



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

**SHAHRASTI 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 Porushava Towns under Upazila
Towns Infrastructure Development Project (UTIDP)**

SHAHRASTI POURASHAVA MASTER PLAN: 2011-2031

STRUCTURE PLAN

URBAN AREA PLAN:

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

WARD ACTION PLAN

December, 2013



**SHAHRASTI POURASHAVA
SHAHRASTI, CHANDPUR**

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Consultant:



Sheltech (Pvt.) Ltd.

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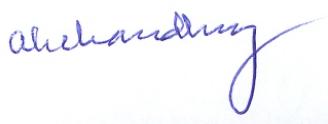
PREFACE

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 Shahrasti Pourashava. This Master plan will serve as a guideline for the future infrastructure development of Shahrasti Pourashava together with land use control and effective management of the services facilities. This will also ensure planned physical, social and economic development of Shahrasti 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 Shahrasti 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 & other stake-holders, collected mouza maps and digitized, demarcated Pura boundary, conducted different types of Engineering Surveys, Socio-economic and Traffic & Transport studies. The Master Plan has been prepared as per Schedule- 2 of Local Government (Pourashava) Act 2009. For the legal coverage, the Master Plan would be placed before the Pourashava for recommendation and approval. The Pourashava Authority, after according recommendation, will submit this Plan to the Local Government Division for approval. While approved, the Local Government Division will publish the plan through gazette notification.

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



(Dr. Akhter Hussain Chaudhury)
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Package- 04



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Executive Summary

Shahrasti Pourashava located in Shahrasti Upazila of Chandpur district. This “B” class Pourashava was established in 1998. The Pourashava comprises 9 wards and 11 mouzas. Shahrasti has a population of 32756 (BBS 2011) with 56.95% of the total land still under agricultural use. In next 20 years, as projections show, the density of population will reach only 14 persons per acre. It has extremely low level of economic activities and economic potentials to flourish as an urban centre in near future. Under such circumstances a development plan can help creating advantages for living and working in the Pourashava that would indirectly help attracting investment for economic growth leading to employment generation. The current development plan of the Shahrasti Pourashava focuses mainly on infrastructure development and control of haphazard spatial development through the instrument of land use zoning. The plan proposed a road network plan of 109.36 km including about 49 km of new road with adequate width and hierarchy. Proposal has also been made for widening of existing narrow roads and linking the missing links.

To promote future drainage management, proposals have been made to create hierarchical drainage network throughout the future town with recovery of encroached khals to serve as primary drains and excavation of filled in areas of the natural khals. To ease water crisis gradual water supply network will be established with treatment plant. Besides, preserving the major ponds as alternatives sources of water, have been suggested. CBO based local waste collection system will have to be introduced at local level for waste management including establishment of a dumping site and a number of transfer stations to collect waste for transportation to the dumping site. In order to streamline future land use development in line with environmental sanctity, a land use zoning has been created for the future town. Based on requirement of the future population, land allocations have been made for various land uses with 26.66% land going to the residential use. Vast land (32.82%) have been retained with agriculture as there will be no need for these land for urbanization during the plan period. Recommendations have been made to strengthen the financial and managerial capacity of the Pourashava including creation of a planning section to handle preparation and implementation of the town plans and manage development control system. Suggestions have been made to reduce dependency on the central government for financing development and improve its own financial capacity by strengthening its own sources of revenue earning, particularly focusing on the holding tax.

Shahrasti Pourashava Master Plan: 2011-2031
Preparation of Master Plan of Shahrasti Pourashava under UTIDP, LGED
(Package- 04)
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LIST OF ABBREVIATIONS AND ACRONYMS

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

LIST OF LOCAL TERMS

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

LIST OF TECHNICAL TERMS

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

Chapter- One

INTRODUCTION

1.1 Introduction

Urbanization in Bangladesh is moving at a rapid pace. Between 1961 to 1981 the average urban growth rate was 8%. The present average growth rate is about 4.5%. According to the population census of 2001 the share of urban population was about 23.29%. Presently, it would be approximately 25%. By the year 2015 the share of urban population will be about 37% of the national population. The importance of urban development is emphasized in terms of its role in the national economy. More than 60% of the national GDP is derived from the non-agricultural sectors that are based in urban areas. Again, the most foreign exchange earning sectors, like, garment and knitwear enterprises are agglomerated in urban areas. These sectors earn over 70% of the foreign exchange. Remittance is also a major sector of foreign exchange earnings and a large share of the remittance goes into the purchase of urban land. Surplus remittance is invested in business and manufacturing located in urban areas. These phenomena indicate the increasing role of urban areas being played in the national economy. The expansion of urban economy leads to the growth of urban population and concomitant haphazard urban spatial growth without planning. The rapid urbanization is also marked by creation of Pourashava, whose number presently stands at about 309. Pourashava are created not only to provide urban services to its citizens but also to create a livable environment through development of planned and environmentally sound living space.

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

The present infrastructure provisions in Pourashava are in a precarious state. Drains are mostly clogged that cannot drain out excess water during heavy rains, natural drainage systems have either been filled up or occupied by land grabbers creating water logging during monsoon. Traffic in Pourashava is increasing day by day with the increase in population and consequent demand. But the sub-standard road network can hardly 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 Pourashava is unorganized and unplanned, which is a major source of environment degradation. Building Construction Rules are not effectively enforced in 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 problems that might emerge in future if they are not addressed now. To overcome all the likely problems to come in future, the Pourashava should go for planned development through preparation of a master plan and move the development forward accordingly. Side by side strengthening its planning department. The master plan can be prepared exercising the power conferred to them by the Pourashava Ordinance 2009. The Upazila Town Infrastructure Development Project aims to prepare master plan for 218 Pourashavas / Upazilas and develop infrastructure during next 20 years. The project keeps provision for a separate plan for land use control, drainage and environment, traffic and transportation management and improvement. The project aims to prepare a Ward Action Plan to ensure systematic execution of future infrastructure development projects. There is also aim to prepare proposals to enhance Pourashava's revenue earning so that it becomes more capable to meet its own capital needs. The master plan of Shahrasti Pourashava suggests development of new roads, drainage facilities, street lights, markets, bus stands, solid waste management, sanitation, water supply and other such infrastructure facilities in order to equip the Pourashava to face future challenges of urbanization and economic regeneration.

1.2 Objectives

According to the Terms of Reference the objectives of Shahrasti Pourashava Master Plan are:

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

1.3 Approach and Methodology

1.3.1 Survey and Data Collection

Extensive Topographic and Physical Feature survey (for details please see subsections of 3.2, 3.3 and 3.4 of Chapter 3 of Survey report), Landuse survey (for details, please see subsections of 4.2, 4.3, 4.4 and 4.5 of chapter 4 of Survey report), Drainage and Environmental Management survey (for details, please see subsections of 6.2 and 6.3 of chapter 6 of Survey report), Transportation and Traffic Management survey (for details, please see subsections of 5.2 of chapter 5 of Survey report) were carried out by the consultant under the close supervision of PMO and Shahrasti Pourashava Officials using sophisticated modern technology (i.e. RTK-GPS, Total Station etc.).

Special care was taken for generalized landuse survey to collect physical information and for indication of existing land use and development pattern. Questionnaire survey (for details, please see subsections of 7.2 of chapter 7 of Survey report) was administered for collection of socio-economic information of the local citizens. Data and information were also collected from Pourashava officials, local elites/leaders, to serve the purpose for preparation of a landuse plan. Master plan maps for Shahrasti Pourashava has been prepared using different scales (i.e. 1:1980, 1:3960) as per ToR to indicate possible intensive development zone and development pattern thereof during successive stages of development within the project area.

1.3.2 Review of Existing Conditions and Plan Preparation

After survey and analysis of existing conditions the planning phase began. Review of the planning area revealed the problems and opportunities. This was followed by a Draft Pourashava Plan with such components as Structure Plan, Urban Area Plan and Ward Action Plans. Structure Plan provided the long term planning principles, while the Urban Area Plan set down the mid level development proposals covering major infrastructure and services. The ward Action Plan made detailed local level development proposals in minor detail. The major issues covered in the Pourashava Master included the following,

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

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

1.3.3 Plan Consultation and Plan Revision

The draft plan was presented in the Pourashava for their comment and suggestion. Power point presentation was made in the Pourashava in presence of Mayor and Councilors and other permanent personalities and representatives of professional groups.

Threadbare discussions followed after presentation, where issues and problems were raised. Comments were recorded for incorporation in the plan. A copy of the plan was sent to LGED for their comments as well.

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

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

study and contour information for site development.

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

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

1.4 Activities Undertaken

The consultant has to undertaken the following major activities for preparation of the Shahrasti Pourashava Master Plan.

a. Visit to the Pourashava

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

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

The consultant has arranged an Inception Seminar/Meeting at the Pourashava level at the project inception level in cooperation with the Shahrasti Poura Authority and disseminated the stakeholders including the Pourashava about the scope and Terms of Reference for the preparation of Master Plan. Views were exchanged with the stakeholders regarding the problems and opportunities of the Pourashava to develop a 20 year development vision for the Pourashava linking the ideas and views received. On completion of the draft final plan a consultation meeting was arranged at Pourashava Office where the plan proposals were disseminated and opinions from the stakeholders sought.

c. Determination of Study Area

The consultant has to determine the study area or the area to be covered under the current planning exercise based on existing condition, demand of the Pourashava and potential scope for future development. The consultant determined Structure Plan Area as 4534.30 acres or 18.35 sq. km. **Map- 1.1** shows the planning area location of Shahrasti Pourashava.

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

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

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

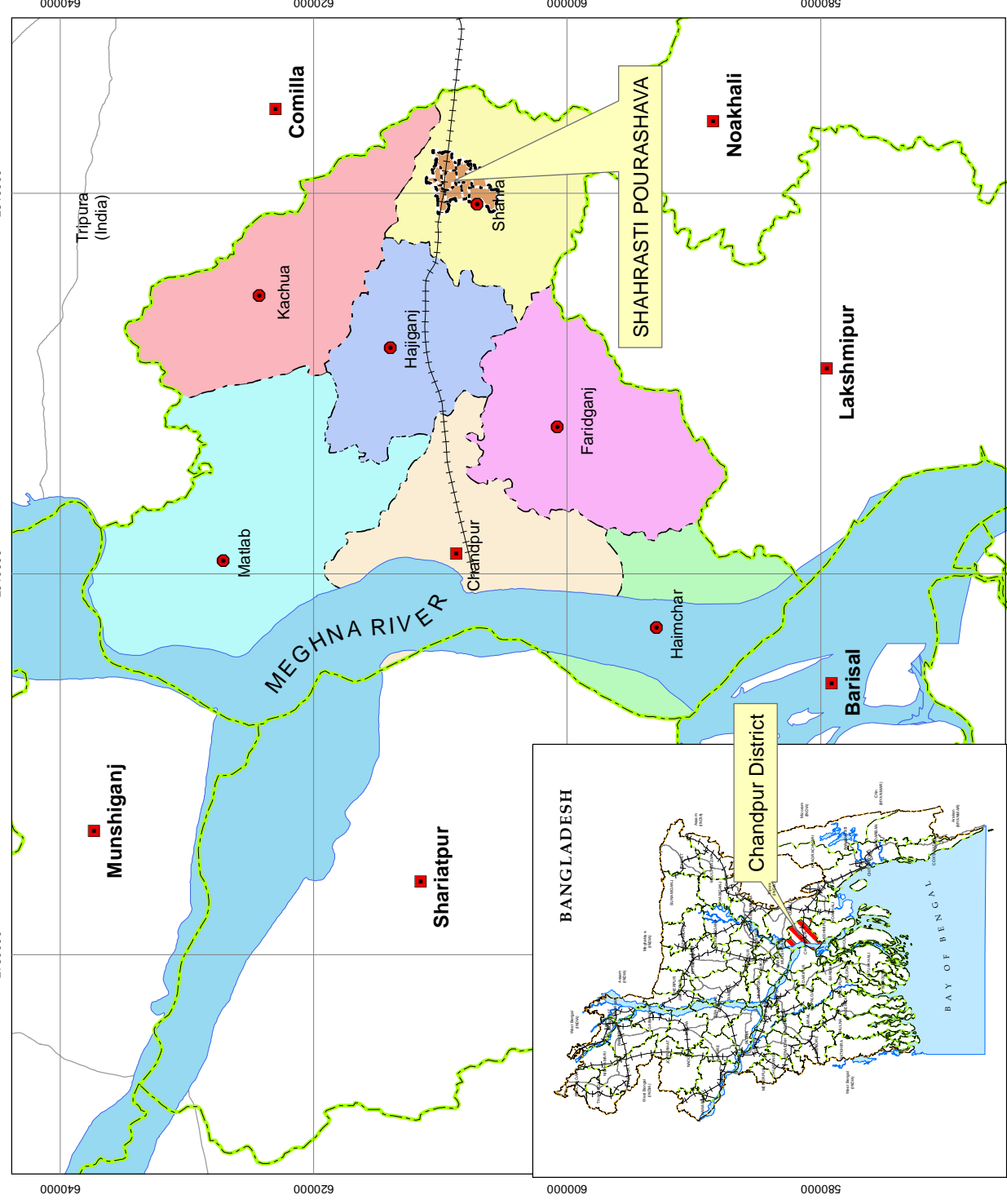
e. Transportation Planning

For making a comprehensive transportation plan for Shahrasti Pourashava the consultant carried out the following tasks:

- i. Collected and assessed the essential data relating to existing transport network, relevant regional and national highway development plans, accident statistics, number and type of vehicles registered for Shahrasti Pourashava.
- ii. Assessed requirements of critical data and collected data through reconnaissance and traffic surveys to estimate present traffic volume, forecast the future traffic growth, and identify travel patterns, areas of traffic conflicts and their underlying causes.
- iii. Studied the viability of different solutions for traffic management and developed a practical short term traffic management plan, including one way system, restricted access for large vehicles, improved signal system traffic islands, roundabouts, pedestrian crossings, deceleration lanes for turning traffic, suitable turning radius, parking policies and separation of pedestrians and rickshaws, etc.
- IV. Assessed the non-motorised traffic movement dominated by cycle rickshaws. Special recommendations were made to utilize these transports in best possible way, without causing unnecessary delays to other vehicles. Proposals were also made about pedestrians and their safety, with special attention for the children.
- V. Assessed the current land use with respect to road transportation, bus and truck stations, railway stations etc. and recommend actions to optimize this land use.
- VI. Prepared a road network plan based on topographic and base map prepared under the Shahrasti Pourashava Master Plan Project. Recommended road development standards, which will serve as a guide for the long and short-term implementation of roads. Also suggested traffic and transportation management plan and the traffic enforcement measure to control traffic movement in a more effective way.

Map 1.1

Location of Shahrasti Pourashava



SCALE

1:457,500



LEGEND

- Upazila Headquarter
- District Headquarter
- International Boundary
- District Boundary
- Pourashava Boundary
- Upazila Boundary
- National Highways
- Railway Network
- River and Sea
- Pourashava Area

UPAZILA NAME

- Chandpur
- Faridganj
- Haimchar
- Haziganj
- Kachua
- Matlab
- Shahrasti

PREPARATION OF MASTER PLAN FOR SHAHRASTI POURASHAVA
Shahrasti Upazila, Chandpur 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: 04 (Comilla Region)



SHELTECH PANTHAKUNJO:
148, 17 West Panthapath,
Dhaka-1207, Bangladesh

Chapter- Two

Conceptual Issues

2.1 Background of the Pourashava

As per the Local Government (Pourashava) Act 2009, the Pourashava in Bangladesh are categorized mainly into A, B, and C classes based mainly on annual income of the Pourashava. There is also a separate category called “Special Class”, basically for industrial and commercial hubs of Narayanganj and Tongi within the Dhaka Metropolitan Development Area (DMDA).

Shahrasti Pourashava is located in Shahrasti Upazila of Chandpur District. Very little is known about the origin of the name of Shahrasti. It is learnt that the, the renowned saint Hazrat Shahrasti (R), a family member of the great saint Hazrat Abdul Kader Zilani (R), came to this area in 745 Bangla year to preach Islam. The Upazila might have been named after the great saint Shahrasti (R). Shahrasti Pourashava was established on 15th October 1998. It is a ‘B’ category Pourashava. There are 15 mohalla/villages, 9 wards.

2.2 Philosophy of the Master Plan

The philosophy behind Upazila master plan lies in the very motive to community welfare through a process of spatial organization, environmental improvement and provision of amenities to the future generations and control of unwanted development.

2.3 Vision & Objectives

2.3.1 Vision

The vision of the current planning exercise is,

“To create a sustainable livable environment where all amenities will be there to promote healthy and comfortable living, together will promote local economy to bring prosperity to the urban centre under the condition of good governance”.

2.3.2 Objectives

Following objectives have been considered as the basis of the plans for Shahrasti Pourashava:

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

To give priority to environmental considerations in making decisions related to physical development

2.4 Content and form of the Structure Plan

2.4.1 Concept

Structure Plan is a kind of strategic plan, or a framework plan, or an indicative plan that is presented in maps and explanatory text that are more 'broad brush' than master plans. 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 is flexible and dynamic and can be changed to accommodate demanded changes. The present Structure Plan is an overall long term strategic plan for Upazila shahars.

Structure Plan is the 1st components 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 Plans detail out development proposals under the framework of Structure Plan.

2.4.2 Content and form of the Report

The Structure Plan is set out in nine chapters.

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

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

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

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

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

Chapter-6 discusses the critical planning issues. Issues related with the transport, environment, landuse control and disaster have been emphasized. Issues relevant with the laws and regulations in

case of policy formulation are also presented.

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

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

2.4.3 Duration and Amendment of the Structure Plan

The Structure Plan is to remain valid for a period of 20 years from the time of its approval that is upto the year 2031. Structure Plan can be amended on the tenth year to cope with changing circumstances. So there will be only one amendment during 2021. The amendment shall be approved by the Pourashava Council.

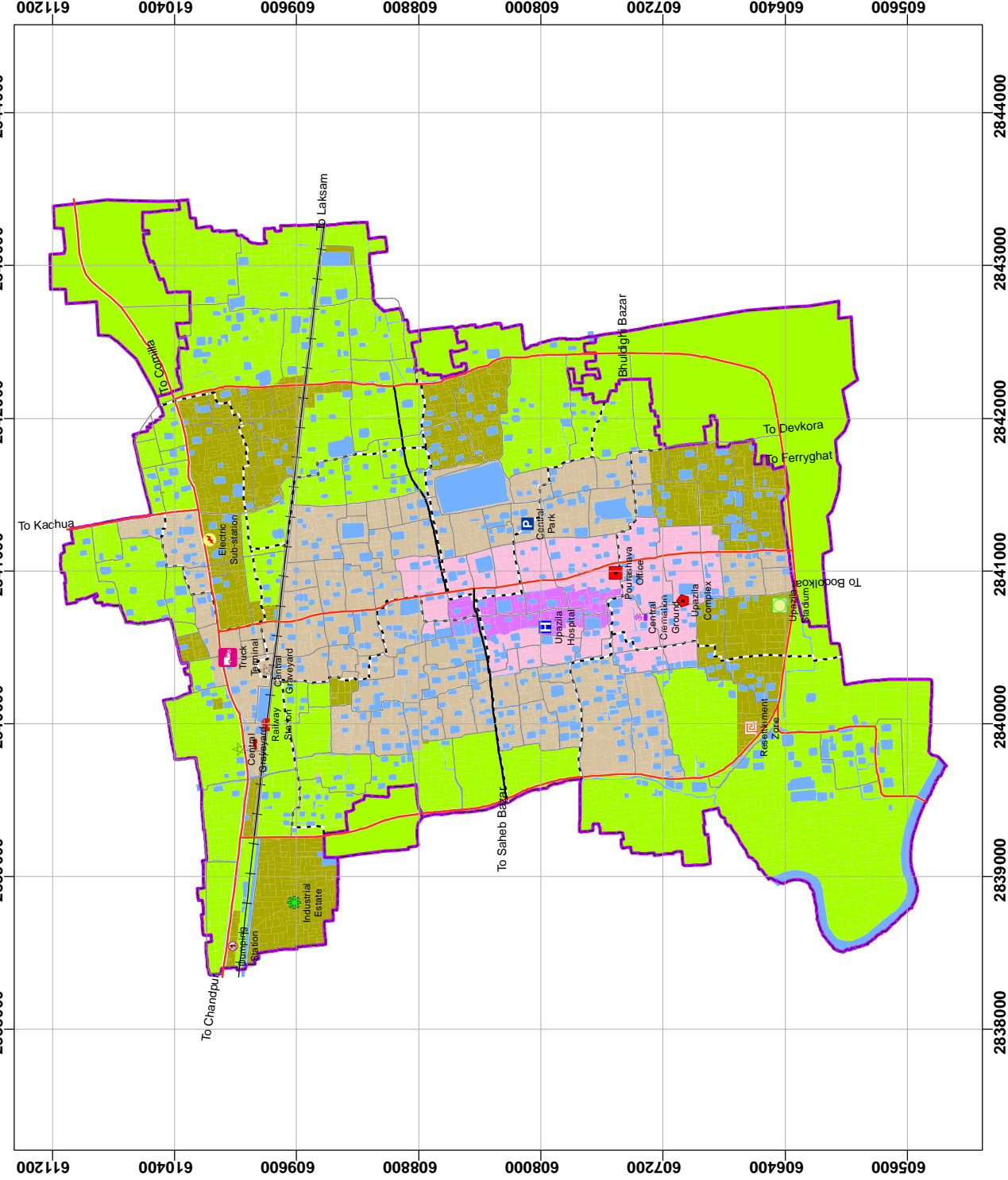
2.4.4 The Style and Format of Structure Plan

The format of a Structure Plan comprises written document and indicative or symbolic major development locations presented in maps and diagrams as parts of the report. It is supported by maps and diagrams as parts of the text and large scale working maps to help project implementation and development control.

The total area of Shahrasti Structure Plan is 4534.30 acres (18.35 sq. km) that include 9 wards of Shahrasti Pourashava and extension area (629.93 acre). But no development proposals are suggested for the extended part as existing Pourashava area is enough to accommodate population and services during Structure Plan period, that is, upto the year 2031. **Map- 2.1** shows the structure plan landuse policy map of Shahrasti Pourashava and **Annex- E** shows a generalized structure plan area policy map.

Map 2.1

Structure Plan Landuse Policy Map of Shahrasti Pourashava



SCALE

1:37,000



LEGEND

- Structure Plan Boundary
- Ward Boundary

Proposed Road

- Tertiary Road (20 ft)
- Secondary Road (40/30 ft)
- Primary Road (80/60 ft)

Major Services

- Pourashava Office
- Upazila Complex
- Bus Terminal
- Central Park
- Dumping Station
- Industrial Estate
- Police Station
- Upazila Hospital
- Upazila Stadium

Landuse Policy Zoning

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

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Local Government Engineering Department (LGED)
Upazila Towns Infrastructure Development Project (UTIDP)
Package No. 04 (Comilla Region)



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Chapter Three

Review of Present Status and the Development Problems

3.0 Introduction

The current chapter of the report makes a review of the various issues of Shahrasti Pourashava and unveils its problems. Intent of this chapter is to introduce the readers with the Pourashava issues and the problems. This chapter will help identify critical problems in order to make planning recommendations.

3.1 Sectoral Review of Present Status

This section of the chapter focuses on the present condition of various sectoral issues of Shahrasti Pourashava.

3.1.1 Societal

Following societal issues have been identified in Shahrasti town.

Small Number of Migrated Families

In the town 91.91% households were found to be the permanent living there since birth, while 8.09% migrated to the town from various places. Low level of employment opportunities is the major reason for low rate of migration.

Population Growth Higher Than National Average

The decadal (1991-2001) urban population growth rate of Shahrasti Pourashava is 13.80% and annual growth rate is 2.67% (BBS 2001), which is greater than national average. In the year 2031, the population of Shahrasti Pourashava will rise to 54040 persons as projection shows.

High Income Level

Field survey shows 50% of the households fall within the income range between Tk.5000 and Tk.15000. Of the surveyed households 39.58% has monthly income below Tk. 5000 that is these households are living below poverty level.

Higher Education Rate but Low level of Education

Literacy rate in the town have been found 95.82% among 6+ years of population, but over 41.69% of the surveyed households have education up to primary level and 6.27% has education from graduation and above level. It indicates high rate of drop outs at the lower tier of education. Poverty seems to be the main reason for high level of drop outs at the lower level.

High Dependency Rate

Shahrasti Pourashava has a higher rate of dependency. Socio-economic survey shows, only 35.56% of the people are engaged in formal earning activities, while 7.60% are fully unemployed. Though housewives (28.33%) are not unemployed, but they are anyhow dependent on their earning males. Students are another dependent group with 28.51%. As a whole, 64.44% of population is directly or indirectly dependent on the earning members of the family.

Work Force

If housewife and students are included in working force then there is about 65.2% of total population who are belongs to working group 15 to 59 age group at Shahrasti Pourashava and remaining 34.8% of population lies under nonworking group in 2031. The situation of Shahrasti pourashava is that most of the female population is belongs to unemployed. As a result the actual percentage of working people is about only 35.58% of the total existing population. This means that, there is a very low level of working force in Shahrasti and it is alarming.

Household Size Larger than National Average

According to 2001 Population Census the average household size in Shahrasti Pourashava was 4.7, which is larger than the national average of 4.5. According to household survey, it has been found that in 54.89% households, the family size vary within 4 to 5 members. Only about 10% families have 8 and above members.

Large Number of Nuclear/single Families

More than three-quarter of the households are nuclear/single families followed by 33% combined and joint families. Of the total population, female population out numbers male population, but in certain age group, female outnumbers the male population.

3.1.2 Economy

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

It is revealed from the sample survey among the male income earners 4.08% of the females have been found engaged in income earning activities. Among the male income earners, over 17.43% are engaged in trading, 12.50% are farmer, 1.23% in self employment, 3.87% works in public offices and 8.27% are in private service. About 29.14% of the populations are students, while 60.43% of females are housewives. And rest 64.44% is not engaged in formal earning activities with 28.33% of Housewives, 28.51% students and 7.60% unemployed. One of the most important income sources is foreign remittance, though it has not been clearly revealed from the household survey. That's why many of the people have higher purchasing capacity.

So, the current economic picture of the Pourashava is not very bright in respect of economy. Virtually no manufacturing establishment has been found in the town that can contribute either employment or cause production leading to expansion of the non-basic sector of the economy. Poverty haunts over one third of its population and service sector activities is far less than momentum. There is extremely low level of investment, no basic industry that could boost local economy and employment. Investment is pulled by nearby larger growth centers like, Noakhali, Lakshmipur and Feni district towns and Chandpur trading centre. However, non-availability of infrastructure and urban amenities also discourage investment in this small town.

3.1.3. Industry

Except some small scale processing units there is virtually no manufacturing and medium scale industry, as such, in the Pourashava. The town actually has no industrial base. Besides, there are a number of rice processing units in the town that can not be termed as industry. There is hardly any agro based industry in Shahrasti Pourashava.

3.1.4 Commerce

In Shahrasti there are a few small and big bazars at different location. Among these, the Thakur Bazar, is situated at the Zero point of Shahrasti. It is the busiest place of Shahrasti Pourashava because of the location of the bus stand. Moreover people also purchase their daily necessities from Kalibazar, Doavanga Market, Kaliabazar etc. Besides, there are a few of other Commercial or shopping centers here and there in Shahrasti Pourashava.

Major part of trade and commerce of the study area is conducted through hat/bazar where agriculture produces, consumer items, merchandise for household and other farm and non-farm items are traded. The market / bazar performs significant role in the Pourashava economy. It is observed that market / bazar provide good number of employment and act as an economic centre for the area of influence of the market / bazar. The main market / bazar of the town remain open everyday from morning to evening. Along with the daily business transactions, one market place is also used as *hat* which sits twice in a week. On the *hat* day farmers, traders, businessmen and many other informal professionals gather in the hats and run trades and business till evening. Actually, the market / bazar are the key supply centre of all sorts of agro-products to the town and other non-producing areas of the region. It is also the major distribution centre of industrial products to the rural hinterland of the region.

That hat / bazar is taking place in the core part of the Pourashava along the main road. People also purchase their daily necessities from Kalibazar, Doavanga Market, Kaliabazar etc. Bazar and *hat* runs in tin-shed semi-pucca structures with parcels of open lands. Two days of a week are the local *hat* days. The hat / bazar are prominent due to availability of agro-product and fish to meet the daily needs of the people. The Pourashava has 764 commercial structures as revealed by physical survey. The scenario proves the area as a small urban- commercial centre that dominates the surrounding Upazila and Zila with its traded goods.

3.1.5 Agriculture

In Shahrasti Pourashava 6.7% of the male income earners in the Pourashava are engaged farming occupation. Besides, another 6.43% are farm laborers living in the Pourashava. The farmers and farm laborers work farm lands, both, within and outside the Pourashava. It is evident from land use survey of the Pourashava that 56.95% of the Pourashava lands are still under agriculture. It indicates that the Pourashava is yet to be adequately urbanized. The farmers and farm labourers work in farm lands, both, within and outside the Pourashava. The farmers collect their farm inputs like, fertilizer, pesticides, and irrigation appliances from stores within the Pourashava. For additional purchase they move to Chandpur, where there are higher level markets for varieties of goods and about one and a half hour journey from the town. The farmers mostly produce Boro and Aman rice and vegetables. Other farm outputs are livestock, forestry and fisheries. There are 3 numbers of small scale poultry farms in the town that produce poultry and

meat to meet the local demand. Vegetables are mostly consumed by the local consumers, while surplus is sold to the *Beparies* (large businessman) who sell them to the whole sellers.

3.1.6 Occupation and Employment

In primary occupation the unemployment rate among the males is only 7.77% in Shahrasti Pourashava. About 4.08% of the females have been found engaged in income earning activities. Among the male income earners, over 17.43% are engaged in trading, 12.50% are farmer, 1.23% in self employment, 3.87% works in public offices and 8.27% are in private service. About 29.14% of the populations are students, while 60.43% of females are housewives.

Table 3.1: Occupation of the Family Members

Type of Occupation	Primary Occupation						Secondary occupation	
	Male		Female		Total		Total	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Government/Autonomous	22	3.86	4	0.75	26	2.35	0	0.00
Private Company	47	8.25	5	0.93	52	4.71	0	0.00
Self employed	7	1.23	1	0.19	8	0.72	0	0.00
Business	99	17.37	0	0.00	99	8.96	8	44.44
NGO Person	1	0.18	6	1.12	7	0.63	0	0.00
Skilled Labor	13	2.28	0	0.00	13	1.18	0	0.00
Labor	11	1.93	0	0.00	11	1.00	0	0.00
Driver	1	0.18	0	0.00	1	0.09	0	0.00
Rickshaw/ Van Puller	14	2.46	0	0.00	14	1.27		0.00
Household Worker	1	0.18	3	0.56	4	0.36	0	0.00
Day Labor Non Agri)	31	5.44	0	0.00	31	2.81	0	0.00
Day Labor (Agri)	71	12.46	0	0.00	71	6.43	0	0.00
Farmer (Land Lord)	3	0.53	0	0.00	3	0.27	5	27.78
Housewife	0	0.00	313	58.50	313	28.33	1	5.56
Unemployed	72	12.63	12	2.24	84	7.60	0	0.00
Students	147	25.79	168	31.40	315	28.51	0	0.00
Others	30	5.26	23	4.30	53	4.80	4	22.22
Total	570	100	535	100	1105	100	18	100

Source: Household survey conducted by the Consultant, 2008.

The existing employment pattern shows a bias towards trading. Since secondary sector employment is highly lacking in the town, people move to self employment like trading. Trading has been found feasible employment in the town, mainly, because higher level of affordability of the people. Remittance is the source of income of a large segment of the town families. The employment scenario of the Pourashava is unlikely to change shortly unless there is any major investment in the industrial sector that can pool a large number of workers and bring vibrancy to the local economy.

3.1.7 Informal Sector Economic Activities

Informal sector characteristics are very similar in all over urban Bangladesh. It is more prominent where there is concentration of people is more. Informal sector is a part and parcel of urban

economy of all developing countries. The most important feature of informal sector is, the sellers carry their goods and services to the buyers and their concentration is more where agglomeration of buyers is more.

Informal sector covers a variety of activities which may be broadly classified as Trading and Services. In various type of mobile or fixed shops they sale items like, food, fish, nuts, coconut, vegetables, daily household items, old cloth / garment, repairing of household gadgets, electronic items repairing, hair cutting, shoe polishing, etc. These income earning activities are considered as informal economic activities.

In the Pourashava, informal entrepreneurs mainly perform their business in the market / bazars and areas where there is agglomeration of people. In informal sector females are hardly visible. Mostly 18-34 age-groups run the informal activities followed by 35-59 age-group. In total, 18 types of occupation grouped under two major categories of Trade and Services have been adopted by the informal entrepreneurs in the Pourashava. Of the various occupations, trade occupies the dominating role. It includes sale of various food items, clothes, vegetables, meat, seed, medicines, etc. and service includes hair cutting, shoe repairing, umbrella repairing, mobile phone service, tailoring, etc. It is revealed that, major occupation is small business shared by about 50% of the total employment, followed by service, agriculture and food processing. They employ very entrepreneurs employ small capital and are usually self-employed.

44.69% respondents monthly earning is in the range of Tk. 3000 to Tk. 6000 and 7.66% is Tk. 2000 to Tk. 3000. A considerable (8.51%) entrepreneurs has monthly income is above Tk. 20000.

Informal entrepreneurs encounter many problems like dull business, unfavorable weather, fear of eviction, extortion, lack of permanent business location, exorbitant rate of interest, lack of credit facilities and unhygienic residential areas. In Shahrasti the concentration of informal entrepreneurs in found more around the bazar area, transport terminal and bus stoppage areas and around major shopping centers.

3.1.8 Physical Infrastructure

3.1.8.1 Existing Road Network

Shahrasti is a small, near linear shaped urban centre. A number of major roads pass through the town to different urban centers including district headquarters. Major roads that pass through the heart of the town form an intersection at the centre of the town known as zero point. The three major roads coming from three different directions meet together at the zero point near the Shahrasti bazar. The routes coming from different places are,

- Hajiganj/Chandpur
- Kachua
- Comilla

The three major roads coming from different directions cross major of Kaliapara-Doavanga khal, Nijmehar-Dakatia River, Naora-Shuchipara, Ghoshpara-Shuchipara, Thakurbazar-Kajir kap, Thakurbazar-KajirKamta khals at several points. The Comilla road comes from East direction, Hajiganj road from the West direction; the Kachua road comes from North. All the roads meet together at zero point of the town.

According to the Pourashava sources the length of total roads in the Pourashava is 95.26 km with 42km of pucca road, 6 km of semipucca road and 47.26 km of katcha road. Besides, the Pourashava has 206 numbers of bridge and culverts including wooden or bamboo built pools.

The Pourashava has about 8.84 km of roads within the town which owned and maintained by the Roads and Highways Department (RHD). These roads pass through the heart of the town to important urban centers-namely Comilla, Chandpur, and Kachua including Dhaka and Chittagong. The crests of these roads have varying widths of 14 ft. to 20 ft., while the right of way ranges from 25 ft. to 100 ft.

LGED maintains about 3.33 km of roads within the Shahrasti Pourashava. These are Soldier Md. Abdul Hoque Road, Naora Road, Naora-Thakurbazar and Meher College Road.

Existing Railway Network

There is one railway network named Meher Railway Station in Shahrasti connecting Comilla and Chandpur (about 4.9 km) and there is a possibility to connect Shahrasti Pourashava with the rest of the country by rail network.

3.1.8.2 Traffic Mode and Infrastructure

Bus Terminal

There are two bus terminals in Shahrasti Pourashava, one at Doavanga more and one at Kaliapara more. The area coverage of the terminal is about 3.6 acres, with a capacity of accommodating 50-60 buses at a time. The terminal is jointly managed by the local Bus owners' association and the Pourashava. Buses destined to Kachua and Chandpur move from Kaliapara bus stand.

Truck Terminal

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

Tempo Stand

Tempo is now a major and cheap commuter human hauler in small towns that play important role in commuter transportation fleets. There are four formal tempo stands in Shahrasti located at Uttar Doavanga, Thakurbazar, Kalibazar area, which accommodates approximately 10 to 12 tempos at a time.

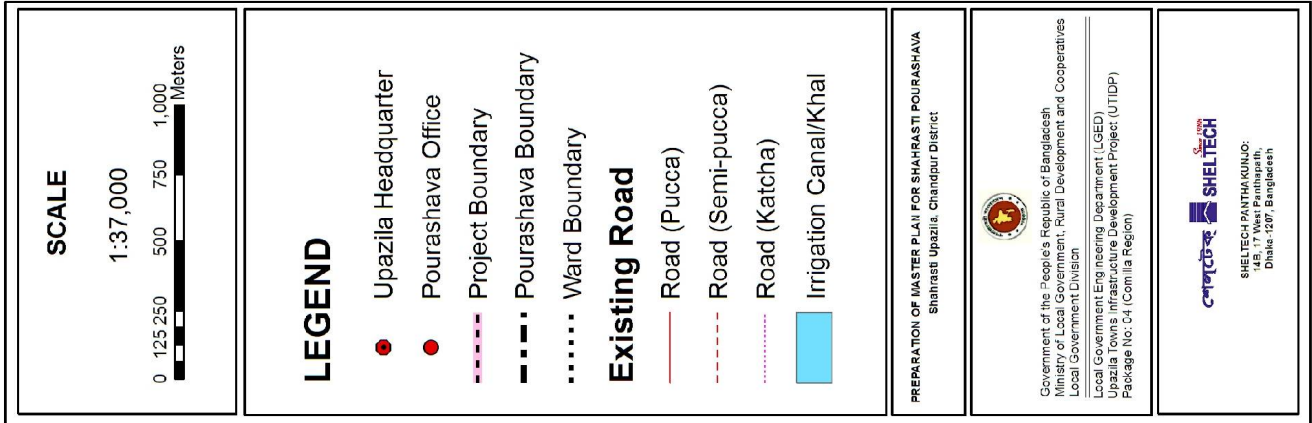
3.1.8.3 Parking

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

3.1.8.4 Footpath

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

Circulation Network (Existing) of Shahrasti Pourashava



PREPARATION OF MASTER PLAN FOR SHAHRASI POURASHAVA
Shahrasti Upazila, Chandpur 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: C4 (Comilla Region)

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3.1.8.5 Waterway

As there is small river named Dakatia River within Shahrasti Pourashava, so there are also some waterway network within Shahrasti Pourashava. There are important canals namely Kaliapara-Doavanga khal, Nijmehar-Dakatia river, Naora-Shuchipara, Ghoshpara-Shuchipara, Thakurbazar-kazir Kap, Thakurbazar-Kajir kamta which passes through the major roads of the town within the Pourashava and which connect the pourashava with Dakatia River and finally connected with Bay of Bengal. It is hearsay that once upon a time these khals were the main trading route of the town which carried the goods and passengers to Hajiganj, Chatkhil, Lakshmipur, Kachua and other surrounding important trading points. Now a day, a part of these khals have encroached by the influential persons of the locality and the rest of the canals have blocked by regular and irresponsible waste dumping. These channels are dead now and the local people reported that ultimately these channels will be sorrow for the town.

3.1.8.6 Drainage System

The drainage system in the study area can be classified into two types. One is the **Natural Drainage** system that has emerged as a natural process following the natural slope of the ground, for the movement of storm run-off. The flow moves from high to low lying areas. The other is the **Man-made Drainage** system that is provided by the municipal authority or any other local government to drain out the domestic waste water or storm water from the urban area.

Natural Drainage Network

Shahrasti Pourashava has large number of water body (total 1409 numbers of ponds and ditches covering an area of 463.78 acres), khals (a total of 32.7 km) for natural drainage system for the retention and draining of storm and household water. But unplanned spatial development activities and growth of rapid settlements due to rapid population growth are causing encroachment on these water bodies, water courses and natural drainage paths. These unplanned development activities are creating obstacles to natural drainage, reducing retention basins and reducing drainage capacity. Poor drainage capacities of the existing khals and water bodies cause long-lasting flood duration in inland areas and intensify the flood damage and creates ecological imbalance situation.

Reservoirs

Large tanks and ponds, Dighi, lakes etc. serve as immediate retention areas for storm water. These structures are both, man-made and natural; and these may be privately owned or publicly owned. These structures function as drainage relief and source of water for emergency use, fisheries, duck rearing, environment and nature preservation. These structures should not be disturbed or removed through physical interventions, like, encroachment, land filling or other means rather should be properly maintained and preserved.

Man-made Drainage System

Provision of this type of drainage is a part of the activities of municipal authority or any other local government and also donor agencies. Shahrasti Pourashava is covering an area of 15.76 sq. km by excluding other urban areas. As a local government body, Shahrasti Pourashava is responsible to provide drainage system to carry out the domestic as well as storm water. The municipality is also responsible for its operation and maintenance within its jurisdiction.

Tertiary Drain

Tertiary drains are local drains. Tertiary drains cover smaller storm drainage area than primary and secondary drains. In ascending order its position is third. Its cross-section is larger than other types; carrying capacity is high and is constructed of brick, cement concrete and sometimes reinforced concrete. Primary drains may be of earthen structure provided sufficient land is available and land value is low. Contributing drainage water comes from households. Tertiary drains discharge its drainage water to secondary drains and natural khals.

Secondary Drain

Secondary drains collect discharge from tertiary drains. One secondary drain may receive drainage discharges from several tertiary drains in its course. Size and capacity of secondary drain is bigger than tertiary drains, its catchment area is smaller than primary drains, bigger than tertiary drains. It may run parallel to bigger roads. Secondary drains may run along and through the middle of its storm water contributing area.

Primary Drain

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

Man Made Drainage System in Shahrasti Pourashava at a Glance

- Length of constructed drainage system

Pucca	:	2.76 km	
Katcha	:	1.20 km	
- Number of ponds/ditches : 1409 Area : 463.78 Acres
- Natural drainage system : 32.7 km Area : 65.72 Acres

Outfall of Drains

There is no formal outfall of drains in the study area. The primary drains mainly discharge storm/waste water to the nearby khals and boro pits along the road. Through the physical infrastructure survey and extensive field observation the consultant has identified outlets to the Sangkor Bangshi, Chaprasirhat khal, Char Kakra khal and Machuadona khal that pass as spider web through the Pourashava. Most of the katcha drains are close ended and without any outlet causes overflows in the road during monsoon.

Capacity and Gravity

Capacity and gravity of these drainage channels are not sufficient to carry out the excessive rainwater that usually occurs in this locality during monsoon. Besides, inadequate drainage sections in conventional drainage system, absence of inlets and outlets, indefinite drainage outlets, lack of proper maintenance of existing drainage system, hampers the natural flow of water.

Therefore, water remains stagnant in many roads and build-up areas creating water logging. Through the physical infrastructure survey and extensive field observation the consultant has

3.1.8.7 Waste Management

There is no formal solid waste management system within Shahrasti Pourashava. It was reported and proved that, the authority did not maintain formal dumping system. A portion of the wastes were dumped on the canal beside the road.

3.1.9 Demographic Characteristics

Population

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

Table 3.2: Population Distribution

Ward No	Population / Census Year			
	1991	2001	2011 (Projected)	Population/Acre (2011)
1		2625	3416	11
2		2608	3394	7
3		2203	2867	14
4		3130	4074	7
5		2572	3347	8
6		2835	3690	11
7		3457	4499	12
8		3039	3955	11
9		2699	3513	4
Total	6912	25168	32756	8

Source: National Population Census, 2001 and projection

Age and Sex Structure

10.77% family members of surveyed households have been found to belonging to the age group of 6 years to 10 years. Over 82% of the population belongs to the age group of 10 years to 56 years which is about over 80.00% according to 2001 Population Census. About 8% of the people belong to the old age group that is 56 years and above. Besides, the following table shows that the overall sex ratio of Shahrasti Pourashava is 118, which is much larger than that of 2001 Population Census.

Household Size

According to 2001 Population Census the average household size in Shahrasti Pourashava was 4.7. According to household survey, it has been found that in 54.89% households, the family size vary within 4 to 5 members. Only about 10% families have 8 and above members.

Population Growth Rate

The annual urban population growth rate of Shahrasti Pourashava is 2.67% (BBS 2001). In the year 2031, the population of Shahrasti Pourashava will be 54040 with the growth rate of 2.67%.

Marital Status

Of the total household members, more than half are married, 41.26% are unmarried, 2.24% is widow/widower and only 0.09% is divorced. As per Population Census 2001, these figures are nearly 52.88%, 43.321%, 3.67% and 0.23% respectively.

Population Density

The present density of population of the pourashava is 6 persons per acre. The density in the Upazila is 8 persons per acre in 2011 and according to 2001 population census it is nearly 6. The density in the pourashava will be 11 persons per acre in 2021 and 14 persons per acre in 2031. The density in the Pourashava will be 13 persons per acre in 2031.

Migration Pattern: Duration of Stay in the Town

Regarding duration of stay in the town, 91.91% households were found to be the permanent residents of the town, living there since birth, while 8.09% were found migrated to the town. Survey shows that, about 91.91% of the Shahrasti people are living here by born. Only 8.09% people come from outside and their living duration in Shahrasti varies. About 3% of the household are living in Shahrasti since 11 to 20 years.

Regarding reasons for migration, 6.38% answered that they came to the town to take opportunities of urban living. Education was the purpose for 0.43%, and business was the purpose for 0.85%.

Education

According to the Survey data 4.18% of the family members are illiterate that is the literacy rate is 95.82% among the surveyed population. However, a higher percentage (41.69%) of the family members has education up to primary level and only 6.27% have education from graduation and above level. About 41.69% of population have only primary education, 10.17% of population have lower secondary level of education and 19.71 have studied up to class ten or secondary level. Only SSC completed population is about 11.53%.

Religion

Over 85% of the households are Muslims in Shahrasti Pourashava. Hindu, constituting 14% of the households, is the second highest religious group. No other religious group has been found in Shahrasti Pourashava during household survey. According to 2001 Population Census, the percentage of Muslims stood at 86.82% and the Hindus at 13.14%. The data clearly indicates that the number of Hindus is gradually dwindling in the area.

Income and Expenditure

Field survey shows 18.30% of the households fall within the income range of Tk.4001-Tk.5000. Only 8.51% households have monthly income of Tk. 20,001-Tk.50, 000. About 17.02% of the households spend between Tk.4001-Tk.5000 per month as family expense. Only 5.11% households spent Tk. 20,001-Tk.50, 000 as family expense. This figure also shows that, the percentage of household of Tk. 2000 and below income group is 1.70% but the percentage of the same group is nil by considering expenditure. It has identified that, a significant number of households spend more than their income. However, many of the households also have other informal sources of income.

3.1.10 Pourashava Institutional Capacity

3.1.10.1 Human Resource Management: Allocated Manpower/Organogram

Shahrasti is a “B” class Pourashava. According to Pourashava manual as ‘B’ class Pourashava, there should have been 91 permanent staff in Pourashava to manage the engineering, administrative, health and family planning, conservancy works. In this organogram Mayor is in top position. Chief Executive Officer (CEO) will coordinate the three major divisions. These divisions are Engineering division (Headed by 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 of the Pourashava

There is acute shortage of manpower in each section of the Pourashava. Existing manpower scenario of Shahrasti Pourashava is horrible. There is acute shortage of manpower in each section of the Pourashava. Pourashava has only 20 staffs against 91 staffs mentioned in Pourashava organogram. There is no Chief Executive Officer, Health Officer. Engineering Division is not well established. 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 Shahrasti Pourashava, the revenue income is low. That’s why it is not capable to pay the salary to all the officials and staffs. And the salary is recovered from the government grant. This is the main reason for understaffing of the Pourashava. This is the main reason for understaffing of the Pourashava.

After analyzing the existing organogram of Shahrasti Pourashava it is found that there is a gap between the standard manpower and existing manpower. The comparative picture of this organogram is shown in **Table- 3.3**.

Table 3.3: Existing Manpower of Shahrasti Pourashava

Manpower Status	Standard Manpower	Existing Manpower	Vacant Post
Mayor	1	1	0
Chief Executive Officer	1	0	1
Administrative Section			
Secretary	1	1	0
Administrative Officer	1	0	1
Head Assistant	1	0	1
Upper Division Assistant	1	0	1
Accountant	1	1	0
Assessor(Tax Assessor)	1	0	1
Tax Collector	1	0	1
Bazar Collector	2	0	2
Assistant Tax Collector	6	2	4
Bazar Inspector	1	0	1
License Inspector	1	1	0
Assistant License Inspector	1	0	1
Accounts assistant	1	0	1
Assistant Assessor	1	0	1
Cashier	1	0	1
Steno Typist/ PA	1	0	1
Store Keeper	1	0	1
Lower Division Assistant/Typist	2	2	0
Jeep Driver	1	0	1
MLSS	5	4	1
Gateman	1	0	1
Gardener	1	0	1
Night Guard	2	1	1

Structure Plan

Manpower Status	Standard Manpower	Existing Manpower	Vacant Post
Sub Total	35	12	23
Part-time/ Contractual Staffs			
Education and Cultural Officer	1	-	1
*Librarian (if any)	1	-	1
*Teacher	18	-	18
*Other Officials	10	-	10
Total	30	-	30
Engineering Section			
Assistant Engineer	1	1	0
Water Super (SAE)	1	0	1
Sub-Assistant Engineer (Civil)	2	1	1
Sub-Assistant Engineer	1	0	1
Bill Clerk	1	0	1
Draftsman	1	0	1
Mechanic (Pump/Vulb Operator)	2	0	2
Pipe Line Mechanic	2	0	2
Tube-well Mechanic	2	0	2
Surveyor/ Sub Overseer	1	0	1
Lower Division Assistant/Typist	2	1	1
Work Assistant	2	0	2
Street Light Inspector	1	0	1
Electrician	2	0	2
Lineman	2	0	2
Electric Helper	1	0	1
Road Roller Driver	1	1	0
Mixture Machine Operator	1	0	1
Truck/Tractor Driver	2	1	1
Truck Helper	2	0	2
MLSS	2	2	0
Sub Total	32	7	25
Health, Family Planning & Conservancy Division			
Medical Officer	1	0	1
Conservancy Inspector	1	0	1
Sanitary Inspector	1	0	1
Slaughtering House Inspector	1	0	1
Moulvi (Contractual)	1	0	1
Lower Division assistant/Typist	1	0	1
Conservancy Supervisor	2	0	2
Vaccination Supervisor	1	0	1
Health Assistant	2	0	2
Vaccinator	6	0	6
Health Visitor	3	0	3
MLSS	2	0	2
Sub Total	22	0	22
Grand Total	91	20	71

Source: Shahrasti Pourashava, 2012.

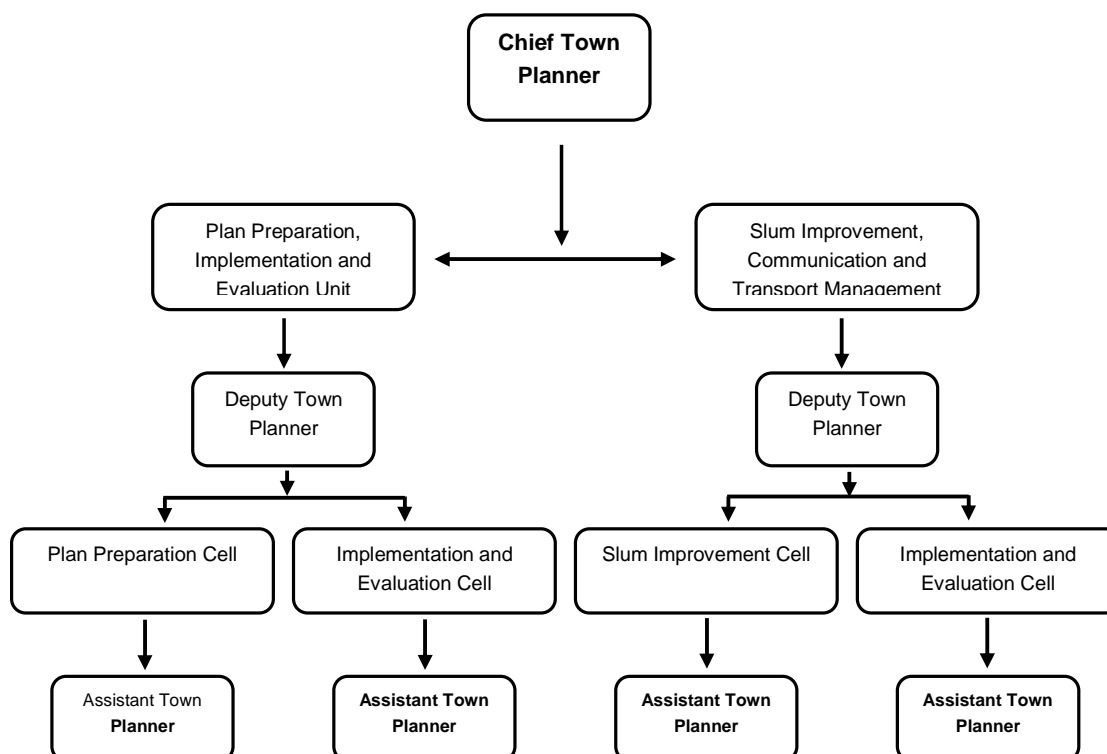
As a traditional system, engineers and secretary are appointed directly by the Ministry of Local Government and other staffs are appointed locally by the pourashava through the approval of the Ministry. Due to low revenue income it is not capable to pay the salary to all the officials and staffs. The salary paid from the government grant and allocation.

3.1.10.2 Pourashava Town Planning Capacity

At present, the Pourashava has no town planning section or any appropriate manpower to prepare or implement town plan. It is recommended to create a Town Planning Section in the organogram directly under the Mayor. There can be one Chief Town Planner equivalent to the Chief Engineer, supported by two Deputy Town Planner and four Assistant Planners plus other necessary support staff. The section will be equipped with necessary computer and other logistics. The responsibility

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

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



Pourashava Master Plan Implementation Capacity

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 will be completed. In the previous section a Town Planning Section has been suggested for the Pourashava. Its prime responsibility will be to monitor regularly implementation of the master plan recommendations. It will prepare monthly progress report on master plan implementation and keep aware the Mayor of the latest situation. The section will also explore ideas to implement master plan provision with the participation of the stakeholders. New will need to be generated to implement master plan under PPP.

3.1.11 Urban Growth Area

It is evident from the land use survey that 56.95% of the Pourashava area is still under agricultural land use. Actually, it has a built up area of 25.39%. The total population was only 25168 in 2001. However, growth rate in 2001 was 2.67%. The estimated population of the pourashava in 2011 was 32756. The present (2011) density of population of the pourashava is 8 persons per acre, while density in Chandpur Town is 7 persons per acre. The average density in the entire Upazila is only 7 persons per acre according to 2001 population census. The density in the Pourashava will

be 14 persons per acre in 2031. So, it is clear from all the above statistics that it is a very small urban centre with very low density, but maintaining high growth rate.

Physical Growth and Directions

Accessibility is an important influencing spatial factor to analyze the growth factor. Another two important factors are flood free high land and existing urban area. Land price signifies how housing structures can be easily produced and, thus, should be supplied elastically to the market. Land price of a property is tightly linked with the land, location and the amenities which are associated with the property. Physical growth usually follows these criteria. The direction of physical growth in the town is towards north to south direction along the Chandpur-Comilla highway and Kalibari – Doavanga road. The high potential area for future urban growth follows these two highways in two opposite directions. Besides these roads Shahrasti bazar area is also a high potential area for future urban growth. Because land elevation and land price both are higher along these major roads. However, minor developments follow the existing urban development in the peripheral areas of the Pourashava.

3.1.12 Catchment Area

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

3.1.13 Existing Land Use

By considering the pourashava area, it has been ascertained that major land use goes to Agricultural land and it is 2217.94 acres which is 56.95% of the total land. The second major land use is Residential land and occupying about 20.76% (808.61 acres) of the Pourashava area. Besides, there is about 14.37% water body, about 2.46% circulation network, about 0.88% commercial activities and about 4.17% of lands are being used for education, community service, government services, manufacturing or industry, service activity and vacant. Vacant land is insignificance in percentage. In following sections ward-wise existing gross land use pattern of the project area have been analyzed.

Residential

Residential use includes urban housing, rural homestead/settlement, flats, Government Quarters, mess/boardings houses, detached and semi-detached houses and informal housing (comprising thatch, katcha and semi-pucca structures) areas. Most residential areas are of informal type means that they were not developed in a planned manner. Residential land has occupied about 808.61 acres of land that is 20.76% of the total Pourashava area. The survey result indicated that residential category is the 2nd dominated land use in the project area. Ward No. 05 is the most built up part of the area. As per area-wise statistics, Ward No. 06, 07, 08, 09, 04, 01, 02 and 03 occupied 13.35%, 13.53%, 13.17%, 12.31%, 9.11%, 8.27%, 7.64% and 5.63% respectively of total residential land use.

Commercial

Commercial area occupies 34.18 acres of land sharing 0.88% of the Pourashava area. Major land uses under this category are retail shops/stores and wholesale shopping areas, financial institution like bank, insurance etc, hotel and restaurant and all categories of ribbon commercial developments along the major roads. Most of the commercial activities are agglomerated in Ward No. 07 which is more accurately adjacent to the Shahrasti Bazar area and its surroundings. About 28% of the commercial land has been found in this area. Commercial activities in other wards have been found very negligible in comparison with Ward No. 02 and 03. The commercial land use of Ward No. 01 is almost zero.

Agricultural

Agricultural land use is the first largest land use of the project area. Approximately 2217.94 acres or 56.95% of land belong to this use within the Pourashava area. This category includes paddy field, cropland, grazing land, horticulture, dairy farm, poultry farm, fish farm, nursery, bamboo garden etc. Except Shahrasti Bazar or the CBD area, most parts of the Poura area and its extended area are semi-urban or rural in nature, where there is a slow trend of urbanization. Thus agriculture is dominant type of land use in the Pourashava as well as in the extended area. Ward No. 09 occupies about 25.55% of the total land under this category. Next largest Ward is 04, which occupies about 18.83% of the total agricultural land. A very interesting thing is that, the outer portion of the Pourashava is agriculture based.

Public Land

This section of the report describes the public land in the Pourashava under various public sector agencies.

a. Pourashava Property

The total land under Pourashava stands at 0.42 acres including the Pourashava office complex. Other Pourashava land includes bazar, market, etc.

b. Land under Government Institutions

Important government properties are, Thana, Upazila Complex, Upazila Health complex, Post Office, Dakbangalow, Sub-registry office, Livestock office, Agriculture office, T & T office etc. The Government service pattern covers mainly 8.12 acres comprising only 0.21% of the total Pourashava area.

3.1.14 Pourashava's Functional Linkage with the Regional and National Network**Regional Network**

The Pourashava itself and its citizens are functionally linked with regional and national activities in many ways. This linkage is operated by means of direct communication and through different media. The District Highway (Comilla-Chandpur road) runs through the Pourashava and links a number of Connector and Access Roads. This Highway is the major arterial road of the study area. It provides connection with Chandpur Pourashava directly. There is one important road intersection named 'zero point' providing linkages with other access roads.

Motorized and non-motorized vehicles are operated in all the nodes of the study area. The non-motorized vehicles are mainly operated within short distance and meet the local needs. The

motorized vehicles are mostly local passenger buses and local popular CNG operated autos and human halers.

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

National Network

The Pourashava is located close to the Bay of Bengal. Shahrasti is bounded on the north by Kachua Upazila and Barura Upazila of Comilla Zila, on the east by Laksham Upazila of Comilla Zila, on the south by Ramganj Upazila of Lakshmipur Zila and on the west by Faridganj and Hajiganj Upazila. Regional importance of the Shahrasti Pourashava as well as Shahrasti Upazila is governed with its agriculture products, with rice being the dominating. Those products are distributed to the adjacent Upazilas. The Shahrasti Upazila is important due to its surplus agriculture production and fish farming that are exported to other Upazilas and Capital City of the country thus establishing and economic linkage with those areas.

Many business companies, apart from their head offices at Dhaka, maintain regional offices for convenience of business operation. Such offices are usually located in comparatively nearby Chandpur and larger district towns like, Lakshmipur, Noakhali, Begumganj or Feni. Importers and exporters communicate with Chittagong City and port for export import. There exist an excellent regional and national road communication network under which linkages are maintained with all regional district and Upazila towns and nationally important capital economic hubs like Dhaka and Chittagong.

Shahrasti Pourashava is connected with Dhaka through Chandpur-Comilla road which connects Dhaka-Chittagong National Highway road. Concentrated development is the common feature of the Pourashava. Suchipara road is another important road, which connect Ramganj Upazila of Lakshmipur district through that direction.

3.1.15 Role of Agencies for Different Sectoral Activities

Agencies responsible for utility facilities and municipal services are important components for an urban centre who play important roles in local development. Almost all national government ministries have their Upazila level offices that are located in the Upazila headquarters town. The concerned departments / organizations responsible for planning and development of utility services are shown in the following table.

Table 3.4: Agencies responsible for Sectoral activities

SI. No.	Sectors	Responsible agencies
1.	Electricity Supply	Rural Electrification Board (REB)
2.	Water Supply	DPHE / Pourashava/ Private
3.	Telecommunication	BTCL / Mobile Phone Companies
4.	Sewerage and Sanitation	DPHE / Pourashava/ Private

5.	Solid Waste Disposal	Pourashava / Private
6.	Fire Service	Fire Services and Civil Defense
7.	Post office	Postal Department

All these offices are headed by an officer and staff and they are responsible to execute the development programmes of the concerned ministries at the grassroots level. They also convey to the head office about the impacts of the programmes and problems of existing in the field and the problems of programmer operation. Some Upazila offices are controlled by the Zila level offices while some are controlled from the head offices at Dhaka.

The authorities (as presented in the **Table-3.4**) perform other responsibilities with the assistance and support of other relevant government agencies. The functions discharged by agencies are:

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

3.2 Development Problems of the Pourashava

3.2.1 Physical Infrastructure Problems

Road and Transportation Problems

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

Traffic Conflict

Traffic conflict is common and frequent in towns where there is admixture of transport vehicles-slow and fast-in the streets. Areas of conflict occur at point where there intensity of traffic movement is high. These are Doavanga Intersection, Rail crossing, Kaliapara Intersection, Kalibazar Intersection etc. The identified reasons for traffic conflict are, improper intersection design, parking of vehicles on the street, waiting of operators on the roads looking for possible passengers, absence of traffic signal, disobedience of traffic rules etc.

Road Accident

Mentionable accidents were not found recently in Shahrasti. Occurrence of minor accidents has been found. Local police station and Upazila Health Complex could not provide any statistical information about road accident.

Narrow Road Width

Narrow widths of roads and poor maintenance have marked by most respondents as major road problems in the town. About 19% of the respondents have pointed to the misery of road movement during monsoon when unpaved roads get muddy. Narrow width of roads is likely to become a

major problem of traffic movement when the town grows and density of population increases in future. As field survey shows, 76% of the households of the town reported that the Pucca road widths in front of their houses are 10 ft. or less. This is alarming, as there will be increase in population leading to higher density.

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

3.2.2 Socio-economic Problems

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

Low level of Education

The survey findings show that over 71.57% of the surveyed households have education upto secondary level. It indicates high level of drop outs at the lower tier of education. It has been found that poverty is the main reason for high level of drop outs at the lower level.

High Dependency Rate

Shahrasti pourashava has a high level of dependency rate. Socio-economic survey shows that only about 35.56% of the people are engaged in formal earning activities. These activities are likely, Government/Autonomous, Private Company, Self employed, Business, NGO Person, Skilled Labor, Labor, Driver, Rickshaw/Van Pullar, Household worker, Day Labor (Agri), Farmer (Land Lord), Farmer (Land Less), Day Labor (Non-agri) and Others. Fully unemployed persons are of 7.60%. Though housewives are not unemployed, but they are actually dependent with our socio-cultural perspective and it is a significant 28.33%. Students are of 28.51% which is also dependent. As a whole, there are about 64.44% of people who are directly or indirectly dependent.

Low level of Working Force

If housewife and students are included in working force then there is about 65.2% of total population who are belongs to working group between 15 to 59 age group at Shahrasti Pourashava and remaining about 34.8% of population lies under nonworking group in 2031. The situation of Shahrasti pourashava is that most of the female population is belongs to unemployed. As a result the actual percentage of working people is about only 35.58% of the total existing population. This means that, there is a very low level of working force in Shahrasti and it is alarming.

Urban Poverty

Still the majority of the town population lives under poverty. They suffer from acute scarcity of employment due to lack of non-farm economic activities. Population of the town is also not enough to serve as a base for informal sector economic activities. As a result staggering poverty continues in the town.

Active and Passive Recreation Facilities

In Shahrasti Pourashava, there is not any formal playground; the existing playgrounds are generally used as school playground. There is no cinema hall in Shahrasti Pourashava. The recreation facilities cover only 2.61 acres of Shahrasti Pourashava, which is only 0.07% of the total pourashava area.

3.2.3 Environmental Issues***Drainage Management Problems***

The condition of drainage service in the Pourashava Centre is very much dismal. These drains are not properly connected. The result is pool of stagnant water found almost everywhere. Few pucca drains has been constructed in the Pourashava Headquarters, especially adjacent of Bazar area and zero point to Upazila Health Complex. Katcha drains do exist and constitutes a significant proportion. During the concentrated heavy rainfall the effect of inadequate drainage become visible.

Waste Management

Shahrasti Pourashava has conservancy department to manage the solid waste like others Pourashava. The Pourashava has only 8 dustbins though these are broken and not usable. Production of solid waste is low due to low volume of population. It was reported and proved that, the authority did not maintain formal dumping system. A portion of the waste is dumped on the canal beside the road. This practice has created blockage of the canals at several points. The authority only collects wastes from road sides and dustbins. Door to door collection system has not yet been introduced in this Pourashava.

Water Sources and Pollution

There are ponds almost in every house and the institutions. The number of ponds is approximately 1409 and which serve as important sources of water supply for the local inhabitants. There are five or six canals namely Kaliapara-Doavanga khal, Nijmehar-Dakatia river, Naora-Shuchipara, Ghoshpara-Shuchipara, Thakurbazar-kazir Kap, Thakurbazar-Kajir kamta. But a significant portion of which have illegally been encroached by the influential persons. At many points the canals have been blocked by the unauthorized and unplanned waste dumping. Ground water level in Shahrasti Pourashava is found between 40 ft to 50 ft during dry season and between 30 ft to 35 ft during wet season. Ground water contains Iron and Arsenic (Source: DPHE, Shahrasti, 2009). One of Pourashava sources reported that, nearly 99% of the tube wells are arsenic contaminated and the provision of deep tube well is not possible because of the presence of salinity in the ground water. The sources of surface water (ponds and ditches only) are polluted by domestic waste, unhealthy sanitation and extensive use of fertilizer in the agriculture production. Soon, water supply is gong to be very critical in the Pourashava. To restore water supply blockages and encroachment of canals must be removed and the canals must be allowed to accommodate water. Water supply problem can be substantially resolved by properly using the natural khal.

Air Pollution

As Shahrasti Pourashava is one of the most develop areas, many activities are performed inside the Poura area. In the peak period it is very busy. The bazaar and the market place remains very caward. Lots of motorized transports, like buses, CNGs, tempos are moving here and there. These

vehicles are polluting the air largely. In some places poultry/livestock farming is observed. They also cause air pollution.

Land Pollution

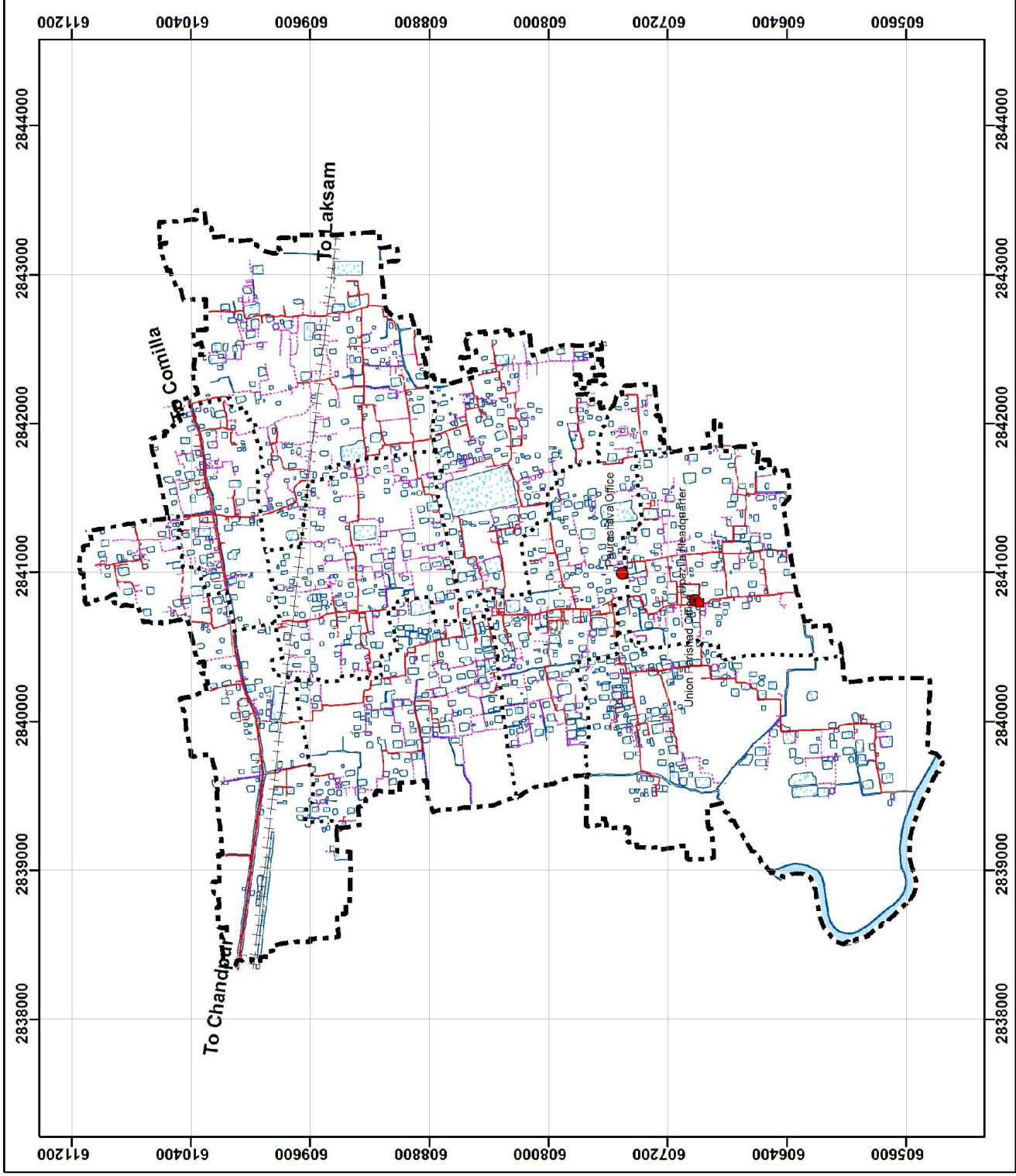
Main reasons for land pollution in Shahrasti are extensive use of fertilizer in the agriculture, waste water discharge on the land, water logging and market and domestic waste disposal on the land. Many latrines of households are connected to drains which create a severe environmental problem. About 26% respondents found poor solid waste management as another important source for land pollution.

Noise Pollution

Particular areas adjacent to the main road have some noise pollution created by movement of heavy vehicles near zero point, Kalibari Bazar, Thakur bazar area. The town is, however, free from heavy traffic congestion.

Map 3.2

Location of Waterbodies Including Drainage Network



SCALE

1:37,000



LEGEND

- Pourashava Office
- Upazila Headquarter
- Project Boundary
- Pourashava Boundary
- Ward Boundary

Existing Road

- Road (Pucca)
- - - Road (Semi-pucca)
- ... Road (Katcha)

Existing Drainage

Existing Waterbody

- Ditch
- Pond/Lake/Khal/Irrigation Canal
- Beel/Marshland/Dighi

PREPARATION OF MASTER PLAN FOR SHAHRASI POURASHAVA
Shaharasi Upazila, Chandpur 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. 04 (Comilla Region)



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Chapter Four

Projection of Future Growth by 2031

4.1 Introduction

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

The population figures collected from secondary sources, especially for 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.

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

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

4.2 Projection of Population

Basis of population projection: There is no data in census 1991 for individual 9 Wards of Shahrasti Pourashava. So, we have considered 2001 census data as base population. The formula for calculation of the population projection is -

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

Where,

P_o = the base year (2001)

P_n = the projected year (2031)

n = time period (20 years)

r = annual growth rate

On the basis of the above formula ward wise population of Shahrasti Pourashava has been estimated upto the year 2031 with a five year interval. Growth of population depends upon two factors. One is natural growth and the second is migration. Natural growth as well as growth from birth and death is partially available in Bangladesh. But migration data is not. So, projection calculation only depending on growth rate will never focus the actual increase or decrease of population. So an alternative technique has been applied here. For this three projections have been made with three different growth rates- 1.67%, 2.67% and 3.67% as presented in Table-4.1, Table-4.2 and Table-4.3 respectively.

Table 4.1: Population Projection and Density for Shahrasti Pourashava Up to 2031 Based on Low Growth Rate (1.67%)

Ward	Acre	HHs 2001	Pop 2001	Pop 2011	PPA 2011	Pop 2016	PPA 2016	Pop 2021	PPA 2021	Pop 2026	PPA 2026	Pop 2031	PPA 2031
Ward 1	299.80	488	2625	3098	10	3365	11	3656	12	3971	13	4314	14
Ward 2	503.09	480	2608	3078	6	3343	7	3632	7	3946	8	4286	9
Ward 3	202.24	393	2203	2600	13	2824	14	3068	15	3333	16	3621	18
Ward 4	574.22	583	3130	3694	6	4013	7	4359	8	4735	8	5144	9
Ward 5	413.51	513	2572	3035	7	3297	8	3582	9	3891	9	4227	10
Ward 6	346.66	536	2835	3346	10	3635	10	3948	11	4289	12	4659	13
Ward 7	382.2	662	3457	4080	11	4432	12	4815	13	5230	14	5682	15
Ward 8	371.25	543	3039	3586	10	3896	10	4232	11	4598	12	4995	13
Ward 9	801.74	490	2699	3185	4	3460	4	3759	5	4083	5	4436	6
Total	3894.71	4688	25168	29701	8	32266	8	35051	9	38078	10	41365	11

Annual growth rate 1.67% estimated by Consultant

Table 4.2: Population Projection and Density for Shahrasti Pourashava Up to 2031 Based on Medium Growth Rate (2.67%)

Ward	Acre	HHs 2001	Pop 2001	Pop 2011	PPA 2011	Pop 2016	PPA 2016	Pop 2021	PPA 2021	Pop 2026	PPA 2026	Pop 2031	PPA 2031
Ward 1	299.80	488	2625	3416	11	3897	13	4446	15	5072	17	5787	19
Ward 2	503.09	480	2608	3394	7	3872	8	4418	9	5040	10	5749	11
Ward 3	202.24	393	2203	2867	14	3271	16	3732	18	4257	21	4856	24
Ward 4	574.22	583	3130	4074	7	4647	8	5302	9	6048	11	6900	12
Ward 5	413.51	513	2572	3347	8	3819	9	4357	11	4970	12	5670	14
Ward 6	346.66	536	2835	3690	11	4209	12	4802	14	5478	16	6250	18
Ward 7	382.2	662	3457	4499	12	5133	13	5856	15	6680	17	7621	20
Ward 8	371.25	543	3039	3955	11	4512	12	5148	14	5872	16	6699	18
Ward 9	801.74	490	2699	3513	4	4007	5	4572	6	5215	7	5950	7
Total	3894.71	4688	25168	32756	8	37368	10	42630	11	48634	12	55482	14

Annual growth rate 2.67%, BBS-1991 & 2001

Table 4.3: Population Projection with Density for Shahrasti Pourashava Up to 2031 Based on High Growth Rate (3.67%)

Ward	Acre	HHs 2001	Pop 2001	Pop 2011	PPA 2011	Pop 2016	PPA 2016	Pop 2021	PPA 2021	Pop 2026	PPA 2026	Pop 2031	PPA 2031
Ward 1	299.80	488	2625	3764	13	4507	15	5397	18	6463	22	7740	26
Ward 2	503.09	480	2608	3740	7	4478	9	5363	11	6421	13	7690	15
Ward 3	202.24	393	2203	3159	16	3783	19	4530	22	5424	27	6495	32
Ward 4	574.22	583	3130	4488	8	5375	9	6436	11	7707	13	9229	16
Ward 5	413.51	513	2572	3688	9	4416	11	5289	13	6333	15	7583	18
Ward 6	346.66	536	2835	4065	12	4868	14	5829	17	6980	20	8359	24
Ward 7	382.2	662	3457	4957	13	5936	16	7108	19	8512	22	10193	27
Ward 8	371.25	543	3039	4358	12	5218	14	6249	17	7483	20	8960	24
Ward 9	801.74	490	2699	3870	5	4634	6	5550	7	6646	8	7958	10
Total	3894.71	4688	25168	36089	9	43216	11	51750	13	61969	16	74206	19

Annual growth rate 3.67% estimated by Consultant

For planning purpose, the projection based on medium growth rate that is 2.67 has been taken. The projection has been generated with data from BBS, 2001. The existing estimated population of Shahrasti Pourashava is 32756 in 2011 within an area of 3894.71 acres. According to 2001 Population Census it was 25168. With an annual growth rate of 2.67% the forecasted population of Shahrasti Pourashava will be 55482 in the year 2031. The gross density of the area will be 14 ppa

(person per acre) in 2031. Due to the maximum concentration of residence in Ward no. 03 the density of population will also be higher (24 ppa) in this zone.

Table 4.4: Gross population density of some areas

Name of the Administrative Unit	Gross Density (per sq.km.) in 2001	Gross Density (per acre) in 2001
Dhaka City Corporation	34692	140
Dhaka District	5830	24
Chandpur District	1333	5
Chandpur Sadar Upazila	1414	6
Chandpur Pourashava	8630	35
Haziganj Upazila	1537	6
Haziganj Pourashava	2660	11
Kachua Upazila	1405	6
Kachua Pourashava	1975	8
Matlab Upazila	1576	6
Matlab Pourashava	1802	7
Sengarchar Upazila	1081	4
Sengarchar Pourashava	1179	5
Shahrasti Upazila	1322	5
Shahrasti Pourashava	1608	7

Source: BBS 2001

Most of the Upazila level towns in Bangladesh are in rural based urban settings. Characteristics of the residents are mostly semi-rural; permanent settler on ancestral land and less use of land than required make density minimum or towards rural. This type of expansion can be termed as 'wide horizontal growth' that actually misuses the urban land in the face of scarcity of land and population density of the country. One of the reasons is less pressure of migrated people due to agrarian economy or minimum non-agrarian economic opportunities. The table both above and below shows that the maximum density of population in Chandpur region (among Pourashava and urban centers) is 35 persons per acre (2001) in Chandpur Pourashava which may be hardly 40-45 in 2011. In Shahrasti, it was 7 persons per acre which may be 12-13 in the year 2031. This population used a total 808.61 acres of land for residential purposes during the survey year in 2010. This is the main reason for this low density but more use of land as residential purpose is the rural type and horizontal development. The average urban population of Chandpur district was 13.83 percent and 9.27 percent in 2001 and 1991 respectively and the decadal growth of urban population in Chandpur was 66.65 in 2001 whereas the total urban population in Bangladesh was 23.39 percent in 2001.

Table 4.5: A Comparative Scenario of Urban Population in Chandpur Region

Name of the Upazila	Urban Population 1991	Urban Population 2001	Area (Sq.Km.)	Area (Acre)	Density/ Sq.Km.	Density (PPA)	Growth Rate (annual)
Chandpur Zila	188476	314102	134.92	33339.41	2328	9	5.24
Chandpur Sadar	99864	108558	16.17	3995.688	6714	27	0.84
Hajiganj	36844	47658	20.03	4949.513	2379	10	2.61
Kachua	12358	22197	11.24	2777.46	1975	8	6.03
Matlab	9677	55710	30.92	7640.487	1802	7	19.13
Sengarchar	-	32130	27.25	6733.611	1219	5	-
Shahrasti	6912	25168	15.65	3867.193	1608	7	13.80

Source: BBS 2001

In context of residential area of Shahrasti, existing residential land will cover the requirement of land for next 20 years population demand. So vertical expansion is a must prescription considering land scarcity and population growth.

4.3 Identification of Future Economic Opportunities

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

Good quality furniture is built here that are marketed all over the country. There is good investment prospect in this field that will bring prosperity of the Pourashava. Other economic prospects are summarized in the following discussions:

- Availability of unskilled and cheap manpower.
- Availability of agriculture land. The land may be used for different agricultural production and those productions may be used for the input of agro-based industries.
- The Pourashava has been developed as a growth centre. Some cluster development is found around this growth centre. Planned development through the master plan will initiate to arrange the growth in a systematic manner. At the same time, economic development parallel to the physical and social development will be encouraged.
- The town has good prospects to local economic 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 development may be arranged for prospective young and educated entrepreneurs to encourage them to invest in manufacturing, in particular.

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

Third, local entrepreneurs may go for consumers goods production targeting local market. Ambitious investors may go further and invest in exportable or export substitutes taking advantage of the proximity of the Chittagong Port and excellent road transport facilities available. The town has gas connection, which is a cheap fuel in the country. Industries using gas as fuel can be set up here. Government and local banks may provide capital support.

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

4.4 Projection of Land use

4.4.1 Estimation of Residential Land Requirement

The present population of the planning area has been estimated as 32756 (2011) as per growth rate of 2.67%. This gives a gross density 8 persons/acre. The future housing area need to be based on a recommended planning standard of 100 persons per acre. With this standard, the estimation shows, the land required to accommodate total projected population (55482) in the year 2031. But survey of existing land use has identified 808.61 acres of land currently under housing use with a low density of population (8 persons/ acre). The consultant, therefore, retracts the existing and additional housing land for the population of the Pourashava for 2031.

Table 4.6: Estimation of Housing Land Requirement

Use/Facility	Recommended standard	Projected Population 2031	Estimated Land Requirement	Existing Land	Additional Land Requirement (2031)
General Housing	100 persons/acre	55482	554.82	808.61	23.63
Real Estate (Public/Private)	200 person/acre		277.41		
Total			832.24	808.61	23.63

4.4.2 Estimation of Land for Business

There is no reason to expect any sharp rise in business activities in next 20 years in the Shahrasti Pourashava. The current land under business/trading use is only 34.18 acres including business areas beyond pourashava that cover shopping and bazar areas. Considering 2.5% rise in business activities and proportionate rise in business area each year, about 0.85 acres of land will be added to commercial land use every year. So, upto the year 2031 (20 years) the increase will be 17.09 acres by the year 2031. Adding the current land (34.18 acres) the total land under business will be 51.27 acres.

4.4.3 Estimation of Land for General Industry

According to approved planning standard the total land for industries comes to 138.70 acres with 83.22 acre for small scale industries and 55.48 acres for cottage and agro based industries.

Table 4.7: Estimation of Land Requirement for General Industries

Use/Facility	Recommended standard	Estimated Land Requirement (acre)	Existing Land (acre)	Additional Land Requirement by 2031 (acre)
Small scale	1.50 acres /1000 population	83.22	4.21	79.01
Cottage/ agro-based	1.00 acres /1000 population	55.48	0	55.48
Total		138.7	4.21	134.49

Therefore, in the year 2031, the estimated land for general industry and manufacturing will stand at 138.70 acres and the existing land use of this purpose is 4.21 acres. So 134.49 acres of additional land will be required.

4.4.4 Estimation of Land for Commercial Use

There is no reason to expect any sharp rise in business activities in next 20 years in the Shahrasti Pourashava. The current land under business/trading use is only 34.18 acres including business areas beyond Pourashava that cover shopping and bazar areas. Market facilities are usually provided privately on commercial basis depending on trend of sale of goods. So it is not possible to fix a standard or project actual area for these services. Field observations shows that most commercial areas are actually mixed areas combined with residence and small scale industry. So, instead of marking commercial areas exclusively for commerce use (that would never develop in this small town), it is better to term the area as mixed use area and allow it to develop as mixed use areas.

Table 4.8: Estimation of Land Requirement for Commerce and Shopping

Use/Facility	Recommended standard	Estimated Land Requirement (acre)	Existing Land (acre)	Additional Land Requirement by 2031 (acre)
Wholesale market	1.00 acre/ 10000 population	5.55	0	5.55
Neighborhood/ Local market	1.00 acre/per neighborhood Market	9.00	0	9
Retail sale Market	1.0 acres/ 1000 population	55.48	34.18	21.30
Super Market	1.50 – 2.50 acres/per super market	1.50	0	1.50
Total		71.53	34.18	37.35

For the sake of current planning the land may earmark as per standard for commercial land use and put them at appropriate locations where mixed use facilities may be developed privately or publicly. The total required commercial land will stand at 71.53 acres. The extra land requirement will stands at 37.35 acres.

4.4.5 Education & Research

Estimation of land according to standard indicates there will be a land requirement of 85.44 acres to accommodate educational facilities by the year 2031. If we deduct the already available 17.63 acres of existing land uses under various education facilities there will be a need of additional 68.00 acres of land for education facilities.

Table 4.9: Estimation of Land Requirement for Education Facilities

Use/Facility	Recommended Standard	Estimated Land Requirement (acre)	Existing Land (acre)	Additional Land Requirement by 2031 (acre)
Nursery	0.5 acre/10,000 population	2.77	2.95	-
Primary School/ kindergarten	2.00 acres/5000 population	22.19	7.68	14.51
Secondary/ High School	5.00 acres/ 20,000 population	13.87	3.08	10.79
College	10.00 acres/20,000 population	27.74	2.53	25.21

Use/Facility	Recommended Standard	Estimated Land Requirement (acre)	Existing Land (acre)	Additional Land Requirement by 2031 (acre)
Vocational Training	5 - 10 acres / Upazila	5	0	5.00
Others	5.00 acres / 20,000 population	13.87	1.39	12.48
Total		85.44	17.63	68

4.4.6 Health Services

There already exists an Upazila health complex on an area of 3.59 acres. Estimation shows minimum 10.00 acres of land for the health complex according to recommended standard. The consultant feels that additional land is required for the Upazila health complex for a Pourashava. In future, as the population and density increases, demand for local health facilities will increase. So according to standard, 11.10 acres have been allotted for Health centre/Maternity clinic.

Table 4.10: Estimation of Land Requirement for Health Services

Use/Facility	Recommended standard	Estimated Land Requirement (acre)	Existing Land (acre)	Additional Land Requirement by 2031 (acre)
Upazila health complex/ hospital	10 -20 acres/ Upazila HQ	10.00	3.59	6.41
Health centre/ Maternity clinic	1.00 acre/ 5,000 population	11.10	0.17	10.93
Total		21.1	3.76	17.34

4.4.7 Open Space

Field survey shows no public park or play field in the town for use by general public except play grounds in the premises of educational institutions. Total recommended land required for various open space recreation facilities stands at 127.06 acres. The facilities include, play field/ground, parks of various categories and stadium/sport complex. If we deduct the already available 2.75 acres of existing land uses under various facilities there will be a need of additional 124.31 acres of land for open space facilities.

Table 4.11: Estimation of Land Requirement for Open Space

Use/Facility	Recommended standard	Estimated Land Requirement (acre)	Existing Land (acre)	Additional Land Requirement by 2031 (acre)
Play field/ playground	3.00 acres/20,000 population	8.32	2.75	5.57
Park	acre /1000 population	55.48	0	55.48
Neighborhood park	1.00 acre /1000 population	55.48	0	55.48
Stadium/ Sports complex	5 – 10 acres/ Upazila HQ	5.00	0	5.00
Cinema/ Theatre	1.0 acre /20,000 population	2.77	0	2.77
Total		127.06	2.75	124.31

4.4.8 Transportation Facilities

In the field of transport establishment the consultant proposes such facilities as, bus terminal, truck terminal, rickshaw stands at selected places, baby taxi/tempo stand and passenger shed for local

bus users. However, many of the proposals may seem pre matured, but will be necessary in future. If land acquisition for these facilities is delayed, land may not be available in future for providing such facilities.

Table 4.12: Estimation of Land Requirement for Transportation Facilities

Use/Facility	Recommended standard	Estimated Land Requirement (acre)	Existing Land (acre)	Additional Land Requirement by 2031 (acre)
Bus terminal	1 acre /20,000 population	2.77	0	2.77
Truck terminal	0.50 acre /20,000 population	1.39	0	1.39
Railway Station	1.0 acre /20,000 population	4	0.4	3.60
Baby taxi/ tempo stand	0.25 acre /one baby taxi/tempo stand	1	0	1
Rickshaw/van stand	0.25 acre /one baby taxi/tempo stand	1	0	1
Passenger Shed	0.25 acre /one baby taxi/tempo stand	1	0	1
Total		11.16	0.40	10.76

4.4.9 Government Offices

The existing Pourashava Office premise is situated in an area of 0.42 acres. Consultant considers that this is not enough for Shahrasti Pourashava. There is land nearby that can be proposed for extension. If necessary, additional space can be created by constructing a high rise building. So no additional land has been proposed.

Other Government Offices (Police Station, Police Box/Outpost, Fire Station, Post Office) Required 10.16 acres of land as per standard where there is 1.50 acres of Police station and 1.39 acres for Post Office.

Table 4.13: Estimation of Land Requirement for Administration

Use/Facility	Recommended standard	Estimated Land Requirement (acre)	Existing Land (acre)	Additional Land Requirement by 2031 (acre)
Upazila Complex	15.00 acres	15.00	5.05	9.95
Pourashava Office	3 - 5 acres	4.00	0.42	3.58
Jail/Sub-Jail	10 acres/Upazila HQ	10.00	0	10.00
Police Station	3 - 5 acres/Upazila HQ	1.50	1.96	-
Police Box/outpost	0.5 acre/ per box	4.50	0	4.50
Fire Station	1.00 acre/ 20,000 population	2.77	0.58	2.19
Post office	0.5 acre /20,000 population	1.39	0.40	0.99
Total		39.16	8.41	31.21

4.4.10 Community Facilities

For various community facilities, the land requirement has been fixed at 9.70 acres. 8.12 acres have been earmarked for a Mosque and Temple, 3.75 acre for Graveyard (**Table-4.14**). If we

deduct the existing land uses under various facilities there will be a need of additional 5.44 acres of land for community facilities.

Table 4.14: Estimation of Land Requirement for Community Facilities

Use/Facility	Recommended standard	Estimated Land Requirement (acre)	Existing Land (acre)	Additional Land Requirement by 2031 (acre)
Mosque/Church/ Temple	0.5 acre / 20,000 population	1.39	8.12	-
Eidgah	1.0 acre/20,000 population	2.77	0.11	2.66
Graveyard	1.00 acre /20,000 population	2.77	3.75	-
Community centre	1.00 acre / 20,000 population	2.77	0	2.77
Total		9.7	11.98	5.44

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

4.4.11 Utility Services

A number of utility establishments are required in a town to run services properly. The consultant, according to approved standard, has earmarked 2.77 acres for water supply installations, like, pump stations and other establishments related to water supply; 2.77 acres have been fixed for gas related facilities. There will be 9 waste transfer stations for collection of solid waste located at suitable locations. Each ward will have one station with an area of 0.25 acre. So there will be a need for 2.25 acres for 9 transfer stations. A dumping site will be developed over an area of 4.00 acres for final disposal of the solid waste. For power sub-station the estimated land is 2.77 acres and for telephone exchange it is 1.39 acres. So the total land requirement under this category is 17.34 acres.

Table 4.15: Estimation of Land Requirement for Utilities

Use/Facility	Recommended standard	Estimated Land Requirement (acre)	Existing Land (acre)	Additional Land Requirement by 2031 (acre)
Water supply Establishment	1 acre /20,000 population	2.77	0	2.77
Gas Distribution Station	1.00 acre/20,000 population	2.77	0	2.77
Solid waste disposal site	5 – 10 acres/Upazila HQ	4.00	0	4.00
Waste Transfer station	0.25 acres/per waste transfer station	2.25	0	2.25
Power sub-station	1 acre/20,000 population	2.77	0	2.77
Telephone Exchange	0.5 acre/20,000 population	1.39	0	1.39
Fuel Station	0.5 acre/20,000 population	1.39	0.02	1.37
Total		17.34	0.02	17.32

Chapter Five

Review of Policy, Law and Regulation

5.1 Introduction

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

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

5.2 Review of Relevant National Policies

5.2.1 National Land Use Policy 2001

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

Key Issues of the National Land Use Plan

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

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

6. Regular monitoring, survey and research on desertification in the northern region, land reclamation, prevention of weathering of land, multi-use of land, conservation and development of coastal area land and condition of watershed areas.

The policy stressed on most intensive and best use of scarce land resources of the country. In one of its objectives (objective 'Kha') the policy aims to introduce 'land use zoning', based on particular characteristics of land, to make best use of land, prevent unplanned expansion of residential areas and control indiscriminate growth of industrial and commercial activities. The policy called for planned and best use of land.

Observation

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

56.95% land of the Shahrasti Pourashava is under the agricultural practices. According to the Landuse Policy, those lands should be preserved as agriculture land. For this purpose the first step will be to exclude agricultural from the pourashava area. For such preservation, policy prescription such as', *in case of rehabilitation of the landless people, Khas land will be emphasized for distribution by the government*' should be adhered.

5.2.2 National Housing Policy, 1993

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

The housing shortage was estimated in 1991 to be about 3.10 million units, composed of 2.15 million units in rural areas and 0.95 million units in urban areas; with the bulk of the backlog consisting of katcha un-serviced units. The housing shortage is likely to exceed 5 million units by

the year 2000 A.D. The current housing stock is deteriorating fast due to aging, general neglect, poverty and civic apathy on the part of the dwellers.

Objectives

The objectives of the National Housing Policy are to:

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

Rural Housing

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

- Avoiding unnecessary displacement of rural settlements due to development projects and where unavoidable, makes proper rehabilitation of the households, with full community involvement.
- Encroachment on agricultural land by proliferation of homestead should be discouraged. Efforts should be made for planned densification of rural homesteads. Subject to availability of khas lands, programmes similar to 'Adarsha Gram' programme of the Ministry of land will be undertaken in rural areas.
- The coordinated provision of water supply, sanitation, electricity, roads and other basic infrastructure services to existing and new habitations.
- Providing assistance by way of providing credit, dissemination of appropriate technology and delivery system for promoting housing.

- Initiating schemes for increased employment opportunities and income generation by extending appropriate credits and advice, so that housing affordability is enhanced.
- Establishing suitable institutional structure including strengthening of existing organizations at district and local level, with the responsibility for planning, financing, implementation, supervision and monitoring of rural housing schemes, and with the full involvement of beneficiaries, NGOs and CBOs, giving special attention to the needs of the poorest segments, specially women and disadvantaged persons.
- Linking the development of housing sites and the upgradation of rural housing with the activities under the Bangladesh Rural Development Board (BRDB) and other programmes for the creation of rural assets and employment.

Slums and Squatter Settlements

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

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

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

Infrastructure

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

- Increase investment by national and local government agencies in order to meet the rapidly growing needs of serviced land and to improve the availability of services in different settlements.
- Promote a balanced pattern of urbanization through a policy of decentralization of investments and incentives for the growth of secondary, intermediate and small towns so as to reduce pressure on metropolitan cities and to control unregulated conversion of agricultural and forest land for the purpose of housing.
- Develop economically buoyant and socially attractive secondary and intermediate towns by strengthening their linkages with contiguous rural areas and market centers as part of

the integrated and planned development of the region and to reduce migration to the larger cities.

- Make necessary investments to increase within a reasonable time, the coverage of entire rural and urban population for potable water supply and basic sanitation.
- Increase investments in public transport and traffic network to improve mobility of people, particularly that of the poor.
- Encourage the use of infrastructure construction technologies, which are cost effective, incrementally upgradable and environmentally appropriate.
- Provide government support for extension of infrastructure based on the participation of the people and private developers, NGOs, CBOs or on innovative systems of infrastructure leasing.
- Provide Government assistance to the local bodies for adequate cost recovery of investment on infrastructure, proper maintenance of services and upgradation of the capability of the personnel in local bodies and functional agencies.
- Provide opportunity for community participation and recognize people's initiative in the design, installation and the upkeep of services within the framework of the development programmes.

Strategies

The salient features of the housing strategy are:

- Housing will be given due priority in the national development plans treating it as a separate sector by itself.
- The role of the Government in housing will primarily be that of a facilitator or enabler in order to increase access to land, infrastructure, services and credit and to ensure availability of building materials at a reasonable price, specially for the low and middle-income groups and to create and promote housing finance institutions; whereas actual construction of housing will generally be left to the private sector developers, the people themselves, and the NGOs.
- Greater emphasis will be laid on affordability, personal savings, self-help and cost recovery. Efforts would be made to enhance affordability of the disadvantaged and low-income groups, through provision of credit for income generation and income enhancement, housing loans at especially low interest, access to space for running workshops or business and such other facilities.
- Improvements and rehabilitation of the existing housing stock will be given priority by the Government alongside new housing.
- Encroachments on public land and formation of unauthorized constructions will be discouraged.
- Austerity will be maintained in building houses and efforts will be made to economize housing costs, discourage extravagant construction, facilitate incremental house building and ensure wider application of low cost technology and optimum use of resources at the individual and national levels both in public and private sectors.
- Regeneration of forest-based building materials would be planned and environmental conservation given due consideration.
- Due attention would be given to construction, protection, replacement and rehabilitation of shelter in disaster affected and fire prone areas.

- Special care would be taken for the preservation of cultural heritage and promotion of vernacular architecture in new housing projects.
- Universities, research institutes and centers will be encouraged to conduct research on housing issues.
- The National Housing Policy will be co-ordinate with other development policies e.g. land, environment, population, employment, social welfare, fiscal and monetary policies at national and local levels.

Observation

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

5.2.3 Population Policy 2004

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

Objectives

The objectives of the National Population Policy are to improve the status of family planning, maternal and child health including reproductive health services and to improve the living standard of the people of Bangladesh through making a desirable balance between population and development in the context of Millennium Development Goals (MDGs) and Interim Poverty Reduction Strategy Paper (IPRSP).

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

Human Resources Development

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

Decentralization of Population Activities

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

Participation of NGOs and Private Sector

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

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

Building of Planned Family

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

Legal and social Measures

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

Observation

1. The population policy has not been able to address the population issues adequately. There has not been any effort for 'all out efforts to popularize and ingrain the slogan "not more than two, one child is better".

2. The policy aimed at decentralization of population activities and ensure people's participation in population control, nutrition and health activities; decentralization of services through devolution of power to the Upazila level and further below. But there have not been any effective steps in this regard.

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

5.2.4 Transportation Policy

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

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

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

Summary of Issues Covered

Following tasks of a road projects will be adopted:

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

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

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

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

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

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

Table 5.2: Design applications

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

* Special type to be used under special circumstances.

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

Table 5.3: Existing and Recommended design lives

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

** Overlaying of 25-40mm BC will be required after every 7-8 yrs.

* Special type to use under special circumstances.

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

Strategic policy issues of the transport policy cover the following:

Greater private sector participation

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

Effective co-ordination in transport

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

Promoting the role of the transport users

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

Transport users should pay for the costs of services

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

Subsidies for transport services

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

Create public awareness for the policy

Make people aware of the national transport policy.

Observation

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

5.2.5 National Environment Policy 1992

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

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

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

Industrial Sector

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

1. Take up pollution control measures for selected polluting industries
2. Potential polluting industries must incorporate control measures in its set up.
3. All industries must conduct EIA and take pollution control measures.
4. All industries in residential areas to be gradually shifted and new locations to be identified for planned industrial development.
5. The industries harmful for environment and producing non-biodegradable products must be gradually banned.
6. Any industries using harmful and toxic waste as raw materials must be banned.
7. Use heavy metals, like, mercury, chromium, lead should be discouraged in industries.

8. The industries producing pollutants should have their own system of pollution monitoring.
9. Introduce 'waste permit/consent order' to improve waste treatment and disposal system.
10. Recycling of waste in order to reduce the volume of waste.
11. Safeguard health of industrial workers.

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

Health and Health Sector

This sector emphasised on the following environmental issues:

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

Energy Sector

The energy sector recommended the following policies.

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

Transport and Communication Sector

1. Care to be taken to make the road infrastructure development congenial to environment and the development of roads does not impede drainage of water.
2. Appropriate measure to be taken so that the passengers and the transport do not endanger public health by indiscriminate throwing of solid waste and defecation.

3. The rail, road and water transport must adopt measures to control emission of excessive black smoke.
4. Creation of public awareness and take care about pollution of river water.
5. Control on water pollution to be ensured in inland river ports and dockyards.
6. Airports to be developed avoiding environmental degradation.
7. Care to be taken to reduce air and sound pollution by aircrafts.
8. Encourage railway rolling stocks that generate less pollution.
9. Forestation on both sides of railways and roads.

Population Sector

1. Conduct study on impact of population growth on environment and take appropriate measures to mitigate the problems of population growth.
2. Prepare manpower utilisation plan to make planned and effective use of human resources congenial to environment.
3. Emphasise participation of women in environment conservation.
4. Mark population as No.1 problem of the country and take appropriate measures to curb population growth.
5. As the poor are mostly affected by environment degradation, appropriate measures are needed to safeguard their health and save them from the adverse effects of environment degradation.

Observation

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

5.2.6 Industrial Policy 2005

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

- set up planned industries considering the real domestic demand, prospect of exporting goods abroad, and discouraging unplanned industries in the light of past experience,

- accept private initiatives as the main driving force of economic development and uphold the government's facilitating role in creating a favourable atmosphere in order to augment private investments,
- arrange for state-owned industrial enterprises to be sold/transferred/leased or administered in any other way by the Privatization Commission or concerned ministries in order to accelerate the privatization process,
- take necessary initiatives to establish industries on state initiative in those sectors that are considered very important and essential because of national interest, where private entrepreneurs are not forthcoming,
- catering the needs for local and foreign market and also for consumer satisfaction of the local products; measures to be undertaken (a) produce world class quality products, (b) diversification of goods, (c) introduce cost-effective management in the production system, (d) more value addition in the industrial sector, and (e) provide support for enhancing productivity by using continuous, appropriate and advanced technology,
- provide inspiration for the speedy expansion of cottage industries and SMEs and for further investment in these sectors so that new employment opportunities are generated, unemployment reduced and poverty alleviation program made in the country.
- prioritize the expansion and development of agro-based and agricultural processing industries, and assist in the expansion of poultry, dairy and goat-sheep industry as agricultural industries.
- provide women entrepreneurs with all necessary assistance in establishing industries in various sectors. Increase productivity at enterprise level; produce high-value added products step by step through development and application of appropriate technology and increase of export through export diversification.
- provide all necessary assistance for producing environment-friendly product with the objective for creating a pollution-free environment in the industrial sector.
- expand the local market and establish more backward linkage industries in order to accelerate the export of high value-added garments produced in the export-oriented garment industries and other relevant industrial subsectors.
- Further enrich the industrial sector with the proper utilization of the country's various natural and mineral resources.

Strategy

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

- There will be no discrimination between domestic and foreign investment. Due emphasis will be given to promotion of regional and sub-regional cooperation.
- Existing public sector enterprises will be progressively privatized and public industrial investment will be limited to only those cases where there is special need to complement private investment or where there is an overriding social and national objective to be achieved.
- The capital market will be developed and strengthened to mobilize domestic savings and to attract foreign investment.
- Development of the infrastructure including port facilities, energy, transport and

communication and human resource development will receive high priority Private investment including "Build, Operate and Own" (BOO) and "Build Operate and Transfer" (BOT) methods will be particularly encouraged in these sectors.

- Intensive industrial zones development will be undertaken together with balanced geographical dispersal of the zones in areas with growing potential to the utilization of local resources as more infrastructural and other facilities are put in place.
- Consistent with the charter of World Trade Organization (WTO), protection to domestic industries from external competition will be rationalized.
- To retain the competitive edge of domestic products, wage increases will be linked to productivity trends, and appropriate labour laws will be put in place to ensure congenial industrial relations.
- The industrial investment will be encouraged through tariff rationalization and (appropriate fiscal measures. The import and export policies will also be made supportive of and consistent with the Industrial Policy.

Observation

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

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

5.2.7 National Tourism Policy

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

- To create interest in tourism among the people
- To preserve, protect, develop and maintain tourism resources
- To take steps for poverty-alleviation through creating employment

- To build a positive image of the country abroad
- To open up a recognized sector for private capital investment
- To arrange entertainment and recreation
- To strengthen national solidarity and integrity

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

Observation

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

5.2.8 Agriculture Policy

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

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

Land Use

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

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

- Land zoning programme will be taken up by the Soil Resources Development Institute (SRDI) on a priority basis. Integrated approach of SRDI will be further strengthened for this purpose.
- To ensure maximum utilization of land, bottom up planning through people's participation and its implementation will be started from the mouza or village level.
- In most areas the same land is suitable for more than one crop. Therefore, farmers will be encouraged to grow more profitable crops as an alternative to only rice-rice cropping pattern.

- Fertile agricultural land is going out of cultivation due to its use for non-agricultural purposes such as private construction, house building, brickfield, etc. Appropriate measures will be taken to stop this trend in the light of the Land Policy of the government.
- Maximum utilization of land will be ensured through promotion of inter-cropping with the main crops.
- Acquisition of land in excess of requirement for non-agricultural purposes will be discouraged.
- Programmes will be taken up to motivate the landowners not to keep their land unused without any acceptable reason.
- Appropriate measures will be taken in the light of the Land Policy so that the interests of small and marginal farmers and the sharecroppers are protected and that the agricultural land is not kept fallow for a long period.

Observation

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

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

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

5.2.9 Urban Forest Policy

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

Objectives of the 1994 National Forestry Policy:

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

- To fulfill national responsibilities and commitments by implementing various efforts and government ratified agreements relating to global warming, desertification and the control of trade and commerce of wild birds and animals ;
- To prevent illegal occupation of forest lands, illegal tree felling and hunting of wild animals through the promotion of participation of local people;
- To encourage effective use and utilization of forest products at various stages of processing;
- To provide for and implement afforestation programmes on both public and private lands.

Statements of the 1994 National Forestry Policy:

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

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

5.2.10 Urban Land Management Policy

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

Policies

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

Strategy

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

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

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

5.2.11 Health Policy

National Health Policy was approved and published by the government in the year 2000. Aim of the Health Policy is –

- To develop a system to ensure easy and availability of health services for the people living in urban and rural areas.
- To ensure optimum quality, acceptance and availability of primary health care including government medical services at the Upazila and Union level.
- To adopt satisfactory measures for ensuring improved maternal and child health at the Union level and install facilities for safe child delivery in each village.
- To improve overall reproductive health resources and services.
- To ensure the presence of full-time doctors, nurses and other officers / staffs, provide and maintain necessary equipment and supplies at each of the Upazila Health Complexes and Union Health and Family Welfare Centers.
- To formulate specific policies for medical colleges and private clinics, and to introduce appropriate laws and regulations for the control and management of such institutions including maintenance of service quality.
- To explore ways to make the family planning program more acceptable, easily available and effective among the extremely poor and low-income communities.
- To arrange special health services for mentally retarded, physical disabled and for elderly population.

Strategy

Some of the strategies of health policy are:

- The aim “health for all” will be implemented through awareness building strategies. Cost-effective procedures to deliver health services will be the prime consideration.
- A specific organization will perform responsibility for Epidemiological Surveillance to control the spread of epidemic diseases. Such concept will be included with different programs.
- The services delivering by the health centers to the patient should be standard and a printed guideline on standard, monitoring and evaluation will be given to those health centers.
- A Health Services Reforms Body will be formed based on the Health and Population Sector Strategy. This Body will be responsible for infrastructural reformation, employment, development planning and implementation of human resources relevant with the health activities and development of carrier of workforces.

5.2.12 National Urbanisation Policy

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

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

5.2.13 Rural Development Policy

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

- Food for Works Program (Kv†Ri wwbgtq Lv`~ KgñP)
- G.R Program (Gratuitous Relief Program)
- T.R Program (Test Relief Program)
- V.G.D Program (Vulnerable Group Development Program)
- V.G.F Program (Vulnerable Group Feeding Program)
- Single-House Single-Farm Program (GKwU evox GKwU Lvghi cKí)
- Back to home Program (N†i †di v KgñP)
- Food for Education Program (Kv†Ri wwbgtq wk¶ v)
- Rural Occupational Project
- Poverty Reduction Project (`vwi ` ` † xKi Y KgñP)
- Self-employment Program for Women (bvi xi Rb` AvZKgñs` vb)
- Women Empowerment Program
- Coordinated Women Development Program
- Peace Home Program

- Shelter Support Program (AvkqY mnvqZv KgñP)
- Educational Allowance Program (Wkñ v f vZv KgñP)
- Aged-allowance Program (eq@ f vZv KgñP)
- Micro-credit Program (ñ î º F Y KgñP)
- Allowances for Widowed, Poor and Husband-renouncement Women Program

Aim and Objective

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

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

5.2.14 Strength and Weaknesses of the Existing Policies

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

Accommodation of future thrust, supply of safe drinking water, providing safe and easy accessibility, use of agriculture production in income generating activities and create provision for further investment.

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

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

5.3 Plan and Program

5.3.1 National Plan for Disaster Management

National Plan for Disaster Management 2008-2015 is an outcome of the national and international commitments of the Government of Bangladesh (GoB) and the Ministry of Food and Disaster

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

Objectives of the Plan

The objectives of this Plan are to:

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

Observation

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

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

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

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

- I. To establish separate ticket counters in railway station, bus terminals, river ports, steamer terminal, airport and airways office to facilitate easy availability of tickets for the PWDs.
- II. To maintain reserve seats in the bus, train and water transports for PWDs.
- III. To fill up the 10 percent reserved quota for employment in the government jobs by the orphans and PWDs.

- IV. To construct a ramp in all the government offices to facilitate easy movement of the PWDs.
- V. To withdraw the existing restrictions regarding appointment of PWDs in the Govt. class I & class II jobs.
- VI. To arrange micro-credit for PWDs by all the Nationalized Commercial Banks (NCBs).

Observation

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

5.4 Act and Ordinance**5.4.1 Local Government (Pourashava) Act 2009**

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

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

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

Functions of Pourashava in the Light of Pourashava Ordinance/Act 2009

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

The Master Plan should include the following:

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

Pourashava Development Management

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

Table 5.4: Functions in brief prescribed in the Local Govt. (Pourashava) Act, 2009

Major activity	Specific functions	Functions in brief
Town planning	Master plan	The Pourashava shall draw up a master plan for the city which shall provide for a survey of the Pourashava including its history, statistics, public services and other prescribed particulars. Development, expansion and improvement of any area within the city; and restrictions; regulation and prohibitions to be imposed with regard to the development of sites, and the erection and re-erection of buildings within the Pourashava.
	Site development schemes	Where a master plan has been drawn up and approved by the government, no owner of lands exceeding such area as may be specified in this behalf in the master plan shall develop the site or erect a building or any plot of land covered by the provisions of a site development scheme sectioned to area in the prescribed manner. Among other matters, a site development scheme may provide for- (a) the division of the site into plots; (b) the street, drains and open spaces to be provided; (c) the land to be reserved for public purposes and to be transferred to the Pourashava; (d) the land to be acquired by the Pourashava; (e) the price of plots; (f) the works that shall be executed at the cost of the owner or owners of the site or sites; and (g) the period during which the area shall be developed.
	Execution of Site Development Schemes	If any area is developed or otherwise dealt with in contravention of the provisions of the sanctioned Site Development Scheme, the Pourashava may by notice require the owner of such area or the person who has contravened the provisions to make such alteration in the site

Major activity	Specific functions	Functions in brief
		may be specified in the notice as where such alteration is not made or for any reason cannot be carried out, the Pourashava may, in the prescribed manner require and enforce the demolition of the offending structure; and notwithstanding anything to the contrary contained in any law, no compensation shall be payable for such demolition.
Building construction	Building construction and re-construction	Without approval of the building site and plan by the Pourashava, nobody can construct, re-construct any building in the Pourashava area. The Pourashava will approve the plan within sixty days or refund it within that specified time frame; otherwise the plan will be considered as approved.
	Completion of construction and change, etc.	After completion of the approved building, the owner will notify to the Pourashava within 15 days. The Pourashava may inspect the building and if found any violation of the provision prescribed in the Master Plan or in the Site Development Scheme, the Pourashava may demolish the building and the demolishing cost may be incurred from the building owner.
	Building control	If any building or anything fixed thereon, be deemed by the Pourashava to be in a ruinous state or likely to fall or in any way dangerous to any inhabitant of such building or any neighboring building or to any occupier thereof or to passers-by, the Pourashava may by notice required the owner or occupier of such building to take such action in regard to the building as may be specified in the notice, and if there is default, the Pourashava may take the necessary steps itself and the cost incurred thereon by the Pourashava shall be deemed to be a tax levied on the owner or occupier of the building. If a building is in dangerous condition, or otherwise unfit for human habitation, the Pourashava may prohibit the occupation of such building till it has been suitable repaired to the satisfaction of the Pourashava.
Development	Development plans	The Pourashava shall prepare and implement development plans for specific time. Such Plans shall provide for- (a) the promotion, improvement and development of such function or functions of the Pourashava as may be specified; (b) the manner in which the plans shall be financed, executed, implemented and supervised; (c) the agency through which the plans shall be executed and implemented; and (d) such other matters as may be necessary.
	Community Development Projects	The Pourashava may, sponsor or promote community development projects for the Pourashava or any part thereof and may in this behalf perform such functions as may be prescribed.
	Commercial schemes	The Pourashava may, with the previous sanction of the Government, promote, administer, execute and implement schemes for undertaking any commercial or business enterprise.
Street	Public streets	The Pourashava shall provide and maintain such public street and other means of public commutation as may be necessary for the comfort and convenience of the inhabitants of the Pourashava and of the visitors thereto.
	Streets	No new street shall be laid out except with the previous sanction of the Pourashava. The Pourashava may by notice required that any street may be paved, metalled, drained, channeled, improved or lighted in

Major activity	Specific functions	Functions in brief
		such manner as may be specified in the notice, and in the event of default, the Pourashava may have the necessary work done through its agency, and the cost incurred thereon by the Pourashava shall be deemed to be a tax levied on the person concerned.
	General provisions about streets	The Pourashava may assign names to streets and paint the names or fix the nameplates on or at conspicuous places at or near the end corner or entrance of the street. No person shall destroy, deface or in any way injure any street, name or name plate, or without the previous permission of the Pourashava, remove the same.
	Street lighting	The Pourashava shall take such measures as may be necessary for the proper lighting of the public streets and other public places vesting in the Pourashava.
	Street watering	The Pourashava shall take such measures as may be necessary for the watering of public streets for the comfort and convenience of the public, and for this purpose, maintain such vehicles, staff and other apparatus necessary.
	Traffic control	The Pourashava shall make such arrangements for the control and regulation of traffic necessary to prevent danger and ensure the safety, convenience and comfort of the public.
	Public vehicles	No person shall keep or let for hire or drive or propel within the limits of the Pourashava any public vehicle other than a motor vehicle except under a license granted by the Pourashava, and in conformity with the conditions of such license. No horse or other animal shall be used for drawing a public vehicle within the limits of the Pourashava except under a license granted by the Pourashava.
Water supply and drainage	Water supply	The Pourashava may provide supply of wholesome water sufficient for public and private purposes. Frame and execute water supply scheme for the construction and maintenance of such works for storage and distribution of water.
	Private sources of water supply	All private sources of water supply within the Pourashava shall be subject to control, regulation and inspection by the Pourashava. No new well, water pump or any other source of water for drinking purposes shall be dug, constructed or provided except with the sanction of the Pourashava.
	Drainage	The Pourashava shall provide an adequate system of public drains in the and all such drains shall be constructed, maintained, kept, cleared and emptied with due regard to the health and convenience of the public. All private drains shall be subject to control, regulation and inspection by the Pourashava
	Drainage scheme	The Pourashava may prepare a drainage scheme in the prescribed manner of the construction of drains at public and private expense. The drainage scheme as approved by the government shall be executed and implemented within specified period.
	Bathing and washing place	The Pourashava may from time to time set a suitable place for use by the public for bathing, washing cloths, or for drying cloth. Specify the time at which and the sex of persons by whom such places may be used. No person shall establish, maintain or run a bath for public use except under a license granted by the Pourashava.
	Dhobi ghat and	The Pourashava may provide dhobi ghats for the exercise of their

Major activity	Specific functions	Functions in brief
	washer men	calling by washer men, and may regulate the use of dhobi ghats and levy fees for their use.
	Public water-course	The Pourashava may declare any source of water, spring, river, tank, pond, or public stream, or any part thereof within the Pourashava, which is not private property, to be a public watercourse.
	Public ferries	The Pourashava may by by-laws provide for the licensing of boats and other vassals plying for hire in a public water-course to be a public ferry and may entrust the management thereof to the Pourashava, and there upon the Pourashava shall manage and operate the public ferry in such manner and levy such tolls as prescribed.
	Public fisheries	The Pourashava may declare any public watercourse as a public fishery, and there upon the right of fishing in such water course shall vest in the Pourashava which may exercise such right in such manner as may be prescribed.

5.4.2 Act for Preservation of Natural Water Reservoir, Open Space, 2000

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

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

5.4.3 Acquisition and Requisition of Immovable Property Ordinance, 1982

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

5.4.4 Brick Burning (Control) Ordinance, 1989

Chairman of the Upazila Parishad is the enforcement authority of the Brick Burning (Control) Ordinance, 1989. In this Ordinance, control imposes only on the brick burning and said that no

person should use wood for such purposes (section 5). For the violation of this regulation, the accused person may be punished with 6 months imprisonment or punished with a fine Tk. 10,000 or with both.

5.4.5 Rural Electrification Board Ordinance, 1977

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

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

5.4.6 Public Health (Emergency Provisions) Ordinance, 1944

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

5.4.7 Conservation of Environment Act, 1995

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

5.4.8 Land Development for Private Housing Project Act, 2004

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

5.5 Review of Relevant Laws and Regulations

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

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

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

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

Appeal (Section 6)

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

Punitive Action (Section 8)

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

Observation

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

5.5.2 Bangladesh National Building Code (BNBC) 1993

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

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

5.5.3 The Building Construction Act 1952

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

Preparation of Master Plan

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

Building Construction Rules

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

Power to Removal of Construction (Section 3B)

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

Restriction on Cutting of Hills (Section 3C)

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

Removal of Unauthorized Building (Section 7)

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

Appeal

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

Observation

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

Chapter Six

Critical Planning Issue

6.0 Introduction

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

6.1 Transport

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

6.1.1 Traffic Conflict

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

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

6.1.2 Unplanned and Narrow Roads

Narrow widths of roads and poor maintenance have marked by most respondents as major road problems in the town. About 19% of the respondents have pointed to the misery of road movement during monsoon when unpaved roads get muddy. Narrow width of roads is likely to become a major problem of traffic movement when the town grows and density of population increases in future. As field survey shows, 76% of the households of the town reported that the Pucca road widths in front of their houses are 10 ft. or less. This is alarming, as there will be increase in population leading to higher density.

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

About 40% of the households reported of having pucca roads in front of their houses, which is an example of good works by the Shahrasti Pourashava. When asked about the problem of roads, 87.63% household respondents answered affirmative. Indicating to major road problems, they

pointed to narrow width of roads, flooding of roads during monsoon, poor condition of roads due to lack of maintenance, traffic congestion at particular points of the town.

Household survey shows, 89.79% of the respondents responded that widening of the road is possible and out of them 82.13% agree to contribute land towards road widening. The authority should take this opportunity and draw up plans to widen the narrow roads. The execution of road widening can be done in phases, if there is lack of funding.

6.2 Environment

6.2.1 Drainage Problem

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

6.2.2 Waste Management

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

Shahrasti Pourashava suffers from the shortfall of funding to provide sufficient drainage system as well as its proper operation and maintenance. In conservancy division there is no staffs for street sweeping, solid waste collection, cleaning and maintenance of drainage system. But due to the lack of equipments they are unable to do cleaning and maintenance. Negligence of duties/responsibilities of staff is another major problem for the drainage system.

6.2.3 Water Supply

Pourashava has its own water supply network, but limited only in a few wards. Ground water supplied by means of 3 production tube wells. There is no overhead tank. So water has to be pumped directly into the households during particular time period through 2 pump houses. Majority of the households are still dependent on tube well for their daily water need. Pourashava installed a few deep tubewell for mainly public use and public purpose, but the system has collapsed. Because, deep tube well provision is not effective in Shahrasti Pourashava. In Shahrasti, there are only one deep tubewell and 1053 hand tubewell. Wells and about 1037 ponds are other important sources of water.

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

6.3 Land Use Control

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

6.4 Disaster

Flood is a major natural disaster in almost every part of the country. However, the intensity of flooding is comparatively less in Shahrasti. Flood mainly occurs from June to September in this area. In Shahrasti Pourashava severe flood has not been occurred yet. Because there is an extraction system of removing blocked water from the central area in the surrounding region of the Poura area. So, people are not much affected by this kind of hazard. Household survey shows, less than 13% households were affected by floods of 1988 and 1991.

The floods of 1988, 1998 and 2004 were particularly catastrophic, resulting in large destruction and loss of lives. The most serious natural calamity causing extensive damage to the Pourashava is the excess of water. In Shahrasti the annual rainfall is so enormous, the general level of the country is low and the whole drainage system is of such a complicated character that it is sometimes very difficult to control the situation created by flooding in the Pourashava.

It is a land of abundant and regular rainfall and the annual inundation of the rivers, the whole district is practically free from drought.

Besides, earthquake of 1762 and 1897 came to the people as a scene of great shock wave but a little injury hence the district lies outside the main earthquake zone.

Chapter Seven

Landuse Zoning Policies and Development Strategies

7.1 Background Study

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

7.2 Structure Plan Zone

Core Area

This area is also known as built-up area. This is defined as the area which has the highest concentration of services; it also has the highest population concentration and density. It will absorb most population growth during the Landuse Plan (2011-2021) period. The total core area in Structure Plan of Shahrasti Pourashava is 50.82 acres and it is the 1.12% of the existing Pourashava. Within this area, there are differences in levels of provision, particularly between the formally developed and planned areas and the majority of unplanned areas. Levels of provision should be maintained in the planned areas.

Fringe Area

This zone is developing areas which will take further decades to reach the population densities of the urban core area. Low initial densities in these areas do not justify supply of a full range of services as they will initially be underused. However, it is essential that planning and reservation of rights of way, at least for primary networks, be undertaken soon to enable provision when justified by increased density levels and allowed by resources. It will be very difficult to find difference between Fringe Area and Peripheral Area in most of the Upazila level Pourashavas. The total fringe area in Structure Plan of Shahrasti Pourashava is 236.98 acres and it is the 5.23% of the existing Pourashava.

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. The total peripheral area in Structure Plan of Shahrasti Pourashava is 997.96 acres and it is the 22.01% of the existing Pourashava.

New Urban Area

This zone will be the required additional area for future planned urban development as per population projection. Existing physical trend of growth and potential areas shall have to be considered in demarking for new urban land development. New facilities and services like road, drains, footpath, waste transfer station and other civic services will be provided. The total new urban area in Structure Plan of Shahrasti Pourashava is 623.38 acres and it is the 13.75% of the existing pourashava. This area is proposed to grow within 2031.

Agricultural Area

Agricultural land (also **agricultural area**) denotes the land suitable for agricultural production, both crops and livestock. It is one of the main resources in agriculture. The land under annual crops, such as cereals, other technical crops, potatoes, vegetables, and melons; also includes land left temporarily fallow; land under permanent crops (e.g., fruit plantations); areas for natural grasses and grazing of livestock. The total area under this category in Structure Plan of Shahrasti Pourashava is 1875.10 acres and it is the 41.35% of the existing pourashava.

Waterbody

Waterbody containing an area equals to or more than 0.2 acres excluding those of khal, irrigation canal and river (sometimes parcel of land may separated from the main flow due to the GIS database management and the existing condition) will be treated as this category. The total area under this category in Structure Plan of Shahrasti Pourashava is 489.17 acres and it is the 10.79% of the existing pourashava.

The total area of Shahrasti Structure Plan area is 4534.31 acres (18.35 sq. km.). The policy zone wise detail area of Shahrasti will be as following table.

Table- 7.1: Structure Plan zone wise area distribution

Policy Zoning	Area(sqkm)	Area(acre)	%
Agriculture	7.59	1875.10	41.35
Circulation Network	1.06	260.91	5.75
Core Area	0.21	50.82	1.12
Fringe Area	0.96	236.98	5.23
New Urban Area	2.52	623.38	13.75
Peripheral Urban Area	4.04	997.96	22.01
Waterbody	1.98	489.17	10.79
Total	18.35	4534.31	100.00

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

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

a. Prepare land use and development plan for the Pourashava

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

b. Implement plans with strong hand

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

c. Enforce building construction rules to their maximum

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

d. Involve land owners in planning and development

In the wake of public sectors inability to achieve comprehensive development it has become necessary to evolve innovative ideas in participatory land development. Effective participatory development will help achieve the targets of planned development with basic urban services at almost no government cost. Customised land readjustment, land pooling and guided land development methods may be tried as pilot projects.

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

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

f. Avoid lavish land acquisition based development

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

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

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

h. Involve planning department of the pourashava in local development

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

i. Prepare standard design for local roads

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

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

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

k. Land contribution for road widening

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

l. Emphasise on compact town

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

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

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

n. Choose areas for priority development

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

o. Create places of industrial agglomeration

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

p. Encourage and promote alternative sources of water

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

q. Get the habit of hygienic disposal of solid waste

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

r. Encourage and promote hygienic sanitation

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

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

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

t. Discourage infrastructure development in uninhabited areas

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

u. Undertake commercial land development to increase land supply

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

v. Strengthen Pourashava manpower capacity and skill

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

w. Raise Pourashava income

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

x. Make best use of khas land

Pourashava should take over all khas land and develop facilities to benefit the people. These lands can be used for play field and park development; for community centre development. It is advised not to make commercial use of khas land.

y. Areas for conservation and protection

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

- historical building, monument, sculpture or any other related articles.
- park, important play field or any other active recreational areas.
- River front areas and the places of natural beauty where go for recreation.

z. Identify and protect areas of ecological significance

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

7.4 Policies for Socio-economic Sector**7.4.1 Population**

Controlling population growth should be given utmost importance nationally, as because of the uninterrupted population growth, the country's economic problems are being accentuated, pressing on its limited resources. It makes poverty reduction difficult which is the key to overall national development. So it is necessary to enhance population control drive. An efficient, well trained and well paid grassroot 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 creation of awareness about small family size.

Strategy:

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

Policy:

Item	Executing Agency
<u>Population Policy/1:</u> Declare population as one of the most critical sectors of national development	✓ Ministry of Planning, ✓ Ministry of Health and Family Planning
<u>Justification:</u> Per capital national growth is being eaten up by constantly growing population. By controlling population national benefits earned from economic growth can be shared in a better way, raising the level of living of the people.	
<u>Population Policy/2:</u> Put more efforts and resources in raising the level of education.	✓ Ministry of Planning, ✓ Ministry of Health and Family Planning, ✓ Ministry of Education.
<u>Justification:</u> 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.	
<u>Population Policy/3:</u> Create well paid and well train grassroot level family planning workers for motivational work.	✓ Ministry of Planning, ✓ Ministry of Health and Family Planning,
<u>Justification:</u> Grassroot level workers can give door to door motivational services and distribute birth control materials in a better way. To get good services they must be well paid and efficient.	

7.4.2 Economic Development and Employment Generation

About 35% of total population belong to age group 16 to 55 years; form the national work force in Shahrasti. Remaining 64% lies under nonworking group. Being 28.33% working group people are female and non income group (housewives). If housewife and students are included in working force then there is about 65.2% of total population who are belongs to working group. This means that, there is a very low level of working force in Shahrasti.

Population projection at a growth rate of 2.67% shows that the size of the population, who will come to the working force, will be 36174 including the students and housewives by 2031 (for detail calculation, please see the annexure- 9.6 of Interim report). Economic development of any place is associated with generation of employment. But there initiative to generate employment opportunities in Shahrasti is not adequate to cope with growing labour force. There is need to invest in basic industries to boost non-basic sector that will generate employment on a large scale.

Generation of employment depends on the rate of investment in various sectors of an economy. An urban economy of any town starts building up with investment in the basic sector that leads to the building up of the non-basic sector. Investment in basic sector is not very bright in Shahrasti as it is a very small town with a very low level of population. Besides, it has to compete with other

adjoining urban centers like, Chandpur Sadar, and larger towns, like, Begumganj, Feni and Noakhali Sadar. These urban centers serve as counter magnets of investment.

Strategy:

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

Policy:

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

Bangladesh Bank had started project to use remittance as capital investment rather than idle money through motivating people, making formalities easy to reduce hassle and initiate enterprises locally. A good number of inhabitants of Shahrasti region live in abroad. They could use this opportunity to utilize their huge amount of idle foreign remittance. The Poura authority may initiate with public line agencies to facilitate these non resident Bangladeshi.

7.4.3 Housing and Slum Improvement

As the town has low level of population and not industrialized, housing is yet to become a problem here. Spontaneous house building is common in Shahrasti. There is still shortage of dwelling unit in Shahrasti. Considering the annual growth rates of household and dwelling unit mentioned in BBS 2001, the demand for housing unit will be 305670 in 2031 (for detail calculation, please see sub-section 5.8.5.2 of chapter 5 of Shahrasti Interim Report).

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 is highly lacking.

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

No slums are observed in this small town, the way they are exposed in large cities. So no slum and squatter related problems are there in the town.

Strategy:

- Upholding the role of 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 in housing area development on public-private partnership basis.

Policy:

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

7.4.4 Social Amenities and Community Facilities

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

use of land should be made by making multiple use of same space. For example, provision of community centre, ward counsilar's office, maternity clinic or any other uses in the same building.

Strategy:

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

Policy:

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

7.5 Physical Infrastructure Sector

7.5.1 Transport

By far, transport is the most important means to revitalize an urban centre. Intra and inter transportation facilities create economies of scale for prospective investors and enables easy and comfortable mobility of people and goods. Easy and cheaper transportation of raw materials and finished goods create good investment climate for manufacturing enterprises that lead to development of the service sector firms. New employment generates and the non-basic sector expands leading to development of thriving urban centre. To create transportation facilities, quality inter-district road network will have to be created that makes movement faster and easy. With good infrastructure transport there will be induced growth of road transport. Besides, quality of local roads will have to be upgraded to encourage people live in the town. Once population starts increasing it will expand local consumer market and will attract new investments in consumer goods production.

Strategy:

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

Policy:

Item	Executing Authority
<u>Policy-Transport/1:</u> Development of efficient inter-city road network with standard roads.	- Roads and Highways Department (RHD).

Item	Executing Authority
Justification: Increased inter-city mobility will increase business transactions and generate investment and employment.	
<u>Policy-Transport/2:</u> Promotion of efficient road transport facilities between urban centers.	-Bangladesh Road Transport Authority (BRTA). -Deputy Commissioner, Chandpur.
Justification: Not only that communication is needed between urban centers, but to attract transport movement emphasis must be laid on quality of roads built.	
<u>Policy-Transport/3:</u> Development of local road network through participatory approach.	- Shahrasti 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.	

7.5.2 Utility Services

Utility services are the most essential parts of urban life. To make an urban centre livable there must be adequate provision for utility services. Utility services include water supply, solid waste management, power supply, sanitation and drainage. Except power supply, the rest are the responsibilities of the 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.

Policy:

Item	Executing Agency
<u>Policy-Utility/1:</u> Exploration of alternative sources of water to ensure sustainable supply.	- LGED, -Shahrasti 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.	
<u>Policy-Utility/2:</u> Involve beneficiary participation in solid waste management.	-Shahrasti Pourashava, - NGO and CBO
Justification: Involvement of beneficiaries in solid waste management will make the operation more effective and reduce financial responsibility of the pourashava.	
<u>Policy-Utility/3:</u> Exploring re-use and recycling of waste materials to extract resources.	-Shahrasti Pourashava, - NGO and CBO
Justification: Re-use and recycling of waste materials will produce resources and reduce cost of waste management.	
<u>Policy-Utility/4:</u> Publicity on the benefits of hygienic sanitation to motivate people and	- LGED, -Shahrasti

enable people to have easy access to sanitary materials.	Pourashava, - NGO and CBO
Justification: Motivation will encourage people to adopt healthy sanitation and reduce health risks.	
Policy-Utility/4: Protection of natural drainage system and preparation of hierarchical drainage network.	- LGED, -Shahrasti 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.	

7.6 Environmental Issues

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

7.6.1 Natural Resources

The Pourashava is not endowed with many natural resources that can be conserved. Among the meager natural resources available it has are, 1546nos of ponds, and 22.58 km of natural drainage canals. These need conservation to ensure sustainability in drainage and water supply of the Pourashava.

Strategy:

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

Policy:

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

Chapter Eight

Implementation Issue

8.0 Introduction

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

8.1 Institutional Capacity Building of the Pourashava

8.1.1 Human Resource Management

Shahrasti is a “B” class Pourashava and according to the Pourashava manual it is supposed to have a specific number of staff for operating its functions. But the present manpower scenario is not supportive to execution of large scale development project like Master Plan. There are only 19 regular and few other contractual staffs in the Pourashava against a sanctioned 91 number of staff. There is no Chief Executive Officer, Sub-Assistant Engineer, Health Officer. Health and family planning section is also not equipped with minimum number of manpower.

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

8.1.1.1 Staff Training

There is no arrangement for regular staff training. As a result the staffs are mostly unskilled. They cannot deliver proper service to the citizens. Besides, most of them are not qualified enough to render proper services.

8.1.1.2 Lack of Automation

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

8.1.1.3 Short of Pourashava Town Planning Capacity

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

Institutional Re-arrangement

Government has provided an organogram up to “**A Class**” Pourashava. Many such Pourashava are within the project list. But there is no provision for Urban Planner in this Pourashava. This will create serious problems in overseeing plan implementation and monitoring of plan implementation.

It is suggested to add an Urban Planning section with the organogram with at least assistant Planners and a Chief Planner directly under the Mayor.

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 constraints 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 Programme (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 performed 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.

Coordination

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

8.1.2 Legal Aspects

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

8.1.3 Good Governance in Legal Provisions

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

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

The constitution of the People's 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.

8.1.4 Financial Issues

8.1.4.1 Governance in Shahrasti Pourashava

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

8.1.4.2 Pourashava's Financial Capacity and Plan Execution

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

8.1.5 Plan Execution Monitoring and Evaluation

An important step for implementation of the Plan is landuse clearance. Landuse 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 landuse clearance.

- Must ensure 20 ft. access road for any type of landuse clearance.
- No permanent landuse 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 landuse clearance.
- Must ensure that no landuse 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 Shahrasti 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.

8.1.6 Updating of Plans

The plan package needs to be updated regularly to make it respond to the spatial and social changes over time. But such updating would require relevant technical professional and fund that are highly lacking in 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, plan implementation monitoring, the Pourashava should immediately go for setting up a planning section with a number of planners and other staff. The section will not only look after planning, but will also be responsible for development control, environment protection, estate management, project preparation. They are professionally educated on these issues. Since the planners are qualified and skilled in computer operation they can also help achieving automation of the Pourashava functions.

8.2 Resource Mobilization

Financial capacity is very important to render effective municipal services. Like, all other small Pourashava of the country, Shahrasti Pourashava, has also very weak financial footing, Holding tax is the most important source of own revenue earning. Again, Pourashava is unable to collect hundred percent of the revenue levied. So, it has to depend on government funding for financing its development projects. However, it must try to become self reliant financially. Following suggestions may taken care of in achieving the targets of self reliance,

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

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

Chapter Nine

Urban Area Plan

9.1 Introduction

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

9.1.1 Goal and Objectives

The Urban Area Plan is the second Part of the Shahrasti Pourashava Master Plan and Land Use Plan is one of the four components of Urban Area Plan. The Urban Area Plan (UAP) has been prepared for managing and promoting development over medium term on the basis of the strategies set by the longer-term Structure Plan. Basically the UAP is an interpretation of the Structure Plan over the medium term (10 years). The coverage of the UAP considers existing urban areas and their immediate surroundings with the purpose of providing development guidance in the areas where most of the urban development activities are expected to take place over the next 20 years. Delineation of the UAP is based on the urban growth area identified in the Structure Plan. It contains more details about specific programs and policies that require to be implemented over the medium term.

9.1.2 Methodology and Approach to Planning

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

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

Land use maps have been prepared applying the appropriate systematic command through GIS. Landuse is transferred on CS mouza map in a scale of RF 1:1980. Land use is divided into different categories and sub-categories approved by the LGED. Land use colour and legend were also fixed by the PMO (Project Management Office) of the UTIDP, LGED. Legend contains, necessary themes, features using different symbolize schemes. As per suggestion of the LGED for fixed legend and approved format for land use, Consultants have prepared existing land use map.

Based on the existing land use map, the land use plan has been prepared using the guidelines in by the ToR. The planning starts from formulation of strategies to issues like functional quality (meeting of space requirements for different functions, relation between functions etc., aesthetic quality, flexibility, deviation, public agency support etc.) for plan implementation. The planning in detail also covers the delineation of existing urban area and the new urban area. The Plan comprises a set of policies including a broad framework for development promotion, control and coordination.

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

9.1.3 Area Delineation of Urban Area Plan

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

The Urban Area Plan area covers 15.76 sq km. This is the Pourashava Area where urban development is going to take place in future. Pourashava operates in this area that provides the basic urban services and facilities as preconditions for urban proliferation.

Table- 9.1: Urban Area Plan Coverage

Shahrasti Pourashava Urban Area Plan	Area	
	Sq. km	Acre
Urban Area Plan Coverage	15.76	3894.67
Percent of Structure Plan Area	85.89%	

The Urban Area Plan constitutes 85.89% of the Structure Plan area. The details have been presented in **Table-9.1** and **Map-9.1**. Following table shows the CS mouza and plot wise area delineation of urban area plan for Shahrasti Pourashava.

Table- 9.2: Mouza Scheduling for Urban Area Plan

Sl. No.	CS Mouza Name	JL No.	Sheet No.	Plot No.
01	Badia	301	0	1-144
02	Ghughushal	362	0	1-583
03	Kajir Kap	371	0	1-442
04	Kajirnagar	372	0	1-96
05	Kaliapara	366	0	1-143
06	Kazir Kamta	285	0	1-311
07	Naora	368	0	1-277
08	Nijmeher	374	1,2,3,4,5,	1-3080
09	Shahapur	367	0	1-714
10	Shreepur	373	0	1-403
11	Shuapara	302	1,2	1-1425
12	Upolota	287	1,2	1-251

9.1.4 Content and Form of Urban Area Plan

Urban area plan is broadly divided into three forms, plan map, explanatory report and GIS database. The plan map depicts the future land use zoning, infrastructure development and other development proposals. Report elaborates all the proposals made in the plan, including, rules, regulations and recommendations for implementation of the plan and GIS database supports the both plan map and reports which have originated from that database. The outline of the Urban Area Plan gives guidance to the Pourashava as to how it can develop the roles i.e. to promote development, to co-ordinate development and to control development.

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

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

The Transportation and Traffic Management Plan is the **Chapter- 11** which includes existing conditions of transportation facilities, intensity of traffic volume, degree of traffic congestion and delay, analysis of existing deficiencies, travel demand forecasting for next 20 years, future traffic volume and level of services and transportation development plan. Moreover, transportation system management strategy and plan implementation strategies are also presented in this plan.

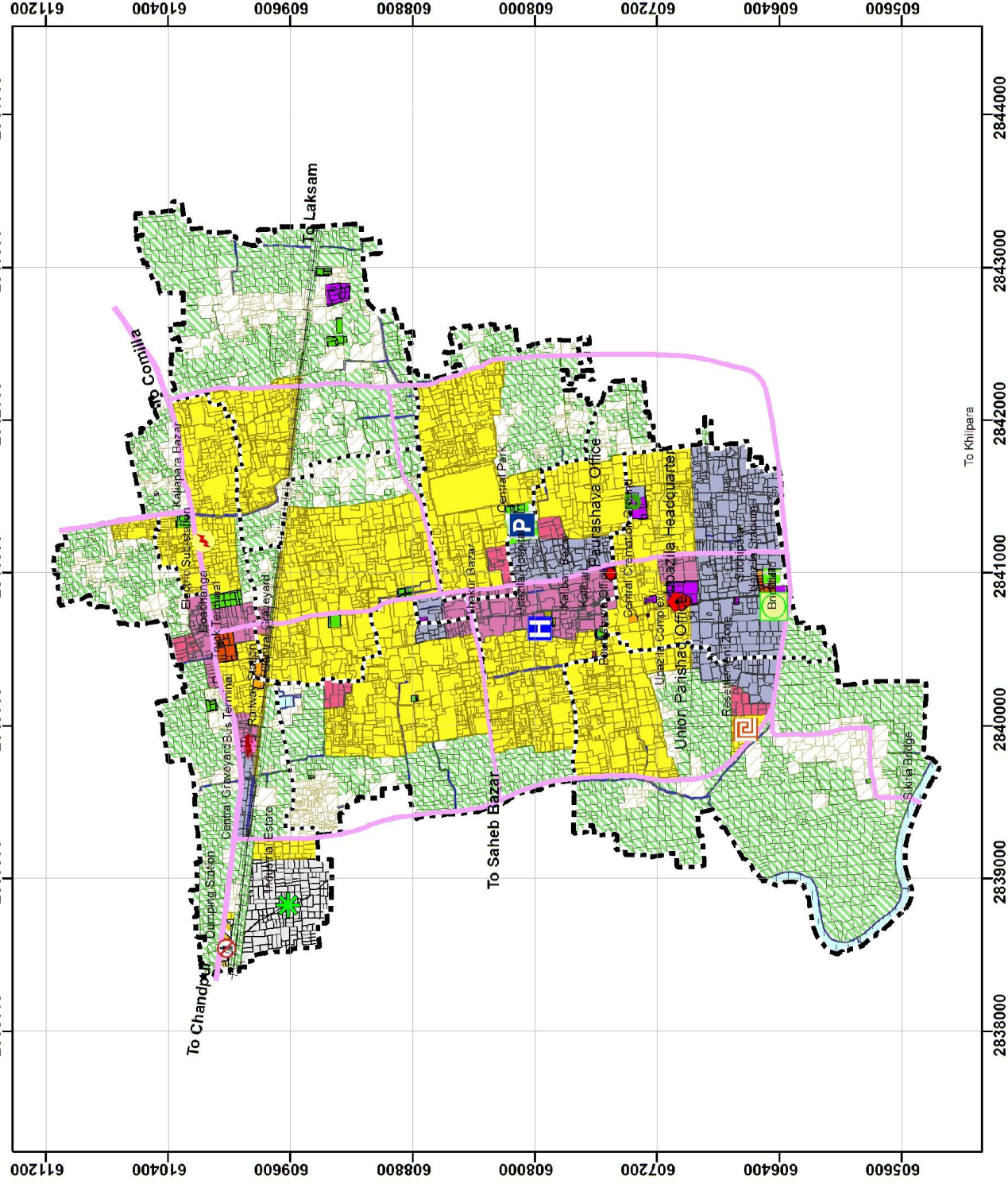
Drainage and Environmental Management Plan is the **Chapter- 12** of the Urban Area Plan. The chapter again subdivided into two parts – drainage part and environment part. Existing drainage network, land level and topographic contour, plan for drainage management and flood control and plan implementation strategies are the components of the drainage part. Existing environmental condition, solid waste and garbage disposal, environment pollution, water logging, natural

calamities and localized hazards, plan for environmental management and pollution control and plan implementation strategies are the key issues of the environment part.

Chapter- 13 of this report is Plan for Urban Services. Existing condition and demand of the Services, projection on existing and proposed Urban Services, Proposals for Urban Services and Implementation, monitoring and Evaluation of the Urban Services Plan are the key issues of this part.

Map 9.1

Urban Area Map with Major Road & Services of Shahrasti Pourashava



SCALE

1:37,000



LEGEND

- Pourashava Office
- Upazila Headquarter
- Project Boundary
- Pourashava Boundary
- Ward Boundary

Proposed Landuse

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

Proposed Major Services

- Bus Terminal
- Central Park
- Dumping Station
- Electric Sub-station
- Industrial Estate
- Police Station
- Resettlement Zone
- Upazila Hospital
- Upazila Stadium

PREPARATION OF MASTER PLAN FOR SHAHRASTI POURASHAVA

Shahrasti Upazila, Chandpur 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. 04 (Comilla Region)



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Chapter Ten

Land Use Plan

10.1 Introduction

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

10.2 Existing and Estimated Future Land Use

10.2.1 Existing Land Use Types and Patterns

The land existing uses of the urban area that is, Pourashava area land has been grouped into 17 categories (**Table-10.1**). The land uses have been classified for Pourashava area. It is clearly evident from the table that residential land use that includes all types of dwelling houses, dominate the built up part of the Pourashava, while nearly half of the total Pourashava land is still under agriculture. **Map- 10.1** shows the urban area map with existing land use pattern of Shahrasti Pourashava.

Table 10.1: Existing Land Use of the Planning Area

Landuse Category	Pourashava Area (Acre)	%
Agriculture	2217.94	56.95
Circulation Network	95.95	2.46
Commercial Activity	34.18	0.88
Community Service	9.92	0.25
Educational Facilities	14.70	0.38
Governmental Services	8.12	0.21
Manufacturing and Processing Activity	4.21	0.11
Mixed Use	2.76	0.07
Recreational Facilities	2.61	0.07
Residential	808.61	20.76
Restricted Area	2.64	0.07
Service Activity	5.65	0.15
Urban Green Space	8.00	0.21
Vacant land	119.80	3.08
Waterbody	559.63	14.37
Total	3894.67	100

Source: Physical Feature Survey, 2010

The land use of the project area has been analyzed ward wise as well as for the entire project area. Within the built up part of the town, residential land use features, that include all types of dwelling houses, dominate the total planning area. In respect of entire Pourashava area, the major land use goes to Agricultural land and it is 2217.94 acres which is 56.95% of the total land. The second major land use is Residential land and occupying about 20.76% (808.61 acres) of the Pourashava area. Besides, there is about 14.37% water body, about 2.46% circulation network, about 0.88% commercial activities and about 4.17% of lands are being used for education, community service, government services, manufacturing or industry, service activity and vacant.

10.2.2 Estimated Future Land Use

The Pourashava is not an ideal township in respect of land use distribution. It is dominated by agricultural land use, which is unusual. Growth of population is the natural trend and at the same time, expansion of non-agricultural use on agriculture land is also natural tendency of the town. This can be controlled through the Compact Township Development concept with the encouragement of vertical development. In case of government services, specific building may accommodate different type of offices.

Future land use has been calculated according to the development control for the masses and the standard supplied by the LGED. In case of public land, existing use and khas land have been emphasized. Willingness and participation of the people in development activities considers as a key factor for future land use demarcation. Slow change of land use emphasizes rather than rapid change. Let the people do whatever he likes on own land – such concept should not be considered for future projection of land uses. Three parts of the projection are, land use change, land use control and land use restriction is included in the Master Plan. In any case, areas of khal (canal) edge should be restricted for human habitation. As a result, khals will not be polluted and silted and these existing canals will act as uninterrupted natural drainage system and drainage outfall.

a. Basis of Estimation

The important basis of estimating the amount of land under each land use type is the size of population in different periods of the Master Plan. The distribution of existing land uses have been estimated considering the total requirement of land in future. Land for different uses have been determined on the basis of estimated future demand for each category of land use.

b. Estimation of Urban Residential Land Requirement

The present population of the planning area has been estimated as 32756 (2011) as per growth rate of 2.76%. This gives a gross density 8 persons/acre. The future housing area need to be based on a recommended planning standard of 100 persons per acre. With this standard, the estimation shows, the land required to accommodate total projected population (55482) in the year 2031 will be 832.24 acres. But survey of existing land use has identified 832.24 acres of land currently under housing use with a low density of population (8 persons/acre). The consultant, therefore, retrains additional housing land (23.63 acres) for the population of the Pourashava in 2031.

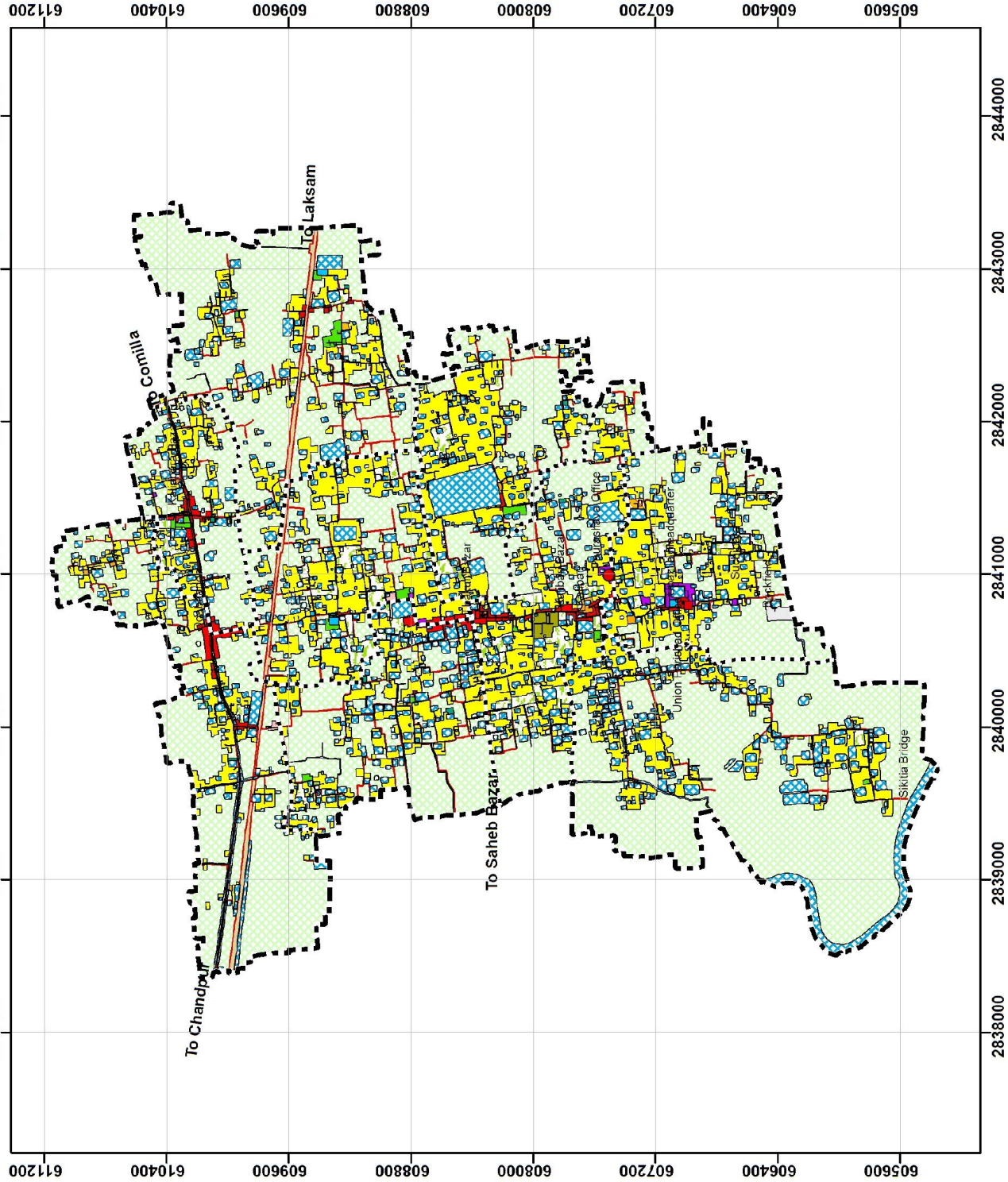
Shahrasti Pourashava Master Plan must have an area delineated for housing the poor, disadvantages and refugee of climate change and other disasters to fulfil National Housing Policy, Disaster Policy and other policy prescriptions of the Government.

c. Estimation of Land for Commercial Use

There is no reason to expect any sharp rise in business activities in next 20 years in the Shahrasti Pourashava. The current land under business/trading use is only 34.18 acres including business areas beyond Pourashava that cover shopping and bazar areas. Market facilities are usually provided privately on commercial basis depending on trend of sale of goods. So it is not possible to fix a standard or project actual area for these services. Field observations shows that most commercial areas are actually mixed areas combined with residence and small scale industry. So, instead of marking commercial areas exclusively for commerce use (that would never develop in this small town), it is better to term the area as mixed use area and allow it to develop as mixed use areas.

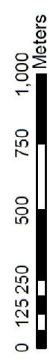
Map 10.1

Urban area map with existing landuse pattern of Shahrasti pourashava



SCALE

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LEGEND

- Pourashava Office
- Upazila Headquarter
- - - Project Boundary
- - - Pourashava Boundary
- - - Ward Boundary

Existing Landuse

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

PREPARATION OF MASTER PLAN FOR CHOWMULHANI POURASHAVA
Shahrasti Upazila, Shahrasti 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. 04 (Comilla Region)



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

Every wholesale market requires space for at least three major activities along with utilities and services. The activities are: stockyard, loading-unloading yard and parking. Usually single wholesale market is enough for most of the small towns like Shahrasti having population not more than 20000 to 30000.

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

For the sake of current planning the consultant can allocate land as per standard for commercial land use and put them at appropriate locations where mixed use facilities may be developed privately or publicly. The total required commercial land will stand at 71.53 acres. The extra land requirement will stand at 37.35 acres.

d. Estimation of Land for General Industrial Zone

According to approved planning standard the total land for industries comes to 138.70 acres with 83.22 acre for small scale industries and 55.48 acres for cottage and agro based industries. At present there is 4.21 acres land used for industrial purpose. So 134.49 acres of additional land will be required.

e. Education & Research Zone

Estimation of land according to standard indicates there will be a land requirement of 85.44 acres to accommodate educational facilities by the year 2031. If we deduct the already available 17.63 acres of existing land uses under various education facilities there will be a need of additional 68.00 acres of land for education facilities.

f. Health Services

There is one Upazila health complex as a Public Health service facility, one private Nursing Home and two other private diagnostic centers cum Hospitals. All of these facilities are available in Ward No. 2, 4 and 7. The total area coverage of existing Upazila Health Complex and others hospitals is 3.76 acres. Estimation shows minimum 10.00 acres of land for the health complex according to recommended standard. The consultant feels that no additional land is required for the Upazila health complex for a Pourashava. In future, as the population and density increases, demand for local health facilities will increase. So according to standard, 11.10 acres have been allotted for Health centre/Maternity clinic.

g. Open Space

Field survey shows, there is no formal park facility for outdoor recreation of Pourashava people. The existing playgrounds are generally used as school playground. The proposed facilities includes, play field/ground, parks of various categories and stadium/sport complex. If we deduct the already available 2.75 acres of existing land uses under various facilities there will be a need of additional 124.31 acres of land for education facilities.

h. Circulation Network

In the Pourashava, 95.95 acres (2.46%) of land is under regional and local roads within the Pourashava. More 135.66 acres of land will be needed for proposed roads (including widening, link and new roads) up to the year 2031. This area will constitute a total of 5.95% land under circulation network within the Pourashava by 2031.

i. Transportation Facilities

In the field of transport establishment the consultant proposes such facilities as, bus terminal, truck terminal, rickshaw stands at selected places, baby taxi/tempo stand and passenger shed for local bus users. These categories of land uses require a total 11.16 acres of land where there is 0.40 acre existing land under such facilities. So for this purpose additional 10.76 acres of land will be required up to the year 2031. However, many of the proposals may seem pre matured, but will be necessary in future. If land acquisition for these facilities is delayed, land may not be available in future for providing such facilities.

j. Government Office

Land for administration is meant for public sector and other office activities. The required land for Upazila complex is 15.00 acres of land and there is 5.05 acres of land available. The land required for Jail/sub-jail is 10.00 acres and there is no such existing land.

The existing land of Shahrasti Pourashava Office premise is situated in an area of 0.42 acres, while the prescribed standard requires a range of 3.00 – 5.00 acres of land for this purpose. Consultant considers that this is not enough for Shahrasti Pourashava. There is land nearby that can be proposed for extension. If necessary, additional space can be created by constructing a high rise building. So no additional land has been proposed.

Other Government Offices (Police Station, Police Box/Outpost, Fire Station, Post Office) Requires 10.16 acres of land as per standard where there is already exists 1.96 acres of Police station and 0.40 acres of Post Office.

k. Community Facility

For various community facilities, the land requirement has been fixed at 9.70 acres. 8.12 acres have been earmarked for a Mosque and Temple, 3.75 acre for Graveyard. The existing coverage area of Mosque/Church/Temple is exceeds the standard requirement. There is 3.75 acres of graveyard in Shahrasti Pourashava but all these lands are under mosque or family based and not centrally or publicly provided. For details, please see **sub-section 4.4.10** of Chapter- 4.

l. Utility Service

A number of utility establishments are required in a town to run services properly. The consultant, according to approved standard, has earmarked 2.77 acres for water supply installations, like, pump stations and other establishments related to water supply; 2.77 acres have been fixed for gas related facilities. There will be 9 waste transfer stations for collection of solid waste located at suitable locations. Each ward will have one station with an area of 0.25 acre. So there will be a need for 2.25 acres for 9 transfer stations. A dumping site will be developed over an area of 4.00 acres for final disposal of the solid waste. For power sub-station the estimated land is 2.77 acres and for telephone exchange it is 1.39 acres. So the total land requirement under this category is 17.34 acres.

m. Agriculture

Existing total area under agricultural use is 2217.85 acres and it is 56.95% of the total Pourashava area. After implementation of the Urban Area Plan up to the year 2031, it will be reduced to 1262.68 acres and it will become 32.42% of the Pourashava area during the end of the plan period.

n. Rural Settlement

Most of the Upazila level towns in Bangladesh, including Shahrasti, are rural based. It is unlikely that all the lands under agriculture will be converted to urban during the project period. This residential area will remain as rural settlement area with low density and limited urban services. This area will have a density of maximum 20 – 30 persons per acre. For the project period, a total of 338.72 acres of land or 8.70% of the total Pourashava area has been earmarked as rural settlement area.

o. Urban Deferred

The Urban Deferred refers to lands lying outside of the urban growth boundary and identified as Urban Deferred and encompassed by the Urban Deferred Boundary. According to planning standard provided by LGED seeks about 10 percent of the total build up area. The total area under this use has been proposed as 221.10 acres that include existing and proposed land uses. Livestock and vegetation based agriculture and existing facilities up to the date of gazette notification of the master plan are permitted uses within the Urban Deferred Zone.

p. Water Body

Existing Water bodies like canal, tanks, ponds, ditch, etc. encompass almost 559.63 acres which is 14.37% of the Pourashava area. More or less, all of the wards have significant amount of water bodies. 483.32 acres of land within the Pourashava area are proposed as waterbody and retention area and it is the 12.41% of the total Pourashava area.

Other 7 categories of landuse, (Heavy industrial zone, historical and heritage site, restricted area, overlay zone, forest, beach and miscellaneous) are not existed as well as proposed in Shahrasti Pourashava.

Table 10.2: Existing and Proposed Landuse within Shahrasti Pourashava

Landuse Category	Existing landuse		Proposed landuse	
	Area (acre)	%	Area (acre)	%
Agricultural Zone	2217.85	56.95	1262.68	32.42
Circulation Network	95.95	2.46	231.61	5.95
Commercial Zone	34.18	0.88	19.43	0.50
Community Facilities	9.92	0.25	5.87	0.15
Education & Research Zone	14.71	0.38	19.62	0.50
General Industrial Zone	4.21	0.11	76.51	1.96
Government Office	8.12	0.21	27.05	0.69
Health Services	0.00	0.00	10.55	0.27
Mixed Use Zone	2.75	0.07	105.15	2.70
Open Space	8.00	0.21	45.42	1.17
Recreational Facilities	2.62	0.07	0.00	0.00
Rural Settlement	0.00	0.00	338.71	8.70
Transportation Facilities	0.00	0.00	5.33	0.14
Urban Deferred	0.00	0.00	221.10	5.68
Urban Residential Zone	808.61	20.76	1037.49	26.64

Landuse Catagory	Existing landuse		Proposed landuse	
	Area (acre)	%	Area (acre)	%
Utility Services	0.00	0.00	4.22	0.11
Water Body	559.63	14.37	483.32	12.41
Service Activity	5.65	0.15	0.00	0.00
Vacant Land	119.82	3.08	0.00	0.00
Restricted Area	2.64	0.07	0.61	0.02
Total	3894.67	100.00	3894.67	100.00

10.3 Land Use Zoning and Development Control

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

10.3.1 Land Use Zoning

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

Density Zoning

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

Height Zoning

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

Considering the existing level of development and development prospects and the location of the project area, consultant recommends following 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.

10.3.2 Land Use Zone Classification

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

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

First 16 land uses zoning of the above list are available and proposed for Shahrasti Pourashava Master Plan and the last 8 will not be applicable for Shahrasti. In the sections below, the general definition of the use and description of associated permitted and conditionally permitted uses under each land use zone have been provided. The uses that are not listed here in any of the categories shall be treated as **Restricted Use** for the corresponding land use category and shall not be permitted only except unanimously decided otherwise by the appropriate authority. In such situations the use shall get permission in the category of **New Use**.

In Master Plan one of the strategies is to develop every ward by providing community facilities. In Urban Area plan consultants proposed growth centre for every ward named as “**Ward Centre**”. All

the Ward Centre includes various facilities such as Neighbourhood centre, Neighbourhood market or Kitchen market, Community Clinic, Neighbourhood Park, Community centre etc.

Following is a short description recommended land use zones.

1) Urban Residential Zone

Urban residential zone refers to all categories of urban residential areas, including existing ones and the residential land use proposed under the present master plan. This includes single family housing or multi-family residential. Zoning for residential use will permit some services. It will permit high density land use. In total this zone covers 1037.49 acres (26.64% of the existing Pourashava area) of land delineated up to the year 2031, considering standard provided by LGED. Besides general residential land uses this category includes Low income housing estate, Housing estate and Resettlement zone. This zone will allow residential uses as listed in **Table-A.1, ANNEX-A**, and conditional uses as listed in **Table-A.2, ANNEX-A**.

Table 10.3: New Development proposal for Urban Residential

Type of Facilities	Ward No.	Mouza Name	Plot No.	Area (acre)
Low Income Housing Estate	2	Upolota 287 01	246, 247, 249, 251, 252, 318, 319, 325, 330, 332-341, 346, 347, 349-361, 366-375, 1784-1786	12.68
Housing Estate	1	Kazir Kamta 285 00	3, 4, 6-52, 55-58, 61-81, 83-135, 180, 303	58.33
Resettlement Zone	9	Nijmeher 374 04	1958-2261, 2263, 2280-2287, 2290-2299, 2960	8.68

2) Rural Settlement

Rural settlement includes the low dense residential area which is scattered within pourashava boundary and rural in nature. This use will have only low density uses and only up to double story building will be permitted aiming to control the growth in this zone. Less service and facilities will be provided. The zone of rural settlement is intended to provide locations, where rural settlement including agriculture can be set up and function. Without creating hazards and changes to surrounding land uses. This zone has an area of 338.72 acres (8.70% of the existing Pourashava area) designated up to 2031. This zone will allow rural residential uses as listed in **Table-A.7, ANNEX-A**, and conditional uses as listed in **Table-A.8, ANNEX-A**.

3) Commercial Zone

The land used for commercial activities is considered as commercial land use. These activities include the buying and selling of goods and services in retail businesses, wholesale buying and selling, financial establishments, and wide variety of services that are broadly classified as "Business". Commercial land includes established markets and areas earmarked for markets. The commercial zone is intended to provide locations which can function without creating hazards to surrounding land uses. This zone has an area of 19.43 acres (0.50% of the existing Pourashava area) designated up to 2031. This zone will allow commercial uses as listed in **Table-A.5, ANNEX-A**, and conditional uses as listed in **Table-A.6, ANNEX-A**. Following table shows the wardwise plot schedule for commercial activities.

Table 10.4: New Development proposal for Commercial Activities

Type of Facilities	Ward No.	Mouza Name	Plot No.	Area (acre)
Neighbourhood Market	1	Upolota 287 01	598, 599, 602-604, 932, 963	13.26
	2	Shuara 302 01	337-339, 346, 348, 350, 360-372, 382	
	3	Shuara 302 02	1095-1099, 1175	
	4	Shahapur 367 00	243, 249-252, 445, 449, 450	
	5	Shahapur 367 00	504, 505	
	6	Shreepur 373 00	45, 52-56	
	7	Shreepur 373 00	56	
		Nijmeher 374 02	885, 967-970	
	8	Nijmeher 374 03	1779-1781, 1787-1791, 2986	
	9	Nijmeher 374 04	1958-1962, 1964, 1970, 2967	
Super Market	8	Nijmeher 374 03	1779, 1781, 1782, 2985	0.39
Wholesale Market	2	Shuara 302 01	407-422, 464-467	4.78

4) Mixed Use Zone

Mixed use zones have been recommended to allow some flexibility in development. In a small town like Shahrasti, as the trend shows, an exclusive commercial land use is unlikely to function. Admixture of land uses will allow flexibility of development, instead of restricting development to any particular use. Total area earmarked for mixed uses stands at 105.15 acres (2.70% of the existing Pourashava area). This zone will allow residential structures together with commercial uses as listed in **Table-A.10, ANNEX-A**, and conditional uses as listed in **Table-A.9, ANNEX-A**.

5) General Industrial Zone

General industries are the Green and Orange A categories of industries as per The Environment Conservation Rules, 1997. The general industrial zone is intended to provide locations, where general industrial establishments can be set up and function without creating hazards to surrounding land uses. As a small urban centre it is unlikely that any major industrial concern will find its place here in the immediate future. This zone has an area of 76.51 acres designated up to 2031. So, total industrial land use will stand at 1.96% of the existing Pourashava area. Since there is no industrial agglomeration in the town, the industrial zone will be meant for new industries. In this zone a complex line of industrial and supporting non-industrial land uses will be permitted as per **Table-A.3, ANNEX-A** and conditional permission will be given to a number of other land uses as specified in **Table-A.4, ANNEX-A**. Following table shows the ward wise plot schedule for general industrial use.

Table 10.5: New Development proposal for Industry

Type of Facilities	Ward No.	Mouza Name	Plot No.	Area (acre)
General Industrial	2	Upolota 287 01	133, 134, 136-292, 294, 296-328, 330-333, 369, 1784	76.51

6) Government Office

Government Office zone covers all kinds of government offices including existing and proposed (e.g. proposed neighbourhood centre) in the town. The existing government offices are Upazila

Tahsil Office, Upazila Agriculture Office, Upazila Livestock Hospital, PDB Office, Police Station, Post Office, Pourashava Office, Sub-registry Office, T & T Office, and Upazila Parishad Office. The proposed Government Offices are nine neighbourhood centres for nine wards and 8 police box/outpost. The permitted uses in this zone is presented in **Table-A.13, ANNEX-A** and conditional uses as listed in **Table-A.14, ANNEX-A**. The total area under this use has been proposed at 27.15 acres (0.70% of the existing Pourashava area) that include existing and proposed land uses. Following table shows the wardwise plot schedule for government office use.

Table 10.6: New Development proposal for Government Office

Type of Facilities	Ward No.	Mouza Name	Plot No.	Area (acre)
Neighbourhood Center	1	Upolota 287 01	592, 604	7.09
	2	Shuara 302 01	345, 346, 364	
	3	Shuara 302 02	1099, 1100-1102, 1151-1153, 1173	
	4	Shahapur 367 00	243, 252-255	
	5	Shahapur 367 00	514, 515	
	6	Shreepur 373 00	45, 56, 57, 61, 61, 62, 71	
	7	Nijmeher 374 02	970, 971, 972	
	8	Nijmeher 374 03	1822, 1823	
	9	Nijmeher 374 04	1967, 1969	

7) Education & Research Zone

Educational & Research zone refers to mainly education & research and other social service facilities as listed in **Table-A.11, ANNEX-A**, and conditional uses as listed in **Table-A.12, ANNEX-A**. The total area under this use has been determined as 19.62 acres (0.50% of the existing Pourashava area) that includes existing, newly proposed land uses and expanding land for existing educational institutions. Two new High schools (ward no. 1, 8), 1 vocational institute (ward no. 03) are proposed and other existing institutes are recommended to strengthen their status through vertical expansion and conversion of non-government institutions to MPO. Following table shows the ward wise plot schedule for education & research use zone.

Table 10.7: New Development proposal for Education & Research

Type of Facilities	Ward No.	Mouza Name	Plot No.	Area (acre)
High School	1	Upolota 287 01	594, 596, 598	1.13
	8	Nijmeher 374 03	1784, 1793-1795	0.60
Vocational Training Institute	3	Shuara 302 02	493, 494, 500-508, 1108, 1110, 1114, 1115, 1122	4.43

8) Agricultural Zone

Agricultural land denotes the land suitable for agricultural production, both crops and livestock. It is one of the main resources in agriculture. It includes productive land (single, double and triple cropped), seed bed, fisheries, poultry farm, dairy farm, nursery, horticulture etc. The Pourashava has a vast area of agricultural land that demands formation of a separate zone like, agriculture zone. Agriculture zone is primarily meant for agriculture; land uses related to it and land uses that support it. Details of land uses is presented in **Table-A.15, ANNEX-A** and conditional uses as listed in **Table-A.16, ANNEX-A**. The total area will stand at 1262.68 acres (32.42% of the existing Pourashava area) after the urban area plan is implemented within 2031.

9) Waterbody

483.32 acres or 12.41% of the existing Pourashava area is indicated as waterbody. These will act as water retention areas which include ponds, water tanks, natural khals and irrigation canals. The plan suggests preserving most of these water bodies for two purposes, first, to serve as source of water, second to serve as water retention area during monsoon. The ponds with an area equal to or more than 0.20 acres will be preserved as the water retention ponds. There will be permitted uses in this zone as stated in **Table-A.21, ANNEX-A** and allow some other uses conditionally as stated in **Table-A.22, ANNEX-A**.

Water courses are the water flow paths or the existing natural water courses that carry storm water and waste water. These are the existing khals. These facilities should not be allowed to such that endanger their existence and use.

10) Open Space

Recreational and sport facilities without or with minimum building structure i.e. Playground, Botanical Garden, Stadium, Zoo etc. will be listed and proposed under Open Space zone. This zone has been provided to meet the active and passive recreational needs of the people and at the same time, conserve the natural resources. The total area earmarked for this zone stands at 45.42 acres (1.17% of the existing Pourashava area). The details of permitted and conditional permits have been presented in **Table-A.17, ANNEX-A** and conditional uses as listed in **Table-A.18, ANNEX-A**. Following table shows the ward wise plot schedule for Open Space zone.

Table 10.8: New Development proposal for Open Space

Type of Facilities	Ward No.	Mouza Name	Plot No.	Area (acre)
Central Park	7	Nijmeher 374 02	924, 925, 931, 938, 939, 942-948	7.81
	6	Nijmeher 374 02	939, 948-950, 952, 954-956, 958-963	
		Shreepur 373 00	136, 137, 139, 142, 143, 145	
Upazila Stadium	8	Nijmeher 374 04	1824-1834	4.34
Neighbourhood Park	1	Upolota 287 01	601, 602, 963, 965, 966, 970, 971	
	2	Shuara 302 01	298, 329, 330, 338-345,	
	3	Shuara 302 02	1154, 1158-1161, 1166	
	4	Shahapur 367 00	243-249	
		Naora 368_00	201, 209-211	
	5	Upolota 287 02	1148, 1507, 1508, 1511, 1794	
	8	Nijmeher 374 03	1818-1821	
	9	Nijmeher 374 04	1892, 1967-1969, 1971, 1976, 1982-1984	
		Nijmeher 374 05	2766-2768, 2770, 2896-2905, 2907-2915	
Open Space	6	Shreepur 373 00	98, 99, 104-106, 108-110, 112-114, 118, 127, 129, 130, 132, 133, 136, 299-302, 311	2.41

11) Circulation Network

In total 231.61 acres or 5.95% of the existing Pourashava area (including 95.95 acres of existing circulation network) has been proposed for circulation network for 2031. Road network including primary, secondary, tertiary and local access road falls under this category. Following table shows the ward wise plot schedule for circulation network zone.

12) Transportation Facilities

Under transportation facilities, both transport and communication services are considered. This category includes, bus terminal/ stand, filling station, garage, and passenger shed, ticket counter, transport office, etc. The plan proposed one bus terminal and one truck terminal is located at ward no 02. Besides, four car parking area is earmarked at different locations in ward no 3, 5, 7 and 8, are proposed here for Shahrasti Pourashava. Following table shows the wardwise plot schedule for Transportation Facilities zone.

Table 10.9: New Development proposal for Transportation Facilities

Type of Facilities	Ward No.	Mouza Name	Plot No.	Area (acre)
Bus Terminal	2	Badia 301 00	100-102	2.65
		Shuara 302 01	150, 153, 156, 160, 161, 168	

13) Utility Services

A number of utility establishments are required in a town to serve the people. Utility services include Overhead Tank, Power Office/Control Room, Public Toilet, Sewerage Office, Waste Disposal, Water Pump House, Water Reservoir, Water Treatment Plant, Waste transfer station etc. There will be 9 waste transfer stations for collection of solid waste located at suitable locations. Each ward will have one station with an area of 0.25 acre. So there will be need for 2.25 acres for 9 waste transfer stations. A dumping site will be developed over an area of 4.08 acres for final disposal of the solid waste proposed at the north-west part of ward no 02 (Upolota Mouza).

Table 10.10: New Development proposal for Utility Services

Type of Facilities	Ward No.	Mouza Name	Plot No.	Area (acre)
Dumping Station	2	Upolota 287 01	116-128	4.08
Slaughtering House	7	Nijmeher 374 01	524	0.14

14) Health Services

The zone of health care facilities is intended to provide locations, where health facilities including Upazila health complex and other maternity clinic can be set up and function. Without creating hazards to surrounding land uses. This zone has an area of 10.55 acres designated up to 2031. Maternity and Child health facility will be available at each neighbourhood centre along with other facilities hence, neighbourhood centres will be developed vertically. Following table shows the wardwise plot schedule for health services zone.

Table 10.11: New Development proposal for Health Services

Type of Facilities	Ward No.	Mouza Name	Plot No.	Area (acre)
Community Clinic	1	Upolota 287 01	599, 601, 602, 966	6.96
	3	Shuara 302 02	1154, 1167, 1169, 1170, 1180, 1182, 1413	
	4	Shahapur 367 00	268, 270, 273	
	5	Upolota 287 02	1675	
	6	Shreepur 373 00	56-58, 63, 65	
	7	Nijmeher 374 02	968-970, 972	
		Shreepur 373 00	63, 65	
	8	Nijmeher 374 03	1791, 1792	
	9	Nijmeher 374 04	1969-1973, 1976, 2293, 2294	

15) Community Facilities

All community facilities, including community center, eidgah, funeral places (i.e. graveyards, cremation ground) and other religious uses denoted as community facilities. This is zone earmarked with an area of 5.87 acres (including existing and proposed) designated up to 2031 and it covers 0.15% of the existing Pourashava area. Following table shows the ward wise plot schedule for Community facilities zone.

Table 10.12: New Development proposal for Community Facilities

Type of Facilities	Ward No.	Mouza Name	Plot No.	Area (acre)
Central Graveyard	2	Badia 301 00	137, 136	3.20
		Shuara 302 01	437, 445-447	
	5	Badia 301 00	138, 139	
		Upolota 287 02	1249, 1250, 1251	
Central Cremation Ground	8	Nijmeher 374 02	730	0.65
Community Center	3	Shuara 302 02	1101, 1153, 1154, 1171, 1172, 1180, 1413	1.99
	6	Shreepur 373 00	59, 63, 65, 66, 71	
	8	Nijmeher 374 03	1782, 1783, 1795, 1802	

16) Urban Deferred

According to planning standard provided by LGED seeks about 10 percent of the total build up area. The total area under this use has been proposed as 221.10 acres or 5.68% of the existing Pourashava area that include existing and proposed land uses. A portion of this zone may use for housing of the poor, disadvantages and refugee for climate change and other disasters to fulfil National Housing Policy, Disaster Policy and other policy prescriptions of the Government. The following are permitted Uses within the Urban Deferred (UD) Zone:

- Agriculture, Livestock Based
- Agriculture, Vegetation Based (mushroom farms shall not be permitted)
- Existing facilities up to the date of gazette notification of the master plan. Condition is that, no further extension will be permitted.

17) Overlay Zone

The overlay land uses refer to those uses that are not compatible to the surrounding land uses but, anyhow, they need to stay there and therefore will not be removed. These uses are only sites and not zones, actually. They have local, regional or national importance, though they don't conform to surrounding land uses. No other use except the use of overlay site is permitted in this zone. There is no scope for permitting or conditionally permitting the functions or uses as the zone itself is an overlay. The present and proposed use of the zone will continue until the next zoning regulation is imposed on those specific parcels of land.

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

- ***Environmental Protection Area***

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

- ***Graveyard Sites***

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

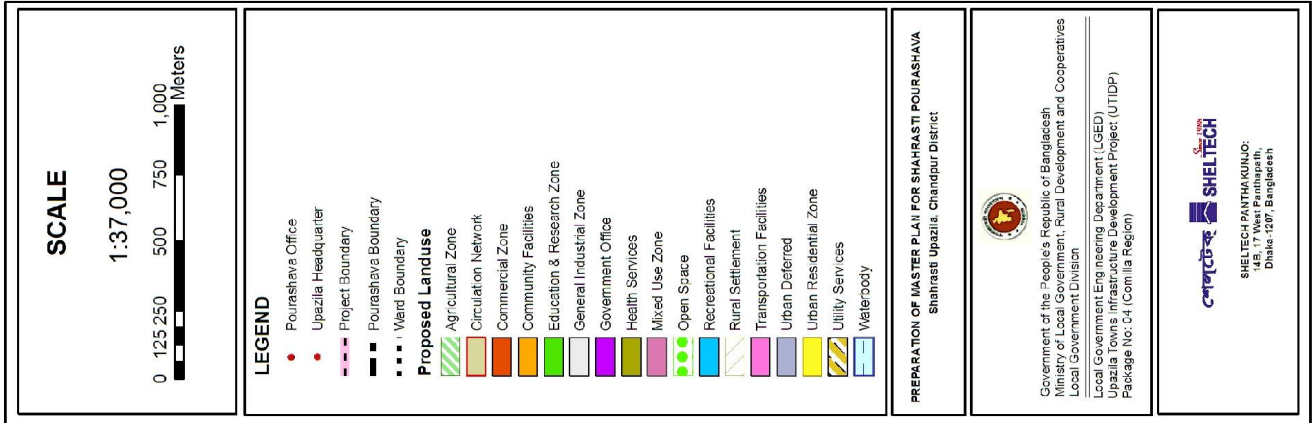
- ***Sports and Recreation Sites***

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

- ***Special Use Sites***

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

Urban Area Map with Proposed Landuse Pattern of Shahrasti Pourashava



PREPARATION OF MASTER PLAN FOR SHAHRASI POURASHAVA
Shahrasti Upazila, Chandpur 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: 04 (Comilla Region)

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10.4 Plan Implementation Strategy

10.4.1 Land Development Regulations to Implement the Land Use Plan

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

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

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

Prior to introduction of the regulations to implement the land use plan, following legislative measures are recommended.

1. Impose control on all types of buildings in the Pourashava according to the setback rule prescribed in the Building Construction (Amendment) Rules, 1996 (Notification No. S. R. O. No. 112-L/96). Building permission for extended areas shall be according to the land use provision prescribed in the plan. Any permission for building construction, front road width shall not be less than 24 ft. and the construction must follow the Building Construction (Amendment) Rules, 1996.
2. To control the air, water, noise and soil pollution, Conservation of Environment and Pollution Control Act, 1995 (Act No. I of 1995) was enacted. In the Pourashava, there is no authority for enforcing the provisions prescribed in the said Act. The pollution related with the implementation of land use component may be controlled with this Act.
3. Haphazard development of commercial activities is the general scenario of the Pourashava. It is necessary to impose control on commercial activities provisioned in the Shops and Establishments Act, 1965 (Act No. VII of 1965).
4. In case of man-made canal, regulations prescribed in the Canal and Drainage Act, 1873 (Act No. VIII of 1873) is the best weapon. For the linking of canal with others and river considering drainage facilities the Act may be enforced.
5. For the conservation of archeological monuments or structures or historical development the Ancient Monuments Preservation Act, 1904 (Act No. VII of 1904) and National Building Code may be enforced. Archeological Department of Bangladesh and Pourashava authority through a partnership process may preserve such type of development.

6. To control air pollution due for brick burning and establishment of brick field, Brick Burning Control Ordinance, 1989 (Ordinance No. VIII of 1989) is the appropriate regulation. The Pourashava authority may enforce this Ordinance with the securing government authorization.

7. To control the medical practitioner, establishment of private clinics and pathological laboratories, the statute named Medical Practice, Private Clinics and Laboratories (Regulation) Ordinance, 1982 (Ordinance No. IV of 1982) was enacted. For efficient enforcement of the Ordinance, the Pourashava authority may execute the Ordinance with the authorization of government.

8. The Pourashava will have to exercise strictly Playfield, Open space, Garden and Natural Tank in Urban Areas Preservation Act, 2000 (Act No. XXXVI of 2000) to some specially important areas like, riverfront and water bodies, drainage channels, low land below certain level, designated open space, etc. Development restrictions are needed around security and key point installations. The provision of restriction will strengthen the power of the plan to safeguard its development proposals and landuse provisions.

9. The government is authorized for establishment of hat and bazar with the acquisition of land through the statute named Hat and Bazar (Establishment and Acquisition) Ordinance, 1959 (No. XIX of 1959). In case of private hat and bazar, a management body is being empowered through the Bangladesh Hats and Bazars (Management) Order, 1973 (P.O. 73/72). The Pourashava authority is also empowered establishing hat and bazar in his jurisdiction through the Local Government (Pourashava) Ordinance, 2009. Coordination may be framed among the government (Upazila Parishad), Pourashava and private owner for the establishment, development and management of the hat and bazar located in the Pourashava premises.

10. In the Pourashava premises, industrial development is controlled by the Bangladesh Cottage Industries Corporation through Bangladesh Cottage Industries Corporation Act, 1973 (Act No. XXVIII of 1973), Industrial Development Corporation through East Pakistan Industrial Development Corporation Rules, 1965 (No. EPIDC / 2A-2/63/354) and Factory Inspector through Factories Act, 1965 (Act No. IV of 1965). Locational aspects and issuing of trade license is controlled by the Pourashava authority. A joint coordination cell among those four authorities may control the establishment of factories and industries in the Pourashava.

11. In the Pourashava, for rain water harvesting, some specific ponds / tanks will needed to be preserved. A number of derelict tanks may be improved through tank improvement project and in this case Tanks Improvement Act, 1939 (Act No. XV of 1939) will support the Pourashava is regulatory aspects.

12. Except Khas land, a considerable amount of public land in the Pourashava may be identified as fallow land or unproductive land. In regulatory term those lands are considered as culturable waste land and those lands are being fallow during five consecutive years. Those lands may be utilized under the guidance of Culturable Waste Land (Utilization) Ordinance, 1959 (Ordinance No. E.P. XIII of 1959).

13. The Pourashava should raise its efforts on the imposition and realization of betterment fees to raise its income. In this case, East Bengal Betterment Fees Act, 1953 may be enforced.

10.4.2 Implementation, Monitoring and Evaluation of the Land Use Plan

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

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

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

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

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

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

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

- increased efficiency of the urban land market would make more private land available to urban households;

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

Plan Monitoring

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

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

Evaluation

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

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

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

Co-ordination

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

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

- Investigate and resolve landuse management complaints, illegal landuse and prosecuting contraventions.

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

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

10.5 Land Use Permit

One of the major purposes of 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 required to be accommodated to support or assist the area, sometimes conditions are imposed in giving land use permit, sometimes strict restrictions are maintained by refusal of applications. A detailed list of permitted and conditionally permitted uses have been provided in **ANNEX-A** according to land use categories. The list has been developed with ideas borrowed from the recommendations made by the consultants under the recently completed DAP Project of RAJUK. It is required that all permit procedures mentioned in **ANNEX-A** are officially adopted through incorporation in the Building Construction Rules under Section 18 of the East Bengal Building Construction Act 1952.

Chapter Eleven

Transportation and Traffic Management Plan

11.0 Introduction

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

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

11.1 Approach and Methodology

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

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

Bus and tempo fleet data were collected from local transport owners' offices like, Bus Owners' Association, Tempo Owners' Association. They also provided information about routes, trips and movement data. Information about bus station and tempo station were collected from the respective owners' associations and the Pourashava/District Administration. Year wise data of non-motorized traffic were collected from the Shahrasti 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 visit. Data on household mobility 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 town. Information about traffic conflict and accident were collected from the field and from Thana (police station). Mapping of major roads was done using physical feature survey data and by thorough reconnaissance survey of roads.

11.2 Assessment of Existing Conditions of Transportation Facilities

11.2.1 Exiting Road Network

Shahrasti is a small, near linear shaped urban centre. A number of major roads pass through the town to different urban centers including district headquarters. Major roads that pass through the heart of the town form an intersection at the centre of the town known as zero point. The three major roads coming from three different directions meet together at the zero point near the Shahrasti bazar. The routes coming from different places are,

- Hajiganj/Chandpur
- Kachua
- Comilla

The three major roads coming from different directions cross major of Kaliapara-Doavanga khal, Nijmehar-Dakatia River, Naora-Shuchipara, Ghoshpara-Shuchipara, Thakurbazar-Kajir kap, Thakurbazar-kajir Kamta khals at several points. The Comilla road comes from East direction, Hajiganj road from the West direction; the Kachua road comes from North. All the roads meet together at zero point of the town. Apart from major roads, large number of local roads having width varying from 8 ft. to 10 ft. width, give access to individual houses and establishments and connect them to major roads. **Map- 11.1** shows the circulation network of Shahrasti Pourashava.

Roads and Highways (R&H) Roads

The Pourashava has about 8.84 km of roads within the town which owned and maintained by the Roads and Highways Department (RHD). These roads pass through the heart of the town to important urban centers-namely Comilla, Chandpur, and Kachua including Dhaka and Chittagong. The crests of these roads have varying widths of 14 ft. to 20 ft., while the right of way ranges from 25 ft. to 100 ft.

Local Government Engineering Department (LGED) Roads

LGED maintains about 3.33 km of roads within the Shahrasti Pourashava. These are Soldier Md. Abdul Hoque Road, Naora Road, Naora-Thakurbazar and Meher College Road. **Table-5.4** shows the names of LGED roads within the Pourashava.

Important Local Roads

The Pourashava has so far developed 70 km of roads within its area with different width. They are also responsible for maintaining the roads. The pourashava has named many of these roads after renowned local personalities. These are Ghoshpara Road, Kajir kap road, Kajir Kamta Primary School road etc.

Map 11.1

Proposed and Existing Road Network of Shahrasti Pourashava



SCALE

1:37,000



LEGEND

● Pourashava Office

● Upazila Headquarter

--- Pourashava Boundary

--- Ward Boundary

--- Extension Area Boundary

Existing Road

Proposed Road

Khal/Canal/River

PREPARATION OF MASTER PLAN FOR SHAHRASTI POURASHAVA

Shahrasti Upazila, Chandpur 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. 04 (Comilla Region)



SHELTECH PANTHAKUNJ:
148, 17 West Panthapath,
Dhaka-1207, Bangladesh

11.2.2 Mode of Transport

Pourashava has only road traffic of different varieties. The modes vary from manually operated rickshaw to vehicular traffic car. There are rickshaw and van as slow moving manually operated road traffic that carry passengers at small distances. Vans carry goods, to even long distances. Among vehicular traffic, there are tempo, auto-rickshaw and bus as public transport. Well to do people have personal cars. Trucks are also there to carry goods.

11.2.3 Intensity of Traffic Volume

Shahrasti is a small regional town with very low level of economic activity. So traffic movement is also very low in the town. There is only one major road intersection in the heart of the town namely "Zero Point" near Pourashava office more. A traffic volume survey was conducted in this intersection in July, 2010 to know the existing directional traffic flow. It is evident from the volume survey that in all the directions there are mainly two peak hours, between 7 am to 12 am and again from 3 pm to 6 pm. During the first peak the commuters move to their work places during the early hours of the day, again the second peak occurs as the commuters start to return home after their work. The peak periods at different directions (from and to) are as follows:

The highest PCU of vehicles recorded to different directions are as follows:

Shahrasti to Chandpur: 56.70 PCU between 8 am to 9 am
 Comilla to Chandpur: 167.40 PCU between 02 pm to 03 pm
 Chandpur to Shahrasti: 49 PCU between 01 pm to 02 pm
 Comilla to Shahrasti: 56.60 PCU between 12 pm to 01 pm
 Shahrasti to Comilla: 63.80 PCU between 09 am to 10 am
 Chandpur to Comilla: 213.10 PCU between 02 pm to 03 pm

11.2.4 Level of Service: Degree of Traffic Congestion and Delay

Speed is one of the most important characteristics of traffic and its measurement is a frequent necessity in traffic engineering studies. Speed is the rate of movement of traffic or of specified components of traffic and is expressed in metric units in kilometers per hour (K.P.H.).

Like any other Upazila towns, Shahrasti Pourashava is also dominated by non-motorized (Mostly Rickshaw) traffic (NMT). It is observed that, NMT imposed on the road nearly double than the motorized transport by both volume and PCU. So, the speed and delay of the transport sector has been studied considering Non Motorized Transport.

It is observed that, the running speed (average speed maintained by a vehicle over a given course while the vehicle is in motion) of peak period is almost 72% from that of off-peak period. The main cause for this low speed is the congestion in the Zero point intersection which is mainly for narrow road and improper design of cross section as well poor traffic management. The maximum and minimum speeds are 10.02 KPH and 6.36 KPH. It is significant to note the cause 'while the vehicle is in motion', because the running speed is obtained by dividing the length of the course by the time the vehicle is in motion, *i.e.* by the running time, which excludes that part of the journey time when the vehicle suffers delay.

The delays occurring due to stopping is conveniently recorded by separate stop-watch. Special watches which can accumulate the delay time as the observer operates buttons find convenient for

this purpose. The delays have been measured at the intersection of Doavanga more and Thakurbazar more.

In addition to stoppage delays, the delays in Shahrasti town is caused by the intervention of various factors such as congestion, inadequacy of carriageway width, mixed traffic conditions, parked vehicle and heavy pedestrian flow and such delays are called congestion delays or operational delays. These are rather difficult to measure precisely.

It is observed that, peak period takes on average 30% excess time than off-peak period in Shahrasti Pourashava due to the congestion, narrow road width and improper design of the intersection.

11.2.5 Facilities for Pedestrians

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

11.2.6 Analysis of Existing Deficiencies

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

11.2.6.1 Roadway Capacity Deficiencies

Narrow Road Width

Narrow widths of roads and poor maintenance have marked by most respondents as major road problems in the town. About 19% of the respondents have pointed to the misery of road movement during monsoon when unpaved roads get muddy. Narrow width of roads is likely to become a major problem of traffic movement when the town grows and density of population increases in future. As field survey shows, 76% of the households of the town reported that the Pucca road widths in front of their houses are 10 ft. or less. This is alarming, as there will be increase in population leading to higher density.

Tortuous Road and Missing Link

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

Traffic Conflict and Congestion

Traffic conflict is common and frequent phenomena in towns where there is admixture of transport vehicles-slow and fast-in the streets. Areas of conflict occur at point where there intensity of traffic movement is high. The consultant studied the traffic movement in all over the town and has identified four main points where the traffic conflict is the highest. These are Doavanga Intersection, Rail crossing, Kaliapara Intersection, Kalibazar Intersection etc. At these points the

slow moving vehicles, like, rickshaw and vans come in conflict with motor vehicles, creating traffic congestion. Besides, bus and CNGs remain standing on these points for long time for boarding and descending of passengers. Upcoming other vehicles do not get required road space to cross the standing vehicles smoothly. For this reason, a sudden but short time jam has occurred. As the number of slow moving vehicles is higher the conflict is usually frequent.

The identified reasons for traffic conflict are,

- too large number of non-motorised traffic,
- disobedience of rules and regulations by operator,
- improper intersection design,
- on street parking of vehicles,
- vehicle operators waiting on the streets looking for passengers, and
- absence of traffic signal, etc.

11.2.6.2 Operational Safety, Signal and other Deficiencies

Like any other Upazila town, Shahrasti Pourashava lacks traffic management system. There is no traffic point and traffic island including road dividers, no signal posts. There is no traffic police. So the traffic operation and road safety are yet to become important traffic issues.

11.2.7 Condition of Rail/Water/Air Transport

Railway Network

There is one railway network named Meher Railway Station in Shahrasti connecting Comilla and Chandpur (about 4.9 km) and there is a possibility to connect Shahrasti Pourashava with the rest of the country by rail network.

Existing Waterway Network

As there is small river named Dakatia River within Shahrasti Pourashava, so there are also some waterway network within Shahrasti Pourashava. There are important canals namely Kaliapara-Doavanga khal, Nijmehar-Dakatia river, Naora-Shuchipara, Ghoshpara-Shuchipara, Thakurbazar-kazir Kap, Thakurbazar-Kajir kamta which passes through the major roads of the town within the Pourashava and which connect the pourashava with Dakatia River and finally connected with Bay of Bengal. It is hearsay that once upon a time these khals were the main trading route of the town which carried the goods and passengers to Hajiganj, Chatkhil, Lakshmipur, Kachua and other surrounding important trading points. Now a day, a part of these khals have encroached by the influential persons of the locality and the rest of the canals have blocked by regular and irresponsible waste dumping. These channels are dead now and the local people reported that ultimately these channels will be sorrow for the town.

Air Transport

There is no air transport facility in Shahrasti.

11.3 Future Projections

11.3.1 Travel Demand Forecasting for Next 20 Years

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

Reviewing different previous planning proposal 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 Shahrasti, which are as follows:

Table 11.1: Geometric design standards of roads proposed by LGED

Road Type	Right of Way (ROW)
Primary School	150-100 feet
Secondary School	100-80 feet
Local School	40-20 feet

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

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

11.3.2 Transportation Network

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

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

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

11.3.3 Future Traffic Volume and Level of Service

The Pourashava has 8.84 km of major roads within the town owned and maintained by Roads and Highway Department. Present population of the Pourashava is 32756 (2011) and after 20 years it will be 55482 (2031). Highest PCU is 167 in Chandpur-Comilla road. The scenario proves that traffic congestion will not be that alarming. The highest road width at present is 20 feet (ROW) and it will be saturated with the traffic if the PCU/hr. exceeds 1000. It is expected that gradual implementation of the components prescribed in the Master Plan will increase traffic volume.

11.4 Transportation Development Plan

Following are the suggested planning standards for road transport (**Table-11.2**). The standards are meant for use by UTIDP, LGED and other planning and development agencies. The standards have been adopted by the consultants to use in current series of plans.

Table 11.2: Proposal for Road Standard in the Project area

Roads 9-15% of the total built up area		
	Widening	New Construction
Pourashava primary roads	ROW 60-120 ft	ROW of National Highway (NH):150ft; Regional Highway(RH):120ft; Zila Road:80-100ft; As the requirement of RHD
Pourashava secondary roads	ROW 30-40 ft	60ft, 40ft, Upazila Road of LGED
Tertiary Road	ROW 25 ft	40ft, 30ft, Union Road of LGED
Access Road/ Local Road	ROW 20ft	25ft, 20ft, Village Road of LGED

Neighborhood and Local Road

All neighborhoods (mahallah) Road ROW may be in between 20 ft. to 40 ft wide depending on their functions.

Standard Road Design

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

Functions of Roads

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

11.4.1 Plan for Road Network Development**11.4.1.1 Road Network Plan**

Three major roads coming from three different directions and meet together at the zero point or near Shahrasti Bazar. A major road (Chandpur-Comolla Road) passes through Doavanga point connecting Chandpur (at west side) and Comilla (at east side). In transportation plan this road will be proposed to widen into 80 feet. This road divides the Pourashava into two parts. The Kalibari roads connect Ramganj from north to south; Kachua road comes from north direction and connect Chandpur-Comilla road at Kaliapara Bazar Point. All the roads meet together at zero point of the town. Apart from major roads, large number of local roads having width varying from 10 ft. to 20 ft. width, give access to individual houses and establishments and connect them to major roads. Kalibari road is crossing the major growth point of Shahrasti. This is the most builtup point of Shahrasti and most densified and highrise structures are situated along this road. Therefore road intersection has not properly designed which causes serious traffic congestion. In the plan this road is proposed to be widened upto 60 feet in future. An outer circular bypass road (ROW 60 feet) is proposed which will minimize traffic congestion in Doavanga Point, Kalia Bazar Point, Kalibari Bazar Point for through traffic. Details of proposed major new roads and widening of roads is

presented in **table 11.3** while a detailed road inventory (proposed) has been enclosed in **ANNEXURE- B. Map-11.1** shows the proposed and existing road network of Shahrasti Pourashava.

Table 11.3: Details of Road Plan Proposal in Shahrasti Pourashava

Road ID	Road Name	Road Type	RoW (Feet)	Road Proposal	Phasing	Length (Meter)
W90		Primary Road	80	Widening	Phase 01	872.38
W99	Comilla to Chandpur Road	Primary Road	80	Widening	Phase 01	4565.29
N100		Primary Road	60	New Road	Phase 03	4543.13
N101		Primary Road	60	New Road	Phase 01	1322.16
N104		Primary Road	60	New Road	Phase 03	3035.65
N105		Primary Road	60	New Road	Phase 03	2345.56
W1	Sikitia Road	Primary Road	60	Widening	Phase 03	1565.18
W6		Primary Road	60	Widening	Phase 01	1147.97
W102	Kalibari Road	Primary Road	60	Widening	Phase 01	1353.57
W41	Kajir Kap Road	Secondary Road	40	Widening	Phase 01	1066.89
W54		Secondary Road	40	Widening	Phase 01	343.49
W154	Saheb Bazar Road	Secondary Road	40	Widening	Phase 01	1399.91
N115		Secondary Road	30	New Road	Phase 03	1036.81
N148		Secondary Road	30	New Road	Phase 02	841.49
N186		Secondary Road	30	New Road	Phase 02	4051.77
N187		Secondary Road	30	New Road	Phase 02	1681.38
N188		Secondary Road	30	New Road	Phase 02	1698.36
W2	Doavanga To Shuchi Para	Secondary Road	30	Widening	Phase 02	1448.71
W7		Secondary Road	30	Widening	Phase 02	930.11
W12		Secondary Road	30	Widening	Phase 03	646.10
W14		Secondary Road	30	Widening	Phase 02	818.95
W15	Shahrasti Majar Road	Secondary Road	30	Widening	Phase 02	1605.53
W16	Bhattola Road	Secondary Road	30	Widening	Phase 03	663.56
W18	Kalibari Road	Secondary Road	30	Widening	Phase 02	1394.09
W19		Secondary Road	30	Widening	Phase 03	742.66
W21	Ghosh Para Road	Secondary Road	30	Widening	Phase 02	616.35
W22		Secondary Road	30	Widening	Phase 03	338.03
W24		Secondary Road	30	Widening	Phase 02	173.05
W27		Secondary Road	30	Widening	Phase 02	162.42
W29		Secondary Road	30	Widening	Phase 02	142.38
W30		Secondary Road	30	Widening	Phase 02	193.12
W34		Secondary Road	30	Widening	Phase 01	151.05
W36		Secondary Road	30	Widening	Phase 02	212.11
W37		Secondary Road	30	Widening	Phase 01	355.06
W38		Secondary Road	30	Widening	Phase 02	110.50
W49		Secondary Road	30	Widening	Phase 03	547.79
W50		Secondary Road	30	Widening	Phase 01	109.00
W55		Secondary Road	30	Widening	Phase 01	451.41
W65		Secondary Road	30	Widening	Phase 03	1299.57
W71		Secondary Road	30	Widening	Phase 01	279.47
W74		Secondary Road	30	Widening	Phase 01	226.26
W78	Solder Md Abdul Huq Road	Secondary Road	30	Widening	Phase 01	842.05

Road ID	Road Name	Road Type	RoW (Feet)	Road Proposal	Phasing	Length (Meter)
W80		Secondary Road	30	Widening	Phase 01	138.24
W82		Secondary Road	30	Widening	Phase 01	147.14
W113		Secondary Road	30	Widening	Phase 02	223.15
W156	Kajir Kap Road	Secondary Road	30	Widening	Phase 02	393.64
W158	Doavanga To Shuchi Para	Secondary Road	30	Widening	Phase 02	469.63
W159	Shahrasti Majar Road	Secondary Road	30	Widening	Phase 02	62.83
W189		Secondary Road	30	Widening	Phase 03	607.50
W190	Solder Md Abdul Huq Road	Secondary Road	30	Widening	Phase 01	759.08

Pourashava Primary Road

Chandpur-Comilla road, Kalibari road, are proposed as Primary road and widened upto 60 and 80 feet in phase 01 and 03. A new bypass road (proposed width 60 feet) is proposed to minimize the traffic congestion near Doavanga Point, Kalibari Bazar point. It will be started from Chandpur-Comilla road and connect with Kalibari road. Total length of primary road is 20.75 km with 60 - 80 ft RoW. Total 9.51 km primary road need to be widened up to RoW 80 feet and the rest 11.25 km primary road will be newly constructed up to RoW 60 feet within the Pourashava. **Figure 11.1** shows the layout design of primary road with 80ft RoW and **Figure 11.2** shows the layout design of primary road with 60ft RoW.

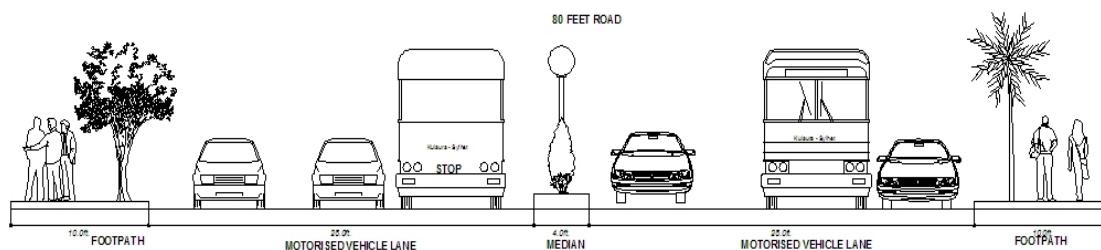


Figure 11.1: Primary Road with 80 ft RoW

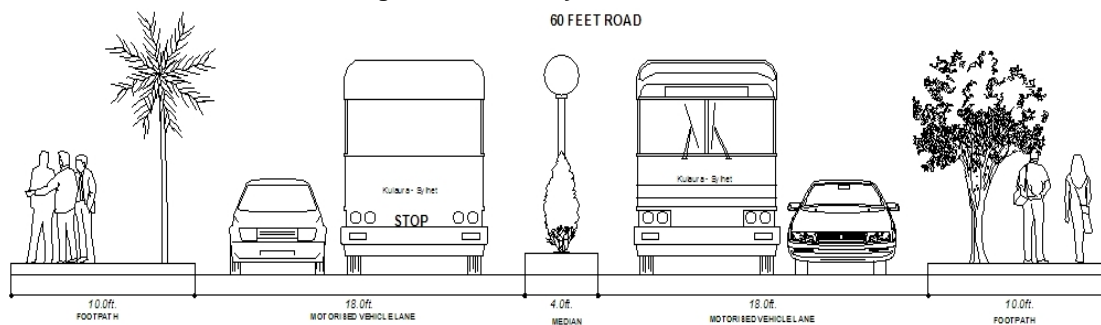


Figure 11.2: Primary Road with 60 ft RoW

Pourashava Secondary Road

Total secondary road is 29.38 km with 40/30 ft RoW in whole project area. 9.31 km secondary road of RoW 40/30 feet will be newly constructed during the project period and rest 20.07 km secondary road will be widened. **Figure 11.3** shows the layout design of secondary road with 40 ft RoW.

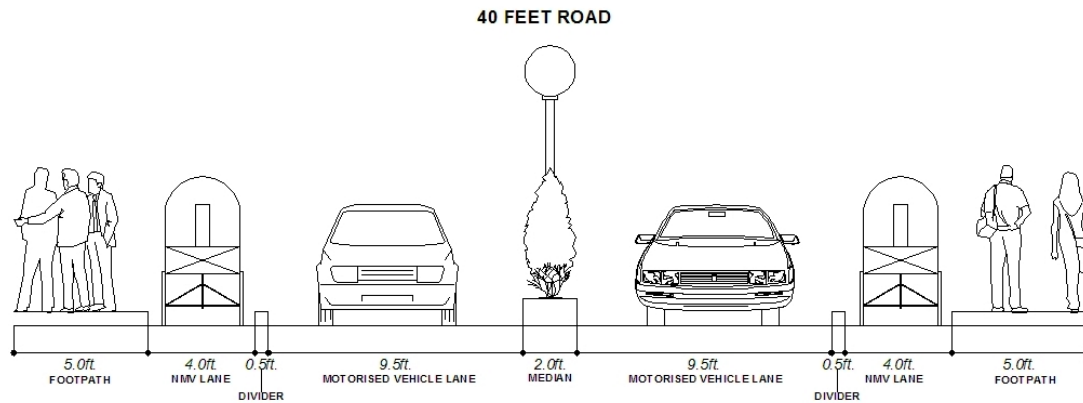


Figure 11.3: Secondary Road with 40 ft RoW.

Pourashava Tertiary Road/ Access Road

Total tertiary road is 59.23 km within the project area with 20 ft RoW. Due to the natural barriers and important establishments the width is not possible widening more than 20 ft RoW. A total of 28.72 km. tertiary road are newly proposed and the rest 30.52 km. tertiary road will be developed as widening road within the Pourashava. **Figure 11.4** shows the layout design of tertiary road with 20 ft RoW.

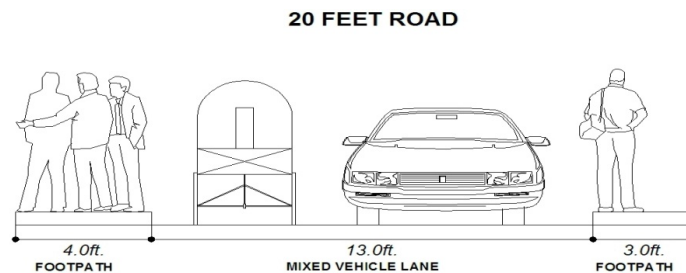


Figure 11.4: Access/Local Road with 20 ft RoW.

Pourashava Others Road

Others existing roads in Shahrasti Pourashava (smaller than 20 feet ROW) will be developed gradually upto 20 feet ROW considering the demand and potentiality of widening.

11.4.1.2 Proposal for Improvement of the Existing Road Networks

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

Alternative cross-sections for the primary road is –

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

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

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

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

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

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

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

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

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

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

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

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

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

No **non-road related development** will be permitted within the road reserve. For new roads which will not be constructed in the foreseeable future, agricultural use of the reserve will be permitted until such times as the road is constructed. No permanent or temporary structure will be permitted. In general, **no direct access** will be permitted onto the main carriageways (of secondary roads) with access gained only at controlled junctions. Occasionally, due to existing situations, access from a side road may be entertained. The number of junctions should be minimized with desired spacing being at 200 meter intervals. Again, this may vary according to necessity but where deviation from this desired spacing is necessary, the deviation should be small. Junctions will be in the form of roundabouts or traffic lights.

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

Functions of the **tertiary road** are:

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

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

No development will be permitted within the 18 meter reserve.

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

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

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

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

Most of the road in Shahrasti Pourashava is very narrow and it creates transportation problem. To improve this situation 60.09 km road is proposed for widening in the road network plan. The highest 30.52 km (50.78%) road is proposed for widening upto 20 feet. Then 17.26 km (28.72%) road is proposed for widening upto 30 feet which will function as secondary road. Widening proposal for primary road is 80 feet (9.05%) and 60 feet (6.77%).

Table 11.4: Summary of road widening in Shahrasti Pourashava

Road Type	RoW (in ft)	Length (in meter)	Length (in km)	Percentage
Primary Road	80	5437.67	5.44	9.05
	60	4066.73	4.07	6.77
Secondary Road	40	2810.29	2.81	4.68
	30	17260.56	17.26	28.72
Tertiary Road	20	30516.73	30.52	50.78
Total		60091.98	60.09	100.00

11.4.1.3 Proposals for new roads

To improve existing transportation system a total of 49.27 km new road of different width has been proposed within the entire project area in the transport development plan. The highest 28.72 km (58.28%) tertiary new road is proposed with 20 ft right of way (RoW), which will function as access road/local road. Then 11.25 km (22.83%) new road is proposed with 60 ft RoW, which will function as Primary road and 9.31 km. (18.89%) new road is proposed as secondary road with 30 ft width.

Table 11.5 shows the summary of new road proposal.

Table 11.5: Summary of new road proposal in Shahrasti Pourashava

Road Type	RoW (in ft)	Length (in meter)	Length (in km)	Percentage
Primary Road	60	11246.50	11.25	22.83
Secondary Road	30	9309.82	9.31	18.89
Tertiary Road	20	28715.48	28.72	58.28
Total		49271.80	49.27	100.00

11.4.2 Plan for Transportation Facilities

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

11.4.2.1 Proposal for Transportation Facilities

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

Table 11.6: Estimation of Land Requirement for Transportation Facilities

Use/Facility	Recommended standard	Estimated Land Requirement (acre)	Existing Land (acre)	Additional Land Requirement by 2031 (acre)
Bus terminal	1 acre /20,000 population	2.77	0	2.77
Truck terminal	0.50 acre /20,000 population	1.39	0	1.39
Railway Terminal	1.0 acre /20,000 population	4	0.4	3.60
Baby taxi/ tempo stand	0.25 acre /one baby taxi/tempo stand	1	0	1
Rickshaw/van	0.25 acre /one baby	1	0	1

Use/Facility	Recommended standard	Estimated Land Requirement (acre)	Existing Land (acre)	Additional Land Requirement by 2031 (acre)
stand	taxi/tempo stand			
Passenger Shed	0.25 acre /one baby taxi/tempo stand	1	0	1
Total		11.16	0.4	10.76

11.4.2.2 Parking and Terminal Facilities

Bus Terminal

There is no formal bus terminal in Shahrasti Pourashava. Generally busses start from Doavanga point and Kaliapara. In transport plan one new bus terminal is proposed at Badia and Shuara mouza (ward no. 2). The area coverage of the terminal is 2.65 acres. This terminal is expected to be able to cater to the need of the town for next 20 years.

Truck Terminal

As a small town, the economic activity is very low in Shahrasti Pourashava. There are only a handful of small scale processing factories including a few saw mills and limited trading activities. So, movement of trucks is extremely negligible here. So, no truck terminal is proposed for the town. In future, if industrial estate developed, a truck terminal can be provided there. A new truck terminal is proposed at ward no. 3.

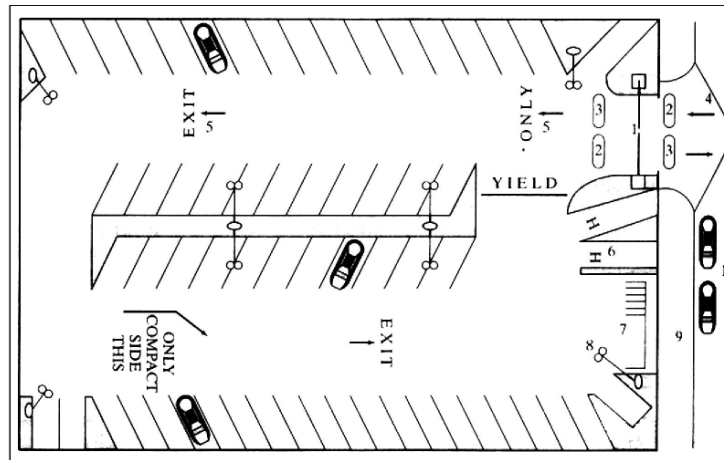


Figure 11.5: Typical Layout of a Bus & Truck Terminal

Bus Stoppage

A bus stop is a designated place where buses stop for passengers to board or disembark a bus. A bus stoppage should be a place for safe passengers as well as free the traffic movement on the road. Usually a bus bay is designed off the main road. The construction of bus stops tends to reflect the level of usage. Stops at busy locations will have bus bay designated along with intersection design.

Parking Facilities

There is hardly any locally owned car in the town but it is likely that there will be a good number of private cars in the near future. So, parking is a necessary requirement for the town at the moment. Therefore, parking space has been suggested in ward no 1 within Housing Estate.

Policies on Managing Parking Demand

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

Policies on Supply of Parking Spaces

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

Policies on Operation and Maintenance of Parking Facilities

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

Policies on Parking Regulation

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

Policies on Enforcement of Regulations

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

Policies on Institutional Setup and Capacity Building

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

Policies on Supportive Legislations

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

Flexibility

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

Design consideration:**Off-Street Parking & Loading: Intent**

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

Off-Street Parking Requirements

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

General Parking Requirements**Occupancy Class**

Residential

Educational

Institutional/Health Care

Business & Mercantile

Industrial

Storage

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

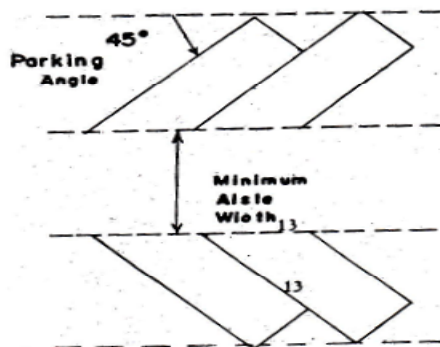


Figure 11.6: Parking Angle and Minimum Aisle Width

Off-Street Loading Requirements

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

- Residential 1 space if 20 units or more
- Institutional/Health Care 1 space if 50 beds for every 300 m²

Parking Requirement

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

Aisle Width

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

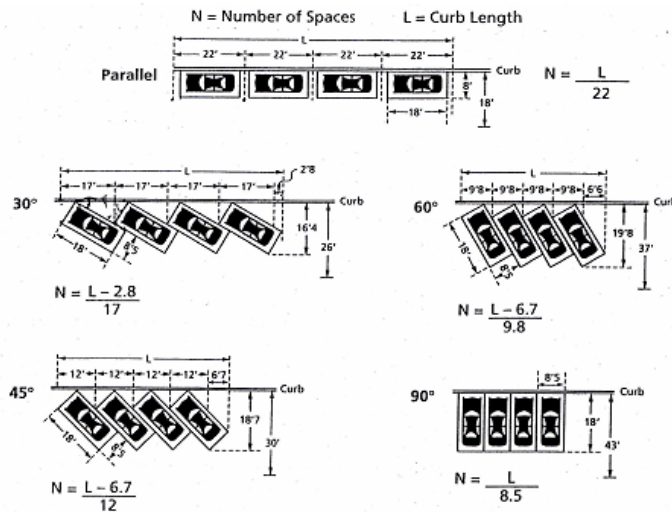
On-street Parking Angle

0°	44°
45°	59°
60°	69°
70°	79°
80°	89°
	90°

- Business & Mercantile 1 space if more than 5,000 m²
- Industrial 1 space for every 300 m²
- Storage 1 space if more than 1,000 m²

Notes:

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

**Figure 11.7: On-Street Space Used for Various Parking Positions****11.4.2.3 Development of Facilities for Pedestrians, Bicycles and Rickshaws****Footpath**

Footpath has been recommended for all the roads (above 20 ft) for safety and ease of pedestrian movement. Due to narrow right of way it is difficult to provide wider footpaths. Width of footpaths will vary between 1.5 m to 2.0 m depending on availability of right of way.

Bicycles and Rickshaws

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

11.4.2.4 Other Transportation Facilities**Improvement Roadway Intersection**

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

Traffic Management

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

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

Signals and Road Marking

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

Road Use Awareness Building

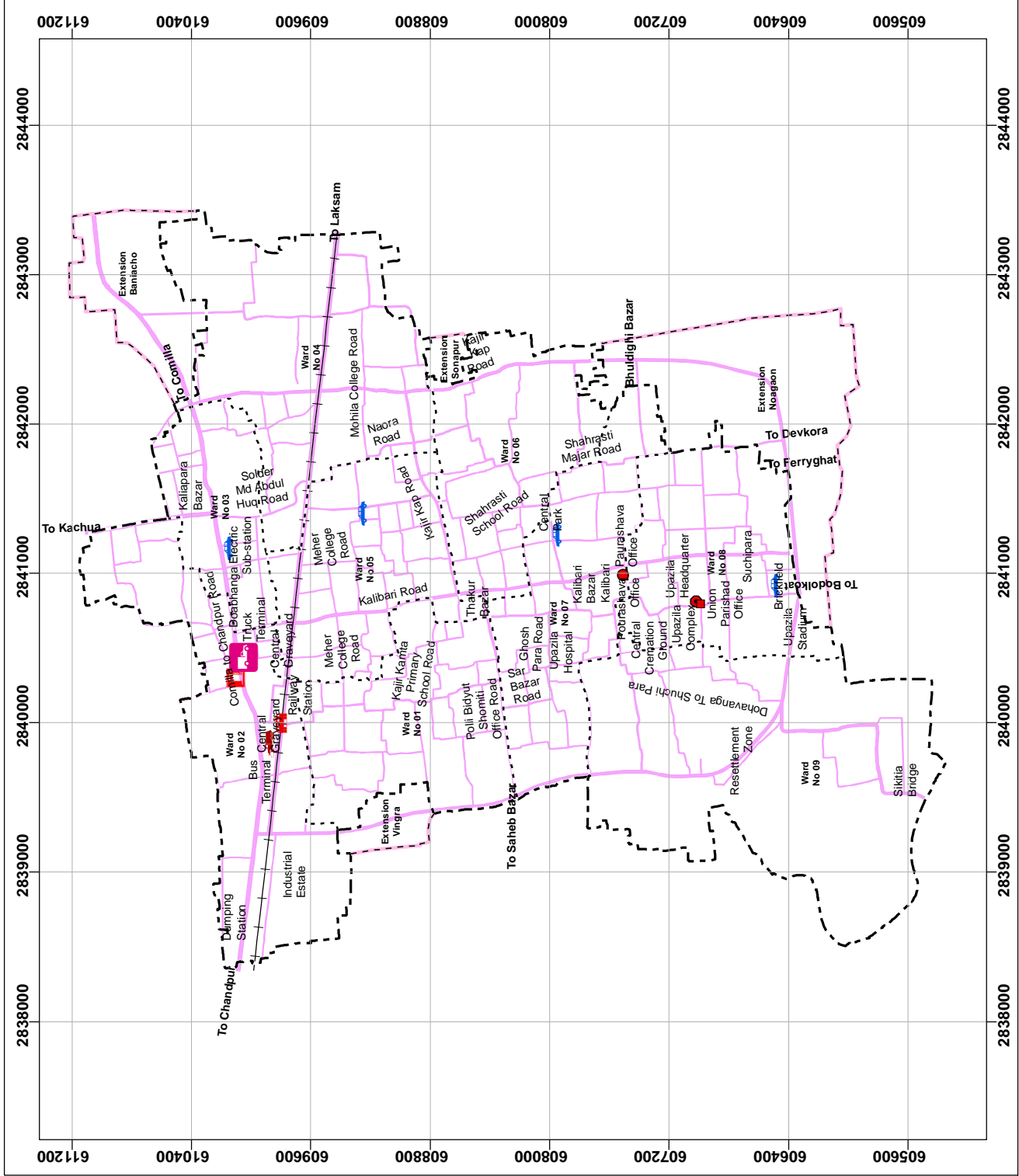
People must be made aware of road use including traffic rules. Drivers of all kinds of vehicles should imparted training on driving and road use. Publicity may be made for pedestrians on road use. Boys scouts and local NGOs can be engaged for this purpose.

Enforcement of Traffic Rules and Regulations

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

Map 11.2

Proposed and existing terminals, stands/stoppages of Shahrasti Pourashava



11.5 Transportation System Management Strategy (TSM)

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

11.5.1 Strategies for Facility Operations

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

Traffic Engineering

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

Parking

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

Roadside Interference

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

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

11.5.2 Strategies for Traffic Flow and Safety

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

Road Safety Initiatives

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

Traffic Law Enforcement

Traffic law enforcement is needed to encourage safer road use and orderly traffic flow. Enforcement of various regulations, such as speed limits, use of seat belts, wearing of motorcycle safety helmets etc. have led to reductions of associated deaths and injuries in many countries.

Effective enforcement of traffic regulations require training of the traffic police force in many traffic related areas, including incident investigation, highway patrolling, motorcycle riding and car driving and management skills. Traffic rules and regulations should be strictly enforced for all. Provision of instant fine for violations may be introduced.

Driver Training and Testing

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

Education and Publicity

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

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

Vehicle Safety

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

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

Medical Services

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

facilities and rehabilitation services are inadequately equipped to provide needed medical attention.

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

Information and Data

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

11.5.3 Strategies for Traffic Management

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

11.6 Plan Implementation

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

11.6.1 Regulations to Implement the Transportation Plan

Following regulations will be needed for implementation of the plan.

Public Roads Act, 2004: Objectives of the Public Roads Act, 2004 is prescribed in the section 2.

Those objectives are to:

- a) establish ownership and responsibilities for roads;
- b) establish the framework for managing the road network;
- c) establish general principles for road management;
- d) provide for general design and planning principles for roads;
- e) confer powers and responsibilities on road authorities;
- f) commit road authorities to provide and maintain safe roads, and to do so using resources efficiently;
- g) provide for the establishment and classification of public roads;
- h) provide for data bases of public roads, and public access to them;
- i) set out rights and duties of road users;
- j) control activities on roads;
- k) make special provision for restriction on access to roads;
- l) identify characteristics of new road types;
- m) provide a legal framework for private sector participation in road construction, operation and maintenance, including tolling of roads;
- n) establish defenses for civil liabilities; and
- o) create offences and provide for penalties.

Section 5 has defined public roads as-

- 1) The Government may declare a public road.
- 2) The declaration may be made in relation to land, whether or not it is currently used for passage by members of the public.
- 3) In the declaration, the Government shall classify the public road as:
 - i. a national road;
 - ii. a regional road;
 - iii. a Zila road;
 - iv. an urban road;
 - v. an Upazila road;
 - vi. a union road;
 - vii. a village road.

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

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

The Pourashava may, in communication with the RHD and LGED and with the prime approval from the Government may enforce the regulations as mentioned above. Again, some of the

relevant regulations of developed countries may be enforced by the appropriate authority for the betterment of accessibility, road safety and road management. In connection with this concept,

Highways Act of England and Wales may be followed.

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

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

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

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

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

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

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

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

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

11.6.2 Implementation, Monitoring, Evaluation and Coordination of the Plan

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

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

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

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

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

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

Implementation by Facilitating Private Investment: *Another approach that would be taken by government toward plan implementation will be to guide and facilitate investments made by the private sector. Government can achieve this with relative ease and at very low cost by setting up a legal and operational framework, coupled with suitable incentives, to facilitate land consolidation,*

plot boundary readjustment, efficient lay out of plots and provision of local infrastructure by the private sector. The benefits of this approach would be:

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

Plan Monitoring

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

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

Evaluation

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

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

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

Co-ordination

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

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

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

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

Chapter Twelve

Drainage and Environmental Management Plan

A. DRAINAGE PLAN

12.0 Introduction

Chapter 12 of the planning report states about the development plan proposals made for drainage and environment. The Chapter is divided into two parts-drainage and environment. In each part this report moves with goals and objectives followed by evaluation of existing conditions and after that development proposals have been set for each component.

12.1 Objectives

Objective of the Drainage Master Plan are following:

Firstly, to find out the present condition of all categories of drains including main and secondary drains and natural streams.

Secondly, to find out level of encroachment over drainage reservations which are responsible for flooding, water logging during heavy rains;

Thirdly, to find out, the existing roadside drainage pattern including capacity and gradients.

Since planned development of Pourashava is very much desirable, Drainage Master Plan is necessary to ensure operation and maintenance of the present drainage facilities including development proposal for future. For this, both short and long term improvement plan involving area based drainage master plan is necessary to ensure proper drainage of the Pourashava.

12.1.1 Methodology and Approach to Planning

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

Urban development should start with drains. Drains can be classified as Plot drains, Block drains, Tertiary drains, Secondary drains and Primary drains. Other natural drainage infrastructure is lowland, outfall areas, khals and rivers. Man-made drains are Plot, Block, Tertiary, Secondary and Primary drains and others are natural drainage infrastructures. In planning for drainage network, care has given on road network in terms of conflict of drainage and waterways with roads.

12.2 Existing of Drainage Network

This section of the report gives an overview of the present conditions of the drainage system in Shahrasti Pourashava.

12.2.1 Existing Drainage System/Network

12.2.1.1 Man Made Drainage System in Shahrasti Pourashava

Pourashava is responsible for drainage management including their construction and maintenance. There is no hierarchical drainage network in Shahrasti Pourashava. The drainage system can be classified into two parts- natural and man-made. **Natural Drainage** system comprising the natural khals that fall into nearby or far off rivers. These serve as primary drains used, both, for carrying storm run-off as well as waste water of the town. The other is the **Man-made Drainage** systems that are of lower hierarchy. These drains have been developed by the Pourashava to drain out the domestic waste water and storm water from the urban area. Following is the picture of man-made drainage system in the Pourashava.

- Length of constructed drainage system

Pucca	: 2.76 km
Katcha	: 1.20 km

Shahrasti Pourashava has a limited length of drainage. The physical feature survey identified that pourashava has so far constructed 3.96 kms of drains of secondary and tertiary category, of which 1.20 km are katcha and only 2.76 km are pucca. According to Pourashava sources, total length of Pourashava drains is about 4.03 km where 3.50 km katcha drains, 1.50 km RCC drains.

12.2.1.2 Natural Drainage System in Shahrasti Pourashava

Natural Drainage system comprising the natural khals, fall into nearby or far off rivers. Natural canals act as primary drain and drain out all storm and domestic waste water which finally thrown to River. Existing natural khals act as local outfalls and sometimes large ponds and ditches also act as the local outfalls of the existing available drains.

- Number of ponds/ditches : 1409 Area : 463.78 Acres
- Natural drainage system : 38.88 km Area : 65.72 Acres

In addition, there is also 1409 numbers of ponds and ditches covering an area of 463 acres. These serve as storage and retention area for storm water during monsoon. But unplanned spatial development activities and rapid growth of settlements due to rapid population growth is causing encroachment on natural water reservoirs, water courses and natural drainage paths, reducing retention basins and drainage capacity. Poor drainage capacity of the existing khals and water bodies cause long-lasting drainage congestion in inland areas and cause inconvenience to inhabitants.

12.2.1.3 Problems of Drainage

The existing drainage network is beset with problems, like,

- tertiary drainage system without link at many places,
- drainage system developed without developed without proper calculation of peak hour run off discharge;

- broken drains at many place due to lack of regular maintenance,
- clogged drains due to disposal of solid waste,
- encroachment of natural drainage system.

The proposed drainage development plan tries to address all the above problems of drainage. The condition of drainage service in the Pourashava Centre is very much dismal. These drains are not properly connected. The result is pool of stagnant water found almost everywhere during heavy rains. Few pucca drains are there in the Pourashava Headquarters, especially adjacent of Bazar area and zero point to Upazila Health Complex. Katcha drains do exist and constitute a significant proportion of the total drainage length. During the concentrated heavy rainfall the effect of inadequate drainage become visible.

Shahrasti Pourashava suffers from the shortfall of funding to provide sufficient drainage system as well as its proper operation and maintenance. Contractual staffs are engaged in its conservancy division for street sweeping, solid waste collection, cleaning and maintenance of drainage system. But due to the lack of equipments they are unable to do cleaning and maintenance. Negligence of duties/responsibilities of staff is another major problem for the drainage system

12.2.1.4 Opportunities of Resolving Drainage Problems

According to the Terms of Reference (ToR) of the project, it is mandatory to provide drainage master plan with RoW of drainage for the entire Pourashava to resolve drainage problem. Besides, there is no road hierarchy, but it is mandatory to provide road hierarchy as per ToR and there is opportunity to provide drainage proposals along with the road alignment. Shahrasti is not a vastly built-up area, so it is possible to provide drainage along with the RoW of roads. Natural khals are indicated in the mouza maps and it is possible to re-cover those khals with their actual area. So, it is very much possible to prepare appropriate primary drainage plan because the master plan will be prepared based on mouza maps.

12.2.2 Appraisal of Local Topography

The study area is mainly medium highland excepting some low lying strips including canals. A small part of it is urbanized with scattered clusters. Generally much of the pourashava area is under agricultural area characterized by crop production. Survey has conducted to measure the elevation of the existing road network, khal, drainage channel (no embankment or dyke in the study area. It is found that usually road levels are not very high than the surrounding area except Hospital road through passing through the heart of Shahrasti. The height of the road varies from 1 meter to 3 meter compared to the adjacent lands.

Through topographic survey land level/spot heights were taken at 50m intervals. By this time 1651 numbers of spot heights were taken out of which 1561 spots are within the Pourashava. The contour map prepared through land level survey shows; nearly 100% of the study area has an average RL of 5.99 m. These areas are free from normal flooding. Only minor water logging occurred during the rainy season that does not stay for long.

The lowest spot height is +3.46 mPWD (Ward No. 2) and the highest spot height is +7.46 mPWD (Ward No. 8) are found in the study area. Average land height of the project area is + 5.99 mPWD. It was observed that maximum parts of total area are on the average height elevation. Main

activities of the Pourashava are concentrated at the central part of higher elevation. The elevation of the Major roads network such as Chandpur-Comilla Road, Shahrasti-Kachua Road, Shahrasti-Bodolcok Road and Shahrasti-Saheb Bazar Road are same as mean elevation. The number of spots covered in each ward with minimum height, maximum height, average height and their standard deviation is shown in **Table-12.1**.

Table 12.1: Spot height in the Project Area

Ward No.	Count	Minimum	Maximum	Mean	Standard
Ward 1	122	4.06	7.46	6.04	0.86
Ward 2	196	3.46	7.46	5.82	1.07
Ward 3	84	3.54	7.46	6.27	0.88
Ward 4	230	3.51	7.14	5.32	0.84
Ward 5	164	4.53	7.46	6.20	0.68
Ward 6	138	3.51	7.46	5.95	0.92
Ward 7	155	4.46	7.46	6.44	0.79
Ward 8	149	3.96	7.46	6.38	0.99
Ward 9	323	3.73	7.07	5.47	0.88
	1561	3.86	7.38	5.99	0.88

Source: Topographic Survey, 2010

A contour map for Shahrasti Pourashava at 0.30m vertical interval was drawn using the spot levels surveyed roughly at 50m interval. It was observed that maximum parts of total area are on the average height elevation. It was observed that maximum parts of total area are on the average height elevation. Main activities of the Pourashava are concentrated at the central part of higher elevation. The elevation of the Major roads network such as Chandpur-Comilla Road, Shahrasti-Kachua Road, Shahrasti-Bodolcok Road and Shahrasti-Saheb Bazar Road are same as mean elevation. From Map 3.1, it has been appeared that a major portion of ward 2, 4 & 9 and part of ward 1, 3, 5, 6 and 8 are below the mean elevation having mostly agricultural land and act as flood plain, during monsoon flood. Other areas are moderate elevation having flat topography where almost all settlements/homestead are concentrated. Topographic map of Shahrasti Pourashava has been shown in the following **Map- 12.1**.

Table 12.2: Percent Distribution of Spot Level according to the Defined Height Interval (excluding Canal)

Spot Interval m PWD	Spot Number (Frequency)	Percentage
Up to 3.50	2	0.13
3.51 – 4.00	46	2.95
4.01 – 4.50	106	6.79
4.51 – 5.00	228	14.61
5.01 – 5.50	190	12.17
5.51 – 6.00	298	19.09
6.01- 6.50	200	12.81
6.51 – 7.00	322	20.63
7.00+	169	10.83
Total	1561	100

Source: Topographic Survey, 2010

From **Map 12.1**, In this connection ward no. 5, 6, 7 and part of ward no. 2, 4 and 9 are having higher elevation (above the mean elevation, 5.71m). Characteristics of contour in this core area are dispersed and less in numbers except some areas having higher number of contours (water bodies like ponds, rivers, etc.). In reverse, part of ward no. 2, 4 and 9 are having less elevation and considered as the hinterland compared with the other parts of the pourashava. Maximum areas of these wards have remained equal to their mean spot level.

Table 12.3: Contour derived from the spot elevation

Sl. No.	Spot Unit	Value
1	Total Contour Number	Count: 530
2	Mean (Meter)	Mean: 5.71
3	Maximum Contour Height (Meter)	Maximum: 7.5
4	Minimum Contour Height (Meter)	Minimum: 3.6
5	Standard Deviation	Standard Deviation: 0.98

Source: Topographic Survey, 2010

12.2.3 Demand for Drain

The demand for drainage comes from settlements that exist and those will be developed in future. The drainage system runs along the primary, secondary and tertiary or local roads. The plan has been prepared on mouza maps. There are significant numbers of canals, ditches and large water tanks (Dighi) as shown in the mouza maps and maximum of these water bodies are khas land or state property. But, in most cases, canals and other khas lands are encroached by the influential persons and the people living adjacent to them. These encroached lands will have to be recovered and put to proper use for community benefit.

12.3 Plans for Drainage Management and Flood Control

Management of a drainage system is more difficult than its construction. It requires not only an institutional set up but also huge resources for regular maintenance. The present 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 with sufficient logistics and resources for sound maintenance. For Shahrasti Pourashava with its scanty revenue earnings, 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 for drainage maintenance to go regularly.

12.3.1 Plan for Drainage Network Development

12.3.1.1 Drainage Network Plan

The Pourashava needs a hierarchical drainage system for easy and smooth discharge of storm and waste water. Such drainage shall comprising tertiary, secondary and primary drains. The existing natural khals will serve as primary drains. Here proposal for new drainage have been presented.

Primary Drain

Primary drains are called as the main drains. Primary drains cover larger storm drainage area than tertiary and secondary drains. In ascending order its position is third. Its cross-section is larger than other types; carrying capacity is high and is constructed of brick, cement concrete and

sometimes reinforced concrete. Primary drains may be of earthen structure provided sufficient land is available and land value is low. Contributing drainage water comes from tertiary and secondary drains. Primary drains discharge its drainage water to outfall, natural khal, river or large lowland area/ Beels. Figure /figures below show the typical cross-section of the primary drains:

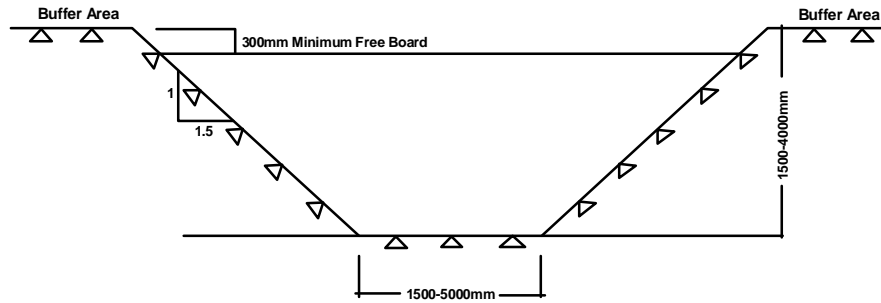


Figure 12.1: Earthen Primary Drain

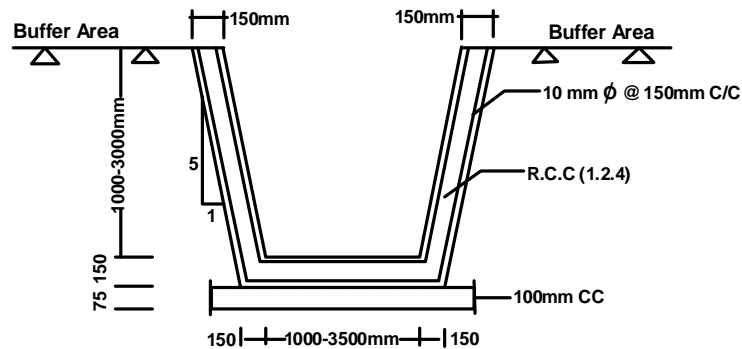


Figure 12.2: Typical RCC Primary Drain

Secondary Drain

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

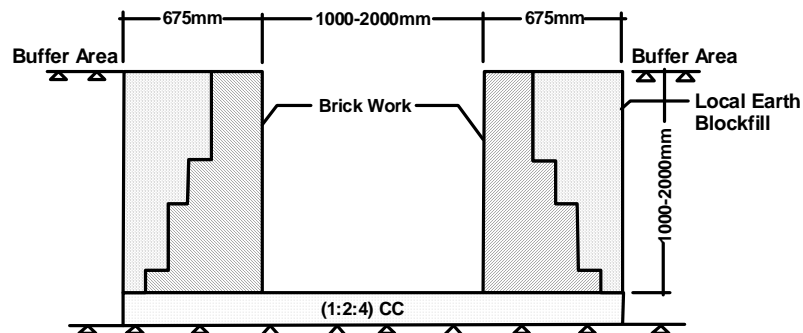
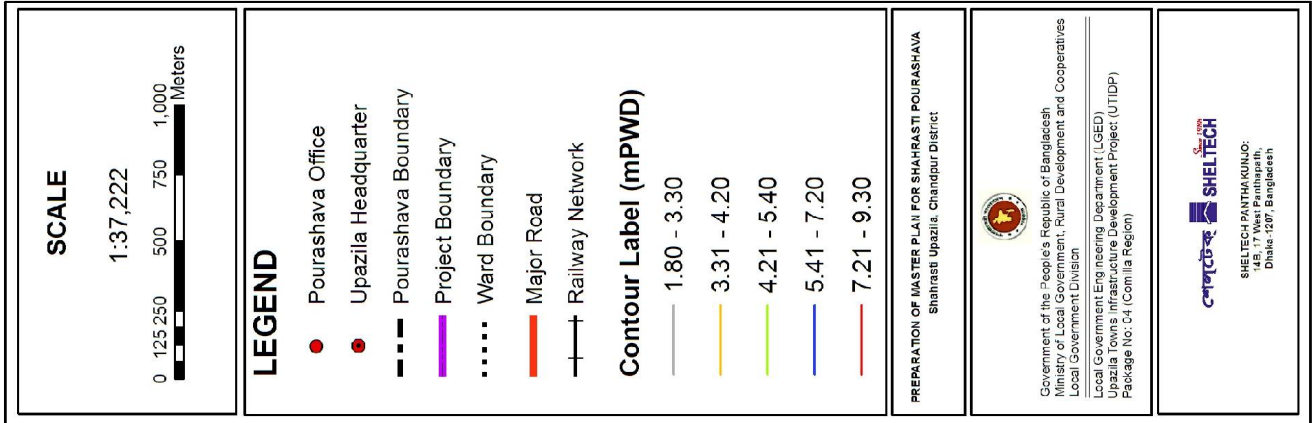


Figure 12.3: A Typical Secondary Drain

Topographic Map of Shahrasti Pourashava



PREPARATION OF MASTER PLAN FOR SHAHRASI POURASHAVA
Shahrasti Upazilla, Chandpur 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: 04 (Comilla Region)



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

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:

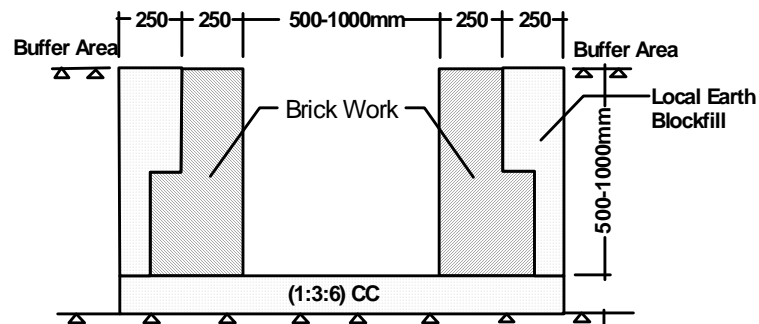


Figure 12.4: A Typical Tertiary Drain

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.

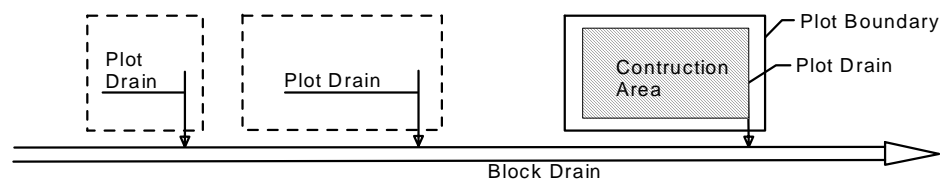


Figure 12.5: Plot and Block Drain

Block Drain

A block drain is provided at the outside of a block that accommodates several buildings of the block. The block drains are made of bricks like plots drains but bigger in size so that it can serve the storm water generated within the block and the buildings and open areas within the block.

Sometimes the block drain may serve few neighboring blocks or Mohallahs. Block drains carry storm water coming from the plot drains. The shape of the block drain is also rectangular, but bigger than plot drains and its bottom is lower than plot drain. The sketch of the plot drain above also shows the block or Mohallah drain under plot drain.

A schematic diagram showing the origin of Primary, Secondary and Tertiary drains and their destinations to the outfall river is presented below.

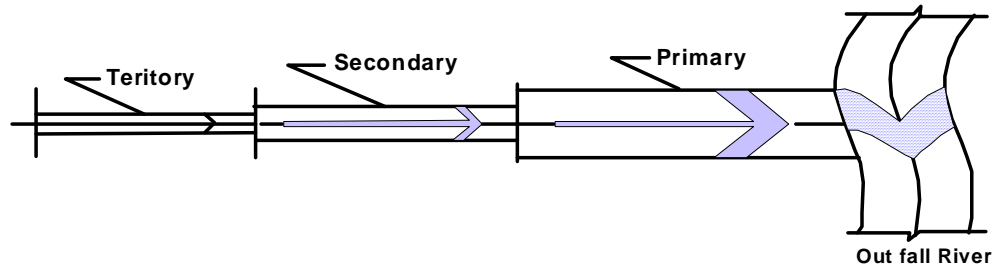


Figure 12.6: A Schematic Diagram showing flow directions from Tertiary drains to Outfall

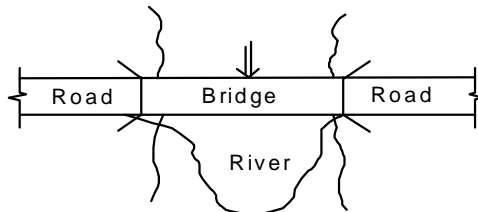
Other Drainage Related Infrastructures

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

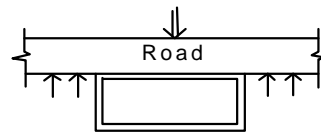
- i. Bridges, culverts, box culverts
- ii. Drainage sluices, pipe sluices, siphons
- iii. Flood protection embankments and flood walls
- iv. Sluice gates, Regulators, Navigation lock
- v. Flood protection and drainage structures.

i) Bridges, Culverts and Box Culverts

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



Definition Sketch Bridge



Definition Sketch Culvert

Figure 12.7: Bridge and Culvert

ii) Drainage sluices, pipe sluices and siphons

Drainage sluices, pipe sluices and siphons are provided on the embankments. Embankments protect the area from floods coming from outside rivers and make the project area flood free. However storm water from rainfall-runoff within the area causes localized flood, drainage congestion and submergence. A sketch below shows a few of such structures.

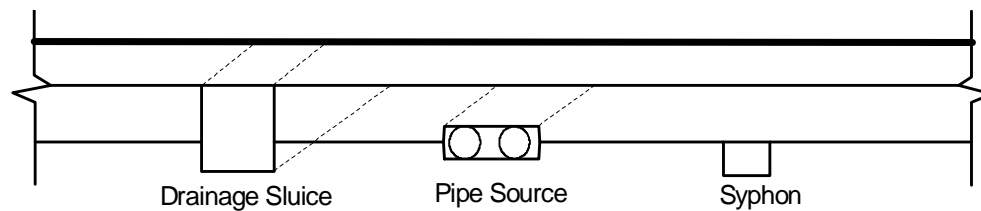


Figure 12.8: A schematic view of Drainage sluice, pipe sluice and syphon on embankment

12.3.1.2 Proposal for Improvement of the Drain Networks

Pourashava has only 3.96 km drainage network. Of these 1.20 km is katcha drain and 2.76 km pucca drain. This drainage network serves mainly Shahrasti Bazar, Upazila Complex and Upazila Hospital road. Based on the results of drainage study the following recommendations are made for improvement of the conditions.

- Rehabilitation of broken drains;
- Cover the open drains based on budget allocation.
- Construction of new channels and rehabilitation of old ones with enough drainage head.
- Removal of all un-authorized structures developed on drainage.
- Regular cleaning and maintenance of drains by the concerned authorities.
- Embarking on a sustained public enlightenment to discourage residents from dumping their refuse into drainage channels.

12.3.1.3 Proposal for New Drains

The 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 proposal for new drains have been made. A detailed drainage network plan is presented in **Map-12.2**.

Tertiary Drain

Tertiary drains are local drains. Tertiary drains connect primary drains through secondary drains. Tertiary drains usually runs along all local secondary/access roads. The total length of newly proposed tertiary drain is 11.44 km. **Annexure-C** shows the proposals of new tertiary drains.

Secondary Drain

Secondary drains collect discharge from tertiary drains and discharge them into primary drains. . Its catchment area is smaller than primary drains, but bigger than tertiary drains. It may run parallel to bigger roads. Secondary drains may run along and through the middle of its storm water contributing area. However, in a built up area it is difficult to have space for such alignment. Therefore, drains are built along roads. In Shahrasti, 74.78 km of new secondary drains have been proposed. **Annexure-C** shows the proposals of new secondary drains.

Primary Drain

Primary drains carry run-off or storm water to the destination from secondary drains. These drains are constructed by brick, cement concrete and sometimes by excavating earth in their alignments. Sometimes borrow pits of the roads serve as primary drains provided borrow pits are uniformly and continuously excavated. Primary drains deliver its discharge usually to the rivers or larger khals. Primary drains may be of earthen structure provided sufficient land is available and land value is

low. Contributing drainage water comes from households and other sources via tertiary and secondary drains. Mainly the existing khals will serve as primary drains. The khals are proposed to be lined up to prevent encroachment and erosion. Lining will also enable easy and quick flow of water during heavy rains. The Pourashava has 38.88 km of khals within the Pourashava, all that will serve as primary drains.

Table 12.4: Length of Different Types of Proposed Drains

Ward No.	Primary Drain (m)	Secondary Drain (m)	Tertiary Drain (m)
Ward No. 1	4670	5730.80	808.81
Ward No. 2	5530	4838.69	1111.39
Ward No. 3	2870	2648.73	1856.87
Ward No. 4	4410	12391.44	0.00
Ward No. 5	3480	8430.49	2603.66
Ward No. 6	1640	7292.13	1447.79
Ward No. 7	5880	11079.90	665.55
Ward No. 8	2770	7988.38	704.09
Ward No. 9	7630	3626.10	2090.12
Total Length (m)	38880	64026.65	11288.27
Total Length (km)	38.88	64.03	11.29

Outfall of Drains

There is no formal outfall of drains in or outside Shahrasti Pourashava. The primary drains mainly discharge storm water to the nearby khals and borrow pits. But these outfalls are not formally designed. Through the physical infrastructure survey and extensive field observation the consultant has identified outlets to the khals that pass like spider web through the Pourashava. Most of the katcha drains are closed ended without any outlet that cause overflows in the road and surroundings. The khals ultimately end up in Dakatia River. For improvement of drainage new local outfalls are proposed to discharge storm and domestic waste water from tertiary drain to secondary drain as well as primary drains or khals.

Drainage Development Phasing

The fund must be made available by the central government to develop the drainage system as per plan. It is beyond the capacity of Pourashava to fund such a huge project from its own resources. It is apprehended that the entire drainage development as per plan would not be possible at a time as it would involve huge expenditure. So it is better to phase out the construction in the following way:

Phase 1: 20.55 km of Secondary Drains

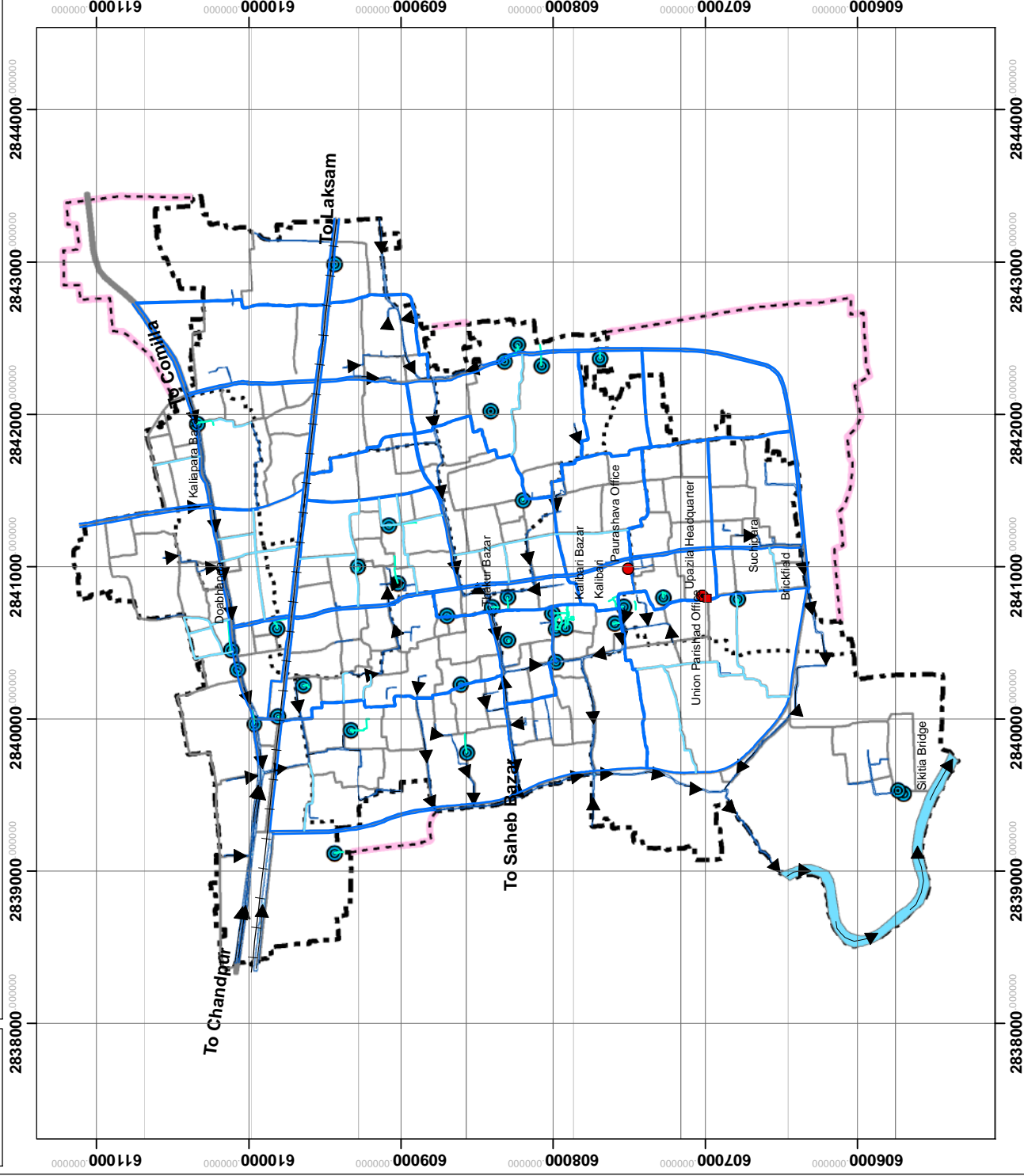
Phase 2: 24.77 km of Secondary Drains, 5.45 km of Tertiary Drains

Phase 3: 18.72 km of Secondary Drains, 5.84 km of Tertiary Drains

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

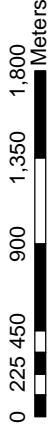
12.3.1.4 List of Infrastructure measures for Drainage and Flood Control Network

Shahrasti Pourashava has a total of 207 numbers of culvert/bridge and three Railway Bridge in the Pourashava cross khal or drain. Those bridges and culverts are located on the irrigation canals and drainage channels. The study area is moderately flood free area. Sudden flash flood is not seen. Water logging is not alarming.



SCALE

1:37,000



LEGEND

- Pourashava Office
- Upazila Headquarter
- Pourashava Boundary
- Ward Boundary
- Extension Area Boundary
- Railway
- Proposed Road Network
- Existing Drain
- Outfall
- Irrigation Canal/Khal

Proposed Drain

- Secondary Drain
- Tertiary Drain

PREPARATION OF MASTER PLAN FOR SHAHRASTI POURASHAVA
Shahrasti Upazila, Chandpur 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. 04 (Comilla Region)



SHELTECH PANTHAKUNJO:
100, Durgam Road,
Dhaka-1207, Bangladesh

12.4 Plan Implementation Strategies

12.4.1 Regulations to implement the Drainage and Flood Plan

For plan implementation the first requirement would be resources mobilisation, which is highly lacking in the Pourashava. Shahrasti is a small Pourashava with very limited holding tax realized. So, the first strategy will be to increase its revenue and non-revenue earning income. The strategy is to build capacity of the 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. The next strategy will be to create awareness among the citizens not to dispose of solid waste in the drains and get them clogged. This can be done by regular publicity, engaging NGOs for motivation and the last by imposing punitive measures like, fine on the waste disposer. The property owner beside the drains should be made responsible to look after the drains in front of his property and made responsible for any clogging.

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

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

12.4.2 Implementation, Monitoring, Evaluation and Coordination of the Plan

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

Objective of a Multi-Sectoral Investment Programme (MSIP) will match a list of the development projects with the funding stream necessary to implement them. There are two basic activities that would determine the contents of MSIP. One activity would be to prioritize and schedule the

investment projects of all public agencies so they will collectively help to achieve the development goals and objectives of the Urban Area Plan. Second activity would be to analyze the source and availability of fund for the prioritized list of development projects.

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

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

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

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

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

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

Plan Monitoring

The Urban Area Plan would simply be tools for guiding and encouraging the growth and development of an urban area in a preferred manner. In a rapidly changing urban environment, the

Urban Area Plan would require to keep up to date. If this is not done, within a few years it will be obsolete. Therefore, it is imperative that the requirement for regular updating of the Urban Area Plan be made a legal requirement.

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

Evaluation

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

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

Co-ordination

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

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

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

B. ENVIRONMENTAL MANAGEMENT PLAN**12.5 Introduction**

In environmental study, a multi-disciplinary approach has been used. In the present study data collection was shared with drainage and geology, transport engineering, socio-economic, and topographical survey components. A structured questionnaire prepared by LGED for environmental survey followed.

12.5.1 Objectives

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

Following are the objectives of environment management:

- a. To create a sustainable living environment.
- b. To create awareness among citizens about livable environment.

12.5.2 Methodology and Approach to Environmental Study

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

12.6 Existing Environmental Conditions

Following is a brief study on the existing environment of Shahrasti Pourashava.

12.6.1 Geo-morphology**Geology**

The Tippera Hills of India that spurs project into, the east of the Noakhali district are of upper primary (Pliocene) formation and generally of a dull reddish colour. Unconsolidated sediments underlie the rest of the district. They are mainly recent and sub recent in age. A major part of the river flood plain sediment was deposited by the old Brahmaputra River that changed its course to the west of the Madhupur Tract. The rest of the sediments were laid down principally by the Meghna River and by minor rivers draining from the Tippera Hills. Silt and clay sized particles predominate in most sediment. The southern part of the district, where the Shahrasti lies, has recent tidal sediments that are mainly silty in nature.

Soil

Almost all soils have young alluvial sediments of recent origin. The soil consist admixture of sand and clay in varying proportions. They occupy very gently undulating topography consisting of broad low flood plain ridges and shallow basins. Most ridge soils are silty, which occur clays in the

basins. The soils are seasonally flooded, mainly by rain water, but all, except a few basins, soils become dry during the summer. The range from olive to dark grey in colour and most are finely mottled, but mainly become acid when dry. Lower layers are mainly neutral to moderately alkaline in reaction with young tidal sediments and soils in the south and south-west are slightly calcareous and some are saline to varying degree. All soils appear to be rich in weather able minerals.

12.6.2 Climate

Lying south of the Tropic of Cancer, the study area enjoys typical tropical monsoon climate with a very high humidity throughout the year. It is distinguished by its heavy rainfall and even temperature. In a year, there are three well marked seasons:

1. Winter from November to February
2. Summer from March to May
3. Rainy season from June to October

But due to climate change the seasons do not always follow the months.

Winter Season

The winter is the most pleasant time of the year. It is then neither too cold nor too hot. Cool light breezes and clear sky prevails. The temperature sharply falls in November and persists till the minimum is reached in January. The mean minimum temperature in January is 12.88°C while the mean maximum is 25.72°C giving a monthly range of -4.94°C. The mean maximum and mean minimum temperature of the season are 29.78°C and 21.38°C respectively. Rainfall during winter is very low and January is the driest month. The prevailing wind of this season is from north-east.

Summer season

In March, the summer begins and continues until May. May is the hottest month with its 84.3°F mean monthly temperature. The mean maximum and the mean minimum seasonal temperature of the study area are 87.9° and 75.7° respectively.

The summer season coincides with the period of nor'-wester thunderstorm, which is locally known as "Kal Baishakhi". As a result there is a marked rise in the rainfall. Rainfall in one storm is usually less than one inch, but sometimes there are heavier showers. An exceptional amount of 20.67" was recorded at Noakhali station on April 30, 1897.

Rainy season or monsoon

With the break of monsoon, which generally occurs in June, the rainy season commences and continues till the end of September or beginning of October. The wind system completely changes its direction during the season. The north-east trade winds disappear and the south-west Monsoon winds start blowing. The south-west Monsoon winds, when crossing the Bay of Bengal pick up moisture from the sea and give heavy rainfall in the district.

12.6.3 Temperature

The normal minimum temperature in the study area lies between 13.5°C to 25.6°C whereas the coldest month is January. On the other hand, the maximum average temperature lies between 25.5°C to 32.3°C whereas the hottest days are of April and May. The following table shows the scenario of normal maximum and normal minimum temperature of the study area.

Table 12.5: Normal average Temperature

Temperature (°C)	JAN	FEB	MAR	APR	MAY	JUNE	JUL	AUG	SEP	OCT	NOV	DEC
Normal Maximum	25.4	27.7	31.2	32.3	32.3	31.1	30.2	30.4	31.1	31.1	29.2	26.0
Normal Minimum	13.5	15.6	19.9	23.3	24.7	25.6	25.4	25.4	25.5	24.4	20.4	15.7

Source: Meteorological Department, Dhaka, 2009 (Data collected at Majdee Court Weather Station, Noakhali)

12.6.4 Humidity

The humidity is very high throughout the year, never falling below 70 per cent. Taking the district as a whole, the annual percentage of humidity is 83.4. Generally the lowest humidity, that is 75 per cent, is recorded in the months of February and April, and the highest, that is 89 per cent, is recorded in July and August.

12.6.5 Rainfall

Rainfall data of Shahrasti Pourashava collected from Weather office and they collect data from district weather station. That is, the rain fall data of Shahrasti Pourashava is represented by that of Chandpur. Highest annual rainfall was occurred in 1999 which was 2621 mm with monthly 218.42 mm rain fall. In this time period lowest rain fall occurred in 2005 which was 1539 mm (except 2008) with average monthly rain fall 128.2 mm. The monthly average rainfall always lies between 30 mm to 220 mm. Mainly, Shahrasti and its surrounding region is rain prone region because of its nearness of the coastal belt. Following **Map-12.3** shows mean annual rainfall (mm) of Bangladesh.

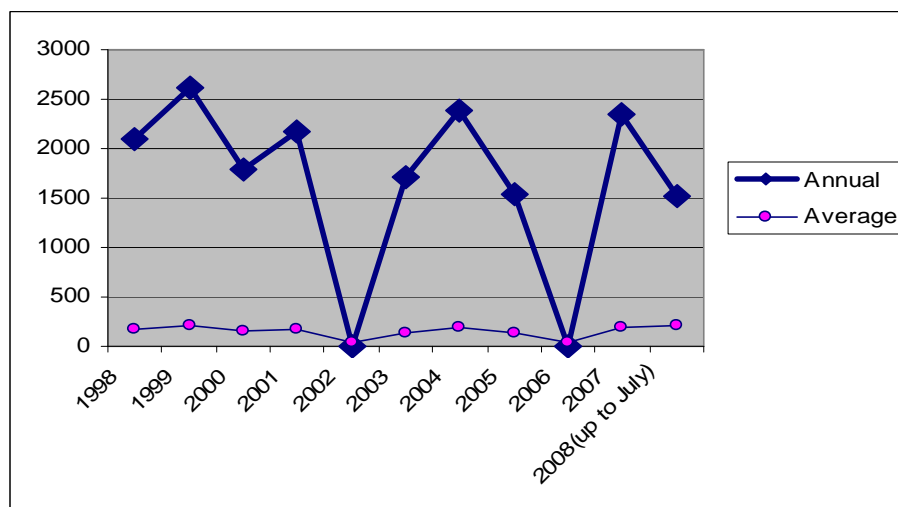


Figure 12.9: Annual and Monthly Average Rainfall Data of Shahrasti Pourashava

12.6.6 Wind Directions

The general direction of the wind is the same as that in the Gangetic Delta: south-west, changing to east for the greater part of the year, with a north and north-west direction during the months of April and May. Nor-westers are caused by outbreaks of cold air from Central Asia which enters Bangladesh from the northwest. Nor-westers occur at the interface between the advancing cold air and warm air already present in the region. The temperature difference across the interface is

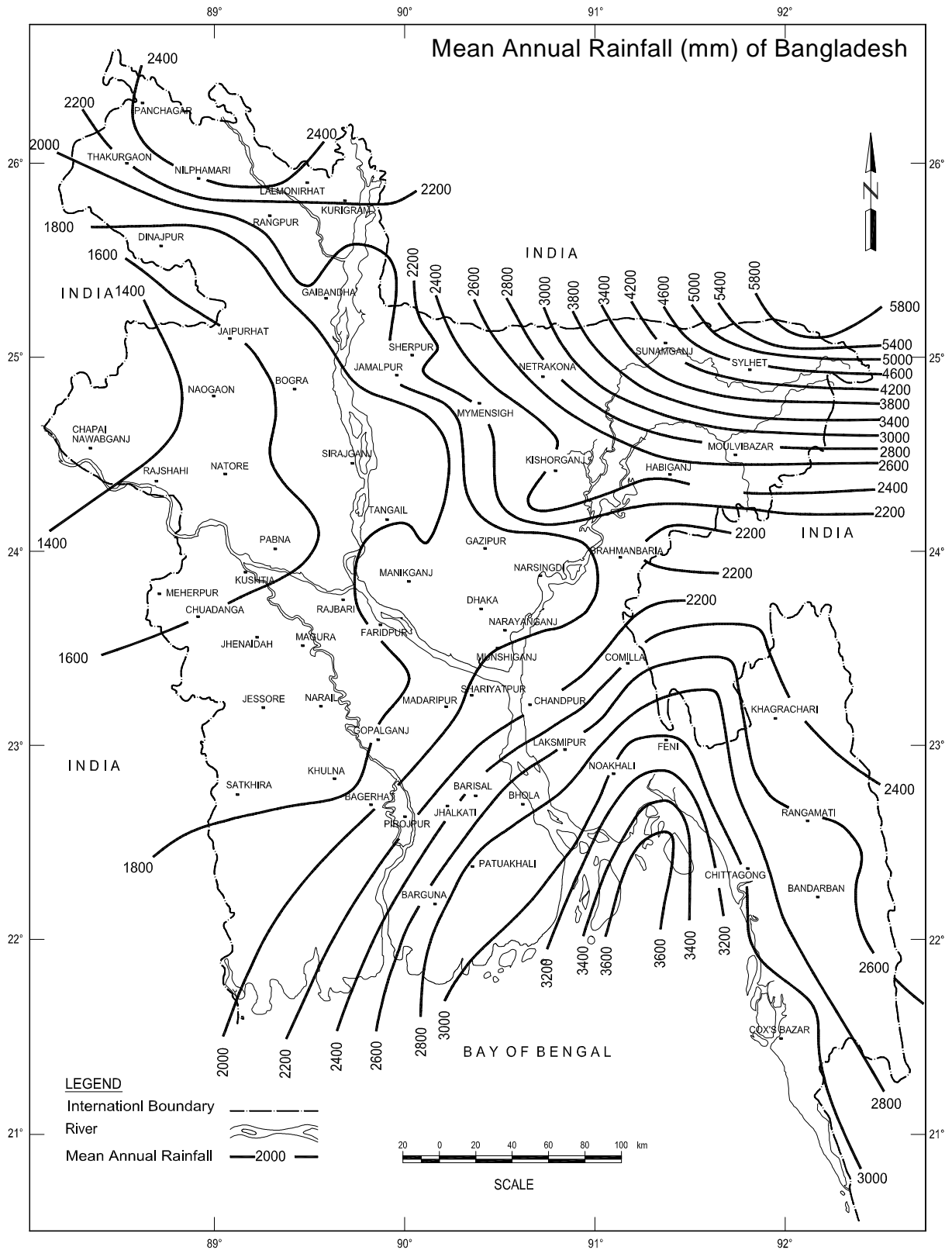
large enough to generate the large scale turbulence which, in turn, generates thunderstorms along the interface. General wind speed throughout Bangladesh is shown in **Map 12.4**.

12.6.7 Hydrology

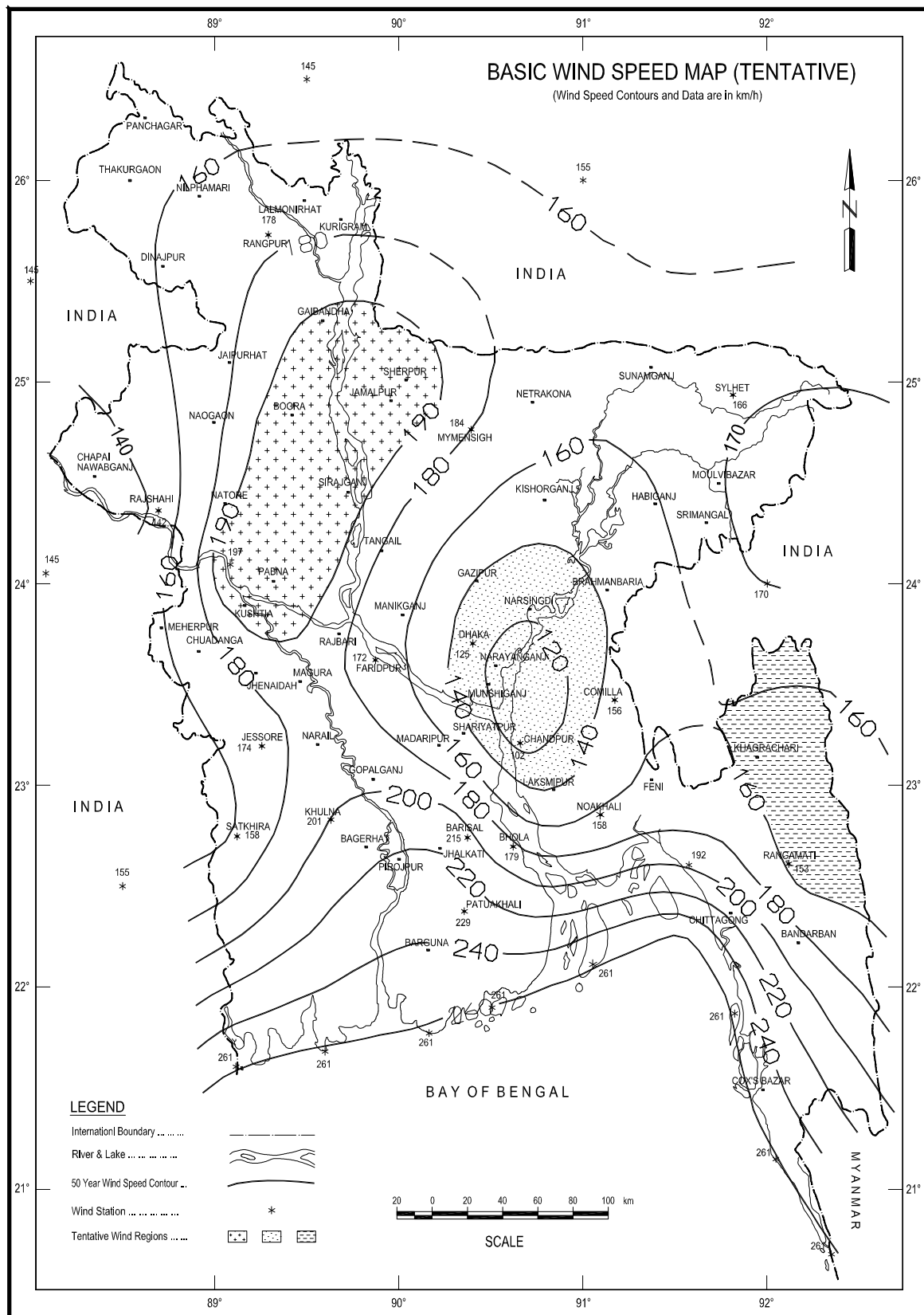
The district of Chandpur is not intersected by so many rivers of Bangladesh. On the west and south of the district and between the islands flows the Meghna with all its bifurcations each of which is much bigger than an ordinary river, and the east is drained by the great *Dakatia* River.

Shahrasti has a significant number of local small khals drainout the storm and other water generated from households and commercial shops. The khals are which acts as the natural drainage of Shahrasti Pourashava and these khals are linked with Bay of Bengal through *Dkatia* River and Meghna River. Most of the portions of the khals have lost their navigability due to sedimentation and narrowing by unauthorized encroachment. In most cases, the situation arose because of the absence of proper look after and management leading to unauthorized encroachment, and unplanned waste dumping. Almost all the khals have changed to ditches and something like 'borrow pit'. Most of the khals are marked in mouza maps and it is possible to reclaim the encroached khal areas for smooth draining of water.

Map- 12.3: Mean Annual Rainfall (mm) of Bangladesh



Map- 12.4: General wind speed throughout Bangladesh



12.6.8 Solid Waste and Garbage Disposal

Household Waste management has not yet been streamlined in the Pourashava. There is no home collection system. People are not used to disposing waste in dustbins that are also very scanty in the town. Households usually dump their waste in nearby ditches or canals. Only a handful of people dump their waste in dustbins. However, as the density of population is very low waste is yet to emerge as a major environmental problem in the area. There is virtually no industry in the town. So, the question of industrial waste does not arise at all.

Kitchen Market Waste is generated from the kitchen markets of the town. Good amount of solid waste is generated from the markets. Due to absence of proper solid waste management system, substantial parts of these wastes find their destination in the local canals. Causing filling of the canals resulting in drainage blockage and water logging.

There is no management system to treat **clinical/ hospital waste** separately. However, there are only a few private and government health facilities in the town. No special arrangement has so far been made for treating clinical waste by the Pourashava. Neither the clinics have their own system of disposing clinical waste. These wastes are disposed of as ordinary solid waste. This system of clinical waste is a threat to human health.

12.6.9 Pollutions**a) Air Pollution**

As Shahrasti Pourashava is one of the most developed areas, many activities are performed inside the Pura area. In the peak period it is very busy. The bazaar and the market place remains very crowded. Lots of motorized transports, like buses, CNGs, tempos are moving here and there. These vehicles are polluting the air largely. There is one brick field situated besides the Dohvanga-Suchipara road and at the south side (ward no 08) of the project area. From this field large amount of effluent are emitting in regular basis. The area of this surrounding region is contaminating in large extent. Besides, there are a few brickfields nearer to the pourashava area which also have a significant influence to this pourashava. In some places poultry/livestock farming is observed. They also cause air pollution.

b) Noise Pollution

Particular areas adjacent to the main road have some noise pollution created by movement of heavy vehicles near zero point, Kalibazar Bazar, Thakur bazaar area. The town is, however, free from heavy traffic congestion.

c) Water Pollution

There are ponds almost in every house and the institutions. The number of ponds is approximately 1409 and which serve as important sources of water supply for the local inhabitants. There are five or six canals namely Kaliapara-Doavanga khal, Nijmehar-Dakatia river, Naora-Shuchipara, Ghoshpara-Shuchipara, Thakurbazar-kazir Kap, Thakurbazar-Kajir kamta. But a significant portion of which have illegally been encroached by the influential persons. At many points the canals have been blocked by the unauthorized and unplanned waste dumping. Ground water level in Shahrasti Pourashava is found between 40 ft to 50 ft during dry season and between 30 ft to 35 ft during wet season. Ground water contains Iron and Arsenic (Source: DPHE, Shahrasti, 2009). One of Pourashava sources reported that, nearly 99% of the tube wells are arsenic contaminated and the

provision of deep tube well is not possible because of the presence of salinity in the ground water. The sources of surface water (ponds and ditches only) are polluted by domestic waste, unhealthy sanitation and extensive use of fertilizer in the agriculture production. Soon, water supply is going to be very critical in the Pourashava. To restore water supply blockages and encroachment of canals must be removed and the canals must be allowed to accommodate water. Water supply problem can be substantially resolved by properly using the natural khal.

d) Land Pollution

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

12.6.10 Natural Calamities and Localized Hazards

a. Floods

Flood is a major natural disaster in almost every part of the country. However, the intensity of flooding is comparatively less in Shahrasti. Flood mainly occurs from June to September in this area. In Shahrasti Pourashava severe flood has not been occurred yet. Because there is an extraction system of removing blocked water from the central area in the surrounding region of the Paura area. So, people are not much affected by this kind of hazard. Household survey shows, less than 13% households were affected by floods of 1988 and 1991.

b. Water Logging

There is water logging problem in different parts of the Pourashava. Waterlogging occurs in the monsoon and the duration of water logging is 5-7 days. It mainly occurs between June to November every year when there is heavy rains. About 63% respondents pointed to poor drainage causing waterlogging during monsoon as the most important environmental problem of the town. The main reason for the waterlogging is encroachment of road RoW by the nearer buildings and houses. Other reasons are the improper design of drainage and the absence of drains.

c. Fire Hazard

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

d. Epidemic

There is no treat of any epidemic in the town. The common diseases of the inhabitants in this Pourashava are the seasonal diseases. From the over all survey findings it has been revealed that the inhabitants of the Pourashava do not face any severe environmental problem from any kind epidemic.

12.6.11 Identifying Major Areas of Threat and Risk

a. Drainage Path Encroachment

There are canals but a significant portion of which have illegally been encroached by the influential persons. At many points the canals have been blocked by the unauthorized and unplanned waste dumping.

b. Water Pollution

Arsenic in the ground water has been identified in Shahrasti. But the people have to depend on ground water for drinking purpose. No other alternative measure has yet been taken to supply safe water for the local residents. The sources of surface water (ponds and ditches only) are polluted by domestic wastes, unhealthy sanitation and extensive use of fertilizer in the agriculture. Soon, water supply is going to be very critical in the Pourashava.

c. Poor Solid Waste Management

Condition of solid waste management in Shahrasti Pourashava is very poor. For waste collection operation, the Pourashava has no conservancy inspector in conservancy department. It is reported and observed that, the shop keepers of kitchen markets and the nearby inhabitants dump their wastes into the canals. It is also reported that the Poura Authority itself dump solid wastes in the road side ditches.

12.7 Plans for Environmental Management and Pollution Control**12.7.1 Proposals for Environmental Issues**

Following mitigation plan is suggested for various environmental problems.

12.7.1.1 Solid Waste Management

Solid waste management is not yet an environmental problem in the town because of low density of population and low consumption rate. But in future population will rise and density will increase. So solid waste management will pose a major environmental problem in future. It is better to take precautionary measures now to avoid any future hazard.

Mitigation Measures:

1. *Introduction home collection system on community initiative.*
2. *Creation of solid waste transfer stations at important locations.*
3. *Creation of a dumping site for disposal of solid waste.*
4. *Uses of sanitary land fill method for treatment of waste at the dumping site.*
5. *Introduce recycling of solid waste.*

12.7.1.2 Ground Water Pollution

Though ground water is not a major source of drinking water supply in the study area, yet ground water pollution by salinity and arsenic is a serious threat for future water supply. Arsenic is a major threat to health for those who use ground water for drinking purpose. Arsenic is a geological problem. Experts view that it arises due to excessive extraction of ground water. So in future, when population rises further excessive ground water extraction will aggravate arsenic contamination situation.

Mitigation Measures:

Following mitigation measures may be adopted:

1. *Expand use of surface water by protecting existing ponds and excavating new ponds.*
2. *Introduce and popularize rain water harvesting system.*
3. *Reduce dependency on ground water.*

12.7.1.3 Surface Water Pollution

Various surface water sources of the town are regularly polluted by deliberate drainage of waste water with respect to pH, turbidity and coliform bacteria when compared with national standard. But present pollution level is low due to low density of population and no industrial agglomeration. The main sources of surface water pollution are urban waste water, sanitary sewage and solid waste dumping. With the implementation of this plan the pollution level may further increase as population and activity will increase leading to increase in waste water, sanitary sewage and solid waste dumping.

Mitigation Measures:

1. *Abolish katcha and hanging latrines.*
2. *Encourage practice of sanitary latrines.*
3. *Take measures against indiscriminate dumping of solid waste.*
4. *Establish and maintain sanitation conditions of slaughter house, fish market and katcha bazaar.*
5. *In future set up sewerage treatment plant to treat waste water.*

12.7.1.4 Prevention of Encroachment of Natural Khals

Most of the natural khals flowing through the town have been encroached by land hungry people. At many places the khals have been filled up. All these activities are causing khals to get squeezed lowering their capacity to drain enough water during monsoon. If this trend continues, it will increase flood risk and water logging in the low lying town.

Mitigation Measures:

1. *Strict measures should be taken to recover state property from encroachers.*
2. *Wherever land fill has been done, should be re-excavated and recovered from encroachers.*
3. *Marking pillars should be set up to mark khas lands of the khal area.*
4. *Vegetation may be created along the khal creating buffer zone between khal and the private property.*

12.7.1.5 Open Space Promotion

Present open space ratio is only 0.66 acre per thousand population. If the plan is implemented by the year 2031 the ratio will be 1.3 acres per thousand populations. But there will be hardly any scope to provide further open space. So, the provision of open space must be implemented in the study area for the greater interest of the future urban dwellers.

Mitigation Measures:

1. *The open space provisions have to be implemented to save future town environment.*
2. *Adequate fund need be allotted to execute open space development.*
3. *No building permission should be accorded in locations earmarked for open space in the master plan.*
4. *Land owners may be motivated to donate land for open space development.*

12.7.1.6 Fire hazard

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

Mitigation Measures:

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

12.7.1.7 Pollution Protection Proposals**a. Industrial / Brickfield**

There are no large scale industries in Shahrasti. Only some food processing (bakery, rice/spice mills) goldsmiths exist. So, no significant air pollution is caused by these establishments. The steps to be taken to protect future air pollution are:

- Allow all the industries are in mixed-use areas. Some of them will have to be re-arranged and shifted to the proposed industrial site.
- Green buffers need to be created around the proposed industrial site; it will separate the area from adjacent land uses and at the same time, environment will be livable.
- In future, the proposed industrial site will also be identified as a site for polluting industry (as identified by the Directorate of Environment). In that, provision of recycling plant should be attached with the individual industry.
- Any brickfield should not be allowed in the Pourashava jurisdiction. Wherever it is set up, the chimney should not be less than 120 ft high.

b. Environmental Improvement Awareness Building

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

The Pourashava is rural based urban area. Canal and pond water are still below the danger level of pollution. Let it should not be increased. Still people awareness is possible for reducing contamination of ground water. People may aware about the use of pesticides in agriculture field, solid waste disposal in a systematic manner and improved sanitation facilities.

c. Other Pollution

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

12.7.2 Natural Calamities and Hazard Mitigation Proposals**12.7.2.1 Protection Plan Addressing Natural Calamities**

Cyclone is a regular natural calamity in the study area. It affects the poor people mostly who can not build houses with permanent materials. Cyclones also destroy trees and other establishments causing economic losses. It is not possible to prevent cyclones, but it is possible to reduce the losses by cyclones.

Mitigation Measures:

1. *Provide housing loan to build houses with permanent materials.*
2. *Take measures to promote employment and reduce poverty.*
3. *Take appropriate measures for post disaster loss mitigation.*

12.7.2.2 Protection Plan Addressing Regular Hazards

- Most of the natural canals and water courses need to be preserved and maintained. The ponds larger than 0.2 acres should be preserved as water reservoir.
- For the removal of drainage congestion, sufficient number of bridges and culverts should be provisioned during construction of roads.
- Indiscriminate land filling for expansion and construction of residential areas and buildings should be controlled with the imposition of agriculture policy.

12.7.2.3 Protection Plan Addressing Encroachment & Other Relevant Issues

- As a measure of protection from encroachment restrictive buffer zone need to be created on both sides of natural canals and other watercourses (if necessary). Walkways and plantation will be needed for the protection of those buffer zones.
- Formation of appropriate legislation on solid waste management will be necessary. People encroaches canal through dumping of solid wastes. Encroachment on road, canal and river should be removed as early as possible with the formation of joined collaboration committee. This committee may be formed with the members from Pourashava, LGED, RHD and WDB.
- Using of waste as an unutilized resource and assisting in recycling of waste for conservation of resources and protection of environment.
- Introduces environmental education especially sanitary habits in school curriculum.

12.7.3 Plan Implementation Strategy

For implementation of the mitigation plan emphasis has to be laid on implementing the mitigation measures. Appropriate institutional set up will be required to implement the measures. Government must allocate sufficient budget for this purpose.

12.7.3.1 Regulations to Implement the Drainage and Flood Plan

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

1. Section 3 of the **Acquisition and Requisition of Immovable Property Ordinance, 1982** is needed for acquisition of land in view to construct environmental components. The authority, according to the demand, will apply to the Deputy Commissioner for such acquisition.

2. Section 4 of the **Conservation of Environment Act, 1995** has prescribed duties and responsibilities of the Director. Most of those responsibilities are on the control of pollution.
3. Section 28 (1, 2 and 3) of the **Forest Act, 1927** has prescribed regulations on village forest, which is necessary for the formation of village / Pourashava forest.
4. Section 5 of the **Playfield, Open space, Garden and Natural Tank in Urban Areas Preservation Act, 2000** will be needed for the preservation of playfield, garden, open space and natural tank of the Pourashava.
5. **Water Hyacinth Act, 1936** was enacted for preventing the spread of water hyacinth in Bangladesh and for its destruction. It is said in the section 5 that, no person shall grow or cultivate water hyacinth in any garden or in any ornamental water or receptacle. Again, according to the section 8(1) said, with a view to facilitating the discovery or destruction of water hyacinth, an Authorized Officer may, subject to any rules made under this Act, by a notice served in the prescribed manner, direct an occupier of any land, premises or water within a notified area to cause-
 - (a) any branches of trees or shrubs on any such land or premises which overhang the edge of any river, stream, waterway, ditch, marsh, bil, lake, tank, pond, pool or pit to be cut back and any undergrowth or jungle thereon to be removed from such edge, within a distance specified in the notice, or
 - (b) any vegetation appearing above the surface of any such water to be removed from the water, within such period as may be specified in the notice.
6. Section 7 of the **Water Resources Planning Ordinance, 1992** will be needed for the development of water resources available in the Pourashava.

12.7.3.2 Implementation, Monitoring, Evaluation and Coordination of the Plan

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

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

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

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

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

Plan Monitoring

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

Evaluation

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

Co-ordination

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

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

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

Chapter Thirteen

Urban Basic Service Development Plan

13.0 Introduction

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 Basic Urban Services Development Plan

13.1.1 Water Supply

Pourashava has its own water supply network, but limited only in a few wards. Ground water supplied by means of 3 production tube wells. There is no overhead tank. So water has to be pumped directly into the households during particular time period through 2 pump houses. Majority of the households are still dependent on tube well for their daily water need. Pourashava installed a few deep tubewell for mainly public use and public purpose, but the system has collapsed. Because, deep tube well provision is not effective in Shahrasti Pourashava. In Shahrasti, there are only one deep tubewell and 1053 hand tubewell. Wells and about 1037 ponds are other important sources of water.

The Pourashava is yet to develop its own network based water supply system. Developing a network based supply system will depend on availability of fresh water aquifer. Detailed geological investigation is required to find out fresh water aquifers. Before that is done Pourashava should take a programme to preserve and maintain all major ponds in the Pourashava. This will require taking over passion of all major waters supply ponds in the Pourashava for the greater interest of the people at large. The project area according to 2001 Census Report is comprised of 25168 populations. As per projection it will be 5582 populations in 2031. By considering the above assumption, the total demand of water consumption of Shahrasti pourashava will be 8877 cubic meter by 2031. This consideration has taken by avoiding excess industrial and commercial demand so that there are no mentionable industrial establishments in this pourashava. Currently available ponds of the Pourashava will be able to supply a significant amount of water in future, while the rest will be procured from tube wells or by the implementation of piped water supply system. Initially, Pourashava should provide more tube wells for public use. A total of 26.64 km. water supply network is proposed for Shahrasti.

Table 13.1: Water Supply Proposal

Existing Conditions (2011)		Proposal (2031)	
Number of Pourashava Tube well	1053	Number of Pourashava Tube wells to be Provided	-
Number of Ponds available for Water Supply • Private • Public		Number of Ponds to be made for Available Water Supply (area \geq 0.2 acre)	822

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

13.1.2 Gas Supply

Shahrasti Pourashava has limited gas supply facility into some areas. But still the facility is not available to a large percentage of people. A total of 23.45 km. gas network is proposed for Shahrasti. Gas network has been shown along all major roads and to the designated industrial site. A recent policy of the government forbids supply of gas for domestic purpose. So networks have been shown only along major roads. During the installation of gas network, Pourashava will consider some necessary steps. They are, in case of **gas manifold station**, may be located on small to medium sized plot (on 0.79 acres of land) on the main ring, at the fringe of the Pourashava. **Upazila regulator station** may be located on small plots throughout the Pourashava. These will be located at the break-off point on the main line, where smaller diameter spurs extend into the area that the gas will serve. **Map- 13.1** shows the proposed linear service network in Shahrasti Pourashava.

A detailed Water & Gas Supply Network inventory (proposed) has been enclosed in **Annexure-D**.

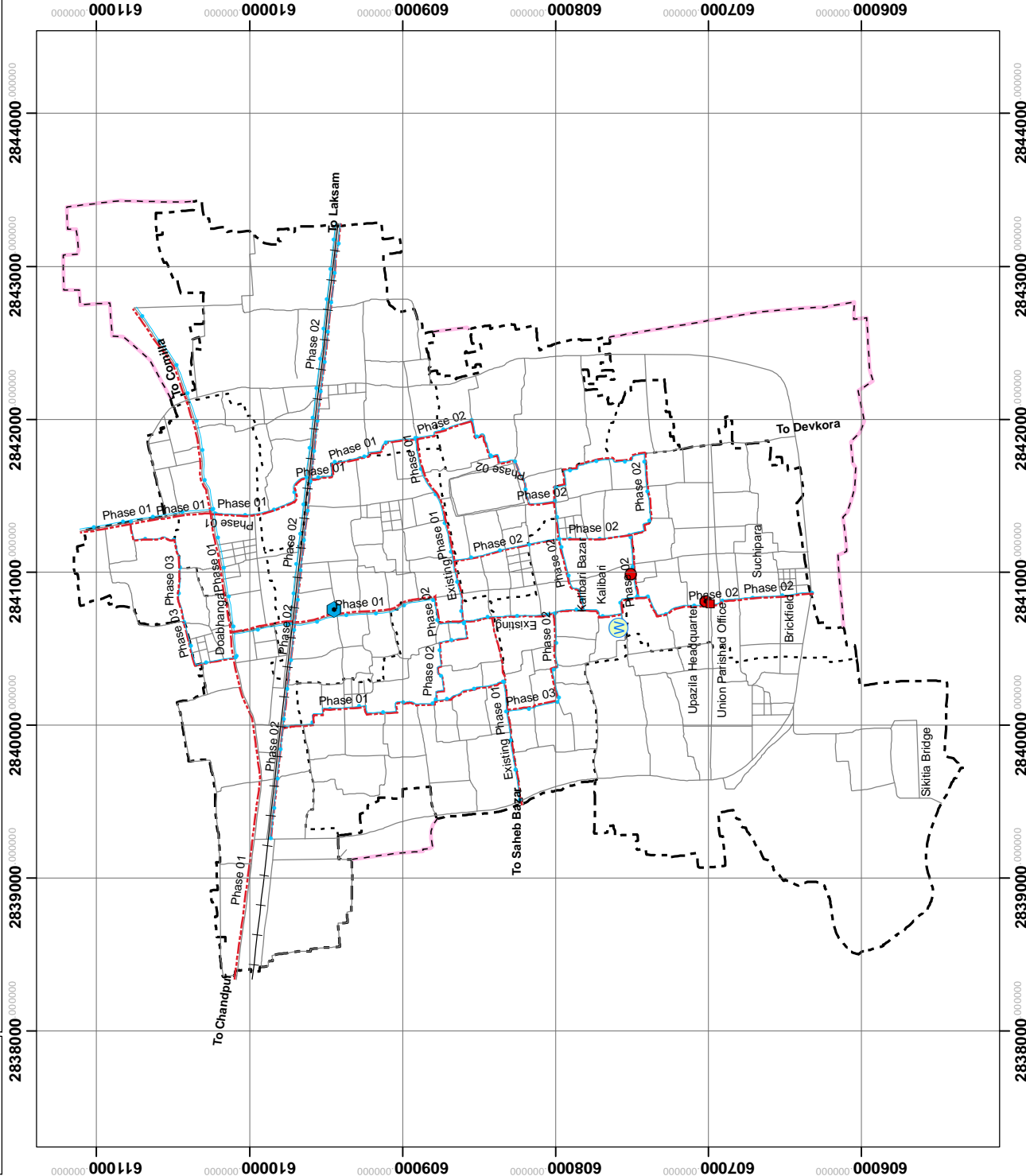
13.1.3 Sanitation

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

According to population census 2001, 83.92% of the households of Shahrasti Pourashava have sanitary latrines, 9.59% have other facility and 6.48% have none. It is reported by the Pourashava that about 70% of the households have sanitary latrines. As revealed by household survey, 97% of the households have sanitary latrines that are healthy sanitation. There is no single ward as 100% sanitized ward. But, a scheme is going on to overcome 100% sanitization.

Due to prohibitive expenditure one should not expect establishing network and treatment plant based sewerage system in the town by the 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. It is proposed to set up public toilets in public gathering areas, like, existing and proposed bus stand, bazaar and the main town centre.

Proposed Linear Service Network Plan



A vertical scale bar labeled "Meters" with markings at 0, 230, 460, 920, 1,380, and 1,840. The bar is divided into segments by horizontal lines, with alternating black and white segments.

 Pourashava Office
 Upazila Headquarter
 Pourashava Boundary
 Ward Boundary
 Extension Area Boundary
 Railway
 Proposed Road
 Gas Supply Line
 Water Supply Line
 Overhead Tank
 Water Supply Station



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

13.1.4 Solid Waste Management

Owing to low density of population solid waste is yet to emerge as a major problem in the town as it happens in larger towns. The households dispose their kitchen waste in nearby ditches or low lands. A major share of solid waste is generated by kitchen markets. These wastes find their destination in local khals. The consultant proposes 4.08 acres of land for dumping site in ward no 04 (Upolota mouza). The site is located in the north-west part of the Pourashava in one corner and ways from habitation, easily accessible. As the wind blows from south to north the site will not produce any odor creating nuisance for the nearby residents. The dumping site will be used as sanitary land fill site, where waste will be scientifically treated. It will include methods to contain leachate such as clay or plastic lining material. Deposited waste will be compacted to increase its density and stability, and covered to prevent attracting vermin (such as mice or rats). For landfill gas will be extracted and pumped out of the landfill using perforated pipes and flared off or burnt in a gas engine to generate electricity.

13.1.5 Electricity

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.

13.1.6 Telecommunication

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

13.1.7 Community Facilities**13.1.7.1 Open Space Recreation**

There is virtually no open space recreation facility in the town. So, all the proposals will be fresh proposals for open space development. The consultant has already estimated 124.28 acres of open space requirement for the town. This land will be distributed to various categories of open space to be provided. The proposed facilities have been provided in **table-13.2**. Space has been reserved for one stadium/sports complex on an area of 5 acre and the consultant allotted sum 4.34 acre of land for this stadium complex at a very suitable location at Ward No. 08. Seven play fields including central playground have been proposed over an area of 5.84 acres at all wards except ward no. 7 and 9. The proposed park in Ward No.06 beside Shahrasti Govt. Primary School will serve as the central park of the town having an area of 7.81 acre. A walkway is proposed around Shahrasti Dighi which will serve as open space requirement of Shahrasti Pourashava.

Table 13.2: Open Space Recreation Development Proposals

Use/Facility	Estimation of Required Land (acre)	Existing Land (acre)	Proposed Land (acre)	No.	Location
Playground	8.32	2.75	5.84	7	Ward No. 1, 2, 3, 4, 5, 6, 8
Central Park	55.48	0	7.81	1	Ward No. 06
Neighborhood Park	55.48	0	21.89	9	Ward No. 1, 2, 3, 4, 5, 8, 9
Stadium/Sports complex	5.00	0	4.34	1	Ward No. 8
Total	124.28	2.75	39.88		

13.1.7.2 Market Facilities

The total land required for market facilities stands at 71.53 acres. This covers, 5.55 acres for wholesale market, 9 acre for neighborhood level market, 55.48 acre for retail sale market and 1.50 acres for super market. The consultant allotted 13.26 acres land for neighborhood markets, and 0.39 acres land for super market which is proposed in ward no 08. Nine neighborhood markets will be provided for the future town at suitable locations in all Ward.

13.1.7.3 Mosque, Eidgah and Graveyard

Standard determined for mosque that the allocated land has already been covered by existing mosque. Yet the consultant feels that there should one central mosque in the town. This mosque has to be developed to facilitate enable access to people living in different parts of the town.

The consultant does not feel it necessary to provide space exclusively for eidgah. Eidgah is a land use that is used for two times a year. The space lies unused for rest of the year. Amid scanty supply of land there is no reason to spare this land. Instead play fields and the stadium should be used for Eid congregation. Existing eidgah, proposed stadium and playfield of Shahrasti have to use as Eidgah.

The town already has 3.75 acre of land under graveyard. However, these graveyards are mostly family graveyards. The consultant has proposed 3.21 acres of land for a Central graveyard in Ward No. 05.

13.1.7.4 Community Centre

There is no municipal community centre in the town though an auditorium has located beside Upazila Complex; the consultant proposes to set up four community centres in ward no. 3, 6 and 8. With even distribution of 2 acres of allotted land for this purpose and these center will serve for multipurpose use including Ward Counselor Office and small scale maternity clinic cum vaccination center. The existing Pourashava office will serve as central community center with vertical expansion.

13.1.7.5 Police Outpost

Eight police outposts will be set up for control of law and order. These will be in all wards except Ward No. 8 hence it will have Police Station.

13.1.7.6 Post Office

There are three post offices in Shahrasti Pourashava. The existing post office will be developed vertically due to scarce of land and few post boxes will set at different location so that people may enjoy easy accessibility to post documents.

13.1.7.7 Fire Station

The town has a fire service station besides Pourashava office with 0.58 acres of land in Ward No. 07.

Table-13.3 shows the land requirement and locations of Community Facilities in Shahrasti Pourashava.

Table 13.3: Estimation of Land Requirement for Community Facilities

Use/Facility	Estimation of Required Land (acre)	Existing Land (acre)	Proposed Land (2031)	No. and Location of Facility	
				No.	Location (Ward)
Mosque/Church/Temple	1.39	8.12	No proposal		-
Eidgah	2.77	0.11	No proposal		-
Graveyard	2.77	3.75	3.21	1	Ward No. 05
Community centre	2.77	0	2.00	3	Ward no. 03, 06, 08
Police Station	1.50	1.96	No proposal		-
Police Box/outpost	4.50	0	5.81	8	Ward No. 01, 02, 03, 04, 05, 06, 07, 09
Fire Station	2.77	0.58	No proposal		-
Post office	1.39	0.40	No proposal		-
Total	19.86	14.92			

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

****Existing graveyard in Shahrasti Pourashava are under mosque or family based and no centrally or publicly provided.**

13.1.8 Education

Total 19.62 acres of land have suggested for education facilities including existing and proposal. The facilities include nursery, primary school, secondary school, college, vocational training institute and other education facilities. **Table-13.4** shows the number of education facilities and their locations.

- Existing Primary Schools will strengthen their capacity.
- **High School:** Two new High Schools at ward no. 01 and 08 will be established and existing 5 high school named as Badiam High School (ward no. 02), Meher High School (ward no 05), Shahrasti Bohomukki High School (ward no. 06), Panchagram Ajjur Rahman High School (ward no. 04), will strengthen their capacity and service.
- **College:** Existing Meher College (in ward no. 05), Karfulannasa Girl's College (ward no. 04) will strengthen its capacity.
- 1 **Vocational Institute** proposed at ward no. 03

Table 13.4: Education Facilities and their Locations

Use/Facility	Land Requirement (acre)	Existing Land (acre)	Proposed Land (acre)	No. and Location of Proposed Facility	
				No.	Location (Ward)
Nursery School	2.77	2.95	No proposal	-	-
Primary School	22.19	7.68	No proposal	-	-
Secondary/High School	13.87	3.08	0.60	2	Ward No. 1, 8
College	27.74	2.53	No proposal	-	-
Vocational Training Centre	5	0	4.43	1	Ward No. 03
Total	71.57	16.24			

13.1.9 Health

There is one Upazila Health Complex in ward no 07 with an area of 3.59 acres which is below standard. The consultant feels that no additional land is required for the Upazila health complex. In future, as the population and density increases, demand for local health facilities will increase. All the proposed neighborhood centers will provide health services also. The consultant proposed eight community clinics in every ward except ward no 02. Total 6.96 acres of land have suggested for community clinic.

Chapter Fourteen

Ward Action Plan

14.1 Introduction

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

14.1.1 Background

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

14.1.2 Content

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

14.1.3 Linkage with Structure Plan and Urban Area Plan

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

Urban Area Plan is an attempts to guide and accomplishing a coordinated, adjusted, and harmonious development of an urban center and its environs in accordance with present and future needs, best promoting health, safety, morals, order, convenience, property, general welfare, as well as efficiency and economy in the process of development; the forecast of a city's future. The plan lays down the infrastructure and future land use zoning of the planning area. The plan must have layer superimposed on mouza map. WAP details out the development proposals taking the framework plan proposed by Urban Area Plan. WAP makes further detailing of the Urban Area

Plan as an upper level plan and takes it to links them to the micro level in order to address the local problems in more vivid fashion.

14.1.4 Approach and Methodology

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

14.1.5 Derivation of Ward Action Plan

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

14.1.6 Revisiting of Structure Plan and Urban Area Plan

Revisiting Structure Plan

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

Population

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

Economic

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

Housing and Slum Improvement

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

Social Amenities and Community Facilities

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

Transport

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

Utility Services

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

Urban Area Plan

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

Chapter-10 of the Urban Area Plan is about **land use** proposals. The plan proposes 16 categories of land uses for future urban area. But over 32% of the available land has been retained as agricultural as much of the current land is under farm use. The population projection and estimated future urban space requirement did not allow more land for urban use reducing the farm land. Residential use fetched 26% of the land excluding about 8% of the rural settlement, while over 12% land has been earmarked as waterbody already existing and also that they are non-urban use. Circulation network takes 5.92%, 1.96% manufacturing and processing (general industrial zone) and 0.50% too commercial along with 2.70% mixed use.

Transportation

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

- Primary Road: RoW 100 feet
- Pourashava Secondary Road: RoW 30 - 40 feet
- Pourashava Tertiary Road: RoW 20 feet

The plan also proposed a road design standard.

The plan proposed a road network plan of 109.36 km including about 49 km of new road, comprising primary and secondary roads only to enable draw the lower level roads by Ward Action Plan.

14.1.7 Prioritization and Ward Wise Action Plan

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

14.2 Ward Action Plan for Ward No. 01

14.2.1 Demography

Ward No. 1 is existed on Kamta mouza and located on the North West part of the town. It has medium density of population compare with other wards. Population projection shows 3416 population for the year 2011 and 5787 population in 2031. For the same year, it has a density of 11 persons per acre and 19 persons per acre respectively. Chandpur Pourashava had a density of 27 persons per acre in 2001.

Table 14.1: Population Statistics of Ward No. 01

Item	Year		
	2001	2011	2031
Area (acre)	365.23	365.23	365.23
Population	2625	3416	5787
Density of Population (acre)	9	11	19

Source: BBS 2001

14.2.2 Critical Issues and Opportunities of the Ward

Ward No. 01 is one of the most problem stricken wards of the Pourashava. Following are the major problems and opportunities of the ward.

a. Critical Issues

i. Problems of Road Infrastructure

The ward is not served by adequate number of roads. The total length of roads in the ward is only 15.41 km. This length of roads will not be able to serve the entire area in future when settlements will increase. New road spaces being created on community efforts are usually very narrow. None of these roads is not above 12 ft wide. Another problem of roads is that they are meandering in their layout. All these will pose serious problems in movement when population rises in the ward. Quality of roads on average is not satisfactory. Only 5.14 km road is paved and 8.34 km road is Katcha. Unpaved roads turn miserable during monsoon making movement more difficult.

ii. Poor Drainage

The ward does not have adequate drainage network serving the entire area. All the households do not have drainage outlet to discharge their waste water. Lack of drainage, though, is not a serious problem now but will emerge as a critical problem as density of population increases in future. In future due to construction the net run off area will increase that will cause water logging at places. So, necessary arrangements will have to be made now to get rid of future drainage problems.

iii. Haphazard Development

Like all other urban areas, unplanned development is a typical characteristic of this ward. Land owners are building their houses and structures anywhere. There is no land use plan, no adherences to building constructions are observed. This is not only destroying the aesthetic of the area but also its livable environment.

iv. Water Supply

Like all other wards water supply is also a critical problem in this ward. Surface water is the main source of drinking and washing. When population will increase the existing ponds will be

inadequate to supply adequate water for the local people that will lead to severe water crisis. More over, there are arrangements for proper maintenance of the ponds. There is likelihood that without proper maintenance caretaking the ponds might get polluted by unhygienic use of water that will endanger health of the local people.

v. Low Density of Population: Problem for Providing Infrastructure

Infrastructure development is not cost effective if the density of population remains very low. The cost of service line is the same for all sizes of population. So, if the population size is small more cost has to be incurred per head of population for providing infrastructure, which is not cost effective.

vi. Lack of Threshold Population for Business

The town possesses a very low level of population which is not adequate to run large retail business activities. This size of population will not help grow the local economy grow. Besides, the average income of the people is also very low which is not conducive to economic flourishing of the town. Higher the size of population more demand is created for goods and services leading to more economic activities and employment. No urban centre can flourish without adequate economic prosperity.

b. Development Opportunities

i. Low Density of Population

The present (2011) density of population in the ward is low, only 11 persons /acre. From environmental point of view this of population can create a very livable environment for the area with respect to ventilation, use of road and other basic services.

ii. Excellent External Connectivity

Dhaka is only 5-6 hours journey from Shahrasti. It takes about 1 hour to reach Chandpur, the district headquarters.

iii. Potential for Small Scale Manufacturing

Cheap labour, availability of raw materials can help grow small scale manufacturing in this town. Furniture making as a processing industry has already established its roots in the town. Jewelry, handicrafts of different kinds, small engineering can be developed here. This, however, would require local initiative. Local entrepreneurs may be provided with small capital to serve as incentive.

14.2.3 Ward Action Plan Proposals

14.2.3.1 Review of Existing Land Use

Study of existing land use of the ward reveals that major land use goes to Agricultural land and it is 192.05 acres which is 52.55% of the total land. The second major land use is Residential land and occupying 21.71% (79.35 acres) of the Pourashava area. Besides, there is 17.66% water body, 2.24% circulation network, 1.23% commercial activities and 4.57% of lands are being used for education, government, community service, government services, manufacturing or industry, service activity, Urban green space and vacant.

14.2.3.2 Proposed Land Use Zoning**i. Urban Residential Zone**

Urban residential zone refers to all categories of urban residential areas, including existing ones and the residential land use proposed under the present master plan. In total this zone covers 183.39 (50.21%) acres of land delineated up to the year 2031 in Ward No. 01, considering standard provided by LGED. Under this category consultant proposed housing estate and with total area of 58.33 acre respectively.

ii. Commercial Zone

The commercial zone is intended to provide locations, where commercial activities including retails can be set up and function, without creating hazards to surrounding land uses. This zone has an area of 1.66 acres (0.46%) designated up to 2031.

iii. Mixed Use Zone

Mixed use zones have been recommended to allow some flexibility in development. Admixture of land uses will allow flexibility of development, instead of restricting development. In ward no 01 the consultant allocates 2.43 acre land for mixed use category.

iv. Education & Research Zone

The total area under this use has been determined as 1.63 acres (0.45% of the ward area) that includes only one existing primary school (Kajir Kamta Primary School) and one new high school (area 1.13 acre).

v. Government Office

Administrative zone covers all kinds of government and non-government offices in the town. The total area under this use has been proposed as 1.02 acres (0.28%) that includes one Neighborhood centre (0.54 acre), and one police box (0.47 acre).

vi. Rural Settlement

The total area under this use has been proposed as 133.45 acres and covers 9.07% of the whole ward that includes existing and proposed land uses.

vii. Circulation Network

Existing and proposed roads covers a total of 39.54 acres of land and it is 10.83% of the whole ward.

viii. Agricultural Zone

The Pourashava including Ward No. 01 has a vast area of agricultural land that demands formation of a separate zone like, agriculture zone. The total area under this use has been estimated as 49.87 acres (13.65%) that include existing and proposed land uses.

ix. Waterbody

The plan suggests preserving most of the water bodies for two purposes, first, to serve as source of water, second to serve as water retention area during monsoon. The ponds with an area equal to or more than 0.2 acres will be preserved as the water retention ponds. The proposed retention area covers 15.75% of the total ward and it is 57.51 acres.

x. Open Space

In this ward there is no outdoor recreational space like park, playground etc. So the consultants accommodate 1.96 acres of land for open space where they proposed one Neighborhood Park (1.02 acres), one playground (0.94 acre).

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

Table 14.2: Existing and Proposed Land Uses

Existing Land Use			Proposed Land Use		
Land Uses	Area (acres)	%	Land Uses	Area (acres)	%
Agriculture	192.05	52.55	Agricultural Zone	49.87	13.65
Circulation Network	8.20	2.24	Circulation Network	22.97	6.29
Commercial Activity	4.48	1.23	Commercial Zone	1.66	0.45
Community Service	1.08	0.30	Community Facilities	0.00	0.00
Educational Facilities	1.41	0.39	Education & Research Zone	1.63	0.45
Manufacturing and Processing Activity	0.00	0.00	General Industrial Zone	0.00	0.00
Governmental Services	0.12	0.03	Government Office	1.02	0.28
-	0.00	0.00	Health Services	0.74	0.20
Mixed Use	0.12	0.03	Mixed Use Zone	2.43	0.67
Urban Green Space	1.38	0.38	Open Space	1.96	0.54
Recreational Facilities	0.00	0.00	Recreational Facilities	0.00	0.00
-	0.00	0.00	Rural Settlement	39.54	10.83
Transportation Facilities	0.00	0.00	Transportation Facilities	0.00	0.00
-	0.00	0.00	Urban Deferred	2.50	0.68
Residential	79.35	21.71	Urban Residential Zone	183.39	50.21
-	0.00		Utility Services	0.00	0.00
Waterbody	64.53	17.66	Water Body	57.51	15.75
Service Activity	0.00		-	0.00	0.00
Vacant Land	12.71	3.48	-	0.00	0.00
Restricted Area	0.00	0.00	Restricted Area	0.00	0.00
Total	365.23	100.00	Total	365.23	100.00

14.2.3.3 Proposed Circulation Network Development

12.31 km (12307.10 m) of circulation network has been proposed for this ward. In first phase 3.01 km roads will be widen. Most of these roads (6.16 km) will be developed during third phase (2017 - 2021).

Table 14.3: Road Proposals for Phase 01

Road ID	Road Name	Road Type	RoW (Ft)	Length (m)	Road Proposal	Phasing
W102	Kalibari Road	Primary Road	60	221.26	Widening	Phase 01
W154	Saheb Bazar Road	Secondary Road	40	1209.94	Widening	Phase 01
W34		Secondary Road	30	151.05	Widening	Phase 01
W37		Secondary Road	30	355.06	Widening	Phase 01
W50		Secondary Road	30	109.00	Widening	Phase 01

Road ID	Road Name	Road Type	RoW (Ft)	Length (m)	Road Proposal	Phasing
W55		Secondary Road	30	451.41	Widening	Phase 01
W71		Secondary Road	30	279.47	Widening	Phase 01
W74		Secondary Road	30	226.26	Widening	Phase 01
W80		Secondary Road	30	7.26	Widening	Phase 01

14.2.3.4 Drainage Development Plan

Ward no 01 has only 477 meter drain. The plan proposes 6539.60 meters (6.54 km) of new drains for ward no. 01 which will be developed during three different phase. Among this 4.63 km drain will be constructed in first phase. Most of these roads will be developed during first phase (2017 - 2021).

Table 14.4: Drainage Proposals for Phase 01

Drain ID	Drain Type	Length (m)	Width (m)	Depth (m)
PS52	Secondary Drain	32.17	2.35 - 3.35	1.24 - 2.24
PS57	Secondary Drain	272.93	2.35 - 3.35	1.24 - 2.24
PS63	Secondary Drain	1205.17	2.35 - 3.35	1.24 - 2.24
PS78	Secondary Drain	143.49	2.35 - 3.35	1.24 - 2.24
PS80	Secondary Drain	356.96	2.35 - 3.35	1.24 - 2.24
PS83	Secondary Drain	97.36	2.35 - 3.35	1.24 - 2.24
PS84	Secondary Drain	447.17	2.35 - 3.35	1.24 - 2.24
PS86	Secondary Drain	271.11	2.35 - 3.35	1.24 - 2.24
PS87	Secondary Drain	229.72	2.35 - 3.35	1.24 - 2.24
PS89	Secondary Drain	0.35	2.35 - 3.35	1.24 - 2.24
PS112	Secondary Drain	145.06	2.35 - 3.35	1.24 - 2.24
PS114	Secondary Drain	348.98	2.35 - 3.35	1.24 - 2.24
PS117	Secondary Drain	107.91	2.35 - 3.35	1.24 - 2.24
PS118	Secondary Drain	456.76	2.35 - 3.35	1.24 - 2.24
PS120	Secondary Drain	284.78	2.35 - 3.35	1.24 - 2.24
PS121	Secondary Drain	230.76	2.35 - 3.35	1.24 - 2.24
PS123	Secondary Drain	0.08	2.35 - 3.35	1.24 - 2.24
PS80	Secondary Drain	0.07	2.35 - 3.35	1.24 - 2.24
PS112	Secondary Drain	0.07	2.35 - 3.35	1.24 - 2.24

Besides, it will be necessary to re-excavate the khals that serve as primary drains. The consultants have identified existing whole of the khals need to be re-excavated to allow smooth flow of Water through them.

Map 14.1

Existing land use of Ward No 01



SCALE

1:9,100



LEGEND

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

PREPARATION OF MASTER PLAN FOR SHAHRASTI POURASHAVA
Shahraati Upazila, Chandpur District

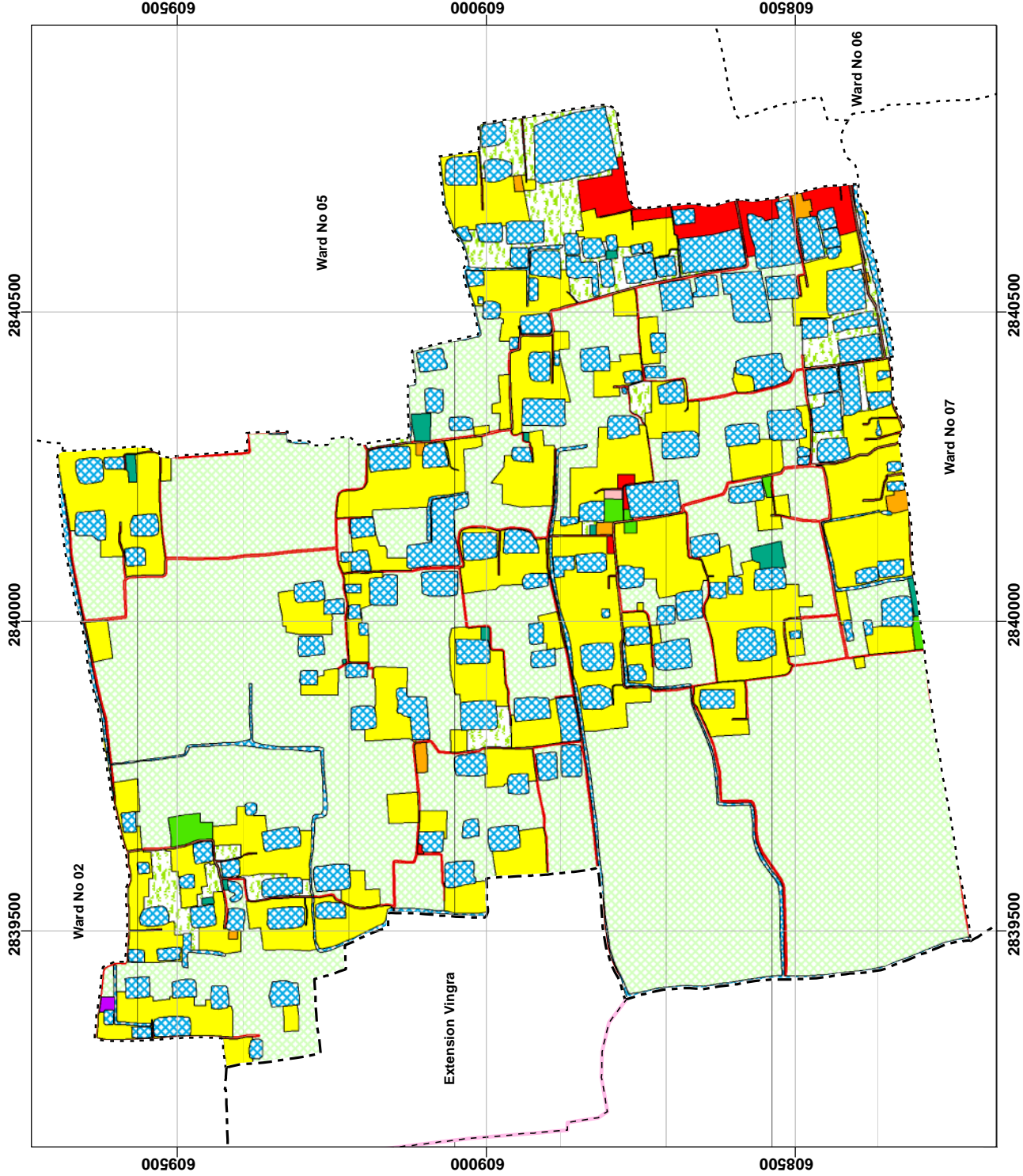


Government of the People's Republic of Bangladesh
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Local Government Division

Local Government Engineering Department (LGED)
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Dhaka-1207, Bangladesh



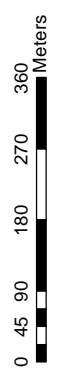


Proposed Landuse of Ward No 01

Map 14.2

SCALE

1:9,000



LEGEND

Proposed Landuse

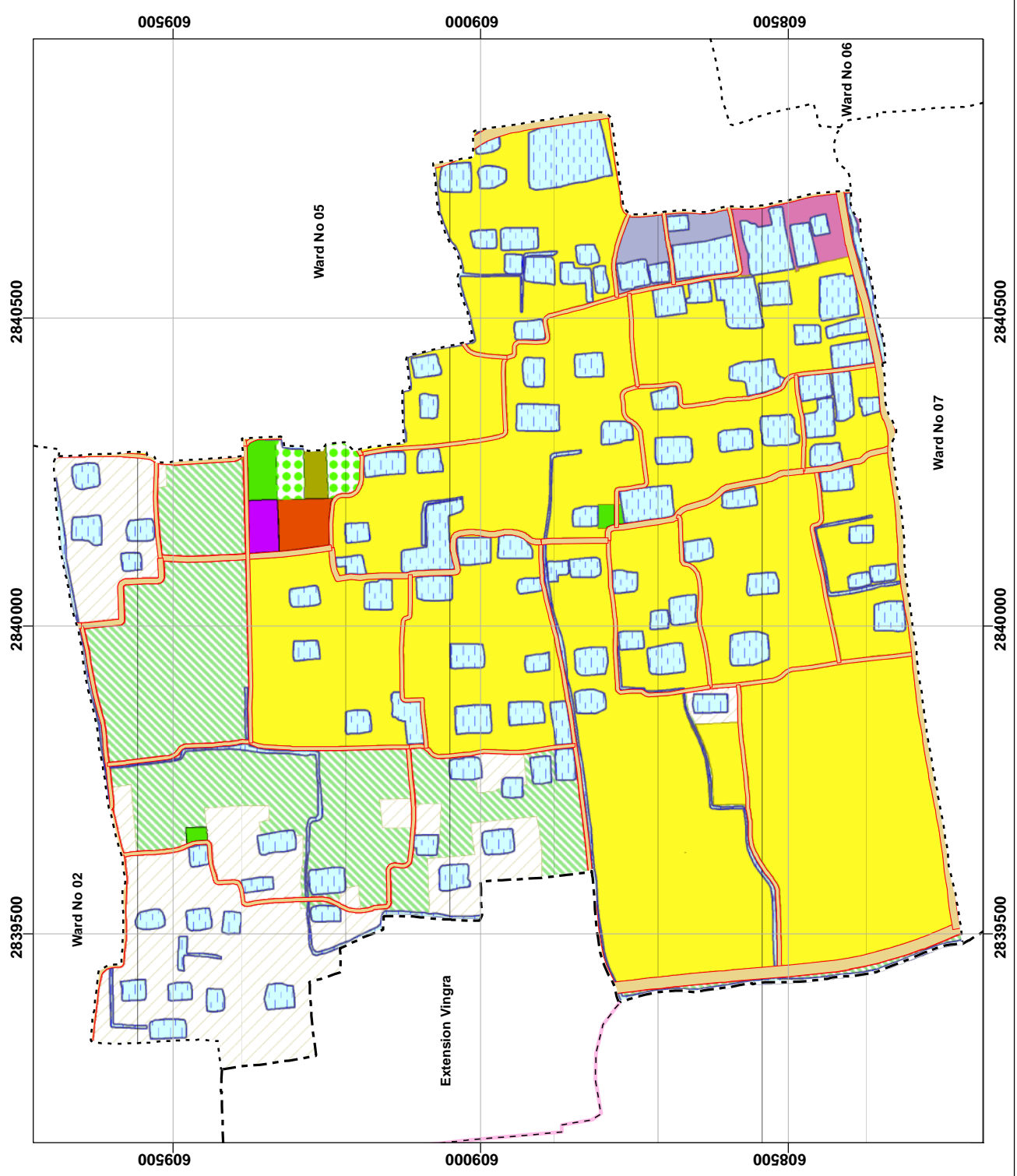
- Agricultural Zone
- Circulation Network
- Commercial Zone
- Community Facilities
- Education & Research Zone
- General Industrial Zone
- Government Office
- Health Services
- Mixed Use Zone
- Open Space
- Overlay Zone
- Recreational Facilities
- Rural Settlement
- Transportation Facilities
- Urban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

PREPARATION OF MASTER PLAN FOR SHAHRASTI POURASHAVA
Shahraati Upazila, Chandpur District

Government of the People's Republic of Bangladesh
Ministry of Local Government, Rural Development and Cooperatives
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SHELTECH PANTHAKUNJO:
148, 17 West Panthapath,
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14.2.3.5 Urban Services**i) Utility Services**

- **Solid Waste Management**

Solid waste management is a major urban service. As density of population increases the volume of solid waste also increases proportionately. However, the income level is also a major factor influencing the volume of solid waste. Population and the volume of waste in the town are yet to be large enough to become a problem for the city. But the present management system is not satisfactory and it might lead to problem in future. The consultant proposed one solid waste transfer station in this ward in a suitable location (within proposed Neighbourhood Market) an area of 5 decimal. It is recommended that home collection system is introduced in the ward by creation of local CBOs. This will cause organized collection of waste and prevent indiscriminate littering.

- **Water Supply**

The Pourashava has no water supply line. It is proposed to install a network based water supply system by exploring fresh water aquifers. There will 2.64 km (2641.39 meter) of water supply lines in this ward running along all categories of roads. There are proposed 2641.39 meters (2.64 km) of gas supply lines which will develop in first phase.

- **Gas Supply**

The Pourashava has 1.61 km gas supply line. It is proposed to install a network based gas supply system. There are proposed 1603.73 meters (1.60 km) of gas supply lines which will develop in first phase.

- **Sanitation**

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

Table 14.5: Proposals of Utility Services for Ward No. 01

Item	Existing	Proposed		
Solid Waste Transfer Station	-	One transfer station		5 decimal
Water Supply Network	-	Proposed Line (m)	Phase 01	2641.39
			Phase 02	1063.34
			Phase 03	10.39
		Total		3715.12
Gas Supply Network	2060.16m	Proposed Line (m)	Phase 01	1603.73
			Phase 03	4.54
		Total		1608.27
Electricity Line		As per existing programme of PDB		

ii) Educational Facilities

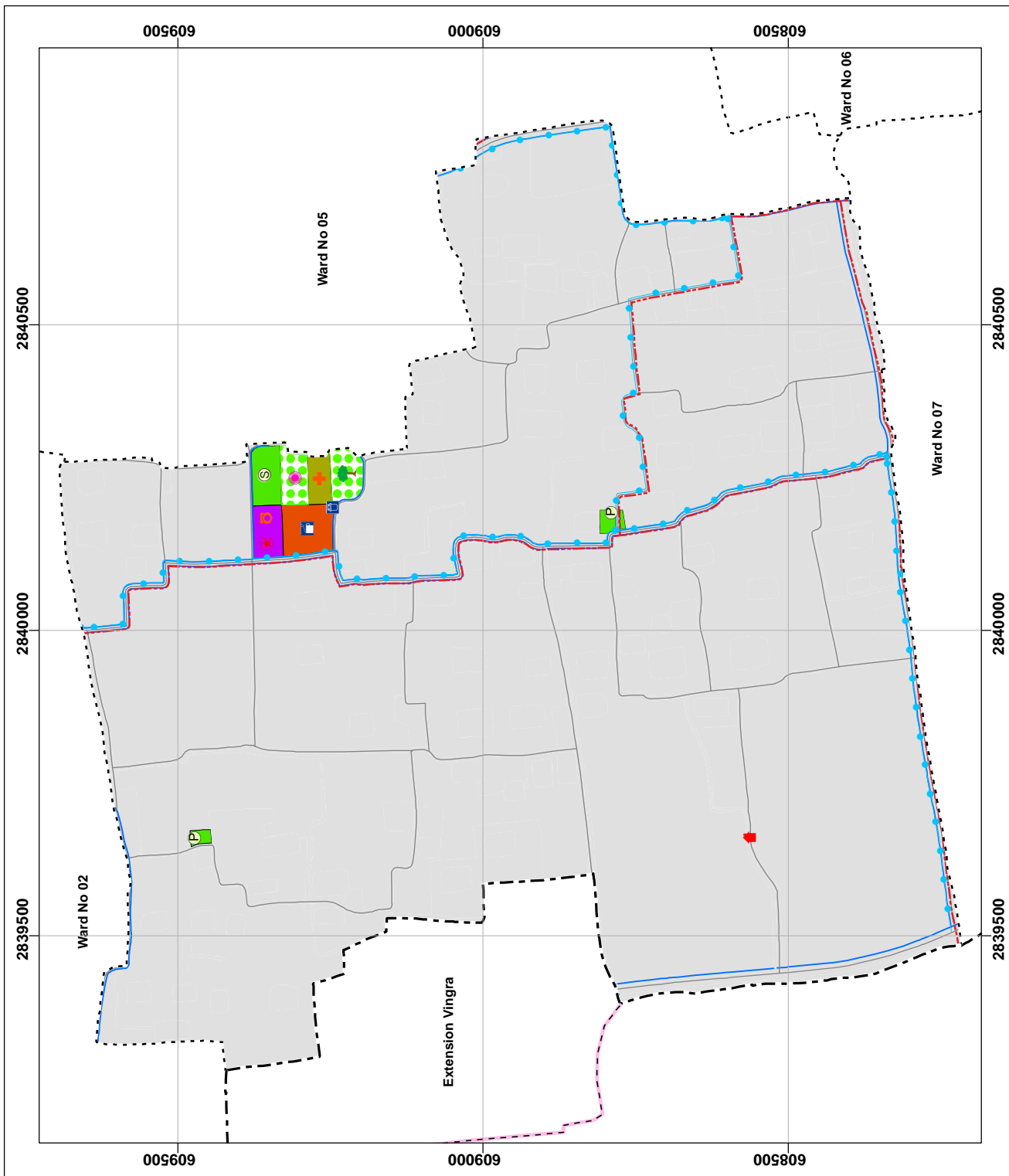
There are 2 primary schools in this ward. The plan proposes one new high school and to strengthen the capacity of existing primary schools in this ward.

Table 14.6 shows all the urban service facilities proposed for Ward No. 01.

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

Table 14.6: Proposed Urban Services for Ward No. 01

Item	Existing		Proposed		Phase 01
	No.	Area (acre)	No.	Area (acre)	
Neighborhood Market	-	-	1	1.66	Land Acquisition
Neighborhood Center	-	-	1	0.54	
Police Box/Outpost	-	-	1	0.47	
Community Clinic	-	-	1	0.74	
High School	-	-	1	1.13	
Neighborhood Park	-	-	1	1.02	Developed in first phase
Playground	-	-	1	0.94	
Primary School	2	0.50	-	-	Strength existing capacity



PREPARATION OF MASTER PLAN FOR SHAHRASTI POURASHAVA
Shahrasti Upazila, Chandpur District

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14.3 Ward Action Plan for Ward No.2

14.3.1 Demography

Ward No. 2 is located partial mouza of Upolata and partial mouza of Shuara of the town. It has low density of population compare with other wards. Population projection shows 3394 population for the year 2011 and 5749 population in 2031. For the same year, it has a density of 7 persons per acre and 11 persons per acre respectively. Chandpur Pourashava had a density of 27 persons per acre in 2001.

Table 14.7: Population Statistics of Ward No. 02

Item	Year		
	2001	2011	2031
Area (acre)	503.11	503.11	503.11
Population	2608	3394	5749
Density of Population (acre)	5	7	11

14.3.2 Critical Issues and Opportunities of the Ward

Ward No. 2 is one of the most problem stricken wards of the Pourashava. Following are the major problems and opportunities of the ward.

a. Critical Issues

i. Problems of Road Infrastructure

The ward is not served by adequate number of roads. The total length of roads in the ward is only 18.28 km. This length of roads can not serve the entire area. New road spaces being created on community efforts are usually very narrow. None of these roads is not above 13 ft wide. Another problem of roads is that they are meandering in their layout. Due to unplanned development, roads do not have proper linkage. Due to missing links one has to travel long way to reach a nearby destination. All these will pose serious problems in movement when population rises in the ward. Quality of roads on average is not satisfactory. Only 10.82 km road is paved and 6.57 km road is unpaved. Unpaved roads turn miserable during monsoon making movement more difficult.

ii. Poor Drainage

The ward does not have adequate drainage network serving the entire area. All the households do not have drainage outlet to discharge their waste water. Lack of drainage, though, is not a serious problem now but will emerge as a critical problem as density of population increases in future. In future due to construction the net run off area will increase that will cause water logging at places. So, necessary arrangements will have to be made now to get rid of future drainage problems.

iii. Haphazard Development

Like all other urban areas, unplanned development is a typical characteristic of this ward. Land owners are building their houses and structures anywhere. There is no land use plan, no adherences to building constructions are observed. This is not only destroying the aesthetic of the area but also its livable environment.

iv. Water Supply

Like all other wards water supply is also a critical problem in this ward. Surface water is the main source of drinking and washing. When population will increase the existing ponds will be

inadequate to supply adequate water for the local people that will lead to severe water crisis. More over, there are arrangements for proper maintenance of the ponds. There is likelihood that without proper maintenance caretaking the ponds might get polluted by unhygienic use of water that will endanger health of the local people.

v. Low Density of Population: Problem for Providing Infrastructure

Infrastructure development is not cost effective if the density of population remains very low. The cost of service line is the same for all sizes of population. So, if the population size is small more cost has to be incurred per head of population for providing infrastructure, which is not cost effective.

vi. Lack of Threshold Population for Business

The town possesses a very low level of population which is not adequate to run large retail business activities. This size of population will not help grow the local economy grow. Besides, the average income of the people is also very low which is not conducive to economic flourishing of the town. Higher the size of population more demand is created for goods and services leading to more economic activities and employment. No urban centre can flourish without adequate economic prosperity.

b. Development Opportunities

i. Low Density of Population

The present density of population in the ward is very low, only 7 persons/acre. From environmental point of view this of population can create a very livable environment for the area with respect to ventilation, use of road and other basic services.

ii. Excellent External Connectivity

Dhaka is only 5-6 hours journey from Shahrasti. It takes about 1 hour to reach Chandpur, the district headquarters.

iii. Potential for Small Scale Manufacturing

Cheap labour, availability of raw materials can help grow small scale manufacturing in this town. Furniture making as a processing industry has already established its roots in the town. Jewelry, handicrafts of different kinds, small engineering can be developed here. This, however, would require local initiative. Local entrepreneurs may be provided with small capital to serve as incentive.

14.3.3 Ward Action Plan Proposals

14.3.3.1 Review of Existing Land Use

Study of existing land use of the ward reveals that the major land use goes to agricultural and it is 355.16 acres which is 70.60% of the total ward. The second major land use is residential use, occupying 12.29% (61.81 acres) of the ward. Besides, there is 9.92% water body, 4.23% land under circulation network, 1.38% under commercial activities and otherwise 1.40% of land is being used for education, community service, government services, manufacturing or industry, urban green space and Vacant land.

14.3.3.2 Proposed Land Use Zoning**i. Urban Residential Zone**

Urban residential zone refers to all categories of urban residential areas, including existing ones and the residential land use proposed under the present master plan. In total this zone covers 41.03 (8.16%) acres of land delineated up to the year 2031 in Ward No. 02, considering standard provided by LGED. Low income housing estate is proposed in this ward with 12.68 acre of land.

ii. General Industrial Zone

In this category the consultant accommodate 76.51 acres of land for proposed BSCIC area.

iii. Commercial Zone

The commercial zone is intended to provide locations, where commercial activities including retails can be set up and function, without creating hazards to surrounding land uses. This zone has an area of 7.59 acres (1.51%) designated up to 2031. this category includes one Neighborhood market and one wholesale market.

iv. Mixed Use Zone

Mixed use zones have been recommended to allow some flexibility in development. Admixture of land uses will allow flexibility of development, instead of restricting development. In ward no 02 the consultant allocates 18.33 acre land for mixed use category.

v. Education & Research Zone

The total area under this use has been determined as 1.15 acres (0.23% of the ward area) that includes existing schools.

vi. Government Office

Administrative zone covers all kinds of government and non-government offices in the town. The total area under this category is 0.96 acres (0.19%) that includes one proposed Neighborhood centre (0.50 acre), one police box (0.46 acre) and existing Government offices.

vii. Agricultural Zone

The Pourashava including Ward No. 02 has a vast area of agricultural land that demands formation of a separate zone like, agriculture zone. The total area under this use has been estimated as 208.37 acres (41.42%) that include existing and proposed land uses.

viii. Waterbody

The plan suggests preserving most of the water bodies for two purposes, first, to serve as source of water, second to serve as water retention area during monsoon. The ponds with an area equal to or more than 0.2 acres will be preserved as the water retention ponds. The proposed retention area covers 7.44% of the total ward and it is 37.44 acres.

ix. Transportation Facilities

Proposed plan suggests a Bus Terminal and a Truck terminal in this ward with an area of 2.65 acres and it is 0.58% of the whole ward. Meher Railway station is situated in this ward.

x. Circulation Network

Existing and proposed roads covers a total of 36.66 acres of land and it is 7.29% of the whole ward.

xi. Open Space

In this ward there is no outdoor recreational space like park, playground etc. So the consultants accommodate 2.73 acres of land for open space where they proposed one Neighborhood Park (2.02 acres) and one playground (0.71 acres).

xii. Utility Services

Proposed plan suggests a Dumping station in this ward with an area of 4.08 acres and it is 0.81% of the whole ward.

Map 14.4 shows the existing land use of Ward No.2 while **Map- 14.5** shows the proposed landuse zoning of ward no. 02.

Table 14.8: Existing and Proposed Land Uses of Ward No. 02

Existing Land Use			Proposed Land Use		
Land Uses	Area (acres)	%	Land Uses	Area (acres)	%
Agriculture	355.16	70.60	Agricultural Zone	208.37	41.42
Circulation Network	21.29	4.23	Circulation Network	36.66	7.29
Commercial Activity	6.93	1.38	Commercial Zone	7.59	1.51
Community Service	1.70	0.34	Community Facilities	1.18	0.23
Educational Facilities	0.22	0.04	Education & Research Zone	1.15	0.23
Manufacturing and Processing Activity	0.00	0.00	General Industrial Zone	76.51	15.21
Governmental Services	0.00	0.00	Government Office	0.96	0.19
-	0.00	0.00	Health Services	0	0.00
Mixed Use	0.73	0.15	Mixed Use Zone	18.33	3.64
Urban Green Space	0.69	0.14	Open Space	2.73	0.54
Recreational Facilities	0.22	0.04	Recreational Facilities	0	0.00
-	0.00	0.00	Rural Settlement	54.7	10.87
Transportation Facilities	0.00	0.00	Transportation Facilities	2.9	0.58
-	0.00	0.00	Urban Deferred	9.48	1.88
Residential	61.81	12.29	Urban Residential Zone	41.03	8.16
-	0.00	0.00	Utility Services	4.08	0.81
Waterbody	49.90	9.92	Water Body	37.44	7.44
Service Activity	0.00	0.00	-	0	0.00
Vacant Land	4.44	0.88	-	0	0.00
Restricted Area	0.00	0.00	Restricted Area	0	0.00
Total	503.11	100.00	Total	503.11	100.00

14.3.3.3 Drainage Development Plan

Ward No. 02 has 368.04 meter drain. The plan proposes 5.95 km of new drains for ward no. 02. Out of these proposed drains, 2592.12 meters (2.59 km) of drain will be developed during the first phase.

Table 14.9: Proposed Drainage Development Plan Proposals for phase 01

Drain ID	Drain Type	Length (m)	Width (m)	Depth (m)
PS47	Secondary Drain	622.19	2.35 - 3.35	1.24 - 2.24
PS48	Secondary Drain	1188.47	2.35 - 3.35	1.24 - 2.24
PS89	Secondary Drain	125.21	2.35 - 3.35	1.24 - 2.24
PS90	Secondary Drain	131.18	2.35 - 3.35	1.24 - 2.24
PS123	Secondary Drain	128.51	2.35 - 3.35	1.24 - 2.24
PS124	Secondary Drain	131.49	2.35 - 3.35	1.24 - 2.24
PS141	Secondary Drain	265.07	2.35 - 3.35	1.24 - 2.24

Besides, it will be necessary to re-excavate the khals that serve as primary drains. The consultants have identified existing whole of the khals need to be re-excavated to allow smooth flow of Water through them.

14.3.3.4 Proposed Circulation Network Development

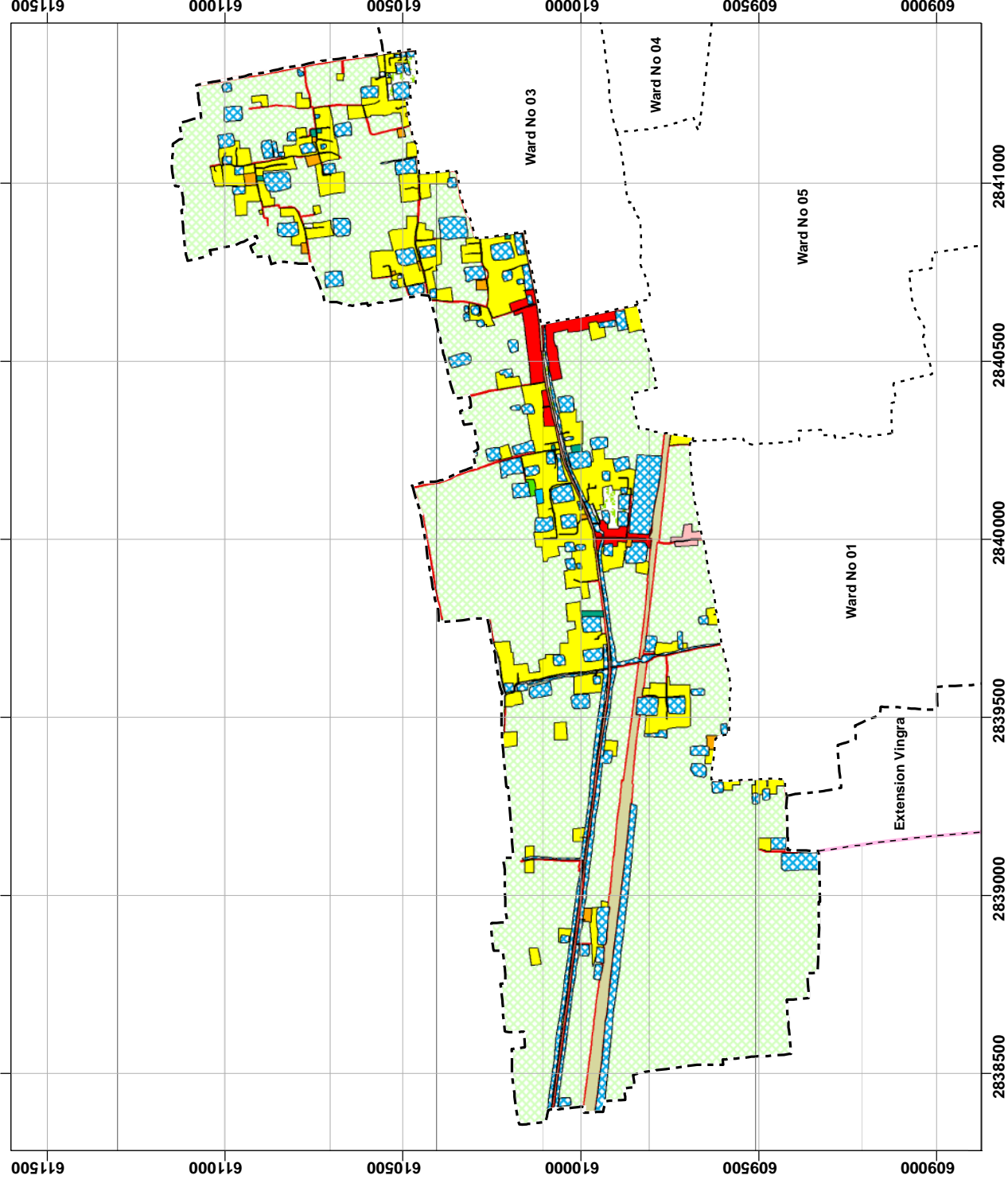
Total 14.35 km (14345.43 m) of circulation network has been proposed for this ward. Most of these roads (7.14 km) will be developed during third phase (2017 - 2021). Only 3.19 km road will be widening up to 30-80 feet during the first phase.

Table 14.10: Road Proposals for Phase 01

Road ID	Road Name	Road Type	RoW (Ft)	Length (m)	Road Proposal
W90		Primary Road	80	494.63	Widening
W99	Comilla to Chandpur Road	Primary Road	80	2241.59	Widening
W102	Kalibari Road	Primary Road	60	174.72	Widening
W80		Secondary Road	30	130.99	Widening
W82		Secondary Road	30	147.14	Widening

Map 14.4

Existing land use of Ward No 02



SCALE

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LEGEND

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

PREPARATION OF MASTER PLAN FOR SHAHRASTI POURASHAVA
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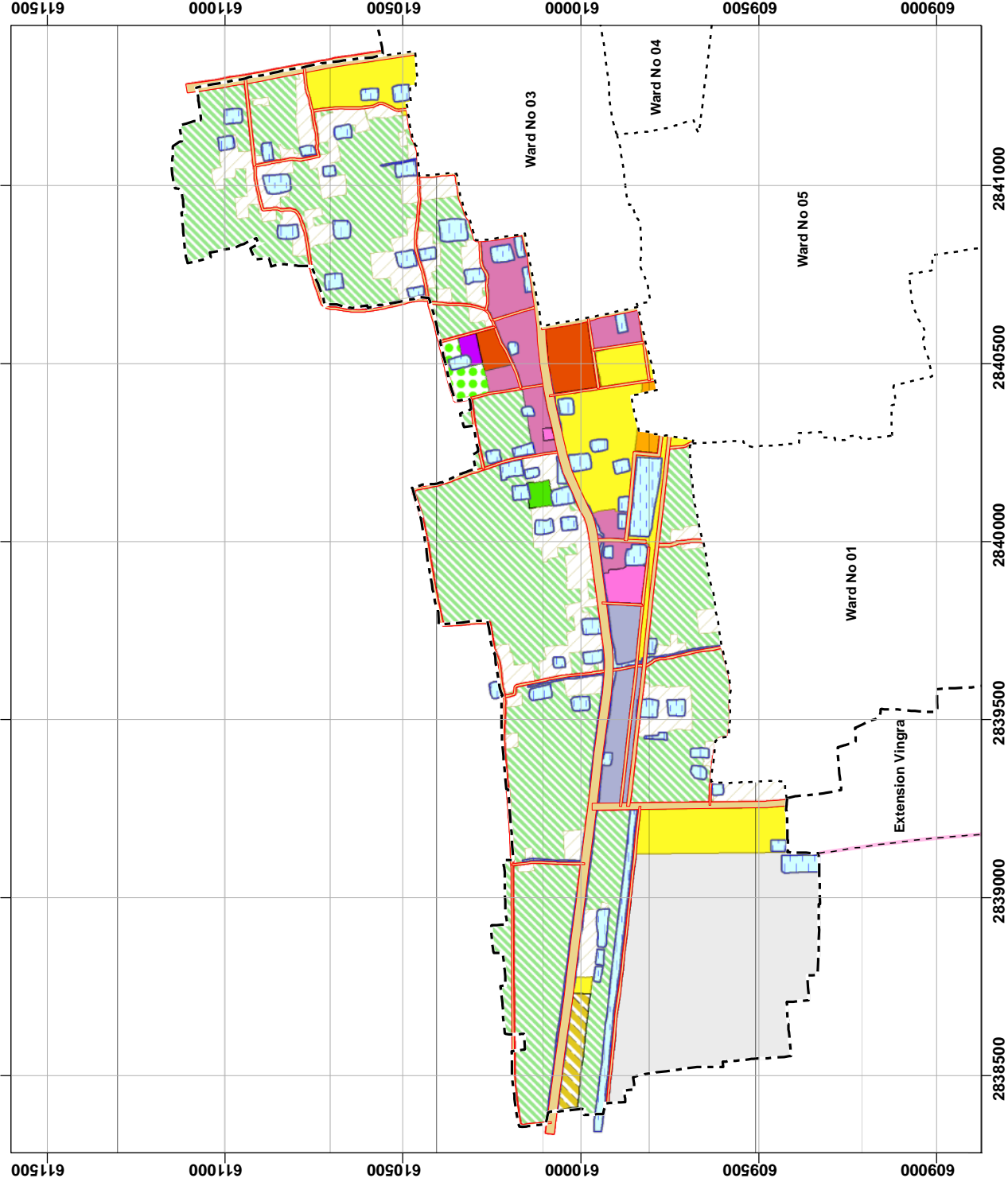
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Map 14.5

Proposed Landuse of Ward No 02



SCALE
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LEGEND

Proposed Landuse

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

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14.3.3.5 Urban Services**i) Utility Services**

- **Solid Waste Management**

Solid waste management is a major urban service. As density of population increases the volume of solid waste also increases proportionately. However, the income level is also a major factor influencing the volume of solid waste. Population and the volume of waste in the town are yet to be large enough to become a problem for the city. But the present management system is not satisfactory and it might lead to problem in future. The consultant proposes one solid waste transfer station in this ward at suitable location (within Neighbourhood Market) an area of 5 decimal. Waste Dumping Station is proposed in the north-west corner of the ward with 4.08 acre of land. It is recommended that home collection system is introduced in the ward by creation of local CBOs. This will cause organized collection of waste and prevent indiscriminate littering.

- **Water Supply**

It is proposed to install a network based water supply system by exploring fresh water aquifers. **Map- 14.6** shows the water supply network proposed for the ward. There are proposed 2787 meters of water supply lines in this ward running along all categories of roads. 552.43 meters of water supply lines will be established in Phase 01 and 1046.92 meters will be in Phase 02.

- **Gas Supply**

It is proposed to install a network based gas supply system. **Map- 14.6** shows the gas supply network proposed for the ward. There are proposed 5448.84 meters of gas supply lines which will develop in three phase. 3268.22 meter is proposed to develop in phase 01. Rest portion of proposed network will be developed in phase 02 and 03.

- **Sanitation**

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

Table 14.11: Proposal of Utility Services of Ward No. 02

Item	Existing	Proposed		
	Area/length			Area/Length
Solid Waste Transfer Station	-	One transfer station		5 decimal
Water Supply Network (m)	-	Proposed Line Length (m)	Phase 01	552.43
			Phase 02	1046.92
			Phase 03	1187.65
		Total		2787
Gas Supply Network (m)	-	Proposed Line Length (m)	Phase 01	3268.22
			Phase 02	1046.90
			Phase 03	1133.72
		Total		5448.84
Electricity Line		As per existing programme of PDB		

ii) Educational Facilities

There is one High school in this ward. The consultant proposes one new Primary school in this ward.

Following table shows the existing and proposed urban facilities for Ward no 02.

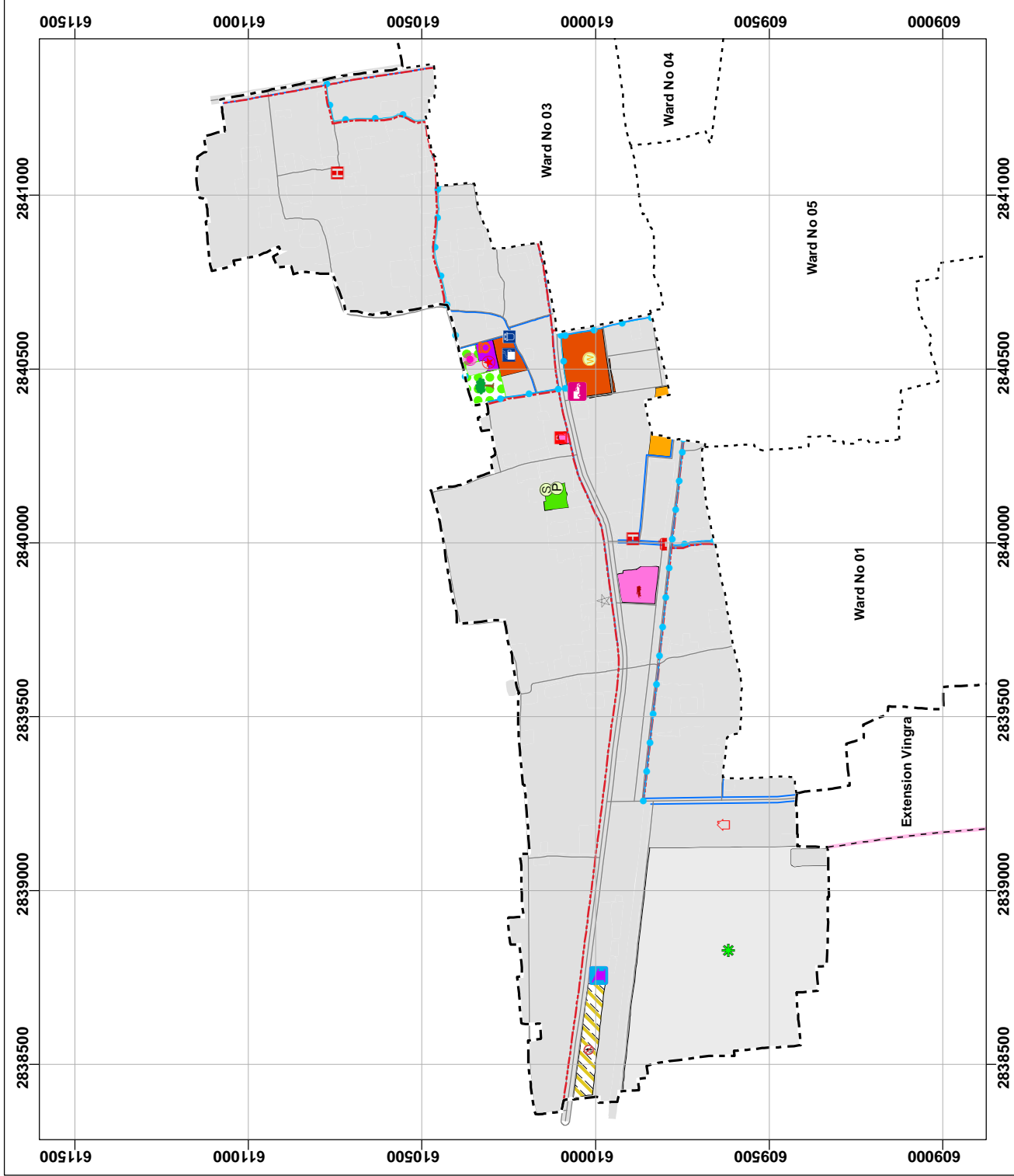
Table 14.12: Proposed Urban Services of Ward No. 02

Item	Existing		Proposed		Phase 01
	Number	Area (Acre)	Number	Area (Acre)	
Neighborhood Market	-	-	1	1.81	Land acquisition
Wholesale Market	-	-	1	5.78	
Neighborhood Center	-	-	1	0.50	
Police Box	-	-	1	0.46	
High School	1	1.15	-	-	Strengthening Existing Facilities
Neighborhood Park	-	-	1	2.02	Developed in first phase
Playground	-	-	1	0.71	

Map- 14.6 shows all the urban services, drainage, water and gas supply network facilities proposed for Ward No.2.

Map 14.6

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



SCALE

1:15,900



LEGEND

Proposed Services

- Auditorium/Theater
- Bus Stop
- Bus Terminal
- CNG/Rickshaw Stand
- Car Parking
- Central Crematorium Ground
- Central Cemetery
- Central Park
- Cinema/Theater Hall
- College
- Community Center
- Community Clinic
- Dumping Station
- Durbin
- Edgah
- Electric Sub-station
- Filling Station
- Fire Service
- High School
- Hospital/Clinic
- Housing Estate
- Industrial Estate
- Launch Terminal
- Low Cost Housing Estate
- Neighbourhood Center
- Neighbourhood Market
- Neighbourhood Park
- Overhead Tank
- Passenger Shed
- Playground
- Police Box/Outpost
- Police Station
- Post Box
- Post Office
- Pourashava Office
- Primary School
- Public Gathering
- Public Toilet
- Railway Station
- Resettlement Zone
- Slaughterhouse
- Super Market
- Sweepers Colony
- Telephone Exchange
- Treatment Plant
- Truck Terminal
- Upazila Complex
- Upazila Hospital
- Upazila Stadium
- Vocational Institute
- Waste Transfer Station
- Water Supply Station
- Wholesale Market
- Proposed Road
- Existing Gas Supply
- Proposed Gas Supply
- Proposed Water Supply
- Proposed Drain

PREPARATION OF MASTER PLAN FOR SHAHRASTI POURASHAVA

Shahrasti Upazila, Chandpur District



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Local Government Division

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Package No. 04 (Comilla Region)



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14.4 Ward Action Plan for Ward No.3

14.4.1 Demography

Ward no 03 is located partial mouza of Shuara and Kaliapara mouza of the town. It has high density of population compare with other wards. In 2011 the Ward had a population of 2867 persons. Population projection shows 4856 populations for the year 2031. For the same year, it has a density of 14 persons per acre and 24 persons per acre respectively. Chandpur Pourashava had a density of 27 persons per acre in 2001.

Table 14.13: Population Statistics of Ward No. 03

Item	Year		
	2001	2011	2031
Area (acre)	202.24	202.24	202.24
Population	2203	2867	4856
Density of Population (acre)	11	14	24

Source: BBS 2001

14.4.2 Critical Issues and Opportunities of the Ward

Ward No. 3 is one of the most problem stricken wards of the Pourashava. Following are the major problems and opportunities of the ward.

a. Critical Issues

i. Problems of Road Infrastructure

This ward has the highest numbers of existing roads. The total length of roads in the ward is 12.08 km. This length of roads can not serve the entire area. New road spaces being created on community efforts are usually very narrow. None of these roads is not above 12 ft wide except Hospital road. Another problem of roads is that they are meandering in their layout. Due to unplanned development, roads do not have proper linkage. Due to missing links one has to travel long way to reach a nearby destination. All these will pose serious problems in movement when population rises in the ward. Quality of roads on average is not satisfactory. Only 7.07 km road is paved and 4.61 km road is unpaved. Unpaved roads turn miserable during monsoon making movement more difficult.

ii. Poor Drainage

The ward does not have adequate drainage network serving the entire area. All the households do not have drainage outlet to discharge their waste water. Lack of drainage, though, is not a serious problem now but will emerge as a critical problem as density of population increases in future. In future due to construction the net run off area will increase that will cause water logging at places. So, necessary arrangements will have to be made now to get rid of future drainage problems.

iii. Haphazard Development

Like all other urban areas, unplanned development is a typical characteristic of this ward. Land owners are building their houses and structures anywhere. There is no land use plan, no adherences to building constructions are observed. This is not only destroying the aesthetic of the area but also its livable environment.

iv. Water Supply

Like all other wards water supply is also a critical problem in this ward. Surface water is the main source of drinking and washing. When population will increase the existing ponds will be inadequate to supply adequate water for the local people that will lead to severe water crisis. More over, there are arrangements for proper maintenance of the ponds. There is likelihood that without proper maintenance caretaking the ponds might get polluted by unhygienic use of water that will endanger health of the local people.

v. Low Density of Population: Problem for Providing Infrastructure

Infrastructure development is not cost effective if the density of population remains very low. The cost of service line is the same for all sizes of population. So, if the population size is small more cost has to be incurred per head of population for providing infrastructure, which is not cost effective.

vi. Lack of Threshold Population for Business

The town possesses a very low level of population which is not adequate to run large retail business activities. This size of population will not help grow the local economy grow. Besides, the average income of the people is also very low which is not conducive to economic flourishing of the town. Higher the size of population more demand is created for goods and services leading to more economic activities and employment. No urban centre can flourish without adequate economic prosperity.

b. Development Opportunities**i. Low Density of Population**

The present density of population in the ward is moderate, only 14 persons /acre. From environmental point of view this of population can create a very livable environment for the area with respect to ventilation, use of road and other basic services.

ii. Excellent External Connectivity

Dhaka is only 5-6 hours journey from Shahrasti. It takes about 1 hour to reach Chandpur, the district headquarters.

iii. Potential for Small Scale Manufacturing

Cheap labour, availability of raw materials can help grow small scale manufacturing in this town. Furniture making as a processing industry has already established its roots in the town. Jewelry, handicrafts of different kinds, small engineering can be developed here. This, however, would require local initiative. Local entrepreneurs may be provided with small capital to serve as incentive.

14.4.3 Ward Action Plan Proposals**14.4.3.1 Review of Existing Land Use**

Study of existing land use of the ward reveals that the major land use goes to agricultural and it is 103.36 acres which is 51.11% of the total ward. The second major land use is residential use, occupying 22.50% (45.50 acres) of the ward. Besides, there is 14.64% water body, 2.78% land under circulation network, 3.39% under commercial activities and otherwise 5.46% of land is being

used for education, community service, government services, manufacturing or industry, NGO activities, service activity and Urban green space, Vacant land.

14.4.3.2 Proposed Land Use Zoning

i. Urban Residential Zone

Urban residential zone refers to all categories of urban residential areas, including existing ones and the residential land use proposed under the present master plan. In total this zone covers 94.62 (46.79%) acres of land delineated up to the year 2031 in Ward No. 03, considering standard provided by LGED.

ii. Mixed Use Zone

Mixed use zones have been recommended to allow some flexibility in development. Admixture of land uses will allow flexibility of development, instead of restricting development. Total area for mixed uses have been put to 10.03 acres (4.96%).

iii. Education & Research Zone

The total area under this use has been determined as 6.46 acres (3.20% of the ward area) that includes existing one Primary school, one high schools and one new Vocational Training Institute.

iv. Government Office

Administrative zone covers all kinds of government and non-government offices in the town. The total area under this category is 1.51 acres (0.75%) that includes one Neighbourhood Centre, one Police Box/outpost and existing Government office (post office).

v. Agricultural Zone

At present Ward No. 03 has an area of agricultural land which is 103.36 acres. The total area under this use has been estimated as 30.28 acres (14.97%) that include existing and proposed land uses.

vi. Waterbody

The plan suggests preserving most of the water bodies for two purposes, first, to serve as source of water, second to serve as water retention area during monsoon. The ponds with an area equal to or more than 0.2 acres will be preserved as the water retention ponds. The proposed retention area covers 10.35% of the total ward and it is 20.93 acres.

vii. Health Services

The total area under this use has been determined as 0.74 acres (0.36% of the ward area) that includes community clinic.

viii. Circulation Network

Existing and proposed roads covers a total of 17.56 acres of land and it is 8.68% of the whole ward.

ix. Open Space

In this ward there is no outdoor recreational space like park, playground etc. So the consultants accommodate 2.01 acres of land for open space where they proposed one Neighborhood Park, one playground.

x. Transportation Facilities

The total area under this use has been proposed 0.85 acres and it is 0.42% of the whole ward.

Map 14.7 shows the existing land use of Ward No.3 while **Map- 14.8** shows the proposed landuse zoning of ward no. 03.

Table 14.14: Existing and Proposed Land Uses

Existing Land Use			Proposed Land Use		
Land Uses	Area (acres)	%	Land Uses	Area (acres)	%
Agriculture	103.36	51.11	Agricultural Zone	30.28	14.97
Circulation Network	5.62	2.78	Circulation Network	17.56	8.68
Commercial Activity	6.86	3.39	Commercial Zone	0.81	0.40
Community Service	0.53	0.26	Community Facilities	0.59	0.29
Educational Facilities	1.96	0.97	Education & Research Zone	6.46	3.20
Manufacturing and Processing Activity	0.00	0.00	General Industrial Zone	0.00	0.00
Governmental Services	0.15	0.07	Government Office	1.51	0.75
-	0.00	0.00	Health Services	0.74	0.36
Mixed Use	0.24	0.12	Mixed Use Zone	10.03	4.96
Urban Green Space	1.14	0.56	Open Space	2.01	0.99
Recreational Facilities	0.00	0.00	Recreational Facilities	0.00	0.00
-	0.00	0.00	Rural Settlement	15.23	7.53
Transportation Facilities	0.00	0.00	Transportation Facilities	0.85	0.42
-	0.00	0.00	Urban Deferred	0.00	0.00
Residential	45.50	22.50	Urban Residential Zone	94.62	46.79
-	0.00	0.00	Utility Services	0.00	0.00
Waterbody	29.61	14.64	Water Body	20.93	10.35
Service Activity	0.00	0.00	-	0.00	0.00
Vacant Land	7.27	3.59	-	0.00	0.00
Restricted Area	0.00	0.00	Restricted Area	0.61	0.30
Total	202.24	100.00	Total	202.24	100.00

14.4.3.3 Proposed Circulation Network Development

Total 6.37km (6369.06 m) of circulation network has been proposed for this ward. There are 2268.01 meter roads will be widened during the first phase (2012 – 2016). Rest of the network will be developed in second and third phase. Following table shows the detail of roads during the first phase.

Table 14.15: Road Proposals for Phase 01

Road ID	Road Name	Road Type	RoW (Ft)	Length (m)	Road Proposal
W90		Primary Road	80	311.37	Widening
W99	Comilla to Chandpur Road	Primary Road	80	1542.77	Widening
W102	Kalibari Road	Primary Road	60	102.85	Widening
W190	Solder Md Abdul Huq Road	Secondary Road	30	311.03	Widening

14.4.3.4 Drainage Development Plan

The plan proposes 4505.59 meters of new drains for ward no. 03. Out of these proposed drains, 2648.73 meters of drain will be developed during the first phase and the rest will be developed during second and third phase.

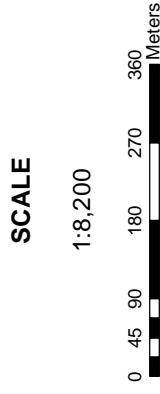
Table 14.16: Drainage Development Plan for Phase 01

Drain ID	Drain Type	Length (m)	Width (m)	Depth (m)
PS46	Secondary Drain	312.52	2.35 - 3.35	1.24 - 2.24
PS47	Secondary Drain	227.45	2.35 - 3.35	1.24 - 2.24
PS48	Secondary Drain	533.14	2.35 - 3.35	1.24 - 2.24
PS134	Secondary Drain	299.87	2.35 - 3.35	1.24 - 2.24
PS136	Secondary Drain	720.68	2.35 - 3.35	1.24 - 2.24
PS140	Secondary Drain	263.84	2.35 - 3.35	1.24 - 2.24
PS151	Secondary Drain	291.22	2.35 - 3.35	1.24 - 2.24

Besides, it will be necessary to re-excavate the khals that serve as primary drains. The consultants have identified existing whole of the khals need to be re-excavated to allow smooth flow of Water through them.

Map 14.7

Existing land use of Ward No 03



LEGEND

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

PREPARATION OF MASTER PLAN FOR SHAHRISTI POURASHAVA
Shahrasti Upazila, Chandpur District

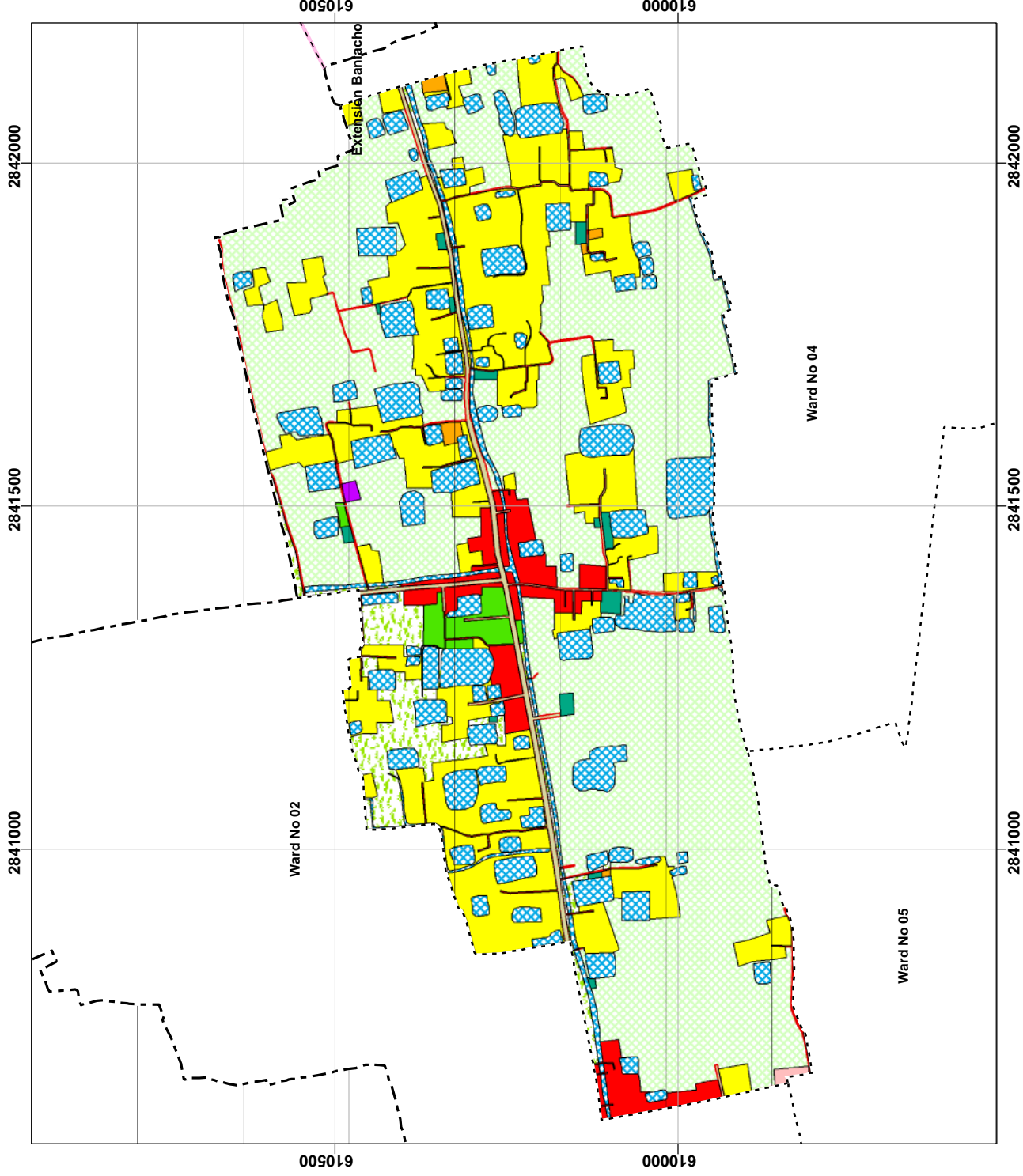


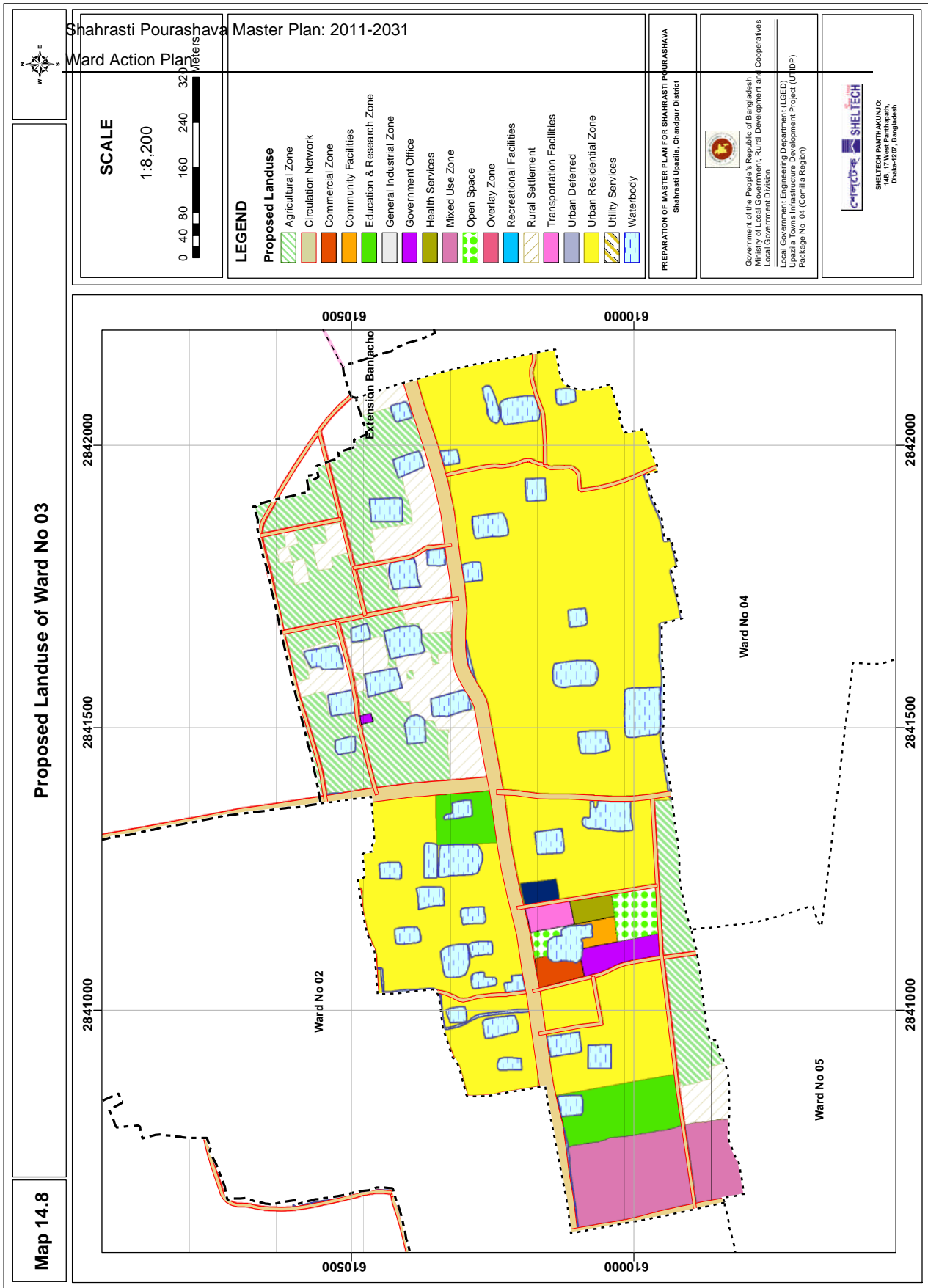
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14.4.3.5 Urban Services**i) Utility Services**

- **Solid Waste Management**

Solid waste management is a major urban service. As density of population increases the volume of solid waste also increases proportionately. However, the income level is also a major factor influencing the volume of solid waste. Population and the volume of waste in the town are yet to be large enough to become a problem for the city. But the present management system is not satisfactory and it might lead to problem in future. The consultant proposes one solid waste transfer station at suitable location an area of 5 decimal. It is recommended that home collection system is introduced in the ward by creation of local CBOs. This will cause organized collection of waste and prevent indiscriminate littering.

- **Water**

It is proposed to install a network based water supply system by exploring fresh water aquifers. **Map- 14.9** shows the water supply network proposed for the ward. There will 2359.97 meters of water supply line in this ward running along all categories of roads. Out of these 2165.67 meters of water supply lines will be established in Phase 01 and the rest will be in Phase 03.

- **Gas Supply**

It is proposed to install a network based gas supply system in Shahrasti. **Map- 14.9** shows the gas supply network proposed for the ward. There will 2100.62 meters of gas lines in this ward running along all categories of roads. Whole water supply lines will be established in Phase 01.

- **Sanitation**

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

Table 14.17: Proposal of Utility Services in Ward No. 03

Item	Existing	Proposed		
	Area/length			Area/Length
Solid Waste Transfer Station	-	One transfer station		5 decimal
Water Supply Network	-	Proposed Line	Phase 01	2165.67
		Length (m)	Phase 02	194.30
		Total		2359.97
Gas Supply Network	-	Proposed Line	Phase 01	2100.62
		Length (m)		
		Total		2101.62
Electricity Line	-	As per existing programme of PDB		

ii) Educational Facilities

There is one primary school (Shuapara Primary School) and one high school (Shuapara High School) in this ward. The plan proposes to strengthen the capacity of existing educational institutions to serve the entire Pourashava as well as the ward. Vocational Training Institute is proposed in ward no 03 which served the whole Pourashava.

Table 14.18: Proposal of Urban Services in Ward No. 03

Item	Existing		Proposed		Phase 01
	Number	Area (Acre)	Number	Area (Acre)	
Primary School	1	2.04	-	-	Strengthen Existing Facilities
High School	1		-	-	
Neighborhood Park	-	-	1	0.75	Developed in first phase
Playground	-	-	1	0.83	
Neighbourhood Center	-	-	1	0.75	Land Acquisition
Neighbourhood Market	-	-	1	0.81	
Community Clinic	-	-	1	0.74	
Community Centre	-	-	1	0.59	
Police Box	-	-	1	0.68	
Vocational Training Institute	-	-	1	443	

Map- 14.9 shows all the urban services, drainage, water and gas supply network facilities proposed for Ward No.3.

Map 14.9

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



SCALE

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LEGEND

Proposed Services

- Auditorium/Theater
- Bus Stop
- Bus Terminal
- CNG/Rickshaw Stand
- Car Parking
- Central Crematorium Ground
- Central Cemetery
- Central Park
- Cinema/Theater Hall
- College
- Community Center
- Community Clinic
- Dumping Station
- Durbin
- Edgah
- Electric Sub-station
- Filling Station
- Fire Service
- High School
- Hospital/Clinic
- Housing Estate
- Industrial Estate
- Launch Terminal
- Low Cost Housing Estate
- Neighbourhood Center
- Neighbourhood Market
- Neighbourhood Park
- Overhead Tank
- Passenger Shed
- Playground
- Police Box/Outpost
- Police Station
- Post Box
- Post Office
- Pourashava Office
- Primary School
- Public Gathering
- Public Toilet
- Railway Station
- Resettlement Zone
- Slaughtering House
- Super Market
- Sweepers Colony
- Telephone Exchange
- Treatment Plant
- Truck Terminal
- Upazila Complex
- Upazila Hospital
- Upazila Stadium
- Vocational Institute
- Waste Transfer Station
- Water Supply Station
- Wholesale Market
- Proposed Road
- Existing Gas Supply
- Proposed Gas Supply
- Proposed Water Supply
- Proposed Drain

PREPARATION OF MASTER PLAN FOR SHAHRASI POURASHAVA

Shahrasi Upazila, Chandpur 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. 04 (Comilla Region)



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Dhaka-1207, Bangladesh

Ward Action Plan for Ward No. 04

14.5.1 Demography

Ward No. 04 is located in partial mouza of Kajirkap, Shahapur, Naora and Ghughushal of the Pourashava. It has low density of population compare with other wards. In 2011 the Ward had a population of 4074 persons. Population projection shows 6900 populations for the year 2031. For the same year, it has a density of 7 persons per acre and 12 persons per acre respectively. Chandpur Pourashava had a density of 27 persons per acre in 2001.

Table 14.19: Population Statistics of Ward No. 04

Item	Year		
	2001	2011	2031
Area (acre)	574.22	574.22	574.22
Population	3130	4074	6900
Density of Population (acre)	5	7	12

14.5.2 Critical Issues and Opportunities of the Ward

Ward No. 4 is one of the most problem stricken wards of the Pourashava. Following are the major problems and opportunities of the ward.

a. Critical Issues

i. Problems of Road Infrastructure

The ward is not served by adequate number of roads. The total length of roads in this ward is only 25.74 km. This length of roads can not serve the entire area. New road spaces being created on community efforts are usually very narrow. None of these roads is not above 12 ft wide. Another problem of roads is that they are meandering in their layout. Due to unplanned development, roads do not have proper linkage. Due to missing links one has to travel long way to reach a nearby destination. All these will pose serious problems in movement when population rises in the ward. Quality of roads on average is not satisfactory. Only 13.51 km road is paved and 11.72 km road is unpaved. Unpaved roads turn miserable during monsoon making movement more difficult.

ii. Poor Drainage

The ward does not have adequate drainage network serving the entire area. All the households do not have drainage outlet to discharge their waste water. Lack of drainage, though, is not a serious problem now but will emerge as a critical problem as density of population increases in future. In future due to construction the net run off area will increase that will cause water logging at places. So, necessary arrangements will have to be made now to get rid of future drainage problems.

iii. Haphazard Development

Like all other urban areas, unplanned development is a typical characteristic of this ward. Land owners are building their houses and structures anywhere. There is no land use plan, no adherences to building constructions are observed. This is not only destroying the aesthetic of the area but also its livable environment.

iv. Water Supply

Like all other wards water supply is also a critical problem in this ward. Surface water is the main source of drinking and washing. When population will increase the existing ponds will be

inadequate to supply adequate water for the local people that will lead to severe water crisis. More over, there are arrangements for proper maintenance of the ponds. There is likelihood that without proper maintenance caretaking the ponds might get polluted by unhygienic use of water that will endanger health of the local people.

v. Low Density of Population: Problem for Providing Infrastructure

Infrastructure development is not cost effective if the density of population remains very low. The cost of service line is the same for all sizes of population. So, if the population size is small more cost has to be incurred per head of population for providing infrastructure, which is not cost effective.

vi. Lack of Threshold Population for Business

The town possesses a very low level of population which is not adequate to run large retail business activities. This size of population will not help grow the local economy grow. Besides, the average income of the people is also very low which is not conducive to economic flourishing of the town. Higher the size of population more demand is created for goods and services leading to more economic activities and employment. No urban centre can flourish without adequate economic prosperity.

b. Development Opportunities

i. Low Density of Population

The present density of population in the ward is low, only 7 persons/acre. From environmental point of view this of population can create a very livable environment for the area with respect to ventilation, use of road and other basic services.

ii. Excellent External Connectivity

Dhaka is only 5-6 hours journey from Shahrasti. It takes about 1 hour to reach Chandpur, the district headquarters.

iii. Potential for Small Scale Manufacturing

Cheap labour, availability of raw materials can help grow small scale manufacturing in this town. Furniture making as a processing industry has already established its roots in the town. Jewelry, handicrafts of different kinds, small engineering can be developed here. This, however, would require local initiative. Local entrepreneurs may be provided with small capital to serve as incentive.

14.5.3 Ward Action Plan Proposals

14.5.3.1 Review of Existing Land Use

Study of existing land use of the ward reveals that the major land use goes to agriculture and it is 417.67 acres which is 72.74% of the total ward. The second major land use is residential use, occupying 12.83% (102.61 acres) of the ward. Besides, there is 8.92% water body, 3.12% land under circulation network, 0.29% under commercial activities and otherwise 1.88% of land is being used for education, community service, government services, manufacturing or industry, NGO activities, service activity and urban green space.

14.5.3.2 Proposed Land Use Zoning

i. Urban Residential Zone

Urban residential zone refers to all categories of urban residential areas, including exiting ones and the residential land use proposed under the present master plan. In total this zone covers 68.37 (11.91%) acres of land delineated up to the year 2031 in Ward No. 04, considering standard provided by LGED.

ii. Commercial Zone

The commercial zone is intended to provide locations, where commercial activities including retails can be set up and function, without creating hazards to surrounding land uses. This zone has an area of 0.90 acres (0.16%) designated up to 2031. The proposed commercial area includes Neighborhood market.

iii. Education & Research Zone

The total area under this use has been determined as 4.10 acres (0.71% of the ward area) that includes existing College (0.93 acre), one primary school (2.29 acre) and one High school (0.70 acre).

iv. Government Office

Administrative zone covers all kinds of government and non-government offices in the town. The total area under this category is 5.13 acres (0.89%) that includes one proposed police outpost (area 0.65 acres), one Neighborhood centre (area 0.78 acres) and existing Government offices.

v. Agricultural Zone

At present Ward No. 04 has a 417 acre area of agricultural land. In future, demand for new residential area and other urban facilities will be high in this ward. According to the standard to accommodate future facilities vast amount of existing agricultural land is used in proposed plan. Proposed land covers a total of 310.35 acres of land and it is 54.05% of the whole ward.

vi. Health Services

The total area under this use has been estimated as 0.91 acres and it is 0.16% of the whole ward. This includes proposed community clinic in this ward.

vii. Circulation Network

Existing and proposed roads covers a total of 32.26 acres of land and it is 5.62% of the whole ward.

viii. Waterbody

The plan suggests preserving most of the water bodies for two purposes, first, to serve as source of water, second to serve as water retention area during monsoon. The ponds with an area equal to or more than 0.2 acres will be preserved as the water retention ponds. The proposed retention area covers 8.89% of the total ward and it is 51.03 acres.

ix. Open Space

In this ward there is no outdoor recreational space like park, playground etc. So the consultants accommodate 3.84 acres of land for open space where they proposed two Neighbourhood Parks and one playground (area 0.70 acres).

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

Table 14.20: Existing and Proposed Land Uses

Existing Land Use			Proposed Land Use		
Land Uses	Area (acres)	%	Land Uses	Area (acres)	%
Agriculture	417.67	72.74	Agricultural Zone	310.35	54.05
Circulation Network	17.93	3.12	Circulation Network	32.26	5.62
Commercial Activity	1.68	0.29	Commercial Zone	0.90	0.16
Community Service	0.40	0.07	Community Facilities	0.00	0.00
Educational Facilities	4.42	0.77	Education & Research Zone	4.10	0.71
Governmental Services	0.00	0.00	Government Office	5.13	0.89
-	0.00	0.00	Health Services	0.91	0.16
Mixed Use	0.00	0.00	Mixed Use Zone	0.00	0.00
Urban Green Space	0.61	0.11	Open Space	3.85	0.67
Recreational Facilities	0.75	0.13	Recreational Facilities	0.00	0.00
-	0.00	0.00	Rural Settlement	97.32	16.95
Residential	73.65	12.83	Urban Residential Zone	68.37	11.91
Waterbody	51.20	8.92	Water Body	51.03	8.89
Vacant Land	5.38	0.94	-	0.00	0.00
Restricted Area	0.54	0.09	Restricted Area	0.00	0.00
Total	574.22	100	Total	574.22	100

14.5.3.3 Proposed Circulation Network Development

13.67 km (13672.53 m) of circulation network has been proposed for this ward. There is 1.29 km. (1293.99 meters) roads will be developed during the first phase. Rest of the network will be developed in second and third phase.

Table 14.21: Road Proposals for Phase 01

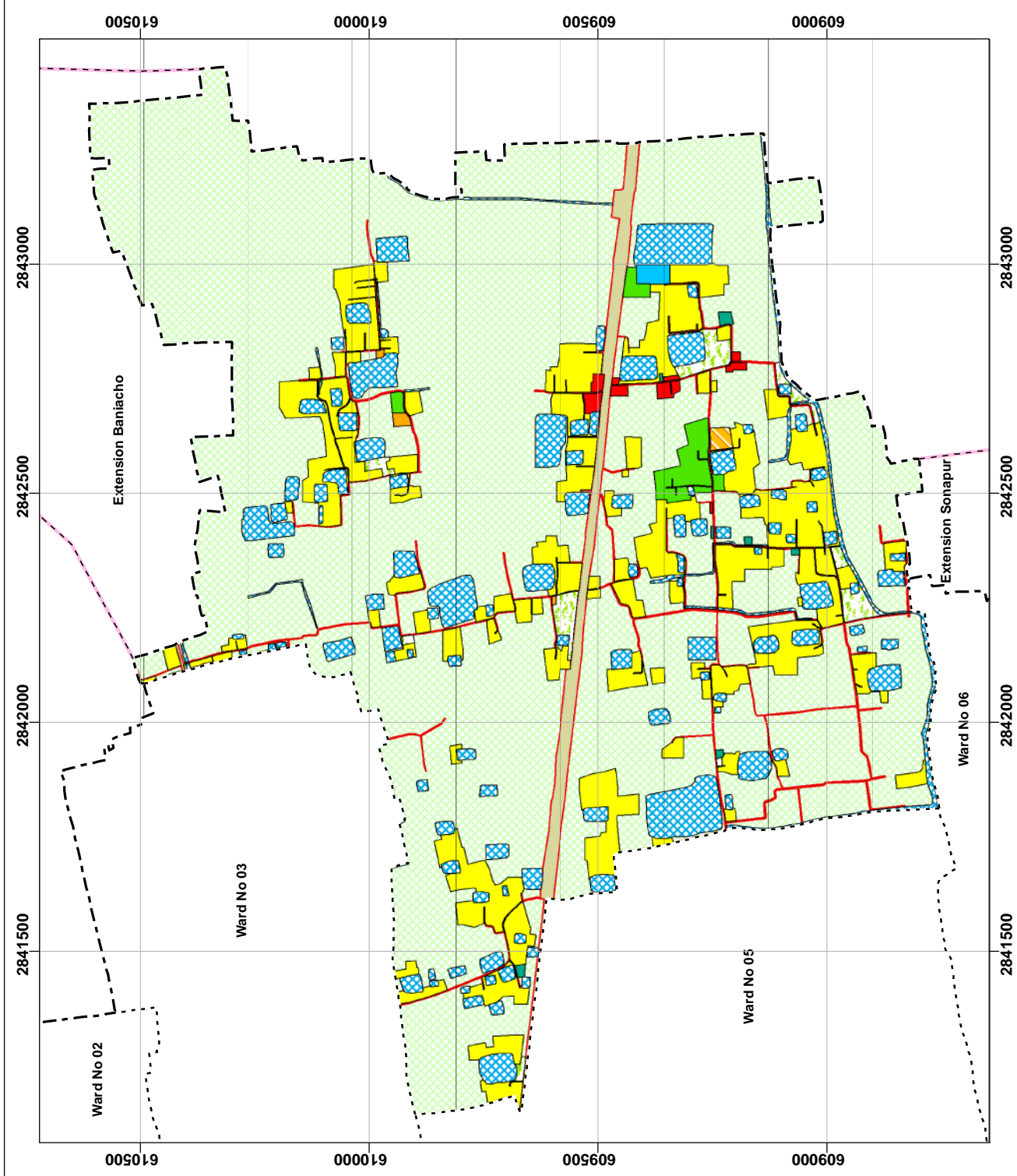
Road ID	Road Name	Road Type	RoW (Ft)	Length (m)	Road Proposal
W99	Comilla to Chandpur Road	Primary Road	80	63.36	Widening
W41	Kajir Kap Road	Secondary Road	40	70.35	Widening
W54		Secondary Road	40	343.49	Widening
W78	Solder Md Abdul Huq Road	Secondary Road	30	368.74	Widening
W190	Solder Md Abdul Huq Road	Secondary Road	30	448.05	Widening

Besides roads, no bridges and culverts have to be developed and the existing culverts with further development will make the proposed roads operable.



Map 14.10

Existing land use of Ward No 04



SCALE

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LEGEND

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

PREPARATION OF MASTER PLAN FOR SHAHRISTI POURASHAVA
Shaharati Upazila, Chandpur District

Government of the People's Republic of Bangladesh
Ministry of Local Government, Rural Development and Cooperatives
Local Government Division
Local Government Engineering Department (LGED)
Upazila Towns Infrastructure Development Project (UTIDP)
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SCALE

1:12,100



LEGEND

Proposed Landuse

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

PREPARATION OF MASTER PLAN FOR SHAHRASTI POURASHAVA
Shahrasti Upazila, Chandpur District

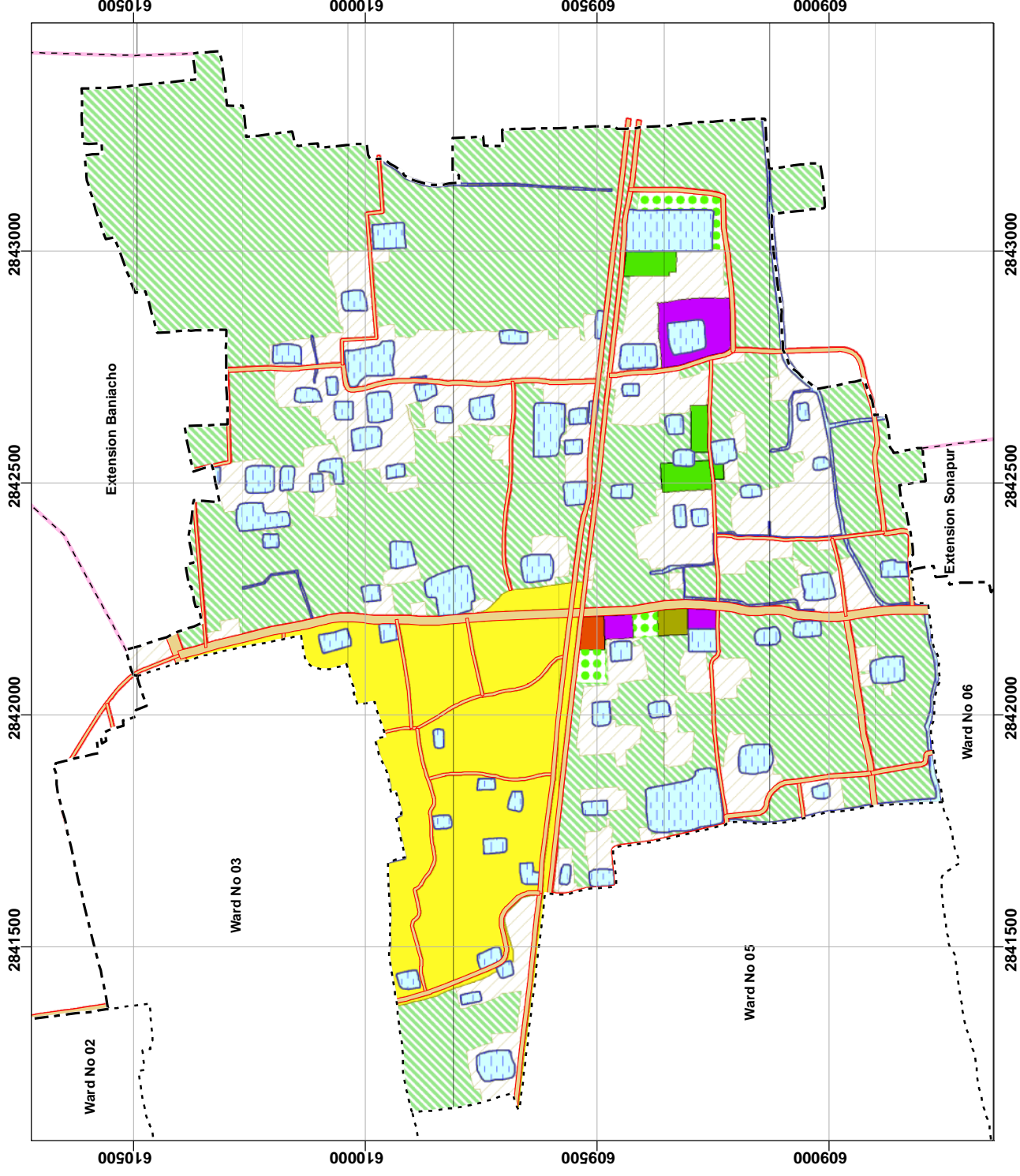


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14.5.3.4 Drainage Development Plan

Ward 04 has 38 meter drain. The plan proposes 12391.44 meters of new secondary drains for ward no. 04. 2375.84 meter drain will be constructed in first phase. Rest of the network of drain will be developed during the second and third phase.

Table 14.22: Drainage Proposals for Phase 01

Drain ID	Drain Type	Length (m)	Width (m)	Depth (m)
PS60	Secondary Drain	335.18	2.35 - 3.35	1.24 - 2.24
PS61	Secondary Drain	70.89	2.35 - 3.35	1.24 - 2.24
PS62	Secondary Drain	334.70	2.35 - 3.35	1.24 - 2.24
PS88	Secondary Drain	351.15	2.35 - 3.35	1.24 - 2.24
PS122	Secondary Drain	833.49	2.35 - 3.35	1.24 - 2.24
PS134	Secondary Drain	320.03	2.35 - 3.35	1.24 - 2.24
PS136	Secondary Drain	60.08	2.35 - 3.35	1.24 - 2.24
PS142	Secondary Drain	70.32	2.35 - 3.35	1.24 - 2.24

Besides, it will be necessary to re-excavate the khals that serve as primary drains. The consultants have identified existing whole of the khals need to be re-excavated to allow smooth flow of Water through them.

14.5.3.5 Urban Services**i) Utility Services**

- **Solid Waste Management**

Solid waste management is a major urban service. As density of population increases the volume of solid waste also increases proportionately. However, the income level is also a major factor influencing the volume of solid waste. Population and the volume of waste in the town are yet to be large enough to become a problem for the city. But the present management system is not satisfactory and it might to lead to problem in future. The consultant proposes one solid waste transfer station in this ward at suitable location with an area of 5 decimal. It is recommended that home collection system is introduced in the ward by creation of local CBOs. This will cause organized collection of waste and prevent indiscriminate littering.

- **Water**

It is proposed to install a network based water supply system by exploring fresh water aquifers. There will 5346.46 meters of water supply lines in this ward running along all categories of roads. 1423.95 meter network will be developed during the first phase.

- **Gas Supply**

It is proposed to install a piped gas supply network to facilitate the households. The plan proposed 2742.89 meters of gas supply lines in this ward as a whole running along the roads. 925.72 meter network will be developed during the first phase.

- **Sanitation**

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

Table 14.23: Proposal for Utility Services for ward no. 04

Item	Existing	Proposed		
	Area/length			Area/Length
Solid Waste Transfer Station	-	One transfer station		5 decimal
Water Supply Network	-	Proposed Line Length (m)	Phase 01	1423.95
			Phase 02	3922.52
		Total		5346.47
Gas Supply Network	-	Proposed Line Length (m)	Phase 01	925.72
			Phase 02	1817.16
		Total		2742.88
Electricity Line		As per existing programme of PDB		

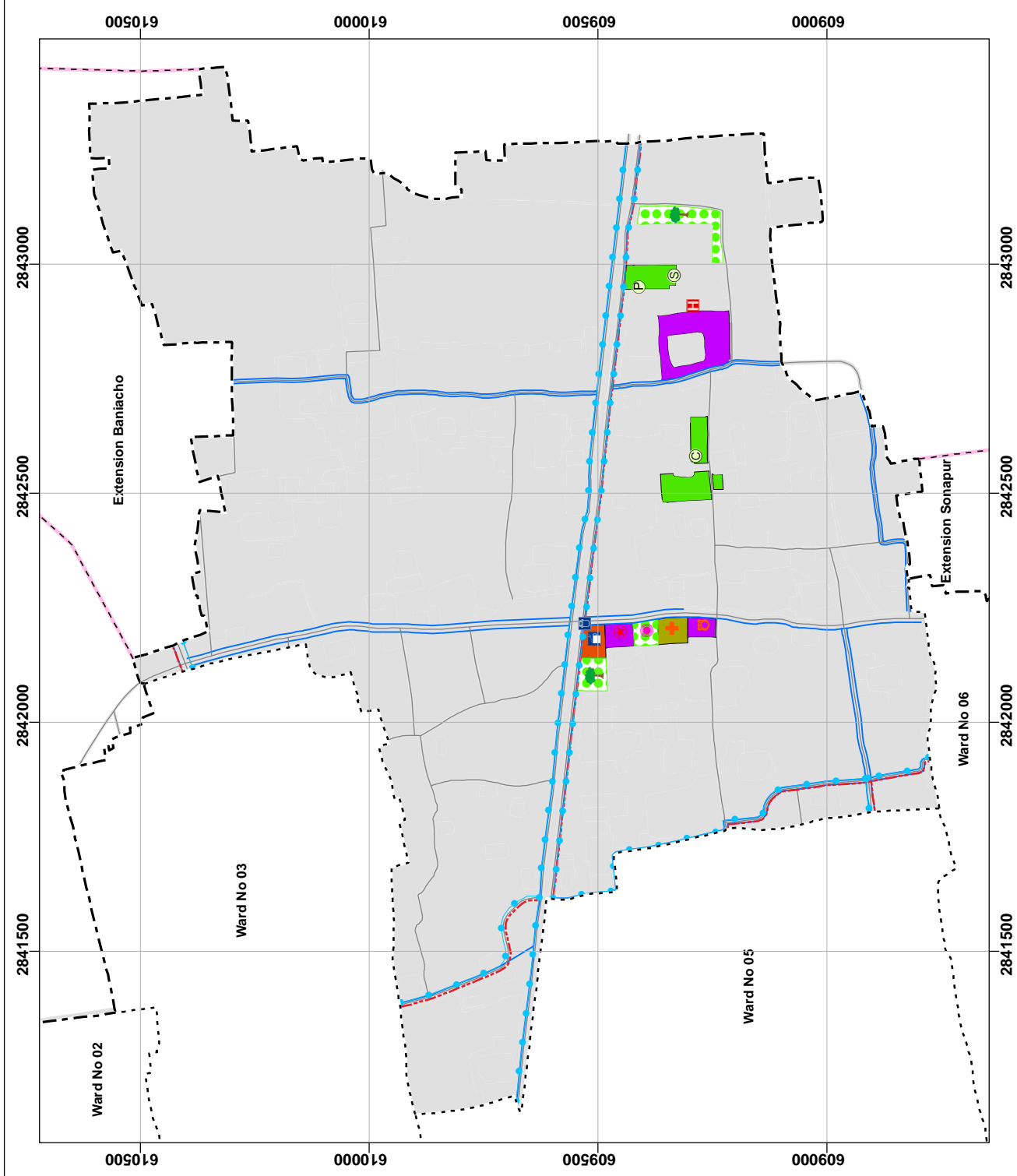
ii) Educational Facilities

There is one existing Primary school (Noara Govt. Primary School), one High school (Panchagram Ajjur Rahman High school) and one college (Karfulaneesa Girl's College) in this ward. The plan proposes to strengthen the capacity of existing educational institutions to serve the entire Pourashava as well as the ward.

Following table shows the existing and proposed Community facilities for Ward no 04. **Map- 14.12** shows all the urban services, drainage, water and gas supply network facilities proposed for Ward No.4.

Table 14.24: Urban Services for ward no 04

Item	Existing		Proposed		Phase 01
	Number	Area (Acre)	Number	Area (Acre)	
Neighborhood Center	-	-	1	0.78	Land acquisition
Police Box	-	-	1	0.65	
Neighborhood Market	-	-	1	0.90	
College	1	0.93	-	-	Strengthen Existing Capacity
Primary School	1	2.29	-	-	
High School	1	0.70	-	-	
Neighbourhood Park	-	-	2	3.14	Developed in first phase
Playground	-	-	1	0.70	



SCALE

1:12,100



LEGEND

Proposed Services

- Playground
- Police Box/Outpost
- Police Station
- Post Box
- Post Office
- Pourashava Office
- Primary School
- Public Gathering
- Public Toilet
- Railway Station
- Resettlement Zone
- Slaughtering House
- Super Market
- Sweepers Colony
- Telephone Exchange
- Treatment Plant
- Truck Terminal
- Upazila Complex
- Upazila Hospital
- Upazila Stadium
- Vocational Institute
- Waste Transfer Station
- Water Supply Station
- Wholesale Market
- Proposed Road
- Existing Gas Supply
- Proposed Gas Supply
- Proposed Water Supply
- Proposed Drain
- Passenger Shed
- Auditorium/Theater
- Bus Stop
- Bus Terminal
- CNG/Rickshaw Stand
- Car Parking
- Central Cremation Ground
- Central Graveyard
- Central Park
- Cinema/Theater Hall
- College
- Community Center
- Community Clinic
- Dumping Station
- Durbin
- Edgah
- Electric Sub-station
- Filling Station
- Fire Service
- High School
- Hospital/Clinic
- Housing Estate
- Industrial Estate
- Launch Terminal
- Low Cost Housing Estate
- Neighbourhood Center
- Neighbourhood Market
- Neighbourhood Park
- Overhead Tank

PREPARATION OF MASTER PLAN FOR SHAHRASTI POURASHAVA

Shahrasti Upazila, Chandpur District



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14.6 Ward Action Plan for Ward No. 05

14.6.1 Demography

Ward No. 05 is located partial mouza of Shahapur, Upolota, Badia of the town. It has low density of population compare with other wards. In 2011 the Ward had a population of 3347 persons. Population projection shows 5670 population for the year 2031. For the same year, it has a density of 8 persons per acre and 14 persons per acre respectively. Chandpur Pourashava had a density of 27 persons per acre in 2001.

Table 14.25: Population Statistics of Ward No. 05

Item	Year		
	2001	2011	2031
Area (acre)	347.88	347.88	347.88
Population	2572	3347	5670
Density of Population (acre)	6	8	14

14.6.2 Critical Issues and Opportunities of the Ward

Ward No. 05 is one of the most problem stricken wards of the Pourashava. Following are the major problems and opportunities of the ward.

a. Critical Issues

i. Problems of Road Infrastructure

The ward is not served by adequate number of roads. The total length of roads in the ward is only 22.79 km. This length of roads can not serve the entire area. New road spaces being created on community efforts are usually very narrow. None of these roads is not above 16 ft wide. Another problem of roads is that they are meandering in their layout. Due to unplanned development, roads do not have proper linkage. Due to missing links one has to travel long way to reach a nearby destination. All these will pose serious problems in movement when population rises in the ward. Quality of roads on average is not satisfactory. Only 11.04 km road is paved and 11.37 km road is unpaved. Unpaved roads turn miserable during monsoon making movement more difficult.

ii. Poor Drainage

The ward does not have adequate drainage network serving the entire area. All the households do not have drainage outlet to discharge their waste water. Lack of drainage, though, is not a serious problem now but will emerge as a critical problem as density of population increases in future. In future due to construction the net run off area will increase that will cause water logging at places. So, necessary arrangements will have to be made now to get rid of future drainage problems.

iii. Haphazard Development

Like all other urban areas, unplanned development is a typical characteristic of this ward. Land owners are building their houses and structures anywhere. There is no land use plan, no adherences to building constructions are observed. This is not only destroying the aesthetic of the area but also its livable environment.

iv. Water Supply

Like all other wards water supply is also a critical problem in this ward. Surface water is the main source of drinking and washing. When population will increase the existing ponds will be

inadequate to supply adequate water for the local people that will lead to severe water crisis. More over, there are arrangements for proper maintenance of the ponds. There is likelihood that without proper maintenance caretaking the ponds might get polluted by unhygienic use of water that will endanger health of the local people.

v. Low Density of Population: Problem for Providing Infrastructure

Infrastructure development is not cost effective if the density of population remains very low. The cost of service line is the same for all sizes of population. So, if the population size is small more cost has to be incurred per head of population for providing infrastructure, which is not cost effective.

vi. Lack of Threshold Population for Business

The town possesses a very low level of population which is not adequate to run large retail business activities. This size of population will not help grow the local economy grow. Besides, the average income of the people is also very low which is not conducive to economic flourishing of the town. Higher the size of population more demand is created for goods and services leading to more economic activities and employment. No urban centre can flourish without adequate economic prosperity.

b. Development Opportunities

i. Low Density of Population

The present density of population in this ward is low, only 8 persons/acre. From environmental point of view this of population can create a very livable environment for the area with respect to ventilation, use of road and other basic services.

ii. Excellent External Connectivity

Dhaka is only 5-6 hours journey from Shahrasti. It takes about 1 hour to reach Chandpur, the district headquarters.

iii. Potential for Small Scale Manufacturing

Cheap labour, availability of raw materials can help grow small scale manufacturing in this town. Furniture making as a processing industry has already established its roots in the town. Jewelry, handicrafts of different kinds, small engineering can be developed here. This, however, would require local initiative. Local entrepreneurs may be provided with small capital to serve as incentive.

14.6.3 Ward Action Plan Proposals

14.6.3.1 Review of Existing Land Use

Study of existing land use of the ward reveals that the major land use goes to agriculture and it is 120.74 acres which is 34.71% of the total ward. The second major land use is residential use, occupying 35.92% (124.97 acres) of the ward. Besides, there is 15% land under waterbody, 4.40% land under circulation network, 0.82% under educational facilities and otherwise 8.66% of land is being used for urban green space, community service, transport and communication, NGO activities, service activity and Vacant land.

14.6.3.2 Proposed Land Use Zoning**i. Urban Residential Zone**

Urban residential zone refers to all categories of urban residential areas, including existing ones and the residential land use proposed under the present master plan. In total this zone covers 184.54 (53.05%) acres of land delineated up to the year 2031 in Ward No. 05, considering standard provided by LGED.

ii. Commercial Zone

The commercial zone is intended to provide locations, where commercial activities including retails can be set up and function, without creating hazards to surrounding land uses. This zone has an area of 1.72 acres (0.49%) designated up to 2031. In this zone one Neighborhood market is proposed by the consultant.

iii. Community Facilities

The total area under this use has been determined as 2.02 acres (0.58% of the ward area), this includes Central Graveyard.

iv. Education & Research Zone

The total area under this use has been determined as 3.04 acres (0.87% of the ward area) that includes existing Primary school and High school.

v. Government Office

Administrative zone covers all kinds of government and non-government offices in the town. The total area under this category is 2.30 acres (0.66%) that includes one Neighborhood centre, one Police box.

vi. Rural Settlement

The total area under this use has been proposed as 25.77 acres and covers 7.41% of the whole ward that includes existing and proposed land uses.

vii. Agricultural Zone

At present Ward No. 05 has a vast area of agricultural land which is 120.74 acres. In proposed plan vast amount of existing agricultural land is used to accommodate future facilities. The total area under this use has been estimated as 37.31 acres (10.72%) that include existing and proposed land uses.

viii. Waterbody

The plan suggests preserving most of the water bodies for two purposes, first, to serve as source of water, second to serve as water retention area during monsoon. The ponds with an area equal to or more than 0.2 acres will be preserved as the water retention ponds. The proposed retention area covers 12.97% of the total ward and it is 45.12 acres.

ix. Health Services

The total area under this use has been estimated as 0.90 acres and it is 0.26% of the whole ward. The proposed plan suggests one Community Clinic.

x. Circulation Network

Existing and proposed roads covers a total of 28.39 acres of land and it is 8.16% of the whole ward.

xi. Open Space

In this ward there is no outdoor recreational space like park, playground etc. So the consultants accommodate 2.65 acres of land for open space where they proposed one Neighborhood Park (area 0.90 acre), one playground (0.94 acre).

xii. Urban Deferred

According to planning standard provided by LGED seeks about 10 percent of the total build up area. The total area under this use has been proposed as 5.28 acres and covers 1.52% of the whole ward that includes existing and proposed land uses.

Map 14.13 shows the existing land use of Ward No.5 while **Map- 14.14** shows the proposed landuse zoning of ward no. 05.

Table 14.26: Existing and Proposed Land Uses

Existing Land Use			Proposed Land Use		
Land Uses	Area (acres)	%	Land Uses	Area (acres)	%
Agriculture	120.74	34.71	Agricultural Zone	37.31	10.72
Circulation Network	15.32	4.40	Circulation Network	28.39	8.16
Commercial Activity	2.31	0.66	Commercial Zone	1.72	0.49
Community Service	0.54	0.16	Community Facilities	2.02	0.58
Educational Facilities	2.86	0.82	Education & Research Zone	3.04	0.87
Governmental Services	0.79	0.23	Government Office	2.30	0.66
-	0.00	0.00	Health Services	0.90	0.26
Mixed Use	1.24	0.36	Mixed Use Zone	8.19	2.35
Urban Green Space	0.39	0.11	Open Space	2.65	0.76
Recreational Facilities	0.99	0.28	Recreational Facilities	0.00	0.00
-	0.00	0.00	Rural Settlement	25.77	7.41
Transportation Facilities	0.00	0.00	Transportation Facilities	0.65	0.19
-	0.00	0.00	Urban Deferred	5.28	1.52
Residential	124.97	35.92	Urban Residential Zone	184.54	53.05
Waterbody	52.18	15.00	Water Body	45.12	12.97
Vacant Land	25.55	7.34	-	0.00	0.00
Restricted Area	0.00	0.00	Restricted Area	0.00	0.00
Total	347.88	100.00	Total	347.88	100.00

14.6.3.3 Proposed Circulation Network Development

Total 14.34km (14336.42 m) of circulation network has been proposed for this ward. Large portion of the proposed network (11.72 km) will be developed in phase 02. Only 2.62 km. (2616.50 meters) roads will be developed during the first phase (2012 – 2016). Following table shows the detail of roads to be widened and newly constructed during the first phase.

Table 14.27: Road Proposals for Phase 01

Road ID	Road Name	Road Type	RoW (Ft)	Length (m)	Road Proposal
N101		Primary Road	60	182.60	New Road
W102	Kalibari Road	Primary Road	60	854.74	Widening
W41	Kajir Kap Road	Secondary Road	40	996.54	Widening
W154	Saheb Bazar Road	Secondary Road	40	109.31	Widening
W78	Solder Md Abdul Huq Road	Secondary Road	30	473.31	Widening

14.6.3.4 Drainage Development Plan

The plan proposes 11034.16 meters of new drains for ward no. 05. Large portion of the proposed network (4046.52 m) will be developed in phase 01. Rest 6.99 km. (6987.63 meters) roads will be developed during the second phase (2012 – 2016).

Table 14.28: Proposed Drainage Development Proposals for Phase 01

Drain ID	Drain Type	Length (m)	Width (m)	Depth (m)
PS51	Secondary Drain	182.97	2.35 - 3.35	1.24 - 2.24
PS52	Secondary Drain	904.15	2.35 - 3.35	1.24 - 2.24
PS56	Secondary Drain	182.91	2.35 - 3.35	1.24 - 2.24
PS57	Secondary Drain	667.71	2.35 - 3.35	1.24 - 2.24
PS61	Secondary Drain	987.78	2.35 - 3.35	1.24 - 2.24
PS88	Secondary Drain	479.85	2.35 - 3.35	1.24 - 2.24
PS140	Secondary Drain	107.71	2.35 - 3.35	1.24 - 2.24
PS141	Secondary Drain	104.01	2.35 - 3.35	1.24 - 2.24
PS142	Secondary Drain	429.15	2.35 - 3.35	1.24 - 2.24
PS52	Secondary Drain	0.15	2.35 - 3.35	1.24 - 2.24
PS56	Secondary Drain	0.15	2.35 - 3.35	1.24 - 2.24

Besides, it will be necessary to re-excavate the khals that serve as primary drains. The consultants have identified existing whole of the khals need to be re-excavated to allow smooth flow of Water through them.

14.6.3.5 Urban Services**i) Utility Services**

- Solid Waste Management**

Solid waste management is a major urban service. As density of population increases the volume of solid waste also increases proportionately. However, the income level is also a major factor influencing the volume of solid waste. Population and the volume of waste in the town is yet to be large enough to become a problem for the city. But the present management system is not satisfactory and it might to lead to problem in future. The consultant proposes one solid waste transfer station at suitable location with an area of 5 decimal. It is recommended that home collection system is introduced in the ward by creation of local CBOs. This will cause organized collection of waste and prevent indiscriminate littering.

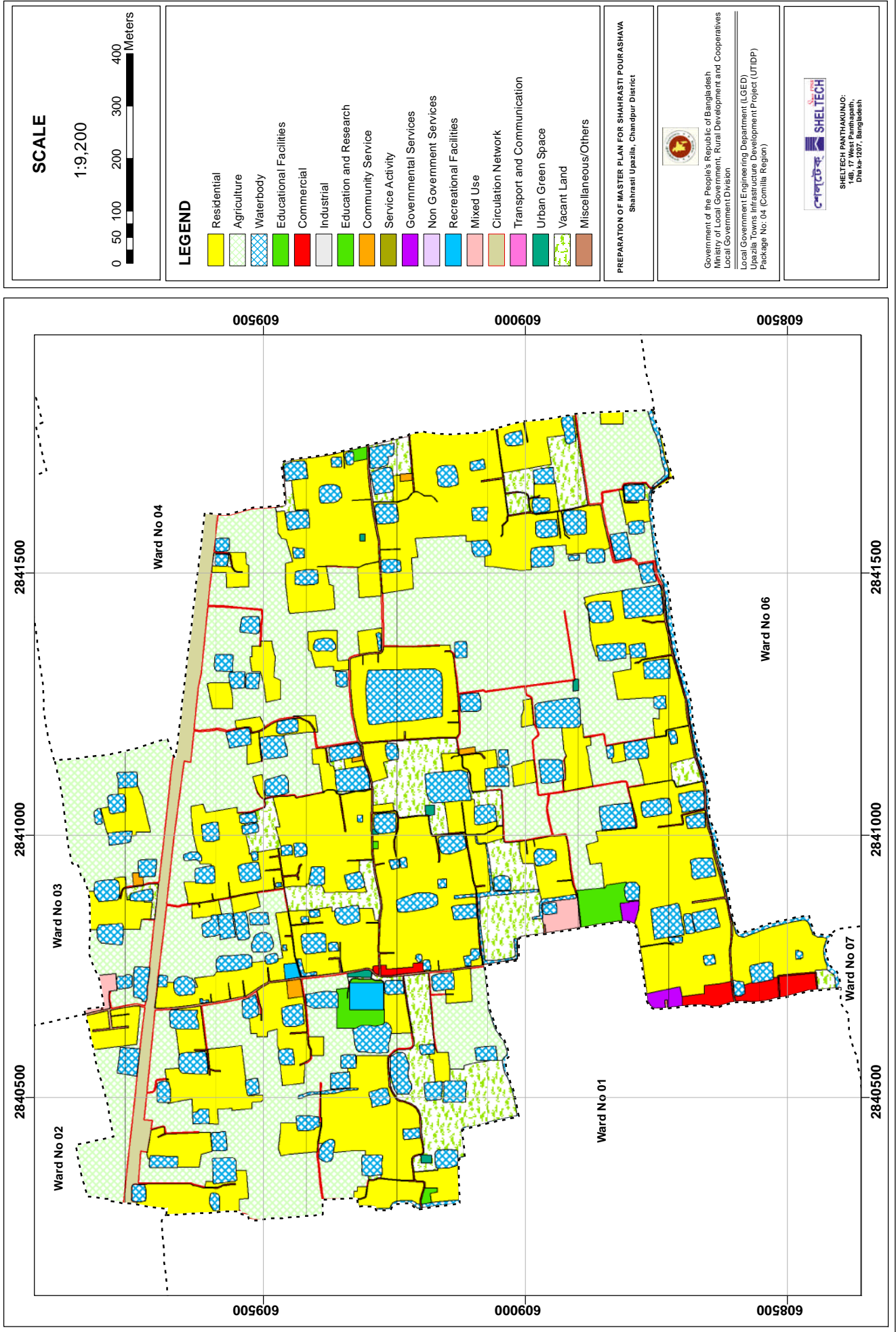
- Water supply**

It is proposed to install a network based water supply system by exploring fresh water aquifers. There will 4044.32 meters of water supply lines in this ward running along all categories of roads. Among this water supply network, 1977.46 meter network will be developed during the first phase.



Map 14.13

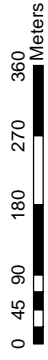
Existing land use of Ward No 05





SCALE

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LEGEND

Proposed Landuse

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

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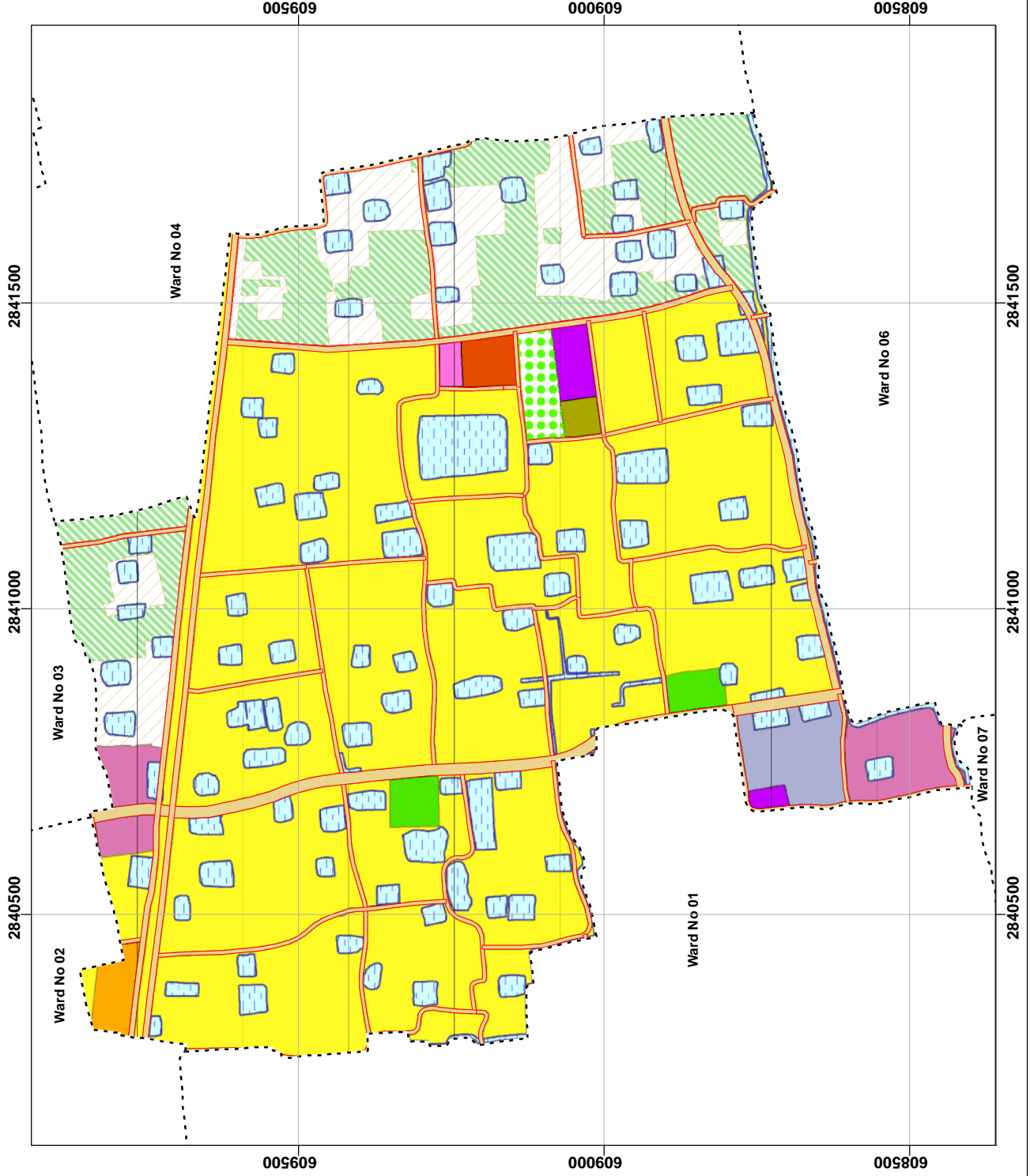


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- **Gas Supply**

It is proposed to install a piped gas supply network to facilitate the households. There will 3933.73 meters of gas supply lines in this ward as a whole running along the roads. Among this water supply network, whole network will be developed during the first and second phase.

- **Sanitation**

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

Table 14.29: Proposal of Utility Services in Ward No. 05

Item	Existing	Proposed		
	Area/length			Area/Length
Solid Waste Transfer Station	-	One transfer station		5 decimal
Water Supply Network		Proposed Line Length (m)	Phase 01	1977.46
			Phase 02	2066.85
		Total		4044.31
Gas Supply Network		Proposed Line Length (m)	Phase 01	2279.15
			Phase 02	1654.58
		Total		3933.73
Electricity Line		As per existing programme of PDB		

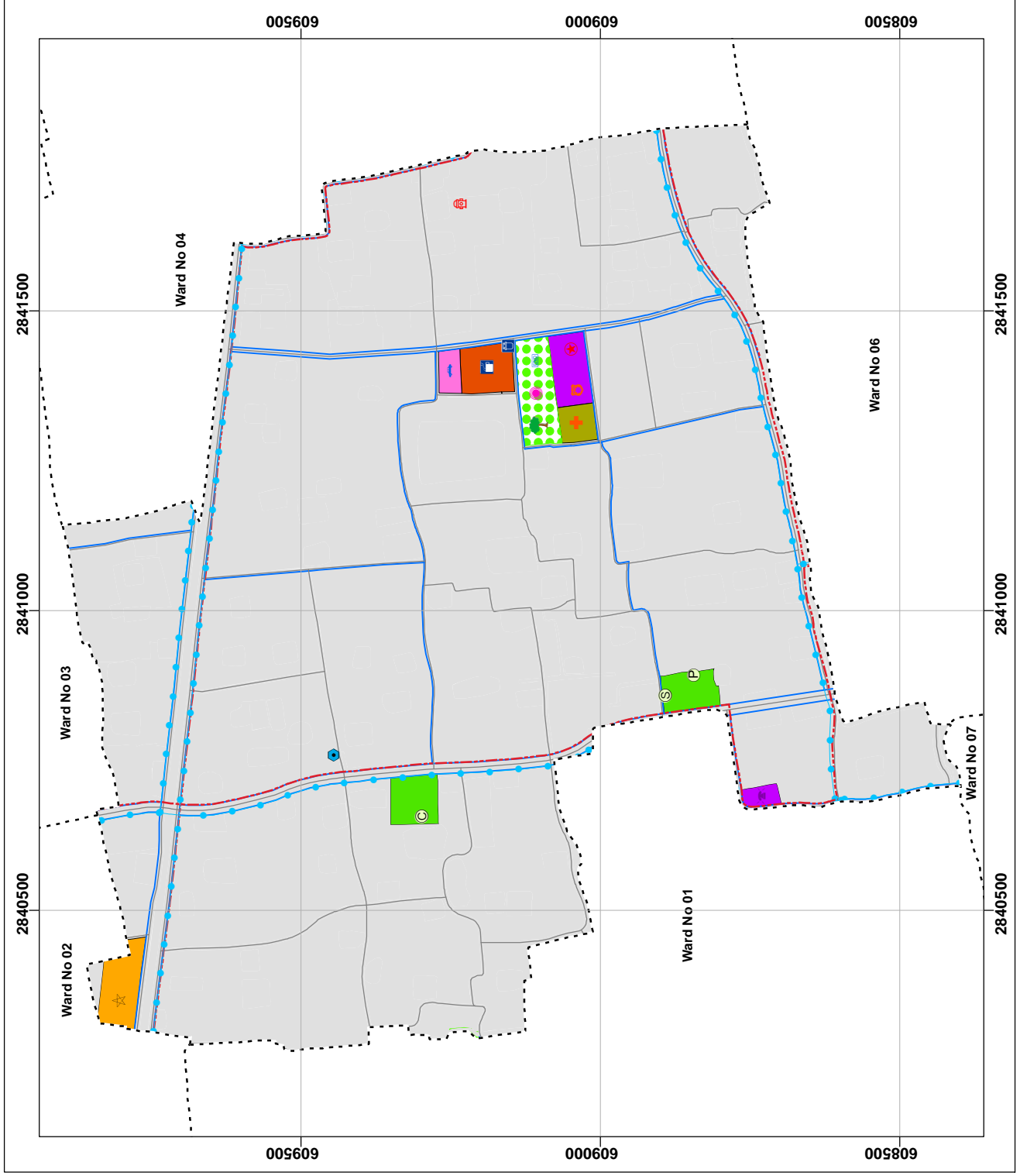
ii) Educational Facilities

In existing landuse there is one primary school (Upolota Govt. Primary School), one High School (Meher High School) and one College (Meher College) in this ward.

Following table shows the existing and proposed Community facilities for Ward no 05. **Map- 14.15** shows all the urban services, drainage, water and gas supply network facilities proposed for Ward No.5.

Table 14.30: Proposal of Urban Services for Ward No. 05

Item	Existing		Proposed		Phase 01
	Number	Area (Acre)	Number	Area (Acre)	
Neighborhood Center	-	-	1	0.87	Land Acquisition
Police Box	-	-	1	0.93	
Neighborhood Market	-	-	1	1.72	
Community Clinic	-	-	1	0.90	
Neighborhood Park	-	-	1	0.90	Developed in first phase
Playground	-	-	1	0.94	
Central Graveyard	-	-	1	2.02	
College	1	1.60	-	-	Strengthen existing capacity
High School	1	0.66	-	-	
Primary School	1	0.77	-	-	



SCALE

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proposed for Ward No.5.

LEGEND

Proposed Services

- Auditorium/Theater
- Bus Stop
- Bus Terminal
- CNG/Rickshaw Stand
- Car Parking
- Central Crematorium Ground
- Central Cemetery
- Central Park
- Cinema/Theater Hall
- College
- Community Center
- Community Clinic
- Dumping Station
- Durbin
- Edgah
- Electric Sub-station
- Filling Station
- Fire Service
- High School
- Hospital/Clinic
- Housing Estate
- Industrial Estate
- Launch Terminal
- Low Cost Housing Estate
- Neighbourhood Center
- Neighbourhood Market
- Neighbourhood Park
- Overhead Tank
- Passenger Shed
- Playground
- Police Box/Cutpoint
- Police Station
- Post Box
- Post Office
- Pourashava Office
- Primary School
- Public Gathering
- Public Toilet
- Railway Station
- Recreation Zone
- Slaughtering House
- Super Market
- Sweepers Colony
- Telephone Exchange
- Treatment Plant
- Truck Terminal
- Upazila Complex
- Upazila Hospital
- Upazila Stadium
- Vocational Institute
- Waste Transfer Station
- Water Supply Station
- Wholesale Market
- Proposed Road
- Existing Gas Supply
- Proposed Gas Supply
- Proposed Water Supply
- Proposed Drain

PREPARATION OF MASTER PLAN FOR SHAHRASTI POURASHAVA

Shahrasti Upazila, Chandpur 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. 04 (Comilla Region)



SHELTECH PANTHAKUNJO:
148/17 West Panthapath,
Dhaka-1207, Bangladesh

14.7 Ward Action Plan for Ward No. 06

14.7.1 Demography

Ward No. 06 is located at Kajirnagar, Nijmeher, Shreepur, Kajirkap mouza of the town. It has moderate density of population compare with other wards. In 2011 the Ward had a population of 3690 persons. Population projection shows 6250 Population for the year 2031. For the same year, it has a density of 11 persons per acre and 18 persons per acre respectively. Chandpur Pourashava had a density of 27 persons per acre in 2001.

Table 14.31: Population Statistics of Ward No. 06

Item	Year		
	2001	2011	2031
Area (acre)	346.69	346.69	346.69
Population	2835	3690	6250
Density of Population (acre)	8	11	18

14.7.2 Critical Issues and Opportunities of the Ward

Ward No. 06 is one of the most problem stricken wards of the Pourashava. Following are the major problems and opportunities of the ward.

a. Critical Issues

i. Problems of Road Infrastructure

The ward is not served by adequate number of roads. The total length of roads in this ward is only 13.17 km. This length of roads can not serve the entire area. New road spaces being created on community efforts are usually very narrow. None of these roads is not above 16 ft wide. Another problem of roads is that they are meandering in their layout. Due to unplanned development, roads do not have proper linkage. Due to missing links one has to travel long way to reach a nearby destination. All these will pose serious problems in movement when population rises in the ward. Quality of roads on average is not satisfactory. Only 7.17 km road is paved and 5.68 km road is unpaved. Unpaved roads turn miserable during monsoon making movement more difficult.

ii. Poor Drainage

The ward does not have adequate drainage network serving the entire area. All the households do not have drainage outlet to discharge their waste water. Lack of drainage, though, is not a serious problem now but will emerge as a critical problem as density of population increases in future. In future due to construction the net run off area will increase that will cause water logging at places. So, necessary arrangements will have to be made now to get rid of future drainage problems.

iii. Haphazard Development

Like all other urban areas, unplanned development is a typical characteristic of this ward. Land owners are building their houses and structures anywhere. There is no land use plan, no adherences to building constructions are observed. This is not only destroying the aesthetic of the area but also its livable environment.

iv. Water Supply

Like all other wards water supply is also a critical problem in this ward. Surface water is the main source of drinking and washing. When population will increase the existing ponds will be

inadequate to supply adequate water for the local people that will lead to severe water crisis. More over, there are arrangements for proper maintenance of the ponds. There is likelihood that without proper maintenance caretaking the ponds might get polluted by unhygienic use of water that will endanger health of the local people.

v. Low Density of Population: Problem for Providing Infrastructure

Infrastructure development is not cost effective if the density of population remains very low. The cost of service line is the same for all sizes of population. So, if the population size is small more cost has to be incurred per head of population for providing infrastructure, which is not cost effective.

vi. Lack of Threshold Population for Business

The town possesses a very low level of population which is not adequate to run large retail business activities. This size of population will not help grow the local economy grow. Besides, the average income of the people is also very low which is not conducive to economic flourishing of the town. Higher the size of population more demand is created for goods and services leading to more economic activities and employment. No urban centre can flourish without adequate economic prosperity.

b. Development Opportunities

i. Low Density of Population

The present density of population in the ward is medium, only 11 persons /acre. From environmental point of view this of population can create a very livable environment for the area with respect to ventilation, use of road and other basic services.

ii. Excellent External Connectivity

Dhaka is only 5-6 hours journey from Shahrasti. It takes about 1 hour to reach Chandpur, the district headquarters.

iii. Potential for Small Scale Manufacturing

Cheap labour, availability of raw materials can help grow small scale manufacturing in this town. Furniture making as a processing industry has already established its roots in the town. Jewelry, handicrafts of different kinds, small engineering can be developed here. This, however, would require local initiative. Local entrepreneurs may be provided with small capital to serve as incentive.

14.7.3 Ward Action Plan Proposals

14.7.3.1 Review of Existing Land Use

Study of existing land use of the ward reveals that the major land use goes to agricultural and it is 145.90 acres which is 42.09% of the total ward. The second major land use is Residential use, occupying 31.13% (107.92 acres) of the ward. Besides, there is 20.12% waterbody, 0.25% commercial activity, 1.51% land under circulation network and otherwise 4.90% of land is being used for education, community service, government services, manufacturing or industry, NGO activities, service activity, vacant land and urban green space.

14.7.3.2 Proposed Land Use Zoning

i. Urban Residential Zone

Urban residential zone refers to all categories of urban residential areas, including existing ones and the residential land use proposed under the present master plan. In total this zone covers 123.16 (35.52%) acres of land delineated up to the year 2031, considering standard provided by LGED.

ii. Commercial Zone

The commercial zone is intended to provide locations, where commercial activities including retails can be set up and function, without creating hazards to surrounding land uses. This zone has an area of 1.77 acres (0.51%) designated up to 2031 that includes one Neighborhood market.

iii. Community Facilities

The total area under this use has been determined as 1.01 acres (0.12% of the ward area) that includes one new Community centre.

iv. Education & Research Zone

The total area under this use has been determined as 1.40 acres (0.40%) that includes existing Primary and High schools.

v. Government Office

Administrative zone covers all kinds of government and non-government offices in the town. The total area under this category is 1.71 acres (0.49%) that includes one Neighbourhood centre (0.98 acres), one police Box (0.73 acre) and existing offices.

vi. Agricultural Zone

At present Ward No. 06 has a vast area of agricultural land which is 145.90 acres. The proposed allocated area covers 27.84% of the total ward and it is 96.52 acres.

vii. Waterbody

The plan suggests preserving most of the water bodies for two purposes, first, to serve as source of water, second to serve as water retention area during monsoon. The ponds with an area equal to or more than 0.2 acres will be preserved as the water retention ponds. The proposed retention area covers 17.25% of the total ward and it is 59.79 acres.

viii. Health Services

The total area under this use has been estimated as 0.74 acres and it is 0.21% of the whole ward. The proposed plan suggests one community clinic.

ix. Circulation Network

Existing and proposed roads covers a total of 19.39 acres of land and it is 5.59% of the whole ward.

x. Open Space

In this ward there is no outdoor recreational space like park, playground etc. So the consultants accommodate 8.28 acres of land for open space. The consultants proposed one playground (area

1.05 acres) as recreational space for the Pourashava people. Major portion of proposed Central Park (4.13 acre) is proposed in this ward. 2.41 acre walkway is proposed around Shahrasti Dighi.

Map 14.16 shows the existing land use of Ward No. 06 while **Map- 14.17** shows the proposed landuse zoning of ward no. 06.

Table 14.32: Existing and Proposed Land Uses

Existing Land Use			Proposed Land Use		
Land Uses	Area (acres)	%	Land Uses	Area (acres)	%
Agriculture	145.90	42.09	Agricultural Zone	96.52	27.84
Circulation Network	5.24	1.51	Circulation Network	19.39	5.59
Commercial Activity	0.85	0.25	Commercial Zone	1.77	0.51
Community Service	0.88	0.25	Community Facilities	0.95	0.27
Educational Facilities	1.93	0.56	Education & Research Zone	1.40	0.40
Governmental Services	0.00	0.00	Government Office	1.71	0.49
-	0.00	0.00	Health Services	0.74	0.21
Mixed Use	0.00	0.00	Mixed Use Zone	4.20	1.21
Urban Green Space	0.71	0.20	Open Space	8.28	2.39
-	0.00	0.00	Rural Settlement	28.78	8.30
Transportation Facilities	0.00	0.00	Transportation Facilities	0.00	0.00
-	0.00	0.00	Urban Deferred	0.00	0.00
Residential	107.92	31.13	Urban Residential Zone	123.16	35.52
-	0.00	0.00	Utility Services	0.00	0.00
Waterbody	69.74	20.12	Water Body	59.79	17.25
Vacant Land	13.48	3.89	-	0.00	0.00
Total	346.69	100.00	Total	346.69	100

14.7.3.3 Proposed Circulation Network Development

8.60 km (8597.80 m) of circulation network has been proposed for this ward. There are 476.74 meters roads will be newly constructed and 74.50 meter roads widened during the first phase (2012-2016). Following table shows the detail of roads during the first phase.

Table 14.33: Road Proposals for Phase 01

Road ID	Road Name	Road Type	RoW (Ft)	Length (m)	Road Proposal
N101		Primary Road	60	476.74	New Road
W154	Saheb Bazar Road	Secondary Road	40	74.50	Widening

14.7.3.4 Drainage Development Plan

The plan proposes 8739.92 meters of new drain. Among these drain 925.57 meters secondary drains will be developed in first phase. Rest of the network will be developed in second and third phase.

Table 14.34: Proposed Drainage Development Plan Proposals for Phase 01

Drain ID	Drain Type	Length (m)	Width (m)	Depth (m)
PS51	Secondary Drain	476.36	2.35 - 3.35	1.24 - 2.24
PS56	Secondary Drain	476.20	2.35 - 3.35	1.24 - 2.24

Besides, it will be necessary to re-excavate the khals that serve as primary drains. The consultants have identified existing whole of the khals need to be re-excavated to allow smooth flow of Water through them.

14.7.3.5 Urban Services

i) Utility Services

- **Solid Waste Management**

Solid waste management is a major urban service. As density of population increases the volume of solid waste also increases proportionately. However, the income level is also a major factor influencing the volume of solid waste. Population and the volume of waste in the town is yet to be large enough to become a problem for the city. But the present management system is not satisfactory and it might lead to problem in future. It is recommended that home collection system is introduced in the ward by creation of local CBOs. This will cause organized collection of waste and prevent indiscriminate littering.

- **Water Supply**

It is proposed to install a network based water supply system by exploring fresh water aquifers. There will 1709.42 meters of water supply lines in this ward running along all categories of roads. The water supply network for this ward will be developed during second phase.

- **Gas Supply**

It is proposed to install a piped gas supply network to facilitate the households. There will about 2151.27 meters of gas supply lines in this ward as a whole running along the roads. The gas supply network for this ward will be developed during second phase.

- **Sanitation**

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

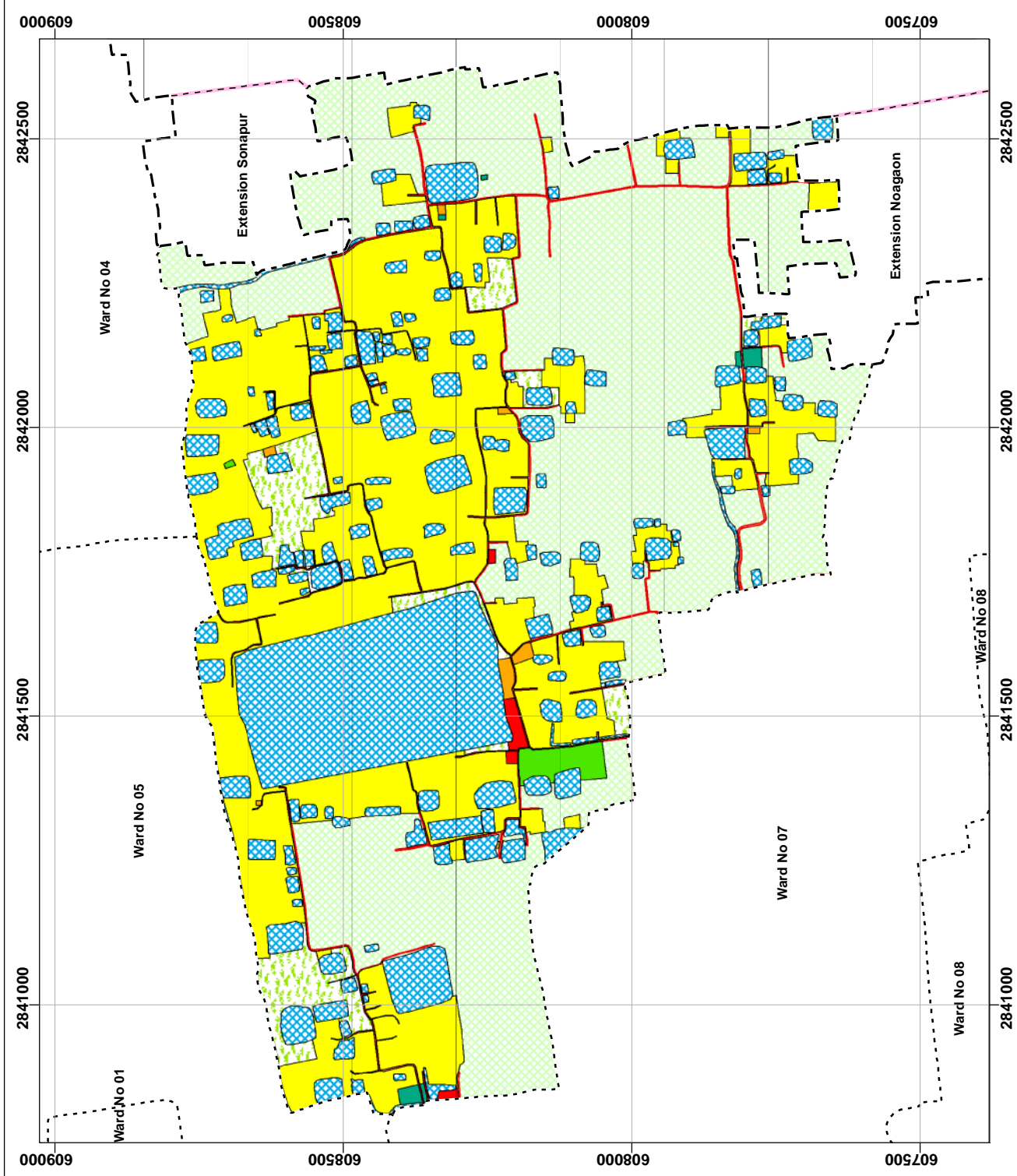
Table 14.35: Proposal of Utility Services in Ward No. 06

Item	Existing	Proposed		
	Area/length			Area/Length
Water Supply Network		Proposed Line Length (m)	Phase 02	1709.42
		Total		1709.42
Gas Supply Network		Proposed Line Length (m)	Phase 02	2151.27
		Total		2151.27
Electricity Line		As per existing programme of PDB		



Map 14.16

Existing land use of Ward No 06



SCALE

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LEGEND

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

PREPARATION OF MASTER PLAN FOR SHAHRASATI POURASHAVA
Shahrasati Upazila, Chandpur 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. 04 (Comilla Region)

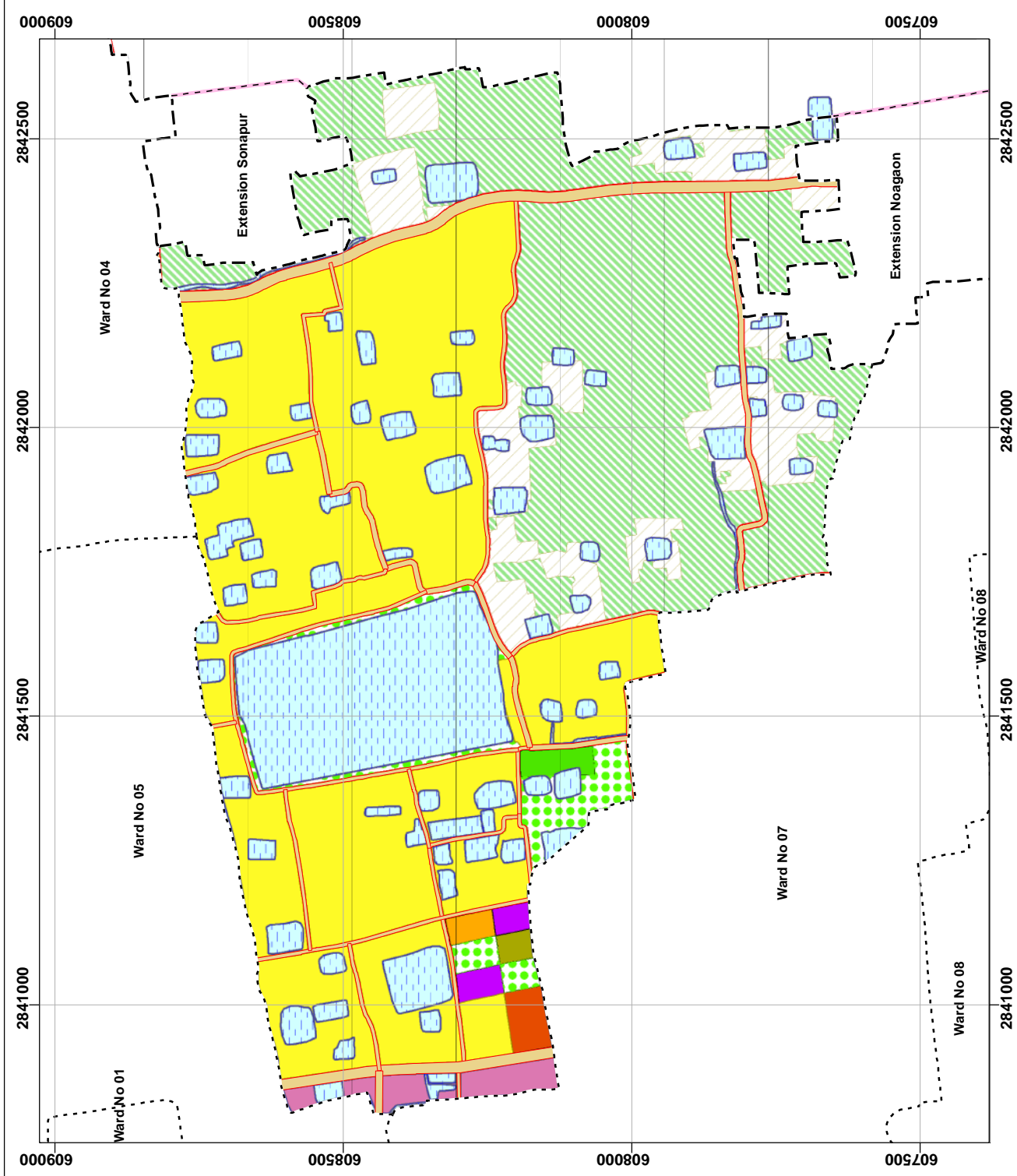


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Map 14.17

Proposed Landuse of Ward No 06



SCALE
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0 50 100 200 300 400 Meters

LEGEND

Proposed Landuse

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

PREPARATION OF MASTER PLAN FOR SHAHRASTI POURASHAVA
Shahrasti Upazila, Chandpur 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. 04 (Comilla Region)



SHELTECH PANTHAKUNJO:
148/17 West Panthapath,
Dhaka-1207, Bangladesh

ii) Educational Facilities

There is one Existing Primary school (named as Shahrasti Govt. Primary School) and one High school (Shahrasti Bohumukkhi high school) in this ward. The plan suggests improving the capacity of existing facilities.

Following table shows the existing and proposed Community facilities for Ward no 06.

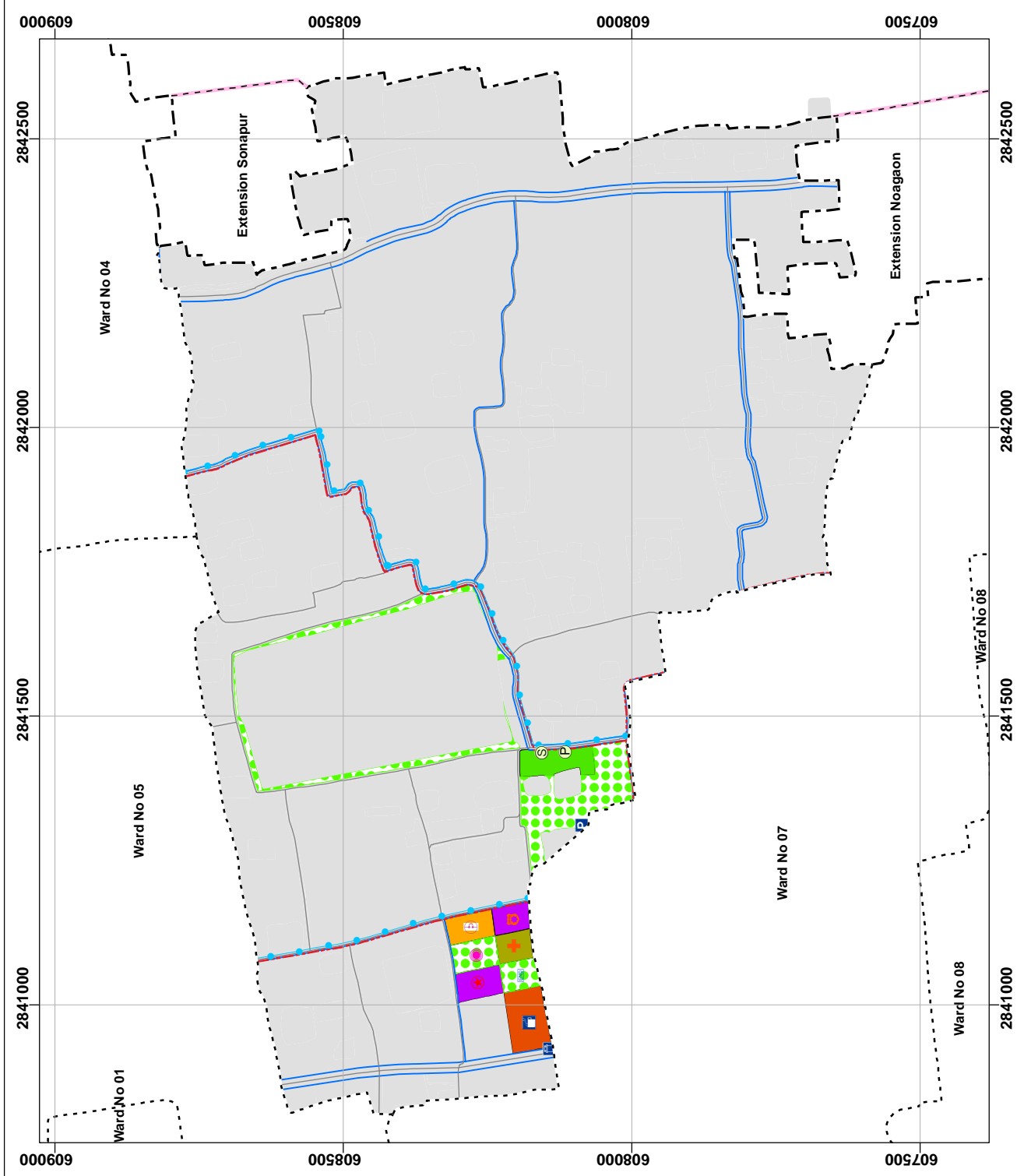
Table 14.36: Proposal of Urban Services for Ward No 06

Item	Existing		Proposed		Phase 01
	Number	Area (Acre)	Number	Area (Acre)	
Community Center	-	-	1	0.95	Land Acquisition
Community Clinic	-	-	1	0.74	
Neighborhood Center	-	-	1	0.98	
Neighborhood Market	-	-	1	1.77	
Police Box/Outpost	-	-	1	0.73	
Central Park (part)	-	-	1	4.13	Developed in first phase
Playground	-	-	1	1.13	
Primary School	1	0.83	-	-	Strengthen existing facility
High School	1	0.57	-	-	

Map- 14.18 shows all the urban services, drainage, water and gas supply network facilities proposed for Ward No.6.

Map 14.18

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



SCALE

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LEGEND

Proposed Services

- Auditorium/Theater
- Bus Stop
- Bus Terminal
- CNG/Rickshaw Stand
- Car Parking
- Central Crematorium Ground
- Central Cemetery
- Central Park
- Cinema/Theater Hall
- College
- Community Center
- Community Clinic
- Dumping Station
- Durbin
- Edgah
- Electric Sub-station
- Filling Station
- Fire Service
- High School
- Hospital/Clinic
- Housing Estate
- Industrial Estate
- Launch Terminal
- Low Cost Housing Estate
- Neighbourhood Center
- Neighbourhood Market
- Neighbourhood Park
- Overhead Tank
- Passenger Shed
- Playground
- Police Box/Outpost
- Police Station
- Post Box
- Post Office
- Pourashava Office
- Primary School
- Public Gathering
- Public Toilet
- Railway Station
- Resettlement Zone
- Slaughtering House
- Super Market
- Sweepers Colony
- Telephone Exchange
- Telephone Booth
- Treatment Plant
- Truck Terminal
- Upazila Complex
- Upazila Hospital
- Upazila Stadium
- Vocational Institute
- Waste Transfer Station
- Water Supply Station
- Wholesale Market
- Proposed Road
- Existing Gas Supply
- Proposed Gas Supply
- Proposed Water Supply
- Proposed Drain

PREPARATION OF MASTER PLAN FOR SHAHRASTI POURASHAVA

Shahrasti Upazila, Chandpur District



Government of the People's Republic of Bangladesh
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Package No. 04 (Comilla Region)



SHELTECH PANTHAKUNJO:
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14.8 Ward Action Plan for Ward No. 07

14.8.1 Demography

Ward No. 07 is located mouza of Nijmeher and Shreepur of the town. It has high density of population compare with other wards. In 2011 the Ward had a population of 4499 persons. Population projection shows 7621 population for the year 2031. For the same year, it has a density of 12 persons per acre and 20 persons per acre respectively. Chandpur Pourashava had a density of 27 persons per acre in 2001.

Table 14.37: Population Statistics of Ward No. 07

Item	Year		
	2001	2011	2031
Area (acre)	382.20	382.20	382.20
Population	3457	4499	7621
Density of Population (acre)	9	12	20

14.8.2 Critical Issues and Opportunities of the Ward

Ward No. 07 is one of the most problem stricken wards of the Pourashava. Following are the major problems and opportunities of the ward.

a. Critical Issues

i. Problems of Road Infrastructure

The ward is not served by adequate number of roads. The total length of roads in the ward is 24.08 km. This length of roads can not serve the entire area. New road spaces being created on community efforts are usually very narrow. None of these roads is above 18 ft wide. Another problem of roads is that they are meandering in their layout. Due to unplanned development, roads do not have proper linkage. Due to missing links one has to travel long way to reach a nearby destination. All these will pose serious problems in movement when population rises in the ward. Quality of roads on average is not satisfactory. Only 14.81 km road is paved and 8.96 km road is unpaved. Unpaved roads turn miserable during monsoon making movement more difficult.

ii. Poor Drainage

The ward does not have adequate drainage network serving the entire area. All the households do not have drainage outlet to discharge their waste water. Lack of drainage, though, is not a serious problem now but will emerge as a critical problem as density of population increases in future. In future due to construction the net run off area will increase that will cause water logging at places. So, necessary arrangements will have to be made now to get rid of future drainage problems.

iii. Haphazard Development

Like all other urban areas, unplanned development is a typical characteristic of this ward. Land owners are building their houses and structures anywhere. There is no land use plan, no adherences to building constructions are observed. This is not only destroying the aesthetic of the area but also its livable environment.

iv. Water Supply

Like all other wards water supply is also a critical problem in this ward. Surface water is the main source of drinking and washing. When population will increase the existing ponds will be

inadequate to supply adequate water for the local people that will lead to severe water crisis. More over, there are arrangements for proper maintenance of the ponds. There is likelihood that without proper maintenance caretaking the ponds might get polluted by unhygienic use of water that will endanger health of the local people.

v. Low Density of Population: Problem for Providing Infrastructure

Infrastructure development is not cost effective if the density of population remains very low. The cost of service line is the same for all sizes of population. So, if the population size is small more cost has to be incurred per head of population for providing infrastructure, which is not cost effective.

vi. Lack of Threshold Population for Business

The town possesses a very low level of population which is not adequate to run large retail business activities. This size of population will not help grow the local economy grow. Besides, the average income of the people is also very low which is not conducive to economic flourishing of the town. Higher the size of population more demand is created for goods and services leading to more economic activities and employment. No urban centre can flourish without adequate economic prosperity.

b. Development Opportunities

i. Low Density of Population

The present density of population in the ward is very high, only 12 persons/acre. From environmental point of view this of population can create a very livable environment for the area with respect to ventilation, use of road and other basic services.

ii. Excellent External Connectivity

Dhaka is only 5-6 hours journey from Shahrasti. It takes about 1 hour to reach Chandpur, the district headquarters.

iii. Potential for Small Scale Manufacturing

Cheap labour, availability of raw materials can help grow small scale manufacturing in this town. Furniture making as a processing industry has already established its roots in the town. Jewelry, handicrafts of different kinds, small engineering can be developed here. This, however, would require local initiative. Local entrepreneurs may be provided with small capital to serve as incentive.

14.8.3 Ward Action Plan Proposals

14.8.3.1 Review of Existing Land Use

Study of existing land use of the ward reveals that the major land use goes to agricultural and it is 140.91 acres which is 36.87% of the total ward and it is the core ward of this Pourashava. The second major land use is Residential use, occupying 28.62% (109.38 acres) of the ward. Besides, there is 17.91% waterbody, 2.50% commercial activity, 2.49% land under circulation network, 0.32% under educational facilities, and otherwise 2.99% of land is being used for urban green space, community service, transport and communication, NGO activities, service activity.

14.8.3.2 Proposed Land Use Zoning**i. Urban Residential Zone**

Urban residential zone refers to all categories of urban residential areas, including existing ones and the residential land use proposed under the present master plan. In total this zone covers 130.01 (34.02%) acres of land delineated up to the year 2031 in Ward No. 07, considering standard provided by LGED.

ii. Commercial Zone

The commercial zone is intended to provide locations, where commercial activities including retails can be set up and function, without creating hazards to surrounding land uses. This zone has an area of 0.83 acres (0.22%) designated up to 2031.

iii. Education & Research Zone

The total area under this use has been determined as 0.93 acres (0.24% of the ward area) which includes existing schools.

iv. Government Office

Administrative zone covers all kinds of government and non-government offices in the town. The total area under this category is 3.04 acres (0.80%) that includes one new Neighborhood centre, one Police Box and existing offices(Fire Service and Pourashava office).

v. Agricultural Zone

At present Ward No. 07 has a vast area of agricultural land which is 140.91 acres. But ward no. 07 is the existing core area and developed ward rather than other wards. Most of the commercial and administrative structures are established in this ward. Therefore in future, demand for commercial activities will be high in this ward. To accommodate future facilities vast amount of existing agricultural land is used in proposed plan. In proposed plan 55.69 acre of land use as agricultural land.

vi. Waterbody

The plan suggests preserving most of the water bodies for two purposes, first, to serve as source of water, second to serve as water retention area during monsoon. The ponds with an area equal to or more than 0.2 acres will be preserved as the water retention ponds. The proposed retention area covers 14.73% of the total ward and it is 56.28 acres.

vii. Health Services

The total area under this use has been estimated as 4.57 acres and it is 1.20% of the whole ward. The proposed plan suggests one community clinic in this ward. Existing Upazila Hospital (3.59 acre) is located in this ward.

viii. Circulation Network

Existing and proposed roads covers a total of 26.33 acres of land and it is 6.89% of the whole ward.

ix. Open Space

In this ward there is no outdoor recreational space like park, playground etc. So the consultants accommodate 4.64 acres of land for open space. The consultants accommodate land where they proposed 0.96 acre land for public gathering space. 3.67 acre land of proposed Central Park is proposed in this ward.

x. Urban Deferred

According to planning standard provided by LGED seeks about 10 percent of the total build up area. The total area under this use has been proposed as 32.27 acres and covers 8.44% of the whole ward that includes existing and proposed land uses.

xi. Utility Services

The total area under this use has been proposed as 0.14 acres and covers 0.04 % the whole ward. This zone includes a slaughtering house.

Table 14.38: Existing and Proposed Land Uses

Existing Land Use			Proposed Land Use		
Land Uses	Area (acres)	%	Land Uses	Area (acres)	%
Agriculture	140.91	36.87	Agricultural Zone	55.69	14.57
Circulation Network	9.53	2.49	Circulation Network	26.33	6.89
Commercial Activity	9.57	2.50	Commercial Zone	0.83	0.22
Community Service	1.84	0.48	Community Facilities	0.00	0.00
Educational Facilities	1.22	0.32	Education & Research Zone	0.93	0.24
Governmental Services	1.45	0.38	Government Office	3.04	0.80
-	0.00	0.00	Health Services	4.57	1.20
Mixed Use	0.42	0.11	Mixed Use Zone	53.12	13.90
Urban Green Space	0.88	0.23	Open Space	4.64	1.21
-	0.00	0.00	Rural Settlement	13.55	3.55
Transportation Facilities	0.00	0.00	Transportation Facilities	0.79	0.21
-	0.00	0.00	Urban Deferred	32.27	8.44
Residential	109.38	28.62	Urban Residential Zone	130.01	34.02
-	0.00	0.00	Utility Services	0.14	0.04
Waterbody	68.45	17.91	Water Body	56.28	14.73
Service Activity	5.65	1.48	-	0.00	0.00
Vacant Land	32.52	8.51	-	0.00	0.00
Total	382.21	100.00	Total	382.20	100.00

Map 14.19 shows the existing land use of Ward No. 07 while **Map- 14.20** shows the proposed landuse zoning of ward no. 07.

14.8.3.3 Proposed Circulation Network Development

12.77 km (12771.25 m) of circulation network has been proposed for this ward. There are 673.50 meter roads will be widened and newly construct during the first phase (2012 – 2016). Remaining 9.27 km will be developed in second phase and 2.82 km in third phase. Following table shows the detail of roads to be widened up to 60 feet during the first phase.

Table 14.39: Road Proposals for Phase 01

Road ID	Road Name	Road Type	RoW (Ft)	Length (m)	Road Proposal
N101		Primary Road	60	662.82	New Road
W6		Primary Road	60	4.52	Widening
W154	Saheb Bazar Road	Secondary Road	40	6.16	Widening

14.8.3.4 Drainage Development Plan

The plan proposes 11.75 km (11745.44 meters) of new drains for ward no. 07. Out of these proposed drains, 1335.04 meters Secondary drains will be developed during the first phase.

Table 14.40: Proposed Drainage Development Plan Proposals for Phase 01

Drain ID	Drain Type	Length (m)	Width (m)	Depth (m)
PS49	Secondary Drain	5.90	2.35 - 3.35	1.24 - 2.24
PS51	Secondary Drain	663.20	2.35 - 3.35	1.24 - 2.24
PS55	Secondary Drain	3.41	2.35 - 3.35	1.24 - 2.24
PS56	Secondary Drain	662.53	2.35 - 3.35	1.24 - 2.24

Besides, it will be necessary to re-excavate the khals that serve as primary drains. The consultants have identified existing whole of the khals need to be re-excavated to allow smooth flow of Water through them.

14.8.3.5 Urban Services**i) Utility Services**

- Solid Waste Management**

Solid waste management is a major urban service. As density of population increases the volume of solid waste also increases proportionately. However, the income level is also a major factor influencing the volume of solid waste. Population and the volume of waste in the town are yet to be large enough to become a problem for the city. But the present management system is not satisfactory and it might to lead to problem in future. The consultant proposed one solid waste transfer station at suitable location with an area of 5 decimal. It is recommended that home collection system is introduced in the ward by creation of local CBOs. This will cause organized collection of waste and prevent indiscriminate littering.

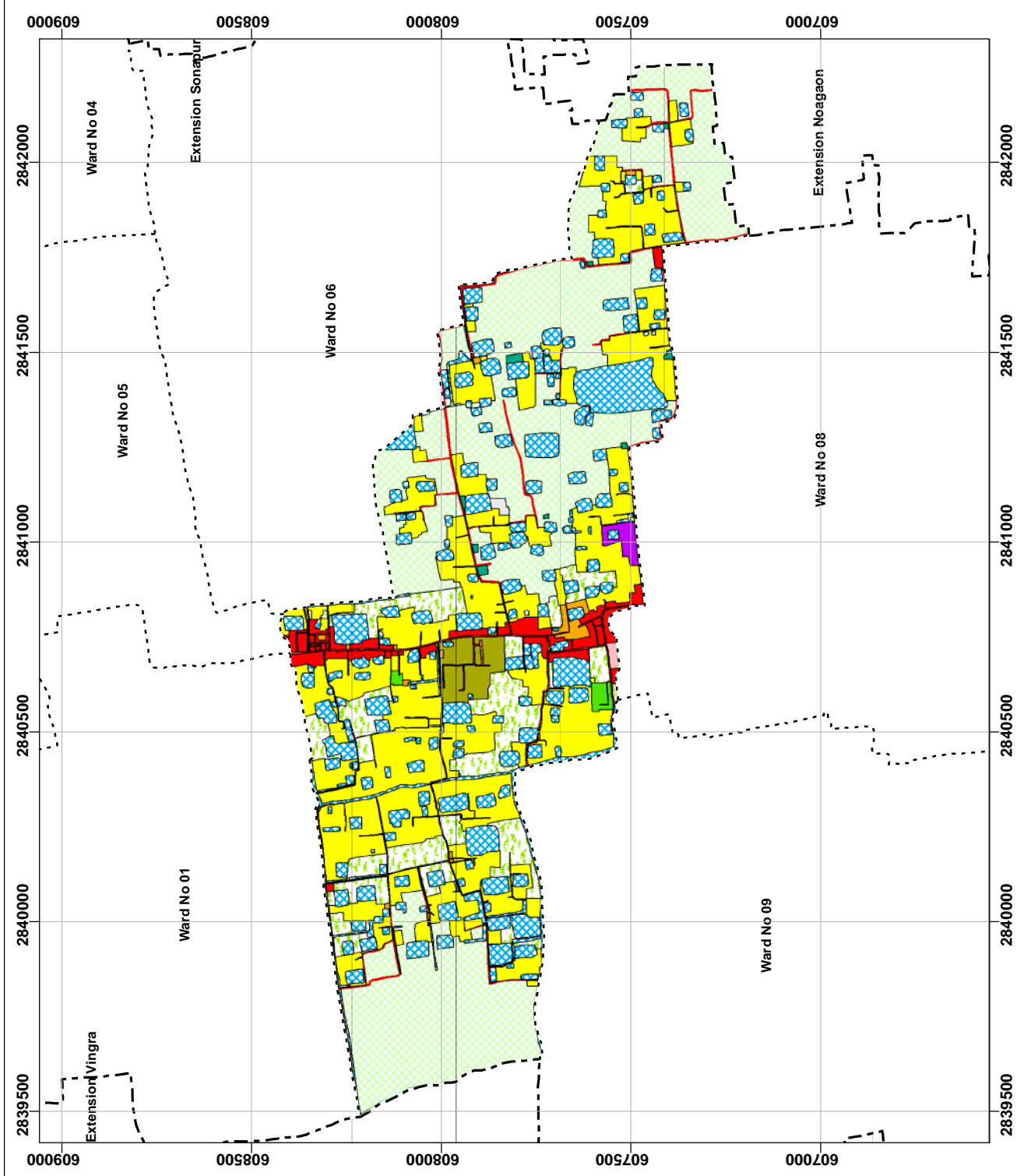
- Water Supply**

It is proposed to install a network based water supply system by exploring fresh water aquifers. There will 5445.66 meters of water supply lines in this ward running along all categories of roads. Among this water supply network, 5106.77 meter lines will be developed during the second phase.



Map 14.19

Existing land use of Ward No 07



SCALE

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LEGEND

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

PREPARATION OF MASTER PLAN FOR SHAHRASATI POURASHAVA
Shahrasti Upazila, Chandpur District



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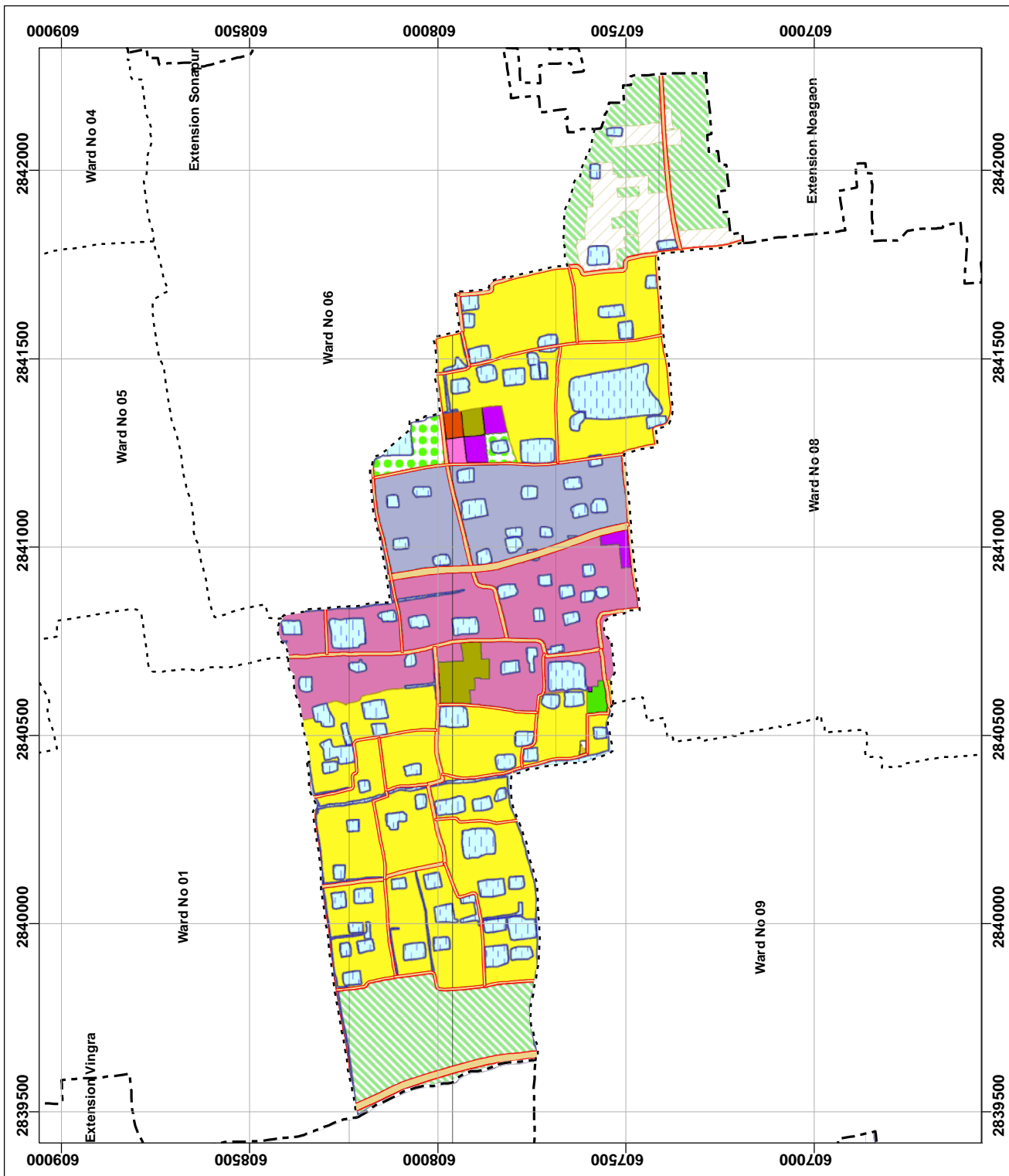


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Proposed Landuse of Ward No 07

Map 14.20



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LEGEND

Proposed Landuse

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

PREPARATION OF MASTER PLAN FOR SHAHRASTI POURASHAVA
Shaharati Upazila, Chandpur District



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- **Gas Supply**

It is proposed to install a piped gas supply network to facilitate the households. There will 3178.66 meters of gas supply lines in this ward as a whole running along the roads and 0.86 meter network will be developed during the first phase.

- **Sanitation**

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

Table 14.41: Proposal of Utility Services in Ward No. 07

Item	Existing	Proposed		
	Area/length			Area/Length
Solid Waste Transfer Station	-	One transfer station		5 decimal
Water Supply Network	-	Proposed Line Length (m)	Phase 02	5106.77
			Phase 03	338.89
		Total		5445.66
Gas Supply Network	-	Proposed Line Length(m)	Phase 01	0.86
			Phase 02	2845.34
			Phase 03	332.46
		Total		3178.66
Electricity Line		As per existing programme of PDB		

ii) Educational Facilities

There are two existing Primary schools named as Nijmeher Model Primary School in this ward. Consultant does not feel to propose any new educational institute in this ward.

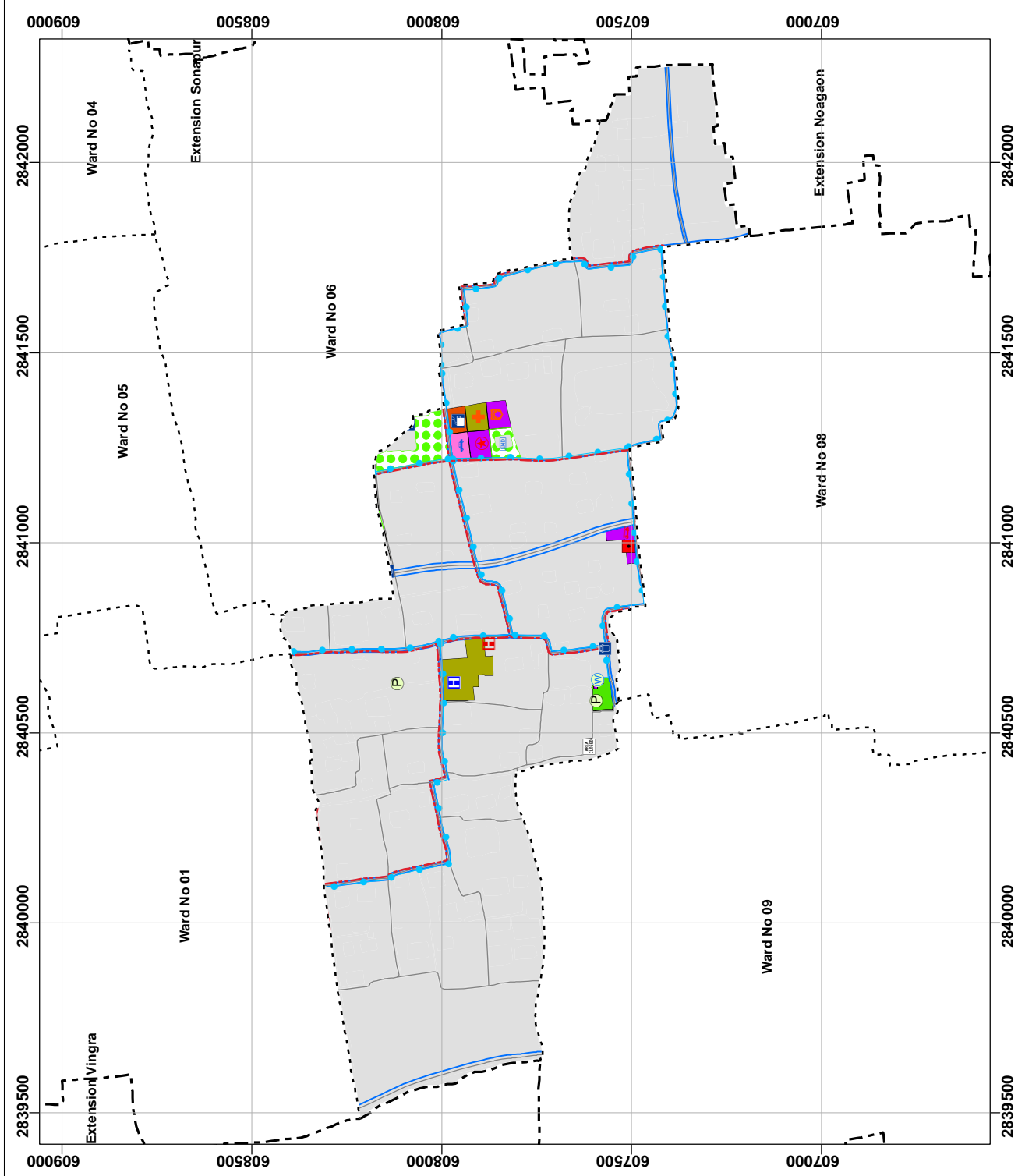
Table 14.42: Proposal of Urban Facilities for Ward No. 07

Item	Existing		Proposed		Phase 01
	Number	Area (Acre)	Number	Area (Acre)	
Primary School	2	0.93	-	-	Strengthen existing Capacity
Community Clinic	-	-	1	0.99	Land Acquisition
Neighborhood Center	-	-	1	0.99	
Police Box/Outpost	-	-	1	1.02	
Neighborhood Market	-	-	1	0.83	
Central Park (part)	-	-	1	3.67	Developed in first phase
Public Gathering	-	-	1	0.96	

Map- 14.21 shows all the urban services, drainage, water and gas supply network facilities proposed for Ward No.7.

Map 14.21

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



SCALE

1:14,600



LEGEND

Proposed Services

- Auditorium/Theater
- Bus Stop
- Bus Terminal
- CNG/Rickshaw Stand
- Car Parking
- Central Crematorium Ground
- Central Cemetery
- Central Park
- Cinema/Theater Hall
- College
- Community Center
- Community Clinic
- Dumping Station
- Durbin
- Edgah
- Electric Sub-station
- Filling Station
- Fire Service
- High School
- Hospital/Clinic
- Housing Estate
- Industrial Estate
- Launch Terminal
- Low Cost Housing Estate
- Neighbourhood Center
- Neighbourhood Market
- Neighbourhood Park
- Overhead Tank
- Passenger Shed
- Playground
- Police Box/Outpost
- Police Station
- Post Box
- Post Office
- Pourashava Office
- Primary School
- Public Gathering
- Public Toilet
- Railway Station
- Resettlement Zone
- Slaughtering House
- Super Market
- Sweepers Colony
- Telephone Exchange
- Treatment Plant
- Truck Terminal
- Upazila Complex
- Upazila Hospital
- Upazila Stadium
- Vocational Institute
- Water Transfer Station
- Water Supply Station
- Wholesale Market
- Proposed Road
- Existing Gas Supply
- Proposed Gas Supply
- Proposed Water Supply
- Proposed Drain

PREPARATION OF MASTER PLAN FOR SHAHRASTI POURASHAVA

Shahrasti Upazila, Chandpur District



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14.9 Ward Action Plan for Ward No. 08

14.9.1 Demography

Ward No. 08 is located Nijmeher mouza of the town. It has moderate density of population compare with other wards. In 2011 the Ward had a population of 3955 persons. Population projection shows 6699 population for the year 2031. For the same year, it has a density of 11 persons per acre and 18 persons per acre respectively. Chandpur Pourashava had a density of 27 persons per acre in 2001.

Table 14.43: Population Statistics of Ward No. 08

Item	Year		
	2001	2011	2031
Area (acre)	371.35	371.35	371.35
Population	3039	3955	6699
Density of Population (acre)	8	11	18

14.9.2 Critical Issues and Opportunities of the Ward

Ward No. 08 is one of the most problem stricken wards of the Pourashava. Following are the major problems and opportunities of the ward.

a. Critical Issues

i. Problems of Road Infrastructure

The ward is not served by adequate number of roads. The total length of roads in the ward is only 16.72 km. This length of roads can not serve the entire area. New road spaces being created on community efforts are usually very narrow. None of these roads is above 18 ft wide. Another problem of roads is that they are meandering in their layout. Due to unplanned development, roads do not have proper linkage. Due to missing links one has to travel long way to reach a nearby destination. All these will pose serious problems in movement when population rises in the ward. Quality of roads on average is not satisfactory. Only 5.72 km road is paved and 10.48 km road is unpaved. Unpaved roads turn miserable during monsoon making movement more difficult.

ii. Poor Drainage

The ward does not have adequate drainage network serving the entire area. All the households do not have drainage outlet to discharge their waste water. Lack of drainage, though, is not a serious problem now but will emerge as a critical problem as density of population increases in future. In future due to construction the net run off area will increase that will cause water logging at places. So, necessary arrangements will have to be made now to get rid of future drainage problems.

iii. Haphazard Development

Like all other urban areas, unplanned development is a typical characteristic of this ward. Land owners are building their houses and structures anywhere. There is no land use plan, no adherences to building constructions are observed. This is not only destroying the aesthetic of the area but also its livable environment.

iv. Water Supply

Like all other wards water supply is also a critical problem in this ward. Surface water is the main source of drinking and washing. When population will increase the existing ponds will be

inadequate to supply adequate water for the local people that will lead to severe water crisis. More over, there are arrangements for proper maintenance of the ponds. There is likelihood that without proper maintenance caretaking the ponds might get polluted by unhygienic use of water that will endanger health of the local people.

v. Low Density of Population: Problem for Providing Infrastructure

Infrastructure development is not cost effective if the density of population remains very low. The cost of service line is the same for all sizes of population. So, if the population size is small more cost has to be incurred per head of population for providing infrastructure, which is not cost effective.

vi. Lack of Threshold Population for Business

The town possesses a very low level of population which is not adequate to run large retail business activities. This size of population will not help grow the local economy grow. Besides, the average income of the people is also very low which is not conducive to economic flourishing of the town. Higher the size of population more demand is created for goods and services leading to more economic activities and employment. No urban centre can flourish without adequate economic prosperity.

b. Development Opportunities

i. Low Density of Population

The present density of population in the ward is very moderate, only 11 persons/acre. From environmental point of view this of population can create a very livable environment for the area with respect to ventilation, use of road and other basic services.

ii. Excellent External Connectivity

Dhaka is only 5-6 hours journey from Shahrasti. It takes about 1 hour to reach Chandpur, the district headquarters.

iii. Potential for Small Scale Manufacturing

Cheap labour, availability of raw materials can help grow small scale manufacturing in this town. Furniture making as a processing industry has already established its roots in the town. Jewelry, handicrafts of different kinds, small engineering can be developed here. This, however, would require local initiative. Local entrepreneurs may be provided with small capital to serve as incentive.

14.9.3 Ward Action Plan Proposals

14.9.3.1 Review of Existing Land Use

Study of existing land use of the ward reveals that the major land use goes to agricultural and it is 175.58 acres which is 47.29% of the total ward. The second major land use is residential use, occupying 28.68% (106.49 acres) of the ward. Besides, there is 14.33% waterbody, 0.35% commercial activity, 1.69% land under circulation network, 0.10% under educational facilities, and otherwise 3.38% of land is being used for governmental service, urban green space, community service, transport and communication, NGO activities, service activity.

14.9.3.2 Proposed Land Use Zoning**i. Urban Residential Zone**

Urban residential zone refers to all categories of urban residential areas, including exiting ones and the residential land use proposed under the present master plan. In total this zone covers 105.13 (28.31%) acres of land delineated up to the year 2031 in Ward No. 08, considering standard provided by LGED.

ii. Commercial Zone

The commercial zone is intended to provide locations, where commercial activities including retails can be set up and function, without creating hazards to surrounding land uses. This zone has an area of 1.82 acres (0.49%) designated up to 2031.

iii. Community Facilities

The total area under this use has been determined as 1.12 acres (0.30% of the ward area) that includes one new Community centre (0.46 acre) and Central Cremation ground (0.65 acre).

iv. Education & Research Zone

The total area under this use has been determined as 0.69 acres (0.19% of the ward area) includes existing Primary School.

v. Government Office

Administrative zone covers all kinds of government and non-government offices in the town. The total area under this category is 9.85 acres (2.65%) that includes one Neighborhood centre (1.03 acres) and existing offices. Existing use includes Police station, Post office and Upazila complex.

vi. Agricultural Zone

At present Ward No. 08 has a vast area of agricultural land which is 175.58 acres. In proposed plan vast amount of existing agricultural land is used to accommodate future facilities. The total area under this use has been estimated as 18.86 acres (5.08%) that include existing and proposed land uses.

vii. Waterbody

The plan suggests preserving most of the water bodies for two purposes, first, to serve as source of water, second to serve as water retention area during monsoon. The ponds with an area equal to or more than 0.2 acres will be preserved as the water retention ponds. The proposed retention area covers 12.45% of the total ward and it is 46.22 acres.

viii. Health Services

The total area under this use has been estimated as 0.50 acres and it is 0.13% of the whole ward. The proposed plan suggests one community clinic.

ix. Circulation Network

Existing and proposed roads covers a total of 22.70 acres of land and it is 6% of the whole ward.

x. Open Space

In this ward there is no outdoor recreational space like park, playground etc. So the consultants accommodate 6.66 acres land for open space. The consultants also accommodate land where they proposed one playground (0.58 acres) and one Neighborhood park (1.43 acre).

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

Table 14.44: Existing and Proposed Land Uses

Existing Land Use			Proposed Land Use		
Land Uses	Area (acres)	%	Land Uses	Area (acres)	%
Agriculture	175.58	47.29	Agricultural Zone	18.86	5.08
Circulation Network	6.28	1.69	Circulation Network	22.27	6.00
Commercial Activity	1.29	0.35	Commercial Zone	1.82	0.49
Community Service	1.84	0.50	Community Facilities	1.12	0.30
Educational Facilities	0.37	0.10	Education & Research Zone	0.69	0.19
Manufacturing and Processing Activity	3.82	1.03	General Industrial Zone	0.00	0.00
Governmental Services	5.51	1.48	Government Office	9.85	2.65
-	0.00	0.00	Health Services	0.50	0.13
Mixed Use	0.00	0.00	Mixed Use Zone	8.86	2.39
Urban Green Space	1.00	0.27	Open Space	6.66	1.79
Recreational Facilities	0.66	0.18	Recreational Facilities	0.00	0.00
Transportation Facilities	0.00	0.00	Transportation Facilities	0.14	0.04
-	0.00	0.00	Urban Deferred	149.23	40.19
Residential	106.49	28.68	Urban Residential Zone	105.13	28.31
Waterbody	53.19	14.33	Water Body	46.22	12.45
Vacant Land	13.14	3.54	-	0.00	0.00
Restricted Area	2.10	0.57	Restricted Area	0.00	0.00
Total	371.27	100.00	Total	371.35	100.00

14.9.3.3 Drainage Development Plan

The plan proposes 8629.47 meters of new drains for ward no. 08. Out of these proposed drains, 1964.41 meter drainage network will be developed during the first phase.

Table 14.45: Drainage Development Proposals for Phase 01

Drain ID	Drain Type	Length (m)	Width (m)	Depth (m)
PS49	Secondary Drain	849.50	2.35 - 3.35	1.24 - 2.24
PS55	Secondary Drain	1114.91	2.35 - 3.35	1.24 - 2.24

Besides, it will be necessary to re-excavate the khals that serve as primary drains. The consultants have identified existing whole of the khals need to be re-excavated to allow smooth flow of Water through them.

14.9.3.4 Proposed Circulation Network Development

9.97 km (9970.38 m) of circulation network has been proposed for this ward. 1115.27 meters roads will be widened during the first phase (2012 – 2016). Following table shows the detail of roads during the first phase.

Table 14.46: Road Proposals for Phase 01

Road ID	Road Name	Road Type	RoW (Ft)	Length (m)	Road Proposal
W6		Primary Road	60	1115.27	Widening

14.9.3.5 Urban Services**i) Utility Services**

- Solid Waste Management**

Solid waste management is a major urban service. As density of population increases the volume of solid waste also increases proportionately. However, the income level is also a major factor influencing the volume of solid waste. Population and the volume of waste in the town is yet to be large enough to become a problem for the city. But the present management system is not satisfactory and it might lead to problem in future. The consultant proposes one solid waste transfer station at the suitable location an area of 5 decimal. It is recommended that home collection system is introduced in the ward by creation of local CBOs. This will cause organized collection of waste and prevent indiscriminate littering.

- Water Supply**

It is proposed to install a network based water supply system by exploring fresh water aquifers. There will 1227.94 meters of water supply lines in this ward running along all categories of roads. Whole network will be developed during the second phase.

- Gas Supply**

It is proposed to install a piped gas supply network to facilitate the households. There will 2282.09 meters of gas supply lines in this ward as a whole running along the roads. whole network will be developed during the second phase.

- Sanitation**

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

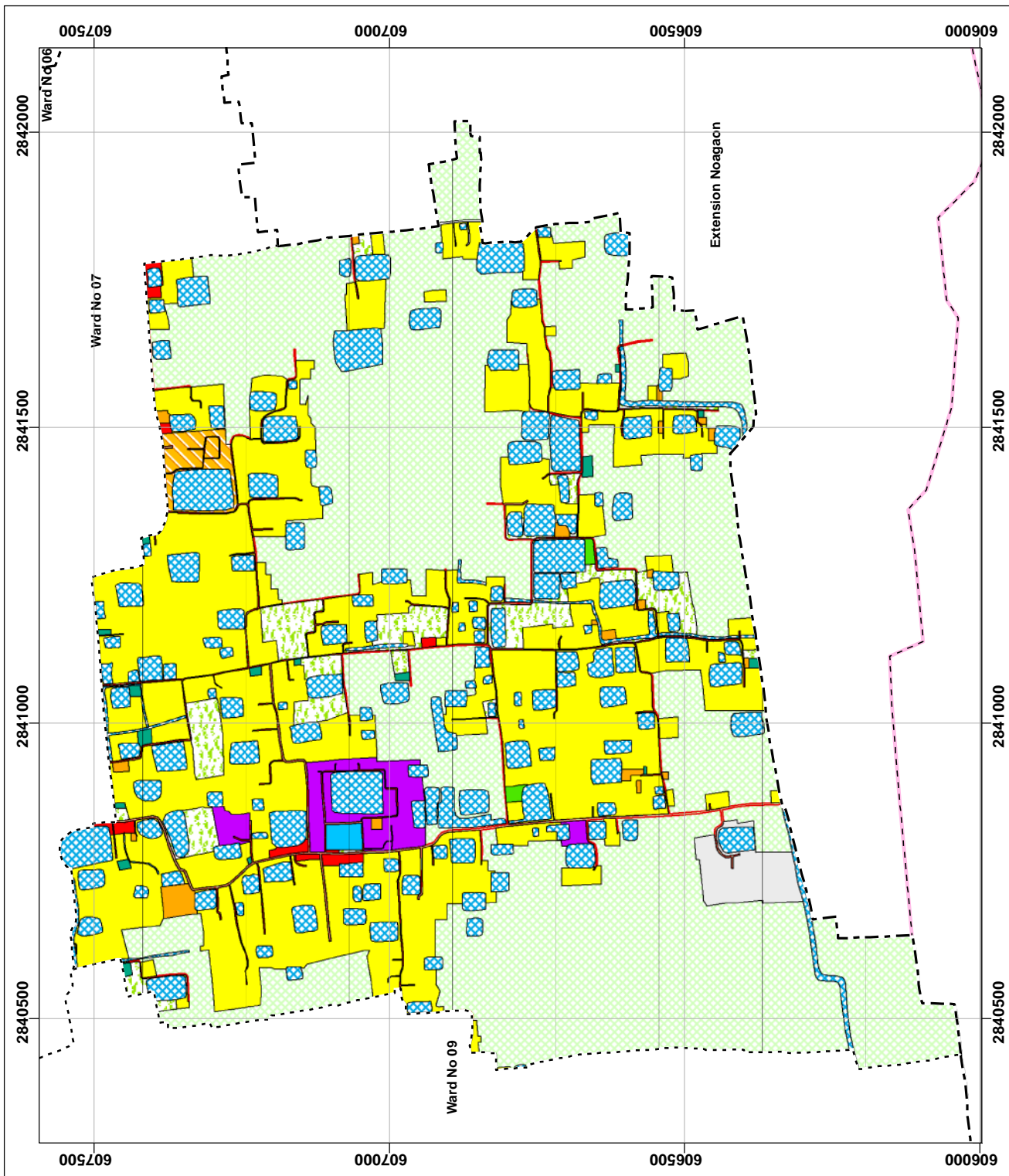
Table 14.47: Proposal of Utility Services in Ward No. 08

Item	Existing	Proposed		
	Area/length			Area/Length
Solid Waste Transfer Station	None	One transfer station		5 decimal
Water Supply Network	-	Proposed Line Length (m)	Phase 02	1227.94
		Total		1227.94
Gas Supply Network		Proposed Line Length (m)	Phase 02	2282.09
		Total		2282.09
Electricity Line		As per existing programme of PDB		



Existing land use of Ward No 08

Map 14.22



SCALE

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LEGEND

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

PREPARATION OF MASTER PLAN FOR SHAHRASATI POURASHAVA
Shahrasi Upazila, Chandpur District

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SCALE
1:9,300

0 45 90 180 270 360 Meters

- LEGEND**
- Proposed Landuse**
- Agricultural Zone
 - Circulation Network
 - Commercial Zone
 - Community Facilities
 - Education & Research Zone
 - General Industrial Zone
 - Government Office
 - Health Services
 - Mixed Use Zone
 - Open Space
 - Overlay Zone
 - Recreational Facilities
 - Rural Settlement
 - Transportation Facilities
 - Urban Deferred
 - Urban Residential Zone
 - Utility Services
 - Waterbody

PREPARATION OF MASTER PLAN FOR SHAHRASTI POURASHAVA
Shahrasti Upazila, Chandpur District

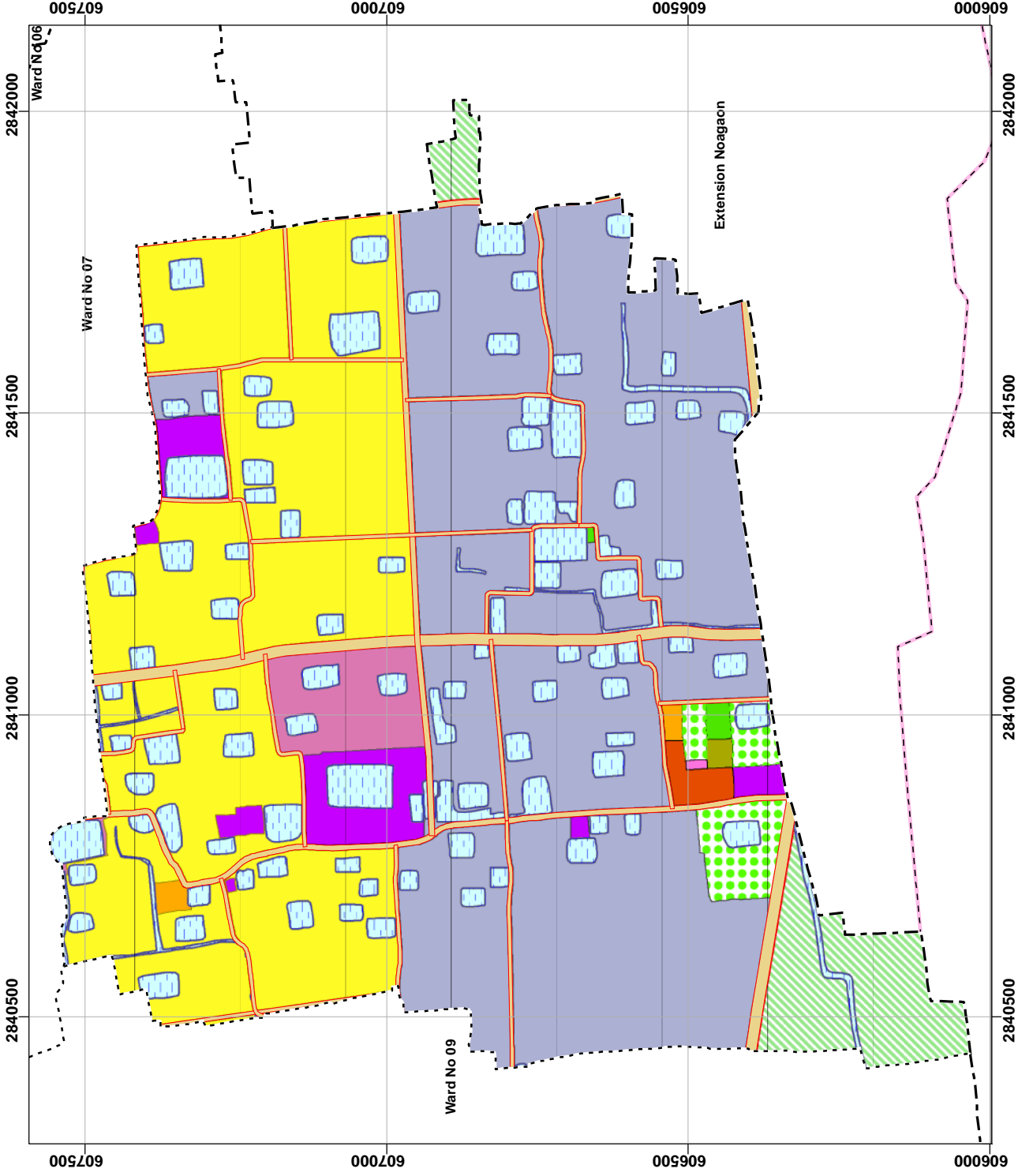


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ii) Educational Facilities

There is one existing Primary school named as Dakshin Nijmeher Community Primary School in this ward. Consultants proposed to extent the existing school area and improve existing capacity. Consultant feels to propose one new High School for educational institute in this ward.

Following table shows the existing and proposed Community facilities for Ward no 08.

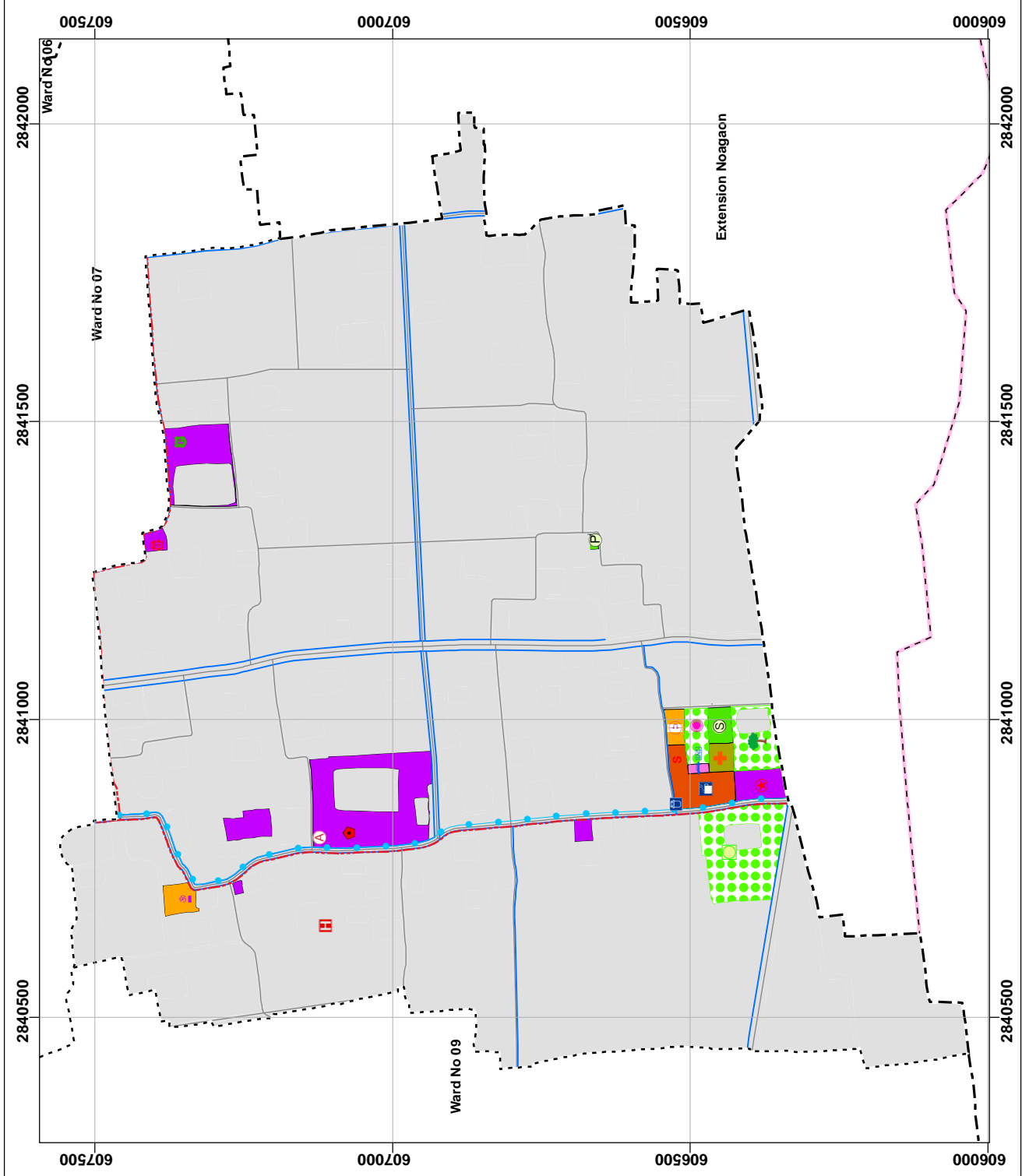
Table 14.48: Proposed Urban Facilities of Ward No. 08

Item	Existing		Proposed		Phase 01
	Number	Area (Acre)	Number	Area (Acre)	
Community Center	-	-	1	0.46	Land Acquisition
Community Clinic	-	-	1	0.50	
Neighborhood Center	-	-	1	1.03	
Neighborhood Market	-	-	1	1.44	
Super Market	-	-	1	0.39	
High School	-	-	1	0.60	
Primary School	1	0.08	-	-	Strengthen the existing facility
Upazila Stadium	-	-	1	4.34	Developed in first phase
Neighborhood Park	-	-	1	1.43	
Playground	-	-	1	0.58	

Map- 14.24 shows all the urban services, drainage, water and gas supply network facilities proposed for Ward No.8.

Map 14.24

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



SCALE

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LEGEND

Proposed Services

- Auditorium/Theater
- Bus Stop
- Bus Terminal
- CNG/Rickshaw Stand
- Car Parking
- Central Crematorium Ground
- Central Cemetery
- Central Park
- Cinema/Theater Hall
- College
- Community Center
- Community Clinic
- Dumping Station
- Durbin
- Edgah
- Electric Sub-station
- Filling Station
- Fire Service
- High School
- Hospital/Clinic
- Housing Estate
- Industrial Estate
- Launch Terminal
- Low Cost Housing Estate
- Neighbourhood Center
- Neighbourhood Market
- Neighbourhood Park
- Overhead Tank
- Passenger Shed
- Playground
- Police Box/Outpost
- Police Station
- Post Box
- Post Office
- Pourashava Office
- Primary School
- Public Gathering
- Public Toilet
- Railway Station
- Resettlement Zone
- Slaughtering House
- Super Market
- Sweepers Colony
- Telephone Exchange
- Treatment Plant
- Truck Terminal
- Upazila Complex
- Upazila Hospital
- Upazila Stadium
- Vocational Institute
- Waste Transfer Station
- Water Supply Station
- Wholesale Market
- Proposed Road
- Existing Gas Supply
- Proposed Gas Supply
- Proposed Water Supply
- Proposed Drain

PREPARATION OF MASTER PLAN FOR SHAHRASI POURASHAVA

Shahrasi Upazila, Chandpur District



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14.10 Ward Action Plan for Ward No. 09

14.10.1 Demography

Ward No. 09 is located in Nijmeher mouza of the town. It has low density of population compare with other wards. In 2011 the Ward had a population of 3513 persons. Population projection shows 5950 population for the year 2031. For the same year, it has a density of 4 persons per acre and 7 persons per acre respectively. Chandpur Pourashava had a density of 27 persons per acre in 2001.

Table 14.49: Population Statistics of Ward No. 09

Item	Year		
	2001	2011	2031
Area (acre)	801.75	801.75	801.75
Population	2699	3513	5950
Density of Population (acre)	3	4	7

14.10.2 Critical Issues and Opportunities of the Ward

Ward No. 09 is one of the most problem stricken wards of the Pourashava. Following are the major problems and opportunities of the ward.

a. Critical Issues

i. Problems of Road Infrastructure

The ward is not served by adequate number of roads. The total length of roads in the ward is only 12.85 km. This length of roads can not serve the entire area. New road spaces being created on community efforts are usually very narrow. None of these roads is above 12 ft wide. Another problem of roads is that they are meandering in their layout. Due to unplanned development, roads do not have proper linkage. Due to missing links one has to travel long way to reach a nearby destination. All these will pose serious problems in movement when population rises in the ward. Quality of roads on average is not satisfactory. Only 7.18 km road is paved and 5.04 km road is unpaved. Unpaved roads turn miserable during monsoon making movement more difficult.

ii. Poor Drainage

The ward does not have adequate drainage network serving the entire area. All the households do not have drainage outlet to discharge their waste water. Lack of drainage, though, is not a serious problem now but will emerge as a critical problem as density of population increases in future. In future due to construction the net run off area will increase that will cause water logging at places. So, necessary arrangements will have to be made now to get rid of future drainage problems.

iii. Haphazard Development

Like all other urban areas, unplanned development is a typical characteristic of this ward. Land owners are building their houses and structures anywhere. There is no land use plan, no adherences to building constructions are observed. This is not only destroying the aesthetic of the area but also its livable environment.

iv. Water Supply

Like all other wards water supply is also a critical problem in this ward. Surface water is the main source of drinking and washing. When population will increase the existing ponds will be

inadequate to supply adequate water for the local people that will lead to severe water crisis. More over, there are arrangements for proper maintenance of the ponds. There is likelihood that without proper maintenance caretaking the ponds might get polluted by unhygienic use of water that will endanger health of the local people.

v. Low Density of Population: Problem for Providing Infrastructure

Infrastructure development is not cost effective if the density of population remains very low. The cost of service line is the same for all sizes of population. So, if the population size is small more cost has to be incurred per head of population for providing infrastructure, which is not cost effective.

vi. Lack of Threshold Population for Business

The town possesses a very low level of population which is not adequate to run large retail business activities. This size of population will not help grow the local economy grow. Besides, the average income of the people is also very low which is not conducive to economic flourishing of the town. Higher the size of population more demand is created for goods and services leading to more economic activities and employment. No urban centre can flourish without adequate economic prosperity.

b. Development Opportunities

i. Low Density of Population

The present density of population in the ward is very low, only 4 persons /acre. From environmental point of view this of population can create a very livable environment for the area with respect to ventilation, use of road and other basic services.

ii. Excellent External Connectivity

Dhaka is only 5-6 hours journey from Shahrasti. It takes about 1 hour to reach Chandpur, the district headquarters.

iii. Potential for Small Scale Manufacturing

Cheap labour, availability of raw materials can help grow small scale manufacturing in this town. Furniture making as a processing industry has already established its roots in the town. Jewelry, handicrafts of different kinds, small engineering can be developed here. This, however, would require local initiative. Local entrepreneurs may be provided with small capital to serve as incentive.

14.10.3 Ward Action Plan Proposals

14.10.3.1 Review of Existing Land Use

Study of existing land use of the ward reveals that the major land use goes to agricultural and it is 566.57 acres which is 70.67% of the total ward. The second major land use is waterbody, occupying 15.07% (120.83 acres) of the ward. Besides, there is 12.42% residential, 0.03% commercial activity, 0.82% land under circulation network, 0.04% under educational facilities, and otherwise 0.34% of land is being used for governmental service, urban green space, community service, transport and communication, NGO activities, service activity.

14.10.3.2 Proposed Land Use Zoning

i. Urban Residential Zone

Urban residential zone refers to all categories of urban residential areas, including existing ones and the residential land use proposed under the present master plan. In total this zone covers 456.85 (56.98%) acres of land delineated up to the year 2031 in Ward No. 09, considering standard provided by LGED.

ii. Commercial Zone

The commercial zone is intended to provide locations, where commercial activities including retails can be set up and function, without creating hazards to surrounding land uses. This zone has an area of 2.31 acres (0.29%) designated up to 2031. The proposed plan includes a Neighborhood market has good accessibility and parking facilities which will be minimize traffic congestion in front of the market.

iii. Education & Research Zone

The total area under this use has been determined as 0.24 acres (0.03% of the ward area) includes one existing Primary schools.

iv. Government Office

Administrative zone covers all kinds of government and non-government offices in the town. The total area under this category is 1.54 acres (0.19%) that includes one Neighborhood centre and one Police Box.

v. Rural Settlement

The total area under this use has been proposed as 63.81 acres and covers 7.96% of the whole ward that includes existing and proposed land uses.

vi. Agricultural Zone

At present Ward No. 09 has a vast area of agricultural land which is 566.57 acres. In proposed plan vast amount of existing agricultural land is used to accommodate future facilities. The total area under this use has been estimated as 456.85 acres (56.98%) that include existing and proposed land uses.

vii. Waterbody

The plan suggests preserving most of the water bodies for two purposes, first, to serve as source of water, second to serve as water retention area during monsoon. The ponds with an area equal to or more than 0.2 acres will be preserved as the water retention ponds. The proposed retention area covers 13.59% of the total ward and it is 108.99 acres.

viii. Health Services

The total area under this use has been estimated as 1.44 acres and it is 0.18% of the whole ward. The proposed plan suggests one Community Clinic.

ix. Circulation Network

Existing and proposed roads covers a total of 25.79 acres of land and it is 3.22% of the whole ward.

x. Open Space

In this ward there is no outdoor recreational space like park, playground etc. So the consultants accommodate 12.63 acres of land where they proposed two Neighborhood Park.

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

Table 14.50: Existing and Proposed Land Uses

Existing Land Use			Proposed Land Use		
Land Uses	Area (acres)	%	Land Uses	Area (acres)	%
Agriculture	566.57	70.67	Agricultural Zone	456.85	56.98
Circulation Network	6.54	0.82	Circulation Network	25.79	3.22
Commercial Activity	0.21	0.03	Commercial Zone	2.31	0.29
Community Service	1.11	0.14	Community Facilities	0	0.00
Educational Facilities	0.32	0.04	Education & Research Zone	0.24	0.03
Manufacturing and Processing Activity	0.00	0.00	General Industrial Zone	0	0.00
Governmental Services	0.10	0.01	Government Office	1.54	0.19
-	0.00	0.00	Health Services	1.44	0.18
Mixed Use	0.00	0.00	Mixed Use Zone	0	0.00
Urban Green Space	1.20	0.15	Open Space	12.63	1.58
Recreational Facilities	0.00	0.00	Recreational Facilities	0	0.00
-	0.00	0.00	Rural Settlement	63.81	7.96
Transportation Facilities	0.00	0.00	Transportation Facilities	0	0.00
-	0.00	0.00	Urban Deferred	22.33	2.79
Residential	99.54	12.42	Urban Residential Zone	105.81	13.20
-	0.00	0.00	Utility Services	0	0.00
Waterbody	120.83	15.07	Water Body	108.99	13.59
Service Activity	0.00	0.00	-	0	0.00
Vacant Land	5.33	0.66	-	0	0.00
Restricted Area	0.00	0.00	Restricted Area	0	0.00
Total	801.75	100.00	Total	801.75	100

14.10.3.3 Proposed Circulation Network Development

9.95 km (9951.22 m) of circulation network has been proposed for this ward. Major portion of the proposed network (9.64 km.) will be widened and newly construct during the second and third phase (2012 – 2016). Following table shows the detail of roads during the first phase.

14.10.3.4 Drainage Development Plan

The plan proposes 5716.22 meters of new drains for ward no. 09. Out of these proposed drains, 5211.11 meters of drain will be developed during the third phase.

Besides, it will be necessary to re-excavate the khals that serve as primary drains. The consultants have identified existing whole of the khals need to be re-excavated to allow smooth flow of Water through them.

14.10.3.5 Urban Services**i) Utility Services**

- **Solid Waste Management**

Solid waste management is a major urban service. As density of population increases the volume of solid waste also increases proportionately. However, the income level is also a major factor influencing the volume of solid waste. Population and the volume of waste in the town is yet to be large enough to become a problem for the city. But the present management system is not satisfactory and it might lead to problem in future. The consultant proposes one solid waste transfer station at suitable location for ward no. 09 an area of 5 decimal. It is recommended that home collection system is introduced in the ward by creation of local CBOs. This will cause organized collection of waste and prevent indiscriminate littering.

- **Water Supply**

It is proposed to install a network based water supply system by exploring fresh water aquifers. No water supply network is proposed for ward No. 09.

- **Gas Supply**

It is proposed to install a piped gas supply network to facilitate the households. No gas supply network is proposed for ward No. 09.

- **Sanitation**

It is apprehended that is no hope that the government would be able to provide network and treatment based sanitation system for the town. So the present system of sanitation will continue. However, the Pourashava must try to promote hygienic sanitation to ensure better public health.

Table 14.51: Proposal of Utility Services in Ward No. 09

Item	Existing	Proposed	
	Area/length		Area/Length
Solid Waste Transfer Station	None	One transfer station	5 decimal
Water Supply Network	-	Proposed Line Length (m)	No Proposal
Gas Supply Network	-	Proposed Line Length (m)	No Proposal
Electricity Line		As per existing programme of PDB	

ii) Educational Facilities

There is one existing Primary school in this ward. Plan proposed to strengthen the capacity of existing Schools.

Following table shows the existing and proposed Community facilities for Ward no 09.

Table 14.52: Proposal of Urban Services for Ward No. 09

Item	Existing		Proposed		Phase 01
	Number	Area (Acre)	Number	Area (Acre)	
Community Clinic	-	-	1	1.44	Land Acquisition
Neighborhood Center	-	-	1	0.66	
Police Box/Outpost	-	-	1	0.88	
Neighborhood Market	-	-	1	2.31	
Neighborhood Park	-	-	2	12.63	Developed in first phase
Primary School	1	0.24	-	-	Strengthen existing capacity

Map- 14.27 shows all the urban services, drainage, water and gas supply network facilities proposed for Ward No.9.

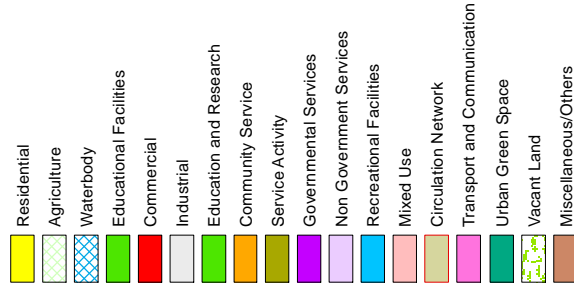


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LEGEND



PREPARATION OF MASTER PLAN FOR SHAHRASTI POURASHAVA
Shahrasti Upazila, Chandpur District

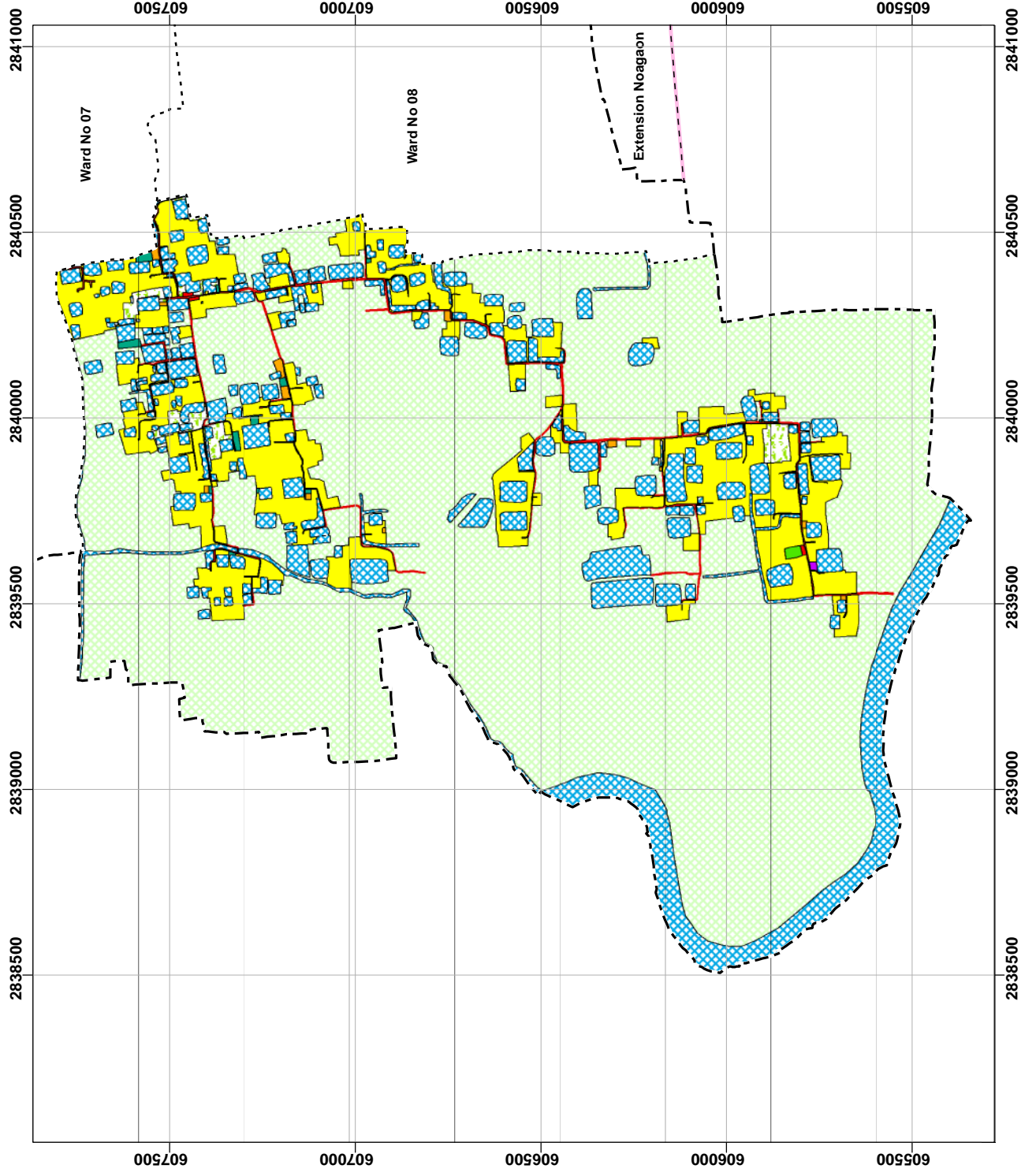


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Upazila Towns Infrastructure Development Project (UTDP)
Package No. 04 (Comilla Region)



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Dhaka-1207, Bangladesh



Proposed Landuse of Ward No 09



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LEGEND

Proposed Landuse

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

PREPARATION OF MASTER PLAN FOR SHAHRASTI POURASHAVA
Shahrasti Upazila, Chandpur District

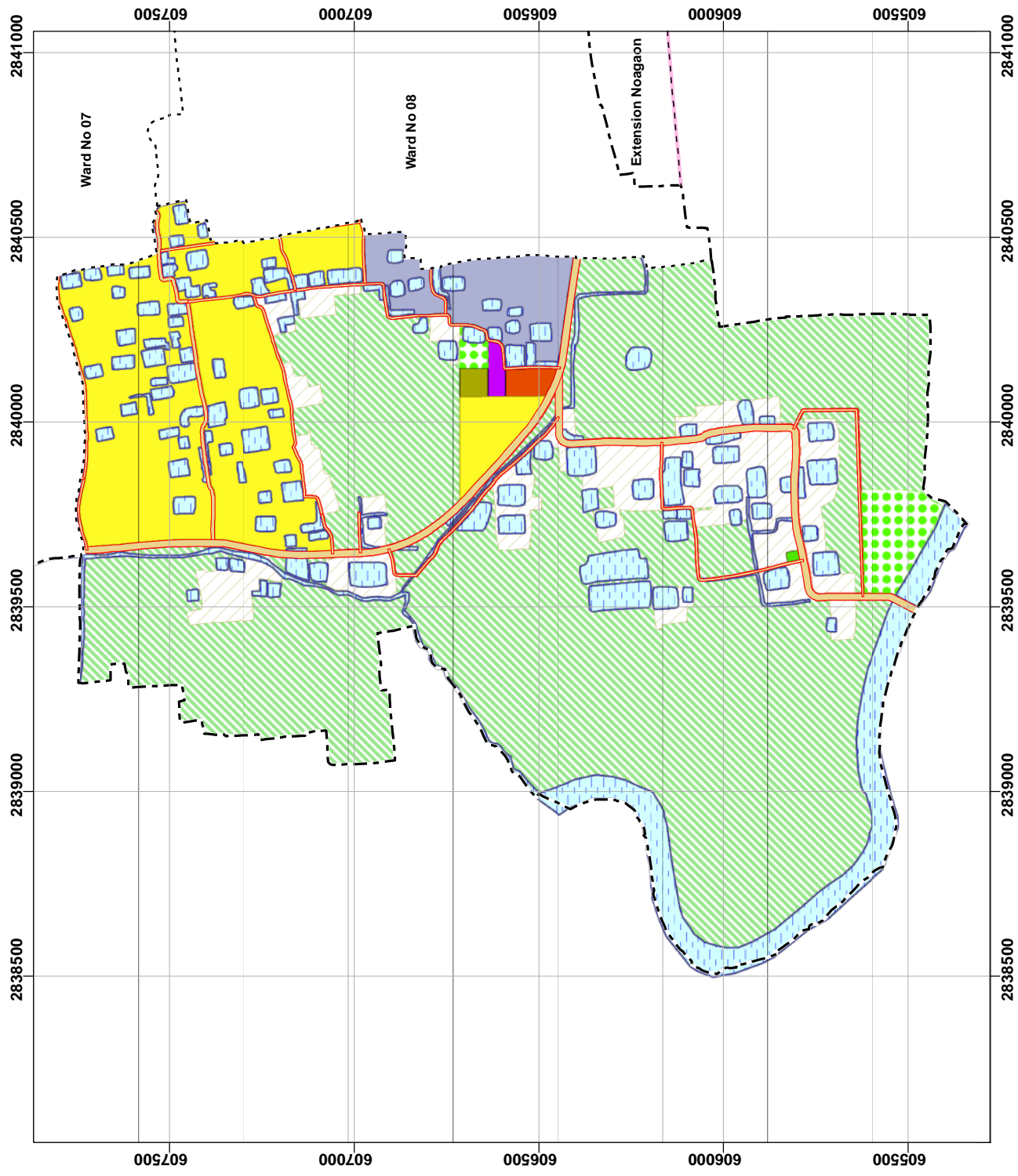


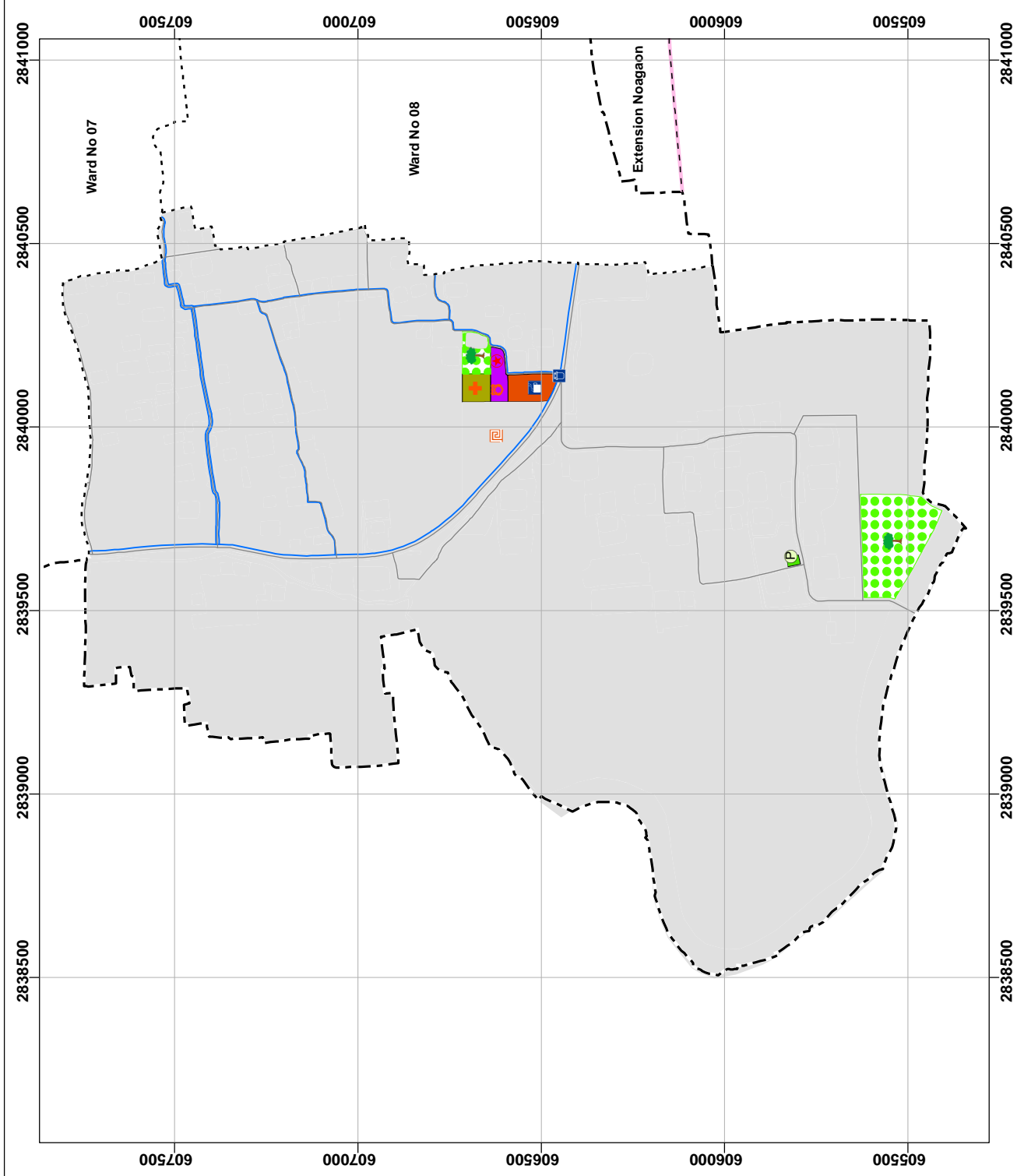
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Package No. 04 (Comilla Region)



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148/17 West Panthapath,
Dhaka-1207, Bangladesh





SCALE

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LEGEND

Proposed Services

- | | |
|----------------------------|------------------------|
| Auditorium/Theater | Playground |
| Bus Stop | Police Box/Outpost |
| Bus Terminal | Police Station |
| CNG/Rickshaw Stand | Post Box |
| Car Parking | Post Office |
| Central Crematorium Ground | Pourashava Office |
| Central Graveyard | Primary School |
| Central Park | Public Gathering |
| Cinema/Theater Hall | Public Toilet |
| College | Railway Station |
| Community Center | Resettlement Zone |
| Community Clinic | Slaughtering House |
| Dumping Station | Super Market |
| Durbin | Sweepers Colony |
| Edgah | Telephone Exchange |
| Electric Sub-station | Treatment Plant |
| Filling Station | Truck Terminal |
| Fire Service | Upazila Complex |
| High School | Upazila Hospital |
| Hospital/Clinic | Upazila Stadium |
| Housing Estate | Vocational Institute |
| Industrial Estate | Waste Transfer Station |
| Launch Terminal | Water Supply Station |
| Low Cost Housing Estate | Wholesale Market |
| Neighbourhood Center | Proposed Road |
| Neighbourhood Market | Existing Gas Supply |
| Neighbourhood Park | Proposed Gas Supply |
| Overhead Tank | Proposed Water Supply |
| Passenger Shed | Proposed Drain |

PREPARATION OF MASTER PLAN FOR SHAHRASI POURASHAVA

Shahrasi Upazila, Chandpur 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. 04 (Comilla Region)



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Chapter Fifteen

Conclusion

15.1 Conclusion

Preparation of the Pourashava development plan is not an end in itself, rather it is an attempt to the beginning of a phase of development of an undeveloped area aspiring for development. Planning is far easier than development. In a developing country like Bangladesh, execution of spatial development plan is really a challenging task for any local government that so vastly rely on the central government for development budget allocation. Amid a host of other priority problems, the central government is often helpless in providing resources for small town's development, where problems are considered less important than those in larger cities. Keeping this constraint in view the local urban governments in smaller towns should emphasise on enhancing the capacity of generating their own resources. Besides, avenues must be searched to recover costs of development from the beneficiaries either directly or indirectly. Direct recovery can be charging development charges or taxes in various forms. Indirectly people can be involved project planning and implementation. This approach of development will benefit in two ways, first, it will create belongingness among people about development of their own areas and second, it will save public money required for development. Land can be procured from land owners for construction of local standard roads. This kind of participatory approach to development would directly benefit the land owner. Without a strong planning section the plans will never come true. There must be some one to take care of the plans and development control effectively. Finally, the Pourashava must give due importance to this plan document to streamline its future development. It must follow the plan for any development, otherwise the plan will lose its credibility and one day it will turn into waste paper which will simply accentuate the town's problems.

Annexure- A: Land use Permission

a. Urban Residential Land Use

Land Use Permitted

The following uses in the tables are proposed to be applicable for this zone only.

Table A.1: Land Use Permitted

Permitted Urban Residential Uses
Artisan's Shop
Assisted Living or Elderly Home
Confectionery Shop
Barber Shop
Child Daycare \ Preschool
Cleaning \ Laundry Shop
Communication Service Facilities
Communication Tower Within Permitted Height
Condominium or Apartment
Cottage
Cyber Café
Daycare Center (Commercial or Nonprofit)
Drug Store or Pharmacy
Employee Housing (Guards \ Drivers) \ Ancillary Use
General Store
Grocery Store
High School
Household Appliance and Furniture Repair Service (No Outside Storage)
Housing For Seasonal Firm Labor
Landscape and Horticultural Services
Mosque, Place Of Worship
Newspaper Stand
Nursery School
Orphanage
Eidgah
Photocopying and Duplicating Services (No Outside Storage)
Pipelines and Utility Lines
Playing Field
Primary School
Private Garages (Ancillary Use)
Project Identification Signs
Property Management Signs
Public Transport Facility
Satellite Dish Antenna
Shelter (Passers By)
Shoe Repair or Shoeshine Shop (Small)
CBO Office

Permitted Urban Residential Uses
Special Dwelling
Temporary Tent
Temporary tent for Permitted Function
Newspaper Stand
Specialized School: Dance, Art, Music, Physically Challenged & Others
Transmission Lines
Urban-Nature Reserve
Utility Lines
Woodlot
Children's Park (Must Have Parking)
ATM Booth
Water Pump \ Reservoir
Monument (Neighborhood Scale)
Bill Payment Booth
Boarding and Rooming House
Dormitory
Memorial Structure (Ancillary)
Neighborhood Center* (Where Neighborhood Center exists)
Permitted
Community Center
Doctor \ Dentist Chamber
Cultural Exhibits and Libraries
Fast Food Establishment \ Food Kiosk
Flowers, Nursery Stock and Florist Supplies
Fitness Centre
Gaming Clubs
Departmental Stores
Retail Shops \ Facilities

Source: Compiled by the Consultants

*Permission of Neighborhood Center Facilities in absence of formal neighborhood should be subject to Landuse Permit Committee

Land Use Conditionally Permitted

The following uses may be permitted or disallowed in this zone after review and approval by the authority/committee following appropriate procedure while the application meets the criteria mentioned in the requirement.

Table A.2: Land Use Conditionally Permitted

Conditionally Permitted Urban Residential Uses
Addiction Treatment Center
Amusement and Recreation (Indoors)
Funeral Services

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

Source: Compiled by the Consultants

Restricted Uses

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

b. General Industry Land use Permitted

General Industry land use category approve only Green and Orange-A category industry mentioned in *The Environmental Conservation Rule, 1997*. The following uses in the tables are proposed to be applicable for this zone only.

Table A.3: Land Use Permitted

Permitted General Industrial Activities
Confectionery Shop
Bank & Financial Institution
Bicycle Assembly, Parts and Accessories
Blacksmith
Bus Passenger Shelter
Communication Tower Within Permitted Height
Freight Transport Facility
Police Box \ Barrack
Fire \ Rescue Station
Grocery Store
Household Appliance and Furniture Repair Service
Machine Sheds
Meat and Poultry (Packing & Processing)
Mosque, Place Of Worship
Newspaper Stand
Photocopying and Duplicating Services
Pipelines and Utility Lines
Printing, Publishing and Distributing
Public Transport Facility
Restaurant
Retail Shops \ Facilities
Salvage Processing
Salvage Yards
Satellite Dish Antenna
Sawmill, Chipping and Pallet Mill
Shelter (Passers By)
Television, Radio or Electronics Repair (No Outside Storage)
Transmission Lines
Truck Stop & Washing or Freight Terminal
Utility Lines
Wood Products
Woodlot
ATM Booth

Permitted General Industrial Activities
Water Pump \ Reservoir
Effluent Treatment Plant
Social Forestry

Source: Compiled by the Consultants

Land Use Conditionally Permitted

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

Table A.4: Land Use Conditionally Permitted

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

Source: Compiled by the Consultants

Restricted Uses

All other uses; except the permitted and conditionally permitted uses.

c. Commercial Zone

Land Use Permitted

Commercial zone is mainly intended for supporting the office and business works. There are several functions that are permitted in this zone.

Table A.5: Land Use Permitted

Permitted Commercial Activity
Accounting, Auditing or Bookkeeping Services
Billboards, Advertisements & Advertising Structure
Agri-Business
Agricultural Sales and Services
Ambulance Service
Antique Shop
Appliance Store
Auction Market
Auditorium, Coliseum, Meeting Halls, and Conference Facilities, Convention
Auto Leasing or Rental Office
Auto Paint Shop
Auto Parts and Accessory Sales (Indoors)
Auto Repair Shop (With Garage)
Automobile Wash
Automobile Sales
Confectionery Shop
Bakery or Confectionery Retail
Bank & Financial Institution
Bar (Licensed)
Barber Shop
Beauty and Body Service
Bicycle Shop
Billiard Parlor \ Pool Hall
Book or Stationery Store or Newsstand
Building Material Sales or Storage (Indoors)
Bulk Mail and Packaging
Bus Passenger Shelter
Cinema Hall
Communication Service Facilities
Communication Tower Within Permitted Height
Computer Maintenance and Repair
Computer Sales & Services
Conference Center
Construction Company
Courier Service
Cyber Café
Daycare Center (Commercial or Nonprofit)

Permitted Commercial Activity
Department Stores, Furniture & Variety Stores
Doctor \ Dentist Chamber
Drug Store or Pharmacy
Electrical and Electronic Equipment and Instruments Sales
Fast Food Establishment \ Food Kiosk
Freight Handling, Storage & Distribution
Freight Transport Facility
Freight Yard
General Store
Grocery Store
Guest House
Hotel or Motel
Inter-City Bus Terminal
Jewelry and Silverware Sales
Junk \ Salvage Yard
Super Store
Market (Bazar)
Mosque, Place Of Worship
Motorcycle Sales Outlet
Multi-Storey Car Park
Newspaper Stand
Outdoor Fruit and Vegetable Markets
Outdoor Recreation, Commercial
Parking Lot (Commercial)
Pet Store
Photocopying and Duplicating Services
Photofinishing Laboratory & Studio
Pipelines and Utility Lines
Post Office
Preserved Fruits and Vegetables Facility \ Cold Storage
Printing, Publishing and Distributing
Project Identification Signs
Property Management Signs
Public Transport Facility
Refrigerator or Large Appliance Repair
Resort
Restaurant
Retail Shops \ Facilities
Salvage Processing
Salvage Yards
Satellite Dish Antenna
Sawmill, Chipping and Pallet Mill
Shelter (Passers By)
Shopping Mall \ Plaza
Slaughter House
Software Development

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

Source: Compiled by the Consultants

Land Use Conditionally Permitted

Some functions are permitted with some condition in this zone.

Table A.6: Land Use Conditionally Permitted

Conditionally permitted commercial activities
Amusement and Recreation (Indoors)
Bicycle Assembly, Parts and Accessories
Broadcast Studio \ Recording Studio (No Audience)
Coffee Shop \ Tea Stall
Concert Hall, Stage Shows
Construction, Survey, Soil Testing Firms
Trade Shows
Craft Workshop
Plantation (Except Narcotic Plant)
Energy Installation
Firm Equipment Sales & Service
Agricultural Chemicals, Pesticides or Fertilizers Shop
Fitness Centre
Flowers, Nursery Stock and Florist Supplies
Forest Products Sales
Fuel and Ice Dealers
Garages
Garden Center or Retail Nursery
Police Box \ Barrack

Conditionally permitted commercial activities
Fire \ Rescue Station
Grain & Feed Mills
Household Appliance and Furniture Repair Service
Incineration Facility
Indoor Amusement Centers, Game Arcades
Indoor Theatre
Lithographic or Print Shop
Motor Vehicle Fuelling Station \ Gas Station
Musical Instrument Sales or Repair
Optical Goods Sales
Painting and Wallpaper Sales
Paints and Varnishes
Parking Lot
Patio Homes
Postal Facilities
Poultry
Private Garages
Professional Office
Retail Shops Ancillary To Studio \ Workshop
Stone \ Cut Stone Products Sales

Source: Compiled by the Consultants

Restricted Uses

All other uses except, the permitted and conditionally permitted uses.

d. Rural Settlement

Land Use Permitted

The following uses in the tables are proposed to be applicable for this zone only.

Table A.7: Land Use Permitted

Permitted Rural Settlement
Agricultural Dwellings
Animal Husbandry
Animal Shelter
Graveyard \ Cemetery
Child Daycare \ Preschool
Primary School
Communication Tower Within Permitted Height
Cottage
Crematorium
Dairy Farming
General Store
Grocery Store
Handloom (Cottage Industry)

Permitted Rural Settlement
Housing For Seasonal Firm Labor
Mosque, Place Of Worship
Newspaper Stand
Nursery School
orphanage
Outdoor Religious Events (Eidgah)
Playing Field
Satellite Dish Antenna
NGO \ CBO Facilities
Special Dwelling (E.G. Dorm For Physically Challenged Etc.)
Temporary Shed \ Tent
Specialized School: Dance, Art, Music, Physically Challenged & Others
Static Electrical Sub Stations
Transmission Lines
Utility Lines
Woodlot
Plantation (Except Narcotic Plant)
Social Forestry
Memorial Structure

Source: Compiled by the Consultants

Land Use Conditionally Permitted

The following uses may be permitted or disallowed in this zone after review and approval by the authority/committee following appropriate procedure while the application meets the criteria mentioned in the requirement.

Table No. A.8: Land Use Conditionally Permitted

Conditionally permitted uses under Rural Settlement
Artisan's Shop (Potter, Blacksmith, and Goldsmith Etc.)
Research organization (Agriculture \ Fisheries)
Energy Installation
Fish Hatchery
Garden Center or Retail Nursery
Emergency Shelter
Sports and Recreation Club, Firing Range: Indoor

Source: Compiled by the Consultants

Restricted Uses

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

e. Mixed use zone**Land Use Permitted**

The following uses in the tables are proposed to be applicable for this zone only.

Table A.11: Land Use Permitted

Permitted uses in Mixed Use Zone
Accounting, Auditing or Bookkeeping Services
Addiction Treatment Center
Billboards, Advertisements & Advertising Structure
Agricultural Sales and Services
Antique Store
Appliance Store
Art Gallery, Art Studio \ Workshop
Artisan's Shop
Assisted Living or Elderly Home
Auditorium, Coliseum, Meeting Halls, and Conference Facilities, Convention
Auto Leasing or Rental Office
Automobile Wash
Automobile Driving Academy
Confectionery Shop
Bakery or Confectionery Retail
Bank & Financial Institution
Barber Shop
Bicycle Shop
Billiard Parlor \ Pool Hall
Blacksmith
Boarding and Rooming House
Book or Stationery Store or Newsstand
Bus Passenger Shelter
Child Daycare \ Preschool
Cleaning \ Laundry Shop
Commercial Recreational Buildings
Communication Service Facilities
Communication Tower Within Permitted Height
Community Center
Condominium or Apartment
Correctional Institution
Courier Service
Cyber Café
Daycare Center (Commercial or Nonprofit)
Doctor \ Dentist Chamber
Employee Housing
Fabric Store
Fast Food Establishment \ Food Kiosk
Funeral Services

Permitted uses in Mixed Use Zone

General Store
Grocery Store
Guest House
Hospital
Jewelry and Silverware Sales
Landscape and Horticultural Services
Mosque, Place Of Worship
Newspaper Stand
Nursery School
Photocopying and Duplicating Services
Pipelines and Utility Lines
Primary School
Project Identification Signs
Property Management Signs
Public Transport Facility
Resort
Satellite Dish Antenna
Shelter (Passers By)
Shoe Repair or Shoeshine Shop (Small)
Slaughter House
Social organization
Software Development
Special Dwelling
Toys and Hobby Goods Processing and Supplies
Training Centre
Transmission Lines
Utility Lines
Vehicle Sales & Service, Leasing or Rental
Warehousing
Woodlot
Children's Park
ATM Booth
Water Pump \ Reservoir
Social Forestry
Dormitory
Rickshaw \ Auto Rickshaw Stand

Source: Compiled by the Consultants

Land Use Conditionally Permitted

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

Table A.12: Land Use Conditionally Permitted

Conditionally permitted uses in Mixed Use Zone
Agricultural Chemicals, Pesticides or Fertilizers Shop
Amusement and Recreation (Indoors)

Conditionally permitted uses in Mixed Use Zone
Beauty and Body Service
Broadcast Studio \ Recording Studio (No Audience)
Building Maintenance \ Cleaning Services, No Outside Storage
Building Material Sales or Storage (Indoors)
Graveyard \ Cemetery
Coffee Shop \ Tea Stall
Computer Maintenance and Repair
Computer Sales & Services
Concert Hall, Stage Shows
Conference Center
Construction Company
Construction, Survey, Soil Testing Firms
Cottage
Counseling Services
Craft Workshop
Crematorium
Plantation (Except Narcotic Plant)
Cultural Exhibits and Libraries
Department Stores, Furniture & Variety Stores
Drug Store or Pharmacy
Energy Installation
Fitness Centre
Flowers, Nursery Stock and Florist Supplies
Freight Handling, Storage & Distribution
Freight Transport Facility
Gaming Clubs
Garages
Garden Center or Retail Nursery
Commercial Office
Project Office
Government Office
Hotel or Motel
Household Appliance and Furniture Repair Service
Indoor Amusement Centers, Game Arcades
Indoor Theatre
Lithographic or Print Shop
Market (Bazar)
Health Office, Dental Laboratory, Clinic or Lab
Musical Instrument Sales or Repair
Optical Goods Sales
Outdoor Café
Outdoor Fruit and Vegetable Markets
Painting and Wallpaper Sales
Paints and Varnishes
Patio Homes
Photofinishing Laboratory & Studio
Poultry
Printing, Publishing and Distributing
Psychiatric Hospital
Retail Shops Ancillary To Studio \ Workshop

Conditionally permitted uses in Mixed Use Zone
Radio \ Television or T&T Station With Transmitter Tower
Refrigerator or Large Appliance Repair
Restaurant
Retail Shops \ Facilities
Sporting Goods and Toys Sales
Sports and Recreation Club, Firing Range: Indoor
Telephone Exchanges
Television, Radio or Electronics Repair (No Outside Storage)

Source: Compiled by the Consultants

Restricted Uses

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

f. Education and Research Area

Land Use Permitted

The following uses in the tables are proposed to be applicable for this zone only.

Table A.13: Land Use Permitted

Permitted uses under Education & Research Zone
Addiction Treatment Center
Billboards, Advertisements & Advertising Structure
Art Gallery, Art Studio \ Workshop
Automobile Driving Academy
Confectionery Shop
Bus Passenger Shelter
Child Daycare \ Preschool
College, University, Technical Institute
Communication Service Facilities
Communication Tower Within Permitted Height
Conference Center
Correctional Institution
Cultural Exhibits and Libraries
Cyber Café
Freight Transport Facility
General Store
Grocery Store
High School
Hospital
Lithographic or Print Shop
Mosque, Place Of Worship
Multi-Storey Car Park
Newspaper Stand
Nursery School
Outdoor Religious Events
Photocopying and Duplicating Services
Post Office

Permitted uses under Education & Research Zone
Primary School
Professional Office
Project Identification Signs
Property Management Signs
Public Transport Facility
Satellite Dish Antenna
School (Retarded)
Scientific Research Establishment
Shelter (Passers By)
Specialized School: Dance, Art, Music & Others
Training Centre
Transmission Lines
Utility Lines
Vocational, Business, Secretarial School
Woodlot
ATM Booth
Water Pump \ Reservoir
Social Forestry
Dormitory
Veterinary School \ College and Hospital

Source: Compiled by the Consultants

Land Use Conditionally Permitted

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

Table A.14: Land Use Conditionally Permitted

Conditionally permitted uses under Education and Research Zone
Auditorium, Coliseum, Meeting Halls, and Conference Facilities, Convention
Bank & Financial Institution
Barber Shop
Boarding and Rooming House
Book or Stationery Store or Newsstand
Coffee Shop \ Tea Stall
Counseling Services
Courier Service
Plantation (Except Narcotic Plant)
Daycare Center (Commercial or Nonprofit)
Doctor \ Dentist Chamber
Drug Store or Pharmacy
Fast Food Establishment \ Food Kiosk
Flowers, Nursery Stock and Florist Supplies
Gallery \ Museum
Garages
Indoor Theatre
orphanage
Outdoor Café
Parking Lot

Conditionally permitted uses under Education and Research Zone
Pipelines and Utility Lines
Postal Facilities
Psychiatric Hospital

Source: Compiled by the Consultants

Restricted Uses

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

g. Government Office

Land Use Permitted

The following uses in the tables are proposed to be applicable for this zone only.

Table A.15: Land Use Permitted

Permitted uses under Government Office Zone
Accounting, Auditing or Bookkeeping Services
Billboards, Advertisements & Advertising Structure
Confectionery Shop
Bus Passenger Shelter
Civic Administration
Communication Service Facilities
Communication Tower Within Permitted Height
Construction, Survey, Soil Testing Firms
Cultural Exhibits and Libraries
Cyber Café
Emergency Shelter
Freight Transport Facility
General Store
Project Office
Government Office
Grocery Store
Guest House
Multi-Storey Car Park
Newspaper Stand
Outdoor Religious Events
Photocopying and Duplicating Services
Post Office
Professional Office
Public Transport Facility
Satellite Dish Antenna
Scientific Research Establishment
Shelter (Passers By)
Training Centre
Transmission Lines

Permitted uses under Government Office Zone
Utility Lines
Woodlot
ATM Booth
Water Pump \ Reservoir
Social Forestry

Source: Compiled by the Consultants

Land Use Conditionally Permitted

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

Table A.16: Land Use Conditionally Permitted

Conditionally permitted uses under Government office
Amusement and Recreation (Indoors)
Auditorium, Coliseum, Meeting Halls, and Conference Facilities, Convention
Bank & Financial Institution
Boarding and Rooming House
Book or Stationery Store or Newsstand
Coffee Shop \ Tea Stall
Conference Center
Courier Service
Plantation (Except Narcotic Plant)
Daycare Center (Commercial or Nonprofit)
Detention Facilities
Doctor \ Dentist Chamber
Energy Installation
Fast Food Establishment \ Food Kiosk
Flowers, Nursery Stock and Florist Supplies
Freight Handling, Storage & Distribution
Freight Yard
Gallery \ Museum
Garages
Police Box \ Barrack
Fire \ Rescue Station
Lithographic or Print Shop
Mosque, Place Of Worship
Outdoor Café
Parking Lot
Parking Lot (Commercial)
Pipelines and Utility Lines
Postal Facilities

Source: Compiled by the Consultants

Restricted Uses

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

h. Agricultural Zone

Land Use Permitted

The following uses in the tables are proposed to be applicable for this zone only.

Table A17: Land Use Permitted

Permitted uses under Agricultural Zone
Food Grain Cultivation
Vegetable Cultivation
Cash Crop Cultivation
Horticulture
Arboriculture
Dairy Farming
Deep Tube Well
Shallow Tube Well
Irrigation Facilities (Irrigation Canal, Culvert, Flood Wall etc)
Temporary Structure (Agricultural)
Animal Shelter
Duckery
Aquatic Recreation Facility (Without Structure)
Tree Plantation (Except Narcotic Plant)
Aquaculture
Static Transformer Stations
Transmission Lines
Utility Lines
Woodlot
Social Forestry

Source: Compiled by the Consultants

Land Use Conditionally Permitted

Table A18: Land Use Conditionally Permitted

Conditionally permitted uses under Agricultural Zone
Graveyard \ Cemetery
Communication Tower Within Permitted Height
Crematorium
Fish Hatchery
Garden Center or Retail Nursery
Poultry

Source: Compiled by the Consultants

Restricted Uses

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

j. Open Space**Land Use Permitted**

The following uses in the tables are proposed to be applicable for this zone only.

Table A.19: Land Use Permitted

Permitted uses under Open Space
Botanical Garden & Arboretum
Bus Passenger Shelter
Caravan Park \ Camping Ground
Carnivals and Fairs
Circus
Plantation (Except Narcotic Plant)
Landscape and Horticultural Services
Open Theater
Park and Recreation Facilities (General)
Pipelines and Utility Lines
Playing Field
Special Function Tent
Tennis Club
Transmission Lines
Urban-Nature Reserve
Utility Lines
Woodlot
Zoo
Roadside Parking
Social Forestry
Memorial Structure

Source: Compiled by the Consultants

Landuse Conditionally Permitted

Table A 20: Land Use Conditionally Permitted

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

Source: Compiled by the Consultants

Restricted Uses

All uses except permitted and conditionally permitted uses are restricted.

k. Water Body

Retaining water is the main purpose of this type of Landuse.

Land Use Permitted

The following uses in the tables are proposed to be applicable for this zone only.

Table A.21: Land Use Permitted

Permitted uses under Water Body
Aquatic Recreation Facility (Without Structure)
Fishing Club
Utility Lines
Water Parks
Memorial Structure

Source: Compiled by the Consultants

Land Use Conditionally Permitted

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

Table A.22: Land Use Conditionally Permitted

Conditionally permitted uses under water body
Plantation (Except Narcotic Plant)
Marina \ Boating Facility
Motorized Recreation

Source: Compiled by the Consultants

Restricted Uses

All uses except permitted and conditionally permitted uses are restricted.

DETAILS OF ROAD NETWORK PROPOSALS

Table B1: Details of Road Widening Proposals for Phase 01

Road ID	Road Name	Road Type	RoW (Ft)	Length (m)	Ward_No	Road Proposal
W90		Primary Road	80	311.37	Ward No 03	Widening
W90		Primary Road	80	494.63	Ward No 02	Widening
W99	Comilla to Chandpur Road	Primary Road	80	63.36	Ward No 04	Widening
W99	Comilla to Chandpur Road	Primary Road	80	1542.77	Ward No 03	Widening
W99	Comilla to Chandpur Road	Primary Road	80	2241.59	Ward No 02	Widening
W6		Primary Road	60	1115.27	Ward No 08	Widening
W6		Primary Road	60	4.52	Ward No 07	Widening
W102	Kalibari Road	Primary Road	60	221.26	Ward No 01	Widening
W102	Kalibari Road	Primary Road	60	854.74	Ward No 05	Widening
W102	Kalibari Road	Primary Road	60	102.85	Ward No 03	Widening
W102	Kalibari Road	Primary Road	60	174.72	Ward No 02	Widening
W41	Kajir Kap Road	Secondary Road	40	996.54	Ward No 05	Widening
W41	Kajir Kap Road	Secondary Road	40	70.35	Ward No 04	Widening
W54		Secondary Road	40	343.49	Ward No 04	Widening
W154	Saheb Bazar Road	Secondary Road	40	6.16	Ward No 07	Widening
W154	Saheb Bazar Road	Secondary Road	40	74.50	Ward No 06	Widening
W154	Saheb Bazar Road	Secondary Road	40	1209.94	Ward No 01	Widening
W154	Saheb Bazar Road	Secondary Road	40	109.31	Ward No 05	Widening
W34		Secondary Road	30	151.05	Ward No 01	Widening
W37		Secondary Road	30	355.06	Ward No 01	Widening
W50		Secondary Road	30	109.00	Ward No 01	Widening
W55		Secondary Road	30	451.41	Ward No 01	Widening
W71		Secondary Road	30	279.47	Ward No 01	Widening
W74		Secondary Road	30	226.26	Ward No 01	Widening
W78	Solder Md Abdul Huq Road	Secondary Road	30	473.31	Ward No 05	Widening
W78	Solder Md Abdul Huq Road	Secondary Road	30	368.74	Ward No 04	Widening
W80		Secondary Road	30	7.26	Ward No 01	Widening
W80		Secondary Road	30	130.99	Ward No 02	Widening
W82		Secondary Road	30	147.14	Ward No 02	Widening
W190	Solder Md Abdul Huq Road	Secondary Road	30	448.05	Ward No 04	Widening
W190	Solder Md Abdul Huq Road	Secondary Road	30	311.03	Ward No 03	Widening

Table B2: Details of New Road Proposals for Phase 01

Road ID	Road Name	Road Type	RoW (Ft)	Length (m)	Ward_No	Road Proposal
N101		Primary Road	60	662.82	Ward No 07	New Road
N101		Primary Road	60	476.74	Ward No 06	New Road
N101		Primary Road	60	182.60	Ward No 05	New Road

Table B3: Details of Road Widening Proposals for Phase 02

Road ID	Road Name	Road Type	RoW (Ft)	Length (m)	Ward_No	Road Proposal
W2	Dohavanga To Shuchi Para	Secondary Road	30	1228.53	Ward No 08	Widening
W2	Dohavanga To Shuchi Para	Secondary Road	30	199.57	Ward No 07	Widening
W7		Secondary Road	30	124.64	Ward No 08	Widening
W7		Secondary Road	30	165.37	Ward No 07	Widening
W14		Secondary Road	30	818.95	Ward No 07	Widening
W15	Shahrasti Majar Road	Secondary Road	30	1537.02	Ward No 07	Widening
W15	Shahrasti Majar Road	Secondary Road	30	68.51	Ward No 06	Widening
W18	Kalibari Road	Secondary Road	30	861.47	Ward No 07	Widening
W18	Kalibari Road	Secondary Road	30	114.69	Ward No 01	Widening

Annexure- B: Proposed Road Inventory

Road ID	Road Name	Road Type	RoW (Ft)	Length (m)	Ward_No	Road Proposal
W18	Kalibari Road	Secondary Road	30	35.60	Ward No 01	Widening
W18	Kalibari Road	Secondary Road	30	35.60	Ward No 05	Widening
W18	Kalibari Road	Secondary Road	30	382.33	Ward No 05	Widening
W21	Ghosh Para Road	Secondary Road	30	616.35	Ward No 07	Widening
W24		Secondary Road	30	0.83	Ward No 07	Widening
W24		Secondary Road	30	172.23	Ward No 06	Widening
W27		Secondary Road	30	162.42	Ward No 06	Widening
W29		Secondary Road	30	142.38	Ward No 06	Widening
W30		Secondary Road	30	193.12	Ward No 06	Widening
W36		Secondary Road	30	212.11	Ward No 06	Widening
W38		Secondary Road	30	110.50	Ward No 06	Widening
W113		Secondary Road	30	49.68	Ward No 08	Widening
W113		Secondary Road	30	173.47	Ward No 07	Widening
W156	Kajir Kap Road	Secondary Road	30	240.93	Ward No 06	Widening
W156	Kajir Kap Road	Secondary Road	30	152.71	Ward No 04	Widening
W158	Dohavanga To Shuchi Para	Secondary Road	30	306.86	Ward No 09	Widening
W158	Dohavanga To Shuchi Para	Secondary Road	30	162.77	Ward No 07	Widening
W159	Shahrasti Majar Road	Secondary Road	30	62.83	Ward No 07	Widening
W9		Access Road	20	355.68	Ward No 08	Widening
W11		Access Road	20	97.86	Ward No 08	Widening
W13		Access Road	20	412.63	Ward No 08	Widening
W13		Access Road	20	1.75	Ward No 07	Widening
W17		Access Road	20	157.15	Ward No 08	Widening
W17		Access Road	20	4.32	Ward No 07	Widening
W20		Access Road	20	13.32	Ward No 07	Widening
W20		Access Road	20	274.08	Ward No 06	Widening
W25		Access Road	20	459.40	Ward No 07	Widening
W25		Access Road	20	6.71	Ward No 01	Widening
W26	Shahrasti School Road	Access Road	20	123.29	Ward No 07	Widening
W26	Shahrasti School Road	Access Road	20	759.42	Ward No 06	Widening
W32		Access Road	20	435.45	Ward No 01	Widening
W35		Access Road	20	157.33	Ward No 01	Widening
W39		Access Road	20	342.84	Ward No 06	Widening
W39		Access Road	20	178.46	Ward No 05	Widening
W44		Access Road	20	915.73	Ward No 01	Widening
W45		Access Road	20	119.21	Ward No 01	Widening
W45		Access Road	20	0.02	Ward No 05	Widening
W46	Kajir Kamta Primary School	Access Road	20	296.15	Ward No 01	Widening
W47		Access Road	20	290.56	Ward No 05	Widening
W51		Access Road	20	2.84	Ward No 01	Widening
W51		Access Road	20	512.13	Ward No 05	Widening
W53		Access Road	20	175.73	Ward No 05	Widening
W58		Access Road	20	169.74	Ward No 05	Widening
W58		Access Road	20	81.26	Ward No 04	Widening
W59		Access Road	20	251.25	Ward No 05	Widening
W60		Access Road	20	424.35	Ward No 05	Widening
W61		Access Road	20	233.15	Ward No 05	Widening
W62		Access Road	20	413.57	Ward No 05	Widening
W63		Access Road	20	204.53	Ward No 05	Widening
W64	Meher College Road	Access Road	20	11.46	Ward No 01	Widening
W64	Meher College Road	Access Road	20	543.76	Ward No 05	Widening
W67		Access Road	20	179.05	Ward No 01	Widening
W68		Access Road	20	108.02	Ward No 05	Widening

Annexure- B: Proposed Road Inventory

Road ID	Road Name	Road Type	RoW (Ft)	Length (m)	Ward_No	Road Proposal
W69	Meher College Road	Access Road	20	1064.33	Ward No 05	Widening
W70		Access Road	20	185.25	Ward No 05	Widening
W72		Access Road	20	199.87	Ward No 01	Widening
W72		Access Road	20	162.58	Ward No 05	Widening
W73		Access Road	20	158.29	Ward No 01	Widening
W73		Access Road	20	0.98	Ward No 05	Widening
W157	Kajir Kap Road	Access Road	20	0.45	Ward No 01	Widening
W157	Kajir Kap Road	Access Road	20	181.16	Ward No 05	Widening

Table B4: Details of New Road Proposals for Phase 02

Road ID	Road Name	Road Type	RoW (Ft)	Length (m)	Ward_No	Road Proposal
N148		Secondary Road	30	841.49	Ward No 05	New Road
N186		Secondary Road	30	1325.53	Ward No 05	New Road
N186		Secondary Road	30	1663.23	Ward No 04	New Road
N186		Secondary Road	30	1047.16	Ward No 02	New Road
N187		Secondary Road	30	1660.86	Ward No 04	New Road
N188		Secondary Road	30	869.83	Ward No 05	New Road
N188		Secondary Road	30	454.89	Ward No 04	New Road
N188		Secondary Road	30	373.65	Ward No 02	New Road
N96		Access Road	20	140.93	Ward No 01	New Road
N97		Access Road	20	13.01	Ward No 01	New Road
N97		Access Road	20	422.18	Ward No 05	New Road
N98		Access Road	20	548.52	Ward No 05	New Road
N114		Access Road	20	678.49	Ward No 07	New Road
N114		Access Road	20	482.72	Ward No 06	New Road
N114		Access Road	20	15.43	Ward No 05	New Road
N118		Access Road	20	732.76	Ward No 02	New Road
N119		Access Road	20	471.92	Ward No 07	New Road
N121		Access Road	20	227.59	Ward No 06	New Road
N122		Access Road	20	1060.93	Ward No 06	New Road
N123		Access Road	20	282.77	Ward No 06	New Road
N124		Access Road	20	142.07	Ward No 06	New Road
N126		Access Road	20	181.12	Ward No 07	New Road
N127		Access Road	20	395.82	Ward No 07	New Road
N128		Access Road	20	258.05	Ward No 07	New Road
N129		Access Road	20	333.06	Ward No 07	New Road
N130		Access Road	20	264.35	Ward No 07	New Road
N133		Access Road	20	839.94	Ward No 02	New Road
N134		Access Road	20	465.52	Ward No 05	New Road
N135		Access Road	20	79.26	Ward No 01	New Road
N135		Access Road	20	8.07	Ward No 05	New Road
N140		Access Road	20	313.79	Ward No 07	New Road
N142		Access Road	20	429.64	Ward No 08	New Road
N142		Access Road	20	618.74	Ward No 07	New Road
N143		Access Road	20	211.43	Ward No 05	New Road
N143		Access Road	20	299.57	Ward No 03	New Road
N144		Access Road	20	733.74	Ward No 03	New Road
N146		Access Road	20	178.88	Ward No 05	New Road
N147		Access Road	20	227.94	Ward No 05	New Road
N149		Access Road	20	116.65	Ward No 01	New Road
N149		Access Road	20	42.64	Ward No 05	New Road
N149		Access Road	20	71.43	Ward No 02	New Road

Annexure- B: Proposed Road Inventory

Road ID	Road Name	Road Type	RoW (Ft)	Length (m)	Ward_No	Road Proposal
N153		Access Road	20	152.17	Ward No 01	New Road
N160		Access Road	20	38.31	Ward No 05	New Road
N160		Access Road	20	299.69	Ward No 02	New Road
N161		Access Road	20	18.19	Ward No 05	New Road
N161		Access Road	20	191.04	Ward No 02	New Road
N162		Access Road	20	200.27	Ward No 02	New Road
N163		Access Road	20	144.07	Ward No 02	New Road
N164		Access Road	20	114.39	Ward No 02	New Road
N165		Access Road	20	218.34	Ward No 08	New Road
N172		Access Road	20	220.77	Ward No 08	New Road
N173		Access Road	20	4.98	Ward No 09	New Road
N173		Access Road	20	226.24	Ward No 07	New Road
N174		Access Road	20	204.05	Ward No 07	New Road
N175		Access Road	20	95.45	Ward No 07	New Road
N176		Access Road	20	43.23	Ward No 06	New Road
N176		Access Road	20	31.24	Ward No 05	New Road
N178		Access Road	20	197.32	Ward No 03	New Road
N185		Access Road	20	492.80	Ward No 05	New Road
N192		Access Road	20	31.18	Ward No 07	New Road
N192		Access Road	20	122.76	Ward No 06	New Road
N193		Access Road	20	183.43	Ward No 05	New Road
N194		Access Road	20	91.79	Ward No 05	New Road
N195		Access Road	20	189.21	Ward No 05	New Road
N196		Access Road	20	251.38	Ward No 03	New Road

Table B5: Details of Road Widening Proposals for Phase 03

Road ID	Road Name	Road Type	RoW (Ft)	Length (m)	Ward_No	Road Proposal
W1	Sikitia Road	Primary Road	60	1565.18	Ward No 09	Widening
W12		Secondary Road	30	474.09	Ward No 07	Widening
W16	Bhattola Road	Secondary Road	30	663.56	Ward No 09	Widening
W19		Secondary Road	30	4.10	Ward No 07	Widening
W19		Secondary Road	30	738.56	Ward No 06	Widening
W22		Secondary Road	30	333.60	Ward No 07	Widening
W22		Secondary Road	30	4.43	Ward No 01	Widening
W49		Secondary Road	30	4.95	Ward No 06	Widening
W49		Secondary Road	30	526.01	Ward No 04	Widening
W65		Secondary Road	30	847.65	Ward No 04	Widening
W189		Secondary Road	30	390.33	Ward No 04	Widening
W3		Access Road	20	568.16	Ward No 08	Widening
W4		Access Road	20	298.27	Ward No 08	Widening
W5		Access Road	20	332.76	Ward No 08	Widening
W8		Access Road	20	234.41	Ward No 08	Widening
W8		Access Road	20	179.51	Ward No 09	Widening
W10		Access Road	20	653.31	Ward No 09	Widening
W23	Miji Bari Road	Access Road	20	428.70	Ward No 07	Widening
W23	Miji Bari Road	Access Road	20	2.01	Ward No 01	Widening
W28		Access Road	20	730.21	Ward No 06	Widening
W31		Access Road	20	340.88	Ward No 01	Widening
W33		Access Road	20	326.25	Ward No 01	Widening
W40		Access Road	20	478.94	Ward No 01	Widening
W42		Access Road	20	296.56	Ward No 01	Widening
W43		Access Road	20	397.95	Ward No 01	Widening

Annexure- B: Proposed Road Inventory

Road ID	Road Name	Road Type	RoW (Ft)	Length (m)	Ward_No	Road Proposal
W48		Access Road	20	662.85	Ward No 01	Widening
W52		Access Road	20	1159.93	Ward No 01	Widening
W56		Access Road	20	252.14	Ward No 04	Widening
W57		Access Road	20	113.99	Ward No 04	Widening
W66	Mohila College Road	Access Road	20	997.30	Ward No 04	Widening
W75		Access Road	20	273.83	Ward No 04	Widening
W76		Access Road	20	303.31	Ward No 01	Widening
W76		Access Road	20	327.94	Ward No 02	Widening
W77		Access Road	20	453.76	Ward No 04	Widening
W79		Access Road	20	436.17	Ward No 04	Widening
W79		Access Road	20	428.69	Ward No 03	Widening
W81		Access Road	20	604.03	Ward No 04	Widening
W83		Access Road	20	882.49	Ward No 02	Widening
W84		Access Road	20	436.91	Ward No 02	Widening
W85		Access Road	20	22.17	Ward No 04	Widening
W85		Access Road	20	201.89	Ward No 03	Widening
W86		Access Road	20	0.36	Ward No 03	Widening
W86		Access Road	20	328.93	Ward No 02	Widening
W87		Access Road	20	201.37	Ward No 02	Widening
W88		Access Road	20	173.62	Ward No 03	Widening
W88		Access Road	20	107.13	Ward No 02	Widening
W89		Access Road	20	2.44	Ward No 03	Widening
W89		Access Road	20	128.96	Ward No 02	Widening
W91		Access Road	20	206.38	Ward No 02	Widening
W92		Access Road	20	223.29	Ward No 02	Widening
W93		Access Road	20	346.57	Ward No 02	Widening
W94		Access Road	20	14.40	Ward No 03	Widening
W94		Access Road	20	451.26	Ward No 02	Widening
W95		Access Road	20	815.17	Ward No 02	Widening
W103		Access Road	20	301.45	Ward No 08	Widening
W107		Access Road	20	106.86	Ward No 04	Widening
W107		Access Road	20	557.42	Ward No 03	Widening
W112		Access Road	20	113.34	Ward No 09	Widening
W155		Access Road	20	170.60	Ward No 04	Widening
W167	Dohavanga To Shuchi Para	Access Road	20	1192.96	Ward No 09	Widening
W171	Kajir Kap Road	Access Road	20	353.58	Ward No 06	Widening

Table B6: Details of New Road Proposals for Phase 03

Road ID	Road Name	Road Type	RoW (Ft)	Length (m)	Ward_No	Road Proposal
N100		Primary Road	60	415.39	Ward No 08	New Road
N100		Primary Road	60	1826.77	Ward No 09	New Road
N100		Primary Road	60	509.31	Ward No 07	New Road
N100		Primary Road	60	574.92	Ward No 01	New Road
N100		Primary Road	60	547.44	Ward No 02	New Road
N104		Primary Road	60	1178.65	Ward No 06	New Road
N104		Primary Road	60	1632.53	Ward No 04	New Road
N105		Primary Road	60	188.30	Ward No 08	New Road
N115		Secondary Road	30	1034.00	Ward No 08	New Road
N106		Access Road	20	302.74	Ward No 08	New Road
N108		Access Road	20	1034.88	Ward No 02	New Road
N109		Access Road	20	245.12	Ward No 02	New Road
N110		Access Road	20	202.59	Ward No 02	New Road

Annexure- B: Proposed Road Inventory

Road ID	Road Name	Road Type	RoW (Ft)	Length (m)	Ward_No	Road Proposal
N116		Access Road	20	466.62	Ward No 08	New Road
N117		Access Road	20	328.91	Ward No 08	New Road
N117		Access Road	20	223.94	Ward No 09	New Road
N120		Access Road	20	410.07	Ward No 08	New Road
N120		Access Road	20	144.63	Ward No 09	New Road
N125		Access Road	20	759.08	Ward No 09	New Road
N125		Access Road	20	10.49	Ward No 07	New Road
N131		Access Road	20	500.36	Ward No 01	New Road
N132		Access Road	20	481.78	Ward No 01	New Road
N136	Miji Bari Road	Access Road	20	264.01	Ward No 07	New Road
N137		Access Road	20	312.33	Ward No 01	New Road
N137		Access Road	20	82.47	Ward No 02	New Road
N138		Access Road	20	9.33	Ward No 09	New Road
N138		Access Road	20	409.17	Ward No 07	New Road
N139		Access Road	20	391.33	Ward No 07	New Road
N141		Access Road	20	241.63	Ward No 08	New Road
N145		Access Road	20	236.33	Ward No 04	New Road
N150		Access Road	20	318.07	Ward No 03	New Road
N151		Access Road	20	206.22	Ward No 02	New Road
N152		Access Road	20	170.21	Ward No 04	New Road
N166		Access Road	20	709.99	Ward No 09	New Road
N168		Access Road	20	707.72	Ward No 09	New Road
N169		Access Road	20	739.52	Ward No 09	New Road
N170		Access Road	20	251.24	Ward No 08	New Road
N170		Access Road	20	150.55	Ward No 09	New Road
N177		Access Road	20	319.04	Ward No 01	New Road
N179		Access Road	20	315.28	Ward No 03	New Road
N180		Access Road	20	280.10	Ward No 03	New Road
N181		Access Road	20	180.75	Ward No 03	New Road
N182		Access Road	20	146.03	Ward No 03	New Road
N183		Access Road	20	544.98	Ward No 04	New Road
N184		Access Road	20	586.71	Ward No 04	New Road
N191		Access Road	20	186.24	Ward No 08	New Road
N197		Access Road	20	208.07	Ward No 02	New Road
N198		Access Road	20	158.78	Ward No 02	New Road

DETAILS OF DRAINAGE NETWORK PROPOSALS

Table C1: Details of Drainage Network Proposals for Phase 01

Drain ID	Drain Type	Length (m)	Width (m)	Depth (m)	Ward Name
PS46	Secondary Drain	312.52	2.35 - 3.35	1.24 - 2.24	Ward No 03
PS47	Secondary Drain	227.45	2.35 - 3.35	1.24 - 2.24	Ward No 03
PS47	Secondary Drain	622.19	2.35 - 3.35	1.24 - 2.24	Ward No 02
PS48	Secondary Drain	533.14	2.35 - 3.35	1.24 - 2.24	Ward No 03
PS48	Secondary Drain	1188.47	2.35 - 3.35	1.24 - 2.24	Ward No 02
PS49	Secondary Drain	849.50	2.35 - 3.35	1.24 - 2.24	Ward No 08
PS49	Secondary Drain	5.90	2.35 - 3.35	1.24 - 2.24	Ward No 07
PS51	Secondary Drain	663.20	2.35 - 3.35	1.24 - 2.24	Ward No 07
PS51	Secondary Drain	476.36	2.35 - 3.35	1.24 - 2.24	Ward No 06
PS51	Secondary Drain	182.97	2.35 - 3.35	1.24 - 2.24	Ward No 05
PS52	Secondary Drain	32.17	2.35 - 3.35	1.24 - 2.24	Ward No 01
PS52	Secondary Drain	904.15	2.35 - 3.35	1.24 - 2.24	Ward No 05
PS55	Secondary Drain	1114.91	2.35 - 3.35	1.24 - 2.24	Ward No 08
PS55	Secondary Drain	3.41	2.35 - 3.35	1.24 - 2.24	Ward No 07
PS56	Secondary Drain	662.53	2.35 - 3.35	1.24 - 2.24	Ward No 07
PS56	Secondary Drain	476.20	2.35 - 3.35	1.24 - 2.24	Ward No 06
PS56	Secondary Drain	182.91	2.35 - 3.35	1.24 - 2.24	Ward No 05
PS57	Secondary Drain	272.93	2.35 - 3.35	1.24 - 2.24	Ward No 01
PS57	Secondary Drain	667.71	2.35 - 3.35	1.24 - 2.24	Ward No 05
PS60	Secondary Drain	335.18	2.35 - 3.35	1.24 - 2.24	Ward No 04
PS61	Secondary Drain	987.78	2.35 - 3.35	1.24 - 2.24	Ward No 05
PS61	Secondary Drain	70.89	2.35 - 3.35	1.24 - 2.24	Ward No 04
PS62	Secondary Drain	334.70	2.35 - 3.35	1.24 - 2.24	Ward No 04
PS63	Secondary Drain	1205.17	2.35 - 3.35	1.24 - 2.24	Ward No 01
PS78	Secondary Drain	143.49	2.35 - 3.35	1.24 - 2.24	Ward No 01
PS80	Secondary Drain	356.96	2.35 - 3.35	1.24 - 2.24	Ward No 01
PS83	Secondary Drain	97.36	2.35 - 3.35	1.24 - 2.24	Ward No 01
PS84	Secondary Drain	447.17	2.35 - 3.35	1.24 - 2.24	Ward No 01
PS86	Secondary Drain	271.11	2.35 - 3.35	1.24 - 2.24	Ward No 01
PS87	Secondary Drain	229.72	2.35 - 3.35	1.24 - 2.24	Ward No 01
PS88	Secondary Drain	479.85	2.35 - 3.35	1.24 - 2.24	Ward No 05
PS88	Secondary Drain	351.15	2.35 - 3.35	1.24 - 2.24	Ward No 04
PS89	Secondary Drain	0.35	2.35 - 3.35	1.24 - 2.24	Ward No 01
PS89	Secondary Drain	125.21	2.35 - 3.35	1.24 - 2.24	Ward No 02
PS90	Secondary Drain	131.18	2.35 - 3.35	1.24 - 2.24	Ward No 02
PS112	Secondary Drain	145.06	2.35 - 3.35	1.24 - 2.24	Ward No 01
PS114	Secondary Drain	348.98	2.35 - 3.35	1.24 - 2.24	Ward No 01
PS117	Secondary Drain	107.91	2.35 - 3.35	1.24 - 2.24	Ward No 01
PS118	Secondary Drain	456.76	2.35 - 3.35	1.24 - 2.24	Ward No 01
PS120	Secondary Drain	284.78	2.35 - 3.35	1.24 - 2.24	Ward No 01
PS121	Secondary Drain	230.76	2.35 - 3.35	1.24 - 2.24	Ward No 01
PS122	Secondary Drain	833.49	2.35 - 3.35	1.24 - 2.24	Ward No 04
PS123	Secondary Drain	0.08	2.35 - 3.35	1.24 - 2.24	Ward No 01
PS123	Secondary Drain	128.51	2.35 - 3.35	1.24 - 2.24	Ward No 02
PS124	Secondary Drain	131.49	2.35 - 3.35	1.24 - 2.24	Ward No 02
PS134	Secondary Drain	320.03	2.35 - 3.35	1.24 - 2.24	Ward No 04
PS134	Secondary Drain	299.87	2.35 - 3.35	1.24 - 2.24	Ward No 03
PS136	Secondary Drain	60.08	2.35 - 3.35	1.24 - 2.24	Ward No 04
PS136	Secondary Drain	720.68	2.35 - 3.35	1.24 - 2.24	Ward No 03

Annexure- C: Proposed Drainage Network

Drain ID	Drain Type	Length (m)	Width (m)	Depth (m)	Ward Name
PS140	Secondary Drain	107.71	2.35 - 3.35	1.24 - 2.24	Ward No 05
PS140	Secondary Drain	263.84	2.35 - 3.35	1.24 - 2.24	Ward No 03
PS141	Secondary Drain	104.01	2.35 - 3.35	1.24 - 2.24	Ward No 05
PS141	Secondary Drain	265.07	2.35 - 3.35	1.24 - 2.24	Ward No 02
PS142	Secondary Drain	429.15	2.35 - 3.35	1.24 - 2.24	Ward No 05
PS142	Secondary Drain	70.32	2.35 - 3.35	1.24 - 2.24	Ward No 04
PS151	Secondary Drain	291.22	2.35 - 3.35	1.24 - 2.24	Ward No 03
PS52	Secondary Drain	0.15	2.35 - 3.35	1.24 - 2.24	Ward No 05
PS56	Secondary Drain	0.15	2.35 - 3.35	1.24 - 2.24	Ward No 05
PS80	Secondary Drain	0.07	2.35 - 3.35	1.24 - 2.24	Ward No 01
PS112	Secondary Drain	0.07	2.35 - 3.35	1.24 - 2.24	Ward No 01

Table C2: Details of Drainage Network Proposals for Phase 02

Drain ID	Drain Type	Length (m)	Width (m)	Depth (m)	Ward Name
PS64	Secondary Drain	1266.07	2.35 - 3.35	1.24 - 2.24	Ward No 08
PS64	Secondary Drain	160.20	2.35 - 3.35	1.24 - 2.24	Ward No 07
PS65	Secondary Drain	619.46	2.35 - 3.35	1.24 - 2.24	Ward No 08
PS67	Secondary Drain	728.78	2.35 - 3.35	1.24 - 2.24	Ward No 08
PS67	Secondary Drain	76.82	2.35 - 3.35	1.24 - 2.24	Ward No 07
PS68	Secondary Drain	941.22	2.35 - 3.35	1.24 - 2.24	Ward No 07
PS68	Secondary Drain	431.42	2.35 - 3.35	1.24 - 2.24	Ward No 06
PS70	Secondary Drain	861.06	2.35 - 3.35	1.24 - 2.24	Ward No 07
PS70	Secondary Drain	517.78	2.35 - 3.35	1.24 - 2.24	Ward No 05
PS72	Secondary Drain	362.51	2.35 - 3.35	1.24 - 2.24	Ward No 07
PS74	Secondary Drain	165.84	2.35 - 3.35	1.24 - 2.24	Ward No 06
PS75	Secondary Drain	160.51	2.35 - 3.35	1.24 - 2.24	Ward No 06
PS76	Secondary Drain	143.94	2.35 - 3.35	1.24 - 2.24	Ward No 06
PS77	Secondary Drain	192.51	2.35 - 3.35	1.24 - 2.24	Ward No 06
PS79	Secondary Drain	209.41	2.35 - 3.35	1.24 - 2.24	Ward No 06
PS81	Secondary Drain	111.69	2.35 - 3.35	1.24 - 2.24	Ward No 06
PS92	Secondary Drain	834.36	2.35 - 3.35	1.24 - 2.24	Ward No 05
PS93	Secondary Drain	246.22	2.35 - 3.35	1.24 - 2.24	Ward No 06
PS93	Secondary Drain	2.97	2.35 - 3.35	1.24 - 2.24	Ward No 04
PS94	Secondary Drain	309.14	2.35 - 3.35	1.24 - 2.24	Ward No 09
PS95	Secondary Drain	62.83	2.35 - 3.35	1.24 - 2.24	Ward No 07
PS96	Secondary Drain	1325.76	2.35 - 3.35	1.24 - 2.24	Ward No 05
PS96	Secondary Drain	1664.20	2.35 - 3.35	1.24 - 2.24	Ward No 04
PS96	Secondary Drain	624.60	2.35 - 3.35	1.24 - 2.24	Ward No 02
PS98	Secondary Drain	627.05	2.35 - 3.35	1.24 - 2.24	Ward No 08
PS98	Secondary Drain	200.26	2.35 - 3.35	1.24 - 2.24	Ward No 07
PS99	Secondary Drain	74.98	2.35 - 3.35	1.24 - 2.24	Ward No 08
PS99	Secondary Drain	168.48	2.35 - 3.35	1.24 - 2.24	Ward No 07
PS101	Secondary Drain	806.08	2.35 - 3.35	1.24 - 2.24	Ward No 07
PS102	Secondary Drain	1361.53	2.35 - 3.35	1.24 - 2.24	Ward No 07
PS104	Secondary Drain	862.01	2.35 - 3.35	1.24 - 2.24	Ward No 07
PS104	Secondary Drain	530.09	2.35 - 3.35	1.24 - 2.24	Ward No 01
PS106	Secondary Drain	405.77	2.35 - 3.35	1.24 - 2.24	Ward No 07
PS108	Secondary Drain	174.40	2.35 - 3.35	1.24 - 2.24	Ward No 06
PS109	Secondary Drain	161.17	2.35 - 3.35	1.24 - 2.24	Ward No 06
PS110	Secondary Drain	140.91	2.35 - 3.35	1.24 - 2.24	Ward No 06
PS111	Secondary Drain	195.32	2.35 - 3.35	1.24 - 2.24	Ward No 06

Annexure- C: Proposed Drainage Network

Drain ID	Drain Type	Length (m)	Width (m)	Depth (m)	Ward Name
PS113	Secondary Drain	206.56	2.35 - 3.35	1.24 - 2.24	Ward No 06
PS115	Secondary Drain	106.54	2.35 - 3.35	1.24 - 2.24	Ward No 06
PS125	Secondary Drain	209.84	2.35 - 3.35	1.24 - 2.24	Ward No 07
PS127	Secondary Drain	828.06	2.35 - 3.35	1.24 - 2.24	Ward No 05
PS128	Secondary Drain	236.91	2.35 - 3.35	1.24 - 2.24	Ward No 06
PS128	Secondary Drain	3.26	2.35 - 3.35	1.24 - 2.24	Ward No 04
PS129	Secondary Drain	195.97	2.35 - 3.35	1.24 - 2.24	Ward No 09
PS130	Secondary Drain	61.27	2.35 - 3.35	1.24 - 2.24	Ward No 08
PS130	Secondary Drain	1.56	2.35 - 3.35	1.24 - 2.24	Ward No 07
PS131	Secondary Drain	1660.53	2.35 - 3.35	1.24 - 2.24	Ward No 04
PS132	Secondary Drain	878.02	2.35 - 3.35	1.24 - 2.24	Ward No 05
PS132	Secondary Drain	446.64	2.35 - 3.35	1.24 - 2.24	Ward No 04
PS132	Secondary Drain	370.20	2.35 - 3.35	1.24 - 2.24	Ward No 02
PS137	Secondary Drain	391.31	2.35 - 3.35	1.24 - 2.24	Ward No 02
PS150	Secondary Drain	216.42	2.35 - 3.35	1.24 - 2.24	Ward No 07
PS152	Secondary Drain	136.14	2.35 - 3.35	1.24 - 2.24	Ward No 04
PS153	Secondary Drain	135.48	2.35 - 3.35	1.24 - 2.24	Ward No 04
PS154	Secondary Drain	220.89	2.35 - 3.35	1.24 - 2.24	Ward No 07
PS155	Secondary Drain	219.84	2.35 - 3.35	1.24 - 2.24	Ward No 07
PS156	Secondary Drain	152.54	2.35 - 3.35	1.24 - 2.24	Ward No 07
PS157	Secondary Drain	156.63	2.35 - 3.35	1.24 - 2.24	Ward No 07
PS158	Secondary Drain	203.07	2.35 - 3.35	1.24 - 2.24	Ward No 07
PT163	Tertiary Drain	207.93	1.50 - 2.50	0.64 - 1.00	Ward No 05
PT163	Tertiary Drain	298.42	1.50 - 2.50	0.64 - 1.00	Ward No 03
PT164	Tertiary Drain	721.15	1.50 - 2.50	0.64 - 1.00	Ward No 03
PT165	Tertiary Drain	240.87	1.50 - 2.50	0.64 - 1.00	Ward No 03
PT170	Tertiary Drain	186.12	1.50 - 2.50	0.64 - 1.00	Ward No 01
PT170	Tertiary Drain	2.12	1.50 - 2.50	0.64 - 1.00	Ward No 05
PT172	Tertiary Drain	405.45	1.50 - 2.50	0.64 - 1.00	Ward No 05
PT173	Tertiary Drain	181.60	1.50 - 2.50	0.64 - 1.00	Ward No 05
PT174	Tertiary Drain	187.65	1.50 - 2.50	0.64 - 1.00	Ward No 05
PT175	Tertiary Drain	249.88	1.50 - 2.50	0.64 - 1.00	Ward No 06
PT176	Tertiary Drain	202.58	1.50 - 2.50	0.64 - 1.00	Ward No 07
PT176	Tertiary Drain	482.59	1.50 - 2.50	0.64 - 1.00	Ward No 06
PT176	Tertiary Drain	0.80	1.50 - 2.50	0.64 - 1.00	Ward No 05
PT177	Tertiary Drain	462.96	1.50 - 2.50	0.64 - 1.00	Ward No 07
PT184	Tertiary Drain	744.19	1.50 - 2.50	0.64 - 1.00	Ward No 05
PT185	Tertiary Drain	368.40	1.50 - 2.50	0.64 - 1.00	Ward No 05
PT186	Tertiary Drain	505.52	1.50 - 2.50	0.64 - 1.00	Ward No 05

Table C3: Details of Drainage Network Proposals for Phase 03

Drain ID	Drain Type	Length (m)	Width (m)	Depth (m)	Ward Name
PS50	Secondary Drain	417.68	2.35 - 3.35	1.24 - 2.24	Ward No 08
PS50	Secondary Drain	1813.77	2.35 - 3.35	1.24 - 2.24	Ward No 09
PS53	Secondary Drain	768.91	2.35 - 3.35	1.24 - 2.24	Ward No 06
PS54	Secondary Drain	1.94	2.35 - 3.35	1.24 - 2.24	Ward No 08
PS58	Secondary Drain	1177.59	2.35 - 3.35	1.24 - 2.24	Ward No 06
PS58	Secondary Drain	0.67	2.35 - 3.35	1.24 - 2.24	Ward No 04
PS59	Secondary Drain	196.31	2.35 - 3.35	1.24 - 2.24	Ward No 08
PS66	Secondary Drain	469.63	2.35 - 3.35	1.24 - 2.24	Ward No 07
PS69	Secondary Drain	655.35	2.35 - 3.35	1.24 - 2.24	Ward No 09

Annexure- C: Proposed Drainage Network

Drain ID	Drain Type	Length (m)	Width (m)	Depth (m)	Ward Name
PS71	Secondary Drain	728.73	2.35 - 3.35	1.24 - 2.24	Ward No 06
PS73	Secondary Drain	324.44	2.35 - 3.35	1.24 - 2.24	Ward No 07
PS82	Secondary Drain	50.19	2.35 - 3.35	1.24 - 2.24	Ward No 06
PS82	Secondary Drain	348.31	2.35 - 3.35	1.24 - 2.24	Ward No 04
PS85	Secondary Drain	844.73	2.35 - 3.35	1.24 - 2.24	Ward No 04
PS91	Secondary Drain	700.79	2.35 - 3.35	1.24 - 2.24	Ward No 08
PS97	Secondary Drain	372.52	2.35 - 3.35	1.24 - 2.24	Ward No 04
PS100	Secondary Drain	470.20	2.35 - 3.35	1.24 - 2.24	Ward No 07
PS103	Secondary Drain	651.86	2.35 - 3.35	1.24 - 2.24	Ward No 09
PS105	Secondary Drain	0.14	2.35 - 3.35	1.24 - 2.24	Ward No 07
PS105	Secondary Drain	730.80	2.35 - 3.35	1.24 - 2.24	Ward No 06
PS107	Secondary Drain	327.38	2.35 - 3.35	1.24 - 2.24	Ward No 07
PS116	Secondary Drain	530.36	2.35 - 3.35	1.24 - 2.24	Ward No 04
PS119	Secondary Drain	842.22	2.35 - 3.35	1.24 - 2.24	Ward No 04
PS126	Secondary Drain	699.99	2.35 - 3.35	1.24 - 2.24	Ward No 08
PS133	Secondary Drain	374.39	2.35 - 3.35	1.24 - 2.24	Ward No 04
PS138	Secondary Drain	847.66	2.35 - 3.35	1.24 - 2.24	Ward No 04
PS139	Secondary Drain	840.09	2.35 - 3.35	1.24 - 2.24	Ward No 04
PS143	Secondary Drain	215.61	2.35 - 3.35	1.24 - 2.24	Ward No 04
PS144	Secondary Drain	8.57	2.35 - 3.35	1.24 - 2.24	Ward No 04
PS146	Secondary Drain	741.23	2.35 - 3.35	1.24 - 2.24	Ward No 04
PS147	Secondary Drain	3.00	2.35 - 3.35	1.24 - 2.24	Ward No 01
PS147	Secondary Drain	419.44	2.35 - 3.35	1.24 - 2.24	Ward No 02
PS148	Secondary Drain	2.52	2.35 - 3.35	1.24 - 2.24	Ward No 01
PS148	Secondary Drain	441.02	2.35 - 3.35	1.24 - 2.24	Ward No 02
PS149	Secondary Drain	257.25	2.35 - 3.35	1.24 - 2.24	Ward No 01
PS159	Secondary Drain	317.05	2.35 - 3.35	1.24 - 2.24	Ward No 08
PS160	Secondary Drain	312.60	2.35 - 3.35	1.24 - 2.24	Ward No 08
PS161	Secondary Drain	307.04	2.35 - 3.35	1.24 - 2.24	Ward No 01
PS162	Secondary Drain	503.50	2.35 - 3.35	1.24 - 2.24	Ward No 07
PT166	Tertiary Drain	377.02	1.50 - 2.50	0.64 - 1.00	Ward No 02
PT167	Tertiary Drain	316.92	1.50 - 2.50	0.64 - 1.00	Ward No 02
PT168	Tertiary Drain	203.95	1.50 - 2.50	0.64 - 1.00	Ward No 02
PT169	Tertiary Drain	156.61	1.50 - 2.50	0.64 - 1.00	Ward No 02
PT171	Tertiary Drain	207.47	1.50 - 2.50	0.64 - 1.00	Ward No 01
PT178	Tertiary Drain	1183.75	1.50 - 2.50	0.64 - 1.00	Ward No 09
PT179	Tertiary Drain	405.78	1.50 - 2.50	0.64 - 1.00	Ward No 08
PT179	Tertiary Drain	142.47	1.50 - 2.50	0.64 - 1.00	Ward No 09
PT180	Tertiary Drain	298.30	1.50 - 2.50	0.64 - 1.00	Ward No 08
PT181	Tertiary Drain	290.21	1.50 - 2.50	0.64 - 1.00	Ward No 03
PT182	Tertiary Drain	306.22	1.50 - 2.50	0.64 - 1.00	Ward No 03
PT183	Tertiary Drain	415.22	1.50 - 2.50	0.64 - 1.00	Ward No 01
PT183	Tertiary Drain	56.90	1.50 - 2.50	0.64 - 1.00	Ward No 02
PT187	Tertiary Drain	715.31	1.50 - 2.50	0.64 - 1.00	Ward No 06
PT188	Tertiary Drain	763.89	1.50 - 2.50	0.64 - 1.00	Ward No 09

DETAILS OF WATER & GAS SUPPLY NETWORK PROPOSALS

Table D1: Details of Water Supply Network Proposals

Facilities	Phasing	Ward Name	Length (m)
Water Supply Line	Phase 01	Ward No 04	839.33
Water Supply Line	Phase 01	Ward No 01	1069.97
Water Supply Line	Phase 01	Ward No 02	124.47
Water Supply Line	Phase 01	Ward No 01	501.84
Water Supply Line	Phase 01	Ward No 01	5.13
Water Supply Line	Phase 01	Ward No 05	1177.51
Water Supply Line	Phase 01	Ward No 04	75.13
Water Supply Line	Phase 01	Ward No 03	323.40
Water Supply Line	Phase 01	Ward No 04	444.09
Water Supply Line	Phase 01	Ward No 03	298.58
Water Supply Line	Phase 01	Ward No 04	65.39
Water Supply Line	Phase 01	Ward No 03	1543.69
Water Supply Line	Phase 01	Ward No 02	161.67
Water Supply Line	Phase 01	Ward No 01	271.24
Water Supply Line	Phase 01	Ward No 05	799.95
Water Supply Line	Phase 01	Ward No 02	266.28
Water Supply Line	Phase 01	Ward No 01	793.20
Water Supply Line	Phase 02	Ward No 06	315.16
Water Supply Line	Phase 02	Ward No 06	498.80
Water Supply Line	Phase 02	Ward No 07	2622.10
Water Supply Line	Phase 02	Ward No 07	4.84
Water Supply Line	Phase 02	Ward No 06	166.04
Water Supply Line	Phase 02	Ward No 07	463.93
Water Supply Line	Phase 02	Ward No 07	622.62
Water Supply Line	Phase 02	Ward No 05	513.51
Water Supply Line	Phase 02	Ward No 04	445.63
Water Supply Line	Phase 02	Ward No 04	1660.50
Water Supply Line	Phase 02	Ward No 05	1325.79
Water Supply Line	Phase 02	Ward No 04	1664.30
Water Supply Line	Phase 02	Ward No 02	1046.92
Water Supply Line	Phase 02	Ward No 08	1227.94
Water Supply Line	Phase 02	Ward No 07	1061.06
Water Supply Line	Phase 02	Ward No 05	201.85
Water Supply Line	Phase 02	Ward No 01	445.72
Water Supply Line	Phase 02	Ward No 01	285.57
Water Supply Line	Phase 02	Ward No 01	332.05
Water Supply Line	Phase 02	Ward No 05	4.05
Water Supply Line	Phase 02	Ward No 07	210.91
Water Supply Line	Phase 02	Ward No 06	482.93
Water Supply Line	Phase 02	Ward No 05	21.65
Water Supply Line	Phase 02	Ward No 07	121.29
Water Supply Line	Phase 02	Ward No 06	246.51
Water Supply Line	Phase 02	Ward No 04	152.10
Water Supply Line	Phase 03	Ward No 02	347.48
Water Supply Line	Phase 03	Ward No 03	194.30
Water Supply Line	Phase 03	Ward No 02	397.67
Water Supply Line	Phase 03	Ward No 02	442.50
Water Supply Line	Phase 03	Ward No 07	338.89
Water Supply Line	Phase 03	Ward No 01	10.39

Table D2: Details of Gas Supply Network Proposals

Facilities	Phasing	Ward Name	Length (m)
Gas Supply Line	Phase 01	Ward No 05	479.88
Gas Supply Line	Phase 01	Ward No 04	356.02
Gas Supply Line	Phase 01	Ward No 01	596.06
Gas Supply Line	Phase 01	Ward No 07	0.86
Gas Supply Line	Phase 01	Ward No 01	473.34
Gas Supply Line	Phase 01	Ward No 01	270.09
Gas Supply Line	Phase 01	Ward No 01	234.63
Gas Supply Line	Phase 01	Ward No 02	127.70
Gas Supply Line	Phase 01	Ward No 05	751.40
Gas Supply Line	Phase 01	Ward No 04	66.54
Gas Supply Line	Phase 01	Ward No 04	60.00
Gas Supply Line	Phase 01	Ward No 03	1277.33
Gas Supply Line	Phase 01	Ward No 02	2506.47
Gas Supply Line	Phase 01	Ward No 03	209.82
Gas Supply Line	Phase 01	Ward No 02	622.14
Gas Supply Line	Phase 01	Ward No 04	443.16
Gas Supply Line	Phase 01	Ward No 03	323.14
Gas Supply Line	Phase 01	Ward No 01	29.61
Gas Supply Line	Phase 01	Ward No 05	1047.88
Gas Supply Line	Phase 01	Ward No 03	290.33
Gas Supply Line	Phase 01	Ward No 02	11.91
Gas Supply Line	Phase 02	Ward No 06	828.58
Gas Supply Line	Phase 02	Ward No 08	227.69
Gas Supply Line	Phase 02	Ward No 08	783.52
Gas Supply Line	Phase 02	Ward No 07	1211.03
Gas Supply Line	Phase 02	Ward No 06	443.06
Gas Supply Line	Phase 02	Ward No 06	160.64
Gas Supply Line	Phase 02	Ward No 08	3.08
Gas Supply Line	Phase 02	Ward No 07	679.39
Gas Supply Line	Phase 02	Ward No 06	482.57
Gas Supply Line	Phase 02	Ward No 05	10.06
Gas Supply Line	Phase 02	Ward No 07	607.83
Gas Supply Line	Phase 02	Ward No 05	1325.82
Gas Supply Line	Phase 02	Ward No 04	1664.39
Gas Supply Line	Phase 02	Ward No 02	1046.90
Gas Supply Line	Phase 02	Ward No 05	318.70
Gas Supply Line	Phase 02	Ward No 08	1267.81
Gas Supply Line	Phase 02	Ward No 07	347.09
Gas Supply Line	Phase 02	Ward No 06	236.42
Gas Supply Line	Phase 02	Ward No 04	152.77
Gas Supply Line	Phase 03	Ward No 07	332.46
Gas Supply Line	Phase 03	Ward No 01	4.54
Gas Supply Line	Phase 03	Ward No 02	576.18
Gas Supply Line	Phase 03	Ward No 02	346.90
Gas Supply Line	Phase 03	Ward No 02	210.65