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Ministry of Local Government, Rural Development & Cooperatives

Local Government Division

DARSHANA PAURASHAVA

MASTER PLAN: 2011-2031

March 2015

Technical Assistance: Local Government Engineering Department (LGED)

Government of the People's Republic of Bangladesh

Ministry of Local Government, Rural Development & Cooperatives

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DARSHANA PAURASHAVA MASTER PLAN: 2011-2031

STRUCTURE PLAN

URBAN AREA PLAN:

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

WARD ACTION PLAN

March, 2015

DARSHANA PAURASHAVA

DARSHANA, CHUADANGA

DARSHANA PAURASHAVA MASTER PLAN: 2011-2031

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PREFACE

Bangladesh has been experiencing rapid urbanization in the last four decades where level of urbanization has reached from 7.60% to nearly 29% between 1970 and 2011. Multidimensional complex factors like; socio-economic, political, demographic and climatic are responsible for this higher growth of spatial transformation. The fast urbanization is putting pressure on the small towns' limited land, urban services and environment along with countries big cities. Whereas urbanization is also considered as an opportunity and an integral part of the development process. Proper development plans and guidelines with necessary legislative measures and appropriate institutional arrangement can help to achieve sustainable urban as well as rural development.

However, presently, the Paurashavas has the legal mandate to take initiatives of formulating development plans, providing infrastructure and other services and creating opportunities for people to initiate developments with sustainable and harmonic approach. In this regards, Darshana Paurashava had initiated steps to frame its' Master Plan (*Physical Development Plan*) by taking technical assistance from the Local Government Engineering Department (LGED). LGED under the Local Government Division of the Ministry of Local Government, Rural Development and Cooperatives initiated a project titled 'Upazila Towns Infrastructure Development Project (UTIDP)' providing all sorts of technical assistances to prepare long term physical development plan titled 'Master Plan' for Darshana Paurashava.

Master Plan of Darshana Paurashava has been prepared following the pre-requisite of the Local Government (Paurashava) Act, 2009. To prepare the Master Plan, LGED engaged consulting firm named Development Design Consultant Ltd. and set up a Project Management Office (PMO) deploying a Project Director, Deputy Project Director, experienced Urban Planners as Individual Consultant and support staffs. Regular monitoring, evaluation and feedback from PMO had also accelerate the pace and quality of the Master Plan preparation tasks. During formulation of the Master Plan, the Paurashava authority along with the project and the Consultant ensure people's opinion, observation and expectation in various ways: conducting sharing meetings, Public Hearing etc. At the end of the formulation process, the Paurashava completed all procedures necessary for its approval as per the related clauses and sub-clauses of the Local Government (Paurashava) Act, 2009. Paurashava Authority has submitted this Plan to the Local Government Division of the Ministry of Local Government, Rural Development and Cooperatives for final approval and gazette notification.

This Master Plan comprises of three tier of Plan in a hierarchical order, these are: Structure Plan for 20 years, Urban Area Plan for 10 years and Ward Action Plan for 5 years. Urban Area Plan also comprises of three components namely; Land Use Plan, Traffic & Transportation Management Plan and Drainage & Environmental Management Plan. This Master plan will serve as guidelines for the future infrastructure development of Darshana Paurashava together with land use control and effective management of service facilities.

The Paurashava Authority acknowledges the full support and all out cooperation from the consultant team, the Project Management office of UTIDP, LGED, Local Government Division of the Local Government, Rural Development and Cooperatives Ministry, public representatives, other stakeholders and civil society with deepest gratitude for accomplishing this remarkable assignment.

Cooperation and participation from national to local authorities, all government institutions, private entities and people of Darshana Paurashava will be necessary to implement this Master Plan successfully and make this Paurashava developed and livable. I hope Darshana Paurashava will be a model Paurashava in Bangladesh through building itself green and sustainable by successful implementation of this Master Plan.

(Md. Mahidul Islam)

Mayor

Darshana Paurashava

EXECUTIVE SUMMARY

Darshana is an important Paurashava of Chuadanga District with a population of only 33396 in the year 2011. Darshana was established as a Thana headquarters in 1852 and was graded as a “C” class Paurashava* on 14th March 1990. Now it is class “B” Paurashava. This Paurashava is characterized by very low gross density covering agricultural land, plain and medium elevation areas.

It has higher agricultural activity as 64.94% of its land is under this land use. In next 20 years, as projections show, the gross density of population will reach only 12 persons per acre. It has still a low level of economic activities and thus potentials to flourish as a vibrant urban center in the near future. Under such circumstances, a Master Plan can help creating advantages for living and working in the Paurashava and help attracting investment for economic growth leading to employment generation. There are not much development activities going on at present as there is lack of organized system of development at present. Current development emphasizes only on road and infrastructural development. Other utilities are generally neglected. The proposed Master Plan will induce such development activities that will ensure proper provisions of utility services, urban services, community facilities and social development opportunities. It will also ensure an automated governance service of the Paurashava and ensure good collection and utilization of its resources and thus enhance the development activities in the future.

The Master Plan is prepared in three tiers - Structure Plan, Urban Area Plan and Ward Action Plan. The Structure Plan provides the policies that will guide the future development of the Paurashava. In the Structure Plan of Darshana Paurashava, 30.22% land is kept as core urban area, new urban, peripheral urban area and the remaining 69.78% area as agricultural, circulation network area and water body to support the future need for food and other agricultural products of the town and to facilitate the future drainage network. The Structure Plan proposes the restructuring of the organogram of the Paurashava and inclusion of town planning department comprising four town planners. This will ensure the better implementation and monitoring of the plan. It also proposes the system of periodic review and updating of the plan and the process of resource mobilization.

Urban Area Plan consists three types of Plans - Land Use Plan, Traffic and Transportation Management Plan and Drainage and Environmental Management Plan. Under the Land Use Plan, the future land use of the Paurashava is proposed according to the fixed standards during the interim phase of the Master Plan. Land Use Plan proposes 11.62% of the Paurashava land to be earmarked under Urban Residential Zone and 6.70% under Rural Settlement. These two zones will form the future residential areas of the Paurashava. Proposals for other land uses, like Commercial Zone (1.24%), Education and Research Zone (1.09%), Open Space (2.11%), Circulation Network (9.46%) etc. are made. Under the Land Use Plan, the development proposals to support the future needs of the people are also given. It proposes one heavy industrial zone, one general industrial zone, one stadium, and hospital, waste dumping ground, one vocational training institute, one bus terminals, one central park, schools, playgrounds, local parks, local markets and many other facilities.

In the Traffic and Transportation Management Plan, the Road Network Plan is proposed. The transportation facilities are proposed here in this plan. In the Road Network Plan of the Paurashava 81.48 km of road widening and 24.74 km of construction of new road is proposed in

the Paurashava area. The road hierarchy is proposed in this plan too. The proposed road network will comprise of primary road (80 and 60 ft RoW), secondary road (40 ft. RoW), tertiary road (30 ft. RoW) and access/ local road (20 ft. RoW). The proposed road network and the transportation facilities along with the proposed management system will provide a good system of management for future traffic and transportation problems.

Under the Drainage and Environmental Management Plan, the drainage network of the Paurashava is proposed. This plan will analyze drainage aspects in the planning of the Paurashava, study geological fault and lineament of the project area and its surroundings, study the existing water development, flood protection and flood control project (if any) in the area and their impacts in the Paurashava plan, present planning options for drainage of the future Paurashava area, study conservation of the natural resources like parks, open space, water bodies, existing ponds etc. and conserve place of historical, architectural (if any) and agricultural importance including natural fisheries. At present, there is only 9.00 km of pucca man-made drain in the Paurashava and the natural canals and river cover 11.27 km. This network is not enough to support the present need and will not be suitable to support in the future. That is why the consultants proposed a comprehensive network of drains that comprises 11.27 km of primary drain (13.04%), 36.50 km of secondary drain (42.24%) and 38.64 km of tertiary drain (44.71) in the plan to support the drainage network.

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

This is the first Master Plan of Darshana Paurashava. It is prepared by LGED under Package-12 of the Upazila Towns Infrastructure Development Project (UTIDP). It is expected that the implementation of the plan will induce higher level of development, ensure planned life, good community and better future.

MASTER PLAN REPORT FOR DARSHANA PAURASHAVA

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ACRONYMS

BM	Bench Mark
BTM	Bangladesh Transverse Mercator
CBD	Central Business District
CNG	Compressed Natural Gas
CS	Cadastral survey
DGPS	Differential Global Positioning System
DLRS	Directorate of Land Records and Survey
DPA	Demarcation of Planning Area
DPHE	Department of Public Health and Engineering
GCP	Ground Control Point
GIS	Geographic Information System
GPS	Global positioning system
K.P.H	Kilometers per Hour
K.M.	Kilometer
LGED	Local Government Engineering Department
MSL	Mean Sea Level
O-D	Origin and destination Survey
PCU	Passenger Car Unit
PWD	Public Works Department
RHD	Roads and Highway Department
RTK-GPS	Real Time Kinematics Global Positioning System
SOB	Survey of Bangladesh
TCP	Temporary Control Points
TIC	Tentative points)
TS	Total Station
UTIDP	Upazila Towns Infrastructure Development Project

LOCAL WORDS

Khal	Canal
Tempo	Human hauler
Bazar	Trade Center
Hat	Weekly an occasional Market
Paurashava	Municipality

CHAPTER 1

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% and at present it is approximately 25%. By the year 2015, the share of urban population will be about 37% of the national population. The importance of urban development is emphasized in terms of its role in the national economy. More than 60% of the national GDP is derived from the non-agricultural sectors that are mainly based in urban areas. Again, the most foreign exchange earning sectors, like, garment and knitwear enterprises are agglomerated in urban areas. These sectors earn over 70% of the foreign exchange. Remittance is also a major sector of foreign exchange earning and a large share of the remittance goes into the purchase of urban land. Surplus remittance is invested in business and manufacturing located in urban areas. These phenomena indicate the increasing role of urban areas being played in the national economy. The expansion of urban economy leads to the growth of urban population and concomitant haphazard urban spatial growth without planning. The rapid urbanization is marked by the creation of Paurashavas, whose number at present stands at 322. Paurashavas are created not only to provide urban services to their citizens, but also to create a livable environment through development of planned and environmentally sound living space.

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

Under the above circumstances, it is high time to think about solving the problems of the Paurashavas that might otherwise be emerged critically in the future. To overcome all likely problems to come in future, the Paurashavas should go for planned development through preparation and implementation of a Master Plan. The Master Plan can be prepared exercising the power conferred to them by the Local Government (Paurashava) Act, 2009. The Upazila Town Infrastructure Development Project (UTIDP) aims to prepare Master Plan for 223 Upazila level Paurashavas and Kuakata Tourism center under 12 packages for a period of next 20 years. The project has provisions for separate plans for

land use control, drainage and environment, traffic and transportation management and improvement. The project also aims to prepare a Ward Action Plan (WAP) to ensure systematic execution of future infrastructure development projects. There is also aim to prepare proposals to enhance Paurashava revenue so that it becomes more capable to meet its own capital needs.

Of the total 223 Paurashavas, Darshana is one of 20 Paurashavas within Khulna Region under Package 12. The location of Darshana within Bangladesh is shown in Map 1.1.

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

Map 1.1: Location Map of Darsana Paurashava within Bangladesh

1.2 Philosophy of the Preparation of Master Plan

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

1.3 Objectives of the Master Plan

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

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

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

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

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

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

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

1.4 Approach and Methodology

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

The current project is preparing a Master plan of the Paurashava, where the existing condition and different problems are identified, studied and analyzed and the probable solutions are to be sought to ameliorate the same. The study moves through a process of data collection-analysis and fixation of objectives for planning. The approach is based on field survey for data collection and collection of information from secondary sources. The data is presented through maps, text and tabular form. Than the survey report and maps are prepared and submitted. Analysis of collected data is carried out to identify the nature

and extent of problems prevailing in the Paurashava in order to fix the objectives of the actions to be undertaken in the form of planning and the interim report prepared and submitted. Through the process, involvement of the stakeholders has been ensured to make the planning as much sustainable as possible. For this purpose, continuous formal and informal discussions and meetings have been carried out throughout the project period using participatory approach. The discussions serve two purposes, first, a sense of belongingness develops within the minds of the stakeholders, particularly among the citizens, about the master plan to be prepared, and secondly, identification of problems and finding their solutions become easier with the participation of stakeholders, as the local stakeholders are more knowledgeable about local problems and possible solutions of those problems.

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

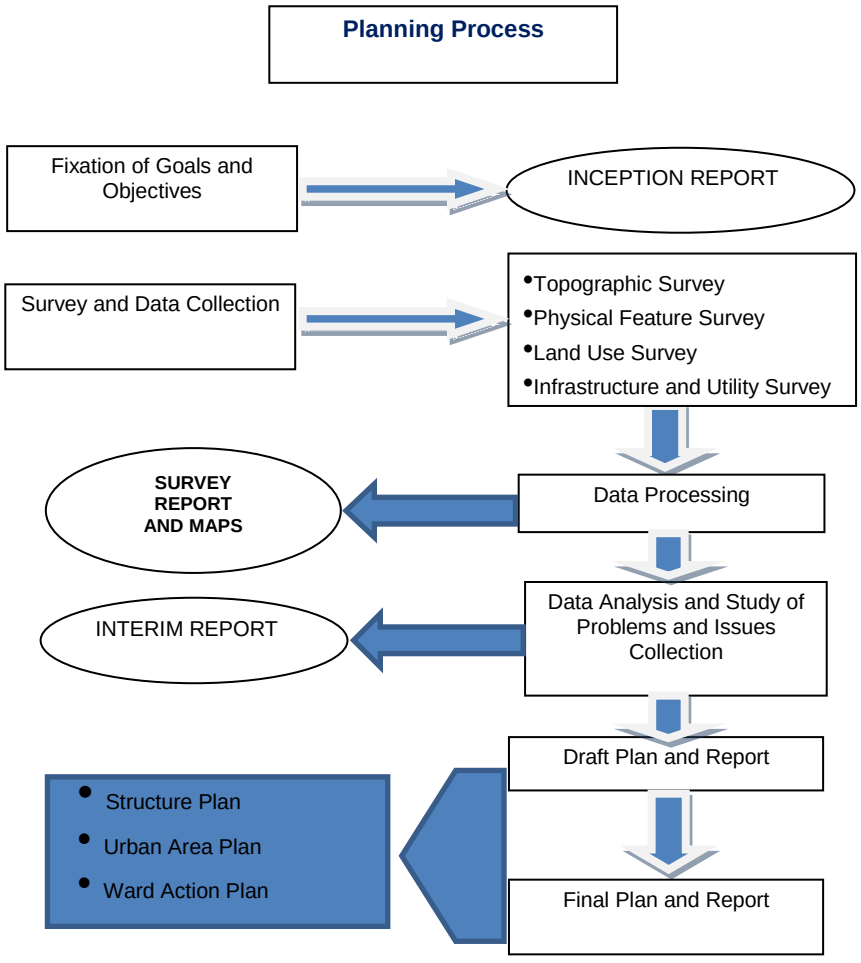

Figure 1.1: Flow Chart of Planning Process

1.5 Scope of Work

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

1. Visits have been made to the Paurashava at different stages of work of the preparation of Master Plan of Darshana Paurashava.
2. Feasibility for preparation of Master Plan has been submitted to the office of the PD, UTIDP.
3. An Inception Seminar has been organized at the Paurashava level to inform the Paurashava about the scope and Terms of Reference for the preparation of Master Plan. A thorough investigation has been made based on potential scope and opportunities available in the Paurashava to develop a 20 year development vision for it linking the ideas and view of the Paurashava people.
4. Determination of the study area and planning area has been done based on existing condition, demand of the Paurashava and potential scope for future development. A detailed survey has been conducted on the existing conditions of socio-economic, demographic, transportation and traffic, physical features, topographic, and land use of the Paurashava area following the approved format and data have been collected from primary and secondary sources. Analysis of such data and information has been carried out to find out the possible area of intervention to forecast future population of the Paurashava (15-20 years), vis-a-vis assess their requirement for different services, such as physical infrastructure facilities, employment generation, housing, right of way and land requirement for the existing and proposed roads, drains, playgrounds, recreation centers and other environmental and social infrastructure. The following major tasks have been accomplished:
    a. Identification and investigation of the existing natural and man-made drains, natural river system, the extent and frequency of floods, area of planning intervention have been done. Other works include study of the contour and topographic maps produced by the relevant agencies and review of any previous drainage Master Plan available for the Paurashava.
    b. A comprehensive (storm water) Drainage Master Plan for a plan period of 20 years has been prepared considering all relevant issues including discharge calculation, catchments areas, design of main and secondary drains along with their sizes, types and gradients and retention areas with preliminary cost estimates for the proposed drainage system.
    c. Recommendations have been made on planning, institutional and legal mechanisms to ensure provision of adequate land for the establishment of proper rights of way for (storm water) drainage system in the Paurashava.
    d. Collection and assessment of the essential data relating to existing transport Land Use Plan, relevant regional and national highway development plans, accident

statistics, number and type of vehicles registered for each Paurashava have been made.

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

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

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

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

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

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

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

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

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

n. In line with the proposed Master Plan, a Ward Action Plan has been proposed with list of priority schemes for the development of roads, drains, traffic management

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

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

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

1.6 Organization of the Master Plan Report

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

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

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

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

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

CHAPTER 2

INTRODUCTION TO STRUCTURE PLAN

2.1 Introduction

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

2.1 Background of the Paurashava

Darshana Paurashava is designated as a Class 'C' was declared as a Paurashava through a government notification. Now it is a class "B" Paurashava. Darshana Pauarshava is the only Municipality of the Damurhuda Upazila. The British ruling authority had established a Police Camp at Damurhuda in 1852. It was subsequently raised to the Thana status in 1859. Nothing is definitely known about the origin of the Upazila name. It is learnt that there lived an influential Brahmen Thakur in the locality Dhamudar by name. The Upazila name probably, might have derived from the name of this Thakur. Darshana Paurashava located at the West-Southern part of Chuadanga district, is the third smallest urban area in the Upazila.[1]

Darshana Paurashava is located about 34 Km. from district Chuadanga Head Quarters, The entire study area defined for preparation of Master Plan includes Daksha, Chandpur, Shayaspur, Dakshim Rasulpur, of 9 wards and 15 Mouzas / Mahallas. The Mouzas / mahallas are Parakpur, chak Bheramara, Chak Damuka Noadapara, Bheramara, Chandgram, Kacharipara, Rathpara, Collegepara, Kuthibazar, Satbaria, Bowanpara, Damukdia, Chandgram. It lies on 23º 31' north latitude and 88º 48' east longitude. The location of Darshana within Chuadanga District is shown in Map 2.1.

Because of the physiographic characteristics of the region, the settlements are clustered either on higher grounds or built up linearly following the roads. The locations, history, geology, settlement pattern all have important implications in the Master Plan of Darshana Paurashava.

2.2 Vision of the Structure Plan

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

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

Map 2.1: Location Map of Darshana Paurashava within District

2.3 Objectives of the Structure Plan

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

- Description of the Paurashava's administrative, economic, social, physical environmental growth, functional linkage and hierarchy in the national and regional context; catchments area; population; land use and urban services; agencies responsible for different sectoral activities etc.
- Identification of urban growth area based on analysis of patterns and trends of development, and projection of population, land use and economic activities for next 20 years.
- Identification and description of physical and environmental problems of Darshana Paurashava.
- Discussion of relevant policies to analyze and find out potential scopes for the use in the present exercise and also find out constraints and weakness of the existing policy to suggest appropriate measures for the development and management of Darshana Paurashava.
- To provide land use development strategies.
- To provide strategies and policies for sectoral as well as socio-economic, infrastructural and environmental issues of development.
- To discuss about implementation issues including institutional capacity building and strengthening of Paurashava, resource mobilization etc.

2.4 Concepts, Content and Format of the Structure Plan

Concepts

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

Structure Plan is the 1st component of the Master Plan package. The other two lower level components are Urban Area Plan and Ward Action Plan. Structure Plan lays down the framework of the future plan including strategy and the sectoral policies. The Urban Area

Plan and the Ward Action Plan detail out development proposals under the framework of Structure Plan.

Content and Format of the Structure Plan

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

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 Paurashava, philosophy of the Master Plan and vision and objectives of the Structure Plan.

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

Chapter-4 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.

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

Chapter-6 discusses the profile of the land use of the Paurashava. It deals with the projection of Future Growth by 2031. Population projection for the year 2031, identification of future economic opportunities and projection of land use are the major discussions of this chapter.

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

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

2.5 Duration and Amendment of the Structure Plan

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

2.6 Structure Plan Area

The total area of Darshana Structure Plan is 3507.06 acres (14.19 sq. km) that include all the 9 wards of the Paurashava.

CHAPTER 3

EXISTING DEVELOPMENT STATUS OF DARSHANA PAURASHAVA

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

3.1 Social Development

Development is a dynamic issue. Measurement of social development essentially requires time series data. Consultant collected recent data of the project area by means of sample survey (5% of total households) with no reference to previous situation. Population census reports are the only sources of information for Paurashava level data, but they cover only a selected number of issues that are not sufficient to make a qualitative judgment of social improvement. It makes a review of social development based on available population census data of 1991 and 2001, 2011 and presents the current situation using the sample socio-economic survey data. This social review indicates positive social development in Darshana Paurashava. As per BBS 2011, present average household size of the project area is 4.2 and is slight lower than the national average of 4.4. It reflects that natural population control program has a significant impact in this project area. Success is also achieved in education sector. Literacy rate was about 59% (BBS, 2011) in 2011.The employment situation is also slightly improved in this Paurashava.

3.2 Economic Development

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

The principal criterion to judge the economy of an urban center is to learn about its main sources of employment. Besides, the number of productive enterprises and tertiary level activities are also the indicators of the pattern and level of economic activities in any area. It is revealed from the sample survey on all categories of people, although 66.94% of the Paurashava area is under agriculture small portion of labor force are engaged in farming activities and agricultural laborers. The dominating occupation is small business. About 27.1% populations are engaged in this sector. Having 18.9% farming or agriculture is the second domination occupation pattern. Other major occupations observed are private sector employee, skilled labor and govt. services. So, the economic picture of the Paurashava is moderately bright. Poverty haunts a large portion of its population and activities in the service sector have not yet gained momentum.

3.2.1 Economic Activities

Industry

Except some small scale processing units, there is virtually no manufacturing, as such, in the Paurashava. The major industrial structure of the area is Crew and Co sugar mill. There are some number of rice processing units and saw mills in the town also.

Commerce

The commercial activities in the Paurashava are dominated by retail business. Darshana Bazar is the main bazar in the Paurashava located at Ward no. 03 which provides daily necessities for the local people.

Services

According to BBS 2001, out of the employed population, 24.34% of the adults are engaged in service of different kinds as employment.

Agriculture

Sample survey by the consultant reveals that about 20 percent of the male income earners in the Paurashava are engaged in farming occupation. The farmers and farm laborers work in farm lands, both, within and outside the Paurashava. It is evident from land use survey of the Paurashava that about 64.94% of the Paurashava lands are still under agriculture.

Agro-based

As the Paurashava is mostly rural in nature at present, with effective agricultural extension services, the agricultural output can be increased many times to serve the agro-based industries in future. In this backdrop, the major challenge is to strike a balance between urbanization and maintenance of rural nature of the project area.

Informal Sector Economic Activities

Informal sector study was not a part of ToR, so the consultant did not conduct any formal study on this sector. It can be considered that the informal sector characteristics at upazila level Paurashava are same all over Bangladesh. It is more prominent, where the concentration of people takes place. Informal sector is a part and parcel of urban economy in developing countries. The most important feature of informal sector is the sellers carry their goods to the buyers and their concentration is more where agglomeration of buyers is more. They have small capital and are usually self-employed. In Darshana, the concentration of informal businesses is found around the bazar area, transport terminal and stoppages and also near the Upazila Complex.

3.2.2 Existing Employment Pattern

The existing employment pattern shows a bias towards trading. Since secondary sector employment is seriously lacking in the town, people move to self employment like trading. Trading has been found feasible as employment mainly, because of higher level of affordability of the people powered by remittance they receive from abroad regularly. Table 3.1 shows the percentage distribution of occupation of the people of Darshana Paurashava.

Out of the employed population, more than 18 percent is engaged in Agriculture sector; while in household work is about 42%. In the Paurashava and about 13.42 % households found depend directly on service sector, as the main source of income. About 878 number of commercial structures located in different places. The scenario is unlikely to change unless there is any major investment in the industrial sector that can pool a large number of workers and render the local economy more vibrant services.

The employment scenario of the Paurashava is unlikely to change shortly unless there is any major investment in the industrial sector that can pool a large number of workers and bring vibrancy to the local economy. It is evident from household survey that there is insignificant employment in the service sector. It is unlikely that public sector jobs will show any major improvement in future. But with the increase in business, and industry there is possibility that private sector jobs will show further increase in future.

Table 3.1: Percentage Distribution of Occupation

Total	Not Working	Looking for Work	House hold Work	Agriculture	Industry	Service
12066	1452	47	3200	1386	361	999
%	19.50	0.63	42.98	18.62	4.86	13.42
Total	63.11			36.9		

Source: Community Series (Zila: Chuadanga), Bangladesh Population Census-2011.

3.3 Population

The total population of Darshana Paurashava is 33396 in the year 2011 (Source: BBS, 2011). According to 2001 population census the annual population growth rate of the Paurashava is 2.11. The Paurashava comprises of 3 mouzas. The density of population is 2973 persons per sq.km. Darshana Paurashava has 7968 households.

According to BBS 2001, the total population of Darshana Paurashava was 19657 and the density of population was 1167 people per sq. km with an annual growth rate of 2.23%. At Present, Ward no. 02 is the most densely populated area. The density per sq. km is 1352 in this ward, followed by 1297 for Ward no. 05. Details are given in Table 6.1, in Chapter 6, Part A of this report.

Size and Type of the Family

The Average household size of the project area is about 4.2 and is slightly lower than the national average of about 4.4. It reflects that natural population control program has hardly impact in the project area. The household size range 3-6 is known to be larger among the households taken for interview. This household size occupies almost 70% of the total households. The socio-economic household survey reveals that most of the families in the study area belong to single family.

Sex Ratio

According to BBS 2011, combined age-group 0-4 comprises 8.4% and the age-group 5-9 years comprises the 10% of the total population of the Paurashava. The age-group 10-14 shows 11.5%, the highest population falls into the age group of 30-49 which is 27.5% and the lowest is 2.4% which is the age group of 60-64. Besides, the population above 60 years is found to be comparatively lower constituting only 4.2% of the population of the Paurashava.

Marital Status

The percentage of married and unmarried population is almost equally distributed (BBS 2011). A negligible percentage of population is widow or widower. The same situation is in case of divorce, which is a good social aspect for the Paurashava. In marital status, 62.8% male and 68.5% female populations were found married.

Religious Status

By religion, 95.14 percent people of the study area belong to the Muslim community. A sizeable percentage (the remaining 3.72%) Hindu community is also present here.

Education

Darshana has about 59 percent illiteracy rate of the population (BBS 2011). A significant portion of population of surveyed population of Darshana Paurashava has only primary level of education. Only a small percentage (3.03%) of population has educational background up to degree level. Although the Paurashava is observed to have high illiteracy rate, yet it lacks in skilled labor forces as proportions of people with higher education, especially with technical education are bare minimum. Details were given in Survey and Interim Report of Darshana Paurashava.

Monthly Income and Expenditure of the Household

Maximum number of household (36.6%) earned tk.2001-tk.4000/month where 50 percent spends the same amount of money as monthly expenditure. Only 3.1 percent of family has earning level above Tk. 12000/month.

Migration pattern

Most of the people have been living in Darshana Paurashava since their birth. This may be a positive factor for future development as people know themselves since their early life. This will enable the local authority to encourage a participatory approach in development. Only a small percentage of people are migrants from elsewhere, but have been living here for a long time. The survey also reveals that most of the people are not interested at all to move from here in future.

3.4 Physical Infrastructure Development

Buildings and Structures

Darshana Paurashava has mainly grown following the major transport networks. Buildings and structures developed along the road network system of the Paurashava. In the Paurashava area there are total 7861 structures. Among them 10542 are katcha, 2880

pucca structures and 4253 are semipucca type. Majority of the residential structures of the area are katcha. The most agglomeration of residential buildings is at Ward no. 07.

Compared to Dhaka, Chuadanga the land value and concentration of population in Darshana is very low, so the buildings in the project area are dominated by low height walk ups. About 95 percent residential buildings of the project area are single storied. Maximum commercial structures are at Ward no. 2, 3, 6 and 7 where the markets are located. All Administrative structures of Darshana Paurashava are mainly located at Ward no. 3, 4, 6and 7.

Transport and Communication

Eight major roads coming from sixteen different directions meet together at the Bus Stand Mor and Puratan Bazar mor. The roads coming from different places are; Chuadanga, Jibon Nagar, Mujibnagar and within the major points of Paurashava. All the roads meet together at zero point of the town, at Darshana Bus Stand Mor. Thana Mor is another places where again three roads are meets. The total length of roads in the Paurashava area is 91.90 km. of which, 7.64 km. katcha, 56.04 km. pucca and 36.29 km semipucca road. There is about 2.12 km of roads of Roads and Highways Department (RHD) within the town.

There is no specific bus terminal at Darshana Paurashava. All shorts of buses stop and departed from the Bus Stand Mor. The location of the terminal has been proposed in the plan after detailed analysis of the traffic situation. Darshana Paurashava is well connected with railway network. Initially the railway line was constructed by British Government to carry sugarcane from different parts of the region as the famous sugar mill named Krew and Company was established in this Paurashava.

3.5 Utility Services

The following paragraphs present the existing condition of utility services in the Paurashava. **Electricity:** The people of the Paurashava area enjoy electricity facility. About 67.8% respondent tells that they have electric connection at moderate level. And rest of respondent tells that they have no electricity facility.

Water Supply: Darshana Paurashava has no piped water supply system. Nominal percentage has private tap water collection system. Paurashava does not provide any deep tube wells for water supply. Shallow tube wells are the main source of water collection. According to BBS 2011, about 96% of inhabitants depends on tube-well for water supply which indicates the absent of piped water supply.

Telecommunication: Bangladesh Telephone and Telegraph Board provides the services to Darshana but the service is very poor. There remain about 69 inhabitants who have the telephone facility. At present like all over the country the mobile phones of different companies have gaining importance.

Solid Waste Management: Condition of solid waste management at Darshana Paurashava is also very poor. At present there is no designated dustbin at the Paurashava. Besides there are some private arrangements for waste dumping. The logistics for collection and disposal of solid wastes include 12 sweepers for collection and

1 garbage truck for transportation. Hospital waste has been dumped at their own dustbins. Garbages of kitchen markets are dumped at nearby vacant places.

Gas Supply: The Paurashava has no gas supply facility at present.

Drains: Total length of drainage network at Darshana Paurashava is 16.47 km. Most of the drains are established by DPHE and Paurashava authority which are mainly situated in the core part that is in Ward Nos. 3, 5 and 7.

3.6 Environmental Issues

Surface water of ponds, canals and rivers at Darshana is observed to be fresh and free from salinity. Water Development Board has taken a project to protect the Paurashava from river erosion by constructing embankment. With the development of a planned drainage system some environmental problem will be minimized.

From the overall survey findings, it has been revealed that the inhabitants of the Paurashava do not face any severe environmental problem. The problems that exist here can be mitigated through proper planning of the Paurashava.

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

3.7 Institutional Capacity

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

Existing Manpower

Darshana is a "B" class Paurashava. According to Paurashava manual there should be 78 officials engaged in a "B" class Paurashava to manage the engineering, administrative, health, family planning, conservancy works within the Paurashava area. In this organogram Mayor has in the top position. 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 have to be engaged. Paurashava has

only 27 officials against 78 officials mentioned in Paurashava manual organogram. Engineering, administrative, health and family planning section is not well established at Darshana Paurashava.

Paurashava Town Planning and Implementation Capacity of Master Plan

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

Conservancy and Health Services

Condition of solid waste management at Kamalganj Paurashava is also very poor. At present there are nine dustbins at the Paurashava. Among there are some private arrangements for waste dumping. The logistics for collection and disposal of solid wastes include 4 sweepers for collection and 1 garbage truck for transportation. Hospital waste has been dumped at their own dustbins. There is one Upazila Health Complex which provides health service to paura population.

Logistic Support/Equipment

According to the Paurashava manual a “B” class Paurashava will get logistic support/equipment to continue the work properly. This includes one jeep, one road roller (5-7 ton), two trucks/tractors, three motor cycle, three by cycles (according to the needs of the Paurashava), one mixture machine, one type writer machine, one photocopier machine and one duplicate machine. Darshana Paurashava got almost all of these logistic supports from government.

3.8 Urban Growth Area

Other important feature of the physical growth pattern of the project area is most of the physical developments have taken place in elongated form along the major roads such as Chuadanga Road, Kushtia Road, Kathuli Road, Bashbaria Road, Thana Road, Bazar Road etc. of the town. Accessibility is a major driving force behind physical growth. Another important factor is flood free high land. Physical growth usually follows major thoroughfare and higher grounds. The general land level of the town is almost uniform everywhere. Therefore, accessibility is the leading factor to direct physical growth. The main thoroughfare of the town is the Chuadanga Road and Kushtia Road; this road is running through the market place of the town. The present growth direction also follows Chuadanga road and its surrounding areas. The commercial activities are expanded along the road. However, minor developments follow the northern and southern part of the Paurashava.

3.9 Catchment Area

It is widely recognized that there is a strong interdependence of social, economic and environmental development between rural and urban areas. The cities and towns play an important role in rural development as markets for their goods and products, and also as the sites for food processing and other agricultural related activities, and as source of non-

farm income, especially from wage labour. On the other hand, urban areas rely on rural areas for food production, labour, raw materials for manufacturing and markets for their products. This linkage is stronger in samll town like the Paurashavas, primarily due to their proximity to the surrounding rural hinterland. People of the catchment areas can access public service offices and hospitals in the towns with less difficulty than offices in cities, while schools and other facilities serve a large number of the catchment area population, contributing significantly to rural development.

Transport and communication connectivity is an important factor for economic development of an area. It has a good road communication network with Chuadanga and nearby Upazila towns. Chuadanga Road, Halt Station Road and Mujib Nagar Road are the major roads in this Paurashava. Chuadanga Road directed from North to South which is the main connectivity of Paurashava with Chuadanga in North and with Paurashava and Halt Station Road which also directed toward Jinaidah in south and connected with Lalon-shah Road within the Paurashava. The regional transportation network is shown in Map 3.1.

3.10 Land Use and Urban Services

The general land uses of the project area are shown in Table 11.1 in Chapter 11, Part B of this report. In the land use pattern of the Paurashava, 17 types of land uses are found. It is clearly evident from survey report that agricultural land use (64.94%) dominates the Paurashava area, followed by residential (17.04%), water bodies (6.52%), circulation network and transport and communication (only 3.64%), vacant place (3.41%) and government services (0.46%) and educational land use occupy 0.64 percent of land.

Settlements are found particularly in the areas of higher elevation following linear pattern alongside the roads. The trend of settlement growth is greater in areas close to the main road. The core part of the Paurashava is the most built up area. Apart from core area, in most of the other areas, residential developments have taken place as dispersed settlements on high lands. Dispersed settlements make provision for services difficult.

3.11 Paurashava Functional Linkage with the Regional and National Network

Any development initiative at the local level must relate to the national level plans in order to achieve cohesion and integrity with overall development of the country to attain the national development objectives.

The present system of national level planning hardly links the local level plans. The present system of allocation of resources in national development budget is a top down approach, which is highly influenced by political objectives. As a result, urban sector is not yet considered a priority sector and due to resource constraint, many problems of the Paurashavas remain unresolved. Therefore, it is important to establish a linkage between the local plans and the national development plan so that aspirations of the people can be realized. National development plans are prepared considering the overall needs and aspirations of the country with respect to different sectors of development.

This necessitates for a bottom up approach of development planning and the budget allocation should be made according to the choice of the local governments who are

accountable to the Paurashava people directly. Budget should be allocated according to the priority list of the projects prepared by the Paurashava that is supposed to reflect the needs of the Paurashava people as the list can be prepared by the counselors and the Mayor who are directly elected by the people.

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

The current program of Paurashava Planning helps to address urban poverty through adequate steps taken up to accelerate urban infrastructure development based on the Darshana Paurashava Master Plan. The new developments will induce new investments in trade and industry and lead to generation of more employment in the service, construction, transport and informal sectors. This will directly assist in reducing poverty. It will help absorb additional work force of rural areas as a result of natural growth of population. Agricultural sector has limitations in absorbing labor force.

Map 3.1: Communication Network of Khulna Region Showing Connevtivity with Chuadanga District

3.12 Role of Agencies for Different Sectoral Activities

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

Care has been taken for all programmes and projects to be developed in a sound manner technically, socially, environmentally and institutionally with full participation of local communities. Due care has been taken so that there have no significant adverse internal or external environmental impacts. Sustainable urban development based on a continuous dialogue between the actors involved in urban development is needed to improve the urban environment. It is expected that after the completion and implementation of the Master Plan as well as the mentioned projects and programmes of other organizations in Darshana, a small town of Chuadanga region will develop with its full potential.

Development Schemes Implemented by the GOs

The recent infrastructure or development schemes implemented by the Government includes roads, road lights etc.

Darshana is agriculture based urban area and Upazila Agriculture Office has a significant influence on its agricultural sector. Central Government use subsidy for the betterment of the farmers.

Electrification of Darshana is directed by Polli Biddutayan Board (Rural Electrification Board- REB) has a master plan to avail 100% electrify the whole Upazila including the Paurashava area. The master plan includes priority basis electrification to the residents and the commercial establishments. According to census 2011, about 67% inhabitants have electricity connections in the municipal area and majority of them reported to have moderately satisfied with electricity connection.

Local Government and Engineering Department (LGED) have an upcoming project of construction of roads, culverts and box culvert within the Paurashava. And LGED of Darshana is responsible for maintenance of Kamalganj.

Development Schemes Implemented by the NGOs

No mentionable infrastructure development project was undertaken by the NGOs in the Paurashava. Different NGOs at Darshana Paurashava provide mainly micro credit service. ASA, Proshika, Muslim aid UK Bangladesh, Grameen Shokti, BURO Bangladesh, Micro Credit Organization also are present within the Paurashava Boundary. Only ASA and an organization named microcredit organization provide micro credit service and money transfer service of western union. Grameen bank of Darshana Paurashava provides micro credit and house loan service for the poor people. BRAC alongside micro credit program provides other type of program for the wellbeing of the local people program provides other type of program for the wellbeing of the local people.

Development Schemes Implemented by Private Sector

There are a few development works that have been implemented by private sector. Some commercial activities and private schools have been developed by private initiative.

CHAPTER 4

CRITICAL ISSUES FOR PLANNING

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

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

4.1 Socio-Economic and Demographic Issues

Most of the Paurashavas in Bangladesh are basically urban centers with direct links to rural areas. There are significant differences in the standard of socio-economic wellbeing and demographic characteristics of these small towns with large cities in the country. Most of these Paurashava towns have small population, not enough to sustain economic growth to render services and facilities for quality of life needed in an urban environment. As a result, qualities in socio-cultural and demographic matters suffer from inadequacies in their requirements of facilities and services of various kinds. Since Darshana Paurashava has all such problems and shortcomings, in the preparation of various components of the Master Plan, this aspect of reality in development has to be addressed for sustainable solutions.

4.2 Transportation and Communication

Transportation and communication network plays very important role in the growth pattern of both urban and rural settlements and their socio-economic and environmental development. Houses and other establishments always prefer road side lands to have easy access to different places and functions. The transportation and communication network at Darshana Paurashava is not yet planned and developed to serve a town. Most of the cases road network is established after the development of infrastructure resulting poor layout of road network, narrow road, pedestrian problem, utility services problem, emergency services problem etc. The Paurashava has a very low traffic volume to sustain high cost of development in this sector, particularly in areas of low population density and scattered settlements. However, without planning a transport network for the Paurashava area as a whole, a standard transport network and an efficient traffic management system for the future can not be ensured. The nature of problems and deficiencies are identified below.

a. Unplanned and Narrow Road

Roads in the town are being developed without using any planning standard and network plan. As a result, narrow roads with tortuous pattern are common. Narrow roads and poor maintenance of roads are major problems for traffic movement in some parts of the Paurashava. New houses and other structures are cropping up along these sub-standard narrow roads. This is likely to poise traffic movement problems in the future, when development becomes more intense and density of population increases. The existing narrow roads require widening and improvements of pavement. Some road segments within the Paurashava are built in an unplanned manner. These segments will require improvement as per future traffic volume and required space for turning lane in the intersections. Narrow width of roads and poor maintenance has marked by most respondents as major road problems in the town. Total 66.1% of the respondents have pointed to the misery narrow width of. 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.

b. Traffic Congestion

A very low level of vehicular traffic in the streets of the town does not pose a problem in terms of congestion at present. However, the consultant studied the traffic movement all over the town and has identified two main points where the Traffic Conflict is the highest. These are Bus Stand Mor (intersection) and Bazar Mor (intersection). The surrounding area is considered as central area and there exists market and commercial establishments. Again, the slow moving vehicles like, rickshaws and vans come in conflict with motor vehicles at these points, creating traffic congestion. As the number of slow moving vehicles is higher the conflicts are usually frequent. The slow moving rickshaws, on street parking and on street loading-unloading of goods are found to be a major source of traffic congestion.

Reason for Congestion

- Lack of management is the prime reason for traffic congestion. There is a common tendency among the rickshaw pullers to disobey rules. They roam about the busy areas in search of passengers and park rickshaws at critical points leading to congestion.
- Improper intersection design, on street parking of vehicles, waiting of operators on the roads looking for possible passengers, absence of traffic signal, disobedience of traffic rules, etc.
- There is no proper and adequate space for parking auto-rickshaws and tempos. They are parked on the road. On road waiting for trips by these vehicles is also a source of congestion.
- Local buses often take passengers from wherever they find. In the same way, they disembark passengers according to their desires. These practices hamper smooth traffic movement.

C. Bus, Truck, and Tempo Terminal/Stand

- In Darshana Paurashava there is no designitated Bus Terminal but bus stand mor is used for the main terminals point for all kind of Motorized vehicle. The location of the terminal has been proposed after detailed analysis of the traffic situation. There is also no specific Tempo stand at Darshana Paurashava. Darshana Paurashava is well connected with railway network. Initially the railway line was constructed by British Government to carry sugarcane from different parts of the region as the famous sugar mill named Keru and Company was established in this Paurashava.

Map 4.1: Existing Transportation Network of Darshana Paurashava

4.3 Urban Utilities

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

4.4 Drainage and Environment

a. Drainage Problem

Majority of the population at Darshana Paurashava is deprived of drainage facility. Unmanaged waste is washed out into the roadside drains and natural canals. Blockage of drains by solid waste reduces the carrying capacity of drains and natural canals and become a source of pollution. Paurashava has very limited resources to clean the drains. It has been observed that in some areas, domestic sewage conveys directly to these water channels. As a result, water logging is a problem at some parts of Darshana Paurashava.

b. Waste Management

The sources of surface water pollution are domestic waste, unhealthy sanitation and extensive use of fertilizer in the agriculture. Condition of solid waste management at Darshana Paurashava is also very poor. There is no dustbin or dumping of the wastes. Dumping also occurs in the ditches which creates major health hazards when season of water logging begins. There is neither any solid waste treatment plant nor any solid waste collection network encompassing entire Paurashava. Solid waste management is hardly visible in this Paurashava. The present practice of dumping consists of truck used for carrying waste. The existing management capacity of Paurashava consists of 12 sweepers and a garbage truck for transportation. Hospital waste has been dumped at their own dustbins. Garbages of kitchen markets are dumped at nearby vacant places.

b. Water Supply

Water demand is meet mainly by hand tube wells and most of the households have their own hand tube wells. Water supply is still not provided from the Paurashava. In some wards households themselves establish electric motor instead of hand tube well for piped water supply to meet individuals' water demand. Due to increasing demand for piped water supply and no intervention by the Paurashava authority, environmental hazards can occur by haphazard development of water supply system and water pollution because of contamination. In addition, scarcity of safe drinking water can lead to creation of severe diseases of which cost may be higher than the cost of planned development.

4.5 Disaster Issues

Bangladesh is a land of abundant and regular rainfall and the annual inundation of the rivers. The whole district is practically free from drought. Water, however, subsides rapidly and the damage caused is not mostly very serious. Though it is located along the bank

River Mathavanga, Darshana Paurashava is not an erosion prone area due to steady flow and low river stage. The Paurashava was not affected by recent flood.

4.6 Land Use Control

A Land Use Plan of the town was prepared in 1987 by Urban Development Directorate (UDD), but it was never brought into practice due to lack of regulatory measure for implementation. Instead, discretionary decisions are used in case of land use decisions. The Land Use Plan at that time was prepared for the Upazila Headquarters by UDD, but remained under the administrative control of the Ministry of LGRD & C. So conflict and lack of legal basis in implementation prevailed. In the present context of socio-economic demand and land use dynamics in the country, development of a Paurashava without a Master Plan cannot be imagined. The preparation of Master Plan is mandatory as per Local Government (Paurashava) Act, 2009.

4.7 Laws and Regulations

Absence of adequate planning and development control is a problem in all urban areas of Bangladesh and Darshana is no exception. A number of legislative measures are there to help the administration of urban area, urban development and management. But all of these planning laws cannot be readily enforced and many of them are not adequate in regulating planned development. Due to lack of proper implementation and enforcement, many important laws are mostly not applied by the urban local governments. As a result, weakness in the implementation of planned development in the Paurashava remains to be a critical problem and has to be addressed.

A substantial portion of national resource is invested in building construction in both public and private sectors. In order to ensure optimum return of this investment and to achieve satisfactory performance of the buildings in terms of safety, serviceability, health, sanitation and general welfare of the people, building construction needs to be controlled and regulated. Legislative measure for such control has been provided in the East Bengal Building Construction Act, 1952 and from time to time, regulations have been promulgated by the government under the Section 18 of this Act. As per law, it is mandatory to get any structure approved from appropriate authority before construction. Permission for building construction in the Paurashava is administered by this authority within its jurisdiction. However, as elsewhere in the country, noncompliance to these rules is also observed here.

a. Weak Local Government

Though Paurashava is a democratically elected urban local government, its authority is limited to work as a local government. In most cases, prior government permission is required before taking any legal action against unscrupulous acts. Section- 66, Section-69 (1) and (2), Section- 72 (4), Section-32 (2) of the Local Government (Paurashava) Act, 2009 are few examples. This is one of the reasons that there has been a little progress in decentralization of governance at local level in Bangladesh.

b. Lack of Fund and Manpower

Local bodies in this country are in constant shortage of funds. The sources of the Paurashava's income are generally taxes, rates, fees and charges levied by it, and rents

and profits accruing from individuals and institutions. The government grants, profits from investments, receipts accruing from the trusts placed with it, loans raised by it and proceeds from other services are the other sources of income for the Paurashava.

The lack of efficient manpower, poor assessment system, and weak legal enforcement for practicing an efficient revenue generation and collection system are the main reasons for the current weakness in the financial management. It is widely accepted that there are also corrupt practices in our public institutions in delivering services, which require to be addressed through institutional and legal reforms.

c. Public Participation in Plan Making Process

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

d. Coordination of Activities of Public Sector Development Agencies

There are a large number of public sector development agencies working in the town and surrounding areas, but there is lack of coordination among activities of these development agencies. Absence of coordination results wastage of resources and often brings misery to the people. This is commonly evident in our urban development works, for example, as one agency digs the streets for telecommunication network and repairs the streets, another agency starts digging for sewerage ducts. Effective coordination by law in this case is necessary for an integrated approach in development saving time and resources. There should be legal provisions for such coordination by the Paurashava Authority to ensure accountability of the agencies working for their respective jobs in the Paurashava area.

e. New Rules for Practicing Planning Standards

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

f. Betterment fee

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

g. Penalty for Violation of Plan Provisions

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

any violation effectively. The penalty provision should be more stringent to ensure enforcement of plan provisions.

4.8 Existing Problems and Weaknesses in the Development

The two major problems that currently exist in Darshana Paurashava include the following:

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

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

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

CHAPTER 5

REVIEW OF POLICIES, LAWS AND REGULATIONS

5.1 Introduction

The urban planning and land use regulations *per se* are essential for municipal development. They impact on land market favorably or unfavorably and result in social benefits and costs depending on their nature and the specific contexts in which they are applied. Policies, regulations and processes that facilitate availability of land and its uses for planned development at affordable costs need to be continued and those lead to contrary results need t0o be eliminated or modified.

5.2 Review of Relevant National Policies

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

5.2.1 Directives of the Local Government (Paurashava) Act, 2009 for Preparing the Master Plan

The Paurashava Ordinances at different times since 1960's till the present time have iterated that a Paurashava as it gets established must prepare its Master Plan for planned development of the municipal town. So far, three ordinances have been made in the year 1967, 1977 and 2008, all suggesting for planned development. The Paurashava Ordinance 2008 was later modified and enacted as Local Government (Paurashava) Act, 2009 in the national Parliament on 6, October, 2009.

The 2009 Act made provision for having the Master Plan prepared by a Paurashava within five years of its inception. The Master Plan of a Paurashava town is aimed for ensuring planned development, and should include the following:

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

Actions Suggested in the Act to Prepare Master Plan

The Local Government (Paurashava) Act, 2009 suggests for having qualified Town Planner in its Organogram of Manpower to undertake the job of preparing the Master Plan of the Paurashava. Until such qualified Town Planner is not available in the Paurashava, the Paurashava may require a competent national government authority to prepare such plan for the Paurashava. The Act also makes it contingent to form a Town Planning

Committee within the capacity of its manpower to execute the Master Plan of the Paurashava Town.

Darshana Paurashava has no Town Planner and Town Planning Committee at the moment. This makes the Paurashava dependent on having the Master Plan currently being prepared by LGED.

5.2.2 National Land Use Policy 2001

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

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

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

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

5.2.3 National Housing Policy, 1993

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

The policy declares that in housing activities, the government will continue to remain as a facilitator in housing sector. The government intends to provide housing only to the poor

and the rootless classes of the society. The policy makes commitments to encourage private organizations, NGOs and CBOs in housing development, income generation and environmental improvement under local planning. The preparation of Master Plan of the Paurashavas is, therefore, a step forward to address the various development issues including housing for mass people at local level.

5.2.4 Population Policy 2004

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

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

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

5.2.5 Transportation Policy 2004

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

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

The aim is to encourage greater private sector participation with national ownership of road and rail infrastructure. Lease of infrastructure may be allowed on long term basis. The Government is interested to establish a user role within its transport planning process.

The Government intends to make arrangements to realize the cost of transport operation and road maintenance from road users through new fiscal policies and protect public interests. The Government will regulate tariffs for passenger and goods both in road and rail transport.

5.2.6 National Environment Policy 1992

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

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

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

Industrial Sector

The following environmental measures are important:

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

Health Sector

The following environmental issues are important:

- Supply of safe drinking water in the Paurashava area and introduction of low cost healthy sanitation system.

- Control of pollution in all kinds of water bodies by municipal, industrial and toxic materials.
- Ban on carrying waste during day time and in open garbage trucks.
- Steps to be taken to protect public health and environment from all activities harmful for human health.
- Inclusion of environment in the academic syllabus.

Energy Sector

The following are some relevant policies:

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

Transport and Communication Sector

The important aspects are:

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

Population Sector

The important aspects are:

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

5.2.7 Industrial Policy 2005

The key aspects of the Industrial Policy 2005 are to:

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

5.2.8 National Tourism Policy 1992 and 2010

Recognizing the contribution of tourism to the socio-economic development of the country, the government framed the National Tourism Policy in 1992. The government in a gazette

notification in May 2010 declared that the government may declare any potential site as a tourist area and if declared so, any development within the area will require formal permission from the government. The attractions of tourism can be varied, and the major policy thrusts for the sector are:

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

5.2.9 Agriculture Policy 1999

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

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

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

- Land zoning 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 will be started from the mouza or village level.
- Measures can be taken to stop fertile agricultural land being used for non-agricultural purposes, such as private construction, house building, brickfield, etc.
- Acquisition of land in excess of requirement for non-agricultural purposes will be discouraged.

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

Government has not framed any effective mechanism to discourage acquisition of land in access of requirement for non-agricultural purpose. To protect agricultural land, immediate

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

5.2.10 Urban Forest Policy 1994

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

- To afforest about 20% of the total area of the country by initiating various afforestation 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 provide for and implement afforestation programmes on both public and private lands.

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

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

5.2.11 National Plan for Disaster Management, 2008-15

National Plan for Disaster Management 2008-2015 is an outcome of the national and international commitments of the Government of Bangladesh (GoB) for addressing the disaster risks comprehensively. The plan is developed to reduce the vulnerability of the

poor to the effects of natural, environmental and human induced hazards to a manageable and acceptable humanitarian level. The objectives of this Plan are to:

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

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

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

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

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

5.2.13 Review of Relevant Laws and Regulations

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

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

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

5.2.13.2 Bangladesh National Building Code (BNBC) 1993

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

5.2.13.3 The Building Construction Act 1952

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

Preparation of Master Plan

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

Building Construction Rules

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

Power to Removal of Construction (Section 3B)

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

Removal of Unauthorized Building (Section 7)

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

Appeal

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

Observation on the Building Construction Act

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

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

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

Table 5.1: Important provisions of different Acts, Policies and Rules having relevance with the preparation of Paurashava Master Plan

Act/Ordinance, Policies, Rules	Relevance with Paurashava Master Plan
Local Government (Paurashava) Act, 2009	Makes provision for having a Master Plan of the Paurashava Town. Provides legal basis for the preparation and implementation of Paurashava Master Plan. Suggests on the content and structure, and other relevant issues, such as provision for qualified Town Planner in the Paurashava staff.
National Land Use Policy 2001	Formulation and effective execution of Land Use Plan in order to ensure planned use of land. Suggests for afforestation, conservation and development of land maintaining landscape.
National Housing Policy, 1993	To create affordable housing through controlling unplanned and haphazard housing area development. To encourage private developers in land and infrastructure development, and house construction. Participatory housing infrastructure development involving the community, NGOs, CBOs,

Act/Ordinance, Policies, Rules	Relevance with Paurashava Master Plan
	private developers and social welfare organizations.
Population Policy 2004	To improve the living standard of the people through a desirable balance between population and development. The proposals are divided into four sectors - human resources development, decentralization of population activities, participation of NGOs and private sector. The policy aims to create a large skilled workforce providing education and training.
Transportation Policy 2004	To provide a safe and dependable transport service for all. Removal of unnecessary control and formulation of laws and regulations conducive to providing services, determining the role of public and private sectors, maintaining an economic and environmental balance, maximum utilization of Government funds and introduction of an integrated transport system and provision of alternate transport systems.
National Environment Policy 1992	To promote natural balance and overall development by means of conservation and development of environment, save an area from natural disaster, identify and control all sources of pollution and degradation, ensure environment friendly development in all sectors, ensure sustainable, long term and environment friendly use of all national resources, and get involved with international initiatives on environmental issues.
Industrial Policy 2005	To set up planned industries considering the real domestic and export demand discouraging unplanned industries, provide necessary assistance for producing environment-friendly products with the objective of creating a pollution-free environment, and enrich the industrial sector with the proper utilization of various natural and mineral resources. To prioritize the expansion and development of agro-based and agricultural processing industries, and assist in the expansion of poultry, dairy and goat-sheep industry as agricultural industries; and provide women entrepreneurs with all necessary assistance in establishing such industries.
National Tourism Policy 1992 and 2010	To create interest in tourism among the people, preserve, protect, develop and maintain tourism resources, take steps for poverty-alleviation through creating employment, build a positive image of the area concerned, arrange entertainment and recreation, identify sectors for private capital investment, and strengthen solidarity and integrity among the peoples.
Agriculture Policy 1999	To strengthen land zoning program, ensure maximum utilization of land through bottom up planning and people's participation, stop fertile agricultural land being used for non-agricultural purposes, and discourage acquisition of land in excess of requirement for non-agricultural purposes.
Urban Forest Policy 1994	To afforest about 20% of the total area of the country by initiating various aforestation programs in forest lands, fallow lands, lands not useful for agriculture, hinter lands and other possible areas to meet the basic needs of the present and future generations and to ensure greater contribution of the forestry sector to economic development; enrich biodiversity in the existing degraded forests by conserving the remaining natural habitats of birds and animals; Strengthen agriculture by extending assistance to those sectors related with forest development, especially by conserving land and water resources; and implement aforestation programs on both public and private lands.
National Plan for Disaster Management, 2008-15	To align the strategic direction of disaster management programs with national priorities and international commitments, articulate the vision and goals for disaster management, outline the strategic directions and priorities to guide the design and implementation of disaster management policies and programs, create a cohesive and well-coordinated programming framework incorporating government, non-government and private sector, and ensure that disaster management has a comprehensive and all-hazards focus comprising disaster risk reduction and emergency response.

Act/Ordinance, Policies, Rules	Relevance with Paurashava Master Plan
National Plan of Action for Persons With Disabilities (PWDs) as well as Autism, 1995	To establish separate ticket counters in railway station, bus terminals, river ports, steamer terminal, airport and airways office to facilitate easy availability of tickets for the PWDs, fill up 10 percent reserved quota for employment in government jobs by orphans and PWDs, construct a ramp in all the government offices to facilitate easy movement of the PWDs, and withdraw the existing restrictions regarding appointment of PWDs in the Government Class I & class II jobs.
The Act (36 of 2000) for Conservation of Play field, Open space, Park and Natural Water Reservoir in Mega City, Divisional Town, District Town and Paurashavas of Bangladesh	To protect the existing use of land such use as play field, park and natural reservoir, and ensure punishment for conversion of such lands by any person/authority without proper permission from the appropriate authority.
Bangladesh National Building Code (BNBC) 1993	To establish minimum standards for design, construction, quality of materials, use and occupancy, location and maintenance of all buildings in order to safeguard within achievable limits, life, limb, health, property and public welfare. It aims to insure public safety, health, and general welfare in so far as they are affected by the construction, alteration, repair, removal, demolition, use or occupancy or buildings, structures of premises, through structural strength, stability, means of egress, safety from fire and other hazards, sanitation, light and ventilation. The BNBC also suggests for conservation and restoration of historic buildings.
The Building Construction Act 1952	The Act calls for preparation of a Master Plan of the urban area concerned before approval of building plan. The Master Plan shall show the future land use of the area through land use zoning. The buildings will be approved according to the land use provisions of the zoning plan. To ensure healthy and environment-friendly building development. To empower special power to remove any building that did not follow the specified rules of the Act.
The Building Construction Act 1952 (Continued)	To take action against any building owner who constructs building violating the rules after approval of the building plan. To forbid cutting of any hill without prior permission of appropriate authority. To keep provision for appeal, if the owner finds himself aggrieved due to any action by the authority.

CHAPTER 6

PROJECTION OF FUTURE GROWTH UPTO 2031

The future growth projection is helpful to draw mechanisms for improving and guiding long-term development strategies, identifying existing problems and future demand and making possible suggestions, to formulate viable projects for urban development and increase management capabilities of the concerned authority. This chapter incorporates projection of population, identification of economic opportunities and projection of land use for Darshana Paurashava.

6.1 Projection of Population

In absence of data for previous census years for Paurashava, it has been difficult task to collect information on population. The detail of how the estimation of population are made, have been discussed below.

Basis of Population Projection Method

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

On the other hand, the difference of data from different secondary sources also makes the job more problematic. The population figures collected from secondary sources especially for Paurashava were very much ambiguous. So for the final projection, several discussions were made with experts and BBS officials. Following the annual growth rate for the study area available from the 2001 Population Census, the projection up to the year 2031 with five years interval has been made.

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

Pn = Po (1+ r) t where,

Po = the base year population (2001)

Pn = the projected year population (2031)

t = time period (30 Year),

r = annual growth rate

Assumptions

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

The important issues to be considered are;

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

Shortcomings

The data found from the several sources is not reliable to be accepted. Because it was found that in different sources the data is also different. When it is calculated for the projection then the output shows the separate result. So, it is the main deficiencies of data obtained from the diverse sources.

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

Ward wise Projected Population

The population of Darshana Paurashava is 33396 in 2011 (BBS, 2011) within an area of 3507.06 acre. According BBS Population Census 2011, the annual growth rate of 1.25%. By considering population growth rate with surrounding areas the planning team decided to consider 1.25 as population growth rate. The forecasted population of Darshana Paurashava will be 42815 in the year 2031 considering this growth rate. The gross density of the area will be 12 ppa (person per acre). Due to the maximum concentration of residence in Ward no. 07, the density of population will also be higher (46 ppa) in this area. Table 6.1 shows ward wise population distribution of Darshana Paurashava based on medium growth rate.

Table 6.1: Population Projection with Density for Darshana Paurashava Up to 2031

Ward no.	Area (In Acre)	2011		2016		2021		2026		2031	
		Pop	PPA	Pop	PPA	Pop	PPA	Pop	PPA	Pop	PPA
Ward-1	227.84	3636	16	3869	17	4117	18	4381	19	4661	20
Ward-2	133.64	4206	31	4476	33	4762	36	5068	38	5392	40
Ward-3	154.17	3628	24	3860	25	4108	27	4371	28	4651	30
Ward-4	260.38	3594	14	3824	15	4069	16	4330	17	4608	18
Ward-5	273.33	3708	14	3946	14	4198	15	4468	16	4754	17
Ward-6	579.51	3711	6	3949	7	4202	7	4471	8	4758	8
Ward-7	84.79	3063	36	3259	38	3468	41	3690	44	3927	46
Ward-8	922.93	4288	5	4563	5	4855	5	5166	6	5497	6
Ward-9	870.47	3562	4	3790	4	4033	5	4292	5	4567	5
Total	3507.06	33396	10	35536	10	37813	11	40236	11	42815	12

Source: 1. BBS, 2001, BBS 2011 & Paurashava. Estimation by the Consultant
***Note**: Medium Growth rate for Population projection has been considered as 1.25*

6.2 Identification of Future Economic Opportunities

The contribution of the small towns to the economic development of their hinterlands depends largely on the urban development in these urban centers. Depending on transport, communication and storage facilities, this Paurashava can play a vital role in linking rural farmers to the urban market. For instance, development of road network

between this small town and its rural hinterlands may greatly benefit rural farmers as it enables them to transfer their agro produces to bigger markets. The industrial development in the Paurashava will have significant impact on the demand for raw materials that are required for the industrial production. All sorts of production materials, like brick, wood, bamboo etc. are produced in the countryside, serving as supply centers for urban demand. To support urban industries and related activities, it requires adequate infrastructure, such as urban rural transfer routes, communication and information structures. Investments in this projects result in enhanced productivity in both urban and rural areas.

Table 6.2 shows the working force for Darshana Paurashava. The total working force of Darshana in 2001 was 17362. According to this table and also information from the socioeconomic survey in the Paurashava, further calculation has been done. At present excluding housewives and students from working force, 79.64% is male and rest 20.36% is female. It will be expected that the total figure will rise to 31153 in the year 2031. For a balance development of an area it will be necessary to create employment opportunities for the estimated work force. It will also expect that after the economic upliftment of Darshana, the participation of female work force in economic activities should be increased.

Table 6.2: Projected Working Force for Darshana Paurashava up to the Year 2031

Year	Working force(excluding housewife and student)		
	Male	Female	Total
2001	14076	3286	17362
2011	16632	4251	20883
2016	18381	4698	23079
2021	20314	5193	25506
2026	22450	5738	28189
2031	24811	6342	31153

Source: 1. BBS, 2001. & 2011. Estimation by the Consultant
***Note**: i. Population from the year 15-59 has been considered as working force*
ii. 27.58% of the working force has been considered as male student and 80.90% is female housewife& Student.

However, it is extremely difficult to make any precise projection about future economy of this small urban center. Considering the present level of economic activities, no major change is anticipated in the local economy in the near future.

The town has good prospects to local economic upliftment provided appropriate government policies and initiatives are taken. People have money, but they will have to convert it into capital. The following suggestions may be considered.

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

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

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

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

6.3 Projection of Land use

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

Table 6.3: Land Use Requirement for Darshana Paurashava

Development Consideration	**Type of Land Use**	**Area (acre)**	**Total**	
			Area (acre)	%
Land for Urban Development	Residential Zone	519.75	791.62	30.93
	Education and Research zone	97.85		
	Open Space	157.29		
	Health Services	16.96		
	Community Facilities	21.50		
	Commercial Zone	81.15		
	Utility Services	21.25		
	Industrial Zone	160.10		
	Transportation Facilities	9.05		
Circulation Network and Reserve Area	Circulation Network**, Agriculture and Water Body		2422.16	69.07
Total Structure Plan Area			**3507.06**	**100**

***Maximum 25% of urban development area will be used as circulation network*

CHAPTER 7

LAND USE ZONING POLICIES AND DEVELOPMENT STRATEGIES

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

7.1 Broad planning View of Structure Plan

Darshana Paurashava is connected with Dhaka by railway and road network. Road network and Chitra railway network along with the land port are the main reason to its development. Along with low land within the Paurashava and maximum of this land is in agricultural practice are the other obstacles to quick flourished of this town. Favorable communication system, availability of gas connection and raw materials create ample opportunity for industrial development. Considering these opportunities, growth pattern of the town and also development constrains, an urban livable environment for people irrespective of their socio-economic, demographic and religious background has been suggested. The implementation of Structure Plan of the Paurashava will translate this consideration into reality. The zoning policies and strategies of development in the land use zones have been given due importance for future development of the Paurashava.

7.2 Zone of Structure Plan Area

To guide long term growth within the Structure Plan Area by means of demarcation of the future growth areas and indication of potential locations of major development zones are broadly classified into seven categories. Table 7.1 shows the Structure Plan area zones, its area and percentage coverage. Details of the description of structure planning zones are given in the following paragraphs. Map 7.1 and Appendix-1 shows the structure plan of Darshana Paurashava.

Table 7.1: Structure Plan Policy Zoning

Zoning	Description of the Zone	Area (acre)	%
Core Area	This area is also known as built-up area. This is defined as the area which has the highest concentration of services; it also has the highest population concentration and density. It will absorb most population growth during the Land use Plan (2011-2021) period.	169.53	4.83
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.	447.14	12.75
New Urban Area	This zone will be the required additional area for future planned urban development as per population projection. New	443.24	12.64

Zoning	Description of the Zone	Area (acre)	%
	facilities and services like road, drains, footpath, waste transfer station and other civic services will be provided. This area is proposed to grow within 2031.		
Agriculture	Agricultural land (also agricultural *area*) denotes the land suitable for Agricultural production, both crops and livestock. It is one of the main resources in agriculture. The land under annual crops, such as cereals, other technical crops, potatoes, vegetables, and melons; also includes land left temporarily fallow; land under permanent crops (e.g., fruit plantations); areas for natural grasses and grazing of livestock.	1892.01	53.95
Water body	Water body containing an area equals to or more than 0.25 acres excluding those of khal, irrigation canal and river will be treated as this category.	223.71	6.38
Major Circulation	Major circulation contains major road network and railways linkage with Regional and national settings.	331.43	9.45
Total		**3507.06**	**100.00**

7.2.1 Core Area

Total 169.53 acres of land, which covers 4.83% of Structure Plan area, is declared as Core Area (Map 7.1). It is located with in Ward no. 7 and Ward no. 3. It includes the highest concentration of service area for an example Paurashava Office, Upazila complex, schools, post office, police station, Darshana Bazar area and other governmental offices and it has the highest potentiality of development. There are differences in levels of provision in this area, particularly between the formally developed and planned areas and the majority of unplanned areas. Levels of provision should be maintained in the planned areas. Since these areas are forecasted to show density increase and increased demand and therefore will require regular upgrading. The main thrust to improve services should be in the unplanned zones, particularly where the deficiencies already are great and quality of life will sharply decline when the services also have to cater for the additional population.

7.2.2 Peripheral Area

A total of 447.14 acres of area, which covers 12.75% of Structure Plan area, is declared as Urban Peripheral Area (Map 7.1). Maximum peripheral area is in Ward nos. 01, 05, 06, 08 and 09 in North West and South East corner of the Paurashava. This zone is developing areas that will take a longer time to reach the population densities of the urban core area. Low initial densities in these areas do not justify supply of a full range of services as they will initially be underused. However, it is essential that planning and reservation of rights of way, at least for primary networks, be undertaken soon to enable provision when justified by increased density levels and allowed by resources.

7.2.3 New Urban Area

Total 443.24 acres of land covering 12.64% of Structure Plan area is declared as New Urban Area (Map 7.1).

New urban area is mainly proposed on western part of Ward no. 07 and 02, which is to be proposed as a residential area in future. Some new urban area is also proposed in the southern portion of Ward no. 4 and also in the northern part of Ward no. 08 and 09. It is

assumed that town will be developed based on establishment as a trade center which mostly depends on successful utilization of the road network with other urban areas and surrounding unions. So most of the new urban lands will be used to meet the extra pressure of development in this Paurashava. A large portion of land in Ward no. 02 and 04 will be used to establish a new residential area for future planned urban development as per population projection.

7.2.4 Agriculture

Total 1892.01 acres of land covering 53.95% of Structure Plan area is declared as Agriculture Area (Map 7.1). Northern and Southern portion of the Paurashava is mostly declared as agriculture area. There has been also agricultural land in southern portion of the Paurashava.

7.2.5 Water body/Retention Area

Total 223.71 acre area, which covers 6.38% of Structure Plan area, is declared as water body (Map 7.1). It includes ponds, Khals, ditches, and river with an area equal to or more than 0.25 acre and all the canal and river within the Paurashava. More detail information is provided in drainage and environmental plan in Chapter 12.

7.2.6 Major Circulation Network

It contains major road network with Chuadanga and other neighbouring urban centers and also includes the major road way network required for maintaining existing internal communication. Total 331.43 acres of land which covers 9.45% of total structure plan area. Map 7.1 shows major circulation network.

Map 7.1: Structure Plan of Darshana Paurashava

7.3 Strategies for optimum use of Urban Land Resources

7.3.1 Optimum use of Urban Land Resources

With a limited land mass, Bangladesh is the most densely populated country in the world. The land area of the country remains static amid continuously increasing population. Such a situation calls for strict regulation to utilize its scarce land resources for non-agricultural purposes. Increase in urban population means more demand for houses, roads, schools, hospitals, factories, bazars, shops, business centers, offices, other service facilities etc. Providing all these facilities require land and that is at the cost of valuable agricultural land, as the country has hardly any fallow land to accommodate all these land uses. Darshana Paurashava is surrounded by valuable fertile agricultural land. Any urban expansion will cost net deduction of agricultural land that will consequently affect local food and cash crop production. Practice of thriftiness on land utilization is, therefore, essentially needed in plans and development proposals. Such practice should start through adoption of conservative and rational standards of space use and their proper application in planning, designing and development. Table 7.2 shows the optimum use of urban land resources.

Table 7.2: Policy for optimum use of urban land resources

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

7.3.2 Plans for New Area Development

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

Table 7.3: Policy for new area development

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

7.3.3 Areas for Conservation and Protection

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

Table 7.4: Area for conservation and protection

Type of Land	Means of Implementation	Implementing Agency
Loss of Productive Agricultural Land: The Master Plan area has a vast agricultural land in the northern side of this project. After implementation of the project, environment of agriculture will be converted into non-productive urban and semi-urban area.	The EIA Guidelines of DOE emphasized on the avoidance of productive agricultural land for any development project. Therefore, it will be wise to consider more economical use of land to avoid fertile lands. The town expansion and land acquisition should be based on the growth rate of population. According to population projection for the year 2031, the present residential land use area will grow with increasing density. So a large share of agricultural land can be spared at least for the time being.	- Darshana Paurashava - DOE.
Low Land, Pond and Drainage Path: All the khals, rivers ponds and ditches with an area equal to or more than 0.25 acre within the Paurashava are declared as retention area. In no way permission for filling up of these ponds should be given. Paurashava should acquire these ponds at suitable time to use them for retention and emergency use.	This area is declared as water body in the Master Plan. As per the guideline of Playfield, Open space, Park and Natural water reservoir Conservation Act 2000, this area will be conserved as water body. According to population projection for the year 2031, the present residential land use area can be developed with increasing density up to this year. So a large share of water body can be spared.	- Darshana Paurashava - Water Development Board

7.4 Policies for Development

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

7.4.1 Policies for Socio-economic Sector

Population

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

Strategy:

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

Table 7.5: Policy for Population Sector

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

Economic Development and Employment Generation

Economic development of any place is associated with generation of employment. The generation of employment depends on the rate of investment in various sectors of an economy. An urban economy of any town starts building up with investment in the basic sector that leads to the building up of the non-basic sector. Investment in basic sector is not very bright in Darshana as it is a very small town with a very small size of population. Besides, it has to compete with other adjoining urban centers like, Damurhuda, Jibonnagar and larger towns, like Jessore, Chuadanga, Meherpur and Jhenaidah. These urban centers are counter magnets of investment. However, the Paurashava must ensure that

any foreseeable opportunity in economic development is given due attention for its own growth and economic benefits.

Strategy:

- Creating basic sector investment climate and leading the local economy forward through promotion of Small and Medium Enterprises (SME).

Table 7.6: Policy for Economic Development and Employment Generation

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

Housing

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

Strategy:

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

Table 7.7: Housing and Slum Improvement

Policy	Executing Agency
Policy House/1: Provision of necessary services and facilities to promote housing at private sector.	- National Housing Authority - Ministry of LGRDC - Darshana Paurashava
Justification: It is more difficult to provide housing on public sector initiatives, as it involves funding and land acquisition that takes a long time. By providing infrastructure and services, general people can be encouraged to build their own	

Policy	Executing Agency
houses.	
Policy House/2: Housing zone land owners can be involved in a participatory development approach, where Paurashava will provide infrastructure and the cost will be shared by land owners.	- National Housing Authority - Ministry of LGRDC - Darshana Paurashava

Social Amenities and Community Facilities

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

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

Strategy:

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

Table 7.8: Social Amenities and Community Facilities

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

7.4.2 Physical Infrastructure Sector

Transport

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

Strategy:

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

Table 7.9: Policy for Transport Sector

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

Utility Services

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

Strategy:

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

Table 7.10: Policy for Utility Services

Policy	Executing Agency
Policy-Utility/1: Exploration of alternative sources of water to ensure sustainable supply.	- LGED - DPHE - Darshana Paurashava
Justification: Amid constant rise of urban population, it is time to explore alternative sources of water like, rain water harvesting and surface water supply.	
Policy-Utility/2: Involvement of beneficiaries in solid waste management.	- Darshana Paurashava, - NGOs and CBOs
Justification: Involvement of beneficiaries in solid waste management will make the operation more effective and reduce financial responsibility of the Paurashava.	
Policy-Utility/3: Exploring re-use and recycling of waste materials to extract resources.	- Darshana Paurashava, - NGOs and CBOs
Justification: Re-use and recycling of waste materials will produce resources and reduce cost of waste management.	
Policy-Utility/4: Publicity on the benefits of hygienic sanitation to motivate people and enable people to have easy access to sanitary materials.	- LGED - DPHE - Darshana Paurashava - NGOs and CBOs
Justification: Motivation will encourage people to adopt healthy sanitation and reduce health risks.	
Policy-Utility/4: Protection of natural drainage system and preparation of hierarchical drainage network.	- LGED - Darshana Paurashava
Justification: Natural drainage systems are being grabbed and filled up, which increases the risk of water logging. Well planned hierarchical drainage network helps smooth drainage of storm and waste water.	

7.4.3 Environmental Issues

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

Natural Resources

The Paurashava is not endowed with many natural resources that can be conserved. Among the meager natural resources that are available, ponds and natural drainage canals can be mentioned.

Strategy:

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

Table 7.11: Policy for Natural Resources

Policy	Executing Agency
Policy-Nature /1: All khas lands within the Paurashava must be assessed and handed over to the Paurashava for use in community interest.	- Ministry of Land - Ministry of Railway - Darshana Paurashava
Justification: This will prevent misuse of khas lands by political and powerful local people.	

Policy	Executing Agency
Policy-Nature/2: All natural canals within the Paurashava must be vested with the Paurashava for maintenance and proper use as drainage canal.	- Ministry of Land - Darshana Paurashava - NGOs and CBOs
Justification: This will help prevent unauthorized occupation and filling of natural drainage.	

CHAPTER 8

IMPLEMENTATION ISSUES

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

8.1 Institutional Capacity Building of the Paurashava

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

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

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

The present plan package imposes a large number of development projects on Darshana Paurashava for implementation. Paurashava will not only be the custodian of the plan, it will also directly implement much of the development projects. Besides, it will also be

responsible for monitoring and implementation of the development projects by other urban development and service giving agencies. This situation calls for strengthening of the existing capability of Paurashava.

8.1.1 Staffing and Training

As a traditional system of the Paurashava, engineer and secretary are appointed directly by the Ministry of Local Government and other staffs are appointed locally through the approval of the Ministry after the advertisement on the newspapers. In Darshana Paurashava, the revenue income is too low. That is why it is not capable to pay the salary of all the officials and staffs. This is the main reason for under staffing of the Paurashava.

There is no proper arrangement for 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.

8.1.2 Lack of Automation

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

8.1.3 Town Planning Capacity

At present, the Paurashava has no town planning section or any appropriate manpower to prepare and implement the Master Plan. The Paurashava must strengthen its capacity to implement its Master Plan when it will be completed. It will otherwise be in trouble in the implementation, monitoring and updating the Master Plan

8.1.3.1 Institutional Framework

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

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

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

Figure 8.1: Scope of Work for Planning Division

8.1.3.2 Lack of Paurashava Town Planning Capacity

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

Darshana is a 'B' class Paurashava. For the 'B' class Paurashava Government approved an organogram and required manpower. A comparison of the existing manpower with the approved organogram finds that there is a huge gap between the two. Many positions have been vacant since the inception of Paurashava. Paurashava authority supported with the line ministry should take necessary steps to set up planning unit and strengthen all units/division of the Paurashava for its better performance.

Support for Planned Urbanization

For creating planned urbanization, Paurashava may:

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

Community Mobilization Program

Following are the community mobilization support activities:

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

Urban Governance Improvement Action Programme (UGIAP)

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

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

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

Citizen Awareness and Participation

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

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

Urban Planning and Environmental Improvement

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

Urban Poverty Reduction

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

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

Income Generating Activities

The income generating activities include:

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

Transparency and Accountability

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

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

Meet the Mass people of Poura-Parishad

8.1.4 Legal Aspects

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

8.1.5 Good Governance in Legal Provisions

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

The Paurashava/Municipal Act/Ordinances prepared at different times since 1960's have iterated for the preparation of Master Plan by the Paurashava/Municipality for its planned development. So far urban local government Ordinances/Acts made in 1967, 1977, 2008 and 2009, all suggested for planned development. The Local Government (Paurashava) Act, 2009 has made the provision of having a Master Plan prepared by a Paurashava within five years of its inception. The function of the Paurashava also includes that it ensures planned development following the rules of the Ordinance. But there is no provision for public participation in the Local Government (Paurashava) Act, 2009. In all these legal documents, people's role has been ignored which is the violation of the norms of good governance.

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

8.1.6 Financial Issues

Governance in Darshana Paurashava

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

The Ministry of LGRD and Cooperative has undertaken a number of projects in respect of establishing governance in upgrading Paurashava accounts system, like, UGIIP, STIFPP. Computer and accessories are supplied under these projects for automation of the accounts system. Besides, trainings are also offered to the Paurashava accounts staff for enabling introduction of automation in accounts system. But all these services have not yet reached Darshana Paurashava.

Revenue Management

The Paurashava still follows a traditional management system in tax collection and revenue management though a scheme of computerized automotive financial system has already been introduced in this Paurashava. Assessment section is responsible to asses the tax of the Paurashava and tax collection, and license and bazar section are responsible to collect the tax of the Paurashava. The public is mainly informed about tax collection during the presentation of annual budget. They may, however, get information from the councilor or Paurashava accounts office.

Paurashava's Financial Capacity and Plan Execution

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

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

8.1.7 Monitoring, Evaluation and Updating

Monitoring and evaluation is a very important part of plan implementation. Monitoring helps check if the plan is being implemented properly. It also measures the level of implementation of the plan. If the plan implementation is not on track, corrective measures can be taken to put execution on the track. After expiry of any plan, evaluation is made about the errors and omissions. Such evaluation helps take corrective measures in the next plan. Such monitoring and evaluation must be carried out from within the Paurashava. But Darshana Paurashava is not equipped with qualified manpower to make such evaluation. Monitoring and evaluation of a plan is essentially, the responsibility of qualified and experienced planners. As there is no planner in the Paurashava, monitoring of plan implementation will be seriously affected. However, plan evaluation can be accomplished by means of out sourcing as and when it is required.

8.1.8 Periodic Review and Updating

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

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

8.2 Resource Mobilization

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

8.3 Concluding Remarks

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

CHAPTER 9

URBAN AREA PLAN

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

9.1 Goals and Objectives of Urban Area Plan

Urban Area Plan is the first phase illustration of the Structure Plan intended to be implemented over a time span of 10 years that includes 1st phase (1st -5th year) and 2nd phase (6th -10th year) of development programs. The Urban Area Plan has been prepared within the policy framework of the Structure Plan and aims to attain the overall project objectives. So there is a hierarchical relationship between the two. In fact, Urban Area Plan is the first phase detailed illustration of the policies and strategies of the structure plan.

The preparation of Master Plan for Darshana Paurashava is aimed towards its future development, and covers the areas that are likely to become urban in future. The Urban Area Plan is aimed to:

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

9.2 Methodology and Approach to Planning

The base map supporting for land use survey was obtained from the physical feature survey that contained all categories of physical features within the planning area (Chapter 3 of Survey Report). During physical feature survey, all structures and the functions of principal buildings were picked up and depicted on the map. The physical features were superimposed on a mouza map and printed for land use survey on the map. The map was carried to the field by investigators for detailed plot to plot land use survey (Chapter 4 of Survey Report). The field investigators carrying the map visited each and every plot and the structures therein and noted their uses in writing and marking them on the map with colour pencil. They also verified the land uses and put during the physical feature survey. Back in the office, the common land uses of plots were delineated in the map as per land use format given in the ToR. The delineated zones were then digitized and a new land use map was prepared for the entire planning area. After land use demarcation, field checking was done to correct possible errors.

Urban Land Use Plan is aimed to guide the physical development of Darshana town including its economic and social activities. This plan adheres to the policy directives spelled out in the Structure Plan. The current Urban Area Plan is akin to the traditional Master Plan approach prevalent in the country that designates plot-to-plot use of land apart from infrastructure development proposals. Thus it will also serve as a development control mechanism/instrument. The Urban Area Plan is, therefore, more rigid than Structure Plan. Making a land use plan on a cadastral map makes the Urban Area Plan more rigid. Once the plan on a cadastral map is drawn and accepted by the government and formalized, it gains a formal status and thus becomes a binding for all concerned.

The objectives of the Urban Area Plan have been attained through:

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

9.2.1 Delineation of Planning Areas

For delineation of Master Plan area, it is necessary to identify the possible future urban growth locations. The objective of project area demarcation is to determine the boundary of the area and mark it on the map as well as in the field. Logic behind the delineation of the Planning area of Darshana Paurashava for the year 2031 has been done on the basis of the gazette notification of the Paurashava and after the reconnaissance survey within the area, the discussions with all groups of stakeholders, analyzing the present trend of developmental growth of the town. Cooperation of the Paurashava was more important in delineating the Paurashava area in the cadastral map and the future planning area boundary (Detail was given in Chapter 2, Section 2.4 of Survey Report). As conversant with local conditions and the future trend of development, valuable advices were received from the Paura Mayor and its engineers and other staffs. Table 9.1 presents the detail about the mouzas, within the 9 wards of the Paurashava.

Table 9.1: Ward wise RS Mouza sheet

Ward Name	Mouza Name	JL No.	Sheet No.
Ward No. 01	Akondobaria	23	01
	Dakshin Chandpur	75	01-07
	Dudhpatila	74	02
Ward No. 02	Akondobaria	23	01
	Dakshin Chandpur	75	05-09
	Shyampur	77	02
Ward No. 03	Dakshin Chandpur	75	07-10, 12, 16
	Shyampur	77	01, 02
Ward No. 04	Dakshin Chandpur	75	01, 07, 08, 10-12,16
	Dudhpatila	74	02
Ward No. 05	Dakshin Chandpur	75	01, 11-14
	Dakshin Ramnagar	76	01
	Dudhpatila	74	02
	Loknathpur	73	05, 06
Ward No. 06	Dakshin Chandpur	75	14, 16, 17
	Dakshin Ramnagar	76	01, 02
	Loknathpur	73	06
Ward No. 07	Dakshin Chandpur	75	11, 12, 14, 16, 17

Ward Name	Mouza Name	JL No.	Sheet No.
	Shyampur	77	01, 02
Ward No. 08	Bhabanipur	24	
	Dakshin Chandpur	75	16, 17
	Dakshin Ramnagar	76	02
	Joynagar	78	01, 02
	Shyampur	77	01, 02
Ward No. 09	Akondobaria	23	01, 02
	Bhabanipur	24	01, 02
	Dakshin Chandpur	75	16
	Joynagar	78	02
	Shyampur	77	01, 02

Source: Field Survey, 2009

9.2.2 Content and Form of Urban Area Plan

The Urban Area Plan is presented in both map and textual format. The plan map is presented in 1:1980 or 1 inch to 165 feet scale, superimposed on latest cadastral/revenue map having plot boundaries within mouzas. The plan is accompanied by an explanatory report supported by necessary figures, maps and data. The report explains the various plan proposals and other components of the plan. At present, the Urban Area Plan covers existing Paurashava area within the Structure Plan area of 14.19 sq. km. or 3507.06 acres with a present population of 42815 of Darshana Paurashava. Urban area plan covers 100% of total structure plan area of Darshana Paurashava.

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

i) Land Use Plan;

ii) Transportation and Traffic Management Plan;

iii) Drainage and Environmental Management Plan and

iv) Proposals for Urban Services

CHAPTER 10

LAND USE PLAN

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

10.1 Existing and Projected land use

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

10.1.1 Existing Land Use

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

The land uses of the project area are shown in Table 10.1. In the land use pattern of the Paurashava, 16 types of land uses are found. It is clearly evident from the table that agricultural land use (almost 64.96%) dominates the Paurashava area, followed by residential (17.04%), water bodies (6.52%), circulation network and transport and communication (only 0.08%), vacant place (about 3.41%) and government services 0.46%, educational land use occupy only 0.60% percentage of land. There are also 1.17% land is used for Industrial/ Manufacturing Processing purposes.

Table 10.1: Existing Land use Classification of Darshana Paurashava

Sl. No.	Landuse	Area in Acre	Area (%)
01	Agriculture	2278.34	64.96
02	Circulation Network	126.75	3.61
03	Commercial Activity	40.37	1.15
04	Community Service	9.15	0.26
05	Education & Research	20.98	0.60
06	Governmental Services	16.19	0.46
07	Manufacturing and Processing Activity	40.96	1.17
08	Miscellaneous	0.00	0.00
09	Mixed Use	5.63	0.16
10	Non-Government Services	0.06	0.00
11	Recreational Facilities	2.23	0.06
12	Residential	597.59	17.04
13	Service Activity	5.84	0.17
14	Transport & Communication	2.63	0.08
15	Urban Green Space	12.10	0.34
16	Vacant Land	119.63	3.41
17	Water Body	228.59	6.52
Grand Total		**3507.06**	**100.00**

Source: Land use Survey, 2009

Map 10.1: Existing Land Use Map of Darshana Paurashava

10.1.2 Land Requirement Estimation

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

Housing

Housing is the most significant segment of urban development scenario. The future housing area need to be based on a recommended planning standard of 100-150 ppa. But during survey it was identified 597.59 acre of land is currently under housing use. The consultant considered the standard for general housing as 50-100 ppa. The planning team recommended 75 person/acre for the estimation. Considering this standard, no additional land is required for these purposes. Table 10.2 shows the detail.

Table 10.2: Estimation of Housing Land Requirement

Use/Facility	Recommended Standard	Land in Acre		
		Estimation	Existing Land	Future Landuse Consideration by the Planning Team
General Residential	75 person/acre	570.87	597.59	642.58
Total		**570.87**	**597.59**	**642.58**

Commerce and Shopping

Market facilities are usually provided privately on commercial basis depending on the trend of sale of goods. So it is not possible to fix a standard or project actual area for these services. The standard for commercial use can only be applied if ever these facilities are provided by the Paurashava. However, for the sake of current planning, we can earmark land as per standard at appropriate location, where commercial facilities may be developed privately or publicly. Including existing commercial activities, the total commercial land in 2031 has been fixed at 43.50 acres.

Table 10.3: Estimation of Commerce and Shopping

Use/Facility	Land in Acre			
	Projected Landuse	Existing Land	Add. Requirement	Future Landuse Consideration by the Planning Team
Commerce and Shopping	47.10	40.37	6.73	43.50
Total	**47.10**	**40.37**	**6.73**	**43.50**

Industry

According to approved planning standard, the total land for industries is estimated to be 107.04 acres where 40.96 acre is existing small scale industry. It requires 57.22 acre of manufacture and processing land by year 2031. Table 10.4 shows the details.

Table 10.4: Estimation of Land Requirement for Industries

Use/Facility	Land in Acre			
	Projected Landuse	Existing Land	Add. Requirement	Future Landuse Consideration by the Planning Team
Industrial	107.04	40.96	66.08	57.22
Total	**107.04**	**40.96**	**66.08**	**57.22**

Education and Research

Estimation of land according to standard indicates that there will be a land requirement of 67.08acres to accommodate educational facilities by the year 2031. If we deduct the already available 20.98 acres of existing land uses under various education facilities, there will be need of additional 38.33 acres of land for education facilities will be required.

Table 10.5: Estimation of Land Requirement for Education and Research

Use/Facility	Land in Acre			
	Projected Landuse	Existing Land	Add. Requirement	Future Landuse Consideration by the Planning Team
Education & Research	67.08	20.98	46.10	38.33
Total	**67.08**	**20.98**	**46.10**	**38.33**

Health Facilities

In future, as the population and density increases, demand for local health facilities other than Health centre will increase which currently use only 5.84 acre. So the Paurashava requires additional 13.28 acres of land for the Health centre/Maternity clinics in future.

Table 10.6: Estimation of Land Requirement for Health Facilities

Use/Facility	Land in Acre			
	Projected Landuse	Existing Land	Add. Requirement	Future Landuse Consideration by the Planning Team
Health Facilities	18.56	5.84	12.72	13.28
Total	**18.56**	**5.84**	**12.72**	**13.28**

Administration

In future, as the population and density increases, demand for local health facilities other than administrative activity will increase which currently use only 16.19 acres. So the Paurashava requires additional 16.71 acres of land for the administrative use in future.

Table 10.7: Estimation of Land Requirement for Administration

Use/Facility	Land in Acre			
	Projected Landuse	Existing Land	Add. Requirement	Future Landuse Consideration by the Planning Team
Governmental	20.00	16.19	3.81	16.71
Total	**20.00**	**16.19**	**3.81**	**16.71**

Community Facilities

For various community facilities, the total land requirement has been fixed at 14.20 acres. There are already exists only 9.15. Total 23.29 acre of land is also required for community and other services up to 2031.

Table 10.8: Estimation of Land Requirement for Community Facilities

Use/Facility	Land in Acre			
	Projected Landuse	Existing Land	Add. Requirement	Future Landuse Consideration by the Planning Team
Community Facilities	14.20	9.15	5.05	23.29
Total	**14.20**	**9.15**	**5.05**	**23.29**

Open Space/ Recreational Facilities

Field survey shows no public park or play field in the town, except play grounds in the premises of educational institutions. The total land required for various open space recreation facilities recommended by client stands at 77.02 acres. The facilities include, play field/ground, parks of various categories and stadium/sport complex.

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

Use/Facility	Land in Acre			
	Projected Landuse	Existing Land	Add. Requirement	Future Landuse Consideration by the Planning Team
Recreational Facilities	2.14	0.00	2.14	3.12
Open Space	97.05	131.73	-34.67	73.91
Total	**99.19**	**131.73**	**-32.53**	**77.02**

Utilities

A number of utility establishments are required in a town to run services properly. The consultant, according to approved standard, has earmarked 1.90 acres for water supply installations, like, pump stations and other establishments related to water supply. A dumping site is proposed to be developed over an area of 5.54 acres for final disposal of the solid waste. The total land requirement for utilities is 12.42 acres.

Table 10.10: Estimation of Land Requirement for Utilities

Use/Facility	Land in Acre			
	Projected Landuse	Existing Land	Add. Requirement	Future Landuse Consideration by the Planning Team
Utility Service Facilities	10.70	0.00	10.70	12.42
Total	**10.70**	**0.00**	**10.70**	**12.42**

Transport and Communication

Estimation of land according to standard indicates that there will be a land requirement of 5.35 acres to accommodate transport and communication facilities by the year 2031. If we deduct the already available 1.79 acres of existing land uses under this facilities, an additional 3.56 acres of land is required for this category land use. The planning team considered 9.25 acres of land for the future.

Table 10.11: Estimation of Land Requirement for Transport and Communication

Use/Facility	Land in Acre			
	Projected Landuse	Existing Land	Add. Requirement	Future Landuse Consideration by the Planning Team
Transport Facilities	5.35	1.79	3.56	9.25
Total	**5.35**	**1.79**	**3.56**	**9.25**

10.2 Land Use Proposals

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

10.2.1 Designation of Future Land Use

Designation of the future land uses in the Land use Plan is an important task of planning as it will ensure the compliance with the Structure Plan guidelines and provide the details of land use pattern along with transport and drainage network and utility lines. The existing uses and new proposals of land uses for future development have been identified and designated on the map for compliance by law. The land use categories with quantity of land required are based on the sectoral needs for now and in future. The implementation of the plan will require cooperation and collaboration of relevant authorities and agencies, and the Paurashava being the custodian of the Plan will safeguard the status of the Plan.

10.2.2 Land Use Zoning

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

10.2.2.1Types of Land Use Zoning

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

a) The height of building/structure,

b) The area of a land parcel that must be left vacant, and

c) The use of a buildings and land.

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

Area Zoning

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

Density Zoning

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

Height Zoning

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

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

10.2.2.2 Classification of Land Use Zoning

The following land use zone classification is recommended under the current Paurashava Master Plan.

Table 10.12: Proposed Land Use Categories for Urban Area Plan of Darshana Paurashava

SL. No.	Land use Category	Remarks	Area	%
01	Urban Residential Zone	Urban Residential area is a land use in which housing predominates. These include single family housing, multi-family residential, or mobile homes. Zoning for residential use may permit some services or work opportunities or may totally exclude business and industry. It may permit high density land use.	407.61	11.62
02	Rural Settlement	Rural settlement includes the low dense residential area which is scattered and rural in nature. It may permit only low density uses. Aiming to control the growth in this zone, less service and facilities will be provided.	234.96	6.70
03	Commercial Zone	The land used for commercial activities is considered as commercial land use. These activities include the buying and selling of goods and services in retail businesses, wholesale buying and selling, financial establishments, and wide variety of services that are broadly classified as "business". Even though these commercial activities use only a small amount of land, they are extremely important to a community's economy. Commercial land includes established markets and areas earmarked for markets.	43.50	1.24

SL. No.	Land use Category	Remarks	Area	%
04	Mixed Use Zone	Mixed land use refers to the area without a dominant land use (Residential, commercial, industrial etc.).	11.22	0.32
05	General Industrial Zone	Green and Orange A categories as per The Environment Conservation Rules, 1997	57.22	1.63
06	Heavy Industrial Zone	Other toxic and pollutions Industries (Orange B and Red categories as per The Environment Conservation Rules, 1997)	0.00	0.00
07	Government Office	All kinds of educational institutes like Primary/secondary/ other Schools/ Colleges etc. are mentioned to calculate the land use for education and research purpose.	16.71	0.48
08	Education & Research Zone	All kinds of educational institutes like Primary/secondary/ other Schools/ Colleges etc. are mentioned to calculate the land use for education and research purpose.	38.33	1.09
09	Agriculture 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.	1892.01	53.95
10	Waterbody	Equal or More than 0.25 acre and justification by the consultant and wet land will merge with water body	223.71	6.38
11	Open Space	Playground, Botanical Garden, Stadium, Zoo etc. (Facilities without or with	73.91	2.11
12	Recreational Facilities	Utility services include Overhead Tank ,Power Office/Control Room, Public Toilet, Sewerage Office, Waste Disposal ,Fire Service, Water Pump House ,Water Reservoir, Water Treatment Plant etc.	3.12	0.09
13	Circulation Network	Road and Rail communication	331.67	9.46
14	Transportation Facilities	Under transport and communication land use both transport and communication services are considered. This category includes airport, bus terminal/ stand, ferry ghat, filling station, garage, launch terminal, post office, passenger shed, telephone exchange, ticket counter, transport office etc.	9.25	0.26
15	Utility Services	Utility services include Overhead Tank ,Power Office/Control Room, Public Toilet, Sewerage Office, Waste Disposal, Fire Service, Water Pump House ,Water Reservoir, Water Treatment Plant etc.	12.42	0.35
16	Health Facilities	Utility services include Overhead Tank ,Power Office/Control Room, Public Toilet, Sewerage Office, Waste Disposal ,Fire Service, Water Pump House ,Water Reservoir, Water Treatment Plant etc.	13.28	0.38
17	Community Facilities	All community facilities including funeral places and other religious	23.29	0.66
18	Historical and Heritage Site	The entire mentionable historical and heritage site.	0.00	0.00
19	Restricted Area	A Restricted Area is an area where no one but certain people can enter. Here the areas which are not accessible for the general public except some high ranked personnel are considered as restricted area.	0.00	0.00
20	Overlay	If the consultant justify any area that should not be defined as other given definitions but the facility(s) may not be avoidable, they may use this category	0.00	0.00
21	Urban Deferred	Optional depending on the Paurashava and the Consultant's judgment	114.85	3.27
22	Forest	Designated Forest Area	0.00	0.00
23	Beach	Sea Beach	0.00	0.00

SL. No.	Land use Category	Remarks	Area	%
24	Miscellaneous	Any other categories which are not related to above 23 categories.	0.00	0.00
Grand Total			**3507.06**	**100.00**

In the sections below, the general definition of the use and description of associated permitted and conditionally permitted uses under each land use zone have been provided. The uses that are not listed here in any of the categories shall be treated as Restricted Use for the corresponding land use category and shall not be permitted only except unanimously decided otherwise by the appropriate authority. In such situations, the use shall get permission in the category of New Use. The following is a short description of recommended land use zones.

Urban Residential Zone

Present residential area of Darshana Paurashava is 9 persons per acre (ppa) gross density and 56 net density. As per the population projection in 2031 planning year gross density within will be 12 ppa and net density within the existing residential area will be 104 ppa. To ensure livable urban environment and efficiently provide civic facilities density of Darshana will be control through providing two type of residential area, namely urban residential zone and rural settlement. It is suggested that ppa of urban residential zone will be 50-100. In case of Darshana Paurashava, urban residential zone covers 407.61 (11.62%) acres of land delineated up to the year 2031, considering standard provided by LGED. It will encourage to dense residential development near the core area. Table A.1, Annexure- A and conditional permission will be given to a number of other land uses as specified on Table A.2, Annexure-A.

Rural Settlement

Darshana Paurashava has some rural characteristics. So in Urban Area Land use category for UTIDP Master Plan the residential settlements within the agricultural belt are categorized as rural settlements. These settlements have usually temporary type of structures. Total 64.96% existing land use is in agriculture practice and most of the settlement situated surrounding or within this agricultural land. So in a manner to control development in Darshana a portion of land declare as rural settlement. This settlement occupies 234.96 acre (6.70%) of land, which comprises more than 6.70% of the total land. The areas of rural settlement have some restrictions for non-agricultural development. Table A7, Annexure-A shows the permitted land use of rural settlement and Table A8, Annexure-A conditionally permitted use in this zone.

Map 10. 2: Land Use Proposal for Darshana Paurashava

Commercial Zone

The commercial zone is intended to provide locations, where commercial activities including retails and wholesale can be set up and function without creating hazards to surrounding land uses. This zone has an area of 43.50 acre (1.24%) designated up to 2031 and zone will allow commercial uses as listed in Table A.5, Annexure- A, and conditional uses as listed in Table A.6, Annexure- A. Again, the following table shows the new land proposal for commercial in Darshana Paurashava.

Table 10.13: New Land Proposal for Commercial Activity Area

Ward No.	Type of Facilities	DP ID	Area in Acre	Mouza Name	Plot No.	Phase-wise development		
						First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year
01	Neighborhood Market	NM-01	0.24	Dakshin Chandpur (075_04)	1968, 1969, 1970	Land acquisition and establish	Provide more facilities	Readjust with new facilities if required
02	Neighborhood Market	NM-02	0.13	Dakshin Chandpur (075_05)	2385	Land acquisition and establish		Continue the development
03	Central Market	CM-01	1.81	Dakshin Chandpur (075_16)	6270	Land acquisition and establish	Provide more facilities	Readjust with new facilities if required
	Neighborhood Market	NM-03	2.09	Dakshin Chandpur (075_12)	4799, 4800	Land acquisition and establish		Continue the development
04	Neighborhood Market	NM-04	2.66	Dakshin Chandpur (075_01)	96-99	Land acquisition and establish	Provide more facilities	Readjust with new facilities if required
05	Neighborhood Market	NM-05	0.90	Loknathpur (073_06)	9652, 9656-9659, 9672	Land acquisition and establish	Provide more facilities	Readjust with new facilities if required
06	Neighborhood Market	NM-06	0.79	Dakshin Ramnagar (076_02)	1015, 1016, 1032, 1033, 1038, 1039	Land acquisition and establish	Provide more facilities	Readjust with new facilities if required
08	Neighborhood Market	NM-08	1.51	Joynagar (078_01)	164, 701	Land acquisition and establish	Provide more facilities	Readjust with new facilities if required
09	Neighborhood Market	NM-09	0.54	Bhabanipur (024_01)	6, 10	Land acquisition and establish	Provide more facilities	Readjust with new facilities if required
				Shyampur (077_02)	1584, 1591, 1592, 1593			
Total : 10.69 Acres of New Land Proposal for Commercial Activity Area								

Mixed Use Zone

Mixed use zones have been recommended to allow some flexibility in development. In a small town like Darshana, as the trend shows, an exclusive commercial land use is unlikely to function. Additionally, mixture of land uses will allow flexibility of development, instead of restricting .development. Total area for mixed uses has been put to 11.22 acre

(0.32%) including both, existing and proposed land uses. This zone will allow residential structures together with commercial uses as listed in Table A.11, Annexure-A, and conditional uses as listed in Table A.12, Annexure- A.

Table 10.14: New Land Proposal for Mixed Use Area

Ward No.	Type of Facilities	DP ID	Area in Acre	Mouza Name	Plot No.	Phase-wise development		
						First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year
01	Ward Center	WC-01	0.61	Dakshin Chandpur (075_04)	1976	Land acquisition and establish	Provide more facilities	Readjust with new facilities if required
02	Ward Center	WC-02	0.64	Dakshin Chandpur (075_05)	2306			
03	Ward Center	WC-03	0.62	Dakshin Chandpur (075_09)	3703			
04	Ward Center	WC-04	0.75	Dakshin Chandpur (075_01)	80			
05	Ward Center	WC-05	0.66	Loknathpur (073_06)	9660			
06	Ward Center	WC-06	0.49	Dakshin Ramnagar (076_02)	667			
07	Ward Center	WC-07	0.27	Dakshin Chandpur (075_17)	7048			
08	Ward Center	WC-08	1.69	Joynagar (078_01)	158			
09	Ward Center	WC-09	1.54	Bhabanipur (024_01)	79, 80			
Total : 7.25 Acres of New Land Proposal for Mixed Use Area								

Ward/Civic center will treated as the hub of local civic functions and it will provide the following facilities as per the requirements of the locality:

- Counselor office
- Community Center
- Community Clinic
- Post Box
- Police Box
- Small shops
- Club and
- Office of Utility Services

General Industrial Zone

General industrial area is intended to provide locations, where general industrial, manufacturing and processing establishments can be set up and function without creating hazards to surrounding land uses. As a small urban center, it is unlikely that any major industrial concern will find its place here in immediate future. This zone has an area of

57.22 acre (1.63%) with general industries designated up to 2031. Availability of land, road way and railway communication and easy accessibility to the market are the prime concern to choice the location of general industrial area. In this zone, a complex line of industrial and supporting non-industrial land uses will be permitted as per Table A.3, Annexure- A and conditional permission will be given to a number of other land uses as specified on Table A.4, Annexure- A.

Table 10.15: New Land Proposal for General Industrial Zone

Ward No.	Type of Facilities	DP ID	Area in Acre	Mouza Name	Plot No.	Phase-wise development		
						First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year
05	Agro based Industry	AgI-01	3.43	Loknathpur (073_06)	9378-9391, 9393	Land acquisition and establish	Provide more facilities	Readjust with new facilities if required
06	Agro based Industry	AgI-02	22.10	Dakshin Ramnagar (076_01)	186-197	Land acquisition and establish		Continue the development
				Dakshin Ramnagar (076_02)	381-385, 391-393, 397-455, 457-462, 535-549			
08	Agro based Industry	AgI-03	4.22	Joynagar (078_01)	380-386, 396, 403-407, 661	Land acquisition and establish	Provide more facilities	Readjust with new facilities if required
Total : 7.25 Acres of New Land Proposal for General Industrial Zone								

Governmental Services

Administrative zone covers all kinds of government and non-government offices in the town. The permitted use in this zone is presented in Table A.15, Annexure- A and conditional uses as listed in Table A.16, Annexure- A. The total area under this use has been estimated as 16.71 acres (0.48%).

Table 10.16: New Land Proposal for Governmental Services

Ward No.	Type of Facilities	DP ID	Area in Acre	Mouza Name	Plot No.	Phase-wise development		
						First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year
05	Upazila Parishad	UP	2.11	Dakshin Chandpur (075_13)	5001, 5002	Land acquisition and establish	Provide more facilities	Readjust with new facilities if required
Total : 2.11 Acres of New Land Proposal for General Industrial Zone								

Education and Research Zone

Education and Research Zone refers to mainly education, health and other social service facilities as listed in Table A.13, Annexure-A, and conditional uses as listed in Table A.14, Annexure-A. The total area under this use has been proposed 32.82 acres of land.

Table 10.17: New Land Proposal for Education and Research Zone

Ward No.	Type of Facilities	DP ID	Area in Acre	Mouza Name	Plot No.	Phase-wise development		
						First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year
02	Primary	PS-01	1.67	Akondobaria	59, 60	Land	Provide	Readjust

Ward No.	Type of Facilities	DP ID	Area in Acre	Mouza Name	Plot No.	Phase-wise development		
						First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year
	School			(023_02) Dakshin Chandpur (075_05)	2371	acquisition and establish	more facilities	with new facilities if required
02	Secondary School	SS-01	4.68	Akondobaria (023_02)	61, 65			
				Dakshin Chandpur (075_05)	2369, 2370			
06	Primary School	PS-02	2.05	Dakshin Ramnagar (076_02),	671, 672, 674, 675, 687, 690, 691, 693			
06	Vocational Institute	VI	7.66	Dakshin Ramnagar (076_02)	499-503, 507-518, 741, 742, 744-758, 765, 766, 1587			
Total : 16.06 Acres of New Land Proposal for Education and Research Zone								

Agriculture Area/ Agricultural Zone

The Paurashava has a vast area of agricultural land that demands formation of a separate zone of, agriculture. Agriculture zone is primarily meant for agriculture; land uses related to it and land uses that support it. Details of land uses are presented in Table A.17, Annexure- A and conditional uses as listed in Table A.18, Annexure- A. The total area under this use has been estimated as 1892.01 acres (53.95%) that include existing and proposed land uses.

Water Body and Retention Area

The planning area has 223.71 acre (6.38%) of water body within the Paurashava. 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 0.25 acre will be preserved as the water retention ponds. There will be permitted uses in this zone as stated in Table A.23, Annexure- A and some other uses may conditionally be permitted as stated in Table-A.24, Annexure- A

Open Space

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 estimated for this zone stands at 73.91 acres (2.11%). The details of permitted and conditional permits have been presented in Table A.19 Annexure- A**,** and conditional uses as listed in Table-A.20**,** Annexure- A. Table 10.7 shows the detail of new land proposal for recreational land proposal in Darshana Paurashava.

Table 10.18: New Land Proposal for Open Space

Ward No.	Type of Facilities	DP ID	Area in Acre	Mouza Name	Plot No.	Phase-wise development		
						First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year
01	Stadium	S-01	15.60	Dakshin Chandpur (075_06)	2825, 2828-2832, 2834, 2835, 2838-2843, 99999	Land acquisition and establishment	Maintaining and improve facilities	
				Dakshin Chandpur (075_07)	3234, 3235, 3263			
02	Playfield	PF-01	1.02	Shyampur (077_02)	1385, 1387	Land acquisition and establish	Maintaining and improve facilities within the park.	
03	Neighborhood Park	NP-02	4.03	Dakshin Chandpur (075_08),	3407,			
				Dakshin Chandpur (075_09),	3706, 3707, 3712,			
				Dakshin Chandpur (075_10),	4026, 99999			
03	Neighborhood Park	NP-03	0.55	Dakshin Chandpur (075_10)	4023			
03	Shishu Park	SP	0.85	Shyampur (077_02)	1281-1283	Land acquisition and establish	Maintaining and improve facilities within the park.	
04	Playfield	PF-04	2.65	Dakshin Chandpur (075_01)	47, 48, 55, 58	Land acquisition and establish	Maintaining the playground and improve facilities	
05	Central Park	CP-01	7.72	Dakshin Chandpur (075_13)	5001-5003, 5006-5013	Land acquisition and establish	Maintaining and improve facilities within the park.	
06	Central Park	CP-01	19.14	Dakshin Chandpur (075_14)	5501, 5503			
				Dakshin Ramnagar (076_02)	442-454, 488-496			
	Neighborhood Park	NP-01	1.29	Dakshin Ramnagar (076_02)	1479-1483, 1536			
	Park	P-01	5.41	Dakshin Chandpur (075_17)	7006			
				Dakshin Ramnagar (076_02)	1545			
	Park	P-03	0.68	Dakshin Ramnagar (076_02)	1460, 1462-1465, 1473, 1536			
06	Park	P-04	4.31	Dakshin Chandpur (075_17)	7004, 7005	Land acquisition and establish	Maintaining and improve facilities within the park.	
				Dakshin Ramnagar (076_02)	1504,1510, 1513, 1514, 1517-1533			
	Playfield	PF-02	1.65	Dakshin	7006-	Land	Maintaining the	

Ward No.	Type of Facilities	DP ID	Area in Acre	Mouza Name	Plot No.	Phase-wise development		
						First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year
				Chandpur (075_17)	7009,7054	acquisition and establish	playground and improve facilities	
	Playfield	PF-03	1.61	Dakshin Ramnagar (076_02)	629,630, 676,677, 678			
08	Park	P-02	0.35	Dakshin Chandpur (075_17)	7006	Land acquisition and establish	Maintaining and improve facilities within the park.	
Total : 51.91 Acres of New Land Proposal for Open Space								

Recreational Facilities

Total 3.12 acres land which covers 0.09% of total land of Darshana Paurashava will use for providing recreational facilities.

Table 10.19: New Land Proposal for Recreational Facilities

Ward No.	Type of Facilities	DP ID	Area in Acre	Mouza Name	Plot No.	Phase-wise development		
						First Phase (1st to 5th yr)	**Second Phase (6th to 10th yr)**	**Beyond 10th year**
05	Auditoriu m	UP	1.04	Dakshin Chandpur (075_11)	4413	Land acquisition and establish	Provide more facilities	Readjust with new facilities if required
				Dakshin Chandpur (075_13)	5080			
Total : 1.04 Acres of New Land Proposal for Recreational Facilities								

Circulation Network

The road network is mainly considered as circulation network. National highway, pucca/ semi- pucca/ katcha road, footpath, flyover, over- bridge, underpass, bridge, culvert, railway, railway bridge all are include in circulation network. Total 331.67 acre land which covers 9.46% of total planning area. At present 86.19 acre of land uses for circulation network in this Paurashava. Annexure-C shows the planning schedule of Circulation Network in Darshana Paurashava.

Transportation Facilities

Ttransportation facilities incorporate transport and communication services. For an example airport, bus terminal/ stand, ferry ghat, filling station, garage, launch terminal, post office, passenger shed, telephone exchange, ticket counter, transport office etc. Total 9.25 acres land (0.26% of total area) will be used for this purpose. The following table shows the new transportation facilities for Darshana Paurashava.

Table 10.20: New Land Proposal for Transportation Facilities

Ward No.	Type of Facilities	DP ID	Area in Acre	Mouza Name	Plot No.	Phase-wise development		
						First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year
01	Tempo Stand	TS-01	0.15	Dakshin Chandpur (075_06)	2867	Land acquisition and establish	Provide more facilities	Readjust with new facilities if required
02	Bus Terminal	BT-01	1.94	Dakshin Chandpur (075_08)	3483, 3486-3488			
				Shyampur (077_02)	1454,1455, 1459-1461			
	Tempo Stand	TS-02	0.20	Dakshin Chandpur (075_05)	2322,2323			
04	Tempo Stand	TS-03	0.38	Dakshin Chandpur (075_07)	3205			
	Truck Terminal	TT	2.51	Dudhpatila (074_02)	2377,2378 2387-2391,3129			
05	Tempo Stand	TS-04	0.40	Loknathpur (073_06)	9427 9469, 9472			
06	Tempo Stand	TS-05	0.22	Dakshin Ramnagar (076_02)	623			
07	Tempo Stand	TS-06	0.25	Dakshin Chandpur (075_16)	6627			
08	Tempo Stand	TS-07	0.33	**Joynagar (078_01)**	437			
Total : 6.37 Acres of New Land Proposal for Transportation Facilities								

Utility Services

It incorporated all utilities and service facilities except the health service. For an example water treatment plant, water reservoir, water pump house, public toilet, fire service, waste disposal, sewerage office, power office or control room and overhead tank. In survey stage this type land use was define as service activity. Total 12.42 acres land which covers 0.35% total area of Darshana Paurashava. Total one Surface Water Treatment Plant, one Waste Dumping Ground, one Effluent Treatment Plant for industrial waste water treatment and seven Waste Transfer Stations will be newly established to fulfill the desired need of Darshana Paurashava. The next table shows the new land proposal for utility services in Darshana Paurashava.

Table 10.21: New Land Proposal for Utility Services

Ward No.	Type of Facilities	DP ID	Area in Acre	Mouza Name	Plot No.	Phase-wise development		
						First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year
01	Waste Transfer Center	WTC-01	0.16	Dakshin Chandpur (075_03)	1557	Land acquisition and establish	Provide more facilities	Readjust with new facilities if required
02	Waste Transfer Center	WTC-02	0.25	Dakshin Chandpur (075_05)	2370			

	Water Pump	WP-01	0.84	Dakshin Chandpur (075_07)	3238			
03	Deep Tubewell	DT-01	0.21	Shyampur (077_02)	1271			
	Waste Transfer Center	WTC-03	0.30	Shyampur (077_02)	1287			
04	Waste Transfer Center	WTC-04	0.85	Dakshin Chandpur (075_01)	63			
05	Waste Transfer Center	WTC-05	0.53	Loknathpur (073_06)	9702			
06	Surface Water Treatment Plant	SWTP-01	1.37	Dakshin Chandpur (075_17)	7006			
				Dakshin Ramnagar (076_02)	1528, 1529, 1534			
	Waste Transfer Center	WTC-06	0.15	Dakshin Chandpur (075_14)	5544			
	Water Pump	WP-02	0.49	Dakshin Ramnagar (076_02)	1588			
07	Waste Transfer Center	WTC-07	0.36	Dakshin Chandpur (075_17)	7032			
08	Waste Transfer Center	WTC-08	0.36	Shyampur (077_01)	148			
	Waste Water Treatment Plant	WWTP	0.58	Shyampur (077_01)	334, 368, 371,			
09	Dumping Site	DS-01	5.54	Bhabanipur (024_01)	146, 154, 156-158, 196, 198-201,203			
	Waste Transfer Center	WTC-09	0.44	Shyampur (077_02)	1110			
Total : 12.42 Acres of New Land Proposal for Utility Services								

Health Services

Total 13.28 acres land will use for health services in Darshana Paurashava, which covers 0.38% total land of planning area. Community based health center and maternity clinic will be establish in each ward center.

Table 10.22: New Land Proposal for Health Services

Ward No.	Type of Facilities	DP ID	Area in Acre	Mouza Name	Plot No.	Phase-wise development		
						First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year
01	Maternity Clinic	MC-01	0.56	Dakshin Chandpur (075_04)	1967-1971	Land acquisition and establish	Provide more facilities	Readjust with new facilities if required
02	Maternity Clinic	MC-02	1.20	Shyampur (077_02)	1369			

04	Maternity Clinic	MC-03	1.20	Dakshin Chandpur (075_01)	100			
05	Maternity Clinic	MC-04	0.87	Loknathpur (073_06)	9394-9397			
06	General Hospital	GH-01	5.88	Dakshin Ramnagar (076_02)	1433,1434, 1439,1440, 1442-1455,1465-1470,1473			
08	Maternity Clinic	MC-05	0.78	Joynagar (078_01)	159			
09	Maternity Clinic	MC-06	2.78	Bhabanipur (024_01)	74-76,78			
Total : 13.28 Acres of New Land Proposal for Health Services								

Community Facilities

Community services include community centre, club house, fire service, health facilities, religious centres, other community services etc. In additionally all funeral places and other religious uses incorporated in this category. Total 23.29 acres land which covers 0.66% of total planning area will be used for this purpose.

Table 10.23: New Land Proposal for Community Facilities

Ward No.	Type of Facilities	DP ID	Area in Acre	Mouza Name	Plot No.	Phase-wise development		
						First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year
02	Slaughter House	SH-01	0.18	Dakshin Chandpur (075_05)	2478	Land acquisition and establish	Provide more facilities	Readjust with new facilities if required
04	Central Eidgah	CE	0.88	Dakshin Chandpur (075_11)	4432		Land acquisition and establish	Provide more facilities
	Central Graveyard	CG	4.94	Dakshin Chandpur (075_11)	4401-4407, 4451,4453, 4454		Land acquisition and establish	Provide more facilities
05	Slaughter House	SH-02	0.18	Loknathpur (073_06)	9655,9672, 9673	Land acquisition and establish	Provide more facilities	Readjust with new facilities if required
06	Graveyard	GY	3.21	Dakshin Ramnagar (076_02)	1119-1123, 1133-1135, 1137		Land acquisition and establish	Provide more facilities
	Slaughter House	SH-03	0.33	Dakshin Ramnagar (076_02)	1458	Land acquisition and establish	Provide more facilities	Readjust with new facilities if required
08	Central Cremation	CC	0.37	Shyampur (077_01)	373		Land acquisition and establish	Provide more facilities
Total : 13.28 Acres of New Land Proposal for Community Facilities								

Urban Deferred

The Urban Deferred refers to lands lying outside of the urban growth boundary and identified as Urban Reserve. The total area under this use has been proposed as 153.75 acres (4.38%) that include existing and proposed land uses. The following are permitted *Uses* within the Urban Reserve (UR) *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.

10.2.3 Land Use Permission

One of the major purposes of land use zoning is to restrict an area for a particular use meant for the zone. This is intended to maintain a disciplined land use distribution and development. But there are many uses other than the use meant for the zone that are considered permitted in the zone. Sometimes such applications are accommodated to support or assist the area, with conditions imposed in giving land use permit, sometimes strict restrictions are maintained by refusal of applications. Detailed lists of permissible and conditionally permissible uses have been provided in Annexure- 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 permit procedures mentioned in Annexure- A are officially adopted through incorporation in the Building Construction Rules under Section 18 of the East Bengal Building Construction Act 1952.

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

a. Computerization of the Permit procedure

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

b. Land use Permit

Paurashava has the legal responsibility to develop plan for the wellbeing of the citizens within its jurisdiction and implement the same by channelizing all developments through appropriate control mechanisms. Issue Plan Permit to private plot owner/s or developers working with the consent of the owner/s that comply the set regulations constitute the most

part of development control activity conducted by Paurashava. In the following paragraphs the structures of the proposed land use control Authority has been elaborated considering that Paurashava shall be strengthened adequately and in that situation planner's ranks would be as under (Proposed organogram of BIP) was given in Section 8.1.3.2, Chapter 8, and Part A of this report.

Structure of Land use Permit Authority

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

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

Land use Permit Planner

Land use Permit will be issued with the signature of Land use Permit Planner [LPP] appointed by the Mayor, Paurashava from among the Planners not below the rank of Assistant Town Planner. Land use Permit issued by the LPP/s shall be considered null and void, even if signed, unless the use sought for, is in conformity with the land use options of the respective zone that contains the plot.

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

Land use Permit Committee

At the mid-level Land use Permit Committee [LPC] shall function for effective control of LPPs [both main stream and Paurashava] and to clarify legal provisions regarding land use permit decisions on a case to case basis. The activities of LPC will include

- Clarify the legal provisions for the LPPs as per their request.
- Make recommendations in case of New Use or Conditional Use and send it to the Paurashava Esthayee Committee for decision.

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

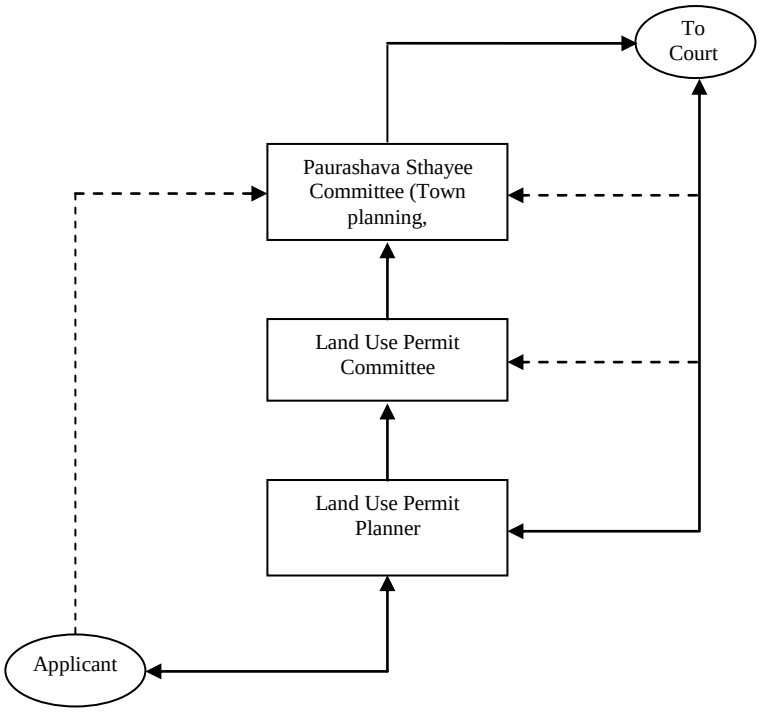

Figure 10.1: Structure of Land use Permit Authority Showing Linkages

Paurashava Esthayee Committee (Town Planning, Public services and development)

According to the Local Government (Paurashava) Act, 2009, section 64 Paurashava Esthayee Committee (Town Planning, Public services and development) shall be the supreme authority regarding Land Use Permit within Paurashava jurisdiction. This Committee will have five Members. The committee will form according to the section 55 of Local Government (Paurashava) Act, 2009.

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

The Committee shall decide whether the proposed New Uses should be permitted or denied; in case of Conditional Permit impose the conditions to comply; accept variances for specific cases and so forth. Besides, the Committee shall decide strict conditions to nonconforming uses and the action against its violation if it so happens.

Land use Permit Option:

For a plot seeking land use permit there can be three possible options:

- Land use permitted
- Land use conditionally permitted, or
- Land use restricted

Land use Permitted

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

Land use Permitted with Condition

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

Land Use Restricted

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

Land use Permit Procedures

Land use permit procedure is a product of a number of interlinking activities. The whole process has been shown in a flow diagram for clearer understanding in Figure 10.2.

The procedure is commenced with the submission of formal application by the applicant to the Mayor of Paurashava. The applicant must submit along with other information and documents a mouza map showing his plot including plot no, mouza name etc. The concerned official designated as Land use Permit Planner (LPP), will then check the compliance of the land use desired by the applicant with the land use zone containing his plot and the uses permitted therein.

Four situations may be possible:

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

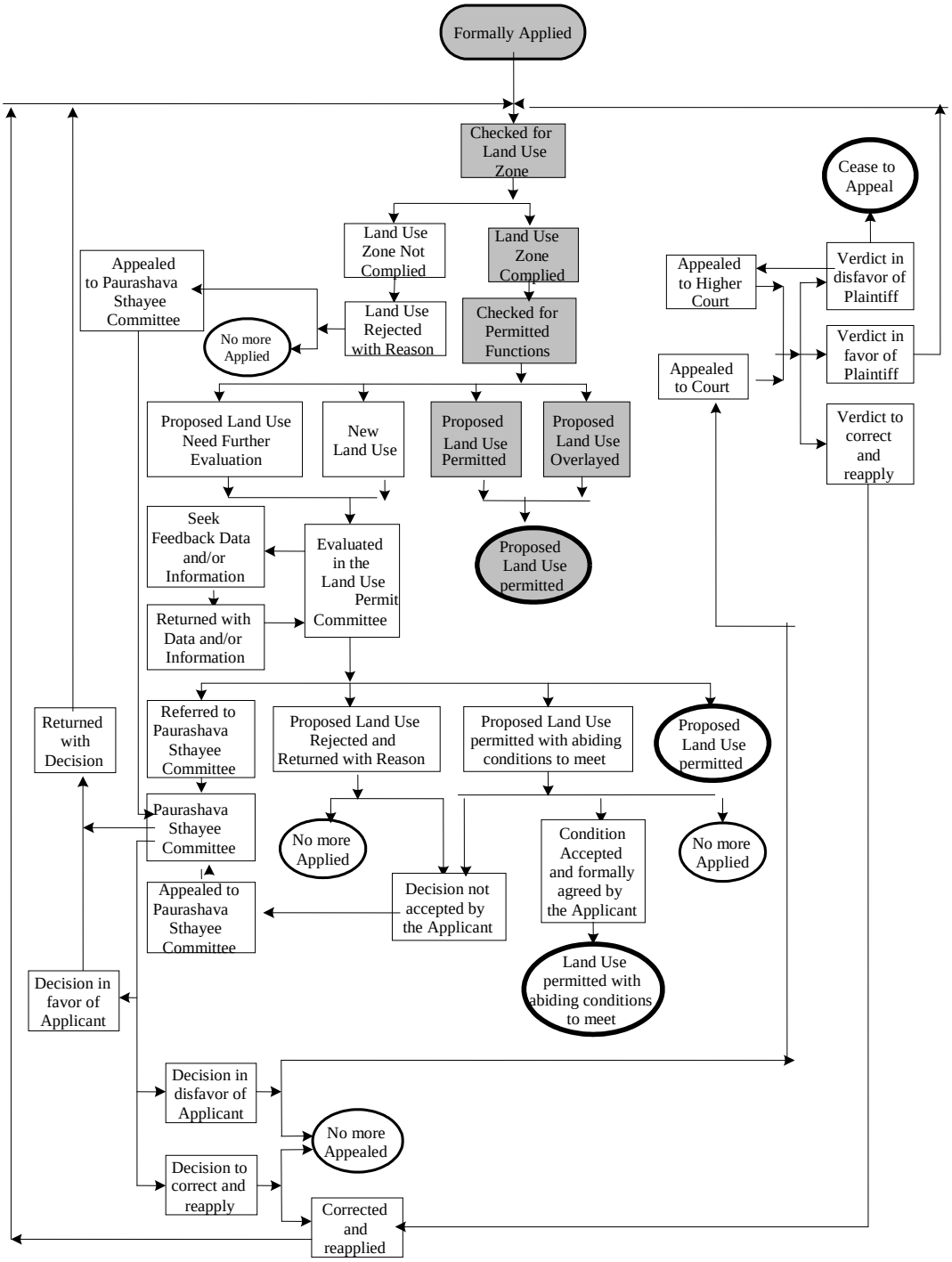

Figure 10.1: Flow Diagram Showing Activity Linkage of Plan Permit Procedure

If the desired use is listed as Permitted or Overlaid then it will be permitted without any question. If the desired use is listed as Conditionally Permitted the LPP would refer it to the LPC for further action.

In case of desired use not found in the permitted or conditionally permitted lists of the zone, the LPP shall reject the desired land use as it is not allowed in the zone. At this stage if the rejection decision taken by the LPP is not satisfactory to the applicant, he/she can appeal to the Paurashava Esthayee Committee. If the decision of the Committee goes

in favor of the applicant, LPP shall then issue the permit. The Committee may also ask the applicant to make some modifications to make his/her claim appropriate for approval. The applicant may comply accordingly and apply afresh. If the applicant is not satisfied with the decision of the Committee he/she may go to the court for decision.

If the LPP is convinced that the desired use should be allowed for the greater interest of the people and therefore, deserves to be considered under New Use category, he may recommend it to the LPC furnishing reasons in favor. The LPC if convinced by the reasoning will send the case to the Committee with recommendation to permit desired land use in the New Use category. Following necessary study and investigation if the Committee is also convinced about permitting the use as recommended by the LPC, they may decide so and authorize the LPP to issue permit for the desired land use in the New Use category.

10.3 Plan Implementation Strategies

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

10.3.1 Land Development Regulations to implement the Land Use Plan

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

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

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

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

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

b. Building Permission and Construction Approval

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

c. Building Permission in Proposed Development Areas

The Master Plan proposes a number of development projects. Many of the lands under these development projects have private ownership. No development in these lands by their owners will be allowed. They will remain in the present form till they are taken over by the respective authority for development or the development project is abandoned.

d. Parking in Commercial and Mixed Use Areas

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

f. Rules for Realization of Betterment Fee

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

g. Planning Rules for Real Estate Companies

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

However, any control imposed on the housing companies must be imbued with a positive approach, so that it does not affect the housing promotion activities of the private sector.

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

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

h. Minimum Road Width

Building Construction Rules, 1996, should be amended in the following way by incorporating the minimum road width standard.

To ease future traffic movement, it is necessary to keep provision for wider roads in the present plan. It is an uphill task to widen roads after development has taken place along the road. So it is wiser to reserve wider right of way for new roads now. Building Construction Rules, 1996 has determined the minimum road width as 12 ft. or 3.65 meter for roads in general and approximately 10 ft. for private roads. The consultants feel that this standard is not enough in view of future increase in population density and traffic. For safeguarding and easing future traffic movement the consultants have set the minimum width for any road for common use as 20 ft. or 6 meter and 16 ft. or 4.77 meter for private roads. However, in the built up areas, where development has already blocked the scope for developing such wide roads, the consultant recommends the minimum road width provisions of BC Rules, 1996. The new road width provision will be applicable in new areas. In the areas, where there already exist roads of less than 20 ft., the land owners on either side of the road will equally share the space needed to increase the road width to 20 ft. The land owners must leave the space vacant for taking it over by the Paurashava for widening of the road at some later date. No proposal for construction should be permitted on the vacant space reserved for road widening though the land will remain under its current ownership till it is taken over by the authority. In the light of the above recommendations, necessary amendment will have to be brought in the BC Rules, 1996 applicable to the secondary and small towns only.

i. Low Land, Pond and Drainage Path

No low land that retains water for certain period of the year can be filled up and no obstruction to natural or manmade drainage system shall be allowed. Prior permission of Darshana Paurashava will be required for filling up of any low lands. The Paurashava shall accord such permission based on prevailing laws. All ponds should not be allowed to be filled up as they are a good source of urban water supply as well as serve as open space. As per the Playfield, Open space, Park and Natural water reservoir Playfield, Open space,

Park and Natural water reservoir Conservation Act 2000, the use of these water bodies cannot be changed without prior permission of the authority.

j. Security Areas - Cantonment, BDR, Police Stations

BDR, Police, etc. areas have to be safe guarded from any possible incompatible development.

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

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

10.3.2 Implementation, Monitoring and Evaluation of the Land Use Plan

Monitoring and evaluation is a very important part of plan implementation. Monitoring helps check if the plan is being implemented properly. It also measures the level of implementation of the plan. If the plan implementation is not on track, corrective measures can be taken to put the execution on track. After expiry of any plan, evaluation is made about the errors and omissions. Such evaluation helps take corrective measures in the next plan. Such monitoring and evaluation must be carried out from within the Paurashava. But Darshana Paurashava is not well equipped with sufficient manpower to make such evaluation. Monitoring and evaluation of a plan is essentially, the responsibility of qualified and experienced planners. As there is no planner in the Paurashava, its monitoring of plan implementation will be seriously affected. However, plan evaluation can be accomplished by means of out sourcing.

Updating of Plans

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

CHAPTER 11

TRANSPORTATION AND TRAFFIC MANAGEMENT PLAN

11.1 Introduction

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

11.1.1 Approach and Methodology

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

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

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

Bus and tempo fleet data were collected from local transport owners' offices like, Bus Owners' Association, Tempo Owners' Association. They also provided information about

routes, trips and movement data. Information about bus station and tempo station were collected from the respective owners' association and the Paurashava/District Administration. Year wise data of non-motorized traffic were collected from the Darshana Paurashava, where these vehicles are registered.

Data on road pattern and condition of roads with their problems and road width were collected from the physical feature survey and verified through field visit. Data were also collected from socio-economic survey of the households. Information on road ownership was collected from the Paurashava, LGED and RHD. The same sources also provided information about future road projects in and around the Paurashava. Information about traffic conflict and accident were collected from the field and from Thana (police station). Mapping of major roads has been done using physical feature survey data and by thorough reconnaissance survey of roads.

11.2 Existing Conditions of Transportation Facilities

This section describes existing transportation facilities namely roadway characteristics, modal share of vehicular traffic, level of service which incorporate degree of traffic congestion and delay and analysis existing deficiencies in transport sector of Darshana Paurashava.

11.2.1 Roadway Characteristics and Functional Classification

11.2.1.1 Major Road Network

The road network of Darshana Paurashava was developed and established according to the growing demand, following the development pattern and meeting short term need. Thus, most of the cases road network is established after the development of infrastructure resulting poor layout of road network, narrow road, pedestrian problem, utility services problem, emergency services problem etc. Intra-zonal movement is mostly carried out through bicycle, rickshaw, rickshaw-van, motorcycle, Auto Rickshaws. Mujib Nagar road and Chuadanga Road are the main road network for communication with other districts. Other major roads are

- Paurashava Road
- Darshana Rail Station Road
- Halt Station Road

Two major road intersections within Darshana Paurashava area are:

- Bus Stand Intersection
- Puratan Bazar More Intersection

11.2.1.2 Roads in Darshana Paurashava

According to the physical feature survey, the total length of roads in the Paurashava area is 91.90 km. There are katcha, semi-pucca and pucca roads within the Paurashava area. Table 11.1 shows the picture of road network of the Paurashava.

Table 11.1: Road network in Darshana Paurashava

Type of Road	Length (km)	Percentage (%)
Pucca	51.53	56.07
Semi-pucca	33.36	36.30
Katcha	7.02	7.64
Total	91.90	100.00

Source: Paurashava, 2009

Roads of the Roads and Highways Department

In this Paurashava, there remains no road maintained by the Roads and Highways Department (RHD).

Roads of Local Government Engineering Department (LGED)

LGED maintains More than 4.8 km of roads within the Darshana Paurashava. These are Mujibnagar Road, Darshana Rail Station Road etc.

Important Local Roads

The Paurashava has so far developed about 91.90 km of pucca, semi-pucca and katcha roads within its area with different widths. The Paurashava is also responsible for maintaining these roads. The authority has named many of these roads after renowned local personalities.

11.2.2 Modal Share of vehicular traffic

Darshana Paurashava is a small town. Non-Motorized Transport (NMT) is currently dominating in the town's internal traffic. The traffic volume survey at Bus Stand Mor intersection presents that almost 78% traffic is NMT. The detailed scenario was described in Chapter 5, Section 5.3.5 of Darshana Survey Report.

11.2.3 Intensity of Traffic Volume

In order to investigate the nature of traffic movement and assess the volume of traffic the consultant has identified Bus Stand Mor intersection and Puratan Bazar Mor intersection are the major road intersections with in the Project Area for conducting the traffic volume survey. The consultant has designed a standard format for traffic volume survey (approved by LGED). Traffic volume survey shows more than 400 traffic move through the first intersection daily. Among these 300 NMT and 80 are MT vehicles. But, on a hat day, the traffic volume is more than 400

11.2.4 Level of Service: Degree of Traffic Congestion and Delay

11.2.4.1Traffic Congestion

Traffic conflict is common and frequent in towns, where there is combination of transport vehicles-slow and fast-in the streets. Major conflicts occur in the places, where intensity of traffic movement is high, on street parking is made and on street loading or unloading of goods are taken place. The consultant studied the traffic movement all over the town and has identified two main points where the Traffic Conflict is the highest. These are located at Bus Stand mor and Puratan Bazar road. At these points, the slow moving vehicles like,

rickshaws and vans come in conflict with motor vehicles, creating traffic congestion. As the number of slow moving vehicles is higher the conflicts are usually frequent.

11.2.4.2 Delay

The delays occur due to stoppage are 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 Bus Stand mor intersection and Puratan Bazar mor intersection. In addition to stop delays, the delays in Darshana town is caused by the interaction of various factors such as congestion, inadequacy of carriageway widths, mixed traffic conditions, parked vehicles and heavy pedestrian flow and such delays are called congestion delays or operational delays and are rather difficult to be measured precisely. It is observed that, peak period takes on average 10-15% excess time than off-peak period in Darshana Paurashava due to congestion, narrow road and improper design of roads.

11.2.5 Facilities for Pedestrians

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

11.2.6 Analysis of Existing Deficiencies

11.2.6.1 Roadway capacity Deficiencies

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

Narrow Road Width

Narrow width of roads and poor maintenance has marked by most respondents as major road problems in the town. About 12.1% 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, most of the households suggested (66.1%) increasing and widening existing road.

11.2.6.2 Operation, Safety, Signal and other Deficiencies

Like any other Upazila town, Darshana Paurashava has no traffic management system. There is no traffic point and traffic island including road dividers and signal posts. There is also no traffic police. So the operation of traffic and road safety is yet to become an important traffic issue.

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

11.2.7.1 Railway Network

There is Rail way in Darshana Paurashava. People can easily travel longer distance with comfortable journey by train with broad gauge. The route as like as, from Darshana

junction to south (Darshana junction- Benapole- Jessore- Khulna) and at North-West direction (Darshana- Chanpai Nawabgang).

11.2.7.2 Waterway Network

There are no any mentionable waterway networks at Darshana Paurashava. There is a river named Mathavanga River and Isshwar Chandra khal in Darshana Paurashava. But it is not used as a regular water way network.

11.2.7.3 Air Communication

If the residents of Darshana want to avail the airways facility they have to go to Jessore City.

11.3 Future Projections

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

11.3.1 Travel Demand Forecasting for Next 20 Years

Road is one of the most critical areas of the current planning project under UTIDP. The main problem of present road network in the Paurashavas is that there is no systematic planning of the roads, whether highway or local roads. There is no logical links of roads and no plan to link the important activity areas where mobility is high. The present level of transport infrastructure at the Upazila Town in Bangladesh is satisfactory. Reviewing different previous planning proposals in Bangladesh and other similar countries and after discussions with experts and LGED officials of this project a set of standard for basic infrastructure and services at Upazila level towns has been finalized. Accordingly different standards have been suggested for different types of Paurashava roads at Darshana, which are as follows:

Table 11.2: Geometric Design Standards of Roads Proposed by LGED

Road Type	Right of Way (ROW)
a) Primary Road	60 feet – 150 feet
b) Secondary Road	40 feet
c) Tertiary	30 feet
d) Local Road	20 feet

Source: UTIDP, LGED.

Darshana is a small town with a very low volume of internal and external traffic movements. So consultants have established a road hierarchy based on the functional area within the Paurashava and as well as the external and internal linkage. This hierarchy will be established as per the geometric design standard provided by the PMO office of LGED and suggestion of the consultation with the Paurashava.

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 Socio-economic Survey, yet these data are highly inadequate to forecast future travel demand.

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

The complexities of traffic in the study area, as per observation are assumed to be insignificant. It is considered that at this level of traffic in the town current measures are sufficient. Detailed traffic study reviews on the transportation and traffic management plan for future.

11.3.2 Transportation Network Considered

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

11.4 Transportation Development Plan

The current section of this chapter of the report is about Transport Development Plan covering its development plan proposals and management of the proposed project area up to the year 2031. The report describes existing transportation facilities and consultant's proposal on the important facilities such as, bus terminal, truck terminal, rickshaw/van stands, baby taxi/tempo stands and passenger sheds for local bus users. Many of the proposals may now seem to be premature, but will be necessary in future. If their executions are delayed, land may not be available in future for providing such facilities. Appendix-3 shows the road network plan of Darshana Paurashava.

11.4.1 Plans for Road Network Development

The standards are meant for use by UTIDP, LGED and other planning and development agencies. The standards have been adopted by the consultants to draw up the transportation development plan. Following are the suggested planning standards (Table 11.3) for road network development. These road hierarchies are proposed based on the functional linkage of the road of Darshana Paurashava.

Table 11.3: Proposal for Road Standard in the Project area

Type	Widening	New Construction
Paurashava primary roads	RoW 60 ft, 80ft, 90 ft	RoW 60 ft
Paurashava secondary roads	40 ft	40 ft
Tertiary Road	30 ft	30 ft
Access Road/ Local Road	RoW 20 ft	RoW 20 ft

Source: Upazila Towns Infrastructure Development Project and Proposed by Consulting Firm, Interim Report Darshana Paurashava

Neighborhood and Local Road

The right of way (RoW) of all neighborhoods (mahallah) roads may be in between 20 ft. to 30 ft wide depending on their functions.

Standard Road Design

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

Functions of Roads

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

11.4.1.1 Road Network Plan

At present three major roads coming from three different directions meet together at the Bus Stand Mor. Three major roads connect the town with different urban centers including district headquarters. All the important facilities like commercial, industrial administrative, Educational, community, heath and recreational services and amenities are situated along side of these roads. Apart from major roads, a large number of local roads having width varying from 10 ft. to 20ft, provide access to individual houses and establishments and connect them to major roads and give access to individual houses and establishments. Planning team initiates to develop external and internal roadway connectivity based on these major roads in a manner to avoid the external vehicles movements through the core area of the town. It is observed Bus Stand intersection has not been properly designed and also the busiest intersection due to its various uses which causes serious traffic congestion. Most dense and high rise structures are situated in this road. This requires a circular road (80 ft) around the Paurashava to minimize traffic congestion. RoW of this proposed by pass will 60. Other roads road will be widening and newly constructed to establish the road hierarchy within the town.

Summary of Road Network Plan

Total 106.22 km of road development has been proposed in Darshana Paurashava. Total 24.74 km road will be newly constructed and 81.48 km road will be widening up to the planning period 2031. Length of the local road will be 45.28 km and RoW of these roads will be 20 ft which covers 42.63% of total road network development proposal. Total length of secondary road will be 13.71 km and RoW of these roads will be 40 ft for this ward. The rest road will be developed as primary road and its RoW will be 60-90 ft. The detailed scenario of road network development proposal is given in Table 11.4. In the following paragraph more detail scenarios of different are given.

Table 11.4: Summary of Road Network Plan of Darshana Paurashava

Width in (ft)	Type of Road	Total		New Road		Road Widening	
		Length(km)	%	Length(km)	%	Length(km)	%
15.00	Walk way	6.15	5.79	6.15	24.87	0	0
20.00	Local Road	45.28	42.63	7.81	31.58	37.47	45.99
30.00	Tertiary Road	17.96	16.91	6.44	26.03	11.52	14.14
40.00	Secondary Road	13.71	12.91	4.02	16.24	9.69	11.89
60.00	Primary Road	14.98	14.11	0.32	1.28	14.67	18.00
80.00	Primary Road	3.46	3.25	0	0	3.46	4.24
90.00	Primary Road	4.67	4.40	0	0	4.67	5.73
Total		**106.22**	**100.00**	**24.74**	**100**	**81.48**	**100.00**

Paurashava Primary Road

Mujibnagar road, College road, Esswarchondro Road and and Halt Station Road will be developed as primary road for Darshana Paurashava. Total length of primary road is 23.11 km with 60-90 ft RoW. About 22.80 km primary road will be widening and rest 0.32 km new primary road will have to be constructed. Figure 11.1 shows the layout design of primary road with 60-90 ft RoW.

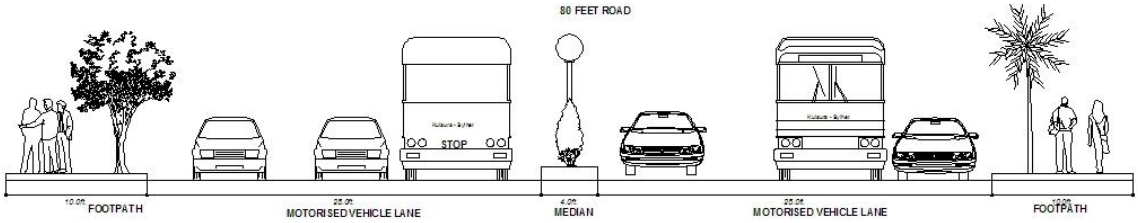

Figure 11.1: Primary Road with 60-90 ft RoW

Paurashava Secondary Road

Total secondary road is 13.71 km with 40 ft RoW. Within in these 9.69 km secondary road will be widening which covers 11.89% of total road widening proposal and rest 4.02 km new secondary road will be constructed which covers 16.24% of total new road proposal for the town. Figure 11.2 shows the layout design of secondary road with 40 ft RoW.

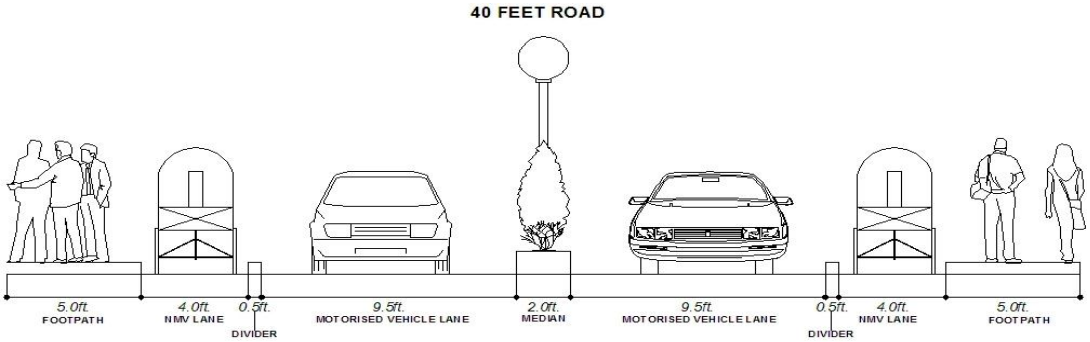

Figure 11.2: Secondary Road with 40 ft RoW.

Access Road/ Local Road

Total local road is 45.28 km with 20 ft RoW, which covers 42.63% of total road network plan of Darshana Paurashava. Of which, total 37.47 km road will widening existing road and 7.81 km road will newly construct to fulfill the future need of the Paurashava. Figure 11.3 shows the layout design of local road with 6m RoW for Darshana Paurashava.

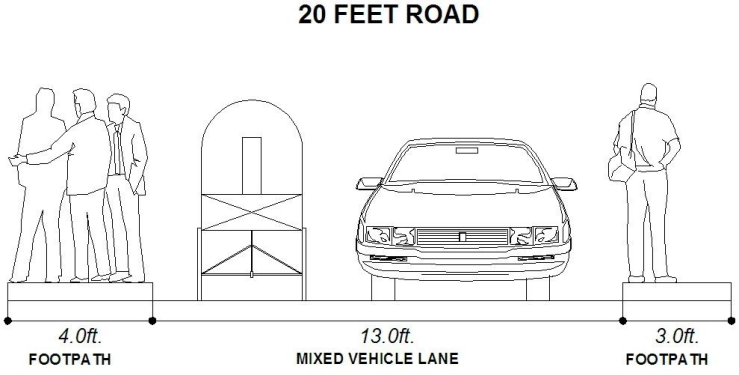

Figure 11.3: Access/Local Road with 6m RoW.

Map 11.1: Existing Road Network of Darshana Paurashava

11.4.1.2 Proposal for Improvement of the Existing Road Networks

Most of the road in Darshana Paurashava is very narrow and it creates some sort of transportation problem. To improve this situation about 81.48 km road is proposed for widening in the transport development plan. The highest 37.47 km (45.99%) road is proposed for widening up to 20 ft, which will function as access road/local road. About 11.52 km (14.14 %) road is proposed for widening up to 30 ft, 9.69 km (11.89%), and the other road is proposed for widening up to 60-90 ft which will function as primary road. Table 11.5 shows the summary of road widening proposal. Detail was given in Appendix-C and Ward Action Plan.

Table 11.5: Summary of road widening proposal at Darshana Paurashava

Road Width (in ft)	Length (in meter)	Length (in km)	Percentage	Road Type
20.00	37467.25793	37.47	45.99	Local Road
30.00	11523.63631	11.52	14.14	Tertiary Road
40.00	9690.38114	9.69	11.89	Secondary Road
60.00	14666.66737	14.67	18.00	Primary Road
80.00	3457.15828	3.46	4.24	Primary Road
90.00	4671.83687	4.67	5.73	Regional road
Total	**81476.94**	**81.48**	**100.00**	

11.4.1.3 List of Proposed New Roads

To improve existing transportation system about 24.74 km new road is in the transport development plan. The highest 7.81 km (31.58%) new road is proposed with 20 ft right of way (RoW), which will function as local road and about 26.03% (6.44km) new road is proposed as tertiary road, about 4.02 km road is proposed as secondary road with 40 ft width and about 0.32 km new road of 60 ft is proposed as primary road in this Paurashava. Table 11.6 shows the summary of road widening proposal. Detail was given in Appendix-C.

Table 11.6: Summary of new road proposal in Darshana Paurashava

Road Width (in ft)	Length (in meter)	Length (in km)	Percentage	Road Type
15.00	6154.20442	6.15	24.87	Walk way
20.00	7812.26385	7.81	31.58	Local Road
30.00	6439.82026	6.44	26.03	Tertiary Road
40.00	4018.13133	4.02	16.24	Secondary Road
60.00	316.54779	0.32	1.28	Primary Road
Total	**24740.97**	**24.74**	**100.00**	

11.4.2 Plans 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 Transportation Facilities Plan

Details requirements of different transport facilities are given in Table 10.11, Chapter 10, and Part B of this report. 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.

11.4.2.2 Parking and Terminal Facilities

Bus Terminal/ Truck Terminal

At present there is no specific bus stand at Darshana Paurashava. All sorts of buses stop and departed from the Bus Stand Mor. The buses are normally parked beside road or on street, with a capacity of accommodating about 3-5 buses at a time. Future increasing travel demand and growth of the town requires a specific place for bus stand, terminal. Considering this demand, a bus terminal is proposed beside proposed Chuadanga road with an area of 1.9 acre in Ward 02. Total 1.7 acre land will be proposed for truck stand at Ward no 04. Detail scenario is given in Table 10.20, Chapter 10, Part B of this report.

Tempo Stand /Taxi Stand

There is also no specific Tempo stand at Darshana Paurashava. Formal tempo stand with 0.6 acre of land has proposed in Ward no 06. Where baby taxi, tempo will parked and also use as tempo stand. Detail scenario is given in Table 10.20, Chapter 10, Part B of this report. Map 11.3 shows the transportation facilities in Darshana Paurashava.

Parking Facilities

There is hardly any locally owned car in the town and it is unlikely that there will be a good number of private cars in the near future. So, parking is not at all any requirement for the town at the moment. Therefore, no parking space for private car has been suggested in the plan. There is hardly any locally owned car in the town and it is unlikely that there will be a good number of private cars in the near future. So, parking is not at all any requirement for the town at the moment. Therefore, no parking space for private car has been suggested in the plan.

Table 11.7: New Land Proposal for Transportation Facilities

Ward No.	Type of Facilities	DP ID	Area in Acre	Mouza Name	Plot No.
01	Tempo Stand	TS-01	0.15	Dakshin Chandpur (075_06)	2867
02	Bus Terminal	BT-01	1.94	Dakshin Chandpur (075_08)	3483, 3486-3488
				Shyampur (077_02)	1454,1455, 1459-1461
	Tempo Stand	TS-02	0.20	Dakshin Chandpur (075_05)	2322,2323
04	Tempo Stand	TS-03	0.38	Dakshin Chandpur (075_07)	3205
	Truck Terminal	TT	2.51	Dudhpatila (074_02)	2377,2378 2387-2391,3129
05	Tempo Stand	TS-04	0.40	Loknathpur (073_06)	9427 9469, 9472
06	Tempo Stand	TS-05	0.22	Dakshin Ramnagar (076_02)	623
07	Tempo Stand	TS-06	0.25	Dakshin Chandpur (075_16)	6627
08	Tempo Stand	TS-07	0.33	**Joynagar (078_01)**	437
Total : 6.37 Acres of New Land Proposal for Transportation Facilities; 1 Bur Terminal, 1 Truck Terminal, 7 Tempo/Rickshaw Stand					

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. Provision of foot path facilities has been given Figure 11.2 to Figure 11.6 of this chapter. Here the panel team initiates to ensure footpath facilities along all the proposed roads in road network development plan.

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 11.4 shows the provision of separate lane for NMT vehicles.

11.4.2.4 Other Transportation Facilities

Improvement Roadway Intersection

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

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.

11.4.3 Waterway Development/Improvement Options

Mathavanga River flows from the west of the Paurashava. But the water way network is not developed due lack of navigability of river bed.

Map 11.2: Proposed Transportation Facilities Map

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 Darshana Paurashava.

11.5.1 Strategies for Facility Operations

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

Traffic Engineering

Ensure effective use and management of existing physical infrastructure. These enhancements typically include better road markings, signs, traffic signals, channelization 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 arterial 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 auto rickshaws.

Roadside Interference

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

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

11.5.2 Strategies for Traffic Flow and Safety

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

Road Safety Initiatives

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

Traffic Law Enforcement

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

Driver Training and Testing

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

Education and Publicity

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

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

Vehicle Safety

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

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

Medical Services

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

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

Information and Data

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

11.5.3 Strategies for Traffic Management

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

11.6 Plan Implementation Strategies

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

11.6.1 Implementation, Monitoring, Evaluation and Coordination of the Plan

Monitoring of Plan Implementation

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

Mobilization of Resources

Paurashava is already suffered from scarcity of resources. For implementing the development project under the plan, huge resources will be necessary. Presently, lion's share of the resources is provided by the government. But it will not be possible for the government to supply all the funds needed to implement plans of all the projects of the Paurashava. So, effort must be directed to mobilize own resources by the Paurashava. Holding tax is the most important sources of local revenue, there should be attempt to

maximize holding tax collection. The Paurashava should collect hundred percent of its holding tax. Besides, to increase earning from holding tax, updating of holding information should be carries out regularly. In this revision, new structure should be brought under tax.

Institutional Arrangement

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

CHAPTER 12

DRAINAGE AND ENVIRONMENTAL MANAGEMENT PLAN

12.1 Drainage Management Plan

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

12.1.1 Goals and Objectives

Provision of drainage facilities are important concern to human settlements to create better living environment. Failure to provide the adequate drainage facilities results in flooding and detrimental environmental quality.

The objectives of drainage planning are described as follows:

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

12.1.2 Methodology and Approach to Planning

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

- Survey the main drainage channels from their heads to the outfalls and to estimate their capacity to discharge water.
- Collect and analyze meteorological data over time in the area to determine the meteorological conditions and predict storm surges.

- Determine the efficiency of the present drainage systems and make recommendation to government.
- Organize a public enlightenment campaign to expose the adverse effects of dumping refuse in drainage channels, through a mass media meeting.
- Drainage channels were surveyed by leveling from the head of the channels to the outfall using a surveyor's level. A zero datum was chosen at the head of each channel. This zero height was then used to level the channel from the head to the toe or outfall. In areas where water flow was observed, the velocity of the flow was recorded. The flow velocity was calculated by timing the flow rate within a 3-5m length of channel. In areas where sediment or refuse was observed to accumulate in the bottom of the channel, the thickness of such sediment or refuse was measured.
- A questionnaire was administered to local residents to collect information about flooding, refuse disposal and drainage channel patterns from local residents along flood prone areas. The answers to the questionnaire were statistically analyzed and use to decipher resident's opinion on the problem of flooding.

12.2 Existing Drainage System/ Network

12.2.1 Man-made drains

Almost all the drain of Paurashava is pucca and covers all the wards of the entire Paurashava. Total length of drainage network at Paurashava is about 9.00 km. The highest pucca drainage network exists at Ward no. 09. Table 12.1 shows the inventory of major drain Darshana Paurashava.

Table 12.1: Inventory of Drains

ID No	Length (m)	Type	Ward No.	Quality	Status
01	60.12	Pucca	01	Poor	Uncovered
02	230.35	Pucca		Poor	Uncovered
03	855.43	Pucca	02	Poor	Uncovered
04	659.34	Pucca	03	Poor	Uncovered
05	149.09	Pucca		Poor	Uncovered
06	80.43	Pucca		Poor	Uncovered
07	240.06	Pucca		Poor	Uncovered
08	42.13	Pucca		Poor	Uncovered
09	119.19	Pucca		Poor	Uncovered
10	128.14	Pucca	04	Poor	Uncovered
11	902.34	Pucca		Poor	Uncovered
12	185.25	Pucca		Poor	Uncovered
13	270.69	Pucca		Poor	Uncovered
14	114.35	Pucca		Poor	Uncovered
15	94.45	Pucca		Poor	Uncovered
16	410.31	Pucca	05	Poor	Uncovered
17	54.23	Pucca		Poor	Uncovered
18	26.04	Pucca		Poor	Uncovered
19	54.25	Pucca		Poor	Uncovered
20	60.22	Pucca	07	Poor	Uncovered
21	94.12	Pucca		Poor	Uncovered
22	85.81	Pucca		Poor	Uncovered
23	157.45	Pucca		Poor	Uncovered
24	86.34	Pucca		Poor	Uncovered
25	158.43	Pucca		Poor	Uncovered
26	41.49	Pucca		Poor	Uncovered
27	279.38	Pucca		Poor	Uncovered

ID No	Length (m)	Type	Ward No.	Quality	Status
28	18.54	Pucca		Poor	Uncovered
29	160.89	Pucca		Poor	Uncovered
30	84.95	Pucca		Poor	Uncovered
31	89.37	Pucca		Poor	Uncovered
32	160.69	Pucca		Poor	Uncovered
33	277.33	Pucca	08	Poor	Uncovered
34	40.04	Pucca		Poor	Uncovered
35	17.8	Pucca		Poor	Uncovered
36	94.91	Pucca		Poor	Uncovered
37	59.69	Pucca		Poor	Uncovered
38	186.53	Pucca		Poor	Uncovered
39	509.21	Pucca		Poor	Uncovered
40	145.08	Pucca		Poor	Uncovered
41	514.86	Pucca		Poor	Uncovered
42	110.43	Pucca	09	Poor	Uncovered
43	520.33	Pucca		Poor	Uncovered
44	251.54	Pucca		Poor	Uncovered
45	56.36	Pucca		Poor	Uncovered
46	57.08	Pucca		Poor	Uncovered
Total	**8995.06**	**-**			

Source: Physical Feature Survey, 2009

Map 12.1: Existing drainage network in Darshana Paurashava

12.2.2 Natural Canal and River

General Description of Natural Canals

Large number of water bodies is present in this Paurashava. Mathabhanga River passes to Western and South-Western side of the Paurashava. There are also a beel namned Isshwarcahndra Beel existed in the Paurashava. Apart from the natural drainage system, quite a large numbers of ponds and ditches observed in the area.

River

As stated earlier Mathabhanga River passes to Western and South-Western side of the Paurashava from north to south direction. Total length of the Mathabhanga River is 6.46 km.

Beel/ Marsh land, Pond-Deghee, Ditch

Apart from the natural drainage system, a number of ponds and ditches (96) observed in the area covering an area of 42.85 acre. Every ward has ponds in this Paurashava these also play an important role to retain the storm water during monsoon and contribute to make the area partially flood free. Table 12.2 shows distribution of water bodies in Paurashava. Map 12.1 shows the manmade and natural drainage network.

Table 12.2: Water Bodies in Paurashava

Type	Number	Area	
		Acres	Percentage
Ditches	17	2.06	0.85
Pond	79	40.79	16.88
River	1	107.15	44.34
Beel	1	91.64	37.92
Total	**98**	**241.64**	**100**

Source: Physical Feature Survey, 2009

12.2.3 Analysis on land level Topographic contour

The contour map prepared through land level survey. Total contour number 2167.The lowest contour height is +3.78 mPWD and the highest contour height is +12.45 mPWD are found in the study area. Average land height of the project area is +8.21 mPWD.

It was observed that north-eastern portion of Paurashava especially ward no 08and ward no 09 of the Paurashava are on below average height 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/homesteads are concentrated. From Map 12.1, It was observed that middle portion of the Paurashava consists of Ward no 05 and some part of Ward no. 02, 03, 04, 07 of the on the above Average height Elevation having mostly Commercial, service activity and Industrial land act as high land which are free from the normal flood. Main activities of the Paurashava are concentrated at the central part of higher elevation.

Map 12.2: Digital Elevation Map of Darshana Paurashava

Table 12.3: Contour derived from the spot elevation

Sl. No	Spot Unit	Value
01	Total Contour Number	2167
02	Mean (Meter)	7.47
03	Maximum Contour Height (Meter)	12.45
04	Minimum Contour Height (Meter)	3.78

Source: Topographic Survey, 2009

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

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

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

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

12.2.4.1 Method Used

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

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

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of storm events observed over a number of years, considering the time variation of the rainfall intensity.

Calculation of Drainage Runoff:

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

Q = CIA/360

Where,

Q = peak flow in m3 / sec

C = run-off coefficient

I = design rainfall intensity in mm/hr

A = Catchment area in hectares

Run – off coefficient

The run-off coefficient C is defined as the ratio of the rate of run–off to the rate of rainfall during the same time period and is dimensionless. Because, some rainfall is retained in depression or ponds and the run–off is prevented from reaching the drain due to obstructions, or infiltrates into the soil, the run – off coefficient is less than one. Table 12.4 shows the run-off coefficients, which are commonly used when using the rational method for the individual situations.

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

Rainfall Intensity:

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

Table 12.4: Common Run – off coefficients for Different Types of Area

Type of Drainage Area		Run–off Coefficient: C
Business	Downtown areas	0.70 – 0.95
	Neighborhood area	0.50 – 0.70
Residential	Single – family areas	0.30 – 0.50
	Multi – units, detached	0.40 – 0.60
	Multi – units, attached	0.60 – 0.75
	Suburban	0.25 – 0.40
	Apartment dwelling areas	0.50 – 0.70
Industrial	Light areas	0.50 – 0.80

Type of Drainage Area		Run–off Coefficient: C
	Heavy areas	0.60 – 0.90
	Parks, cemeteries, playgrounds	0.10 – 0.35
	Rail road yard areas	0.20 – 0.40
	Unimproved areas	0.10 – 0.30
	Streets; Driveways and roofs	0.10 – 0.95
Lawns	Sandy soil, flat, 2%	0.05 – 0.10
	Sandy soil, avg, 2 – 7%	0.10 – 0.15
	Sandy soil, steep, 7%	0.15 – 0.20
	Heavy soil, flat, 2%	0.13 – 0.17
	Heavy soil, avg, 2 – 7%	0.18 – 0.22
	Heavy soil, steep, 7%	0.25 – 0.35

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

12.2.4.2 Demand Analysis

As stated earlier that the drainage network of Paurashava is mostly developed based on natural drainage system. Unfortunately most of the natural drainage system are either filled with silt and solid waste or encroached by the influential. These channels should be dredged and should reacquire from encroachment. Again, special attention would be provided to ensure integrated natural and manmade drainage network system. In the demand analysis land use, especially road network and alignment of river/ khal will be important basis for drainage network and area determination of drains.

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

12.3 Plans for Drainage Management and Flood Control

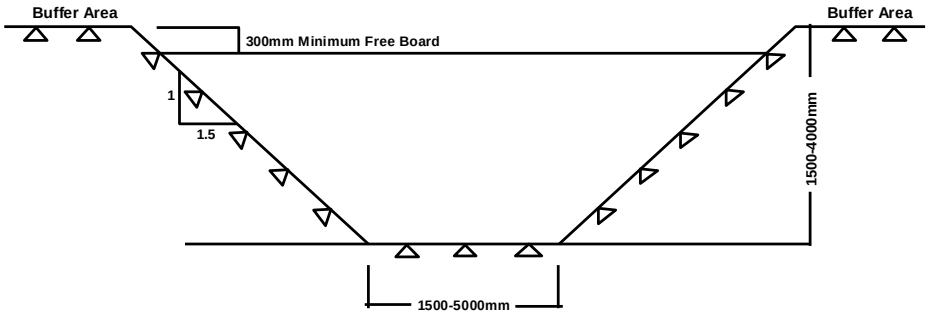
12.3.1 Plan for Drain Network Development

Drainage Network Plan

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

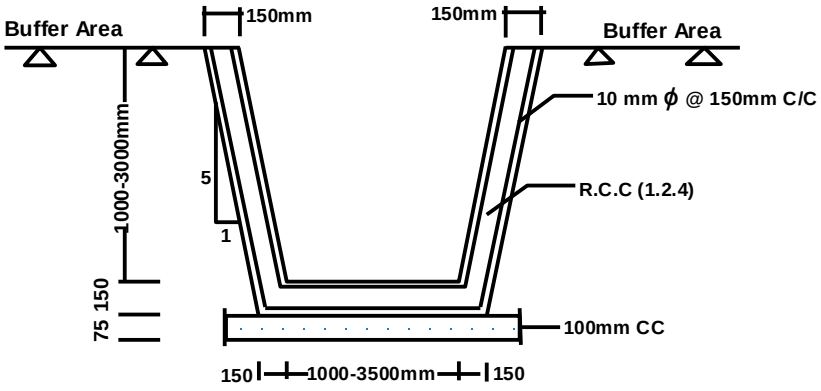
Primary Drain

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



A Typical Earthen Primary Drain (Dimensions in mm)

Figure 12.1: Earthen Primary Drain

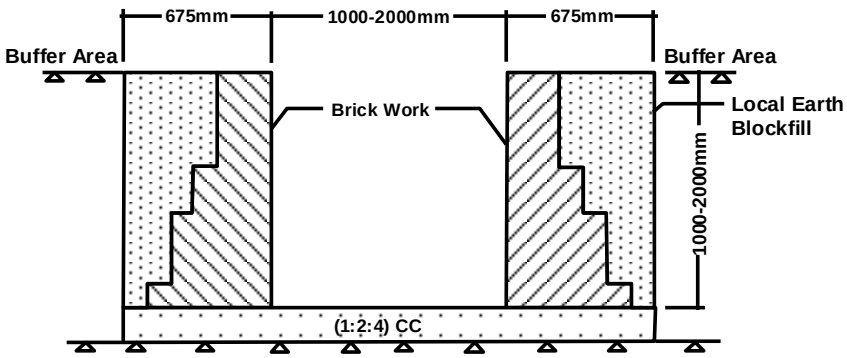


A Typical RCC Primary Drain (Dimensions in mm)

Figure 12.2: Typical RCC Primary Drain

Secondary Drain

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



A Typical Secondary Drain (Dimensions in mm)

Figure 12.3: A Typical Secondary Drain

Tertiary Drain

Tertiary drain carry run-off or storm water received from the above mentioned plot drains and block or Mahallah drains. Their catchment area or storm water contributing area is bigger than Mahallah 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:

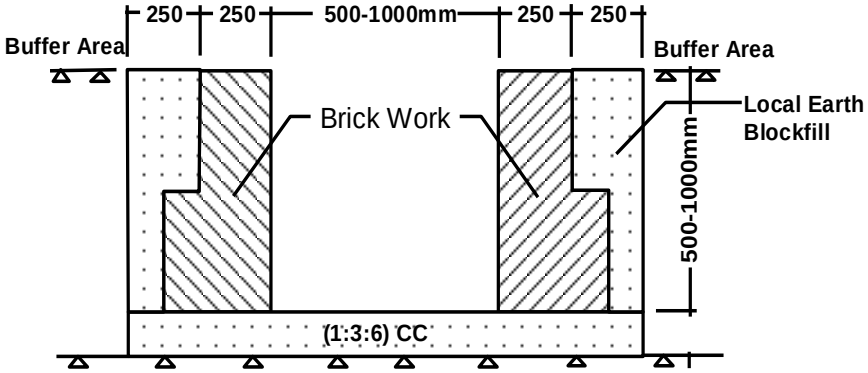


Figure 12.4: A Typical Tertiary Drain

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 Mahallah drain. The sketch below gives an impression of plot drain usually constructed in a plot and block drains that follow plot drain.

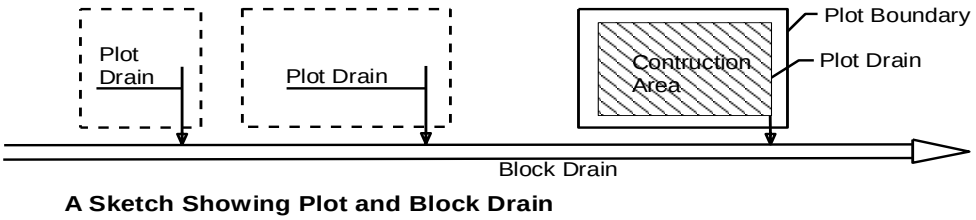


Figure 12.5: Plot and Block Drain

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 neighbouring blocks or Mahallahs. 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 Mahallah drain under plot drain.

Other Drainage Related Infrastructures

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

i. Bridges, culverts, box culverts

ii. Drainage sluices, pipe sluices, siphons

iii. Sluice gates, Regulators, Navigation lock

iv. Flood protection and drainage structures.

i) Bridges, Culverts and Box Culverts

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

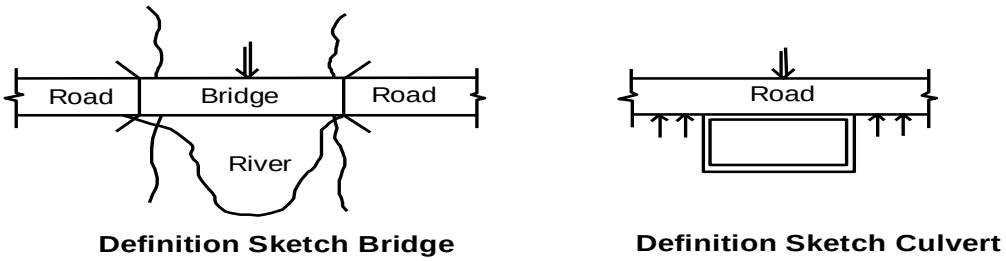


Figure 12.6: Bridge and Culvert

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.

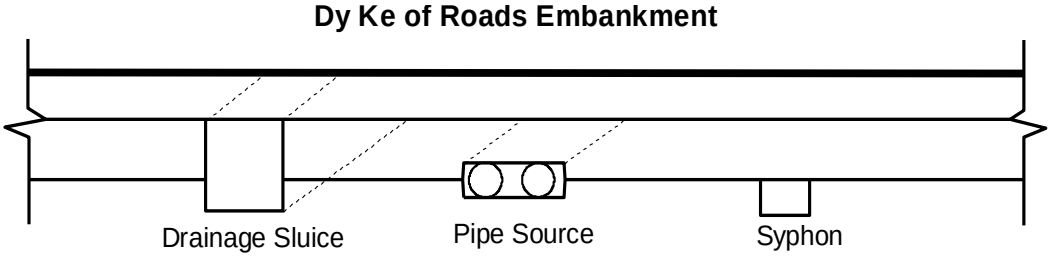


Figure 12.7: A schematic view of Drainage sluice, pipe sluice and siphon on embankment which relieve drainage congestion.

12.3.2 Outfall of Drains

There is no existing formal outfall of drains in or outside Paurashava. The secondary drains mainly discharge storm water to the nearby River, khals and borrow pits, which will be act as primary drain. Total 16 number of drainage out falls are established for drainage development plan of Paurashava.

12.3.3 Proposal for Improvement of the Existing Drain Networks

Paurashava has only 9 km drainage network Darshana Paurashava. All of are pucca drain. This drainage network served mainly in core area of the Paurashava (ward no 2, 3, 7). Based on the results of drainage study it is recommended for the existing drain that:

- Rehabilitate broken drains;
- Cover the open drains based on budget allocation.
- Construction of new channels and rehabilitation of old ones with enough drainage head.
- Construct a new pump drainage network for the area towards Dhalai River.
- Remove all un-authorized structures, which developed on drainage structures.
- Regular cleaning and maintenance by the concerned authorities.
- Embarking on a sustained public enlightenment to discourage residents from dumping their refuse into drainage channels.

12.3.3.1 List of proposed new drains

Total 36.50 km secondary drain and 38.64 km tertiary drain proposed in drainage development plan. Table 12.5 shows the summary of proposed drainage facilities at Paurashava. And Map 12.3 shows the drainage network proposal for Paurashava. In additional the Mathabhanga River and Issarchanrda canal and other canal with a total length of 11.27 km will serve as the primary drain and main out fall along with main natural drainage network. Detail was given in Appendix-D

Table 12.5: Summary of proposed drain

Type of Drain	Length in M	Length in Km	%
Primary (Mathabhanga River and Issarchanrda canal)	11270	11.27	13.04
Secondary Drain	36499.52	36.50	42.24
Tertiary Drain	38636.40	38.64	44.71
Total	86405.91	86.41	100.00

12.3.3.2 List of Infrastructure measures for Drainage and Flood Control Network

About 37 box culverts, one water treatment plants, one waste water treatment plant and 8 drainage outfalls will be established for drainage and flood control network of Darshana Paurashava.

Map 12.3: Drainage Network Proposal of Paurashava

12.4 Environmental Management Plan

This section describes the goals and objectives, and methodology and approach to planning of environment management plan.

12.4.1 Goals and Objectives

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

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

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

12.4.2 Methodology and Approach to Planning

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

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

12.4.3 Existing Environmental Condition

With the increase of housing along with population will produce impact on the environment. Rapid urbanization and numerous human activities will deteriorate the

environment, if the infrastructure is not developed as per requirement. So, before planning and designing of any development project, possible adverse environmental impact should be studied. The whole range of potential impacts of the project of various environmental components due to various project activities should be identified qualitatively and in quantities, where they are possible. After identification of significant impacts and issues arising out of them, mitigation measures or project modification/ alternatives will have to be proposed to address the environmental impact issues. An environmental management plan should also be formulated for mitigation and protection of adverse effect of the project on the environment. Environmental consideration in the planning process can make the project sustainable for a long period.

12.4.3.1 Geo-morphology

Geology, Soil, Sub soil Condition

Being located in the Chuadanga District, the general soil type is following. The Paurashava belongs to Non-calcareous Brown Floodplain soils group whose main characteristics are: Non-calcareous brown sandy loams to clay loams occurring in the old Himalayan piedmont plain, Tista and Old Brahmaputra floodplains and locally in the old Ganges river floodplain. Soils are slightly too strongly acid in reaction.

Climate

Darshana has a tropical climate and except for heavy rainfalls, the climate is much like other parts of the country. The mean annual rainfall is 2000 mm with the heaviest occurring during August-September period. Despite the rainfall, the climatic regime is similar to that of the remainder of the county. The cool and dry winter, December-February is followed by a hot and showery pre-monsoon period, March-May, and then the relatively cooler but very wet monsoon season, June-September. This is followed by a transitional humid and showery period up to the beginning of the winter. It is affected by tornados which periodically devastate the area in March-May and in September-November often cause damage to katcha buildings.

Temperature

Average maximum temperature varies between 30.1° C and 36.3° C and minimum temperature varies between 26.4° C (December) and 24.6° C (January). The hottest months are March, April, May, June and August. From December to February, Paurashava experiences cold periods when temperature varies from 12.5° C (December) to 14.1° C (February).

Humidity

The climate of Chuadanga district is marked by medium humidity, the mean humidity which was recorded to be 79%.

Rainfall

The Darshana Paurashava has an average normal rainfall of 459 mm in the month of July which is highest among all other months. In August, it falls to 157 mm. From November to March, this rainfall varies between 40.1 mm to 2.5 mm. July has been the highest precipitation in comparison to September, August and June.

Wind Directions

A cool dry, almost cloudless season from November through February with north-eastern monsoon winds is followed by a transition period, namely the pre-monsoon hot season that comes along with changing wind directions, thunderstorms, and increasing cloud cover from March through May at Darshana of Chuadanga District. Single rain events in March, April and May might be the characteristic thunderstorms of the hot dry season. The Monsoon season started at the end of May and lasted until end of October.

Waste and Garbage disposal

Condition of solid waste management at Darshana Paurashava is very poor.

House hold Waste

There is inadequate solid waste management system in Paurashava. No formal Paurashava provided dustbins are available there. So people have to dump their household waste here and there. There is also lack of awareness among the town dwellers.

Industrial waste

There is one mentionable industry within the Paurashava which is a Krew & Co. Other industrial types are only rice and saw mills. But these industries do not produce mentionable industrial wastages.

Kitchen market waste

Garbages of kitchen markets are dumped to nearby dustbins.

Clinical/ Hospital waste

Hospital waste is dumped to their own dustbin.

Waste Management System

There are only 5 dustbins. One waste collection truck and two push carts are used to collect solid waste.

12.4.3.2 Brick Field

There is some brickfield located at some distance away from the Paurashava and it chimney is as per the required specification.

12.4.3.3 Fertilizer and other chemical Use

Main reasons for land pollution at Darshana Paurashava are extensive use of fertilizer in agriculture.

12.4.3.4 Pollutions

Water

Surface water of ponds, canals and rivers at is fresh and free from salinity. There are 79 ponds, 1 canals and 1 river at Darshana Paurashava which are important sources of water for the inhabitants. The sources of surface water pollution are domestic waste, unhealthy sanitation, poor drainage system and extensive use of fertilizer in the agriculture. Paurashava authority has taken initiative to reduce surface water pollution.

Air

As Paurashava is a small town with no heavy factory other than only a saw mill and vehicular traffic, it is almost free from air pollution. There are some brickfields is located in the Paurashava area and their chimneys are as per the required specification.

Sound

As Paurashava is a small town with some small manufacturing factories and vehicular traffic, which responsible for air pollution. Particular areas adjacent to the main road like Bus Stand Mor and Bazar intersection have some noise pollution created by movement of few heavy vehicles. It is however, almost free from heavy traffic congestion.

Land Pollution

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

Other Pollution

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

12.4.3.5 Natural Calamities and Localized Hazards

Erosion

Though the Paurashava lies beside Mathabhanga River, no river erosion is marked in recent years.

Floods

Floods are annual phenomena with the severe occurring during the months of July and August. Flash flood occurs at Paurashava in one or more time in every two to four years interval and is caused by heavy rains. In 2003, a major flood had broken out affecting 1000 acres of land causing a loss of one core taka. The entire Paurashava was affected. There was no govt. support or assistance to mitigate damages.

Earth Quake

The town of Darshana is no different from other towns of Bangladesh, but as disasters are concerned it is low vulnerable to at least one disaster, earthquake, due to its location. It is situated in earthquake zone 3 of Bangladesh which is less vulnerable for earthquake.

Arsenic

The most Arsenic risk areas are located in the central and southern parts of Bangladesh. especially in areas located in the south and southeast, extremely high Arsenic concentrations are found exceeding 250 µg/L. High Arsenic concentrations can generally be found in the lower catchment areas of the Ganges, Brahmaputra, and Meghna River system, particularly in areas close to the lower Meghna Estuary, where 80% of wells exceed the 50 µ/L concentration limit for arsenic. Areas located in the uplifted north-central areas and in the northwest are less affected. However in Damurhuda Upazilla some Tube wells were found affected or marked by DPHE as arsenic affected.

Water Logging

There is water logging problem at Paurashava, duration of it is 2-3 months and it mainly occurs between June and August every year.

Fire Hazard

Fire hazard often occurred at the Paurashava. Frequency of fire hazard is 1 to 2 times in each year.

12.5 Plans for Environmental Management and Pollution Control

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

12.5.1 Proposals for Environmental Issues

12.5.1.1 Solid waste management Plan

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

sanitary facilities with the intensive motivational work for practicing appropriate defecation systems.

Criteria for Selection of Solid Waste Dumping Site

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

- Site should be located to minimum fuel distance
- Site should not create any nuisance to the residential areas
- Site should be connected with main road and have sufficient width for truck movement.
- Infiltration of water into the dump should be prevented by covering the wastes with a layer of soil and sloping surface of the dump.

Land Requirement for Solid Waste Management

Total waste generation rate in Paurashava of Bangladesh is 0.25 kg/cap/day. The generation of wastes increases by 46% in wet seasons from dry season (Source: Community Based Solid Waste Management through Public-Private-Community Partnerships: Experience of Waste Concern in Bangladesh by Iftekhar Enayetullah, October 30 to November 1, 2006). At present (on year 2011) Darshana Paurashava per day solid waste generation of 6.96 metric ton in dry season and 8.68 metric ton during wet season. As per this assumption, at Darshana Paurashava per day solid waste generation will be 9.718 metric ton at dry season and 12.438 metric ton during wet season by the year 2031. So the required land for solid waste filling will be 2.25 acre. After filling and closing up of solid waste disposal site, it can be used for many purpose such as playground, market, shopping center, parks, recreational area, car parking area, bus/truck terminal or other public facilities. Total 5.54 acres land is proposed by the Paurashava for solid waste dumping station south corner of the proposed Paurashava Master Plan.

Table 12.6: New Land Proposal for Environmental Management Facilities

Ward No.	Type of Facilities	DP ID	Area in Acre	Mouza Name	Plot No.
01	Waste Transfer Center	WTC-01	0.16	Dakshin Chandpur (075_03)	1557
02	Waste Transfer Center	WTC-02	0.25	Dakshin Chandpur (075_05)	2370
	Water Pump	WP-01	0.84	Dakshin Chandpur (075_07)	3238
03	Deep Tubewell	DT-01	0.21	Shyampur (077_02)	1271
	Waste Transfer Center	WTC-03	0.30	Shyampur (077_02)	1287
04	Waste Transfer Center	WTC-04	0.85	Dakshin Chandpur (075_01)	63
05	Waste Transfer Center	WTC-05	0.53	Loknathpur (073_06)	9702
06	Surface Water Treatment Plant	SWTP-01	1.37	Dakshin Chandpur (075_17)	7006
				Dakshin Ramnagar (076_02)	1528, 1529,1534
	Waste Transfer Center	WTC-06	0.15	Dakshin Chandpur (075_14)	5544
	Water Pump	WP-02	0.49	Dakshin Ramnagar (076_02)	1588

Ward No.	Type of Facilities	DP ID	Area in Acre	Mouza Name	Plot No.
07	Waste Transfer Center	WTC-07	0.36	Dakshin Chandpur (075_17)	7032
08	Waste Transfer Center	WTC-08	0.36	Shyampur (077_01)	148
	Waste Water Treatment Plant	WWTP	0.58	Shyampur (077_01)	334, 368, 371,
09	Dumping Site	DS-01	5.54	Bhabanipur (024_01)	146, 154, 156-158, 196, 198-201, 203
	Waste Transfer Center	WTC-09	0.44	Shyampur (077_02)	1110
Total : 12.42 Acres of New Land Proposal for Environmental Management Facilities					

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

The river Mathabhanga is a great asset that plays multifaceted role for the town. It could be a source of water and also a source of recreation or open space.

Mitigation:

- The river should be preserved for future sustainable source of surface water supply for the city when the city's ground water would be depleted.
- Its banks can serve as breathing space and recreation for the town dwellers.
- The river should be kept pollution free applying regulatory measures based on environmental regulations,
- No industry should be allowed within 100 m of the river bank.

Loss of Wetlands

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

Mitigation:

1. Designate all ponds in Master Plan Map and protect the large ones according to the ecological importance and public interest.
2. Protect the ponds as per regulatory framework of Master Plan.
3. Avoiding wetlands during road alignment fixation.
4. Stopping housing, industries and other development works in wetlands through earth filling.
5. Stopping earth filling of ponds in the area through creation of public awareness.

6. Strict implementation of Playfield, Open space, Park and Natural water reservoir Conservation Act 2000.
7. Strict implementation of Environment Conversation Act (ECA), 1885
8. Create new laws if existing one fails to stop land filling of ponds.

12.5.1.3 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 problem for future water supply. It is reported that over 70% of the tube wells are affected by arsenic which is a major threat to health for those who use ground water for drinking purpose. Arsenic is geological problem. But experts view that it arises due excessive extraction of ground water. So in future, when population rises further excessive ground water extraction will aggravate 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.

12.5.1.4 Surface Water Pollution

Various surface water sources of the town are regularly polluted by deliberate drainage of waste water in respect of pH, turbidity and coliform bacteria when compared with national standard. But present pollution level is low due to low density of population and no industrial agglomeration. The main sources of surface water pollution are, urban waste water, sanitary sewage and solid waste dumping. 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. Improve sanitation conditions of slaughter house, fish market and katcha bazar.
5. Propaganda for public awareness.
6. In future set up sewerage treatment plant to treat waste water.

12.5.2 Natural calamities and regular hazard mitigation proposals

12.5.2.1 Protection plans addressing Natural Calamities

a. Flood Protection

The Mathabhanga River is subject to bank erosion, but it is not continuous. The road and the agricultural land along the river have eroded to some extent. With implementation of Master Plan (MP) Project, the whole project area will be protected from flooding.

Enhancement Activities:

1. Arrangement of pump drainage to Mathabhanga during high flood when gravitational drainage fails. Pump of excess water will save the area from internal flooding.

Responsible Organizations: BWDB and Paurashava

b. Earthquake

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

Enhancement Activities:

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

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

c. Protection Plan addressing regular hazards

Fire Hazard

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

Mitigation Measures:

1. Set up modern fire extinguishing devises.
2. Discourage people from using low quality electrical wire in building and industries.
3. Ensure periodical checking of electrical lines.

4. Advise low income dwellers about cooking safety.
5. Create awareness among people about the dangers of fire hazard.

d. Protection Plan addressing encroachment and other relevant issues

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

Mitigation:

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

Responsible Organizations: Paurashava, DOE and Forest Department

12.6 Plan Implementation Strategies

12.6.1 Regulations to Implement the Drainage and Flood Plan

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

12.6.2 Implementation, Monitoring, Evaluation and Coordination of the Plan

For plan implementation the first requirement would be resources, which is highly lacking in the Paurashava. It is a small Paurashava with very limited holding tax realized. So, the first strategy will be to increase its revenue earning and non-revenue earning income. The strategy is to build capacity of the Paurashava to implement the plan. Permission for additional manpower has to be sought from the government. At the same time additional fund has to be provided to pay for salaries and charges.

CHAPTER 13

PLAN FOR URBAN SERVICES

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

13.1 Water Supply

The Paurashava is yet to develop its own network based water supply system. The entire water supply system of the Paurashava is based on household tube well and pond. As per the census 2011, about 96.90% household depend on tube well and about 1.20% depend on privately arrange piped water supply for drinking water. However, not many of the tube wells provide arsenic free drinking water. As a result lots of hand tube wells water is mostly used for washing purpose. Water from ponds is mainly used for washing.

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. But here problem lies here to use of ground water. Safiuddin (2001) observed the serious arsenic contamination of groundwater in Bangladesh has come out recently as the biggest natural calamity in the world. The people in 59 out of 64 districts comprising 126,134 sq km of Bangladesh are suffering due to the arsenic contamination in drinking water (arsenic contamination is also found in the ground water of Darshana Paurashava). Seventy five million people are at risk and 24 million are potentially exposed to arsenic contamination. He also mentioned the groundwater in Bangladesh has declined progressively due to the excessive extraction of water for irrigation and domestic water supply, lack of water management and inadequate recharge of the aquifer. The groundwater declined beyond 8 meters in 12% areas of Bangladesh in 1986. This extent rose to 20% areas in 1992 and 25% areas in 1994. So in case of water supply for Darshana Paurashava, special emphasis will be given to use surface water rather than use of ground water. The Chitra River is the most important source of water supply.

Based on the water of Mathabhanga River one surface water treatment plants with an area of 1.36 acres will be established on the sides of the river (in ward no. 06 and 07).Map 13.1 shows the location of surface water treatment plant proposed for Darshana Paurashava. And it will be the main source of water supply network in Darshana Paurashava. Before it is done Paurashava should take a programme to preserve and maintain all major ponds in the Paurashava. This will require taking over passion of all major waters supply ponds in the Paurashava for the greater interest of the people at large. Detailed was given in Table 10. 21, Chapter 10, Part B of this report. Figure 13.1 thematic shows cross section of road showing the water supply network along the road.

The Paurashava has large number of ponds, khals and river. The town dwellers use their water for their daily necessities. Other than drinking and cooking purpose the use of these sources of water can be considered. In a project of DANIDA and DPHE for Water Supply and Sanitation for this type Paurashava, the daily per capita consumption has been calculated as 53 liters (Source: Raipur Paurashava). So it will require much less amount of water supply for the Paurashava town than a city consumption as assumed above. According to the estimation (on the basis of medium growth rate) in 2031 this will be around 34845 on the basis of medium growth rate. So according to the above stated per capita consumption will be 5429.55 m3 in 2031.

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

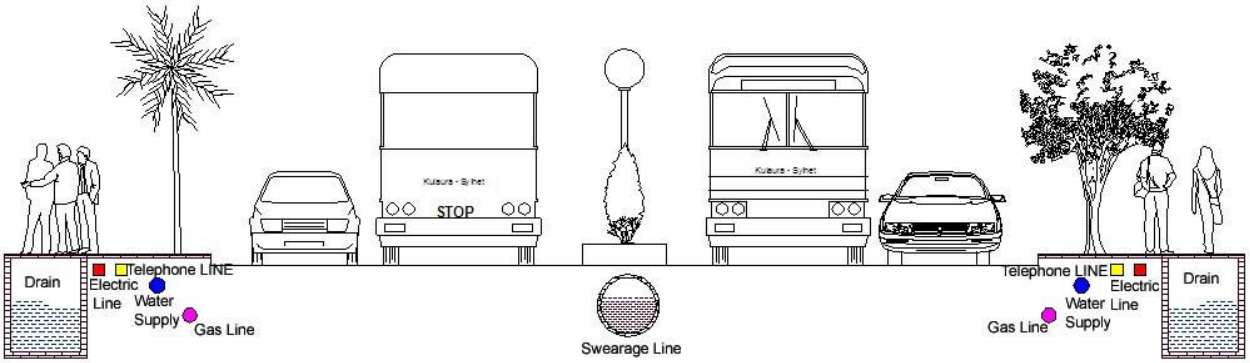


Figure 13.1: Thematic Cross Section of Road is showing different utility services along the road

13.2 Solid Waste Management

There will be 7 waste transfer stations in each ward with an area of 3.78 acres for collection of solid waste. A dumping site will be developed over an area of 2.21 acres for final disposal of the solid waste. The waste dumping site is located in Ward no. 09 at south-eastern boundary of the Paurashava.

13.3 Sanitation

As the field survey shows, the present sanitation system of the Paurashava is composed of a variety of types, like, hanging latrine, pit latrines of different types, water sealed latrines and septic tank based sanitary latrine. Figure 13.1 shows thematic cross section of road showing the sewerage network along the road.

According to 2011 Population Census, about 22.50% of the Paurashava households had healthy sanitation and 35.40% of other toilet facilities. But the present situation, as ascertained from household survey, shows that, 99% of the households use hygienic sanitation.

Due to prohibitive expenditure one should not expect establishing network and treatment plant based sewerage system in the town by the Paurashava. So, for long the sanitary system of the Paurashava will remain on site. To promote healthy sanitation, Paurashava

should promote low cost sanitary latrines in the town together with awareness building for healthy sanitation. It is proposed to set up public toilets in public gathering areas, like, existing and proposed bus stand, bazaar and the main town centre.

Map 13.1: Urban Services Map of Darshana Paurashava

13.4 Electricity and Gas

Power Development Board (PDB) is mainly responsible for electricity supply in the Paurashava, supported by the Rural Electrification Board (REB). PDB works for power production and distribution, while REB is responsible for distribution only. 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 Paurashava will be provided through existing power system master plan of both REB and PDB. But the greatest problem of power supply in the entire country remains to be handicapped by the shortage of supply due to low production.

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 gas networks have been established along major roads. Figure 13.1 shows thematic cross section of road showing the electricity and gas network along the road.

13.5 Telecommunication

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

13.6 Community Facilities

13.6.1 Open Space Recreation

Detailed will be given in Ward Action Plan. Table 10.18, Chapter 10, Part-B of this report shows proposed new land for new open space facilities and Table 10.19, Chapter 10, Part-B of this report shows recreational facilities for Darshana Paurashava. Again Map 13.1 shows the location of open space and recreational facilities proposed in Darshana Paurashava.

13.6.2 Market Facilities

There is scope of established local market as per the local needs in the proposed ward centers of Darshana Paurashava. Table 10.14, Chapter 10, Part-B of this report shows the proposed ward centers of Darshana Paurashava. In additionally 1 Central market, 8 neighborhood markets along with the existing paura central market will be established for Darshana Paurashava. Besides this, 3 slaughter house has been proposed in different part of the Paurashava. Table 10.5, Chapter 10, Part B of this report shows new proposed market facilities for this town.

13.6.3 Mosque, Eidgah and Graveyard

Standard determined for mosque that the allocated land has already been covered by existing mosque. So, additional land is not proposed for this purpose in this plan. A central Eidgah, a central graveyard and a central Cremation zone are proposed in the plan.

13.6.4 Post Office

The existing post office will serve as the central post office for Darshana Paurashava and a few post boxes will set at different location so that people may enjoy easy accessibility to post documents.

13.6.5 Fire Station

There was one fire service station at Darshana Paurashava. So it does not require any new area.

Table 13.1: New Land Proposal for Common Urban Facilities

Ward No.	Type of Facilities	DP ID	Area in Acre	Mouza Name	Plot No.
02	Slaughter House	SH-01	0.18	Dakshin Chandpur (075_05)	2478
04	Central Eidgah	CE	0.88	Dakshin Chandpur (075_11)	4432
	Central Graveyard	CG	4.94	Dakshin Chandpur (075_11)	4401-4407, 4451, 4453, 4454
05	Slaughter House	SH-02	0.18	Loknathpur (073_06)	9655,9672, 9673
06	Graveyard	GY	3.21	Dakshin Ramnagar (076_02)	1119-1123, 1133-1135, 1137
	Slaughter House	SH-03	0.33	Dakshin Ramnagar (076_02)	1458
08	Central Cremation	CC	0.37	Shyampur (077_01)	373
Total : 13.28 Acres of New Land Proposal for Community Facilities					

CHAPTER 14

WARD ACTION PLAN

14.1 Introduction

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

14.1.1 Background

The Ward Action Plans are prepared under the framework of Structure Plan and Urban Area Plan. The Ward Action Plans contain details of development proposals at Ward level including the problems and opportunities existing therein and also include the proposals made in the upper level plan that is in the Urban Area Plan. The Ward Action Plans have been formulated for execution within a period of 5 years.

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

14.1.2 Content and Form of Ward Action Plan

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

a. Provide basic micro level infrastructure and services in the project area through systematic planning, under the framework of Structure Plan and proposals of the Urban Area Plan;

b. Create congenial environment to promote economic activities;

c. Improve drainage system and protect natural water channels from encroachment; and

d. Create service centers to promote urban growth.

14.1.3 Linkage with Structure and Urban Area Plan

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

14.2 Derivation of the Ward Action Plan

The Ward Action Plan is derived from the conceptual framework, and guidelines and strategies for development under Structure Plan and detailed proposals of Urban Area Plan.

14.2.1 Revisiting Structure Plan and Urban Area Plan

To guide long term growth of the Paurashava, potential locations of major development areas are identified and the Structure Plan Area is broadly classified into seven categories, namely Core Area, Fringe Area, Peripheral Area, , New Urban Area, Agriculture, Water body, Major Circulation Network. The Urban Area Plan is prepared under the framework of Structure Plan and the infrastructure identified for improvement and development are listed as proposals in the Urban Area Plan. The broad classification of lands in the Structure Plan and detailed proposals in the Urban Area Plan form the basis for Ward Action Plan.

14.2.2 Prioritization

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

14.2.3 Ward Wise Action Plan

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

14.3 Ward Action Plan for Ward No. 01

14.3.1 Demography

Ward No.1 is located on the east-northern part of the Paurashava. It has medium density of population. As per the BBS 2001, this Ward had a population of 3166 persons. At present 3636 population for the year 2011. For the same year, it has a density of about 16 persons per acre (ppa) and it will be 20 ppa in 2031. Table 14.1 shows the details.

Table 14.1: **Population Statistics of Ward No. 01**

Item	Year	
	2011	**2031**
Area (acre)	227.84	227.84
Population	3636	4661
Density of Population (per acre)	16	20

14.3.2 Critical Issues and Opportunities of the Ward

Ward no.1 is mostly rural character and has scattered settlement. Here the basic facilities and infrastructures required for an urban area are not established yet.

There is absence of water supply system. 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 water crisis. Moreover, there is lack of 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.

There is also no systematic drainage network in this ward. Solid waste management facility is absent here. There is also lack of recreational and educational facilities.

Very low density and scattered settlements are the main obstacles for infrastructure development, which is not adequate to run large retail business activities. This size of population will not help to grow the local economy.

Development Opportunities

i. Low Density of Population

The present density of population in the Ward is 16 ppa. From environmental point of view, this population can create a very livable environment for the area with respect to ventilation, use of road and other basic services.

ii. Good External Connectivity

It has the good external connectivity with surrounding upazila and district town.

iii. Potential for Small Scale Manufacturing

Cheap labour, availability of raw materials and agricultural land can help grow small scale manufacturing and agro based industry in this town. Furniture making as a processing industry has already established its roots in the town. Jewelry, handicrafts of different kinds, and small engineering works can be developed here. This, however, would require

local initiative. Local entrepreneurs may be provided with small capital as incentive toward initiating business ventures based on local potentiality.

14.3.3 Ward Action Plan Proposals

14.3.3.1 Review of Existing Land Use

Ward no. 01 is mainly rural in character. Out of total 227.84 acres of land in this Ward, more than 147.33 acres is used as agriculture. The residential use occupies 60.90 acres, and circulation network 10.19 acres. The availability of urban green space is negligible. There is no forest, industrial and mixed use, non-governmental services, recreational and transport and communication facilities in the Paurashava. No other notable types of land uses are found in this Ward. Map 14.1 shows the existing land use of Ward no. 01.

Table 14.2: Comparative Scenario of Existing and Proposed Land Uses of Ward No. 01

Sl. No.	Existing Land use	Area in Acres	%	Sl. No.	Proposed Land Use	Area in Acres	%
01	Residential	60.90	26.73	01	Urban Residential Zone	29.10	12.77
					Rural Settlement	29.86	13.11
02	Education & Research	2.68	1.18	02	Education & Research Zone	2.39	1.05
03	Governmental Services	0.00	0.00	03	Government Office	0.00	0.00
04	Commercial Activity	1.83	0.80	04	Commercial Zone	1.06	0.47
05	Manufacturing and Processing Activity	0.00	0.00	05	General Industrial Zone	0.00	0.00
					Heavy Industrial Zone	0.00	0.00
06	Mixed Use	0.83	0.36	06	Mixed Use Zone	1.34	0.59
07	Circulation Network	10.19	4.48	07	Circulation Network	20.43	8.97
08	Urban Green Space	1.35	0.59	10	Transportation Facilities	0.15	0.06
09	Community Service	0.17	0.08	11	Community Facilities	1.31	0.58
				12	Health Facilities	0.56	0.25
10	Recreational Facilities	0.00	0.00	13	Recreational Facilities	0.00	0.00
11	Agriculture	147.33	64.74	14	Agriculture Zone	120.72	52.98
12	Miscellaneous	0.00	0.00	15	Water Body	1.61	0.71
13	Water Body	1.81	0.80	16	Open Space	15.70	6.89
14	Service Activity	0.00	0.00	17	Restricted Area	0.00	0.00
15	Transport & Communication	0.01	0.00	18	Utility Services	0.16	0.07
16	Vacant Land	0.74	0.32	19	Urban Deferred	3.45	1.51
				20	Miscellaneous	0.00	0.00
Grand Total		227.84	100	Grand Total		227.84	100

14.3.3.2 Proposed Land Use Zoning

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

Urban Residential Zone

In existing land uses, both the urban residential and rural homestead has been considered as residential use as a whole. In Ward Action Plan, more than 29.10 acres of land has been earmarked for urban residential use, which will occupy 12.77% of the total ward area.

Rural Settlement

As this Ward is rural in character, 29.86 acres of land is proposed to remain as rural settlement (13.11%) up to the year 2031.

Commercial Zone

At present, commercial activity and density of population are medium in this Ward. A small neighborhood market has been proposed for this ward. Additionally, other commercial functions are provided in mixed use zone, along with administrative and community facilities for this Ward.

Circulation network

For any type of development, circulation network is an important facility. To improve the efficiency of transport network of the Ward, more roads are proposed which will consume 20.43 acres of land and more than 8.97% of the total area.

Health Services

Total 0.56 acres of land covering 0.25% of total land of Ward no. 01 will be used for health services.

Community Facilities

Land for community facilities encompasses by graveyard, temple, mosque etc. 1.31 acres of land has been proposed for community facilities in this ward.

Agricultural Zone

The Paurashava including this Ward has a vast area of agricultural land that demands formation of a separate zone like, agriculture zone. Existing agriculture land of Ward no.1 is 147.33 acres. Due to development changes of the Ward, 120.72 acres covering 52.98% of the total land will remain for agriculture up to the year 2031. Rural homestead will also perform some agricultural activities as farm, poultry or horticulture. This zone will serve as the hinterland for the town.

Open Space

Total 15.70 acres of Land is earmarked as open space for Ward no. 01. It shares 6.89% land of this Ward.

Water Body

The plan suggests for 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 0.25 acres will be preserved as the water retention ponds. The proposed retention area covers 1.61 acres of land, which covers almost 0.71% of the total Ward area.

Utility Services

Total 0.16 acres of land will be used for utility services in this Ward. It shares 0.07% of land of this Ward.

Map 14.1: **Land Use Proposal of Darshana Paurashava** (Ward no. 01)

14.3.3.3 Proposed Road Infrastructure Development

Total of 6.94 km of road development has been proposed for Ward no. 01. Length of the local road will be 3.94 km and width of these roads will be 20 ft which covers 56.80% of total road network development proposal. Total length of secondary road will be 0.47 km with 40 ft width will be developed in this Ward in the first Ward Action Plan for Darshana Paurashava. The detailed scenario of road network development proposal is given in Table 14.3.

Table 14.3: Summary of Road Network Proposal at Ward no. 01 of Darshana Paurashava

Width (Ft)	Type of Road	Total		New Road		Road Widening	
		Length (km)	%	Length (km)	%	Length (km)	%
15	Walkway	0.00	0.00	0.00	0.00	0.00	0.00
20	Local/Access	3.94	56.80	0.42	76.88	3.52	55.08
30	Tertiary	1.32	19.06	0.13	23.12	1.20	18.71
40	Secondary	0.47	6.71	0.00	0.00	0.47	7.29
60	Primary	1.21	17.43	0.00	0.00	1.21	18.92
80	Primary	0.00	0.00	0.00	0.00	0.00	0.00
90	Primary	0.00	0.00	0.00	0.00	0.00	0.00
Total		6.94	100.00	0.55	100.00	6.39	100.00

Table 14.4: Proposed Road in Ward 01

Proposed Road ID	Proposed Road Type	Proposed Row (Ft)	Proposed Status	Phasing	Length (M)
LR_W_93	Local	20	Widening	Phase 2	370.82
LR_W_101	Local	20	Widening	Phase 2	446.13
TR_W_18	Tertiary	30	Widening	Phase 2	282.50
TR_W_17	Tertiary	30	Widening	Phase 2	913.52
SR_W_15	Secondary	40	Widening	Phase 1	464.92
PR_W_06	Primary	60	Widening	Phase 1	1206.10

 # Roads length ≥ 250 meter

14.3.3.4 Drainage Development Plan

There is only 0.47 km of man-made pucca drainage system in Ward no. 01. Among the natural drainage facilities. The proposed drainage facilities will be developed based on this natural water body. The river will serve as primary drain and will be connected with 3.07 km secondary drain and 7.95 km tertiary drain. Table 14.5 shows the details.

Table 14.5: Proposed Drainage Development Plan in Ward 01

Proposed Drain ID	Proposed Drain Type	Proposed Drain Width	Proposed Status	Length (Meter)	Phase
SD_01	Secondary Drain	1.5	New Construction	190.65	Phase 3
SD_02	Secondary Drain	1.5	New Construction	1190.01	Phase 3
SD_03	Secondary Drain	1.5	New Construction	897.34	Phase 3
TD_01	Tertiary Drain	1	New Construction	738.58	Phase 3
TD_02	Tertiary Drain	1	New Construction	1030.29	Phase 3
TD_17	Tertiary Drain	1	New Construction	451.96	Phase 2
TD_19	Tertiary Drain	1	New Construction	357.45	Phase 2
Total				**4856.27**	

14.3.3.5 Urban Services

a. Solid Waste Management

Solid waste management is a major urban service. As density of population increases the volume of solid waste also increases proportionately. However, the income level is a major factor that influences the volume of solid waste. Population and the volume of waste in the Paurashava 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 0.16 acres of solid waste transfer station in this Ward to serve the Paurashava. 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.

Table 14.6: New Urban Development Service Proposals

Type of Facilities	DP ID	Area in Acre	Mouza Name	Plot No.
Neighborhood Market	NM-01	0.24	Dakshin Chandpur (075_04)	1968, 1969, 1970
Ward Center	WC-01	0.61	Dakshin Chandpur (075_04)	1976
Stadium	S-01	15.60	Dakshin Chandpur (075_06)	2825, 2828-2832, 2834, 2835, 2838-2843, 99999
			Dakshin Chandpur (075_07)	3234, 3235, 3263
Tempo Stand	TS-01	0.15	Dakshin Chandpur (075_06)	2867
Waste Transfer Center	WTC-01	0.16	Dakshin Chandpur (075_03)	1557
Maternity Clinic	MC-01	0.56	Dakshin Chandpur (075_04)	1967-1971
Total Land for New Urban Development Service Proposals of Ward No. 01 is 17.32 acres				

b. Water Supply

It is proposed to install a network based water supply system by exploring fresh water from the Mathabhanga River. One water treatment plants will be established on the bank of the Mathabhanga River at Ward no.06 and 07 and water supply lines in this Ward will be established along all categories of roads as per the growth of the settlement from this water treatment plant.

c. Sanitation

It is apprehended that the government would not be able to provide network and treatment based sanitation system for the town. So the present system of sanitation will continue. However, the Paurashava must try to promote hygienic sanitation to ensure better public health. There is hardly any public toilet in the town to serve the visitors and the local people.

Map 14.2: Proposed Road, Drainage and Utility Services Plan for Darshana Paurashava (Ward No. 01)

14.4 Ward Action Plan for Ward No. 02

14.4.1 Demography

Ward no. 02 is located southern-east part of the Paurashava boundary. In 2001, the Ward had a population of 3964 Persons only. The population of the Ward is now (2011) 4206 and the density 40 ppa. Table 14.7 shows the details.

Table 14.7: Population Statistics of Ward No. 02

Item	Year	
	2011	2031
Area (acre)	133.64	133.64
Population	4206	5392
Density of Population (per acre)	31	40

14.4.2 Critical Issues and Opportunities of the Ward

Critical Issues

Ward no. has characteristics of rural activities. There is shortage of basic facilities and infrastructures required for the area. There is no water supply system, systematic drainage and solid west management facilities, and the area lacks in planned recreational facilities. Even the road network and other basic facilities are not up to the mark. Scattered settlements are the main obstacle for infrastructure development in this Ward.

Development Opportunities

The opportunities are similar as mentioned for Ward no. 1.

14.4.3 Ward Action Plan Proposals

14.4.3.1 Review of Existing Land Use

The maximum land of this Ward is at present used for residential purpose (58.18 acres). Ward 02 occupies above 40.77 acres of agricultural land. Commercial land occupies 5.41% and water bodies occupy 1.79% of the land of the Ward. Also 0.77 acres of land is used as Manufacturing and Processing Activity. The amount of land used for open spaces is very negligible in this Ward. Table 14.8 shows the details.

Table 14.8: Existing and Proposed Land Uses of Ward No. 02

Sl. No.	Existing Land use	Area in Acres	%	Sl. No.	Proposed Land Use	Area in Acres	%
01	Residential	58.18	43.53	01	Urban Residential Zone	55.01	41.17
					Rural Settlement	10.97	8.21
02	Education & Research	0.02	0.02	02	Education & Research Zone	5.26	3.94
03	Governmental Services	0.13	0.10	03	Government Office	0.00	0.00
04	Commercial Activity	7.23	5.41	04	Commercial Zone	5.16	3.86
05	Manufacturing and Processing Activity	0.77	0.58	05	General Industrial Zone	0.57	0.42
					Heavy Industrial Zone	0.00	0.00
06	Mixed Use	0.50	0.38	06	Mixed Use Zone	0.99	0.74
07	Circulation Network	8.20	6.13	07	Circulation Network	19.82	14.83
08	Urban Green Space	0.62	0.47	10	Transportation Facilities	2.49	1.87
09	Community Service	3.69	2.76	11	Community Facilities	3.78	2.83
				12	Health Facilities	0.00	0.00
10	Recreational Facilities	0.00	0.00	13	Recreational Facilities	0.00	0.00

Sl. No.	Existing Land use	Area in Acres	%	Sl. No.	Proposed Land Use	Area in Acres	%
11	Agriculture	40.77	30.51	14	Agriculture Zone	19.39	14.51
12	Miscellaneous	0.00	0.00	15	Water Body	2.22	1.66
13	Water Body	2.39	1.79	16	Open Space	2.35	1.76
14	Service Activity	0.55	0.41	17	Restricted Area	0.00	0.00
15	Transport & Communication	0.45	0.34	18	Utility Services	1.24	0.93
16	Vacant Land	10.13	7.59	19	Urban Deferred	4.37	3.27
				20	Miscellaneous	0.00	0.00
Grand Total		133.64	100	Grand Total		133.64	100

14.4.3.2 Proposed Land Use Zoning

Urban Residential Zone

In the existing land uses, both the urban residential and rural homestead has been considered as residential use as a whole. In the Ward Action Plan for Ward no. 02, more than 55.01 acres of land has been earmarked for urban residential use, which will occupy 41.17% of the total land.

Education and Research Zone

Total 5.26 acres of land is proposed for education and research. Map 14.5 shows the location of educational institutions of Ward no. 02.

Commercial Zone

About 5.16 acres of land has been proposed for this purpose, which occupies 3.86% of total land.

General Industry

A total of 0.57 acres of land is earmarked for general industrial zone and it shares 0.42% of total land of the Ward. The industry must be in green and orange–A category. There is no probability for heavy industrial zone in this Ward.

Circulation network

For any type of development, circulation network is an important facility. To improve the efficiency of the Ward activities, more roads are proposed, which will consume about 19.82 acres of land covering about 14.83% of the total area. Additional road network are proposed at Ward no.02 for the improvement of road network, widening of existing roads, link road and new roads are proposed for phase wise development within the plan period.

Transportation Facilities

One truck terminal of 2.49 acre has been proposed for the transportation facilities of ward 2.

Community Facilities

A total of 3.78 acre of land will be used for community facilities covering 2.83% of the total land of Ward no. 02.

Agricultural Zone

Total 19.39 acres of land will be used as agricultural zone. It occupies 14.51% total land of Ward no. 02.

Open Space

Total of 2.35 acres of land is proposed for open space covering 1.76% of total land. The proposed open space consists of one playfield and a local park.

Water body

The plan suggests for 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 individually with an area equal to or more than 0.25 acre will be preserved as the water retention ponds. The total land proposed for retention area covers about 2.22 acres.

Utility Services

A proposal is made with 1.24 acre of land for establishing utility services. Details are given in Chapter 10, Part B of this report.

Map 14.3: **Land Use Proposal of Darshana Paurashava (Ward No. 02)**

14.4.3.3 Proposed Road Infrastructure Development

A total of 7.44 km of road development proposal is made in the Ward Action Plan. Length of the local roads is 4.99 km and RoW of these roads will be 20 ft covering only 67.04% of the area proposed for total road network development. About 1.23 km length of primary road of 90 feet width is proposed for this Ward. The detailed scenario of road network development proposal is given in Table 14.09.

Table 14.9: Summary of Road Network Proposal at Ward no. 02 of Darshana Paurashava

Width (Ft)	Type of Road	Total		New Road		Road Widening	
		Length (km)	%	Length (km)	%	Length (km)	%
15	Walkway	0.00	0.00	0.00	0.00	0.00	0.00
20	Local/Access	4.99	67.04	0.49	52.37	4.50	69.16
30	Tertiary	0.78	10.42	0.45	47.63	0.33	5.05
40	Secondary	0.16	2.15	0.00	0.00	0.16	2.46
60	Primary	0.29	3.86	0.00	0.00	0.29	4.42
80	Primary	0.00	0.00	0.00	0.00	0.00	0.00
90	Primary	1.23	16.53	0.00	0.00	1.23	18.92
Total		7.44	100	0.94	100	6.50	100

Table 14.10: Proposed Road in Ward no. 02

Proposed Road ID	Proposed Road Type	Proposed Row (Ft)	Proposed Status	Phasing	Length (M)
LR_W_360	Local	20	Widening	Phase 2	261.81
LR_W_115	Local	20	Widening	Phase 3	287.75
LR_W_304	Local	20	Widening	Phase 2	345.15
TR_W_38	Tertiary	30	Widening	Phase 2	328.45
TR_N_14	Tertiary	30	New	Phase 2	358.27
PR_W_04	Primary	60	Widening	Phase 1	287.03
PR_W_11	Primary	90	Widening	Phase 1	527.98
PR_W_28	Primary	90	Widening	Phase 1	696.73

 # Proposal for proposed road length ≥ 250 meter

14.4.3.4 Drainage Development Plan

There is only 1.10 km man-made drainage facility at Ward no. 02. Existing drainage is mostly depending on natural drainage facilities. Total 3.28 km secondary drain and 9.53 km tertiary drain is proposed in this ward. Table 14.11 shows the details.

Table 14.11: Proposed Drainage Development Plan in Ward 02

Proposed Drain ID	Proposed Drain Type	Proposed Drain Width	Proposed Status	Length (Meter)	Phase
SD_04	Secondary Drain	1.50	New Construction	760.66	Phase 2
SD_05	Secondary Drain	1.50	New Construction	567.62	Phase 2
SD_06	Secondary Drain	1.50	New Construction	774.25	Phase 2
SD_07	Secondary Drain	1.50	New Construction	224.73	Phase 2
SD_22	Secondary Drain	1.50	New Construction	444.07	Phase 2
TD_120	Tertiary Drain	1.00	New Construction	29.79	Phase 2
TD_121	Tertiary Drain	1.00	New Construction	105.32	Phase 2
TD_122	Tertiary Drain	1.00	New Construction	11.52	Phase 2
TD_123	Tertiary Drain	1.00	New Construction	108.02	Phase 2
TD_125	Tertiary Drain	1.00	New Construction	76.73	Phase 2
TD_38	Tertiary Drain	1.00	New Construction	80.21	Phase 2
TD_41	Tertiary Drain	1.00	New Construction	343.17	Phase 2
TD_43	Tertiary Drain	1.00	New Construction	411.24	Phase 2
Total				**3937.34**	

14.4.3.5 Urban Services

a. Solid Waste Management

Solid waste management is more or less the same throughout the Paurashava. 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. There is a proposal for waste transfer station for the management of solid waste.

b. Water Supply and sanitation

It is proposed to install a network based water supply system by exploring fresh water from the Mathabhanga River. One water treatment plants will be established on the bank of the Mathabhanga River at Ward no 06 and 07 and water supply lines in this Ward will be established along all categories of roads as per the growth of the settlement from this water treatment plant.

It is apprehended that the government would not be able to provide network and treatment based sanitation system for the town. So the present system of sanitation will continue. However, the Paurashava must try to promote hygienic sanitation to ensure better public health. There is hardly any public toilet in the town to serve the visiting and the local people.

Table 14.12: New Urban Development Service Proposals

Type of Facilities	DP ID	Area in Acre	Mouza Name	Plot No.
Neighborhood Market	NM-02	0.13	Dakshin Chandpur (075_05)	2385
Ward Center	WC-02	0.64	Dakshin Chandpur (075_05)	2306
Primary School	PS-01	1.67	Akondobaria (023_02)	59, 60
			Dakshin Chandpur (075_05)	2371
Secondary School	SS-01	4.68	Akondobaria (023_02)	61, 65
			Dakshin Chandpur (075_05)	2369, 2370
Playfield	PF-01	1.02	Shyampur (077_02)	1385, 1387
Bus Terminal	BT-01	1.94	Dakshin Chandpur (075_08)	3483, 3486-3488
			Shyampur (077_02)	1454,1455, 1459-1461
Tempo Stand	TS-02	0.20	Dakshin Chandpur (075_05)	2322,2323
Waste Transfer Center	WTC-02	0.25	Dakshin Chandpur (075_05)	2370
Water Pump	WP-01	0.84	Dakshin Chandpur (075_07)	3238
Maternity Clinic	MC-02	1.20	Shyampur (077_02)	1369
Slaughter House	SH-01	0.18	Dakshin Chandpur (075_05)	2478
Total Land for New Urban Development Service Proposals of Ward No. 02 is 12.75 acres				

Map 14.4: Proposed Road, Drainage and Utility Services Plan for Darshana Paurashava (Ward No. 02)

14.5 Ward Action Plan for Ward No. 03

14.5.1 Demography

Ward no. 3 is located on the middle part of the town. In 2001, the Ward had a population of 4501 persons. Population projection shows that 4651 people will be living in the Ward in the year 2031 with a density of 30 persons per acre. Table 14.13 shows the details.

Table 14.13: Population Statistics of Ward No. 03

Item	Year	
	2011	2031
Area (acre)	154.17	154.17
Population	3628	4651
Density of Population (per acre)	24	30

14.5.2 Critical Issues and Opportunities of the Ward

Critical Issues

Ward no.03 is one of the most important areas with urban characteristics. The main administrative, commercial, educational establishments are located in this ward. The picture for basic facilities and infrastructures are similar as other wards of the Paurashava.

Development Opportunities

As Darshana is a small town with less diversified activities the opportunities for future development are almost similar for the entire Paurashava.

14.5.3 Ward Action Plan Proposals

14.5.3.1 Review of Existing Land Use

Out of total 154.17 acre of land 49.77 acre (32.28%) is used as residential purpose. About 27.63 acres (17.92%) are used in agricultural use. Water bodies occupy 3.47% of land of the ward. At present 14.83 acres of land are used in commercial purpose and about 14.28 acre is used as circulation network. Only 4.14 acre of land is used for community facilities.

Table 14.14: Comparative Scenario of Existing Land Use and Proposed Land Use of Ward no. 03

Sl. No.	Existing Land use	Area in Acres	%	Sl. No.	Proposed Land Use	Area in Acres	%
01	Residential	49.77	32.28	01	Urban Residential Zone	59.91	38.86
				02	Rural Settlement	0.00	0.00
02	Education & Research	2.19	1.42	03	Education & Research Zone	1.61	1.04
03	Governmental Services	0.26	0.17	04	Government Office	0.21	0.14
04	Commercial Activity	14.83	9.62	05	Commercial Zone	16.69	10.83
05	Manufacturing and Processing Activity	27.69	17.96	06	General Industrial Zone	17.45	11.32
				07	Heavy Industrial Zone	0.00	0.00
06	Mixed Use	0.45	0.29	08	Mixed Use Zone	2.47	1.60
07	Circulation Network	14.28	9.26	09	Circulation Network	33.96	22.03
08	Urban Green Space	0.66	0.43	10	Transportation Facilities	0.23	0.15
09	Community Service	0.68	0.44	11	Community Facilities	0.98	0.64
				12	Health Facilities	0.00	0.00
10	Recreational Facilities	0.17	0.11	13	Recreational Facilities	0.15	0.10

11	Agriculture	27.63	17.92	14	Agriculture Zone	0.00	0.00
12	Miscellaneous	0.00	0.00	15	Water Body	4.53	2.94
13	Water Body	5.35	3.47	16	Open Space	7.92	5.14
14	Service Activity	0.30	0.20	17	Restricted Area	0.00	0.00
15	Transport & Communication	0.12	0.08	18	Utility Services	0.21	0.14
16	Vacant Land	9.80	6.36	19	Urban Deferred	7.84	5.09
				20	Miscellaneous	0.00	0.00
Grand Total		**154.17**	**100**	**Grand Total**		**154.17**	**100**

14.5.3.2 Proposed Land Use Zoning

Urban Residential Area

In existing land uses has been considered the residential as residential use as a whole. In Ward Action Plan more than 59.91 acre of land has been earmarked for urban residential use which will occupy 38.86% of the total land.

Education and Research Zone

About 1.61 acres of land has been proposed for education and research. One primary school will be established in ward no. 03. Those will be located at both fringe and peripheral area of ward no. 03.

Governmental Services

For administrative use 0.21 acres of land is proposed. This occupies 0.13 % of total ward no. 03.

Commercial Zone

Total 16.69 acre of land is allocated for commercial use. In the allocated mixed use zone, more commercial activities will be operated.

Circulation network

For any type of development circulation network is any important facility. To improve the efficiency of the ward more roads are proposed which will consume 33.96 acre of land and almost 22.03% of the total area. For network improvement widening of existing road, link road and new roads are proposed which will be done phase wise within 2031.

Transport and Communication

Total 0.23 lands will be used for transport and communication in Ward no. 03.

Community Facilities

Land for community facilities is proposed to be 0.98 acre in this Ward.

Agricultural Zone

No agricultural land use proposed for this ward.

Open Space

Total 7.92 acres of land is proposed for open space, which consist of 5.14% of the Ward. Here, one local park and one playground are proposed. Details are given in Chapter 10, Part B of this report.

Water Bodies

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 0.25 acres will be preserved as the water retention ponds. The proposed retention area covers about 4.53 acre of land which will cover more than 2.94% of the total land of the Ward.

Map 14.5: **Land Use Proposal of Darshana Paurashava (Ward No. 03)**

14.5.3.3 Proposed Road Infrastructure Development

Total 10.80 km road development proposal has been proposed in first Ward Action Plan for Ward no. 03 of Darshana Paurashava. About 7.02 km local road has been proposed for this ward. Length of secondary road will be 0.64 km and RoW will be 40 ft. Total length of Primary road will be 0.64 km and 1.56 km and width of these roads will be varied from 60ft and 90ft for this Ward. Detailed scenario of road network development proposal is given in Table 14.15.

Table 14.15: Summary of Road Network Proposal at Ward no. 03 of Darshana Paurashava

Width (Ft)	Type of Road	Total		New Road		Road Widening	
		Length (km)	%	Length (km)	%	Length (km)	%
15	Walkway	0.00	0.00	0.00	0.00	0.00	0.00
20	Local/Access	7.02	65.00	0.59	100.00	6.43	62.99
30	Tertiary	0.68	6.32	0.00	0.00	0.68	6.68
40	Secondary	0.64	5.97	0.00	0.00	0.64	6.31
60	Primary	0.89	8.27	0.00	0.00	0.89	8.75
80	Primary	0.00	0.00	0.00	0.00	0.00	0.00
90	Primary	1.56	14.44	0.00	0.00	1.56	15.27
Total		**10.80**	**100**	**0.59**	**100**	**10.21**	**100**

Table 14.16: Proposed Road in Ward 03

Proposed Road ID	Proposed Road Type	Proposed Row (Ft)	Proposed Status	Phasing	Length (M)
LR_W_233	Local	20	Widening	Phase 2	544.86
LR_W_200	Local	20	Widening	Phase 2	565.52
TR_W_37	Tertiary	30	Widening	Phase 2	260.88
SR_W_07	Secondary	40	Widening	Phase 1	387.76
PR_W_20	Primary	60	Widening	Phase 1	891.26
PR_W_12	Primary	90	Widening	Phase 1	1559.23

 # Proposal for proposed road length ≥ 250 meter

14.5.3.4 Drainage Development Plan

There is only existing 1.40 km man-made drainage facility at Ward no. 03. Existing drainage is mostly depending on natural drainage facilities. Consultants proposed 5.80 km secondary drain and 12.68 km tertiary drain. Table 14.17 shows the summary.

Table 14.17: Proposed Drainage Development Plan in Ward 03

Proposed Drain ID	Proposed Drain Type	Proposed Drain Width	Proposed Status	Length (Meter)	Phase
SD_09	Secondary Drain	1.50	New Construction	817.76	Phase 1
SD_10	Secondary Drain	1.50	New Construction	731.24	Phase 1
SD_24	Secondary Drain	1.50	New Construction	1268.03	Phase 1
SD_25	Secondary Drain	1.50	New Construction	923.00	Phase 1
SD_28	Secondary Drain	1.50	New Construction	877.46	Phase 1
TD_11	Tertiary Drain	1.00	New Construction	39.20	Phase 2
TD_12	Tertiary Drain	1.00	New Construction	209.00	Phase 2
TD_124	Tertiary Drain	1.00	New Construction	50.24	Phase 2
TD_126	Tertiary Drain	1.00	New Construction	218.31	Phase 2
TD_127	Tertiary Drain	1.00	New Construction	68.17	Phase 1
TD_128	Tertiary Drain	1.00	New Construction	58.33	Phase 1
TD_13	Tertiary Drain	1.00	New Construction	208.70	Phase 2
TD_34	Tertiary Drain	1.00	New Construction	172.76	Phase 1

Proposed Drain ID	Proposed Drain Type	Proposed Drain Width	Proposed Status	Length (Meter)	Phase
TD_35	Tertiary Drain	1.00	New Construction	174.52	Phase 1
TD_36	Tertiary Drain	1.00	New Construction	166.27	Phase 1
TD_37	Tertiary Drain	1.00	New Construction	246.01	Phase 1
TD_45	Tertiary Drain	1.00	New Construction	78.53	Phase 1
TD_72	Tertiary Drain	1.00	New Construction	396.82	Phase 1
TD_74	Tertiary Drain	1.00	New Construction	381.85	Phase 1
Total				**7086.17**	

14.5.3.5 Urban Services

a. Solid Waste Management

Solid waste management is a major urban service. As density of population increases, the volume of solid waste increases proportionately. It is recommended that home collection system is introduced in the Ward by creation of local CBOs. This will cause organized collection of waste and prevent indiscriminate littering.

b. Water Supply and sanitation

The proposed water treatment plant and the water supply system will expected to improve the water supply condition of the Paurashava as a whole after the implementation of this Master Plan. The Paurashava must try to promote hygienic sanitation to ensure better public health. There is hardly any public toilet in the town to serve the visitors and the local people.

Table 14.18: New Urban Development Service Proposals

Type of Facilities	DP ID	Area in Acre	Mouza Name	Plot No.
Central Market	CM-01	1.81	Dakshin Chandpur (075_16)	6270
Neighborhood Market	NM-03	2.09	Dakshin Chandpur (075_12)	4799, 4800
Ward Center	WC-03	0.62	Dakshin Chandpur (075_09)	3703
Neighborhood Park	NP-02	4.03	Dakshin Chandpur (075_08),	3407,
			Dakshin Chandpur (075_09),	3706, 3707, 3712,
			Dakshin Chandpur (075_10),	4026, 99999
Neighborhood Park	NP-03	0.55	Dakshin Chandpur (075_10)	4023
Shishu Park	SP	0.85	Shyampur (077_02)	1281-1283
Deep Tube well	DT-01	0.21	Shyampur (077_02)	1271
Waste Transfer Center	WTC-03	0.30	Shyampur (077_02)	1287
Total Land for New Urban Development Service Proposals of Ward No. 03 is 10.46 acres				

Map 14.6: Proposed Road, Drainage and Utility Services Plan for Darshana Paurashava (Ward No. 03)

14.6 Ward Action Plan for Ward No. 04

14.6.1 Demography

Ward No. 4 is located on the norther-middle part of the town. It has the moderate density of population. In 2001, the Ward had a population of 4742 persons. Population projection shows that 4608 people will be living in the Ward in the year 2031 with a moderately density of 18 persons per acre.Table 14.19 shows the details.

Table 14.19: Population Statistics of Ward No. 04

Item	Year	
	2011	2031
Area (acre)	260.38	260.38
Population	3594	4608
Density of Population (per acre)	14	18

14.6.2 Critical Issues and Opportunities of the Ward

Ward no. 04 is located on the northern-middle side of the Paurashava with mostly rural and scattered settlements. The basic facilities and infrastructure required for an urban area are not yet established here. There is no systematic drainage and solid waste management facilities, lack of recreational and educational facilities. Even the road network and other basic facilities are not up to the mark. Again, very low density and scattered settlements are the main obstacles for infrastructure development.

Development Opportunities

As Darshana is a small town with less diversified activities the opportunities for future development are almost similar for the entire Paurashava.

14.6.3 Ward Action Plan Proposals

14.6.3.1Review of Existing Land Use

Out of the total 260.38 acres, about 94.65 acres of land i.e. 36.35% is used for agriculture. For residential land use, about 83.46 acres are used. It occupies more than 32.05% of total land. Water bodies occupy only 3.18% land of the Ward. Total 5.33 acres of land is used for educational purpose. At present, only 3.90 acre of land is used for commercial purpose, while 12.70% is used for circulation network. No non-government establishments, land for transport and communication, recreational facilities area does not exist in this Ward.

Table 14.20: Comparative Existing Land Use and Proposed Land Use of Ward No. 04

Sl. No.	Existing Land use	Area in Acres	%	Sl. No.	Proposed Land Use	Area in Acres	%
01	Residential	83.46	32.05	01	Urban Residential Zone	80.73	31.00
				02	Rural Settlement	3.87	1.49
02	Education & Research	5.33	2.05	03	Education & Research Zone	5.75	2.21
03	Governmental Services	0.94	0.36	04	Government Office	0.17	0.06
04	Commercial Activity	3.62	1.39	05	Commercial Zone	5.41	2.08
05	Manufacturing and Processing Activity	7.10	2.73	06	General Industrial Zone	6.35	2.44
				07	Heavy Industrial Zone	0.00	0.00
06	Mixed Use	0.26	0.10	08	Mixed Use Zone	1.43	0.55

Sl. No.	Existing Land use	Area in Acres	%	Sl. No.	Proposed Land Use	Area in Acres	%
07	Circulation Network	33.06	12.70	09	Circulation Network	59.90	23.00
08	Urban Green Space	4.54	1.74	10	Transportation Facilities	3.14	1.21
09	Community Service	1.96	0.75	11	Community Facilities	6.30	2.42
				12	Health Facilities	0.00	0.00
10	Recreational Facilities	0.71	0.27	13	Recreational Facilities	0.66	0.26
11	Agriculture	94.65	36.35	14	Agriculture Zone	52.03	19.98
12	Miscellaneous	0.00	0.00	15	Water Body	6.64	2.55
13	Water Body	8.29	3.18	16	Open Space	17.74	6.81
14	Service Activity	0.33	0.13	17	Restricted Area	0.00	0.00
15	Transport & Communication	0.00	0.00	18	Utility Services	0.85	0.33
16	Vacant Land	16.14	6.20	19	Urban Deferred	9.28	3.56
				20	Miscellaneous	0.00	0.00
Grand Total		260.38	100	Grand Total		260.38	100

14.6.3.2 Proposed Land Use Zoning

Urban Residential Zone

In the existing land uses, both the urban residential and rural homestead has been considered as residential use as a whole. In Ward Action Plan, about 80.73 acres of land has been earmarked for urban residential use which will occupy more than 31.00% of the total land.

Commercial Zone

About 5.41 acre area will be as commercial zone for ward no. 04 in Darshana Paurashava.

Circulation network

For any type of development circulation network is any important facility. To improve the efficiency of the Ward, more roads are proposed which will consume 59.90 acres of land and more than 23.00% of the total area. For network improvement widening of existing road, link road and new roads are proposed which will be done phase wise within 2031.

Community Facilities

Proposed land for community service will be increased to 6.30 acre. Total 2.42% of Ward area will be occupied by this type of land use.

Agricultural Zone

The Paurashava including Ward no. 04 has a vast area of agricultural land that demands formation of a separate zone like, agriculture zone. Existing agricultural land of Ward no. 4 is 94.65 acres. Due to development changes in the Ward, only 52.03 acres of land will remain for agriculture covering 19.98% of the total land up to the year 2031.

Open Space

Total 17.74 acres of land will be used for urban open space which covers 6.81% of total land of the Ward no. 04 of Darshana Paurashava.

Water Body

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 0.25 acre will be preserved as the water retention ponds. The proposed retention area occupies about 6.64 acres of the total land of the Ward.

Map 14.7: Land Use Proposal of Darshana Paurashava (Ward No. 04)

14.6.3.3 Proposed Road Infrastructure Development

Total 14.33 km road development proposal have been proposed in the first Ward Action Plan for Ward no. 04 of Darshana Paurashava. Length of the local road will be 8.42 km and width of these roads will be 20 ft and covering 58.76% of total road network development proposal. Length of secondary road for this Ward will be 1.93 km. Detailed scenario of road network development proposal is given in Table 14.21 and table 14.22.

Table 14.21: Summary of Road Network Proposal at ward no. 04 of Darshana Paurashava

Width (Ft)	Type of Road	Total		New Road		Road Widening	
		Length (km)	%	Length (km)	%	Length (km)	%
15	Walkway	0.00	0.00	0.00	0.00	0.00	0.00
20	Local/Access	8.42	58.76	1.61	100.00	6.81	53.55
30	Tertiary	0.74	5.18	0.00	0.00	0.74	5.84
40	Secondary	1.93	13.47	0.00	0.00	1.93	15.17
60	Primary	1.37	9.56	0.00	0.00	1.37	10.77
80	Primary	0.00	0.00	0.00	0.00	0.00	0.00
90	Primary	1.87	13.03	0.00	0.00	1.87	14.68
Total		14.33	100	1.61	100	12.72	100

Table 14.22: Proposed Road in Ward no. 04

Proposed Road ID	Proposed Road Type	Proposed Row (Ft)	Proposed Status	Phasing	Length (M)
LR_W_52	Local	20	Widening	Phase 2	307.15
LR_N_34	Local	20	New	Phase 2	343.42
LR_W_300	Local	20	Widening	Phase 2	357.57
LR_W_274	Local	20	Widening	Phase 2	358.46
LR_N_31	Local	20	New	Phase 2	386.77
LR_N_35	Local	20	New	Phase 3	387.09
LR_W_337	Local	20	Widening	Phase 3	396.70
LR_W_277	Local	20	Widening	Phase 2	480.75
TR_W_14	Tertiary	30	Widening	Phase 3	273.93
TR_W_10	Tertiary	30	Widening	Phase 2	384.29
SR_W_12	Secondary	40	Widening	Phase 1	250.27
SR_W_30	Secondary	40	Widening	Phase 1	403.76
SR_W_06	Secondary	40	Widening	Phase 1	414.30
SR_W_08	Secondary	40	Widening	Phase 1	853.53
PR_W_02	Primary	60	Widening	Phase 1	1368.97
PR_W_10	Primary	90	Widening	Phase 1	476.64
PR_W_29	Primary	90	Widening	Phase 1	1389.85

 # Road length ≥ 250 meter

14.6.3.4 Drainage Development Plan

There is 1.50 km man-made drainage facility at Ward no. 04 of Darshana Paurashava. The proposed drainage facilities will be developed based on this natural channel. Proposal has been made for 10.49 km secondary drain and 14.89 km tertiary drain. Table 14.23 shows the Summary.

Table 14.23: Proposed Drainage Development Plan in Ward 04

Proposed Drain ID	Proposed Drain Type	Proposed Drain Width	Proposed Status	Length (Meter)	Phase
SD_08	Secondary Drain	1.50	New Construction	1473.85	Phase 3
SD_23	Secondary Drain	1.50	New Construction	980.90	Phase 2
SD_30	Secondary Drain	1.50	New Construction	1178.07	Phase 2
TD_03	Tertiary Drain	1.00	New Construction	179.20	Phase 2
TD_06	Tertiary Drain	1.00	New Construction	278.17	Phase 2
TD_07	Tertiary Drain	1.00	New Construction	191.25	Phase 2
TD_71	Tertiary Drain	1.00	New Construction	860.98	Phase 2
TD_73	Tertiary Drain	1.00	New Construction	844.46	Phase 2
TD_82	Tertiary Drain	1.00	New Construction	393.69	Phase 2
TD_83	Tertiary Drain	1.00	New Construction	243.55	Phase 2
TD_84	Tertiary Drain	1.00	New Construction	11.85	Phase 2
TD_85	Tertiary Drain	1.00	New Construction	358.31	Phase 2
TD_90	Tertiary Drain	1.00	New Construction	547.14	Phase 2
				7541.42	

14.6.3.5 Urban Services

Urban Utility Services

There is a proposal for waste transfer station of 0.85 acres in ward 04.

Water Supply and Sanitation

The proposed water treatment plant and the water supply system will improve the water supply condition of the Paurashava as a whole after the implementation of this Master Plan. The Paurashava must try to promote hygienic sanitation to ensure better public health for the entire Paurashava.

Table 14.24: New Urban Development Service Proposals

Type of Facilities	DP ID	Area in Acre	Mouza Name	Plot No.
Neighborhood Market	NM-04	2.66	Dakshin Chandpur (075_01)	96-99
Ward Center	WC-04	0.75	Dakshin Chandpur (075_01)	80
Playfield	PF-04	2.65	Dakshin Chandpur (075_01)	47, 48, 55, 58
Tempo Stand	TS-03	0.38	Dakshin Chandpur (075_07)	3205
Truck Terminal	TT	2.51	Dudhpatila (074_02)	2377,2378 2387-2391,3129
Waste Transfer Center	WTC-04	0.85	Dakshin Chandpur (075_01)	63
Maternity Clinic	MC-03	1.20	Dakshin Chandpur (075_01)	100
Central Eidgah	CE	0.88	Dakshin Chandpur (075_11)	4432
Central Graveyard	CG	4.94	Dakshin Chandpur (075_11)	4401-4407, 4451,4453, 4454
Total Land for New Urban Development Service Proposals of Ward No. 04 is 16.82 acres				

Map 14.8: **Proposed Road, Drainage and Utility Services Plan for Darshana Paurashava (Ward No. 04)**

14.7 Ward Action Plan for Ward No. 05

14.7.1 Demography

Ward No. 5 is located in the northern part of the town. In 2001, the Ward had a population of 3609 persons. Population projection shows that 4754 people will be living in the year 2031 with a density of 17 persons per acre only. Table 14.25 shows the details.

Table 14.25: Population Statistics of ward no. 05

Item	Year	
	2011	2031
Area (acre)	273.33	273.33
Population	3708	4754
Density of Population (per acre)	14	17

14.7.2 Critical Issues and Opportunities of the Ward

Critical Issues

The basic facilities and infrastructure required for an urban area are established here. It is the peripheral part of the Paurashava. There is insufficient water body in this Ward.

Development Opportunities

As Darshana is a small town with less diversified activities, the opportunities for future development are almost similar for the entire Paurashava.

14.7.3 Ward Action Plan Proposals

14.7.3.1 Review of Existing Land Use

This ward is mainly used for agricultural in nature. Out of total 273.33 acres of land i.e. 70.58% is used as agricultural use. About 17.24% land is used for residential purpose covering about 47.11 acres. Water bodies occupy only 6.18 acres land of the Ward. At present, only 0.76 acres of land are used for commercial purpose and 1.86% land is used as circulation network.

Table 14.26: Comparative Existing Land Use and Proposed Land Use of Ward No. 05

Sl. No.	Existing Land use	Area in Acres	%	Sl. No.	Proposed Land Use	Area in Acres	%
01	Residential	47.11	17.24	01	Urban Residential Zone	34.89	12.76
				02	Rural Settlement	31.76	11.62
02	Education & Research	1.35	0.49	03	Education & Research Zone	1.07	0.39
03	Governmental Services	12.60	4.61	04	Government Office	13.27	4.85
04	Commercial Activity	0.76	0.28	05	Commercial Zone	1.22	0.45
05	Manufacturing and Processing Activity	0.00	0.00	06	General Industrial Zone	0.00	0.00
				07	Heavy Industrial Zone	0.00	0.00
06	Mixed Use	0.00	0.00	08	Mixed Use Zone	0.78	0.28
07	Circulation Network	6.31	2.31	09	Circulation Network	23.94	8.76
08	Urban Green Space	0.39	0.14	10	Transportation Facilities	1.17	0.43
09	Community Service	0.17	0.06	11	Community Facilities	0.57	0.21
				12	Health Facilities	0.00	0.00
10	Recreational Facilities	0.00	0.00	13	Recreational Facilities	1.03	0.38
11	Agriculture	192.90	70.58	14	Agriculture Zone	145.66	53.29
12	Miscellaneous	0.00	0.00	15	Water Body	6.00	2.20

Sl. No.	Existing Land use	Area in Acres	%	Sl. No.	Proposed Land Use	Area in Acres	%
13	Water Body	6.18	2.26	16	Open Space	6.79	2.48
14	Service Activity	0.14	0.05	17	Restricted Area	0.00	0.00
15	Transport & Communication	0.38	0.14	18	Utility Services	0.45	0.16
16	Vacant Land	5.02	1.84	19	Urban Deferred	4.62	1.69
				20	Miscellaneous	0.00	0.00
Grand Total		273.33	100	Grand Total		273.33	100

14.7.3.2 Proposed Land Use Zoning

Urban Residential Zone

In existing land uses, both the urban residential and rural homestead has been considered as residential use as a whole. In Ward Action Plan, more than 34.89 acres of land has been earmarked for urban residential use which will occupy 12.76% of the total land.

Rural Settlement

In Ward Action Plan, more than 31.76 acres of land has been earmarked for rural settlement zone which will occupy 11.62% of the total land.

Education and Research Zone

About 1.07 acres education facilities are proposed in this ward. Development and improvement of existing educational institution is proposed for this ward. It covers 0.39% of total land of the Ward.

Circulation network

For any type of development, circulation network is important. To improve the functional efficiency of the Ward, more roads are proposed which will consume 23.94 acres of total area. For network improvement and widening of existing road, link road and new roads are proposed which will be done phase wise within 2031.

Transportation Facilities

Total 1.17 acre area covering only 0.43% of total land of Ward no. 05 will be used for transportation facilities. One tempo stand will be established in this land. Table 10.20 of Chapter 10, Part B of this report shows the details.

Community Facilities

Proposed land for community service will be increased from 0.17 acre to 0.57 acres.

Agricultural Zone

Due to future population growth and development of infrastructure, agricultural land will be reduced from 192.90 acres to 145.66 acres. A small portion of land of rural homestead will also be utilized for agricultural activities as farm, poultry or horticulture. In ward no 05, maximum agricultural land will be reduced by future housing project.

Water Body

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 0.25 acres will be preserved as the water retention ponds. The proposed retention area covers about 6.00 acres of land.

Map 14.9: **Land Use Proposal of Darshana Paurashava (Ward No. 05)**

14.7.4.3 Proposed Road Infrastructure Development

Total 9.88 km road development proposal have been made in the Ward Action Plan for Ward no. 05. Length of the local road will be 5.04 km and width of these roads will be 20 ft wide covering 36.00% of total road network development proposal. Length of secondary road will be 2.52 km and RoW will be 40 ft. Total length of primary road will be 1.70 km and width of these roads will be 60 ft. Detailed scenario of road network development proposal is given in Table 14.27 and 14.28.

Table 14.27: Summary of Road Network Proposal at Ward no. 05 of Darshana Paurashava

Width (Ft)	Type of Road	Total		New Road		Road Widening	
		Length (km)	%	Length (km)	%	Length (km)	%
15	Walkway	0.00	0.00	0.00	0.00	0.00	0.00
20	Local/Access	5.04	51.03	1.14	58.02	3.90	49.29
30	Tertiary	0.62	6.24	0.00	0.00	0.62	7.80
40	Secondary	2.52	25.48	0.83	41.98	1.69	21.36
60	Primary	1.70	17.25	0.00	0.00	1.70	21.55
80	Primary	0.00	0.00	0.00	0.00	0.00	0.00
90	Primary	0.00	0.00	0.00	0.00	0.00	0.00
Total		**9.88**	**100**	**1.97**	**100**	**7.91**	**100**

Table 14.28: Proposed Road in Ward no. 05

Proposed Road ID	Proposed Road Type	Proposed Row (Ft)	Proposed Status	Phasing	Length (M)
LR_N_37	Local	20	New	Phase 3	307.87
LR_W_213	Local	20	Widening	Phase 3	430.49
TR_W_08	Tertiary	30	Widening	Phase 2	367.53
SR_N_14	Secondary	40	New	Phase 1	291.73
SR_W_28	Secondary	40	Widening	Phase 1	477.09
SR_W_13	Secondary	40	Widening	Phase 1	877.99
PR_W_07	Primary	60	Widening	Phase 1	396.45
PR_W_19	Primary	60	Widening	Phase 1	475.11
PR_W_18	Primary	60	Widening	Phase 1	802.66

 # proposed roads upto 250 meters

14.7.3.4 Drainage Development Plan

There is 0.58 km man-made drainage facility in Ward no. 05. The proposed drainage facilities will be developed based on this natural channel. There is proposal for 8.40 km of Secondary drain which will connect 9.41 km tertiary drain. Table 14.29 shows the details.

Table 14.29: Proposed Drainage Development Plan in Ward 05

Proposed Drain ID	Proposed Drain Type	Proposed Drain Width	Proposed Status	Length (Meter)	Phase
TD_05	Tertiary Drain	1.00	New Construction	872.43	Phase 2
TD_76	Tertiary Drain	1.00	New Construction	228.72	Phase 2
TD_89	Tertiary Drain	1.00	New Construction	586.59	Phase 2
TD_94	Tertiary Drain	1.00	New Construction	103.20	Phase 2
TD_102	Tertiary Drain	1.00	New Construction	116.27	Phase 2
TD_108	Tertiary Drain	1.00	New Construction	131.42	Phase 2
TD_114	Tertiary Drain	1.00	New Construction	130.49	Phase 2
SD_15	Secondary Drain	1.50	New Construction	1302.77	Phase 3
SD_26	Secondary Drain	1.50	New Construction	1438.67	Phase 2
Total				**4910.57**	

14.7.3.5 Urban Services

A waste transfer station of 0.45 acre of land is proposed for Ward no. 05.

a. Solid Waste Management

Solid waste management is more or less the same throughout the Paurashava. 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. There is a proposal for waste transfer station for the management of solid waste.

b. Water Supply and sanitation

There is no proposal for water treatment plant and water supply system in this Ward. The Paurashava must try to promote hygienic sanitation to ensure better public health for the entire Paurashava.

Table 14.30: New Urban Development Service Proposals

Type of Facilities	DP ID	Area in Acre	Mouza Name	Plot No.
Neighborhood Market	NM-05	0.90	Loknathpur (073_06)	9652, 9656-9659, 9672
Ward Center	WC-05	0.66	Loknathpur (073_06)	1015, 1016, 1032, 1033, 1038, 1039
Agro based Industry	AgI-01	3.43	Loknathpur (073_06)	9378-9391, 9393
Upazila Parishad	UP	2.11	Dakshin Chandpur (075_13)	5001, 5002
Central Park	CP-01	7.72	Dakshin Chandpur (075_13)	5001-5003, 5006-5013
Auditorium	UP	1.04	Dakshin Chandpur (075_11)	4413
			Dakshin Chandpur (075_13)	5080
Tempo Stand	TS-04	0.40	Loknathpur (073_06)	9427 9469, 9472
Waste Transfer Center	WTC-05	0.53	Loknathpur (073_06)	9702
Maternity Clinic	MC-04	0.87	Loknathpur (073_06)	9394-9397
Slaughter House	SH-02	0.18	Loknathpur (073_06)	9655,9672, 9673
Total Land for New Urban Development Service Proposals of Ward No. 05 is 17.84 acres				

Map 14. 10: **Proposed Road, Drainage and Utility Services Plan for Darshana Paurashava (Ward No. 05)**

12.8 Ward Action Plan for Ward No. 06

12.8.1 Demography

Ward No. 6 lies on the north-western part of Darshana Paurashava. In 2001, the Ward had a population of 3412 persons. Population projection shows that 4758 people will be living in the year 2031 with a density of 8 persons per acre only. Table 14.31 shows details.

Table 14. 31: Population Statistics of Ward No. 06

Item	Year	
	2011	2031
Area (acre)	579.51	579.51
Population	3711	4758
Density of Population (per acre)	6	8

14.8.2 Critical Issues and Opportunities of the Ward

Critical Issues

Narrow roads, traffic congestion, lack of drainage facilities, absent of water supply network, unplanned and haphazard development are main features of this Ward. The 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.

The higher the size of population, the more demand is created for goods and services leading to more economic activities and employment. No urban centre can flourish without adequate economic prosperity.

Development Opportunities

As Darshana is a small town with less diversified activities the opportunities for future development are almost similar for the entire Paurashava.

14.8.3 Ward Action Plan Proposals

14.8.3.1 Review of Existing Land Use

This Ward is agricultural in character. Out of total 579.51 acre of land i.e. about 388.18 acres (66.98%) is used as agricultural use. About 72.84 acre (12.57%) are residential use. Water bodies occupy more than 11.32% land of the ward. Table 14.32 shows the details.

Table 14. 32: Existing and Proposed Land Uses of Ward No. 06

Sl. No.	Existing Land use	Area in Acres	%	Sl. No.	Proposed Land Use	Area in Acres	%
01	Residential	72.84	12.57	01	Urban Residential Zone	30.83	5.32
				02	Rural Settlement	72.22	12.46
02	Education & Research	7.04	1.21	03	Education & Research Zone	14.65	2.53
03	Governmental Services	1.29	0.22	04	Government Office	0.37	0.06
04	Commercial Activity	6.09	1.05	05	Commercial Zone	5.13	0.89
05	Manufacturing and Processing Activity	0.05	0.01	06	General Industrial Zone	0.00	0.00
				07	Heavy Industrial Zone	0.00	0.00
06	Mixed Use	0.60	0.10	08	Mixed Use Zone	0.88	0.15
07	Circulation Network	9.32	1.61	09	Circulation Network	42.75	7.38

Sl. No.	Existing Land use	Area in Acres	%	Sl. No.	Proposed Land Use	Area in Acres	%
08	Urban Green Space	0.06	0.01	10	Transportation Facilities	0.73	0.13
09	Community Service	0.28	0.05	11	Community Facilities	3.58	0.62
				12	Health Facilities	4.55	0.79
10	Recreational Facilities	0.08	0.01	13	Recreational Facilities	0.00	0.00
11	Agriculture	388.18	66.98	14	Agriculture Zone	272.61	47.04
12	Miscellaneous	0.00	0.00	15	Water Body	64.36	11.11
13	Water Body	65.58	11.32	16	Open Space	14.42	2.49
14	Service Activity	0.51	0.09	17	Restricted Area	0.00	0.00
15	Transport & Communication	0.57	0.10	18	Utility Services	2.39	0.41
16	Vacant Land	26.95	4.65	19	Urban Deferred	49.85	8.60
				20	Miscellaneous	0.00	0.00
Grand Total		579.51	100	Grand Total		579.51	100

14.7.3.2 Proposed Land Use Zoning

Urban Residential Zone

About 30.83 acres of land is proposed as urban residential homestead up to the year 2031.

Rural settlement

About 72.22 acres of land is proposed as rural homestead up to the year 2031.

Education and Research Zone

Total 14.65 acre area covering 2.53% of total land of Darshana Paurashava will be used as education and research zone in Ward no. 06.

Commercial Zone

It will comprise of only 5.13 acres (0.89%) of land. Some amount of future commercial use will be created within the residential zone.

Circulation network

To improve the efficiency of the Ward, more roads are proposed which will consume 42.75 acres of land and more than 7.38% of the total area. For network improvement, widening of existing road, link road and new roads are proposed which will be done phase wise within 2031.

Water Body

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 0.25 acres will be preserved as the water retention ponds. The proposed retention area covers about 64.36acres (11.11%) of land.

Map 14.11: Land Use Proposal of Darshana Paurashava (Ward No. 06)

14.8.3.3 Proposed Road Infrastructure Development

Total 18.48 km road development proposal has been proposed in the first Ward Action Plan for Ward no. 06 of Darshana Paurashava. Total 4.93 km local road with 20 ft width has been proposed for this ward where the length of the proposed primary road is about 3.21 km with the width of 60 ft. Table 14.33 and 14.34 shows the details.

Table 14.33: Summary of Road Network Proposal at Ward no. 06 of Darshana Paurashava

Width (Ft)	Type of Road	Total		New Road		Road Widening	
		Length (km)	%	Length (km)	%	Length (km)	%
15	Walkway	3.96	21.44	3.96	48.40	0.00	0.00
20	Local/Access	4.93	26.65	0.96	11.71	3.97	38.54
30	Tertiary	4.15	22.44	1.23	15.07	2.91	28.30
40	Secondary	2.24	12.12	2.03	24.82	0.21	2.01
60	Primary	3.21	17.35	0.00	0.00	3.21	31.15
80	Primary	0.00	0.00	0.00	0.00	0.00	0.00
90	Primary	0.00	0.00	0.00	0.00	0.00	0.00
Total		**18.48**	**100**	**8.19**	**100**	**10.29**	**100**

Table 14.34: Proposed Road in Ward No. 06

Proposed Road ID	Proposed Road Type	Proposed Row (Ft)	Proposed Status	Phasing	Length (M)
WW_N_06	Walkway	15	New	Phase 2	3961.81
LR_W_142	Local	20	Widening	Phase 3	279.47
LR_N_39	Local	20	New	Phase 2	283.13
LR_W_342	Local	20	Widening	Phase 2	323.00
LR_W_100	Local	20	Widening	Phase 3	381.68
TR_N_09	Tertiary	30	New	Phase 2	271.10
TR_N_06	Tertiary	30	New	Phase 2	312.51
TR_W_23	Tertiary	30	Widening	Phase 2	455.91
TR_W_01	Tertiary	30	Widening	Phase 2	471.25
TR_W_16	Tertiary	30	Widening	Phase 2	913.29
SR_N_05	Secondary	40	New	Phase 1	707.47
SR_N_03	Secondary	40	New	Phase 1	849.05
PR_W_22	Primary	60	Widening	Phase 1	609.22
PR_W_08	Primary	60	Widening	Phase 1	745.22
PR_W_23	Primary	60	Widening	Phase 1	1851.43

 # Roads length ≥ 250 meter

14.8.3.4 Drainage Development Plan

There is no maentionable man-made drainage facility in Ward no. 06 of Darshana Paurashava. Total 10.98 km of secondary drain will be served for Ward number 06, which will be connected by 14.27 km tertiary drain. Table 14.35 shows the details.

Table 14.35: Proposed Drainage Development Plan in Ward 06

Proposed Drain ID	Proposed Drain Type	Proposed Drain Width	Proposed Status	Length (Meter)	Phase
SD_16	Secondary Drain	1.50	New Construction	1083.69	Phase 2
SD_27	Secondary Drain	1.50	New Construction	2770.52	Phase 1
TD_09	Tertiary Drain	1.00	New Construction	213.42	Phase 2
TD_10	Tertiary Drain	1.00	New Construction	212.36	Phase 2
TD_100	Tertiary Drain	1.00	New Construction	11.90	Phase 2
TD_101	Tertiary Drain	1.00	New Construction	38.67	Phase 2

Proposed Drain ID	Proposed Drain Type	Proposed Drain Width	Proposed Status	Length (Meter)	Phase
TD_103	Tertiary Drain	1.00	New Construction	342.17	Phase 2
TD_104	Tertiary Drain	1.00	New Construction	11.24	Phase 2
TD_105	Tertiary Drain	1.00	New Construction	219.84	Phase 2
TD_106	Tertiary Drain	1.00	New Construction	11.00	Phase 2
TD_107	Tertiary Drain	1.00	New Construction	115.24	Phase 2
TD_109	Tertiary Drain	1.00	New Construction	255.28	Phase 2
TD_110	Tertiary Drain	1.00	New Construction	11.06	Phase 2
TD_111	Tertiary Drain	1.00	New Construction	132.59	Phase 2
TD_112	Tertiary Drain	1.00	New Construction	11.10	Phase 2
TD_113	Tertiary Drain	1.00	New Construction	55.06	Phase 2
TD_115	Tertiary Drain	1.00	New Construction	247.71	Phase 2
TD_116	Tertiary Drain	1.00	New Construction	11.07	Phase 2
TD_117	Tertiary Drain	1.00	New Construction	193.77	Phase 2
TD_129	Tertiary Drain	1.00	New Construction	223.75	Phase 2
TD_131	Tertiary Drain	1.00	New Construction	223.11	Phase 2
TD_14	Tertiary Drain	1.00	New Construction	3452.51	Phase 3
TD_15	Tertiary Drain	1.00	New Construction	312.31	Phase 2
TD_16	Tertiary Drain	1.00	New Construction	203.94	Phase 2
TD_18	Tertiary Drain	1.00	New Construction	204.85	Phase 2
TD_21	Tertiary Drain	1.00	New Construction	230.16	Phase 2
TD_23	Tertiary Drain	1.00	New Construction	84.61	Phase 2
TD_24	Tertiary Drain	1.00	New Construction	72.07	Phase 2
TD_25	Tertiary Drain	1.00	New Construction	540.48	Phase 2
TD_26	Tertiary Drain	1.00	New Construction	239.44	Phase 2
TD_27	Tertiary Drain	1.00	New Construction	241.72	Phase 2
TD_28	Tertiary Drain	1.00	New Construction	207.51	Phase 2
TD_29	Tertiary Drain	1.00	New Construction	209.25	Phase 2
TD_30	Tertiary Drain	1.00	New Construction	136.76	Phase 2
TD_31	Tertiary Drain	1.00	New Construction	44.70	Phase 2
TD_32	Tertiary Drain	1.00	New Construction	264.22	Phase 2
TD_33	Tertiary Drain	1.00	New Construction	448.83	Phase 2
TD_39	Tertiary Drain	1.00	New Construction	405.87	Phase 2
TD_75	Tertiary Drain	1.00	New Construction	94.53	Phase 2
TD_77	Tertiary Drain	1.00	New Construction	365.21	Phase 2
TD_78	Tertiary Drain	1.00	New Construction	11.26	Phase 2
TD_79	Tertiary Drain	1.00	New Construction	367.49	Phase 2
TD_80	Tertiary Drain	1.00	New Construction	11.54	Phase 2
TD_81	Tertiary Drain	1.00	New Construction	108.32	Phase 2
TD_95	Tertiary Drain	1.00	New Construction	354.41	Phase 2
TD_96	Tertiary Drain	1.00	New Construction	11.21	Phase 2
TD_97	Tertiary Drain	1.00	New Construction	227.84	Phase 2
TD_98	Tertiary Drain	1.00	New Construction	11.07	Phase 2
TD_99	Tertiary Drain	1.00	New Construction	68.13	Phase 2
				15324.79	

14.8.3.5 Urban Services

a. Solid Waste Management

Solid waste management is a major urban service. As density of population increases, the volume of solid waste also increases proportionately. However, the income level is also a major factor influencing the volume of solid waste. Population and the volume of waste in the Paurashava 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. It is recommended that home collection system is introduced in the Ward by creation of local CBOs. This will cause organized collection of waste and prevent indiscriminate littering.

b. Water Supply

It is proposed to install a network based water supply system by exploring fresh water from the Mathabhanga River. One water treatment plants will be established on the bank of the Mathabhanga River at Ward 06 and water supply lines in this Ward will be established along all categories of roads as per the growth of the settlement from this water treatment plant.

c. Sanitation

The Paurashava must try to promote hygienic sanitation to ensure better public health for the entire Paurashava. There is hardly any public toilet in the town to serve the visitors and the local people.

Table 14.36: New Urban Development Service Proposals

Type of Facilities	DP ID	Area in Acre	Mouza Name	Plot No.
Neighborhood Market	NM-06	0.79	Dakshin Ramnagar (076_02)	1015, 1016, 1032, 1033, 1038, 1039
Ward Center	WC-06	0.49	Dakshin Ramnagar (076_02)	667
Agro based Industry	AgI-02	22.10	Dakshin Ramnagar (076_01)	186-197
			Dakshin Ramnagar (076_02)	381-385, 391-393, 397-455, 457-462, 535-549
Primary School	PS-02	2.05	Dakshin Ramnagar (076_02),	671, 672, 674, 675, 687, 690, 691, 693
Vocational Institute	VI	7.66	Dakshin Ramnagar (076_02)	499-503, 507-518, 741, 742, 744-758, 765, 766, 1587
Central Park	CP-01	19.14	Dakshin Chandpur (075_14)	5501, 5503
			Dakshin Ramnagar (076_02)	442-454, 488-496
Neighborhood Park	NP-01	1.29	Dakshin Ramnagar (076_02)	1479-1483, 1536
Park	P-01	5.41	Dakshin Chandpur (075_17)	7006
			Dakshin Ramnagar (076_02)	1545
Park	P-03	0.68	Dakshin Ramnagar (076_02)	1460, 1462- 1465, 1473, 1536
Park	P-04	4.31	Dakshin Chandpur (075_17)	7004, 7005
			Dakshin Ramnagar (076_02)	1504,1510, 1513, 1514, 1517-1533
Playfield	PF-02	1.65	Dakshin Chandpur (075_17)	7006-7009,7054
Playfield	PF-03	1.61	Dakshin Ramnagar (076_02)	629,630, 676,677, 678
Tempo Stand	TS-05	0.22	Dakshin Ramnagar (076_02)	623
Surface Water Treatment Plant	SWTP-01	1.37	Dakshin Chandpur (075_17)	7006
			Dakshin Ramnagar (076_02)	1528, 1529,1534
Waste Transfer Center	WTC-06	0.15	Dakshin Chandpur (075_14)	5544
Water Pump	WP-02	0.49	Dakshin Ramnagar (076_02)	1588
General Hospital	GH-01	5.88	Dakshin Ramnagar (076_02)	1433,1434, 1439,1440, 1442-1455,1465-1470,1473
Graveyard	GY	3.21	Dakshin Ramnagar (076_02)	1119-1123, 1133-1135, 1137
Slaughter House	SH-03	0.33	Dakshin Ramnagar (076_02)	1458
Total Land for New Urban Development Service Proposals of Ward No. 06 is 78.83 acres				

Map 14.12: **Proposed Road, Drainage and Utility Services Plan for Darshana Paurashava (Ward No. 06)**

14.9 Ward Action Plan for Ward no. 07

14.9.1 Demography

Ward no. 07 is also located on the middle part of the Paurashava. In 2001, the Ward had a population of 3613 persons. Population projection shows that 3927 people will be living in the Ward in the year 2031. The density of population will be 46persons per acre. Table 14.37 shows the details.

Table 14.37: Population Statistics of Ward no. 07

Item	Year	
	2011	2031
Area (acre)	84.79	84.79
Population	3063	3927
Density of Population (per acre)	36	46

14.9.2 Critical Issues and Opportunities of the Ward

Critical Issues

Although this Ward is located in the central area in the context of the Paurashava town, most of the areas have residential characteristics. There are also commercial establishments, mixed use and residential settlements. However, it has lack of basic facilities and infrastructure required for an urban area. The Ward is not adequately served by roads. Quality of roads on average is not satisfactory.

Ward no. 07 is located just beside of Ward no 08, the most important commercial area with better infrastructural facilities. The Ward, however, has the rural characteristics. Thus the Ward has greater potentialities to grow as an important and livable urban area by building up various community and infrastructural facilities and amenities. This could serve the entire Ward and surrounding area.

Development Opportunities

As Darshana is a small town with less diversified activities, the opportunities for future development are almost similar for the entire Paurashava.

14.9.3 Ward Action Plan Proposals

14.9.3.1 Review of Existing Land Use

Out of total 84.79 acres of land covering 14.81% of the Ward area is used for agriculture. More than 45.61 acres of land are used for Residential. Water bodies occupy about 5.87% land of the Ward. About 8.88% is used as circulation network, and only 0.85 acre of land is used for community facilities. A negligible percentage of urban green space is available here. Table 14.38 shows the details.

Table 14.38: Comparative Existing Land Use and Proposed Land Use of Ward No. 07

Sl. No.	Existing Land use	Area in Acres	%	Sl. No.	Proposed Land Use	Area in Acres	%
01	Residential	45.61	53.78	01	Urban Residential Zone	48.88	57.65
				02	Rural Settlement	0.00	0.00
02	Education & Research	0.71	0.84	03	Education & Research Zone	0.76	0.90
03	Governmental Services	0.64	0.76	04	Government Office	0.00	0.00
04	Commercial Activity	4.15	4.90	05	Commercial Zone	4.98	5.87
05	Manufacturing and Processing Activity	0.08	0.10	06	General Industrial Zone	0.00	0.00
				07	Heavy Industrial Zone	0.00	0.00
06	Mixed Use	2.66	3.13	08	Mixed Use Zone	1.49	1.76
07	Circulation Network	7.53	8.88	09	Circulation Network	20.32	23.97
08	Urban Green Space	0.07	0.08	10	Transportation Facilities	0.85	1.01
09	Community Service	0.85	1.00	11	Community Facilities	0.47	0.55
				12	Health Facilities	0.00	0.00
10	Recreational Facilities	1.26	1.49	13	Recreational Facilities	1.26	1.48
11	Agriculture	12.56	14.81	14	Agriculture Zone	0.00	0.00
12	Miscellaneous	0.00	0.00	15	Water Body	5.17	6.09
13	Water Body	4.97	5.87	16	Open Space	0.60	0.71
14	Service Activity	1.67	1.97	17	Restricted Area	0.00	0.00
15	Transport & Communication	0.77	0.91	18	Utility Services	0.00	0.00
16	Vacant Land	1.25	1.48	19	Urban Deferred	0.00	0.00
				20	Miscellaneous	0.00	0.00
Grand Total		**84.79**	**100**	**Grand Total**		**84.79**	**100**

14.9.3.2 Proposed Land Use Zoning

Urban Residential Area

In Ward Action Plan, more land is allocated for residential use. More than 48.88 acres of land has been earmarked for urban residential use, which occupies about 57.65% of the total land.

Education and Research Zone

All together 0.76 acres (0.90%) of land is proposed for educational purposes, where additionally 1.87 acres of land is allocated for establishment of a Primary School. Table 14.35 shows the details.

Commercial Zone

Total 4.98 acres area which covers 5.87% of total land of Ward no. 07 will be used as commercial zone for Darshana Paurashava. A ward market is proposed to establish in this ward.

Mixed Use

More than 1.76% of the total area of the Ward is allocated for mixed use zone. This mixed use land will be used for commercial and community facilities. One Ward Center will also be established within this mixed use zone.

Circulation network

For any type of development, circulation network is an important facility. To improve the efficiency of the Ward, more roads are proposed which will consume more than 20.32 acres of land and more than 23.97% of the total area. For network improvement, widening

of existing road, link road and new roads are proposed which will be done phase wise within 2031.

Community Facilities

Total 0.47 acre area covering 0.55% of total land of this Ward will be used for community facilities. No additional land is proposed for this purpose in this Ward.

Recreational Facilities

Total 1.26 acre area covering 1.48% of total land of this Ward will be used for Recreational Facilities.

Water Body

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 0.25 acre will be preserved as the water retention ponds. The proposed retention area covers more than 5.17 acres of land.

Map 14.13: **Land Use Proposal of Darshana Paurashava (Ward No. 07)**

14.9.3.3 Proposed Road Infrastructure Development

Total 6.49 km road development proposal has been made in the first Ward Action Plan for Ward no. 07 of Darshana Paurashava. Length of the local road will be 3.24 km and width of these roads will be 20 ft and it covers 49.85% of total road network development proposal. Total length of secondary road will be 0.67 km with width of 40 ft and primary road with 60-90 ft width will be 1.70 km. Detailed scenario of road network development proposal is given in Table 14.39 and 14.40.

Table 14.39: Summary of Road Network Proposal at Ward no. 07 of Darshana Paurashava

Width (Ft)	Type of Road	Total		New Road		Road Widening	
		Length (km)	%	Length (km)	%	Length (km)	%
15	Walkway	0.00	0.00	0.00	0.00	0.00	0.00
20	Local/Access	3.24	49.85	0.48	68.95	2.76	47.54
30	Tertiary	0.88	13.56	0.00	0.00	0.88	15.20
40	Secondary	0.67	10.31	0.00	0.00	0.67	11.55
60	Primary	1.29	19.85	0.22	31.05	1.07	18.50
80	Primary	0.40	6.21	0.00	0.00	0.40	6.96
90	Primary	0.01	0.23	0.00	0.00	0.01	0.26
Total		**6.49**	**100**	**0.70**	**100**	**5.80**	**100**

Table 14.40: Proposed Road for Ward no. 07

Proposed Road ID	Proposed Road Type	Proposed Row (Ft)	Proposed Status	Phasing	Length (M)
TR_W_31	Tertiary	30	Widening	Phase 2	275.13
SR_W_18	Secondary	40	Widening	Phase 1	365.09
PR_W_01	Primary	60	Widening	Phase 1	532.89
PR_W_19	Primary	60	Widening	Phase 1	539.11
PR_W_25	Primary	80	Widening	Phase 1	403.14

Roads ≥ 250 meter

14.9.3.4 Drainage Development Plan

There is 3.70 km of man-made drainage facility at Ward no. 07 in Darshana Paurashava. The proposed drainage facilities will be developed based on this river. Here proposed 4.84 km of secondary drain and the river will serve as primary drains for Ward no. 07 which will be connected by 7.50 km tertiary drain. Table 14.41 shows the details.

Table 14.41: Proposed Drainage Development Plan in Ward 07

Proposed Drain ID	Proposed Drain Type	Proposed Drain Width	Proposed Status	Length (Meter)	Phase
SD_11	Secondary Drain	1.50	New Construction	1132.97	Phase 1
SD_12	Secondary Drain	1.50	New Construction	850.66	Phase 1
SD_13	Secondary Drain	1.50	New Construction	533.46	Phase 1
SD_14	Secondary Drain	1.50	New Construction	282.97	Phase 1
TD_04	Tertiary Drain	1.00	New Construction	661.21	Phase 1
TD_08	Tertiary Drain	1.00	New Construction	234.12	Phase 1
TD_118	Tertiary Drain	1.00	New Construction	337.68	Phase 1
TD_119	Tertiary Drain	1.00	New Construction	42.91	Phase 1
TD_133	Tertiary Drain	1.00	New Construction	13.03	Phase 1
TD_134	Tertiary Drain	1.00	New Construction	150.18	Phase 1
TD_136	Tertiary Drain	1.00	New Construction	135.35	Phase 1

Proposed Drain ID	Proposed Drain Type	Proposed Drain Width	Proposed Status	Length (Meter)	Phase
TD_20	Tertiary Drain	1.00	New Construction	55.53	Phase 1
TD_22	Tertiary Drain	1.00	New Construction	50.39	Phase 1
TD_40	Tertiary Drain	1.00	New Construction	219.32	Phase 2
TD_46	Tertiary Drain	1.00	New Construction	189.68	Phase 1
TD_47	Tertiary Drain	1.00	New Construction	12.02	Phase 1
TD_51	Tertiary Drain	1.00	New Construction	291.69	Phase 1
TD_52	Tertiary Drain	1.00	New Construction	64.70	Phase 1
TD_53	Tertiary Drain	1.00	New Construction	71.91	Phase 1
TD_86	Tertiary Drain	1.00	New Construction	264.80	Phase 1
TD_87	Tertiary Drain	1.00	New Construction	235.74	Phase 1
TD_88	Tertiary Drain	1.00	New Construction	11.01	Phase 1
TD_91	Tertiary Drain	1.00	New Construction	72.73	Phase 1
TD_92	Tertiary Drain	1.00	New Construction	12.23	Phase 1
TD_93	Tertiary Drain	1.00	New Construction	139.88	Phase 1
Total				**6066.17**	

14.9.3.5 Urban Services

a. Solid Waste Management

Solid waste management is a major urban service. As density of population increases, the volume of solid waste also increases proportionately. However, the income level is also a major factor influencing the volume of solid waste. Population and the volume of waste in the Paurashava 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 has not proposed any solid waste transfer station or disposable site in this area. It is recommended that home collection system is introduced in the Ward by creation of local CBOs. This will cause organized collection of waste and prevent indiscriminate littering.

b. Water Supply

It is proposed to install a network based water supply system by exploring fresh water from the Mathabhanga. One water treatment plants will be established on the bank of the Mathabhanga River at Ward no. 06 and 07 and water supply lines in this Ward will be established along all categories of roads as per the growth of the settlement from this water treatment plant.

c. Sanitation

The Paurashava must try to promote hygienic sanitation to ensure better public health for the entire Paurashava.

Table 14.42: New Urban Development Service Proposals

Type of Facilities	DP ID	Area in Acre	Mouza Name	Plot No.
Ward Center	WC-07	0.27	Dakshin Chandpur (075_17)	7048
Tempo Stand	TS-06	0.25	Dakshin Chandpur (075_16)	6627
Waste Transfer Center	WTC-07	0.36	Dakshin Chandpur (075_17)	7032
Total Land for New Urban Development Service Proposals of Ward No. 07 is 0.88 acres				

Map 14.14: **Proposed Road, Drainage and Utility Services Plan for Darshana Paurashava (Ward No. 07)**

14.10 Ward Action Plan for Ward no. 08

14.10.1 Demography

Ward No. 8 is located on the south-western part of the town. In 2001, the Ward had a population of 3927 persons. Population projection shows that 35497 people will be living in this Ward in the year 2031 with a density of 6 persons per acre. Table 14.43 shows the details.

Table 14.43: Population Statistics of Ward No. 08

Item	Year	
	2011	2031
Area (acre)	922.93	922.93
Population	4288	5497
Density of Population (per acre)	**5**	**6**

14.10.2 Critical Issues and Opportunities of the Ward

Critical Issues

Ward No.08 is located on the south-western side of Paurashava. Most of the area is now in agricultural practice. There is acute shortage of basic infrastructure and facilities necessary for a livable urban environment.

Development Opportunities

As Darshana is a small town with less diversified activities, the opportunities for future development are almost similar for the entire Paurashava. Internal connectivity of road is a positive point for development.

14.10.3 Ward Action Plan Proposals

14.10.3.1 Review of Existing Land Use

Ward no. 08 is mainly rural in character. Out of total 922.93 acres of land of this Ward, more than 727.25 acres of land i.e. 78.80% is used as agriculture. Residential uses have 105.49 acres for the purpose. It occupies almost 11.43% of total land. An amount of 1.18 acre of land is under commercial use. Among other uses, water bodies occupy 4.37% land, while 0.32 acre is used for education and 1.80% is used for circulation network. Only 0.10% of land is used for community facilities. No other type of land uses are found in this Ward, not even any recreational facility is present in this Ward. Table 14.44 shows the details.

Table 14.44: Existing and Proposed Land Use of Ward no. 08

Sl. No.	Existing Land use	Area in Acres	%	Sl. No.	Proposed Land Use	Area in Acres	%
01	Residential	105.49	11.43	01	Urban Residential Zone	52.60	5.70
				02	Rural Settlement	47.95	5.20
02	Education & Research	0.32	0.03	03	Education & Research Zone	0.12	0.01
03	Governmental Services	0.29	0.03	04	Government Office	2.70	0.29
04	Commercial Activity	1.18	0.13	05	Commercial Zone	1.79	0.19
05	Manufacturing and Processing Activity	0.00	0.00	06	General Industrial Zone	0.00	0.00
				07	Heavy Industrial Zone	0.00	0.00
06	Mixed Use	0.15	0.02	08	Mixed Use Zone	1.73	0.19

Sl. No.	Existing Land use	Area in Acres	%	Sl. No.	Proposed Land Use	Area in Acres	%
07	Circulation Network	23.48	2.54	09	Circulation Network	63.25	6.85
08	Urban Green Space	3.51	0.38	10	Transportation Facilities	0.68	0.07
09	Community Service	0.90	0.10	11	Community Facilities	3.97	0.43
				12	Health Facilities	0.80	0.09
10	Recreational Facilities	0.00	0.00	13	Recreational Facilities	0.00	0.00
11	Agriculture	727.25	78.80	14	Agriculture Zone	683.02	74.01
12	Miscellaneous	0.00	0.00	15	Water Body	39.67	4.30
13	Water Body	40.32	4.37	16	Open Space	1.24	0.13
14	Service Activity	2.32	0.25	17	Restricted Area	0.00	0.00
15	Transport & Communication	0.33	0.04	18	Utility Services	1.54	0.17
16	Vacant Land	17.40	1.88	19	Urban Deferred	21.18	2.29
				20	Miscellaneous	0.00	0.00
Grand Total		**922.93**	**100**	**Grand Total**		**922.93**	**100**

14.10.3.2 Proposed Land Use Zoning

Urban Residential Zone

In Ward Action Plan, more than 52.60 acres of land remains for Urban Residential Zone occupying 5.70% of the total land

Rural Settlement

In Ward Action Plan, more than 47.95 acres of land remains for rural settlement occupying 5.20% of the total land.

Education and Research Zone

Total 0.12 acre of land is proposed for education and research in Ward no. 08.

Circulation network

For any type of development, circulation network is an important factor. The circulation network 63.25 acres which covers 6.85% of the total area. For network improvement, widening of existing road, link road and new roads are proposed which will be done phase wise within 2031.

Health Services

Total 0.80 acre of land is proposed for health services. One maternity clinic will be established in this area.

Community Facilities

Proposed land for community service will be increased from 0.90 acre to 3.97 acres due to road widening and construction of new roads for smooth functioning of traffic circulation.

Agricultural Zone

There is 727.25 acres of agricultural land in this Ward. In the future, for infrastructure, housing and other facilities and services, agricultural land will be used. So it is proposed that 74.01% (683.02 acres) of total land of the Ward will remain in agricultural use up to the year 2031.

Water Body

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 0.25 acres will be preserved as the water retention ponds. The proposed retention area covers about 39.67 acres of land.

Map 14.15: **Land Use Proposal of Darshana Paurashava (Ward No. 08)**

14.10.3.3 Proposed Road Infrastructure Development

Total 17.09 km road development proposal has been proposed for Ward no.08 of Darshana Paurashava. Length of the local road is 3.45 km with width of 20 ft covering 20.18% of total road network development proposal. Total length of secondary road will be 3.11 km and width of these roads will be varied from 40 ft. Length of primary road will be 3.05 km with 80 ft width. Detailed scenario of road network development proposal is given in Table 14.45 and 14.46.

Table 14.45: Summary of Road Network Proposal at Ward no. 08 of Darshana Paurashava

Width (Ft)	Type of Road	Total		New Road		Road Widening	
		Length (km)	%	Length (km)	%	Length (km)	%
15	Walkway	2.19	12.83	2.19	29.20	0.00	0.00
20	Local/Access	3.45	20.18	1.05	13.93	2.40	25.08
30	Tertiary	5.27	30.83	3.49	46.51	1.78	18.55
40	Secondary	3.11	18.22	0.77	10.21	2.35	24.49
60	Primary	0.01	0.07	0.01	0.15	0.00	0.00
80	Primary	3.05	17.87	0.00	0.00	3.05	31.88
90	Primary	0.00	0.00	0.00	0.00	0.00	0.00
Total		**17.09**	**100**	**7.51**	**100**	**9.58**	**100**

Table 14.46: Road Proposal for ward no. 08

Proposed Road ID	Proposed Road Type	Proposed Row (Ft)	Proposed Status	Phasing	Length (M)
WW_N_03	Walkway	15	New	Phase 2	572.40
WW_N_02	Walkway	15	New	Phase 2	1436.02
LR_W_252	Local	20	Widening	Phase 2	396.24
LR_N_02	Local	20	New	Phase 2	475.86
TR_N_02	Tertiary	30	New	Phase 2	334.82
TR_N_01	Tertiary	30	New	Phase 2	342.38
TR_N_11	Tertiary	30	New	Phase 2	581.18
TR_W_05	Tertiary	30	Widening	Phase 3	613.36
TR_W_28	Tertiary	30	Widening	Phase 3	789.09
TR_N_03	Tertiary	30	New	Phase 2	977.09
TR_N_10	Tertiary	30	New	Phase 2	1255.36
SR_N_08	Secondary	40	New	Phase 1	298.89
SR_N_09	Secondary	40	New	Phase 1	324.76
SR_W_22	Secondary	40	Widening	Phase 1	540.99
SR_W_19	Secondary	40	Widening	Phase 1	620.73
SR_W_04	Secondary	40	Widening	Phase 1	807.99
PR_W_26	Primary	80	Widening	Phase 1	2890.36

 # Road ≥ 250 meter

14.10.3.4 Drainage Development Plan

There is only 0.95km man-made drainage facility at Ward no. 08 of Darshana Paurashava. The proposed drainage facilities will 12.68 km secondary drain and 7.39 km tertiary drain. Table 14.47 shows the details.

Table 14.47: Proposed Drainage Development Plan in Ward 08

Proposed Drain ID	Proposed Drain Type	Proposed Drain Width	Proposed Status	Length (Meter)	Phase
SD_19	Secondary Drain	1.50	New Construction	2172.78	Phase 1
SD_20	Secondary Drain	1.50	New Construction	2184.84	Phase 1

Proposed Drain ID	Proposed Drain Type	Proposed Drain Width	Proposed Status	Length (Meter)	Phase
SD_21	Secondary Drain	1.50	New Construction	28.85	Phase 1
TD_130	Tertiary Drain	1.00	New Construction	474.26	Phase 2
TD_132	Tertiary Drain	1.00	New Construction	460.46	Phase 2
TD_135	Tertiary Drain	1.00	New Construction	286.79	Phase 1
TD_137	Tertiary Drain	1.00	New Construction	239.46	Phase 1
TD_138	Tertiary Drain	1.00	New Construction	11.44	Phase 1
TD_139	Tertiary Drain	1.00	New Construction	47.24	Phase 1
TD_140	Tertiary Drain	1.00	New Construction	317.36	Phase 1
TD_141	Tertiary Drain	1.00	New Construction	363.21	Phase 1
TD_142	Tertiary Drain	1.00	New Construction	11.04	Phase 1
TD_143	Tertiary Drain	1.00	New Construction	250.61	Phase 1
TD_144	Tertiary Drain	1.00	New Construction	330.55	Phase 2
TD_145	Tertiary Drain	1.00	New Construction	11.78	Phase 2
TD_146	Tertiary Drain	1.00	New Construction	331.81	Phase 2
TD_147	Tertiary Drain	1.00	New Construction	11.27	Phase 2
TD_148	Tertiary Drain	1.00	New Construction	11.40	Phase 2
TD_149	Tertiary Drain	1.00	New Construction	95.15	Phase 1
TD_48	Tertiary Drain	1.00	New Construction	184.03	Phase 2
TD_49	Tertiary Drain	1.00	New Construction	11.77	Phase 1
TD_50	Tertiary Drain	1.00	New Construction	20.18	Phase 1
TD_56	Tertiary Drain	1.00	New Construction	573.50	Phase 1
TD_57	Tertiary Drain	1.00	New Construction	581.60	Phase 1
TD_68	Tertiary Drain	1.00	New Construction	539.28	Phase 3
TD_69	Tertiary Drain	1.00	New Construction	814.31	Phase 3
TD_70	Tertiary Drain	1.00	New Construction	572.54	Phase 3
Total				**10937.49**	

14.10.3.5 Urban Services

a. Solid Waste Management

The present solid waste management system is not satisfactory and it might to lead to problem in future. The consultant does not propose any solid waste disposable and transfer station in this Ward. There is also no initiative for water supply and sanitation system. There is also no new proposal for solid waste management, water supply and sanitation system and also other urban utility facilities in this Ward.

b. Sanitation

The Paurashava must try to promote hygienic sanitation to ensure better public health for the entire Paurashava.

Table 14.48: New Urban Development Service Proposals

Type of Facilities	DP ID	Area in Acre	Mouza Name	Plot No.
Neighborhood Market	NM-08	1.51	Joynagar (078_01)	164, 701
Ward Center	WC-08	1.69	Joynagar (078_01)	158
Agro based Industry	AgI-03	4.22	Joynagar (078_01)	380-386, 396, 403-407, 661
Park	P-02	0.35	Dakshin Chandpur (075_17)	7006
Tempo Stand	TS-07	0.33	**Joynagar (078_01)**	437
Waste Transfer Center	WTC-08	0.36	Shyampur (077_01)	148
Waste Water Treatment Plant	WWTP	0.58	Shyampur (077_01)	334, 368, 371,
Maternity Clinic	MC-05	0.78	Joynagar (078_01)	159
Central Cremation	CC	0.37	Shyampur (077_01)	373
Total Land for New Urban Development Service Proposals of Ward No. 08 is 10.19 acres				

Map 14.16: **Proposed Road, Drainage and Utility Services Plan for Darshana Paurashava (Ward No. 08)**

14.11 Ward Action Plan for Ward no. 09

14.11.1 Demography

Ward no. 9 is located on the southern-east part of the town. Population projection shows 4567 population for the year 2031. For the same year, it will contain a density of about 5 persons per acre.

Table 14.49: Population Statistics of Ward No. 09

Item	Year	
	2011	2031
Area (acre)	870.47	870.47
Population	3562	4567
Density of Population (per acre)	4	5

14.11.2 Critical Issues and Opportunities of the Ward

Critical Issues

Most of the area of the Ward is now under agricultural practices. There is acute shortage of basic infrastructure and facilities necessary for a livable urban environment. Infrastructure development is not cost effective for its low density of population. This size of population will not help grow the local economy. Like all other wards, water supply is also a critical problem in this Ward.

Development Opportunities

As Darshana is a small town with less diversified activities, the opportunities for future development are almost similar for the entire Paurashava.

14.11.3 Ward Action Plan Proposals

14.11.3.1 Review of Existing Land Use

Ward no. 09 is mainly rural and peripheral area in character. Out of total 870.47 acres of land of this Ward, about 647.08 acres of land is under agricultural use. The residential use has 74.22 acres of land covering about 8.53% of total land. Among other uses, 10.77% water body, and about 1.65% is used for circulation network. Only 0.08 acre of land is used for commercial purposes and 0.05% of land is used for Community facilities.

Table 14.50: Comparative Existing Land Use and Proposed Land Use of Ward no. 09

Sl. No.	Existing Land use	Area in Acres	%	Sl. No.	Proposed Land Use	Area in Acres	%
01	Residential	74.22	8.53	01	Urban Residential Zone	19.05	2.19
				02	Rural Settlement	50.06	5.75
02	Education & Research	1.34	0.15	03	Education & Research Zone	1.20	0.14
03	Governmental Services	0.03	0.00	04	Government Office	0.00	0.00
04	Commercial Activity	0.67	0.08	05	Commercial Zone	0.54	0.06
05	Manufacturing and Processing Activity	5.27	0.61	06	General Industrial Zone	3.07	0.35
				07	Heavy Industrial Zone	0.00	0.00
06	Mixed Use	0.19	0.02	08	Mixed Use Zone	1.28	0.15
07	Circulation Network	14.38	1.65	09	Circulation Network	46.97	5.40
08	Urban Green Space	0.89	0.10	10	Transportation Facilities	0.81	0.09
09	Community Service	0.45	0.05	11	Community Facilities	0.50	0.06

Sl. No.	Existing Land use	Area in Acres	%	Sl. No.	Proposed Land Use	Area in Acres	%
				12	Health Facilities	2.79	0.32
10	Recreational Facilities	0.00	0.00	13	Recreational Facilities	0.00	0.00
11	Agriculture	647.08	74.34	14	Agriculture Zone	599.28	68.85
12	Miscellaneous	0.00	0.00	15	Water Body	92.35	10.61
13	Water Body	93.71	10.77	16	Open Space	1.55	0.18
14	Service Activity	0.03	0.00	17	Restricted Area	0.00	0.00
15	Transport & Communication	0.00	0.00	18	Utility Services	2.97	0.34
16	Vacant Land	32.19	3.70	19	Urban Deferred	47.60	5.47
				20	Miscellaneous	0.00	0.00
Grand Total		870.47	100	Grand Total		870.47	100

14.11.3.2 Proposed Land Use Zoning

Residential Area

In the land use proposal, the urban residential use possesses 19.05 acres of land which covers 2.19% total land of Ward no. 09 in Darshana Paurashava.

Rural Settlement

As half of the land of the Ward is in agricultural use, so in Ward Action Plan, almost 5.75% (50.06 acre) is proposed for rural homestead up to the year 2031.

Education and Research Zone

All together 1.20 acres of land is proposed for education and research purposes for this Ward. Moreover, a high school and one primary have been additionally proposed.

Circulation network

For any type of development, circulation network is very important. To improve the efficiency of the Ward activities, more roads are proposed which will consume land and it is more than 46.97of the total area of Ward no. 09 in Darshana Paurashava. For network improvement, widening of existing road, link road and new roads are proposed which will be done phase wise within 2031.

Open Space

Total 1.55 acres of open land has been proposed for a Local Park for Ward no 09.

Water Body

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 0.25 acres will be preserved as the water retention ponds. The proposed retention area covers 92.35 acres of land.

Map 14.17: **Land Use Proposal of Darshana Paurashava (Ward No. 09)**

14.11.3.3 Proposed Road Infrastructure Development

Total 14.77 km road development proposal has been proposed in the first Ward Action Plan for Ward no. 09 of Darshana Paurashava. Length of the local road will be 4.26 km with width of 20 ft covering 28.82% of total road network development proposal. Total length of secondary road will be 1.97 km and width of these roads will be 40ft .There is proposal for 5.01 km primary road network of 60ft width. Detailed scenario of road network development proposal is given in Table 14.51 and 14.52.

Table 14.51: Summary of Road Network Proposal at Ward no. 09 of Darshana Paurashava

Width (Ft)	Type of Road	Total		New Road		Road Widening	
		Length (km)	%	Length (km)	%	Length (km)	%
15	Walkway	0.00	0.00	0.00	0.00	0.00	0.00
20	Local/Access	4.26	28.82	1.07	39.87	3.18	26.35
30	Tertiary	3.53	23.90	1.14	42.36	2.39	19.77
40	Secondary	1.97	13.34	0.39	14.51	1.58	13.08
60	Primary	5.01	33.94	0.09	3.27	4.92	40.80
80	Primary	0.00	0.00	0.00	0.00	0.00	0.00
90	Primary	0.00	0.00	0.00	0.00	0.00	0.00
Total		14.77	100	2.70	100	12.07	100

Table 14.52: Proposed Road for Ward no. 09

Proposed Road ID	Proposed Road Type	Proposed Row (Ft)	Proposed Status	Phasing	Length (M)
LR_W_346	Local	20	Widening	Phase 2	259.84
LR_W_347	Local	20	Widening	Phase 2	260.43
LR_N_40	Local	20	New	Phase 2	378.64
TR_N_15	Tertiary	30	New	Phase 2	449.78
TR_N_17	Tertiary	30	New	Phase 2	599.68
TR_W_29	Tertiary	30	Widening	Phase 2	766.16
TR_W_06	Tertiary	30	Widening	Phase 2	812.44
SR_N_11	Secondary	40	New	Phase 1	382.79
SR_W_22	Secondary	40	Widening	Phase 1	1569.22
PR_W_27	Primary	60	Widening	Phase 1	858.44
PR_W_21	Primary	60	Widening	Phase 1	1175.71
PR_W_14	Primary	60	Widening	Phase 1	2889.86

 # Roads ≥ 250 meter

14.11.3.4 Drainage Development Plan

There is already 1.80 km man-made drainage facility at Ward no. 09 of Darshana Paurashava. Existing drainage is mostly depending on natural drainage facilities. The proposed drainage facilities will be developed based on this natural channel and will be connected by 13.98 km secondary drain and 9.51 km tertiary drain in the first Ward Action Plan. Table 14.53 shows the details.

Table 14.53: Proposed Drainage Development Plan in Ward 09

Proposed Drain ID	Proposed Drain Type	Proposed Drain Width	Proposed Status	Length (Meter)	Phase
SD_17	Secondary Drain	1.50	New Construction	839.00	Phase 2
SD_18	Secondary Drain	1.50	New Construction	6602.59	Phase 3
SD_29	Secondary Drain	1.50	New Construction	1976.12	Phase 1
TD_42	Tertiary Drain	1.00	New Construction	610.61	Phase 2
TD_44	Tertiary Drain	1.00	New Construction	585.19	Phase 2
TD_54	Tertiary Drain	1.00	New Construction	783.27	Phase 1
TD_55	Tertiary Drain	1.00	New Construction	544.01	Phase 1
TD_58	Tertiary Drain	1.00	New Construction	233.42	Phase 1
TD_59	Tertiary Drain	1.00	New Construction	189.31	Phase 2
TD_60	Tertiary Drain	1.00	New Construction	35.24	Phase 2
TD_61	Tertiary Drain	1.00	New Construction	210.25	Phase 2
TD_62	Tertiary Drain	1.00	New Construction	244.91	Phase 2
TD_63	Tertiary Drain	1.00	New Construction	224.85	Phase 2
TD_64	Tertiary Drain	1.00	New Construction	209.81	Phase 2
TD_65	Tertiary Drain	1.00	New Construction	485.43	Phase 2
TD_66	Tertiary Drain	1.00	New Construction	521.78	Phase 2
TD_67	Tertiary Drain	1.00	New Construction	179.87	Phase 2
Total				**14475.69**	

14.11.3.5 Urban Services

a. Solid Waste Management

Solid waste management is a major urban service. As density of population increases the volume of solid waste also increases proportionately. However, the income level is also a major factor influencing the volume of solid waste. Population and the volume of waste in the Paurashava are yet to be large enough to become a problem for the town. But the present management system is not satisfactory and it might lead to problem in future. The consultant does not propose solid waste transfer stations or disposal site in this Ward. They also do not propose any other utility services, like water supply and sanitation system for this zone.

b. Water supply and Sanitation

The proposed water treatment plant and the water supply system will improve the water supply condition of the Paurashava as a whole after the implementation of this Master Plan. The Paurashava must try to promote hygienic sanitation to ensure better public health for the entire Paurashava.

Table 14.54: New Urban Development Service Proposals

Type of Facilities	DP ID	Area in Acre	Mouza Name	Plot No.
Neighborhood Market	NM-09	0.54	Bhabanipur (024_01)	6, 10
			Shyampur (077_02)	1584, 1591, 1592, 1593
Ward Center	WC-09	1.54	Bhabanipur (024_01)	79, 80
Dumping Site	DS-01	5.54	Bhabanipur (024_01)	146, 154, 156-158, 196, 198-201,203
Waste Transfer Center	WTC-09	0.44	Shyampur (077_02)	1110
Maternity Clinic	MC-06	2.78	Bhabanipur (024_01)	74-76,78
Total Land for New Urban Development Service Proposals of Ward No. 09 is 10.84 acres				

Map 14.18: Proposed Road, Drainage and Utility Services Plan for Darshana Paurashava (Ward No. 09)

14.12 Implementation Guidelines

The Master Plan of Darshana Paurashava will be an effective tool for planned urban development, if it is implemented properly with legal enforcement. The different components of the Master Plan have varied implications if they are not implemented in an integrated manner. There is no separate laws related directly to the implementation of Master Plan of the Paurashavas in the country other than the Local Government (Paurashava) Act, 2009 and some relevant national policies and laws as discussed in chapter 5 under the Structure Plan.

However, the legal provisions that have been made in the Local Government (Paurashava) Act, 2009 can effectively be applied in the implementation of the Master Plan of Darshana Paurashava for the time being along with other relevant national policies and laws that have also implications at Paurashava level, such as Playfield, Open space, Park and Natural water reservoir Conservation Act 2000 and BNBC 1993. Other national policies, guidelines and laws relevant to population, agriculture, environment, tourism, building materials, building construction etc. have implications for the implementation of various components including the Ward Action Plan of the Master Plan of Darshana Paurashava.

Therefore, until specific laws and guidelines are made by the government for the Paurashavas in Bangladesh for the implementation of Master Plans, the existing laws, policies and guidelines should be strictly followed so that the goal and objectives of these plans are achieved. Effective application of the various existing policies and laws require prudent exercise of professional knowledge and expertise, which is lacking in the existing human resources of the Paurashavas in Bangladesh. In particular, the Paurashavas require professional urban/town planner(s) in the setup of their manpower. In this context, there is an urgent need for the creation of a planning division/section in the existing set up of the Paurashava Organogram.

14.12.1 Proposals for Mitigation of Identified Issues

The critical issues of planning and development identified in the Structure Plan have been addressed through the preparation of Urban Area Plan and Ward Action Plan. The proposals made in these plans resolve the issues rose in the Structure Plan.

14.12.2 Comparative Advantage of Master Plan

The Paurashavas in Bangladesh do not have any practicing plans at present in regard to organized development of land use or infrastructure. This situation has been continuing over a long period of time in the past promoting spontaneous land and infrastructure development. As a result, there are examples of unplanned development creating discomfort to the people living in almost all Paurashavas in the country. The implementation of the currently prepared Master Plan of Darshana Paurashava will remove those obstacles by applying the principles, guidelines and proposals of various components of its Master Plan. The Ward Action Plan prepared following the Urban Area Plan will solve the most pressing needs of the town in infrastructure development.

14.13 Conclusion

The Paurashavas in Bangladesh for the first time in its history are having their detailed Master Plans prepared scientifically using modern tools and techniques. These Master Plans will be effective tools for planned development of most of the urban centers in Bangladesh. The planned township development will also ensure required services for the rural areas of the country. This in turn will make a positive impact on economic growth, social progress and environmental sustainability. The Darshana Paurashava must avail this opportunity for its progress in the future by implementing the Master Plan.

CHAPTER 15

CONCLUSION

15.1 Conclusion

Preparation of the Paurashava development plan is not an end in itself; rather it is an attempt to the beginning of a phase of development of an undeveloped area aspiring for development. Planning is far easier than development. In a developing country like Bangladesh, execution of spatial development plan is really a challenging task for any local government that so vastly rely on the central government for development budget allocation. Amid a host of other priority problems, the central government is often helpless in providing resources for small town's development, where problems are considered less important than those in larger cities. Keeping this constraint in view the local urban governments in smaller towns should emphasize on enhancing the capacity of generating their own resources. Besides, avenues must be searched to recover costs of development from the beneficiaries either directly or indirectly. Direct recovery can be charging development charges or taxes in various forms. Indirectly people can be involved project planning and implementation. This approach of development will benefit in two ways, first, it will create belongingness among people about development of their own areas and second, it will save public money required for development. Land can be procured from land owners for construction of local standard roads. This kind of participatory approach to development would directly benefit the land owner. Without a strong planning section the plans will never come true. There must be someone to take care of the plans and development control effectively. Finally, the Paurashava must give due importance to this plan document to streamline its future development. It must follow the plan for any development, otherwise the plan will lose its credibility and one day it will turn into waste paper which will simply accentuate the town's problems.