



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

**DOHAR PAURASHAVA**  
**MASTER PLAN: 2011-2031**

March 2015



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

## **DOHAR 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



**DOHAR PAURASHAVA**  
**DOHAR, DHAKA**

# **DOHAR 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, Dohar 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 Dohar Paurashava.

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

(Alhaj Abdur Rahim Miah)  
Mayor, Dohar Paurashava

## EXECUTIVE SUMMARY

The term “Master Plan” is a guideline for future development. This guideline is being resulted on specific issues. The Government of Bangladesh has committed to prepare the Paurashava master Plan for ensuring the Paurashava environment livable. At present, development scenery of the Paurashava shows a very grave situation. Primary and secondary drains and natural streams are not functioning as an integrated drainage system due partly to silting up and unplanned and deficient construction and lack of maintenance. Encroachment on drainage reservations causes inundation to many areas, including houses and roads, during heavy storms. There is hardly any roadside drain and if any, the roadside drains are inadequate due to insufficient capacities and incorrect gradients.

Equally, traffic and transportation problems in the Paurashavas of Bangladesh are continuously increasing as the development and management of road network has not been commensurate with the increasing demand for its usage. Traffic congestion, delay, accidents, pedestrian and parking difficulties, air and noise pollution are among the problems. Traffic congestion is one of the most important and critical problems now being identified in the Paurashavas. The situation has been steadily deteriorating over time, over large areas and for longer periods of the day. If this unplanned construction goes on unabated it will make the environment of the Paurashava unsuitable and inhabitable. At present, there is no proper Master Plan for development of Paurashava to overcome those problems. In the absence of proper Master Plan construction of all types of infrastructure like houses, roads, drains, markets are going on unabated in an unplanned manner. This situation is creating an adverse action in the original landscape thereby creating environmental hazards.

It appears that planned development of Paurashava is very important. In view of this grave situation it has, therefore, been contemplated that preparation of Master Plan is being made with projection for a period of 20 years. Further, in support of the Master Plan there are separate plans named Landuse Plan, Drainage and Environmental Plan, Traffic Management Plan, Community Services Plan and Ward Action Plan to ensure operation and maintenance of the existing infrastructure along with those facilities proposed to be built up under the future investment program and above all, to suggest improvement of the management ability of the Paurashava Authority so that their revenue earning capability will be enhanced with a view to building up the Paurashava Authority as self-sustaining local government institution. The Master Plan will also suggest construction of roads and bridges / culverts, drainage facilities, streetlights, markets, bus stands, solid waste management, sanitation, water supply and other such infrastructure facilities.

This is the primary effort of planned development for the Dohar Paurashava, guided by the LGED under Package-01 of the Upazila Towns Infrastructure Development Project (UTIDP). It is expected that the implementation of the plan will induce higher level of development, ensure planned life, good community and better future of the Paurashava inhabitants.

Dohar Paurashava is located within the Dhaka zila at a distance about 40 km. from the zero point of Dhaka city and on the south-west part of Dhaka zila. It lies between 23°32' and 23°40' north latitude and 90°00' and 90°12' east longitude. It is bounded by Raipara union and Nobabgonj Upazila on the north, Suterpara and Narisha union on the south, Arial bill and Nobabgonj Upazila on the east, Mahmudpur and Kusumhati union on the west. The Consultant has identified the Paurashava's existing jurisdiction area as 19.77 sq. km. and “A” Class Paurashava with a total

population of 71362 people according to BBS population Census-2011, Community Series, Zila-Dhaka the population. The major problems of the Paurashava are lack of community facilities, lack of infrastructure facilities, unplanned drainage system, unplanned residential development, and poor capacity of the Paurashava. The Paurashava is a naturally developed area. Planning effort yet not been taken by the public authority. Therefore, a mixed landuse scenario is viewed all over the Paurashava. About 3 to 5 meter earth filling will be needed for every development activities in the Paurashava. So, bulk development should not be encouraged due to the huge cost involvement. Almost all the Wards have no sewerage system and toilets are mostly consists of sock pits. Overall garbage disposal system is poor. Garbage Dumping Ground is not available and mostly disposes on open streets. Wastes collect by the NGOs but not well organized all over the planning area.

Dohar Paurashava bears rural influences and 32% incomes come from service and 30.7% come from business and remittance at present a major source of income in Dohar Paurashava. About 66.8% households earn tk.5001-10000 per month. No substantial saving of the income is found.

The Upazila Towns Infrastructure Development Project (UTIDP) of LGED requires that one of its outputs is a comprehensive set of plans for Dohar Paurashava. The proposed set of plans consists of Structure Plan, Urban Area Plan and Ward Action Plan.

The Structure Plan sets out a long-term strategy – covering the twenty years from 2011 to 2031 for urban development and the use of land in the Paurashava Town as a whole. It extends to the entire area demarcated by the Consultant. The document sets out a series of policies to be pursued and the broad objectives set for development of the Paurashava to be achieved.

The Urban Area Plan elaborates policies of the Structure Plan as far as they affect the area where urban development activity will be concentrated. The plan, therefore, is limited to the existing urban area and its immediate surroundings. It is for a period of ten years, covering the period from 2011 to 2021. In providing more detailed guidance available in the Structure Plan, it gives greater precision to the spatial dimension of the Structure Plan policies. The Urban Area Plan includes landuse Plan, Traffic and Transportation Plan, Drainage and Environmental Management Plan and Plan for Community Services and utility facilities.

The Paurashava is mainly agricultural dominant around 58.23 % land are under agricultural use. Considering the development pattern and for effective development control 31.50 % land has proposed as residential, 4.86% industrial, 0.94% commercial use and 5.10% acre as mixed use.

In total, 176.02 km roads existing in the Paurashava out of which 42.60 km is Pucca road, 61.21 km is brick soling Semipucca road, 72.21 km is Katcha road. For efficient accessibility 145.80km roads have been proposed for the Paurashava of which some are fully new road and others are road widening.

In the Paurashava, existing length of the drain is 6.10km. and about 145.69 km drain is being proposed of which 23.13 Km are primary drain, 87.68 Km are secondary drain and 34.88 Km are tertiary drain.

The Ward Action Plan provides guidance for areas where major change or action is expected in the short-term (5 years). According to the individual Ward of the Paurashava, this plan provide further the policies and proposals of both the Structure Plan and Urban Area Plan in more detailed and guidance for the control, promotion and coordination of development.



## MASTER PLAN REPORT FOR DOHAR PAURASHAVA

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## LIST OF ABBREVIATIONS AND ACRONYMS

BBS	: Bangladesh Bureau of Statistics
BDT	: Bangladeshi Taka (Currency)
BM	: Bench Mark
BTCL	: Bangladesh Telecommunication Company Limited
BWDB	: Bangladesh Water Development Board
CBO	: Community Based organization
CS	: Cadastral Survey
DGPS	: Differential Global Positioning System
EMP	: Environmental Management Plan
EPA	: Environment Protection Authority
GCP	: Ground Control Points
GIS	: Geographic information System
Govt.	: Government
GPS	: Global Positioning System
H.Q.	: Head Quarter
H/hold	: Household
JICA	: Japan International Cooperative Agency
KM/ km	: Kilometer
LAN	: Local Area Network
LCC	: Lambert Conformal Conic
LGED	: Local Government Engineering Department
LPG	: Liquid Petroleum Gas
MV	: Motorized Vehicle
NGO	: Non-Government Organizations
NMV	: Non Motorized Vehicle
O-D	: Origin – Destination
Orgs.	: Organizations
PCU	: Passenger Car Unit
PD	: Project Director
PMO	: Project Management Office
R.F.	: Representative Fraction
RHD	: Roads and Highways Department
RoW	: Right of Way
RS	: Revenue Survey
RTK-GPS	: Real Time Kinematics Global Positioning System
SoB	: Survey of Bangladesh
SPSS	: Statistical Package for Social Science
TCP	: Temporary Control Point
TIN	: Triangulated Irregular Network
ToR	: Terms of Reference

## CHAPTER-1 INTRODUCTION

### 1.1 Introduction

At present the rate of urbanization in Bangladesh is very high. Between 1961 to 1981, the average urban growth rate was 8%. The present average urban growth rate is about 4.5%. According to the population census of 2001, the share of urban population was about 23.29% and in 2011 it was approximately 25%. 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 can not drain out water during heavy rains and natural drainage systems have either been filled up or occupied by land grabbers creating water logging during monsoon. Traffic in Paurashavas is increasing day by day with the increase in population and demand. But the substandard road network can not keep pace with the growing demand for movement. As a result, congestion becomes a common problem. Road networks are not developed in planned and systematic way leaving room for traffic congestion that increases economic loss to the people due to travel delay. The land use development in the 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 for a period of next 20 years. The project has provisions for separate plans for land use plan, drainage

and environment plan, traffic and transportation management plan. 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 Dohar is one of 19 Paurashavas within Dhaka Region under Package 01.

Thus the Master Plan of Dohar 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.

## **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 DoharPaurashava are to:

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

Plan for the people of Dohar 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;

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;

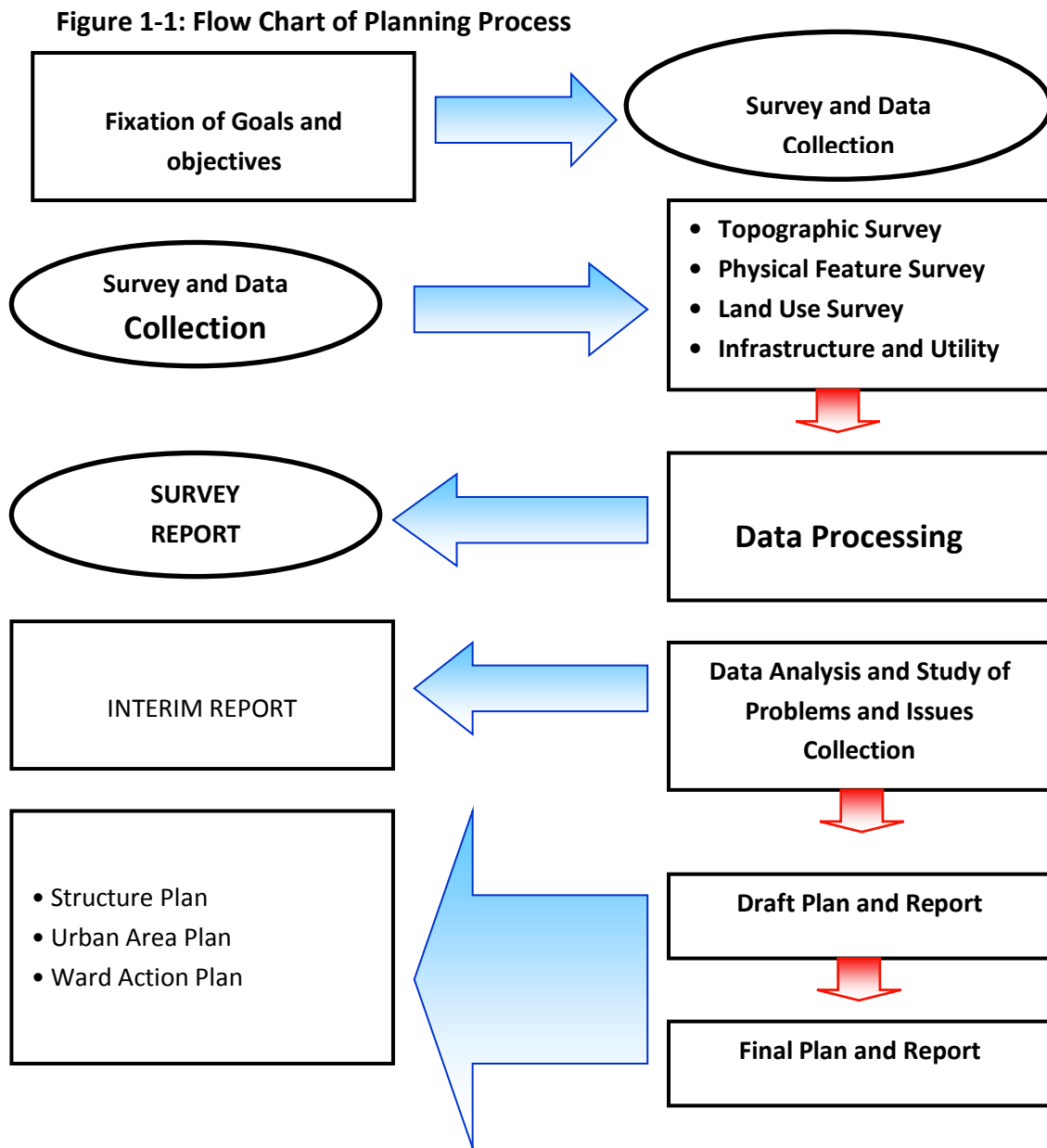
Provide controls for private sector development, with clarity and security in regard to future development;

Provide guideline for development considering the opportunity and constrains of future development of the Upazila Town; andf. Prepare a 20-year Master Plan to be used as a tool to ensure and promote growth of the

Dohar Paurashava in line with the guiding principles of the Master Plan and control anyunplanned 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 Draft 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.



**Map 1-1: The location of Dohar Paurashava within Bangladesh**



## 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 Dohar 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 centres and other environmental and social infrastructure. The following major tasks have been accomplished:

- 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.
- 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.

- 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.
- 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.
- 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.
- 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.
- 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.
- Assessment has been made on the current land use with regard to road transportation, bus & truck stations etc, and recommendations to be provided on actions to optimize this land use.
- 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.
- 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.
- Preparation of a plan has been set out proposed Master Plan at 3-levels namely Structural Plan, Urban Area Plan and Ward Action Plan.
- 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.

- 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.
- 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.
- 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.
- 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 Dohar 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

The Draft 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 Dohar Paurashava Master Plan (Structure Plan, Urban Area Plan and Ward Action Plan)”. Part A of this report describes the Structure Plan of Dohar Paurashava and Chapter 2 describes the conceptual issues related to the preparation of Structure Plan for Dohar Paurashava.

#### 2.1 Background of the Paurashava

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. There is also a separate category called “Special Class”, basically for industrial and commercial hub of Narayanganj and Tongi within the Dhaka Metropolitan Development Area (DMDA). Dohar (Joypara) Paurashava is located within the Dhaka zila at a distance about 40 km. from the zila shahar and on the south-west part of Dhaka zila. It lies between 23°32’ and 23°40’ north latitude and 90°00’ and 90°12’ east longitude. It is bounded by Raipara union and Nobabgonj Upazila on the north, Suterpara and Narisha union on the south, Arial bill and Nobabgonj Upazila on the east, Mahmudpur and Kusumhati union on the west.

The Consultant has identified the Paurashava’s existing jurisdiction area as 19.78 sq. km. according to BBS population Census-2011, Community Series, Zila-Dhaka. Among the nine Wards, Ward No. 6 has occupied largest area which is 995.26 acres and Ward No. 9 is the smallest (405.83 acres). About 4,883.84 acres of land is being identified as a Structure Plan area with the consultation of stakeholders. Physical development trend for next 20 years has been considered for such expansion.

Dohar came into existence in 1926 as Thana and was upgraded to upazila in 1983. Nothing is definitely known about the origin of the upazila name. It is learnt that in the past the Hindu Zaminder of this locality was fond of lyric songs. The people who usually acted as the second party in performing of these lyric songs were popularly known as Dohar and these people were allowed to settle down by this zaminder in this locality. In consequence of which the area after words, named as Dohar. Dohar Paurashava was established in 2000. Total area of the Paurashava is 19.78 Sq.km. with 26 mahallahs and 9 wards.

#### 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.

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 Dohar Paurashava StructurePlan 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 Dohar
- 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 Dohar 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.



## **Map 2-1: Dohar Paurashava in Regional Setup**



The present Structure Plan is an overall long term strategic plan for the Paurashava *Shahar* (Town), Dohar. 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.

## **2.5 Duration and Amendment of the Structure Plan**

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

## **2.6 Structure Plan Area**

Boundary of the Structure Plan area has been decided with the assistance and advises received from Dohar Paurashava Mayor, Councilors and other professional staffs and Gazette notification (S R O No-83 Law/ 2001). In order to delineate this boundary, there was a wide reconnaissance survey involving eye observation of the entire Paurashava area including those areas which have future potential growth. But since, the formation of Dohar Paurashava is 10 years back (2000); the development trend do not took much momentum as it required. It is still in her infancy. In addition, the Mayor and the Councilors opinioned in favor of keeping the Paurashava area encompassing the nine wards as exist for next 20 years. Strong arguments from Paurashava Mayor and Councilors were advised not to extend the boundary as it is not an old Paurashava and the present area is enough as study/ planning area. Though the 2000 Gazette declared Dohar urban area as Paurashava composed of nine Wards where the adjoining areas are still rural in character; not having significant urban development trend. So, Consultant has considered 19.78 sq. km. with nine Wards as Structure Plan area. The area of structure plan should consider as planning area.



**Map 2-2: Jurisdiction of planning area of Dohar Paurashava**



## CHAPTER-3

### PAURASHAVA'S EXISTING TREND OF GROWTH

#### 3.1 Social Development

##### Age-sex structure

Age-sex distribution indicates that population mostly increase naturally. The age-sex distribution implies that generally female population is less than male population in the Paurashava. But, in case of Dohar Paurashava, according to Population Census 2011; the number of female population was found greater than the male. 10.2% family members of the Paurashava have been found to belong to the age group of 0-4 years. On the other hand 8.5% peoples fall in the age group of 60 years and above. The highest population goes under the range of 20 to 49 years age group which consists of 44.10% of the total population. So, in all the Wards the number of young and workable population is highest than any other aged group population.

##### Household size

Family size ranges from 1-4, 5-7, and 8+ members, but most prevalent size is 1-4 and 5-7 members. There are both single and joint family systems. Ward No. 2 had major percentage of single family (57.2%) and Ward No. 5 had major percentage joint-family system (33.4%) compared to other Wards. Most of the families in the Paurashava are single family type and the average family member is 4.5 persons per family.

##### Marital status

In the Paurashava 40.80% of male and 24.41% of female population was never married. The percentage of currently married males and females were 58.29% and 66.58% respectively and percentage of widowed and divorced were 0.78% and 0.14% of male, and 8.37% and 0.61% of female respectively.

##### Migration pattern

According to the socio-economic sample survey-2009, about 94.5% households of Dohar Paurashava are permanent residents and 5.5% households are migrated. Migration occurred only in the ward no. 1, 2 and 3. In ward no. 1, all the migrated households migrated after 2000 and in ward no. 2, all the migrations occurred during 1990 to 2000. In ward no. 3, 27.3% of the migrated households migrated from 1990 to 2000 and 72.7% of the migrations occurred after 2000. So the number of in-migrated population is going up. It is seen that in ward no. 1 and 2, all the migrations occurred from the other districts and from same Upazila respectively. In ward no. 3, 72.7% migrated households migrated from other districts. There are various reasons for the migration. It is found for ward no. 3 that migration occurred mainly for service or transfer and business or commerce purposes. In ward no. 1 and 2, the reasons for migration are mainly business or commerce and service or transfer respectively.

##### Growth rate

In the Dohar Upazila, from the year 1974-1981, annual growth rate of population was 1.56%, and from the year 1981-1991 the rate increased to 2.13%. In 2001 government

notified the urban characterized area of the Upazila as Paurashava and surprisingly then the growth rate of the whole Upazila decreased to 0.89% during the year 1991-2001. On the other hand, for urban area the population growth rate increased to 10.06%. According to BBS 2011, the growth rate has been notified as -4.10%. Regarding the decreasing rate of growth for urban areas, the growth rate of the Paurashava area is being considered 1.67 percent which is similar to the growth rate of whole upazila .

**Table 3.1: Population growth rate of Dohar Upazila**

Year	Growth rate (Decadal)	Growth rate (Annual)
1974-1981	15.6	1.56
1981-1991	21.3	2.13
1991-2001	8.9	0.89
2001-2011	16.7	1.67

Source: BBS Population Census-2011

### **Educational status**

By considering educational status, about 21.4% household heads in Dohar are in class VI-X, 29% households head are in class I-V, 17.6% household heads are in SSC/equivalent, 9.2% household heads are in HSC/equivalent, 6.3% household heads are in BSS/equivalent, 2.9% household heads are in MSS/equivalent, 0.4% household heads are above MSS and rest 13% household heads are illiterate.

The percentages of MSS and above MSS are nil in ward no. 1; 28% of the household heads are in class I to V. On the other hand both in ward no. 2 and ward no.3, the highest percentage of the household heads is 24% who studied in class V1-X. In ward no.4, there are no people above SSC level and the highest percentage is 64% that found for class V1-X. In ward no. 5, there are no educated people above HSC level; 33.3% of the household heads are illiterate and 23.8% household heads are in class I-V. In ward no.6, the percentage of SSC/equivalent passed household heads is the highest (38.1%). However, there is no educated person having a degree of MSS/equivalent and above. In ward no. 7, the percentage of household heads studied in class I-V is the highest (40%); 25% are in class VI-X and 15% are illiterate. In ward no. 8, the highest percentage is 36.7% that has been found for class I-V and in ward no. 9, the percentage of household heads with an education level of class V1-X is the highest (47.6%).

### **Religion**

Dohar Paurashava is mixed with people of all religions. Among them 66.45% of this Paurashava population was Muslim, 32.66% was Hindu and 0.74% was Buddhist, 0.12% was Christian, 0.04% was other.

### **Land Value**

Land value is an important determinant for any project related to the physical development because; the development depends on project cost and the cost on land value. In recent time, a rapid change of land value is found in the Paurashava premises. Wealthy people of the community are investing on land and became landlord because they consider it as a safe investment. As a result, land value curve is on upward. Value of



land depends on location, accessibility, height and free of natural hazards. Following paragraphs discuss on land value of the study area.

*Official Value:* The official land value uses for calculation and collection of land revenue. In the physical planning aspects, study of land value is necessary for land acquisition. For the preparation of physical development project including cost involvement, an idea on land value is necessary. In this study, the official land value is being quoted from the actual value considers by the Sub-registry Office of the Dohar Paurashava.

**Table 3.2: Mouza-wise land value in the Study Area, 2011**

Sl. No.	Mouza name	Bari/Vita	Kanda	Nama	Others
1.	Andhara	210972/-	78235/-	50000/-	
2.	Kathalia	49111/-	75000/-	4000/-	
3.	Garail	286945/-	162000/-	16739/-	Pond-46666/-
4.	Post Kumari	90421/-	176306/-	33715/-	
5.	Baoar Kumarjani	460000/-	200464/-	25570/-	
6.	Baimhati	300175/-	195370/-	50230/-	Shop-3450838/-
7.	Dohar/jaypara	187045/-	100000/-	25000/-	
8.	Shorishadair	51140/-	47730/-	5153/-	
9.	Sri Horipara	100000/-	30030/-	16000/-	

Source: Dohar Sub-Registry Office.

In this study, four types of land in nine mouzas are being considered. In the natural land market, land for homestead / housing construction is higher than other type of land and this scenario is prevailing in the Paurashava also. In another scenario, commercial land value is higher than homestead / residential land value. Bari, Vita, kanda, nama, pond and shop are these types of land are under the jurisdiction of agriculture land. For development activities, in case of land cost, those lands should be emphasized, though land development cost is higher than other type of lands.

It is clearly observed that land value increases with the height of the land. It increases from low to medium high land. The maximum mean value is found for the high land and lowest for the low land.

#### **Land Ownership Types and Patterns**

Most of the land in Dohar Paurashava are high and medium high land, about 45% land are medium high and 38% land are high and only 6% land are low land, rest of the land are habitable land. About 41.6% of households in Dohar Paurashava hold 0-10 decimals land, 47.90% households hold 10-20 decimal land and only 10.5% households hold more than 20 decimal land. So it can be said for Dohar that most of the land are in the hand of a few number of people.

**Table 3.3: Land Ownership Pattern of Dohar Paurashava**

Land Area (Decimal)	Percentage of Household
0-10	41.60
10-20	47.90
20-30	6.72

30-40	0.42
40-50	1.26
50-60	0.84
90-100	0.42
140-150	0.42
190-200	0.42
<b>Total</b>	<b>100</b>

Source: Socio-economic Survey, 2009

### 3.2 Economic Development

Two basic elements of economic development i.e. employment generation and increase of productivity are found in the cities and urban areas than the rural areas. This is a common phenomenon for the developed and developing countries. Employment opportunities act as a strong pull factor for influx of job seekers in the cities and urban areas, the centers of productivity. Special features of the study area are that it covers a vast rural area, besides a small urban center of Paurashava town. A Regional Highway (Dhaka-Dohar HW) passes in the Paurashava and both the sides of the highway is occupied by huge tracts of agriculture land and sporadic homesteads, at places showing the signs of development along with the hats, bazars indicating the dominant role of agriculture and fishery. This indicates general feature of the study area as a mixture of rural and semi-urban nature. These special socio-economic features of the study area have been taken into consideration in conducting the study of the prevailing economic situation.

#### Commerce

Commerce includes purchase and sale of various consumer and durable items performed by the business person. In the study area, such activities are wholesale and retail trade, hotel and restaurant business, transport, storage services, hat/bazar, etc. Major part of trade and commerce of the study area is conducted through hat / bazar where agriculture produces, consumer items, merchandise for household and other farm and non-farm items are transacted. The market / bazar performs significant role on the Paurashava economy. It is observed that market / bazar provide good number of employment and act as an economic centre for the area of influence of the market / bazar. This market / bazar remain open everyday from morning to evening. Along with the daily business transactions, two market places are also used as hat which sits twice in a week. On the hat day farmers, traders, businessmen and many other informal professionals gather in the hats and run trades and business till evening. Actually, the market / bazar is the key supplying centres of all sorts of agro-products to the urban areas and other non-producing areas of the country, and similarly this market / bazar is the major distribution centres of industrial products to the vast majority of the rural people throughout the country at consumer levels. Importance of the market / bazar place cannot be ignored, rather needs to be facilitated with provision of infrastructure facilities.

Two locations are found with agglomeration of commercial activities at hat / bazar area in the Paurashava. That hat / bazar are taking place in the core part of the Paurashava along with the road; tin-shed semi-pucca structures with parcels of open lands. Saturday, Monday and Wednesday of a week are the local Hat days. Those hat / bazars are prominent due to its availability of agro-product and fish. People from different Upazilas, Zilas and Capital City accumulate in those hat / bazars as a buyer.

### **Services**

The service sector consists of the hotel and restaurant business; transport and communication, storage / godown, financial intermediaries, real estate, rental activities, public administration, education, health, community service and social work including social and personal services. The service sector significantly contributes to the local economy. Most of the service structures are housed in permanent structures. Also there are some temporary structures. It is found that 18% households are dependent on services and 41% percent are engaged in large and small business activities in Dohar Paurashava. For health services, Upazila health complex have tremendous services of the Paurashava and surrounding areas.

There are different types of administration and government services like Paurashava Office, Upazila Headquarters, sub-registry office, Police station and non govt. establishments like banks and NGOs working throughout the study area. Major investment by the banks are in the field of cash credit in the form of running capital and capital loan for setting up of business establishments, besides general banking facility. Some NGOs have also disbursed agricultural loan. The NGOs are rendering services in the fields of poverty alleviation programs, awareness building, health care, education, sanitation, micro-credit and training on income generating activities including skill development. NGOs provide services in the field of micro-credit; encourage social services, advance loan for poultry, fisheries, livestock, agriculture, house building, land purchase and capital loan for running business. NGOs also take part in various social activities like awareness building on environment, natural calamities, health and many other fields. A good number of people special women and poverty-stricken has been getting various types of services from the NGOs for quite a long period.

### **Primary occupation**

Agricultural and farming related occupation in Dohar Paurashava is more dominating; about 25% households heads are involved in agriculture and farming. Besides agriculture and farming about 27% households are involved in business including 14% small business and 13% large business. 18% of household heads are involved in private service; the other occupations are Govt. officer 2%, skilled labor 3%, house wife 4%, teaching 2%, other Govt. employee 8%, Rickshaw/ Vanpooler/ Driver 1%, Handicrafts 3% in Dohar Paurashava. There are also 6% unemployed/ retired households head exists in Dohar Paurashava.

In ward no.1 there are no percentages of occupation of Govt. Officers, Other Govt. employee, Teaching, Unskilled Labor and Hawker/Vendor. The highest percentage is 28.0 of Private Service. 20.0 percent of occupation of Business is the highest in ward no.2. The

highest percentages of occupation of Farming and Agriculture are 64.0, 61.9, 42.9 in ward no 4, 5 and 9 respectively. There are Govt. Officer and Teacher in ward no.5, 8 and 9 respectively. The highest percentages of occupation of Private Service are 33.3 and 30.0 in ward no. 6 and 8 respectively.

### **Income**

In Dohar Paurashava, about 94% families are single earned, 5% families are double earned and 1% families are triple earned. Major portion of income come from business, service, agriculture and remittance and handloom industries. About 32% incomes come from service, 30.7% come from business, 25.2% from agriculture and 11.8% from other sources.

In ward no 4, 5 and 9 major portion of income comes from agricultures and in ward no 1 and 2 major portion of income comes from business. In ward no 3 and 6 major portion of income comes from service. In ward no 7 and 8 major portion of income comes from both business and service.

About 2.1% households monthly earn tk.0-5000, 66.8% households earn tk.5001-10000, 24.8% households earn tk.10001-15000, 4.2% households earn tk.15001-20000, 1.7% households earn tk.20001-25000 and 0.4% households earn above tk.25000.

### **Expenditure**

There are various kind of expenditure of individual household in an urban area such as food expenditure, house rent expenditure, water expenditure, electricity expenditure, gas expenditure, health expenditure, education expenditure, transport expenditure, recreational expenditure and others. Food expenditure is mandatory but other service-oriented expenditures depend on fiscal condition of the urban dwellers and provisional system of urban authority.

According to socio-economic field survey-2009, 94.1% household has no house rent expenditure, 99.2% household has no water expenditure, 8.8% household has no electricity expenditure, 69.7% household has no gas supply expenditure, 8.0% household has no health expenditure, 15.5% household has no educational expenditure, 63.0% household has no transport expenditure and 24.4% household has no recreational expenditure. In Dohar Paurashava, minimum value of monthly food expenditure is tk. 2000; median value is tk. 4700 and maximum value is tk. 40000.

Education, food, habitat, cloth, treatment are the basic needs of each individual. These are indispensable in everyday life. Similarly water, electricity, gas, transport, and recreation are also necessary in every household. In Dohar Paurashava the highest maximum value of food expenditure is seen in ward no. 3 which is tk.40000. On the other hand lowest minimum value is tk.2000 in ward no.4, 7 and 8 and the highest median value is tk. 6000 which is seen in ward no.5. There are no minimum expenditure for house rent, water, gas, education, transport and recreation in Dohar Paurashava. The highest maximum value of house rent expenditure is seen in ward no. 3 which is tk.3000. There is no water facility in Dohar Paurashava. The highest maximum value of electricity expenditure is seen in ward no. 1 and 3 which is tk.1200 and the highest median value is tk.300.

### **Agriculture**

Agriculture dominates the economy of this Paurashava. Among agricultural produces, important items besides paddy are vegetables, local fruits, sugarcane, jute and mustards. Among the agriculture products, paddy, local fruits, mustards and vegetables are consumed locally and a considerable percent are using by the inhabitants of adjacent Upazilas.

### **Agro-based**

There are several types of agro based industry in the Paurashava. Rice mill, saw mill, ice factory, seed processing industry and bakery factory are prominent agro based industry here. The industrial activities cover 3.62 acres of the study area. Local woods are being processed in the Saw Mill and locally produced paddy are using in the Rice Mill. Those industries have been established all over the Paurashava. But there is no big industry within the Paurashava area.

### **Employment Pattern**

Occupation related to Business was found to be more prominent in Dohar Paurashava; about 27% households were involved in business of which 14% were involved in small business and 13% in large business. Besides business, agriculture and farming was the major occupation of about 25% households. 18% of household heads were involved in private service; the other occupations are Govt. officer 2%, skilled labor 3%, house wife 4%, teaching 2%, other Govt. employee 8%, Rickshaw/ Vanpooler/ Driver 1%, Handicrafts 3% in Dohar Paurashava. There were also 6% unemployed/ retired household heads in Dohar Paurashava.

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### **Informal Economic Sector**

Informal sector covers a lot of activities which may be classified as Trading and Services. Various type of mobile or fixed salable items like food, fish, nuts, coconut, vegetables, daily household items, old cloth / garment, repairing of household gadgets, electronic items repairing, hair cutting, shoe polishing, etc. are considered as informal economic activities.

Informal entrepreneurs encounter many problems like dull business, unfavourable weather, fear of eviction, extortion, lack of permanent business location, exorbitant rate of interest, lack of credit facilities and unhygienic residential areas. Informal sector covers a lot of activities which may be classified as Trading and Services. Various type of mobile or fixed salable items like food, fish, nuts, coconut, vegetables, daily household items, old cloth/ garment, repairing of household gadgets, electronic items repairing, hair cutting, shoe polishing, etc. are considered as informal economic activities.

In the Paurashava, informal entrepreneurs mainly perform their business in the market/bazaars and males are dominating this sector. Mostly 18-34 age-groups run the informal activities followed by 35-59 age-group. In total, 18 types of occupation grouped under two major categories of Trade and Services, adopted by the informal entrepreneurs in the Paurashava. Of the various occupations, trade includes sale of various food items, clothes, vegetables, meat, seed, medicines, etc. and service includes hair cutting, shoe repairing, umbrella repairing, mobile phone service, tailoring, etc. Informal entrepreneurs encounter many problems like dull business, unfavorable weather, fear of eviction, extortion, lack of permanent business location, exorbitant rate of interest, lack of credit facilities and unhygienic residential areas.

### **3.3 Physical Infrastructure Development**

The jurisdiction of Dohar Paurashava is in regular shape. Dohar Paurashava is primarily an agricultural area covering 58.23% of its total area and is privately owned. On the other hand 30.04% area is used for residential purposes and is also privately owned. Only 0.20% of the Paurashava area is owned by the government. The Paurashava is dominated by urban environment; as a result about 60% structures are found pucca, constructed with permanent materials like with brick and the roof . The semi-pucca structures are 20% that have wall made with C.I. Sheets. On the other hand, about 20% houses are katcha that is constructed bamboo thatch, jute stick, C.I. Sheet and wood. The building materials used for the construction of houses reflects poor economic condition of the owners. A linear development is found along the existing Regional Highway (Dhaka-Dohar Highway) of the Paurashava, such development should be continued naturally. A planning control will be needed on those linear expansions. At present, some scattered development likes rural homestead is found in the Paurashava premises; those should be controlled with the infrastructural planning and development.

A trend of urban growth is found around the Dohar and along the Regional Highway. A tremendous development trend is generating in ward number three. If the communication system develops, Dohar Paurashava will become a very important transaction point because of its nearness to Dhaka city. Residential and commercial developments have enormous potential that can be flourished in the Paurashava.

After the year of 1980, when Upazila system imposes in consideration of the decentralization of administration, no internal road was developed and trend of development became frizzed. As a result, natural development prevails in the Paurashava.

After the year of 1990, development activities started sparsely due to the presence of vast low lands But, this type of development also followed the proximity of Upazila Headquarters.

*Road:* Pucca road, Semi-Pucca road and Katcha road are constitutes this category of land use. Field survey revealed that, Highest distribution of circulation network is visible in ward no 06 which is 13.72%.

**Waterways:** No waterway facility is found in the Paurashava.

**Railway:** There is no railway facility in the Paurashava.

**Airway:** No airway facility is found in the Paurashava.

### 3.4 Environmental Growth

The plan has documented Dohar Paurashava area's environmental conditions, determines potentiality for present and past site contamination (e.g., hazardous substances, petroleum products and derivatives) and identifies potential vulnerabilities (to include occupational and environmental health risks).

### 3.5 Population

Accordinging population cencus 2001 the population of Doahar Paurashava was 61793 whereas Population Census 2011 shows the total population of the Dohar Paurashava was 36,434 which is a great mistake. By adding the whole area according to cencus data 2011 the total population of Dohar Paurashava was 71362of which 35,719 are males and 35,643 are females. The entire population is over 9 wards with different density. The most populous ward was ward no-01 having 10557 peoples, while the least population was found in ward no-06 which population was 5762. The following table (table 3.4) represents the overall demographic scenario of Dohar Paurashava.

**Table 3.4: Ward wise population of Dohar Paurashava, 2011**

Ward No	Male Pop.	Female Pop.	Both Sexes
1.	5339	5218	10557
2.	4323	3985	8308
3.	5006	4551	9557
4.	2753	2672	5425
5.	4533	4308	8841
6.	2803	2959	5762
7.	4255	4706	8961
8.	3267	3573	6840
9.	3365	3746	7111
<b>Total</b>	<b>35643</b>	<b>35719</b>	<b>71362</b>

Source: BBS Population Cencus-2011 (Community Series, Zila:Dhaka)

#### Population distribution

Total population of Dohar Paurashava was 71362 according to population Census 2011. Table 3.5 represents area wise population and density per sq. km. in the Dohar Paurashava.

**Table 3.5: Ward Wise population density and percentage of Dohar Paurashava**

Ward No.	Area (sq. km)	Ward wise Population	Density /sq. km	Ward wise Population (%)
1	1.56	10557	6767	14.79
2	1.65	8308	5035	11.64
3	2.36	9557	4050	13.39
4	2.76	5425	1966	7.60
5	1.64	8841	5391	12.39
6	4.03	5762	1430	8.07
7	1.87	8961	4792	12.56
8	2.27	6840	3013	9.58
9	1.64	7111	4336	9.96
<b>Total</b>	<b>19.78</b>	<b>71362</b>	<b>3610</b>	<b>100.00</b>



### **Map 3-1: Existing Growth Potentiality of Dohar Paurashava**



Population variation among the Wards is 5000 to 11000 and household size is 4.7 for all the Wards in the Paurashava. Number of household and population is highest in ward 1, 3, 5 and in 7. In other area density is lower than those. The scenario proves that availability of land presents around all the residential developments. Expansion of roads to increase the width, construction of new missing links and new community services should not create rehabilitation problem or demolishing of construction.

### Population density

In the Dohar Paurashava, the average density was 3610 persons per sq.km according to the Population Census, 2011. Ward no-1 was found to have the highest density of 6767 persons per sq. km while the lowest density was found in ward no-6 consisting of 1430 persons per sq. km., ward no -1 and 5 had higher density, where as the rest of the wards had comparatively low density.

## 3.6 Institutional Capacity

The Paurashava is responsible for Paurashava administration and also responsible for providing services, slum upgrading, infrastructure development and licensing of non-motorized transport within its jurisdiction. To perform the responsibilities efficiently as prescribed in the Local Government (Paurashava) Act, 2009 existing capacity of the Dohar Paurashava administration is not sufficient. The responsibility may be categorized as two broad heads named Revenue Collection including Budget Preparation and Delivery of Services. Three types of management system are involved with those two responsibilities and they are Top Management, Middle Management and Supervisory Management. A general scenario is found in those three category management system of the Paurashava i.e. lack of efficient manpower. Shortage of technical manpower in the Paurashava is also an administrative problem.

### Allocated Manpower / Organogram

The manpower allocated by the Government for every Paurashava in the country except the Mayor and nine Counselors and the organogram according to the Local Government (Paurashava) Act, 2009 is presented in the Table-3.6.

**Table 3.6: Allocated manpower for Dohar Paurashava**

Section under Divisions	Alocated Manpower
Administration	43
General section	17
Accounts Section	05
Assessment section	05
Tax Collection and License Section	12
Municipal market section	04
Engineering Division	78
Water supply and sanitation section	34
Civil,electrical & mechanical Section	44
Health Division	28
Health and family planning section	24
Conservancy Section	4
Total	149

Source: Local Government Ministry of Bangladesh, 2009.

Existing manpower except the Mayor and Councilors in the Dohar Paurashava is presented in the Table-3.7. In total 39 employees as permanent staffs are in the Dohar Paurashava. Those employees are under the Administrative division, Health division and Engineering division.

**Table 3.7: Existing manpower in the general and engineering division**

<b>Positions under Divisions</b>	<b>Number of employee</b>
<b>Administration and Health Division</b>	<b>11</b>
Secretary	1
Accountant	1
License Inspector	1
Assistant License Inspector	1
Tax Assessor	1
Assistant Tax Collector	2
Lower Division cum Typist	1
Vaccinator	2
MLSS	1
<b>Engineering Division</b>	<b>8</b>
Xen	1
Town Planner	1
Assistant Engineer	1
Sub Assistant Engineer (Civil)	1
Work Assistant	1
Street Light Inspector	1
Line Man	1
Garbage Truck Driver	1
<b>Conservancy Division</b>	<b>21</b>
Conservancy worker	8
Sweeper Supervisor	1
Sweeper	10
Office boy	1
Office Sweeper	1
<b>Total</b>	<b>39</b>

Source: Proposed Annual Budget, Dohar Paurashava, 2011-12.

From table 3.7, it is seen that there are shortage of manpower in administrative, engineering and license division. However, it is a matter of disappointment that there is no staff in any division. In addition, no water supply division is found in the Paurashava as there is no provision of water supply facilities yet. Hence, existing scenario deserves more involvement of employees as well as strengthening the divisions by recruiting allocated HR; otherwise execution of master plan will be very difficult through present manpower attachment of the Dohar Paurashava authority.

#### **Paurashava Town Planning Capacity**

In Dohar Paurashava, there is a Town Planner working form 22-09-2011 but there is no surveyor and draftsman. Hence, it is not possible for only 1 technical person to monitor and execute all the activities related to development control as well as to follow the guidelines of Master Plan.

### **Implementation Capacity of the Paurashava Master Plan**

In implementation procedure, preparation of Project Proposal is the primary step of the Master Plan. Due to the absence of appropriate employee for the purpose so the Paurashava is not capable of implementation of the Master Plan without Town Planning Department.

### **Conservancy and Health Services**

In the Dohar Paurashava, only 1 Vaccination Supervisor and 1 Vaccinator works under health division but there is no Conservancy Inspector to control and monitor the conservancy activities. In total, there are 15 employees for the purpose of street sweeping who works on casual basis. So, it is for sure, conservancy and health services are running in the Paurashava without any systematic procedure as well as following any healthy measures.

### **Logistic Support/Equipment**

Logistic support and necessary equipment is limited for Dohar Paurashava which should be a really big concern. Two garbage trucks and 15 sweepers (on contact basis) are the only means of conservancy services. Except those trucks and road roller, other equipments are using for Paurashava administration.

## **3.7 Urban Growth Area**

Physical growth of Dohar Paurashava town depends on the road pattern. Dohar Paurashava is connected with Dhaka through a Regional Highway. Concentrated development is the common feature of the Paurashava. A Regional Highway passed through the western part of the Paurashava in North-south direction. Soil of the Zila is mainly formed by the young Ganges flood plain.

For a better living environment above environmental phenomenon should be considered with the systematic planning principles and regulatory measures. With these views, people's awareness should be increased about the fair living environment through different public activities. Arrangement of landuses should be provisioned for all the public and private organizations as their necessities.

Dohar Paurashava is well connected with the Regional Highway. Negligible urban facilities like water supply, cleaning of road, road lighting, dustbin facilities and road maintenance (constructed by the Paurashava, LGED and RHD) are the facilities provided by the Paurashava Authority. All urban facilities as a township development are necessary. Most of the urban services were developed when the Paurashava was formed as a growth centre.

Most of the areas in the Paurashava are low land needs sufficient earth filling to provide urban services. As a result, heavy construction cost should be considered to provide those facilities.

## **3.8 Catchment area**

A regional important highway namely Dhaka-Dohar regional highway passes through the Paurashava which maintain the communication system of Dhaka city with the entire

western part of Dhaka Zila. It is bounded by Raipara union and Nobabgonj Upazila on the north, Suterpara and Narisha union on the south, Arial bill and Nobabgonj Upazila on the east, Mahmudpur and Kusumhati union on the west. If the communication systems developed, Dohar Paurashava will become a very important transaction point that will maintain the communication with northern part of Bangladesh and the capital city Dhaka.

### 3.9 Landuse and Urban Services

#### Landuse

According to UTIDP Guideline for preparation of Paurashava Master Plan, land use of the study area should be divided into 19 major categories. But only 16 categories of land use are found in the study area. Recreational facility, non-governmental services, forest, miscellaneous and restricted land use are absent in Dohar Paurashava. The Table 3.8 and Map 3.2 present a clear picture of land use categories of the study area. Dohar Town centre area is the most built up area by comprising all kinds of urban and rural land uses.

**Table 3.8: General Land Use of Dohar Paurashava (Area in Acre)**

SL. No.	Land Use Category	Ward No									Total	
		1	2	3	4	5	6	7	8	9	Area(acre)	(%)
1	Agriculture	122.14	220.87	288.01	436.56	140.87	779.11	241.93	386.31	228.81	2844.62	58.23
2	Circulation Network	12.19	9.64	11.90	11.14	9.63	13.06	9.09	7.15	11.42	95.22	1.95
3	Commercial Activity	9.23	13.56	2.66	5.56	5.76	2.38	3.43	1.76	2.61	46.95	0.96
4	Community Service	0.80	1.03	1.38	0.55	1.27	0.94	0.98	0.52	1.27	8.74	0.18
5	Education & Research	2.24	0.28	2.25	2.78	6.24	1.56	4.56	0.93	2.70	23.55	0.48
6	Governmental Office	0.00	0.00	0.35	2.62	6.69	0.00	0.00	0.00	0.11	9.78	0.20
7	Manufacturing and Processing Activity	0.90	9.03	0.34	0.00	0.00	3.41	0.00	0.04	0.00	13.72	0.28
8	Mixed Use	2.96	1.33	0.06	0.00	0.78	0.02	0.00	0.00	0.00	5.15	0.11
9	Non Government Services	0.00	0.01	0.00	0.02	0.16	0.09	0.00	0.05	0.00	0.33	0.01
10	Recreational Facilities	0.00	0.29	0.26	0.00	1.47	0.00	0.00	0.19	0.00	2.21	0.05
11	Residential	188.63	127.15	216.34	172.18	193.46	132.27	172.57	130.92	134.07	1467.59	30.04
12	Health Service	0.45	0.02	0.08	0.95	3.28	0.00	0.00	0.49	0.30	5.58	0.11
13	Transport & Communication	0.00	0.01	0.07	0.47	0.02	0.00	0.32	0.00	0.00	0.89	0.02
14	Open Space	0.63	0.43	1.36	0.48	0.11	3.67	0.28	2.46	0.34	9.76	0.20
15	Vacant Land	12.85	2.92	4.06	10.18	2.46	12.90	3.41	2.92	3.56	55.26	1.13
16	Water Body	31.66	21.44	53.57	37.66	32.74	45.84	25.04	26.83	20.63	295.40	6.05
Total Area		384.68	408.00	582.70	681.16	404.94	995.26	461.62	560.56	405.83	4883.84	100

Source: Land Use Survey, 2009

Major built up part of the Paurashava area is using for residential purposes. According to the land use survey table of the study area, it has been ascertained that 1467.59 acres (30.04%) of land is presently under residential use. Commercial and Processing &

Manufacturing use occupied 46.95 acres (0.96%) and 13.72 acres (0.28%) respectively. From the survey results, it is found that the study area is dominated by urban character. The circulation network and mixed use occupied 95.22 acres (1.95%) and 5.51 acres (0.11%) respectively. A large part of 295.40 acres (6.05%) is occupied by the water bodies including the three rivers. While 8.74 acres (0.18%) of land is available for community services, 23.55 acres (0.48%) of land for educational facilities has been found in the land use survey.

### **Residential**

Residential use includes residential house, residential quarters, rest house, slum, mess etc. It has been appeared that Ward No 03 has the most residential concentration (14.74%) while Ward No. 05 has the second highest concentration, i.e. 13.18% and Ward No 02 has the lowest residential concentration.

### **Commercial**

Commercial land use mainly comprises of different types of shop (book shops, cloth shops, departmental store, grocery shops, stationary shop etc.), market, Katcha bazaar and other lands being used for commercial purpose. Survey result depicts that commercial activities are mainly concentrated in Ward No 02, 13.56 acres of land which is 28.88% of total commercial area. Ward No 01 has 19.65% area, which is second highest and third highest in Ward No 05 (12.26%). Among rest of the wards, commercial land use is lowest at Ward No 08 (3.75%), where maximum land is use in agriculture.

### **Industrial**

Survey revealed that there have several rice and saw mill in Paurashava area. Industrial/Processing and Manufacturing activity in Dohar Paurashava mainly includes rice mill, saw mill, ice factory, seed processing industry, bakery factory and other manufacturing and processing activities. Major industrial/manufacturing concentration is seen in Ward No 02. There is no industrial use in Ward No 04, 05, 07 and 09.

### **Agricultural**

Around 2844.62 acres of land is under agricultural use in Dohar Paurashava. It has been appeared from field survey that, Ward No 06 has maximum agricultural land 27.39% (779.11 acres) and after it comes Ward No 04 (436.56 acres). All wards have agricultural land use. Minimum agricultural land use is found in Ward No 01 which is 4.29%.

### **Education**

Land that used for Colleges, High School, Primary School, NGO School and Madrasa are considered in this section. Survey depicts that, major concentration of educational institutes is found in Ward No 05 (26.49%) and Ward No 07 (19.36%). However, educational institutes spread over most of the wards of this Paurashava at certain percentage.

### **Governmental Services**

Dohar Paurashava office, UNO office, Food Office, Sub-Register Office, Upazila Primary and Secondary Education Office, Water Development Board, Rural Development Board

and other Upazila level government offices come under this land use category. Government offices are located at Ward No 03, 04, 05 and 09. Dohar Paurashava Office is situated at Ward No 04 and Ward No 05 occupy largest amount (26.80% and 68.46%) of this type land use.

The Paurashava office is a pucca two storied as Poura Bhaban and situated in ward No 05 comprising of about 89 decimal lands. Surrounding lands are using for commercial and residential use. The Paurashava has some vacant land in each ward with 55.27 acres.

#### **Non-Government Services**

In Dohar Paurashava non-government services are mostly concentrated in ward no 05. In ward no 05, 0.16 acre (47.03%) of land are used for non-government services. There are no land use available ward no. 01, 03, 07 and 09.

#### **Water Bodies**

Water body of Dohar Paurashava is mainly consists of pond, ditches, khals, dinghies, irrigation canal etc. It covers 295.40 acres of land. Ward No 03 (18.13%), Ward No 06 (15.52%) share that major percentage of water bodies in this Paurashava.

#### **Recreational**

According to the field survey, recreational facilities in Dohar Paurashava are mainly located in Ward No 05 (66.68%). Ward No 01, 04, 06, 07 and 09 has no land use in this category.



**Map 3-2: Existing Landuse of Dohar Paurashava**



### **Mixed-Use**

Mixed-use areas are those where, either commerce is mixed up with residence or residence with commerce or residence with office or admixture of all the three. Sometimes small industrial enterprises are also found to co-exist with any one or all the above landuse. However, other admixture of diverse land uses is also found. Mixed landuse is a common character of all unplanned urban centers in Bangladesh. The degree of such admixture depends on the specific location of the area. If the area is closer to the urban centre than the more profitable landuse takes over the less profitable ones and co-existence of diverse landuse prevail for long till one fully takes over the other. In such areas usually commerce gradually takes over residential use.

Survey revealed that, high percentage of mixed use lands are seen in Ward No 01 (57.46%) and Ward No 02 (25.77%).

### **Circulation**

A total of 95.22 acres (1.95%) of land are under this category. It includes, regional highway, primary, secondary, tertiary roads, local road, access road, feeder road, walk way, etc. This landuse includes establishments to accommodate all transport and communication facilities such as bus terminal / stoppage, truck, tempo stand etc. Pucca road, Semi-Pucca road and Katcha road are constitutes this category of land use. Field survey revealed that, Highest distribution of circulation network is visible in ward no 06 which is 13.72acre.

## **3.10 Paurashava Functional Linkage with the Regional network**

### **Regional Network**

Dohar Paurashava is connected with Dhaka city by a regional highway. A Regional Highway named Dhaka-Dohar Road passed through the western part of the Paurashava in north-south direction. So the agro product can easily transport in different parts of Bangladesh.

## **3.11 Role of Agencies for Different Sectoral Activities**

Agencies responsible for utility facilities and municipal services are an important component for an area. Utility services include water supply, gas supply, electric supply, sewerage and drainage system, telecommunication system, fire services, solid waste management, etc. The concerned departments / organizations responsible for planning and development of utility services are shown in the following table.

**Table 3.9: Agencies responsible for sectoral activities**

Sl. No.	Sectors	Responsible agencies
1.	Electricity Supply	Rural Electrification Board (REB)
2.	Water Supply	DPHE / Paurashava/ Private
3.	Telecommunication	BTCL / Mobile Phone Companies
4.	Sewerage and Sanitation	DPHE / Paurashava/ Private
5.	Solid Waste Disposal	Paurashava / Private
6.	Fire Service	Fire Services and Civil Defense
7.	Post office	Postal Department

Source: Physical Feature Survey, 2009.

The authorities (as presented in the Table-3.9) should perform other roles need to be carried out with the assistance and support of other relevant government agencies. Those roles are:

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

**Map 3-3: Regional/ National Road Network of Dohar Paurashava.**



## CHAPTER-4

### CRITICAL PLANNING ISSUES

#### 4.1 Transport

Van and rickshaw are two major transport modes in the study area. Motorcycle and Bicycle is the main mode for private users. Movement of motorcycle is also identified as major private mode. Inadequacy of bus service found normal scenario in the study area. The peak hour traffic movement is found in morning from 7am to 9 pm and in the afternoon from 6 pm to 8 pm in general. Though overall traffic congestion is low, let it should not be increased. Establishment of bus route within the study area is another prior demand of the people.

From the physical feature survey, it is found that the hat / bazar in the study area is served by bituminous and brick soling roads. But the area is not served by well defined road hierarchy, nor is required now due to sparse use of roads by motorized vehicles. However, the induced activities due to the prospects of upward economic change may need to provide road network befitting with the need.

Highway traffic is comparatively high and dominated by mixed type of vehicles including non-motorized. Generally, surface of the highways is moderate. The road network is not facilitated by designated parking area, bus terminal and bus bay. The core urban area of this Paurashava is very congested and the road with of this area is very narrow and existing road network developed in an unplanned way. As a result, sometimes congestion and chaotic situation occurs for a little while. In spite of this situation, present road network is functioning well. But it has to be upgraded to accommodate the future increase of volume of traffic that is expected to increase due to the rapid growth of urban population and influence of Dhaka city growth.

#### 4.2 Environment

In Dohar Paurashava, noise pollution occurred by three wheelers and sound generates from saw mills and rice husking mills. Water contamination is observed as “Arsenic” threat. Air pollution is caused by dust emitted from saw mill, rice husking mills and furniture shops. Flood water and water logging creates health hazards. Dysentery and diarrhea diseases occur due to flood and water logging. Habitual inundations, especially in monsoon, due to external floods from canals are another threat to environment. Pragmatic planning / solution and Drainage Master Plan are very pertinent issues which is utmost importance in planning the Dohar Paurashava.

However, implementation of activities like roads, drainage, bridge / culverts, housing and industrial establishments and bazars will radically change the natural topography and landuse pattern. The agricultural land will be converted into urban and semi-urban nature. Existing scenic beauty will disappear; water bodies will lost and general slope will be diminished for earth filling due to urbanization. Therefore, in the process of preparation Structure Plan, Urban Area Plan and Ward Action Plan, consideration of those factors will be made for keeping the natural environment livable.

To create a better living environment, environmental phenomenon (as discussed earlier) has been considered with the systematic planning principles and regulatory measures. With these views, people's awareness needed to be increased through different public activities about the fair living environment. Arrangement of landuses should be provisioned for all the public and private organizations as their necessities.

### **4.3 Physical Infrastructure**

Most of the lands in the Paurashava area are acting an important role on the supply of agriculture commodities in different Paurashavas and Zilas. Development activities are reducing the agriculture land rapidly. This trend should be controlled through the imposition of development control, but the contemporary regulations and their management is not enough to control such development activities.

About 2 to 3 meter earth filling will be needed for every development activities in the Paurashava. So, bulk development should not be encouraged due to the huge cost involvement. Poor soil condition is another problem of bulk development. Lowlands are also providing natural drainage facilities in the area.

The Paurashava is a naturally developed area. Planning effort yet not been taken by the public authority. Therefore, a mixed landuse scenario is viewed all over the Paurashava. These unorganized landuses should be framed within a planning manner with the physical and financial involvement of public authority.

All roads in the Paurashava town are narrow and irregular (except the National Highway). Some of the roads submerge in rainy season. Widths of all semi-pucca and katcha roads are between 3 to 4 meters and somewhere they are using as footway. Those narrow and irregular roads may be widen and in regular shaped but not in all cases. Because some of the roads are in densely populated areas, pucca buildings and commercial establishments will be needed to demolish. Some roads did not preserve any scope for further improvement. Infrastructural facilities such as water supply and sanitation will not be possible to construct in those narrow roads.

Urban facilities provided by the Paurashava authority are not enough. All urban facilities as a township development are necessary. Most of the urban services were developed when the Paurashava was formed as a growth centre. Inhabitants of the Paurashava make their opinion (during consultation meeting) in favour of Paurashava system.

Problem relating to the housing is mostly concerned with the poor community. Apart from dwelling, poor piped water supply and frequent load shedding are daily problem for the inhabitants. Almost all the households use tubewell as their source of drinking water. In a nut shell, municipal services are not adequate. Among these, drainage and toilet facilities are two major problems in most part of the Paurashava. The Paurashava cannot solve the problems due to scarcity of fund.

### **4.4 Drainage and other municipal facilities**

The Paurashava is quite poor in respect of basic utility & other social services and facilities. Information collected through Socio-economic survey reveals basic utility



facilities. There is no water supply network and gas connection in the Paurashava. For drinking water supply, deep tubewell, community tubewell uses. Almost all the Wards are connected with electricity supply in moderate level. Some areas have not electricity connection. Drainage and Sewerage and Solid waste are also in same condition. People use various types of fuel sources like Cylinder gas, kerosene, Wood, Electric Heater, Cow dung, etc. Electricity supply for household lighting and for other purposes exists but with frequent load shedding.

Drainage, sewerage and sanitary toilet facilities are very much important facilities for an urban area. Drainage and Sewerage facilities are very poor. According to household survey Drainage and Sewerage facility are unavailable in Dohar Paurashava. On the other hand hundred percent of sanitary toilet facilities is observed in every ward in Dohar Paurashava. Due to lack of drainage facilities water clogation during rain is common phenomenon. Almost all the Wards have no sewerage system and toilets are mostly consists of sock pits. Overall garbage disposal system is poor. Solid waste dumping ground is not available and mostly disposes on open streets. Waste collection is being collected through NGOs but not well organized all over the study area.

**Drainage Facility:** Nearly non-existence, very shallow type is the major characteristics of drainage facilities in the Paurashava. Those drains are not continuous and open and not facilitated all the Wards. The drainage condition, serviceability, structural condition, obstruction, situation, blockage are found in those drainage networks. Water drained irregularly through those networks and they are also using as solid waste dumping ground. Drainage network in the Paurashava is mostly under public initiative. There is no well organized, well constructed drainage pattern / network encompassing all the Wards of the Paurashava. Drainage aspects plays a vital role in clearing waste water but the survey finds most of the drainage network unable to function due to poor maintenance, design, debris accumulations and faulty gradients. Drainage must receive image priority in Ward Action Plan as water logging within selected places of Paurashava is saver, therefore, planning options for drainage of the future should be seriously pursued. The present inefficient drainage needs to be well designed encompassing all the Wards right from household level to main road. There is no drain for household waste. Existing open drains are obstructed with rubbish and reduce the discharge facilities, creating health hazards.

**Sewerage Facility:** Sewerage system is very important component from the environmental point of view. Almost all the area of the Paurashava is devoid of sewerage facilities. There exists a minor process of development in certain selected Wards but limited to government quarter only. Regarding ownership of toilets it varies widely in most of the Paurashava area. Most of the households have their own toilets.

**Toilet Facility:** Toilet system of the study area is mostly categorized as semi-pucca. In spite of this, Paurashava has a modest development of pucca toilets in government zones. Sewerage system has not been introduced on a trial basis as to their popularity and acceptance. Table and the graph below gives total picture regarding toilet facility in the Paurashava. Ownership of toilets varies widely in most of the study areas. Most of

the households have their own toilets. The overwhelming head of the households responded service quality not satisfactory as most of the above facilities are absent.

Water Sources: Hand tubewell and ponds as water sources exists in most of the Wards of the Dohar Paurashava. Ownership of hand tubewell mostly goes to households own property.

Besides these, other issues like graveyard, open public space, education facilities, religious facilities are inadequate in this Paurashava. Though there are formal graveyards, but for proper utilization formalization and maintenance is required. Up gradation of Hindu Shashan ghat is required.

#### **4.5 Landuse Control**

Accommodation of future thrust of growth due to the rapid growth of urban population and influence of Dhaka city demand for supply of safe drinking water, providing safe and easy accessibility, use of agriculture production in income generating activities and create provision for further investment will increase.

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

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

Major aim of the Landuse Policy 2001 was to prevent indiscriminate conversion of agricultural land in to non-agricultural use, because such conversion may be threatened for food security of the country. Such conversion should be prohibited with the multi-sectoral use of land. During implementation of Urban Area Plan / Ward Action Plan, necessary control should be imposed according to the following manner.

1. High value agriculture land should be preserved only for agriculture purposes. The land produces three crops in a year are under this category. Any physical development activities should be prohibited by the Paurashava authority. In the Paurashava a major portion of land is demarcated as high value agriculture land.
2. Drainage congestion due to the indiscriminate development activities is another critical issue. With the increase of population and commercial activities, lands of the Paurashava town are being converted for habitation. Natural development of those settlements somewhere creates drainage congestions. In the core urban area the existing roads are very narrow and there is a absence of drainage network. So, water logging is a common phenomenon in this area.

3. Missing links in road transportation creates accessibility problem. In the intersections, lands are using by commercial activities including daily bazar and saw mill which are increasing traffic congestion.
4. Easy accessibility with neighbouring Upazilas and a regional linkage is needed. Those linkages will grave huge amount of agriculture land. The single crop land may be used for this purpose.

#### **4.4 Disaster (if any)**

Disaster is the tragedy of a natural or man-made hazard that negatively affects society or environment. Disaster can be classified into two categories: natural disaster and man-made disaster. Natural disaster is the effect of flood, volcanic eruption, earthquake or landslide, draught, epidemic, etc. that affects environment and leads to financial, environmental or human losses. Man-made disasters is resulting from human intent, negligence or error, or involving a failure of a man-made system.

The Paurashava area including the Dohar Upazila has affected by the several major natural disasters ranging from Cyclone, Flood to Water logging and Draughts, etc. The periods of those disasters are 1998, 2000, 2004, 2007 and 2008. Very scanty attempt has been made by the government to rehabilitate people after the natural disaster.

Urbanization is converting lands for residential use. Agricultural lands and water bodies are being chosen most frequently and the lands are being converted into urban settlement. In Dohar Paurashava, wet lands are being filled up and agricultural lands are being converted. This has been identified as the major man-made disaster accelerating the degree of conversion year to year. Use of poisonous insecticides on the agricultural land is another man-made disaster which will affect in the long-run.

#### **4.5 Laws and Regulations**

The regulations prescribed (mentioned in the Chapter-5.2.1, Sl. No. 1 to 20) in the Local Government (Paurashava) Act, 2009 are not directly related with the physical development activities and their control. The Building Construction Act, 1952 is called the mother regulation to control all type of physical development but no instruction is being included in the Local Government (Paurashava) Act, 2009. The Paurashava authority approves the building plan and excavation of tank without any regulatory control.

The regulation prescribed in the Local Government (Paurashava) Act, 2009 on the preparation of master plan is called traditional regulation. In the modern world, the concept of master plan became obsolete. In this project, the so called master plan, as mentioned in the Local Government (Paurashava) Act, 2009 considered as a package and the plan included in this package named Structure Plan, Urban Area Plan and Ward Action Plan, though there is no regulation in the country on the preparation and implementation of those plans.

In the Paurashava about 58.23 % (except water bodies) land is under agriculture use. Most of those lands are private. Different type of help is necessary for the farmers involved with those agriculture lands. Section 13(1a) of the Agricultural Development

Corporation Ordinance, 1961 prescribed regulation on the function of the Corporation and said that “the Corporation shall make suitable arrangements throughout Bangladesh, on a commercial basis, for the procurement, transport, storage and distribution to agriculturists of essential supplies such as seed, fertilizers, plant protection equipment, pesticides and agricultural machinery and implements.” Where the Corporation is absent, how the farmers will get benefit prescribed in the section 13(1a)? To increase the agricultural commodities such type of help is necessary.

Except the Paurashava Town (Township development areas), other areas are rural. To generate rural-based township environment, those rural areas should be preserved. Rural development components as prescribed in the section 7(1a) of the Bangladesh Rural Development Board Ordinance, 1982 should be provisioned to control those rural areas. As prescribed in the section 7(1a), functions of the Board shall be “to promote village-based primary co-operative societies and Thana Central Cooperative Association (TCCA) with a view to enabling them to be autonomous, self-managed and financially viable vehicles for increasing production, employment generation and rural development.”

## CHAPTER-5

### PAURASHAVA DEVELOPMENT RELATED POLICIES, LAWS AND REGULATIONS

#### 5.1 Indicative Prescription of Policy for Paurashava in the light of the Different Urban Policies, Laws, Regulations and Guidelines

The preparation of Structure Plan, Urban Area Plan and Ward Action Plan for the Dohar Paurashava is highly depended on the policies and relevant contemporary rules and regulations prescribed by the government. In preparation of the above Plans, guidelines and strategies prescribed through the policies are considered carefully. Contemporary rules and regulations help to formulate the process and procedure for development control.

##### Urban Land Management Policy

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

##### Policies

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

- Undertaking land-sharing schemes and tenancy reforms for establishing clear rights of tenants.
- Allocating khas land/acquired land for housing the poor.
- Allocating reasonable proportion of land in urban places for housing the poor.

### **Strategies**

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

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

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

### **Landuse Policy**

Bangladesh Landuse Policy was prepared and notified in the year 2001. Major aim of the policy is to prevent indiscriminate conversion of agricultural land in to non-agricultural use, because such conversion may be threatened for food security of the country. The expansion of residential, commercial, industrial and socio-economic uses will encourage the diminishing trend of agriculture land. Through the policy, government has encouraged Compact Township and vertical expansion of the different type of building rather than horizontal expansion.

### **Objectives**

The objectives of the Landuse Policy are to:

- Prohibit the recent practice on conversion of agriculture land into non-agricultural use to ensure food security for the people.

- Impose zoning provision to control the better use of land according to the nature of land located in different regions.
- Rehabilitation of landless people on the alluvion lands alluviated from river, Haor or sea.
- Preserve khas land for future physical development activities.
- Confirm landuses in relation with the existing natural environment.
- Use of land in favour of job creation, landlessness and poverty alleviation.
- Control land pollution.
- Construction of multi-storied building with accommodation of various purposes in public and private sector for ensuring minimum land coverage.

About 46% land of the Dohar Paurashava is under the agricultural practices. According to the Landuse Policy, those lands should be preserved as agriculture land. For such preservation, some guidelines prescribed in the Landuse Policy will be considered they are – in case of rehabilitation of the landless people, Khas land will be emphasized for distribution by the government.

### **Housing Policy**

Housing, in the context of overall improvement of human settlements, is considered by the Government of Bangladesh as an integral part of culture and planning for economic development. The Global Strategy for Shelter by the year 2000 adopted by the United Nations in November, 1988 calls upon governments to take steps for formulating a National Housing Policy, 2004 in the light of "the enabling approach" for achieving the goals of the strategy.

The housing problem in the country is of serious magnitude. In addition to the large number of homeless households; the rapid growth of slums and unauthorized squatter settlement; the increasing cost of land and construction materials; rampant speculation and the phenomenal increase in house rent, the problem is compounded by non-availability of basic civic services, including water and sanitation to the bulk of the population and acute shortage of affordable and adequate shelter for the poor and vulnerable groups. The housing shortage was estimated in 1991 to be about 3.10 million units, composed of 2.15 million units in rural areas and 0.95 million units in urban areas; with the bulk of the backlog consisting of katcha un-serviced units. The housing shortage is likely to exceed 5 million units by the year 2000 A.D. The current housing stock is deteriorating fast due to aging, general neglect, poverty and civic apathy on the part of the dwellers.

### **Objectives**

The objectives of the National Housing Policy are to:

- Make housing accessible to all strata of society and to accelerate housing production in urban and rural areas with major emphasis on needs of the low and middle-income groups, the high priority target groups will be the disadvantaged, the destitute and the shelterless poor.

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

### **Rural Homestead**

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

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



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

### **Slums and Squatter Settlements**

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

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

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

### **Infrastructure**

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

- Increase investment by national and local government agencies in order to meet the rapidly growing needs of serviced land and to improve the availability of services in different settlements.
- Promote a balanced pattern of urbanization through a policy of decentralization of investments and incentives for the growth of secondary, intermediate and small

towns so as to reduce pressure on metropolitan cities and to control unregulated conversion of agricultural and forest land for the purpose of housing.

- Develop economically buoyant and socially attractive secondary and intermediate towns by strengthening their linkages with contiguous rural areas and market centres as part of the integrated and planned development of the region and to reduce migration to the larger cities.
- Make necessary investments to increase within a reasonable time, the coverage of entire rural and urban population for potable water supply and basic sanitation.
- Increase investments in public transport and traffic network to improve mobility of people, particularly that of the poor.
- Encourage the use of infrastructure construction technologies, which are cost effective, incrementally upgradeable and environmentally appropriate.
- Provide government support for extension of infrastructure based on the participation of the people and private developers, NGOs, CBOs or on innovative systems of infrastructure leasing.
- Provide Government assistance to the local bodies for adequate cost recovery of investment on infrastructure, proper maintenance of services and upgradation of the capability of the personnel in local bodies and functional agencies.
- Provide opportunity for community participation and recognize people's initiative in the design, installation and the upkeep of services within the framework of the development programmes.

### **Strategies**

The salient features of the housing strategy are:

- Housing will be given due priority in the national development plans treating it as a separate sector by itself.
- The role of the Government in housing will primarily be that of a facilitator or enabler in order to increase access to land, infrastructure, services and credit and to ensure availability of building materials at a reasonable price, specially for the low and middle-income groups and to create and promote housing finance institutions; whereas actual construction of housing will generally be left to the private sector developers, the people themselves, and the NGOs.
- Greater emphasis will be laid on affordability, personal savings, self-help and cost recovery. Efforts would be made to enhance affordability of the disadvantaged and low-income groups, through provision of credit for income generation and income enhancement, housing loans at especially low interest, access to space for running workshops or business and such other facilities.
- Improvements and rehabilitation of the existing housing stock will be given priority by the Government alongside new housing.

- Encroachments on public land and formation of unauthorized constructions will be discouraged.
- Austerity will be maintained in building houses and efforts will be made to economize housing costs, discourage extravagant construction, facilitate incremental house building and ensure wider application of low cost technology and optimum use of resources at the individual and national levels both in public and private sectors.
- Regeneration of forest-based building materials would be planned and environmental conservation given due consideration.
- Due attention would be given to construction, protection, replacement and rehabilitation of shelter in disaster affected and fire prone areas.
- Special care would be taken for the preservation of cultural heritage and promotion of vernacular architecture in new housing projects.
- Universities, research institutes and centres will be encouraged to conduct research on housing issues.
- The National Housing Policy will be co-ordinated with other development policies e.g. land, environment, population, employment, social welfare, fiscal and monetary policies at national and local levels.

#### **Population Policy, 2004**

Realizing the importance of population and development, the government prepared a Population Policy in the year 1976 and identified population problem as a national problem. Objectives of the Population Policy are to improve the status of family planning, maternal and child health including reproductive health services and to improve the living standard of the people making a desirable balance between population and development in the context of Millennium Development Goals (MDGs) and Interim Poverty Reduction Strategy (IPRS). Economic growth, poverty reduction and social development has identified as national strategy through the Population Policy of 1976. In the Policy, urgent attention should be given on the gender equity and empowerment, welfare services for elderly and poor, control on rural to urban migration, human resource development through skilled workforce and participation on NGOs and private sector in the process to control the population growth.

#### **Aims**

Aims of the Population Policy as presented are:

- Aware females about family planning to reduce Total Fertility Rate (TFR) and increase to use family planning devices among the fertile groups.
- Towards stable population within the year 2060 and the net growth rate not higher than 1% within the year 2010.
- Provide importance on mother's health to reduce maternal dead.
- To aware people about HIV / AIDS and to reduce it's chronological expansion.
- To help for providing gender equity and women empowerment in the society.

- To increase personal quality of the planners, administrators and service delivery agencies and to develop the information collection system, research and presentation.
- To control immigration from rural to urban and considers effective steps.
- Provisioning environmental sustainability including safe drinking water supply.

### **Agriculture Policy**

Primary goal of the Agriculture Policy is to modernize and diversify the crop sector (including agricultural system) through initiation and implementation of a well-organized and well-coordinated Agriculture Development Plan. Overall objective of the Agriculture Policy is to make the nation self-sufficient in food increasing crop production (cereals also) and ensure a dependable food security system for all.

### **Aims**

Clause 2 of the Agriculture Policy presents aims to increase crop production and maintain food security in the country. Some of those aims are:

- To increase income of the farmers and their buying capacity through stable and benefited agricultural development.
- To develop and preservation of productivity of the land.
- Removal of dependency on specific crop as a stable food.
- Introduces biological technologies, their use and expansion among the farmers.
- To encourage farmers for introducing irrigation from secondary sources during draught and introduces stable irrigation facilities for improving cropping intensity and crop production.
- Introduction of farming as an income generating sector through farming system and agro-forestry activities.
- To produce necessary agro-product for industrial use.
- To find out new opportunities for more export and minimum import of agriculture commodities.

### **Transportation Policy**

For the country's economic and social development and for poverty alleviation, development of the road network is essential. For this reason the transport sector has been accepted as a priority sector. With the development of the economy the volume of vehicles, passengers and goods has been increasing. In the meantime a notification regarding classification, definition and responsible organizations for all roads was issued. In this context standardization and cost rationalization of the roads in the country, especially the Zila, Upazila, Union and village roads, have become very essential. For the development of Multimodal Transportation System (Road-Rail-River) such a standardization/ cost rationalization of roads and bridges / culverts is a need of the hour. Standardization including cost rationalization will provide the basis of appraisal of road / bridge projects leading to optimal development of the transport system as a whole. At

present there is no standard design and national unit cost for construction and maintenance of various roads and bridges and culverts. As a result substantial cost difference has been proposed by the agencies for same type of road / bridges for the same area.

### Summary of Issues Covered

Following tasks of a road projects will be adopted:

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

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

**Table 5-1: Passenger Car Unit (pcu) Conversion factors for non-urban roads**

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

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

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

**Table 5-2: Design applications**

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

\* Special type to be used under special circumstances.

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

**Table 5-3: Existing and Recommended design lives**

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

\*\* Overlaying of 25-40mm BC will be required after every 7-8 yrs. \* Special type to be used under special circumstances.

### Environment Policy

Bangladesh National Environment Policy was approved and published in 1992. Key elements of the Policy are –

- Maintain ecological balance and overall physical development progress of the country through protection and development of different sectors. Protection from natural disaster is one of them.
- Identification and regulation all type of activities which pollutes and degrade the environment.
- Ensuring proper Environment Impact Assessment prior to undertaking of industrial and other development projects.
- Ensuring sustainable use of natural resources.

### Proposed Sectors

For the fulfillment of every component of Environment Policy, it has divided in to 15 sectors. Those sectors are – Agriculture, Industry, Health, Energy, Water Development,

Flood Control and Irrigation, Land, Forest including flora and fauna, Fish and Livestock, Food, Seashore and Maritime, Transport and Communication, Housing and Urbanization, Population, Literacy and awareness, Science, Technology and Research, Legal framework and Institutional framework.

### **Strategies**

For the implementation of policies, a large number of strategies have been framed according to the sector. Some of those strategies are:

**Agriculture:** Conduct field survey for imposing sustainable farming system and increase soil fertility. Necessary steps should be taken based on that survey. Control on the use of chemical insecticides and pesticides and encourage farmers using bio-chemical fertilizer. Such strategy may be implemented by the Agriculture Ministry, Bangladesh Agriculture Research Council, Directorate of Agriculture Extension, Bangladesh Rice Research Institute, Jute Research Institute, Bangladesh Agriculture Research Institute, Bangladesh Sugar and Food Industries Corporation.

**Industry:** The industries identified by the Directorate of Environment in the group of polluting industries, measures should be taken against them as early as possible. The strategy should be imposed by the Agriculture Ministry, Directorate of Forest, Commerce Ministry, Controller of Export Import, Plant Protection Wing, Directorate of Agriculture Extension, Bangladesh Sugar and Food Industries Corporation.

**Health:** Pure drinking water supply and sanitary latrine in urban and rural areas should be introduced. Industrial and agricultural wastes which are harmful for the health should not be dumped in the river, pond, canal and ditches. This should be controlled through the imposition of appropriate regulations. Those strategies will be maintained by the Local Government Division, Directorate of Public Health Engineering, Paurashava Authority and Directorate of Environment.

**Water Development, Flood Control and Irrigation:** For the expansion of the project on Water Development, Flood Control and Irrigation, environmental audit is necessary. Based on that audit, environmental degradation areas will be identified and appropriate measures will be undertaken. Roads and Highways Department, Bangladesh Road Transport Authority, Directorate of Environment, Water Development, Flood Control and Irrigation Ministry and Bangladesh Water Development Board will responsible for implementation of those strategies.

**Land:** Landuse regulations should be prepared and their effective use will be confirmed for planned use of land. Land Ministry, Agriculture Ministry, Industrial and other relevant Ministries, Local Government Division, Works Ministry, Directorate of Forest and Zila Parishad will responsible for such strategies.

### **Industrial Policy**

At first, in the year 1999, government of Bangladesh has approved and notified the Industrial Policy. Again, in the year 2005, Industrial Policy of Bangladesh was published by the government. Both the Policies are synonyms and foremost objective is to setup

planned industries considering the domestic demand, prospect of exporting goods and discouraging unplanned industrial growth in the light of past experience.

### **Objectives**

Objective of the industrial policy is –

- To expand the production-base of the economy by accelerating the level of industrial investment.
- To promote the private sector to lead the growth of industrial production and investment.
- To focus the role of the government as a facilitator in creating an enabling environment for expanding private investment.
- To permit public undertaking only in those industrial activities where public sector involvement is essential to facilitate the growth of the private sector and / or where there are overriding social concerns to be accommodated.
- To attract foreign direct investment in both export and domestic market-oriented industries to make up for the deficient domestic investment resources and to acquire evolving technology and gain access to export markets.
- To ensure rapid growth of industrial employment by encouraging investment in labour intensive manufacturing industries including investment in efficient small and cottage industries.
- To generate female employment in higher skill categories through special emphasis on skill development.
- To raise industrial productivity and to move progressively to higher value added products through skill and technology up gradation.
- To enhance operational efficiency in all remaining public manufacturing enterprises through appropriate management restructuring and pursuit of market-oriented policies.
- To diversify and rapidly increase export of manufactures.

### **Strategies**

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

- There will be no discrimination between domestic and foreign investment. Due emphasis will be given to promotion of regional and sub-regional cooperation.
- Existing public sector enterprises will be progressively privatized and public industrial investment will be limited to only those cases where there is special need to complement private investment or where there is an overriding social and national objective to be achieved.



- The capital market will be developed and strengthened to mobilize domestic savings and to attract foreign investment.
- Development of the infrastructure including port facilities, energy, transport and communication and human resource development will receive high priority Private investment including "Build, Operate and Own" (BOO) and "Build Operate and Transfer" (BOT) methods will be particularly encouraged in these sectors.
- Intensive industrial zones development will be undertaken together with balanced geographical dispersal of the zones in areas with growing potential to the utilization of local resources as more infrastructural and other facilities are put in place.
- Consistent with the charter of World Trade Organization (WTO), protection to domestic industries from external competition will be rationalized.
- To retain the competitive edge of domestic products, wage increases will be linked to productivity trends, and appropriate labour laws will be put in place to ensure congenial industrial relations.

The industrial investment will be encouraged through tariff rationalization and (appropriate fiscal measures. The import and export policies will also be made supportive of and consistent with the Industrial Policy.

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

### **Health Policy**

National Health Policy was approved and published by the government in the year 2000.

Aim of the Health Policy is –

- To develop a system to ensure easy and availability of health services for the people living in urban and rural areas.
- To ensure optimum quality, acceptance and availability of primary health care including government medical services at the Upazila and Union level.
- To adopt satisfactory measures for ensuring improved maternal and child health at the Union level and install facilities for safe child delivery in each village.
- To improve overall reproductive health resources and services.
- To ensure the presence of full-time doctors, nurses and other officers / staffs, provide and maintain necessary equipment and supplies at each of the Upazila Health Complexes and Union Health and Family Welfare Centres.

- To formulate specific policies for medical colleges and private clinics, and to introduce appropriate laws and regulations for the control and management of such institutions including maintenance of service quality.
- To explore ways to make the family planning program more acceptable, easily available and effective among the extremely poor and low-income communities.
- To arrange special health services for mentally retarded, physical disabled and for elderly population.
- Strategies
- Some of the strategies of health policy are:
  - The aim "health for all" will be implemented through awareness building strategies. Cost-effective procedures to deliver health services will be the prime consideration.
  - A specific organization will perform responsibility for Epidemiological Surveillance to control the spread of epidemic diseases. Such concept will be included with different programs.

The services delivered by the health centers to the patient should be standard and a printed guideline on standard, monitoring and evaluation will be given to those health centers.

- A Health Services Reforms Body will be formed based on the Health and Population Sector Strategy. This Body will be responsible for infrastructural reformation, employment, development planning and implementation of human resources relevant with the health activities and development of carrier of workforces.

### **National Urban Policy**

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

- Ensure regionally balanced urbanization through diffused development and hierarchically structured urban system.
- Facilitate economic development, employment generation, reduction of inequality and poverty eradication through appropriate regulatory frameworks and infrastructure provisions.
- Ensure optimum utilization of land resources and meet increased demand for housing and urban services through public-private partnerships.
- Protect, preserve and enhance urban environment, especially water bodies.
- Devolve authority at the local urban level and strengthen local governments through appropriate powers, resources and capabilities so that these can take effective responsibility for a wide range of planning, infrastructure provision, service delivery and regulatory functions.

- Involve all sectors of the community, in participatory decision-making and implementation processes.
- Ensure social justice and inclusion by measures designed to increase the security of poor people through their access to varied livelihood opportunities, secure tenure and basic affordable services.
- Take in to account, particular needs of women, men, children, youth, elderly and the disabled in developing policy responses and implementation.
- Assure health, safety and security of all citizens through multifaceted initiatives to reduce crime and violence.
- Protect, preserve and enhance the historical and cultural heritage of cities and enhance their aesthetic beauty.
- Develop and implement urban management strategies and governance arrangements for enhancing complementary roles of urban and rural areas in sustainable development.
- Ensure good governance by enhancing transparency and establishing accountability.

#### **Rural Development Policy**

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

- Food for Works Program (Lj-SI çhçej-u MjçÉ LjÑp\$Q£)
- G.R Program (Gratuitous Relief Program)
- T.R Program (Test Relief Program)
- V.G.D Program (Vulnerable Group Development Program)
- V.G.F Program (Vulnerable Group Feeding Program)
- Single-House Single-Farm Program (HLçV hjs£ HLçV Mijil LjÑp\$Q£)
- Back to home Program (O-l @glj LjÑp\$Q£)
- Food for Education Program (Mj-cÉI çhçej-u çnrj LjÑp\$Q£)
- Rural Occupational Project (fõ£ S£çhLjue fËLÒf)
- Poverty Reduction Project (çjçlâ çh-jjQe fËLÒf)
- Self-employment Program for Women (jçqmj-cl BaÈ-LjÑpwøqje fËLÒf)
- Women Empowerment Program (jçqmj-cl pijjçSL rja;ue fËLÒf)
- Coordinated Women Development Program (pjçeÄa jçqmj Eæue fËLÒf)
- Peace Home Program (njçç¹ çehjp LjÑp\$Q£)
- Shelter Support Program (BnËue LjÑp\$Q£)
- Educational Allowance Program (çnrj Efh<sup>a</sup>çš LjkÑH<sup>2</sup>j)

- Aged-allowance Program (হুওলি়া়ি LjকÑH²j)
- Micro-credit Program (রফাGZ LjÑpSQ£)
- Allowances for Widowed, Poor and Husband-renouncement Women Program (øhdh\_i, caxØq J üij£ ølaÉJ²; jøqm\_i-cl SeÉ ija\_i fÉc;e LjÑpSQ£)

### **Aims and objectives**

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

- To increase the income and provision of jobs for the Villagers, especially for women and people under low-living standard in the rural areas.
- To confirm sustainable economic and social development through poverty reduction.
- To encourage self-employment opportunities in the rural areas.
- To emphasize for the development of rural wealth according to the equal distribution of economy and national development as prescribed in the Constitution of Bangladesh.

To give confirmation to the rural people about infrastructural development, equal distribution of wealth and marketing of the agricultural production.

To produce technologically efficient people about education, technical education and trainings in rural areas.

Identification of demand and their fulfillment for socio-economic development of rural poor, persons involved with the production, especially small farmers and landless people.

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

### **Programs**

Programs for the rural development may be framed on Involvement of people with the decision-making and development activities, Poverty reduction, Rural infrastructural development, Agro-based rural economy, Rural educational system, Village health service and development of foodstuffs, Village population control, Development of village settlement, Landuse and development, Village industrial expansion, Increase of capital and financing, Women empowerment, Development of village child and youth, Development of village backward population, Area-based special development program, Self-employment for self-dependent, Cooperative system for rural development and Conservation of rural environment.

## **5.2 Laws and Regulations Related to -**

### **5.2.1 Urban Development Control**

For planned urban 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. The President of Bangladesh is empowered through the Constitution (called constitutional Wright) to establish,

control and removal of any government office. This is a part of national administration. The President of Pakistan, in the year 1960 was enacted the Municipal Administration Ordinance, 1960. In the year 1977, some of the Municipalities were upgraded and re-named as Paurashava and administered through the Paurashava Ordinance, 1977. Again, in the year 2009, Paurashava Ordinance, 1977 was re-named as Local Government (Paurashava) Act, 2009.

The Local Government (Paurashava) Act, 2009 is the only regulation executes by the Paurashava authority. The Paurashava authority may provide the functions as prescribed in the Act, no provision is being outlined to control and manage those functions. The jurisdiction of this act on other regulations includes following Acts and Ordinances. The Paurashava may enforce those regulations according to their capacity.

- A\_jçbÑL fËçauìje A\_jCe, 1993 (1993 p-el 27 ew A\_jCe)
- AbÑ GZ A\_jc\_jma A\_jCe, 2003 (2003 p-el 8ew A\_jCe)
- ÙÛ\_je£u pL\_lj\_l Lç\_jne AdÉ\_j-cn, 2008
- h\_jwm\_j-cn nË\_j A\_jCe, 2006 (2006 p-el 42 ew A\_jCe)
- Cantonments Ordinance, 1924 (Ordinance No. II of 1924)
- District Ordinance, 1836 (Ordinance No. I of 1836)
- The Penal Code, 1890 (Ordinance No. XLV of 1890);
- Prevention of Corruption Ordinance, 1947 (Ordinance No. II of 1947)
- hÉ\_jwL çL\_jç\_f\_je£ A\_jCe, 1991 (1991 p-el 14 ew A\_jCe)
- The Bangladesh Shilpa Rin Sangstha Order, 1972 (P.O. No. 128 of 1972)
- The Bangladesh Shilpa Bank Order, 1972 (P.O. No. 129 of 1972)
- The Bangladesh House Building Finance Corporation Order, 1973 (P.O. No. 17 of 1973)
- The Bangladesh Krishi Bank Order, 1973 (P.O. No. 27 of 1973)
- The Investment Corporation of Bangladesh Ordinance, 1976 (Ordinance No. XL of 1976)
- The Rajshahi Krishi Unnayan Bank Ordinance, 1986 (Ordinance No. LV III of 1986)
- çL\_jç\_f\_je£ A\_jCe, 1994 (1994 p-el 18 ew A\_jCe)
- Local Government (Paurashava) Act, 2009 (Ordinance No. XLXVIII of 2009)
- Local Government (Paurashava) Act, 2009 (Ordinance No. XLXVIII of 2009)
- SeÈ J jªaªÉ çehåe A\_jCe, 2004 (2004 p-el 29 ew A\_jCe) (see section 53(2)(Q))
- Evidence Ordinance, 1872 (Ordinance No. I of 1872) (see section 131)
- fö ç\_l\_jN A\_jCe, 2005

On the other hand, the Paurashava is empowered for delivery urban services, collection of taxes and tolls, preparation of budget, control development and other physical activities provide health and social services and electoral role. All of those activities are guided through this Ordinance. In case of regulatory involvement, the Ordinance is wide enough than other authorities. The Ordinance proves that the Paurashava is independent and self regulatory body, but due to the absence of necessary manpower, technological support and government initiative in financial matter, the Paurashava is dependent on central government.

#### **Building Construction Rules, 1996**

**Building Construction:** The Paurashava Authority is the custodian and enforcement authority of the Building Construction Ordinance, 1952 and Building Construction Rules, 1996 for any construction in the Paurashava premises. Section 3(1) of the Act presents control on building construction in the country. Mostly approval system of the building plan prescribed in the Rules and punishment for the breach of regulation presented in the Act. But the approval system is lengthy and volume of punishment is poor.

**Density Control:** Section 12(1) of Building Construction Rules, 1996 sets a formula for building height determination based on the width of the front road. This rule imposes a limit on the building height as long as the front road is less than 75 ft. (22.87 meter). Indirectly this limits the number of family or the size of population in a building. Setback rule of the building and approval system of the building plan also prescribed in the Building Construction Rules.

**Excavation of Tank:** Section 3(2) of the Act presents control on the excavation of Tank in the urban area. Approval for such excavation will be needed from the concerned authority. The regulation mostly enforces by the Development Authority and the Deputy Commissioner enforces on the areas other than the jurisdiction of Development Authority.

**Raging of Hill:** Section 3(3) of the Act presents regulation on the raging of hill. In the Act it is prescribed that anybody is not authorized for raging of hill without approval from the concerned authority. Development Authority and Deputy Commissioner is the concerned authority.

#### **National Reservoir Protection Act, 2000**

**Playfield, Open space, Park and Natural Reservoir Conservation Act, 2000.** In short, this Act may be called as National Reservoir Protection Act. The jurisdiction of this Act is covered Metropolitan City, Divisional and District level Cities and all urban areas including Paurashava area. Aim of the Act is to preserve play field, open space, park / garden and natural water reservoir. For the Paurashava premises, Paurashava Authority is empowered for enforcement of the said Act.

According to the section 5 of this Act, any area demarcated as Playfield, Open space, Garden and Natural Tank should not be changed with other use or it is prohibited for rent, leasing or any other procedure followed by, or handover to anybody for such changes. Again, according to the section 6, approval from concerned authority through application within stipulated time will be needed for any change of the area identified as

play field, open space and natural tank. Punishment for such changes without approval from concerned authority is presented in the section 8. For such unlawful activities, punishment may be 5 years imprisonment or Tk 50,000 as a penalty or both. For preservation of natural water bodies in the Paurashava, this Act will be the important tool of the Paurashava authority.

#### **Acquisition and Requisition of Immovable Property Ordinance, 1982**

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

#### **Brick Burning (Control) Ordinance, 1989**

Chairman of the Upazila Parishad is the enforcement authority of the Brick Burning (Control) Ordinance, 1989. In this Ordinance, control imposes only on the brick burning and said that no person should use wood for such purposes (section 5). For the violation of this regulation, the accused person may be punished with 6 months imprisonment or punished with a fine Tk. 10,000 or with both.

#### **Conservation of Environment Ordinance, 1995**

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

#### **Rural Electrification Board Ordinance, 1977**

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

(a) To establish electricity generation transmission, transformation and distribution systems in the rural areas of Bangladesh.

(b) To take measures for effective use of electricity to foster rural development with special emphasis on increase of use of electric power for economic pursuits such as development of agriculture and establishment of rural industries and assisting the advantaged sections of the community for augmenting their income and standard of living.

### **Public Health (Emergency Provisions) Ordinance, 1944**

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

### **Land Development for Private Housing Project Ordinance, 2004**

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

## **5.2.2 Paurashava Development Management**

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

From the year 1977 to 2009, Paurashava Ordinance 1977 enforces by the Paurashava authority and the name of the statute was Paurashava Ordinance 1977. After



promulgation of the same statute, name of the Ordinance has changed as Local Government (Paurashava) Act, 2009. Generally, people call it Local Government (Paurashava) Act, 2009.

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

**Table 5-4 Functions in brief prescribed in the Local Government (Paurashava) Act, 2009**

Major activity	Specific functions	Functions in brief
<b>Town planning</b>	Master plan	The Paurashava shall draw up a master plan for the city which shall provide for a survey of the Paurashava including its history, statistics, public services and other prescribed particulars. Development, expansion and improvement of any area within the city; and restrictions; regulation and prohibitions to be imposed with regard to the development of sites, and the erection and re-erection of buildings within the Paurashava.
	Site development schemes	Where a master plan has been drawn up and approved by the government, no owner of lands exceeding such area as may be specified in this behalf in the master plan, shall develop the site or erect a building or any plot of land covered by the provisions of a site development scheme sanctioned to area in the prescribed manner. Among other matters, a site development scheme may provide for- (a) the division of the site into plots; (b) the street, drains and open spaces to be provided; (c) the land to be reserved for public purposes and to be transferred to the Paurashava; (d) the land to be acquired by the Paurashava; (e) the price of plots; (f) the works that shall be executed at the cost of the owner or owners of the site or sites; and (g) the period during which the area shall be developed.
	Execution of Site Development Schemes	If any area is developed or otherwise dealt with in contravention of the provisions of the sanctioned Site Development Scheme, the Paurashava may by notice require the owner of such area or the person who has contravened the provisions to make such alteration in the site may be specified in the notice as where such alteration is not made or for any reason cannot be carried out, the Paurashava may, in the prescribed manner require and enforce the demolition of the offending structure; and notwithstanding anything to the contrary

Major activity	Specific functions	Functions in brief
		contained in any law, no compensation shall be payable for such demolition.
<b>Building construction</b>	Building construction and re-construction	Without approval of the building site and plan by the Paurashava, nobody can construct, re-construct any building in the Paurashava area. The Paurashava will approve the plan within sixty days or refund it within that specified time frame; otherwise the plan will be considered as approved.
	Completion of construction and change, etc.	After completion of the approved building, the owner will notify to the Paurashava within 15 days. The Paurashava may inspect the building and if found any violation of the provision prescribed in the Master Plan or in the Site Development Scheme, the Paurashava may demolish the building and the demolishing cost may be incurred from the building owner.
	Building control	If any building or anything fixed thereon, be deemed by the Paurashava to be in a ruinous state or likely to fall or in any way dangerous to any inhabitant of such building or any neighboring building or to any occupier thereof or to passers-by, the Paurashava may be notice required the owner or occupier of such building to take such action in regard to the building as may be specified in the notice, and if there is default, the Paurashava may take the necessary steps itself and the cost incurred thereon by the Paurashava shall be deemed to be a tax levied on the owner or occupier of the building.  If a building is in dangerous condition, or otherwise unfit for human habitation, the Paurashava may prohibit the occupation of such building till it has been suitable repaired to the satisfaction of the Paurashava.
<b>Development</b>	Development plans	The Paurashava shall prepare and implement development plans for specific time. Such Plans shall provide for- (a) the promotion, improvement and development of such function or functions of the Paurashava as may be specified; (b) the manner in which the plans shall be financed, executed, implemented and supervised; (c) the agency through which the plans shall be executed and implemented; and (d) such other matters as may be necessary.
	Community Development Projects	The Paurashava may, sponsor or promote community development projects for the Paurashava or any part thereof and may in this behalf perform such functions as may be prescribed.

Major activity	Specific functions	Functions in brief
	Commercial schemes	The Paurashava may, with the previous sanction of the Government, promote, administer, execute and implement schemes for undertaking any commercial or business enterprise.
<b>Street</b>	Public streets	The Paurashava shall provide and maintain such public street and other means of public commutation as may be necessary for the comfort and convenience of the inhabitants of the Paurashava and of the visitors thereto.
	Streets	No new street shall be laid out except with the previous sanction of the Paurashava. The Paurashava may by notice required that any street may be paved, matalled, drained, channeled, improved or lighted in such manner as may be specified in the notice, and in the event of default, the Paurashava may have the necessary work done through its agency, and the cost incurred thereon by the Paurashava shall be deemed to be a tax levied on the person concerned.
	General provisions about streets	The Paurashava may assign names to streets and paint the names or fix the nameplates on or at conspicuous places at or near the end corner or entrance of the street. No person shall destroy, deface or in any way injure any street, name or name plate, or without the previous permission of the Paurashava, remove the same.
	Street lighting	The Paurashava shall take such measures as may be necessary for the proper lighting of the public streets and other public places vesting in the Paurashava.
	Street watering	The Paurashava shall take such measures as may be necessary for the watering of public streets for the comfort and convenience of the public, and for this purpose, maintain such vehicles, staff and other apparatus necessary.
	Traffic control	The Paurashava shall make such arrangements for the control and regulation of traffic necessary to prevent danger and ensure the safety, convenience and comfort of the public.
	Public vehicles	No person shall keep or let for hire or drive or propel within the limits of the Paurashava any public vehicle other than a motor vehicle except under a license granted by the Paurashava, and in conformity with the conditions of such license. No horse or other animal shall be used for drawing a public vehicle within the limits of the Paurashava except under a license granted by the Paurashava.
<b>Water supply</b>	Water supply	The Paurashava may provide supply of wholesome water

Major activity	Specific functions	Functions in brief
<b>and drainage</b>		sufficient for public and private purposes. Frame and execute water supply scheme for the construction and maintenance of such works for storage and distribution of water.
	Private sources of water supply	All private sources of water supply within the Paurashava shall be subject to control, regulation and inspection by the Paurashava. No new well, water pump or any other source of water for drinking purposes shall be dug, constructed or provided except with the sanction of the Paurashava.
	Drainage	The Paurashava shall provide an adequate system of public drains in the and all such drains shall be constructed, maintained, kept, cleared and emptied with due regard to the heal and convenience of the public. All private drains shall be subject to control, regulation and inspection by the Paurashava
	Drainage scheme	The Paurashava may prepare a drainage scheme in the prescribed manner of the construction of drains at public and private expense. The drainage scheme as approved by the government shall be executed and implemented within specified period.
	Bathing and washing place	The Paurashava may from time to time set a suitable place for use by the public for bathing, washing cloths, or for drying cloth. Specify the time at which and the sex of persons by whom such places may be used. No person shall establish, maintain or run a bath for public use except under a license granted by the Paurashava.
	Dhobi ghat and washer men	The Paurashava may provide dhobi ghats for the exercise of their calling by washer men, and may regulate the use of dhobi ghats and levy fees for their use.
	Public water-course	The Paurashava may declare any source of water, spring, river, tank, pond, or public stream, or any part thereof within the Paurashava, which is not private property, to be a public watercourse.
	Public ferries	The Paurashava may by by-laws provide for the licensing of boats and other vassals plying for hire in a public water-course to be a public ferry and may entrust the management thereof to the Paurashava, and there upon the Paurashava shall manage and operate the public ferry in such manner and levy such tolls as prescribed.
	Public fisheries	The Paurashava may declare any public watercourse as a public fishery, and there upon the right of fishing in such water course shall vest in the Paurashava which may exercise such right in such manner as may be prescribed.

### **5.3 Strength and Weaknesses of the Existing Policies**

The Consultant has identified following weaknesses in the existing policies. These are – accommodation of future thrust of growth, supply of safe drinking water, providing safe and easy accessibility, use of agriculture production in income generating activities and create provision for further investment.

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

Many factors are involved with this such as landuse change, increase of commuters, increase of vehicular movement, forward linkage of commodities and social changes of the Paurashava dwellers.

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



## CHAPTER-6

### PROJECTION OF FUTURE GROWTH BY 2031

#### 6.1 Introduction

The Chapter presents future growth of the Paurashava according to the population, economy and landuse. The projected period for those components has been considered for the year 2010 to 2031. In case of population and landuse, projection has been presented but in case of economy, opportunities have been considered. For the Dohar Paurashava, government policy is the prime focus as economic opportunity but that is not considered here. Existing local economic strength considers as the basis of economic opportunity. Agriculture, fish, foreign remittance, livestock and poultry, local fruits and availability of labour force considers as a basic components of the economic opportunities.

#### 6.2 Projection of Population

Accordinging population census 2001 the population of Doahar Paurashava was 61793 where as Population Census 2011 shows the total population of the Dohar Paurashava was 36,434 which is a great mistake. By adding the whole area according to census data 2011 the total population of Dohar Paurashava was 71362 of which 35,719 are males and 35,643 are females. From 2001 to 2011 the population growth rate was 1.45 which is below the upazilla growth rate as because there is limited urban facilities in this area.

**Table 6-1: Population growth trend analysis**

Items	2011	2001	Growth Rate	
			Decadal	Annual
Both sexes	71362	61793	14.5	1.45
Male	35643	30925	14.3	1.43
Female	35719	30868	14.7	1.47

Source: Population census-2011 and 2001, Community Series

**Basis of population projection:** According to population census 2001 the population of Dohar Paurashava was 61793 and it becomes 71362 in 2011 population census. So, we have considered 2011 census data as base population and annual growth rate is 1.45 according to the Census Year 2011. Though this area is in rural character but due to influence of rapid urbanization of Bangladesh the present growth rate will increase in near future. Considering all scenarios the expected annual growth rate for this area is 2.0%. The formula quoted in calculation of the population projection is -

$$F = A (1+r)^n$$

F=Projected population

A=Current population

R=Growth Rate

N=Year

The projection shows that the population of the study area was 71362 in 2011 and it will be 78784 in 2016, 86977 in 2021, 96023 in 2026 and 106009 in 2031. The scenario proves that in next 20 years the Paurashava population will be increased. The projection is showing slow increase of population. In special case, government policy on relocation of industries from Dhaka City and community facilities provided by the Paurashava according to the Master Plan, the growth rate will be increased rather than the normal rate at present.

**Table 6-2: Population projection**

Ward No	Area (in sq.km)	Existing Population 2011	Projected Population			
			2016	2021	2026	2031
1	1.56	10557	12141	13403	14797	16336
2	1.65	8308	9554	10548	11645	12856
3	2.36	9557	10991	12134	13395	14789
4	2.76	5425	6239	6888	7604	8395
5	1.64	8841	10167	11225	12392	13681
6	4.03	5762	6626	7315	8076	8916
7	1.87	8961	10305	11377	12560	13866
8	2.27	6840	7866	8684	9587	10584
9	1.64	7111	8178	9028	9967	11004
<b>Total</b>	<b>19.78</b>	<b>71362</b>	<b>78784</b>	<b>86977</b>	<b>96023</b>	<b>106009</b>

Source: BBS, 2011 and calculated by the Consultant (Considering Urban growth rate 2.00)

### 6.3 Identification of Future Economic Opportunities

Some handloom industries are located in the Dohar Paurashava area. Good communication and huge agro based product are influencing economy of the Paurashava. The agricultural productions are mostly used in the Dhaka City. Investment in this field will bring huge prospects of the Paurashava. Other economic prospect summarizes in the following discussions:

Availability of agriculture land. The land may be used for different agricultural production and those productions may be used for the input of agro-based industries.

Availability of unskilled and cheap manpower.

Due to the nearness of Dhaka City, the Paurashava may be developed as the fringe area of Dhaka City. This fringe area with its agriculture production will support to the Dhaka City where marketing for those productions are available such as water way and National Highway network.

The Paurashava has been developed as growth centre concept. Some cluster development is found around this growth centre. Through this master plan, planned development will initiate to arrange the growth component in a systematic manner. At the sametime, economic development parallel to the physical and social development will be encouraged.



## 6.4 Projection of Landuse

### Landuse requirement

Most of the land of this Paurashava is agricultural land. There are also a large numbers of industries are seen in this Paurashava. Agriculture and manufacturing based township can be encouraged in the preparation of Master Plan. Growth of population is the natural trend and at the sametime, expansion of non-agricultural use on agriculture land is also natural tendency of the people. This will be controlled through the Compact Township concept with the encouragement of vertical development. In case of government services, specific building may accommodate different type of offices.

Future landuse will be calculated according to the development control for the masses and the standard supplied by the LGED. In case of public land, existing use and khas land will be emphasized. Willingness and participation of the people in development activities will be the key factor for future landuse demarcation. Slow change of landuse will be emphasized rather than rapid change. Let the people do whatever he likes on own land – such concept should not be considered for future projection of landuses. Three parts of the projection are landuse change, landuse control and landuse restriction will be included in the Master Plan. In any case, river front areas should be restricted for human habitation. As a result, river water will safe from contamination.

In case of landuse change, the standard given by the LGED according to the projected population and area for the specific service will be calculated. But, the agriculture land should be preserved from any type of physical development. It should not be decreased. The vertical expansion will be emphasized rather than horizontal. In case of road network planning, missing links will be prescribed rather than new roads. For the development of pisciculture, all ponds and ditches may be preserved, in some exceptional cases; small number of ditches may be used for physical development activities. Landuse control and landuse restriction will be imposed by the Paurashava according to the prescribed plan.

People's willingness will be considered as important base for the projection because the Master Plan is for the inhabitants of the Paurashava. They will be the beneficiary group of that Master Plan. Their willingness in case of use and land allocation, location, expansion provision will be the important consideration. On the basis of fulfillment of their demand, they will like to involve them willingly in the implementation procedure of the Master Plan.

### Demand Analysis

Different methods will be followed for the calculation of landuse demand (such as 1 acre land for 20000 populations in case of a primary school). Demand for utility services, will be calculated according to the growth of people and the standard followed in the country. In case of special allocation, emergency services and restricted use of land, any method should not be considered. An amount of land will be allocated or preserved for that service. The detailed of landuse standard and proposals have discussed in landuse planning chapter.

**Table 6-3: Standard of Landuse and future need**

Types of Land Uses	Recommended Standard	Existing (acre)	Future land requirement			
			2016	2021	2026	2031
<b>Residential</b>		<b>1467.59</b>	<b>787.84</b>	<b>869.78</b>	<b>960.23</b>	<b>1060.10</b>
General residential	100 persons/1 acre		787.84	869.78	960.23	1060.10
Real Estate–Public/Private	200 population/ 1 acre		-	-	-	-
<b>Roads</b>		<b>95.22</b>	<b>(10%-15% of total Planning Area)</b>			
Paurashava primary roads	150 – 100 feet		-	-	-	-
Paurashava secondary roads	100 – 60 feet		-	-	-	-
Paurashava local roads	40 - 20 feet		-	-	-	-
<b>Education</b>		<b>23.55</b>	<b>128.18</b>	<b>141.51</b>	<b>156.22</b>	<b>172.47</b>
Nursery	0.5 acre/10,000 population		7.88	8.70	9.60	10.60
Primary School/ kindergarten	2.00 acres/5000 population		31.51	34.79	38.41	42.40
Secondary/High School	5.00 acres /20,000 population		19.70	21.74	24.01	26.50
College	10.00 acres/20,000 population		39.39	43.49	48.01	53.00
Vocational Training Centre	5 - 10 acres / Upazila	1	10.00	11.04	12.19	13.46
Other	5.00 acres / 20,000 population		19.70	21.74	24.01	26.50
<b>Open Space</b>		<b>9.76</b>	<b>169.39</b>	<b>187.00</b>	<b>206.45</b>	<b>227.92</b>
Play field/ground	3.00 acres/20,000 population		11.82	13.05	14.40	15.90
Park	1.00 acre /1000 population		78.78	86.98	96.02	106.01
Neighborhood park	1.00 acre /1000 population		78.78	86.98	96.02	106.01
<b>Recreational</b>		<b>2.21</b>	<b>13.94</b>	<b>14.35</b>	<b>14.80</b>	<b>15.30</b>
Stadium/sports complex	5 – 10 acres/Upazila HQ		10.00	10.00	10.00	10.00
Cinema/ Theatre	1.0 acre /20,000 population		3.94	4.35	4.80	5.30
<b>Health</b>		<b>5.58</b>	<b>25.76</b>	<b>27.40</b>	<b>29.20</b>	<b>31.20</b>
Upazila health complex/ hospital	10 -20 acres/Upazila HQ		10.00	10.00	10.00	10.00
health centre /Maternity clinic	1.00 acre/ 5,000 population		15.76	17.40	19.20	21.20
<b>Community Facilities</b>		<b>8.74</b>	<b>25.20</b>	<b>27.82</b>	<b>30.71</b>	<b>33.90</b>
Mosque/Church/Temple	0.5 acre /20,000 population		1.97	2.17	2.40	2.65
Eidgah	1.0 acre/20,000 population		3.94	4.35	4.80	5.30
Graveyard	1.00 acre /20,000 population		3.94	4.35	4.80	5.30
Community centre	1.00 acre /20,000 population		3.94	4.35	4.80	5.30
Police Station	3 – 5 acres/Upazila HQ	1	5.00	5.52	6.09	6.73
Police Box/outpost	0.5 acre/ per box	1	0.50	0.55	0.61	0.67
Fire Station	1.00 acre/ 20,000 population		3.94	4.35	4.80	5.30
Post office	0.5 acre /20,000 population		1.97	2.17	2.40	2.65
<b>Utility Facilities</b>		<b>2.66</b>	<b>19.76</b>	<b>21.41</b>	<b>23.20</b>	<b>25.2</b>
Drainage	As per requirement	-	-	-	-	-
Water supply	1.00 acre/ 20,000 population	0.00	3.94	4.35	4.80	5.30
Gas Station	1.00 acre/ 20,000 population	-	3.94	4.35	4.80	5.30
Solid waste disposal	4-10 acres/ Upazila HQ	0.00	4.00	4.00	4.00	4.00
Waste transfer station	0.25 acres/ per transfer station	-	-	-	-	-

Types of Land Uses	Recommended Standard	Existing (acre)	Future land requirement			
			2016	2021	2026	2031
Electric sub-station	1.00 acre/ 20,000 population	0.18	3.94	4.35	4.80	5.30
Telephone exchange	.5 acre/ 20,000 population	0.05	1.97	2.18	2.40	2.65
Fuel station	.5 acre/ 20,000 population	0.06	1.97	2.18	2.40	2.65
Slaughter House	As per requirement	-				-
Public toilet		-				-
Others		2.37				-
<b>Commerce and Shopping</b>		<b>46.95</b>	<b>86.66</b>	<b>95.68</b>	<b>105.63</b>	<b>116.61</b>
Wholesale market	1.0 acres/ 10000 population		7.88	8.70	9.60	10.60
Retail sale market	1.0 acres/ 1000 population		78.78	86.98	96.02	106.01
Corner shops	0.25 acre/per corner shop		-	-	-	-
Neighborhood market	1.00 acre/per neighborhood market		-	-	-	-
Super Market	1.50 – 2.50 acres/per super market		-	-	-	-
<b>Industry</b>		<b>13.72</b>	<b>196.96</b>	<b>217.44</b>	<b>240.06</b>	<b>265.02</b>
Small scale	1.50 acres /1000 population		118.18	130.47	144.03	159.01
Cottage/agro-based	1.00 acres /1000 population		78.78	86.98	96.02	106.01
<b>Transportation</b>		<b>0.89</b>	<b>5.91</b>	<b>6.52</b>	<b>7.2</b>	<b>7.95</b>
Bus terminal	1.0 acre /20,000 population		3.94	4.35	4.80	5.30
Truck terminal	0.50 acre /20,000 population		1.97	2.17	2.40	2.65
Rickshaw/van stand	0.25 acre /one baby taxi/tempo stand	1				
Passenger Shed	0.25 acre /one baby taxi/tempo stand	1				
<b>Administration</b>		<b>9.78</b>	<b>25.00</b>	<b>25.00</b>	<b>25.00</b>	<b>25.00</b>
Upazila complex	10-15.00 acres	1	10.00	10.00	10.00	10.00
Paurashava office	3 – 5 acres	1	5.00	5.00	5.00	5.00
Jail/SubJail	10/ Upazilla Hq		10.00	10.00	10.00	10.00

\* \*\*Considering density 100 persons/acre

## 6.5 Housing

Housing areas in the Paurashava is the composition of an admixer of housing types. Mixed residential, poor dominated rural houses and semi-urban homesteads are found. Most housing areas have developed in a spontaneous fashion. In the rural part of the Paurashava, with its rural-agricultural character, has a different housing type. Population density is very high in this Pourashva. Buildings in the Paurashava are dominated by pucca structures (83.23%) and another major type is katcha structure (9.89%). Owners of the buildings have been found violated the setback rule by the construction. Except labor charge there is very little variation in building construction cost between Dhaka and Dohar Paurashava. Besides the natural growth rate high rural urban migration rate is creating problem in housing sector. In the central part there is informal housing on the abandoned land of absentee land lord. These housing are required to be formalized. Problems relating to the housing are mostly concerned with the poor community. Apart from dwelling, pure water and transportation are real problems for the inhabitants.

Municipal services are highly inadequate. Drainage is major problem in rural part of the Paurashava. The Paurashava can not solve the problems due to scarcity of fund.

For effective promotion of housing the government should change its role to a facilitator instead of a provider. Government agencies should provide infrastructure and finance on soft terms and the rest should be left with the private sector. Currently private developers investment shows the future potentiality of housing sector development. There is a great demand for rental housing in Paurashava area. Since it is very close to Dhaka city people are interested to reside and commute to their work place in Dhaka regularly. Small and large industries can provide housing for their employee which can contribute to an extent in the housing sector.

#### **Basis of housing projection**

Existing landuse is the only basis for housing projection. Residential use and mixed-use has considered for the year 2011 as base year and projected housing area is calculated considering 100 persons per acre and there is no standard for industrial use, commercial use, etc.

#### **Demand analysis**

The existing residential area is about 1467.59 acres. It is estimated that housing demand stands at 1060.09 acres at the end of project period 2031, followed by 787.84 acres housing areas in 2016, 869.77 acres in 2021 and 960.23 acres in 2026. The estimate is based on the standard supplied by 100 person per acre. So, as per standard no additional housing areas will be needed at the end of 2031.

**Table 6-4: Ward wise housing demand (in acre)**

Ward No.	Existing housing areas (acres)	Estimated housing demand			
		2011	2016	2021	2026
1	188.63	121.41	134.03	147.97	163.36
2	127.15	95.54	105.48	116.45	128.56
3	216.34	109.91	121.34	133.95	147.89
4	172.18	62.39	68.88	76.04	83.95
5	193.46	101.67	112.25	123.92	136.81
6	132.27	66.26	73.15	80.76	89.16
7	172.57	103.05	113.77	125.60	138.66
8	130.92	78.66	86.84	95.87	105.84
9	134.07	81.78	90.28	99.67	110.04
<b>Total</b>	<b>1467.59</b>	<b>787.84</b>	<b>869.77</b>	<b>960.23</b>	<b>1060.09</b>

Source: Land use survey, 2010 and calculated by the consultant

## **Map 6-1: Population Density of the study area**



## 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 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 8.1 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.

##### 7.1.1 Core Area

Total 256.68 acres of land, which covers 5.25% of Structure Plan area, is declared as Core Area. It includes major portion of ward 1, 2, 4 and ward 5. It is mainly the highest concentration of service area for an example paurashava, upazila complex, schools, post office, police station, bazar area etc. and it has the highest potentiality of development. Because the town developed based on the major roads namely Joypara main road, shaheb bazaar road, Dhaka to dohar road and college road. Within this area, there are differences in levels of provision, particularly between the formally developed and planned areas and the majority of unplanned areas. Levels of provision should be maintained in the planned areas. 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.

##### 7.1.2 Fringe Area

A total of 1182.56 acres of land covering 24.21% of Structure Plan area is declared as Fringe Area. Maximum fringe area of proposed structure plan is located at Ward 2,3,4, 5 and 7. This area mainly proposed, where a slow trend of urbanization is continuing in unplanned manner. The area is 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 encouraging a more rapid urbanization in a planned way.

##### 7.1.3 Peripheral Area

A small portion of land are within this category. A total of 473.87 acres of area, which covers 9.70 % of Structure Plan area, is declared as Urban Peripheral Area which mainly is located at the Ward no 4,6,7, 8 and 9 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.



## **Map 7-1: Structure Plan of Dohar 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.	256.68	5.25
Fringe Area	This zone is developing areas which will take further decades to reach the population densities of the urban core area. Low initial densities in these areas do not justify supply of a full range of services as they will initially be underused. However, it is essential that planning and reservation of rights of way, at least for primary networks, be undertaken soon to enable provision when justified by increased density levels and allowed by resources.	1,182.56	24.21
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.	473.87	9.70
New Urban Area	This zone will be the required additional area for future planned urban development as per population projection. New facilities and services like road, drains, footpath, waste transfer station and other civic services will be provided. This area is proposed to grow within 2031.	781.63	16.00
Agriculture	Agricultural land (also <i>agricultural area</i> ) 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.	1,466.97	30.04
Water body	Water body containing an area equals to or more than 0.3 acres excluding those of khal, irrigation canal and river will be treated as this category.	278.42	5.70
Circulation Network	It covers all the major roads within the structure plan areas.	438.61	8.98
<b>Total</b>		<b>4,883.84</b>	<b>100</b>

#### 7.1.4 New Urban Area

Total 781.63 acres of land covering 16% of Structure Plan area is declared as New Urban Area. New urban area mainly proposed Southern portion of Ward no.04 and Ward no.05. It is assumed that town will be developed on north-west side of present core area. So most of the new urban lands will be use to meet the extra pressure of development trend for this reason. A large portion of land in Ward no.06 and Ward no.07 will be used to establish industry and rest of the land will be used for future planned urban development as per population projection.

### 7.1.5 Agriculture

Total 1,466.97 acres of land covering 30.04% of Structure Plan area is declared as Agriculture Area. Eastern portion of the Paurashava is mostly declared as agriculture area.

### 7.1.6 Waterbody

Total 278.42 acres of land covering 5.70% of Structure Plan area is declared as Agriculture Area. It includes ponds and ditches with an area equal to or more than 0.3 acres and river within the Paurashava.

### 7.1.7 Major Circulation Network

It contains Regional Highway passes over the paurashava area , road network with other neighboring urban centers and also includes the major road way network required for maintaining existing internal communication. Total 438.61 acres of land which covers 8.98 % of total structure plan area.

## 7.2 Strategies for optimum use of Urban Land Resources

### 7.2.1 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 centres, 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. Dohar 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 8.2 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
<p><u>Policy UA/1:</u> <u>Optimization of Available Land Resources</u> Growth within the established urban area is not compact in Dohar. There are still large amount</p>	<p>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</p>	<p><i>Control:</i> 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</p>	<p>-Dohar Paurashava;  -Ministry of Land</p>

Policy	Justification	Means of Implementation	Implementing Agency
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.	is a need to economize the use of land, which is a scarce resource against an expanding population in the country.	by public sector agencies. Policies to discourage large scale land acquisition for development by the public sector can be tried. <i>Promotion:</i> The public sector should develop infrastructure facilities and services in deprived areas to enable the land owners for development.	
<u>Policy UA/2: Utilisation of Khas Land for Urban Development</u>	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.	-Dohar Paurashava -Ministry of Land -DC, Dhaka

### 7.2.2 Plans for New Area Development

Table 8.3 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
<u>Policy UA/3: Initiatives For New Urban Area Development</u>	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.	-Dohar Paurashava -DPHE -Private sector.

### 7.2.3 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 8.4.

**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.	-Dohar Paurashava -DOE.
Low Land, Pond and Drainage Path: Pond and ditches with an area equal to or more than 0.3 acres within the Paurashava are declared as retention area. In no way permission for filling up of these ponds should be given.	This area is declared as water body in the Master Plan. As per the guideline of "Play field, Open space, Park and Naural Water Reserviour 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	-Dohar Paurashava -Water Development Board

Type of Land	Means of Implementation	Implementing Agency
Paurashava should acquire these ponds at suitable time to use them for retention and emergency use.	developed with increasing density up to this year. So a large share of water body can be spared.	
Green Belt: The river bank is declared as green belt. This area will be used for aforestation and recreational purposes for conservation of environment and creation of opportunity for tourism development in this town.	This area is declared as green belt in the Master Plan.	-Dohar Paurashava

### 7.3 Policies for Development

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

#### 7.3.1 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
<u>Population/1:</u> Declaring population as one of the most critical sectors of national development 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.	-Ministry of Planning  -Ministry of Health and Family Planning
<u>Population/2:</u>	-Ministry of Education

Policy	Executing Agency
<p>Putting more efforts and resources in raising the level of education.</p> <p><u>Justification:</u> Education would not only create awareness among the masses about the benefits of small family size, it will also help secure better job with higher pay that would reduce poverty.</p>	<p>-Ministry of Planning</p> <p>-Ministry of Health and Family Planning</p>
<p><u>Population/3:</u> Creation of well paid and well trained grassroots level family planning workers for motivational work.</p> <p><u>Justification:</u> 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.</p>	<p>-Ministry of Planning</p> <p>-Ministry of Health and Family Planning</p>

### 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 very bright in Dohar as it is very close to Dhaka City. Besides, it has good communication with other adjoining urban centers. 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
<p><u>Economic/1:</u> Provision of bank loans on easy terms to attract prospective investors in the SME sector.</p> <p><u>Justification:</u> Easy loans would encourage and attract prospective investors for investment in small scale industries.</p>	<p>-Ministry of Industries</p> <p>-Ministry of Commerce</p>
<p><u>Population/2:</u> Taking of measures to channelize remittance to value adding productive sectors.</p> <p><u>Justification:</u> Larger amount of remittance is being diverted to land purchase, which is considered as the safest investment. This huge capital may be diverted to productive sectors to help create more employment.</p>	<p>-Ministry of Industries</p> <p>-Ministry of Commerce</p>



Policy	Executing Agency
<p><u>Population/3:</u> Arranging entrepreneurship training programmes for prospective investors.</p> <p><u>Justification:</u> 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.</p>	<p>-Ministry of Industries.</p> <p>-Ministry of Commerce.</p>

### Housing

Being very close to Dhaka city there is an extreme demand of housing for the commuter people. 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.

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

### 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
<p><u>Policy House/1:</u> Provision of necessary services and facilities to promote housing at private sector.</p> <p><u>Justification:</u> 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 houses.</p>	<p>- National Housing Authority</p> <p>- Ministry of LGRD</p> <p>- Dohar Paurashava</p>
<p><u>Policy House/2:</u> 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.</p>	<p>- National Housing Authority</p> <p>- Ministry of LGRD</p> <p>- Dohar Paurashava</p>

### 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 have 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
<p><u>Policy-Amenity/1:</u> Procurement of khas and other public land for park, playfield, community centre.</p> <p><u>Justification:</u> Since above facilities are non-revenue earning, they should be procured at least cost.</p>	<ul style="list-style-type: none"> <li>- Ministry of Land</li> <li>- DC Office, Dhaka</li> <li>- Ministry of LGRD</li> <li>- Dohar Paurashava</li> </ul>
<p><u>Policy-Amenity/2:</u></p> <p>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.</p>	<ul style="list-style-type: none"> <li>- DC Office, Dhaka</li> <li>- Ministry of Land</li> <li>- Ministry of LGRD</li> <li>- Dohar Paurashava</li> </ul>

### 7.3.2 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**

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

**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**

<b>Policy</b>	<b>Executing Agency</b>
<p><u>Policy-Utility/1:</u> Exploration of alternative sources of water to ensure sustainable supply.</p> <p><u>Justification:</u> Amid constant rise of urban population, it is time to explore alternative sources of water like, rain water harvesting and surface water supply.</p>	<p>- LGED - Dohar Paurashava</p>
<p><u>Policy-Utility/2:</u> Involvement of beneficiaries in solid waste management.</p> <p><u>Justification:</u> Involvement of beneficiaries in solid wastemanagement will make the operation more effective and reducefinancial responsibility of the Paurashava.</p>	<p>- Dohar Paurashava, - NGOs and CBOs</p>
<p><u>Policy-Utility/3:</u> Exploring re-use and recycling of waste materials to extract resources.</p> <p><u>Justification:</u> Re-use and recycling of waste materials will produce resources and reduce cost of waste management.</p>	<p>- Dohar Paurashava, - NGOs and CBOs</p>
<p><u>Policy-Utility/4:</u> Publicity on the benefits of hygienic sanitation to motivate people and enable people to have easy access to sanitary materials.</p> <p><u>Justification:</u> Motivation will encourage people to adopt healthy sanitation and reduce health risks.</p>	<p>- LGED - Dohar Paurashava - NGOs and CBOs</p>
<p><u>Policy-Utility/5:</u> Protection of natural drainage system and preparation of hierarchical drainage network.</p> <p><u>Justification:</u> Natural drainage systems are being grabbed and filled up, which increases the risk of water logging. Well planned hierarchical drainage network helps smooth drainage of storm and waste water.</p>	<p>- LGED - Dohar Paurashava</p>

### 7.3.3 Environmental Issues:

From environmental point of view Dohar 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 cyclone, there is no natural hazard. There is no mentionable air, water or soil pollution in the Paurashava from any mentionable sources at present.

### Natural Resources

The Paurashava is not endowed with many natural resources that can be conserved. Among the major natural resources there are 561 ponds, 453 ditches, 44 irrigational canals and 3 natural canals/ khals naturally drain the rain water. Out of the total ponds with an area equal to or more than 0.25 acres and the natural khals need to be protected and conserved to ensure sustainability in drainage and water supply of the Paurashava.

### Strategy:

All khas land 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. Justification: This will prevent misuse of khas lands by political and powerful local people.	- Ministry of Land - Dohar Paurashava
Policy-Nature/2: All natural canals within the Paurashava must be vested with the Paurashava for maintenance and proper use as drainage canal. Justification: This will help prevent unauthorized occupation and filling of natural drainage.	- Ministry of Land - Dohar Paurashava - NGOs and CBOs



## 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.
- Massive training programme has to be arranged for the municipal staff for computerized accounting, billing and infrastructure development.
- 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 Local Government (Paurashava) Act, 2009 needs to be revised and more power should be given to the Executive Officer for appointment of employees.

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

The present plan package imposes a large number of development projects on Dohar 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 Rural Development and Cooperatives and other staffs are appointed locally through the approval of the Ministry after the advertisement on the newspapers. The Paurashava is capable to collect the taxes and tolls prescribed by the government. But still they have lack of tax collection. There is no proper arrangement for staff training only few training is received by LGED which are not sufficient enough. As a result, the staffs are mostly unskilled. They can not deliver proper service to the citizens. Besides, most of them are not qualified enough to render proper services.

### **8.1.2 Lack of Automation**

Still now 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 Lack of Paurashava 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**

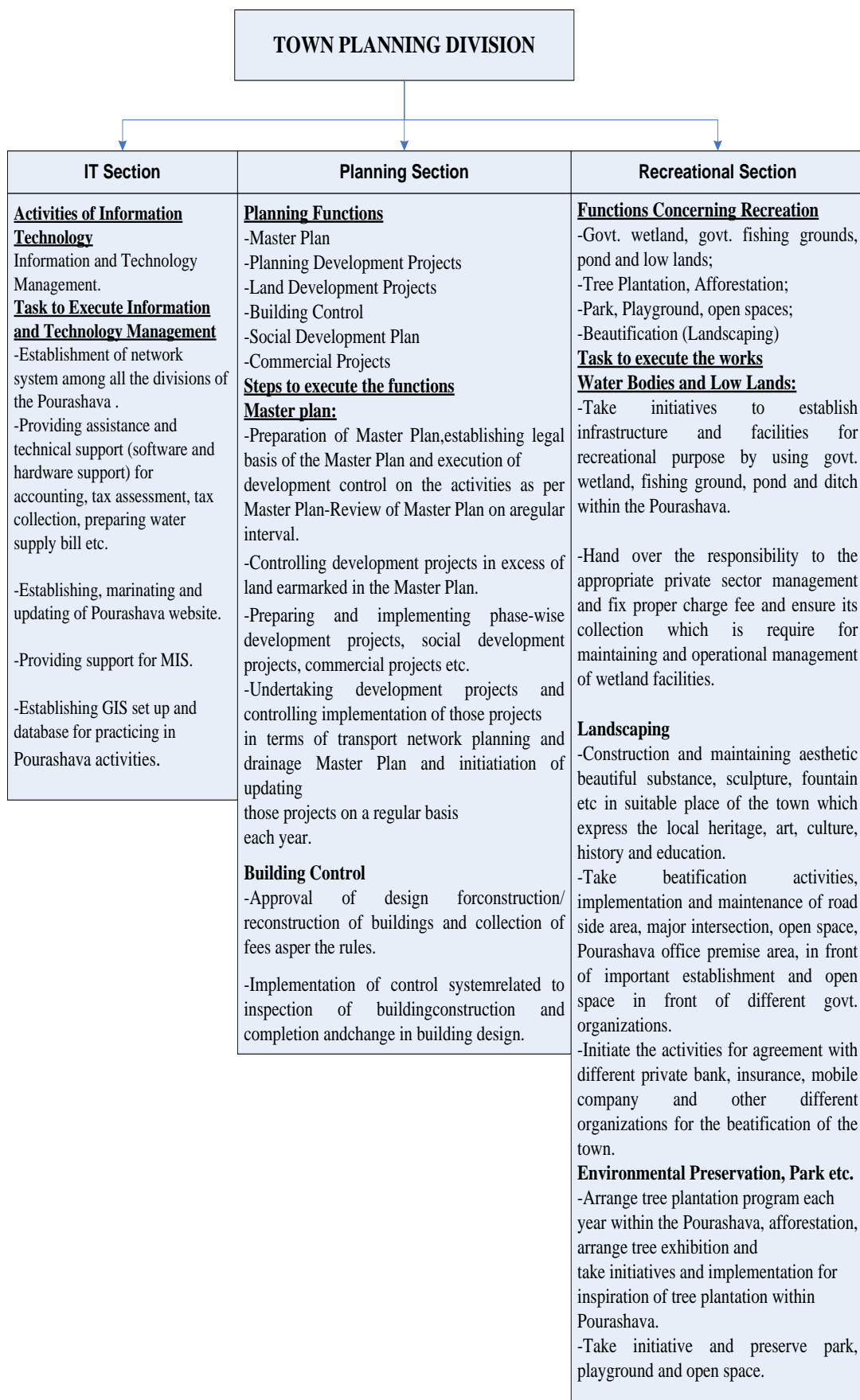
To rearrange the institutional framework for the Paurashavas recently the government has made a committee to reform the organogram of all the Paurashavas of Bangladesh. According to the clause no. 72-78 (Paurashava Officer & staff, provident fund etc) of Paurashava Act, 2009 and on the basis of the type 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 it's mandatory responsibility 'town development and control' well and serve the inhabitants presently as well as in the future. The planning unit/division may have some sections that are as follows:

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

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



**Figure 8-1: Scope of Work for Planning Division**



### **8.1.3.2 Lack of Paurashava Town Planning Capacity**

At present, the Paurashava has no town planning section or any appropriate manpower to prepare and implement the Master Plan. For proper implementation of the Master Plan for each Paurashava under UTIDP, establishment of a separate planning unit 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.

Sonargaon 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 Programme (UGIAP) and Capacity Building of Institutes at Municipality-level in particular.

### **Citizen Awareness and Participation**

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

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

### **Urban Planning and Environmental Improvement**

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

### **Urban Poverty Reduction**

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

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

### **Income Generating Activities**

The income generating activities include:

- Tax assessment software use and capacity development for staffs of assessment section.
- Continue reassessment activities regularly at 5 years interval.
- Continue interim assessment regularly in whole year.
- Introduction of computerized tax system and bill preparation.
- Increase collection by more than 5% annually (up to 85% collection efficiency).

- Increase non-tax own revenue source atleast by inflation rate.
- Introduction of computerized trade license system and computer bill/license prepared and report produced.
- Introduction of computerized Water bill (Tariff) system.
- Introduction of Computerized non-motorized vehicle management system.
- Identification of new income sources for increasing income.

#### **Transparency and Accountability**

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

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

#### **8.1.4 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 Dohar 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 Dohar 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 assess 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, Dohar 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 Dohar 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. A Town Planner is working from 22-09-2011 in Dohar Paurashava. As there is no effective town planning division/department in the Paurashava, monitoring of plan implementation is seriously affecting.

### **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 Dohar Paurashava. As there is no effective planning division/department 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 division/department with a number of planners and other supporting 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 piecemeal. 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. Dohar Paurashava should immediately setup a planning division/department with a number of Sr. Urban Planners and supporting staff such as surveyors and draftsman.





## 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 Dohar 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. 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 Dohar 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. 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. 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 use names put during the physical feature survey. Back in the office, the common land uses of plots were delineated in the map as per land use format given in the ToR. The delineated zones were then digitized and a new land use map was prepared for the entire planning area. After land use demarcation, field checking was done to correct possible errors.

Urban Land Use Plan is aimed to guide the physical development of Dohar 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.

### **9.3 Delineation of Planning Areas**

Planning area has been decided with the assistance and advises received from Dohar Paurashava Mayor, Councilors and other professional staffs and Gazette notification (S R O No-83 Law/ 2001). In order to delineate this boundary, there was a wide reconnaissance survey involving eye observation of the entire Paurashava area including those areas which have future potential growth. But since, the formation of Dohar Paurashava is 10 years back (2000); the development trend do not took much momentum as it required. It is still in her infancy. In addition, the Mayor and the Councilors opinioned in favor of keeping the Paurashava area encompassing the nine wards as exist for next 20 years. Strong arguments from Paurashava Mayor and Councilors were advised to extend the boundary as it is not an old Paurashava and various developments has taken place, and the present area is enough as study/ planning area. Though the 2000 Gazette declared Dohar urban area as Paurashava composed of nine Wards where the adjoining areas are still rural in character; not having significant urban development trend. So, Consultant has considered 19.78 sq. km. with nine Wards as the planning area.

### **9.4. 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.

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

- Land Use Plan;
- Transportation and Traffic Management Plan;
- Drainage and Environmental Management Plan; and
- Proposals for Urban Services.

The Urban Area Plan is concerned only with the area where the greatest change is expected in the medium-term (10 years). For this area, it indicates how the Structure Plan policies might be pursued whilst also giving greater precision to the spatial dimension of the policies.

The outline of the Urban Area Plan gives guidance to the Paurashava as to how it can develop the roles i.e. to promote development, to co-ordinate development and to control development.

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

The Landuse Plan is the first chapter of Part-B of this report. It identifies approaches of planning, existing and projected landuse and proposed landuse. Requirement of land for different purposes, landuse zoning and plan implementation strategies are also included here.

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

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

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



## CHAPTER-10

### LANDUSE PLAN

The Landuse Plan is the first element of the Dohar Paurashava Urban Area Plan. The Landuse Plan is being prepared for managing and promoting development over medium-term on the basis of the strategies set by the longer-term Structure Plan. Basically the Landuse Plan is an interpretation of the Urban Area Plan over the medium-term (10 years). The coverage of the Landuse Plan considers existing urban areas and their immediate surroundings with the purpose of providing development guidance in the areas where most of the urban development activities are expected to take place over the next 10 years. Delineation of the Landuse Plan area is based on the urban growth area identified as the Urban area Plan. It contains more details about specific programs and policies that require to be implemented over the medium-term.

#### 10.1. Methodology and Approach

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

Landuse map has prepared applying the appropriate systematic command through GIS. Landuse is transferred on CS Mouza map in a scale of RF 1:1980. Landuse is divided into different categories and subcategories approved by the LGED. Landuse colours and legend were also fixed by the PD (Project Director) of the UTIDP, LGED. Legend contains, necessary themes, features using different symbolize schemes. As per suggestion of the LGED for fixed legend and approved format for landuse, Consultants have prepared existing landuse map.

Based on the existing landuse map, the landuse plan is being prepared according to the guidelines given by the ToR. The planning starts from formulation of strategies to issues like functional quality (meeting of space requirements for different functions, relation between functions etc., aesthetic quality, flexibility, deviation, public agency support etc.) for plan implementation. The planning in detail also covers the delineated existing urban area and the new urban area.

#### 10.2 Existing and Projected Landuse

##### 10.2.1 Introduction

Details of landuse include structures and uses of land in multi-dimensions. Every individual structure and its details were surveyed during the survey period and find out the uses of land. Most of the landuse information was collected through physical feature survey. Later on, landuse map is prepared showing different use categories.

At present, except about 58.23% agriculture land, 30.04% residential development and 5.42% water bodies, rest land are using for various purposes. According to the physical feature survey, the study area has as many as 30537 structures. It is found that 83% of the structures are Pucca which is the highest amount. For rearrangement and enforcement of new provision those land will generate planning scope. Due to the absence of airport and helipad, vertical expansion of the building will be easily encouraged in anywhere of the Paurashava. New innovation for increase the agriculture production may be encouraged easily.

The Paurashava seems a barren land area. People are not quite aware about the modern facilities available to their door step. It is easier to inject guiding principles, modern facilities and long run development control for the Paurashava as well as for the inhabitants.

### **10.2.2 Analysis and Projection on Existing and Proposed Landuses**

The Paurashava is not an ideal township due to the agriculture domination. Agriculture based township should be encouraged in the preparation of Master Plan. Growth of population is the natural trend and at the sametime, expansion of non-agricultural use on agriculture land is also natural tendency of the people. This will be controlled through the Compact Township concept with the encouragement of vertical development. In case of government services, specific building may accommodate different type of offices.

Future landuse have been calculated according to the development control for the masses and the standard supplied by the LGED. In case of public land, existing use and khas land may be emphasized. Willingness and participation of the people in development activities may be the key factor for future landuse demarcation. Slow change of landuse has emphasized rather than rapid change. Let the people do whatever he likes on own land – such concept should not be considered for future projection of landuses. Three parts of the projection are landuse change, landuse control and landuse restriction has been included in the Master Plan. In any case, river front areas should be restricted for human habitation. As a result, river water will safe from contamination.

Projection of landuse depends on the growth of population. After population projection it is found that, population of this Paurashava will be 78784 in the year 2021 and 106009 in the year 2031. Projection on landuse also depends on present trend of migration.

In case of landuse change, standard given by the LGED according to the projected population and area for the specific service is being calculated. Minimum use of agriculture land for physical development is emphasized in the plan. The vertical expansion will be emphasized rather than horizontal. In case of road network planning, missing links will get priority rather than new roads. For the development of pisciculture, most of the ponds and ditches may be preserved, in some exceptional cases; small number of ditches may be used for physical development activities. Landuse control and landuse restriction will be imposed by the Paurashava according to the prescribed plan.

The standards presented in the Table-10.2 are fairly generous and considered for the Paurashava (including extended areas). Adjustments have to be made in the core areas

and a time line may be set to gradually achieve these standards over a five, ten and fifteen years period.

### **Commerce**

In total, 46.95 acres commercial land is in the Paurashava.

Determination of Standard: According to the standard on Wholesale Market/bazar, 1 acre land is to be provided for every 10,000 populations and 1 acre land for every 1000 population for Retail sale market. Again, 0.25 acre of land is being standardized for per corner shop, 1 acre per neighbourhood market, 1.5 to 2.5 acre per super market and 1 acre per 25,000 populations for bank, hotel, garage and godown. The study team has considered 106009 populations for the study area up to the year 2031. For this population total number of required wholesale market/bazar stands at  $(106009/10,000)$ , means 10.60 acres land is being needed up to the year 2031 and for retail sale market, 106.01 acres.

Recommendation / Forecast: In the planning area already has retail sale market including wholesale market/bazaar. The study team recommends a wholesale market/bazar on earmarking land. Necessary planning permission and design criteria will be provided by the Paurashava. The lands may be allowed to use for other commercial purposes like bank, hotel and godown. Few new area has for commercial zone and other probable areas for commercial development are earmarked as mixed use area so that they may use this land for residential/commercial purpose according to the demand.

### **Industry**

In the Paurashava, 13.72 acres land is under industrial development.

Determination of Standard: According to the standard, land is being allocated as 1.5 acres for every 1000 populations in case of small-scale industry, 5 acres per 10000 populations for heavy industry and service industry and 1 acre per 1000 population for cottage/agro-based industry. The study team has estimated 106009 populations for the planning area up to the year 2031. For this population total required land for industry stands at  $(106009 / 1,000 * 1.5)$  159.01 acres land for small-scale industry, 159.01 acres for cottage / agro-based industry up to the year 2031.

Recommendation / Forecast: The study team observed that though this Paurashava is rural base there is potentiality of industrial development due to nearness of Dhaka city. Considering the real scenario the consultants has recommended a area for agrobased industries acres. The area may located at the ward no 3,6 and 7 and along with the proposed new roads which recommend planned formation including grouping of industries on different locations. Necessary planning permission will be followed by the Paurashava. The lands, however, should not be allowed to use other than industry. The industries which are located dispersely should be accommodated within the prescribed industrial areas.

### **Primary School**

There are 21 primary schools in the planning area covering together 10.54 acres land.

**Determination of Standard:** According to the standard on primary school, 1 school with 2 acres of land is to be provided for every 5,000 population. The study team has estimated 106009 populations for the planning area up to the year 2031. For this population total number of required primary school stands at  $(106009/ 5,000)$ , means 21 schools with 42 acres land will be needed up to the year 2031.

**Recommendation / Forecast:** According to the standard new primary school and extension of the existing area of school has proposed for extension.

### **Secondary School**

There are 6 secondary schools in the planning area covering together 6.89 acres land.

**Determination of Standard:** According to standard, 5 acres of land may be provided for every 20,000 population for one secondary school. The projected population of the planning area is 106009 up to the year 2031. Therefore, as per standard the planning area needs  $(106009/ 20,000)$  5 secondary school with an area of 25 acres up to the year 2031. Number of schools already exceeds the requirement.

**Forecast / Recommendation:** As per above standard, more secondary school is recommended and existing areas of the school proposed for expansion.

### **College / Higher Secondary School**

There is 2 numbers of college in the planning area. The existing colleges are located on 2.98 acres of land.

**Determination of Standard:** The standard for college is 10 acres per 20000 populations. So there is a need of 5 college as per planning standard in 2031.

**Recommendation / Forecast:** The planning team has recommended new colleges and expansion of the existing college.

### **Vocational Training Centre**

An important component for the rural masses is vocational training. Multi-dimensional training may be offered through the centre. People are being benefited directly and prepare him as a technical person enjoying training from vocational centre. At present, there is no vocational training centre in the Paurashava.

**Determination of Standard:** The prescribed standard for vocational training centre is 5 to 10 acres for Upazila.

**Recommendation / Forecast:** The study team recommends a vocational training institute.

**University:** Government has taken initiative to establish an agricultural university in this area. With discussion with the Mayor, Councilors and social elites of the Paurashava the area has been earmarked. Besides that an area for medical college has been recommended in this area.



**Table 10-1: Existing Landuse of Dohar Paurashava**

Sl. No.	Land Use Category	Area (acre)	Percentage (%)
1	Agriculture	2844.62	58.23
2	Circulation Network	95.22	1.95
3	Commercial Activity	46.95	0.96
4	Community Service	8.74	0.18
5	Education & Research	23.55	0.48
6	Governmental Services	9.78	0.20
7	Manufacturing and Processing Activity	13.72	0.28
8	Mixed Use	5.15	0.11
9	Non Government Services	0.33	0.01
10	Recreational Facilities	2.21	0.05
11	Residential	1467.59	30.04
12	Service Activity	5.58	0.11
13	Transport & Communication	0.89	0.02
14	Urban Green Space	9.76	0.20
15	Vacant Land	55.26	1.13
16	Water Body	295.40	6.05
<b>Total Area</b>		<b>4884.74</b>	<b>100.00</b>

Source: Land Use Survey, 2009

### Health Facilities

Existing health facilities are not bad in this Paurashava. There are 6 clinics, 2 health complex and 2 hospitals in the Paurashava and hospital named Dohar General Hospital which is a big one and it has importance in both regional and national context.

Determination of Standard: The prescribed standard for health facilities are 10 to 20 acres for Upazila Hospital and 1 acre per 5000 population for Health centre/Maternity clinic. According to the standard, up to the year 2031, (106009 / 5000) means 21 acres of land will be needed for Health centre/Maternity clinic.

Recommendation / Forecast: The study team recommends an area for new health facilities where the land owners/private developer will develop such services. Necessary planning permission will be offered by the Paurashava. The lands, however, should not be allowed to use other than health services.

### Open Space

At present there is 9.76 acres of land under this category in the Paurashava.

Determination of Standard: The standard recommends 3 acres per 20000 populations for playground, 1 acre per 1000 population for park and 1 acre per 1000 population for Neighbourhood Park. A total of 227.92 acres of land is needed for this category.

Recommendation / Forecast: The study team is recommended play field, central park, neighborhood park. Community forest and tourism development also prescribed without considering any standard. Amount of land for those components have been considered through discussion with the stakeholders.



## **Map 10.1: Existing Landuse of Dohar Paurashava**



## **Map 10.2: Landuse Plan of Dohar Paurashava**



### **Community Facilities**

Community facilities include Community centre, Graveyard/Burial ground, Electric sub-station, Water supply pump, Post office, T&T office, Public library, Eidgah, Mosque/Church/Temple, Police station, Police box/outpost, Fire service station, Waste disposal site, club, etc. Existing land under community facilities is 8.74 acres.

Determination of Standard: The standard suggests 1 acre per 20000 for the community centre, Graveyard/ Burial ground and Eidgah. Again, 0.5 acre per 20,000 populations prescribed for Mosque/Church/Temple, Post office and T&T, 1 acre per 20,000 populations for Fire service station and 3–5 acres per Upazila Headquarters and police station.

Recommendation / Forecast: The study team recommends community centre, fire station, Pura graveyard, ward office. Areas for Mosque/Church/Temple, Post office, Fire service station and T&T remain with existing areas.

### **Administration**

In the Paurashava, 9.78 acres land is under administrative use.

Determination of Standard: According to the standard for administrative land, 15 acres of land is to be provided for every Upazila, 3 to 5 acres per Paurashava office, 0.10 acres per Union and 10 acres for jail/sub-jail. Total required land for administration stands at 25 acres.

Recommendation / Forecast: The planning area already has one Upazila office, one Paurashava office and other govt. offices but the area is not sufficient the planning team has recommended new administrative area.

### **Recreation**

Only 2.21 acres land is under recreational use in the Paurashava.

Determination of Standard: According to the standard for recreational facilities, 1 acre of land is to be provided for every 20,000 population for cinema/theatre, 5 to 10 acres land for stadium/sports complex. For this population total land required for cinema / theatre stands at  $(106009/20,000)$ , means 5.30 acres of land is being needed up to the year 2031.

**Recommendation / Forecast:** The study team recommends a stadiumcum under this category of land.

### **Residential**

Existing residential areas of the Paurashava is 1467.59 acres. All type of residential lands is included with such amount of land.

Determination of Standard: The standard recommends in Table-10.2 is 100 persons per acre (net). Again, it is recommended 200 persons per acre for real estate or housing areas both for public and private. No standard is being recommended for low-income group.

Recommendation / Forecast: According to the standard (100 persons per acre), 1060.10 acres land will be needed up to the year 2031. As the area is in rural character and there

is no vital potentiality for future rapid urban development, there is limited opportunity for private sector housing development. The consultant team assumed that within 2031 no major change will be occurred in urban development. Considering 100 person/acre there is no need for further residential land development. But considering the modern housing development some areas for planned residential development and some areas for low income housing and resettlement has proposed.

Conservation and harvesting of rain water in Government Blocks, Commercial Buildings and Institutional Buildings. They should provide required facilities and infrastructure for conservation and harvesting of rain water available to them.

Following requirements are optional and should be provided in residences depending on site conditions and as per case to case basis.

**Terrace Water Collection:** The terrace shall be connected to a sump or well through filtering tank by PVC pipes. A valve system shall be incorporated to enable the first part of the rain water collected to be discharged to the soil if it is dirty and make arrangements to collect subsequent discharge.

**Open Ground:** Whenever there is open ground a portion of top soil should be removed and replaced with sand to allow percolation of rain water.

**Table 10-2: Existing and proposed land uses including standard**

Types of Land Uses	Recommended Standard	Existing (acre)	Future demand (acre) 2031	Proposed land (acre)	Percent (%)
<b>Residential</b>		<b>1467.59</b>	<b>1060.10</b>	<b>1,538.26</b>	<b>31.50</b>
General residential	100 persons/1 acre			1391.50	
Real Estate – Public/Private	200 population/ 1 acre		-	146.05	
<b>Roads</b>		<b>95.22</b>	<b>10% of total</b>	<b>439.76</b>	<b>9.00</b>
Paurashava primary roads	150 – 100 feet		-	-	
Paurashava secondary roads	100 – 50 feet		-	-	
Paurashava local roads	40 - 20 feet		-	-	
<b>Education</b>		<b>23.55</b>	<b>172.47</b>	<b>157.28</b>	<b>3.22</b>
Nursery	0.5 acre/10,000 population		10.60	32.85	
Primary School/ kindergarten	2.00 acres/5000 population		42.40		
Secondary/High School	5.00 acres /20,000 population		26.50	18.41	
College	10.00 acres/20,000 population		53.00	72.49	
Vocational Training Centre	5 - 10 acres / Upazila		13.46	13.62	
University/Other	5.00 acres / 20,000 population		26.50	19.98	
<b>Open Space</b>		<b>9.76</b>	<b>232.92</b>	<b>179.30</b>	<b>3.67</b>
Stadium/sports complex	5 – 10 acres/Upazila HQ		5.00	-	
Play field/ground	3.00 acres/20,000 population		15.90	-	
Park	1.00 acre /1000 population		106.01	-	
Neighborhood park	1.00 acre /1000 population		106.01	-	
<b>Recreational</b>		<b>2.21</b>	<b>5.30</b>	<b>4.15</b>	<b>0.09</b>
Cinema/ Theatre	1.0 acre /20,000 population		5.30	4.15	
<b>Health Service</b>		<b>5.58</b>	<b>31.20</b>	<b>24.43</b>	<b>0.50</b>
Upazila health complex/ hospital	10 -20 acres/Upazila HQ	3.11	10.00	2.89	
health centre/Maternity clinic	1.00 acre/ 5,000 population	2.47	21.20	21.56	
<b>Community Facilities</b>		<b>8.74</b>	<b>33.90</b>	<b>28.72</b>	<b>0.59</b>
Mosque/Church/Temple	0.5 acre /20,000 population		2.65	-	
Eidgah	1.0 acre/20,000 population		5.30	-	



Types of Land Uses	Recommended Standard	Existing (acre)	Future demad (acre) 2031	Proposed land (acre)	Percent (%)
Graveyard	1.00 acre /20,000 population		5.30	-	
Community centre	1.00 acre /20,000 population		5.30	-	
Police Station	3 – 5 acres/Upazila HQ		6.73	-	
Police Box/outpost	0.5 acre/ per box		0.67	-	
Fire Station	1.00 acre/ 20,000 population		5.30	-	
Post office	0.5 acre /20,000 population		2.65	-	
<b>Utility Facilities</b>		<b>1.95</b>	<b>25.2</b>	<b>8.00</b>	<b>0.16</b>
Drainage	As per requirement	-	-	-	
Water supply	1.00 acre/ 20,000 population	0.00	5.30	0.24	
Gas Station	1.00 acre/ 20,000 population	-	5.30	0	
Solid waste disposal	4-10 acres/ Upazila HQ	0.00	4.00	4.99	
Waste transfer station	0.25 acres/ per transfer station	-	-	1.28	
Electric sub-station	1.00 acre/ 20,000 population	0.18	5.30	0.18	
Telephone exchange	.5 acre/ 20,000 population	0.05	2.65	0.05	
Fuel station	.5 acre/ 20,000 population	0.06	2.65	0.06	
Slaughter House	As per requirement	-	-	0.10	
Public toilet	As per requirement	-	-	0.47	
Others		2.37	-	2.37	
<b>Commerce and Shopping</b>		<b>46.95</b>	<b>116.61</b>	<b>45.83</b>	<b>0.94</b>
Wholesale market	1.0 acres/ 10000 population		10.60	-	
Retail sale market	1.0 acres/ 1000 population		106.01	-	
Corner shops	0.25 acre/per corner shop		-	-	
Neighborhood market	1.00 acre/per neighborhood market		-	-	
Super Market	1.50 – 2.50 acres/per super market		-	-	
<b>Industry</b>		<b>13.72</b>	<b>265.02</b>	<b>237.56</b>	<b>4.86</b>
Small scale	1.50 acres /1000 population		159.01	-	
Cottage/agro-based	1.00 acres /1000 population		106.01	-	
<b>Transportation</b>		<b>0.89</b>	<b>7.95</b>	<b>12.41</b>	<b>0.25</b>
Bus terminal	1.0 acre /20,000 population		5.30	-	
Truck terminal	0.50 acre /20,000 population		2.65	-	
Rickshaw/van stand	0.25 acre /one baby taxi/tempo stand		-	-	
Passenger Shed	0.25 acre /one baby taxi/tempo stand		-	-	
<b>Administration</b>		<b>9.78</b>	<b>25.00</b>	<b>27.22</b>	<b>0.56</b>
Upazila complex	10-15.00 acres	1	10.00	-	
Paurashava office	3 – 5 acres	1	5.00	-	
Jail /SubJail	10 acre/Upazilla Hq		10.00		
<b>Urban Deferred</b>	<b>10 percent of the total build up area</b>	-	-	<b>75.51</b>	<b>1.55</b>

## 10.3 Landuse Proposals

### 10.3.1 Introduction

Basically, landuse proposal involves with the existing conflicting landuses. Those conflicts may be raised due to different causes. Inhabitants of the Paurashava are not aware about the land level and slope direction of the Paurashava. Without knowing this information they are raising their land up to a mark and constructing permanent structure. As a result, water logging problem during rainy season is all over the residential areas.

Due to the absence of development control, the core area of the Paurashava is already developed as mixed-use area. Commercial, residential, administrative, educational uses

are admixture in the core area. Zoning provision, landuse control should not be enforced in such type of the core area.

At present, the Paurashava is a natural developed area. Rearrangement of the existing use is not possible. Land acquisition for expansion of road (to increase the width of road) will create socio-political hazards. As a result, the roads in the core area remain same as today.

For water supply network, construction of sewerage facilities and removal of fire hazards, at least 24 feet width road is necessary. In the Paurashava, except Regional Highway, such type of road is absent. New road will form new township on agriculture land. These processes will washout agriculture domination from the Paurashava. Compact Township will be effective for new formation, not for the mixed-use areas where most of the roads are 8 to 10 feet width.

### **10.3.2 Designation of Future Landuse**

- Identification and development of sites for government housing. After preparation and implementation of the master plan, different types of government activities will be increased. Residential accommodation will be needed for those government employees. A site for government housing should be reserved. National Housing Authority is appropriate for performing this responsibility.
- Encourage central government to decentralize industrial development from Dhaka. Those facilities may be relevant with specific agro-product such as jute for jute industry, cane and bamboo for handicrafts, poultry and horticulture farming, export-oriented vegetation, etc. Different authorities such as Agriculture Development Corporation, Small and Cottage Industries Corporation, Directorate of Livestock and Poultry may be the responsible authority.
- Provision of sites and services schemes for the low and lowest income groups. The Paurashava authority and Schedule Bank may be appropriate for performing these responsibilities. Housing for low-income group, distribution of khas land among the lowest-income group and loan with low-interest for house construction may be the appropriate schemes.
- Upgrading of slum and squatter settlements. Mostly, the vulnerable groups are affected by river erosion, form slum and squatters on public land. If possible, those formations should be upgraded providing basic utility services. It is better, in Paurashava context, the people are living in the slum and squatters, rehabilitate them with the provisioning of housing for lowest-income group. The Paurashava and NGOs can perform such role.
- Location for new industrial development. The industrial area prescribed in the Landuse Plan will be developed provisioning all utility services. The authorities relevant with those utility services will perform the responsibilities. At first, the polluting industries (water and noise) from their original location should shift to the new location. Imposition of taxes, tax holiday and subsidized taxes may be imposed by the Paurashava for such rearrangement.

- Monitoring the principal aspects of community facility provision in the Paurashava. Wholesale or retail market, specialized clinic, etc. are under this community facility. When any difficulties will be encountered in case of suitable site selection considering demand of the inhabitants, the Paurashava will perform the lead role.

### **10.3.3 Landuse Zoning**

Zoning is a classification of landuses that limits what activities can or cannot take place on a parcel of land by establishing a range of development options. Zoning has been defined as an action through legislation provided to a development authority / Paurashava to control a) heights to which buildings may be erected; b) the area of lots that must be left un-built upon; and c) the uses to which buildings may be constructed.

#### **Area / Use Zoning**

The objective of area zoning is to specify which types of landuse are considered appropriate for different areas or 'zones', and it therefore indicates the planning control objectives of the authority or municipality for its administrative area. The authority is obliged under the planning acts to designate in its development plan objectives for the use solely and primarily of particular areas for particular purposes.

According to the landuse table, area zoning is divided as agriculture, residential, commercial, industrial, administration and institutional. The zone has further segmented and detailed in the Ward Action Plan. A detailed scenario as plot-to-plot basis is also presented with the calculation of covered area in the landuse plan.

#### **Density / Bulk Zoning**

Aim of the density zoning is to provide an acceptable density which is related to the designed facilities and amenities especially for the residential areas. This will ensure a healthy community and enjoyable community life. In a particular area, how much number of buildings will be permitted and constructed, the decision is under the density zoning. Provisioning of setback rule and percent of land uses for different purposes is the prime consideration of density zoning. The proposed percentage mentioned in the landuse table is the only tool to control building density in the Paurashava.

#### **Height Zoning**

This zoning provides height limits for structures and objects of natural growth and standards for use of an area which encourage and promote the proper and sound development of areas. It is also applicable to height restrictions for flight safety around airports or other similar purposes.

For effective development control, in addition landuse zoning individual facility and the structures therein is complied certain regulations imposed to ensure desirable end. Relation between ground cover of buildings and the land parcel that house it, minimum setback of building from the adjoining plot boundaries and the maximum floor area that can be constructed in relation to plot size and the connecting road among many other details, are controlled by Building Construction Rules, 1996. Besides, Bangladesh National Building Code focuses on the appropriate materials, construction method, building safety and associated issues. In absence of Paurashava Master Plan the above rules did not have

scope for area specific rules and hence were common for the whole development process.

According to the Building Construction Rule, 1996, minimum permissible road width for obtaining plan permission is to shown, construction is allowed on plots connected by narrow roads provided the plot owner leaves formally half of the addition area needed to make the road 6m for widening the road to the permitted minimum. Perhaps the intension behind this was that gradually the whole road would rise up to 6m in short time and it is true for new areas. But congested unplanned area represents an alarming picture. In commercial area, most of the plots are occupied almost entirely by pucca structures covering the property line connected by the narrow pathways. Those owners did not bother for Paurashava's plan permission and a handful of those who obtained plan permission did not care to follow them. It is suggested that existing rules need to be modified to tackle the environmental problems created by illegal building construction.

#### **10.3.4 Summary Showing Distribution of Land for Existing and Proposed Landuse**

After a detailed consultation between the PMO and the consultants of the project, the land use classification for the Paurashava Master Plan has finalized. The followings are the finalized land use zone classification recommended by the PMO. The permitted use of land under different category of land has shown in the **Annex-B**.

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

First 16 land use zoning of the above list are available and proposed for Dohar Paurashava Master Plan and the last 7 will not be applicable for Dohar. In the sections below, the general definition of the use and description of associated permitted and conditionally permitted uses under each land use zone have been provided. The uses that are not listed here in any of the categories shall be treated as Restricted Use for the corresponding land use category and shall not be permitted only except unanimously decided otherwise by the appropriate authority. In such situations the use shall get permission in the category of New Use.

Following is a short description recommended land use zones.

### Urban Residential Zone

Urban residential zone refers to all categories of urban residential areas, including existing ones and the residential land use proposed under the present master plan. This includes single family housing or multi-family residential. Zoning for residential use will permit some services. It will permit high density land use. In the year 2031, total population of the Paurashava will be 106009. If, standard of population considers 100 persons per acre (at present 33 persons per acre and it will be 100 persons per acre in the year 2031), total residential land will be needed 1060.09 acres. Existing residential area of the Paurashava is 1467.59 acres. So, there is no need of additional land for future residential development theoretically. But in practical the rate of overall urbanization in country context will influence the area for future rapid urbanization considering that some area for future residential use and compact residential area development has proposed. Considering the development pattern a total of 1,538.26 (31.50%) acres of land has proposed under this category including 2 planned residential area, 1 low income housing area and 1 area for resettlement zone.

**Table 10-3: Proposed new areas for planned residential development**

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area in Acre
<b>Residential</b>				
Planned Residential Area-1	4	Batia_055_00	66, 71-76, 81-92, 113-125, 207-241, 250-253, 305, 310-311, 314	24.25
Planned Residential Area-2	5	Joypara_057_02	2527-2529, 2562-2565, 2610-2684, 2692-2725, 2728 part, 2729-2731, 3439-3457, 3479-3480	36.95
		Nurpur_056_00	106-112, 114, 119-122, 130, 133-135	
Low Income Housing Area	6	Yousfpur_060_01	6, 8-10, 18, 19 part, 20-34, 55 part, 56, 57 part, 58 part, 59 part, 60-92	29.48
Re-Settlement Residential Zone	6	Yousfpur_060_01	57 part, 58 part, 59 part, 61-62, 97-109, 110 part, 146-166, 363	55.37
		Laskarkanda_059_00	590-591, 596-597600 part, 601, 624-698, 707-718	
<b>Total</b>				<b>146.05</b>

### Rural Settlement

Rural settlement includes the low dense residential area which is scattered within Paurashava boundary and rural in nature. This use will have only low density uses and only up to double story building will be permitted aiming to control the growth in this zone. Less service and facilities will be provided. The zone of rural settlement is intended to provide locations, where rural settlement including agriculture can be set up and function. Without creating hazards and changes to surrounding land uses. A total of 115.33 (2.36%) acres of land has been proposed under this category.

### Commercial Zone

The land used for commercial activities is considered as commercial land use. These activities include the buying and selling of goods and services in retail businesses, wholesale buying and selling, financial establishments, and wide variety of services that are broadly classified as "Business". Commercial land includes established markets and areas earmarked for markets. The commercial zone is intended to provide locations which can function without creating hazards to surrounding land uses. Existing commercial area of the Paurashava is 46.95 acres. If standard of area calculate according to the population for the year 2031, total 116.61 acres commercial land will be needed. But in present situation pure commercial development may not possible that's way more mixed used land(residential-commercial land has proposed. A total 45.83 acres of land has proposed under this category including new area for whole sale market, Poura New Market and Poura super market.

**Table 10-4: Proposed facilities for commercial development**

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area in Acre
<b>Commercial Facility</b>				
Poura New Market	4	Nurpur_056_00	190-199, 201 part, 207, 208 part, 386-390, 391 part	3.59
Poura Super Market-1	4	Joypara_057_02	2071	2.60
Poura Super Market-2	6	Ghata_061_01	773-776, 783-789, 840-841, 843-848	4.98
Wholesale Market	4	Nurpur_056_00	38 part, 45-52, 53 part, 60-65, 66 part, 70-72	7.49
<b>Total</b>				<b>18.66</b>

### Mixed Use Zone

Mixed use zones have been recommended to allow some flexibility in development. In a small town like Dohar, as the trend shows, an exclusive commercial land use is unlikely to function. Admixture of land uses will allow flexibility of development, instead of restricting development to any particular use. Existing land under this use is 5.15 acres. A total of such 244.69 acres land has proposed under this category. Mostly central area of the Paurashava is under mixed-use zone.

### General Industrial Zone

General industries are the Green and Orange A categories of industries as per The Environment Conservation Rules, 1997. The general industrial zone is intended to provide locations, where general industrial establishments can be set up and function without creating hazards to surrounding land uses. In the Paurashava, industries occupied 13.72 acres land. For the year 2031 a total of 265.02 acres land should be provisioned according to the standard for industrial development. But considering the potentiality for industrial development total of 237.56 acres of land has proposed under this category including a proposed new industrial zone.

**Table 10-5: Proposed new industrial area**

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area in Acre
<b>Industrial</b>				
Industrial Zone-1	3	Khalpar_058_02	899 part, 905 part, 906, 907 part, 922-949, 950 part, 951-952, 953 part, 998-1000, 1001 part, 1008 part, 1011-1033, 1598-1680, 1682 part, 1796-1800, 1805-1807	79.96
		Khalpar_058_03	2180, 2183-2187, 2189-2199, 2201, 2203, 2206 part, 2210-2286	
	6	Laskarkanda_059_00	60 part, 61 part, 62 part, 65 part, 66 part, 67-80, 82 part, 163-228, 314, 323 part, 324-326, 329-438, 474-486, 608 part, 609 part, 610 part, 612-623	111.24
		Yousufpur_060_01	5 part, 11-17, 19 part, 36-54, 113-145	
Industrial Zone-2	7	Ghata_061_01	1218-1220, 1314-1348, 1351 part, 1352-1353, 1354 part, 1356 part, 1357-1375, 1385-1392, 1412 part, 1413-1464	35.22
<b>Total</b>				<b>226.42</b>

### Government Office

Government Office zone covers all kinds of government offices including existing and proposed (e.g. proposed neighbourhood center) in the town. The existing government offices are Upazila Tahsil Office, Upazila Agriculture Office, Upazila Livestock Hospital, PDB Office, Police Station, Post Office, Paurashava Office, Sub-registry Office, T & T Office and Upazila Parisad Office. Existing land under this use is 9.78 acres. For the year 2031, 25.00 acres land will be needed. The administration includes Paurashava office, Police station, Tahsil office and other utility offices. The planning team has proposed 27.22 acres of land under this category including two new area .

**Table 10-6: Proposed new area for government services**

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area in Acre
<b>Administration</b>				
Administration Area-1	6	Yousfpur_060_02	746 part, 747-756, 760-761	10.86
		Ghata_061_01	54-57, 73-86, 87 part	
Administration Area-2	6	Ghata_061_01	1115, 1124-1135, 1190-1191, 1193-1204,	7.26
<b>Total</b>				<b>18.12</b>

### Education & Research Zone

Educational & Research zone refers to mainly education & research and other social service facilities as listed in **Table-A.13, ANNEX-B**, and conditional uses as listed in **Table-A.14, ANNEX-B**. Mostly educational institutes such as primary school/kindergarten, secondary school, college and vocational training institute are in this group. Existing land under this use is 23.55 acre. For the year 2031, 172.47 acres land will be needed if standard considers for this purpose. Including all educational institution as presented in the following table a total of 157.28 acres of land has proposed under this category.

**Table 10-7: Proposed new facilities for educational development**

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area in Acre
Agriculture University	6	Ghata_061_01	813 part, 814 part, 815-817, 821-824, 829-831, 853, 854 part, 855-870, 872-890, 891 part, 892-893, 894 part, 895 part	10.55
Vocational Training Institution	6	Laskarkanda_059_00	537-553, 554 part, 572-589, 590 part, 592-595, 596 part, 598-599, 763	13.62
Medical College	6	Yousufpur_060_02	1018-1022, 1045-1053, 1055-1071, 1074-1081, 1168-1201	41.49
		Ghata_061_01	273-335	
College-1	1	Latakhola_043_01	1312, 1340-1348, 1362	7.37
		Latakhola_043_02	2659-2662, 2676, 2911	
College-2	6	Ghata_061_01	23-38, 39 part, 40, 42 part	8.12
College-3	8	Sutarpara_063_01	179 part, 180 part, 283-286, 289 part, 290 part, 291 part, 365-371, 459-462, 485	4.64
	9	Sutarpara_063_01	361-364, 463-464, 465 part, 466-470	7.14
High School-1	4	Latakhala_043_01	41, 43-56	3.67
High School-2	4	Joypara_057_02	2413-2414, 2426-2431	2.24
Primary School-1	1	Latakhala_043_01	1226-1230	2.48
Primary School-2	2	Khalpar_058_02	681-683, 691-693, 694-696	2.36
Primary School-3	4	Latakhala_043_01	57-64, 69	1.58
Primary School-4	5	Joypara_057_02	2411-2412, 2443-2445	2.05
Primary School-5	6	Yousufpur_060_01	167-171	5.87



Primary School-6	7	Ghata_061_02	2791 part, 2792 part, 2794 part, 2795 part, 2796-2797, 2806 part, 2807, 2811 part, 2812	2.69
IT Park Cum Public Library	5	Joypara_057_01	1374	0.24
<b>Total</b>				<b>116.11</b>

### Agricultural Zone

Agricultural land denotes the land suitable for agricultural production, both crops and livestock. It is one of the main resources in agriculture. It includes productive land (single, double and triple cropped), seed bed, fisheries, poultry farm, dairy farm, nursery, horticulture etc. The Paurashava has a vast area of agricultural land that demands formation of a separate zone like, agriculture zone. Agriculture zone is primarily meant for agriculture; land uses related to it and land uses that support it. Existing total area under agricultural use is 2844.62 acres. After implementation of the Urban Area Plan up to the year 2031, it will be reduced. A total of 1,466.97 acres of land has proposed under this category.

### Waterbody

These will act as water retention areas which include ponds, water tanks, natural khals and irrigation canals. The plan suggests preserving most of these water bodies for two purposes, first, to serve as source of water, second to serve as water retention area during monsoon. The ponds with an area equal to or more than 0.3 acres will be preserved as the water retention ponds. In the Paurashava, total water body is 295.40 and up to the year 2031 it will be 278.42 acres.

### Open Space

Open space includes play field/play ground, park, neighborhood park, community/reserve forest, tennis ground and open tourism components. At present, 9.76 acres land is under the open spaces. Up to the year 2031, 232.92 acres land under open spaces will be needed. A total of 179.30 acres of land has proposed under this category.

**Table 10-8: Proposed new facilities for open space development**

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area in Acre
Stadium/ Sports Complex	5	Joypara_057_02	2687 part, 2688 part, 2689, 2690 part, 2726-2728, 2733-2734, 2737-2749, 2754-2757, 2762-2764, 2789 part, 2790 part, 2791 part, 2792-2803, 2804 part	10.26
Central Park	7	Ghata_061_01	1163-1172, 1175-1186, 1215-1217, 1222-1277	21.28
Play Ground-1	3	Joypara_057_01	734 part, 739, 741 part, 746 part, 1483	1.33
Play Ground-2	6	Yousufpur_060_01	172-173	2.73
Play Ground-3	8	Modhurchar_068_01	361-364, 366 part, 370	2.48
Play Ground-4	9	Sutarpara_063_01	293-296, 300 part, 301-302, 334, 342-346, 347 part, 348-	5.04

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area in Acre
			355, 356 part	
Community Park /Play Ground	3	Khalpar_058_02	1042-1052, 1054 part, 1059-1064, 1065 part, 1066 part, 1072-1084, 1089-1092, 1099	7.88
Community Park-1	1	Latakhola_043_02	2578, 2593 part, 2594 part	1.93
Community Park-2	2	Khalpar_058_02	726 part, 727 part, 728-734, 744-751, 1818	4.38
Community Park-3	3	Joypara_057_01	497, 948 part, 949-952	0.54
Community Park-4	5	Joypara_057_02	2846-2850	1.30
Community Park-5	6	Yousufpur_060_02	945-947, 950-952	1.55
Community Park-6	6	Laskarkanda_059_00	554, 556-571, 699-706, 753-754	13.60
Community Park-7	7	Ghata_061_02	2606 part, 2610, 2617-2618, 2621 part, 2621 part, 2622-2629	2.73
Community Park-8	8	Sutarpara_063_01	1, 2 part, 3 part, 4 part, 5 part, 6-9, 11 part, 12-13, 14 part, 17-18, 19 part	4.43
<b>Total</b>				<b>81.46</b>

### Circulation Network

Road network including primary, secondary, tertiary and local access road falls under this category. Following table shows the ward wise plot schedule for circulation network zone. In the Paurashava, 95.22(1.95%) acres land is under regional and local roads. More land will be needed for provisioning proposed roads up to the year 2031. About 10-15% of the total land may be considered for road network. A total of 439.76 acres (9.00%) of land has proposed under this category.

### Transportation Facilities

Under transportation facilities, both transport and communication services are considered. This category includes, bus terminal/ stand, filling station, garage, passenger shed, ticket counter, transport office, etc. In the Paurashava, only 0.89 acres land is under this use. For the year 2031, 7.95 acres land will be needed according to the standard. Transportation and Communication related services are Bus transport terminal, Truck terminal, Rickshaw / Van / Auto stand, Passenger shed, etc. Considering the real scenario with a proposed Bus terminal, truck terminal with loading unloading facilities and 3 tempoo stand total of 12.41 acres of land has proposed under this category.

**Table 10-9: Proposed new transportation facilities.**

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area in Acre
Bus Terminal	4	Joypara_057_02	2283-2285, 2286 part, 2287-2289, 2291	2.86
Track Terminal & Load-Unload Area	4	Nurpur_056_00	66 part, 67-69, 202-203, 206, 212 part, 213-220, 221 part, 222-225, 231 part	7.65

Tampo Stand-1	1	Latakhola_043_01	798 part, 800	0.56
Tampo Stand-2	1	Latakhola_043_01	599 part, 600 part	0.32
		Latakhola_043_02	2595 part	
Tampo Stand-3	9	Sutarpara_063_01	1085 part, 1086 part	0.35
<b>Total</b>				<b>11.74</b>

### Utility Services

A number of utility establishments are required in a town to serve the people. Utility services include Overhead Tank, Power Office/Control Room, Public Toilet, Sewerage Office, Waste Disposal, Water Pump House, Water Reservoir, Water Treatment Plant, Waste transfer station etc. A dumping station, water station and Slaughter house, Public toilet, Waste transfer Station; have proposed under this category with an area of 8.00 acre.

**Table 10-10: Proposed new utility services.**

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area in Acre
Dumping Site	1	Latakhola_043_01	2 part, 3 part, 5 part	2.10
	4	Latakhola_043_01	13, 14 part, 15, 176, 177 part, 178 part, 179 part	2.89
Slaughter House	1	Joypara_057_03	3820 part	0.10
Public Toilet-1	1	Latgakhola_043_01	798 part, 799 part, 800 part	0.23
Public Toilet-2	1	Latgakhola_043_02	2595 part	0.08
Public Toilet-3	9	Sutarpara_063_01	1086 part	0.16
Waste Transfer Station-1	2	Joypara_057_01	352	0.45
Waste Transfer Station-2	3	Khalpar_058_02	1487-1789	0.60
Waste Transfer Station-3	8	Modhurchar_068_01	256	0.23
Water Station	1	Latakhola_043_02	2722-2723	0.24
<b>Total</b>				<b>7.08</b>

### Health Services

The zone of health care facilities is intended to provide locations, where health facilities including upazila health complex and other maternity clinic can be set up and function. Existing land under this use 5.58 acre. For the year 2031, 31.20 acres land will be needed if standard considers for this purpose. With a proposed hospital zone total of 24.43 acres of land has proposed under this category.

**Table 10-11: Proposed facilities for residential development**

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area in Acre
Health Center	6	Laskarkanda_059_00	126 part, 127-137	20.03
		Yousufpur_060_02	852-862, 875-907, 917 part, 918 part, 919, 932	

### Community Facilities

All community facilities, including funeral places (i.e. graveyards) and other religious uses denoted as community facilities. At present, 8.74 acres of land is under this category. According to the standard, about 33.90 acres land may be prescribed for community facilities up to 2031. One of the important philosophies of this plan is provisioning compact township development. Based on this concept, the Ward Councilor's Office building may be used including family planning clinic, Union Parishad Office and club. Land for such type of activities is not prescribed in the plan, land only allocated for Ward Councilor's Office building. A total of 28.72 acres of land has proposed under this category.

**Table 10-12: Proposed new community facilities.**

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area in Acre
Fire Service	5	Batia_055_00	280, 284 part	0.44
Community Centre	5	Joypara_057_02	3340 part, 3341-3343, 3344 part, 3345-3348, 3352-3353	1.86
Poura Graveyard	6	Yousufpur_060_02	1165, 1220-1221, 1230-1231	2.66
Cremation	4	Latakhola_043_02	2799, 2805, 2806 part, 2812, 2816	2.17
Ward Center	1	Latakhola_043_02	1616 part	0.05
	2	Joypara_057_01	108 part	0.08
	3	Joypara_057_01	827 part	0.15
	4	Joypara_057_02	2293 part	0.06
	5	Joypara_057_02	3351, 3354 part, 3355 part	0.29
	6	Ghata_061_01	894 part	0.08
	7	Kazirchar_062_00	60 part	0.15
	8	Sutarpara_063_01	1037 part	0.06
	9	Sutarpara_063_01	1323 part, 1324 part	0.15
<b>Total</b>				<b>8.20</b>

### Urban Deferred

According to planning standard provided by LGED seeks about 10 percent of the total build up area. The total area under this use has been proposed as 75.51 acres of the existing Paurashava area that include existing and proposed land uses. A portion of this zone may use for housing of the poor, disadvantages and refugee for climate change and other disasters to fulfil National Housing Policy, Disaster Policy and other policy prescriptions of the Government. The following are permitted Uses within the Urban Deferred (UD) Zone:

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

**Table 10-13: Proposed area for urban defferd.**

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area in Acre
Urban Defferd	4	Nurpur_056_00	20 part, 21 part, 39-44, 183-188, 208 part, 209-211, 212 part, 226-230, 231 part, 233-255, 256 part, 257-261, 262 part, 264-275, 347-385, 391 part, 392 part, 393-435, 438-443	61.49
	7	Kazirchar_062_00	39-47, 66-69, 71, 73-88	14.83
<b>Total</b>				<b>75.51</b>

### Recreational Facilities

It includes cineme/theatre, Stadium/sports complex. Only 2.21 acres land is under recreational use in the Paurashava. According to the standard for recreational facilities 5.30 acres of land is being needed up to the year 2031. The study team recommends a total of 4.15 acres of land including a stadium and a theratre.

**Table 10-14: Proposed area for Recreational Facilities.**

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area in Acre
Theatre	6			3.71

### Overlay Zone

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

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

### Environmental Protection Area

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

### Graveyard Sites

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

### Sports and Recreation Sites

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

### Special Use Sites

There are some special use areas that need to be protected. Special and temporary events like, fair, hat etc. may be permitted in this zone. The purpose for delineating this zone is to preserve them and make them be able to render services to the present community and future generations. Plot scheduling for development proposals of Dohar Paurashava of different category of land usages are shown in the following table.

**Table 10-15: Proposed landuse of the Dohar Paurashava**

Landuse Type	Area (Acre)	Percentage (%)
Agricultural Zone	1,466.97	30.04
Circulation Network	439.76	9.00
Commercial Zone	45.83	0.94
Community Facilities	28.72	0.59
Education & Research	157.28	3.22
Government Office	27.22	0.56
Health Services	24.43	0.50
Industrial Zone	237.56	4.86
Mixed Use Zone	244.69	5.01
Open Space	179.30	3.67
Recreational Facilities	4.15	0.09
Residential Zone	1,538.26	31.50
Rural Settlement	115.33	2.36
Transportation Facilities	12.41	0.25
Urban Deferred	75.51	1.55
Utility Services	8.00	0.16
Waterbody	278.42	5.70
<b>Total</b>	<b>4,883.84</b>	<b>100.00</b>

Source: Landuse Survey, 2009 and proposed by the Consultant.

## 10.4 Plan Implementation Strategy

### 10.4.1 Land Development Regulations to Implement the Landuse Plan

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

Implementation of the Landuse Plan depends on successful pursuit of the policies specified in the Structure Plan. Those policies represent a significant challenge face with the responsibility of planning and managing the development of the Paurashava area. However, at present no authority is responsible for planning and managing physical development activities in the Paurashava and no regulation except Local Government (Paurashava) Act, 2009 for controlling physical development. This poses a serious

constraint to the implementation of the Landuse Plan and in fact any other form of development plans.

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

Prior to introduction of the regulations to implement the landuse plan, legislative involvement is recommended here.

1. To control the air, water, noise and soil pollution, Conservation of Environment and Pollution Control Act, 1995 (Act No. I of 1995) was enacted. In the Paurashava, there is no authority for enforcing the provisions prescribed in the said Act. The pollution related with the implementation of landuse component may be controlled with this Act.
2. Impose control on all type of buildings in the Paurashava according to the setback rule prescribed in the Building Construction (Amendment) Rules, 1996 (Notification No. S. R. O. No. 112-L/96). Building permission for extended areas shall be according to the landuse provision prescribed in the plan. Any permission for building construction, front road width shall not be less than 16 ft. and the construction must follow the Building Construction (Amendment) Rules, 1996.
3. Haphazard development of commercial activities is the general scenario of the Paurashava. It is necessary to impose control on commercial activities provisioned in the Shops and Establishments Act, 1965 (Act No. VII of 1965).
5. In case of man-made canal, regulations prescribed in the Canal and Drainage Act, 1873 (Act No. VIII of 1873) is the best weapon. For the linking of canal with others and river considering drainage facilities the Act may be enforced.
6. For the conservation of archeological monuments or structures or historical development the Ancient Monuments Preservation Act, 1904 (Act No. VII of 1904) may be enforced. Archeological Department of Bangladesh and Paurashava authority through a partnership process may preserve such type of development.
7. To control air pollution due to brick burning with the establishment of brick field, Brick Burning Control Ordinance, 1989 (Ordinance No. VIII of 1989) is the appropriate regulation. The Paurashava authority may enforce this Ordinance with the authorization given by the government to him.
8. To control the medical practitioner, establishment of private clinics and pathological laboratories, the statute named Medical Practice, Private Clinics and Laboratories (Regulation) Ordinance, 1982 (Ordinance No. IV of 1982) was enacted. For efficient enforcement of the Ordinance, the Paurashava authority may execute the Ordinance with the authorization of government.
9. The Paurashava will have to exercise strictly Playfield, Open space, Garden and Natural Tank in Urban Areas Preservation Act, 2000 (Act No. XXXVI of 2000) to some specially important areas like, riverfront and water bodies, drainage channels, low land below certain level, designated open space, etc. Development restrictions are needed around security and key point installations. The provision of restriction will

strengthen the power of the plan to safeguard its development proposals and landuse provisions.

10. The government is authorized for establishment of hat and bazar with the acquisition of land through the statute named Hat and Bazar (Establishment and Acquisition) Ordinance, 1959 (No. XIX of 1959). In case of private hat and bazar, a management body is being empowered through the Bangladesh Hats and Bazars (Management) Order, 1973 (P.O. 73/72). The Paurashava authority is also empowered establishing hat and bazar in his jurisdiction through the Local Government (Paurashava) Act, 2009. Coordination may be framed among the government (Upazila Parishad), Paurashava and private owner for the establishment, development and management of the hat and bazar located in the Paurashava premises.
11. In the Paurashava premises, industrial development is controlled by the Bangladesh Cottage Industries Corporation through Bangladesh Cottage Industries Corporation Act, 1973 (Act No. XXVIII of 1973), Industrial Development Corporation through East Pakistan Industrial Development Corporation Rules, 1965 (No. EPIDC / 2A-2/63/354) and Factory Inspector through Factories Act, 1965 (Act No. IV of 1965). Locational aspects and issuing of trade license is controlled by the Paurashava authority. A joint coordination cell among those four authorities may control the establishment of factories and industries in the Paurashava.
12. In the Paurashava, for rain water harvesting, some specific ponds / tanks will needed to be preserved. A number of derelict tanks may be improved through tank improvement project and in this case Tanks Improvement Act, 1939 (Act No. XV of 1939) will support the Paurashava is regulatory aspects.
13. Except Khas land, a considerable amount of public land in the Paurashava may be identified as fallow land or unproductive land. In regulatory term those lands are considered as culturable waste land and those lands are being fallow during five consecutive years. Those lands may be utilized under the guidance of Culturable Waste Land (Utilization) Ordinance, 1959 (Ordinance No. E.P. XIII of 1959).
14. The Paurashava should raise its efforts on the imposition and realization of betterment fees to raise its income. In this case, East Bengal Betterment Fees Act, 1953 may be enforced.

#### **10.4.2 Implementation, Monitoring and Evaluation of the Landuse Plan**

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

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



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

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

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

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

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

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

#### **Plan Monitoring**

The Landuse Plan would simply be tools for guiding and encouraging the growth and development of the Paurashava in a preferred manner. In a rapidly changing urban

environment, the Landuse Plan would require to keep up to date. If this is not done, within a few years it will be obsolete. Therefore, it is imperative that the requirement for regular updating of the Landuse Plan be made a legal requirement.

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

### **Evaluation**

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

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

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

### **Co-ordination**

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

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

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

In spontaneous areas, while all out people's co-operation is needed for project implementation; there will also be some elements of negotiation. Negotiation will be particularly needed in case of road widening projects. It will be a crucial task for Paurashava to convince the affected people to give up their land for road use. Efforts should be made to convince the land owners on the ground of enhancement of property

value due to road widening. In case people refuse to offer land free of cost necessary arrangements may have to be made for payment of compensation. This process of negotiation will be very critical, cumbersome and time consuming, and therefore, has to be handled with utmost care and patience. The best results can be accrued only by winning people's confidence. In case the authority fails to get peoples co-operation they should exercise power of compulsory acquisition of land. Attempts may be made to engage NGOs / CBOs to work as catalysts in negotiation.



## CHAPTER-11

### TRANSPORTATION AND TRAFFIC MANAGEMENT PLAN

#### 11.1 Introduction

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

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

#### 11.2 Approach and Methodology

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

Standard methodology was followed for traffic study in the project area as per the Terms of Reference. A nine hour traffic counting was conducted to assess the traffic volume at the most important traffic point. The Paurashava authority identified 3 different intersection covering two entry/exit links of the Paurashava to conduct transport survey. Detail description of survey stations are shown in Table-11.1. O-D survey was performed at all 2 entry/exit links simultaneously on different dates. The selected intersections for traffic survey is given below at table 11.1.

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

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

### **11.3 Existing Conditions of Transportation Facilities**

#### **11.3.1 Roadway Characteristics and Functional Classification**

The planning area covers 19.78 sq. km. (4,883.84 acres) and road/ circulation network length is 176.02 km with an area of 0.38sq km (95.22 acre). The regional highway runs through the Paurashava and links a number of Connector Roads and Access Roads and these are the main arterial road of the planning area. It provides connection with Dohar Paurashava to Dhaka. Dohar Bus stand Intersection is the major inter section of the Paurashava and most of the traffic are generating from this area.

The roads of the Paurashava belonging to number of agencies named Roads and Highways Department (RHD) responsible for Regional Highway, Local Government Engineering Department (LGED) responsible for construction and maintenance of Upazila and Union roads and Dohar Paurashava responsible for construction and maintenance of roads within the Paurashava area. Existing transportation system is dominated by road network catering to the passenger service and freight transport.

The road network provides access to various places within the study area and connects various parts of the country following bus routes. Major trips of vehicles are generated from, within the Paurashava from the regional highway, Dohar bazaar road, College road, Thana road, Garail road and Paurashava road. The field survey data reveals that total amount of road in the Paurashava area is 176.02 km out of which 42.60 km is Pucca road, 61.21 km is brick soling Semipucca road, 72.21 km is Katcha road.

**Table 11-1: Road network of Dohar Paurashava**

Types of Road	Length (KM)	Area( Sq. KM)
Pucca	42.60	0.11
Semi Pucca	61.21	0.13
Katcha	72.21	0.14
<b>Total</b>	<b>176.02</b>	<b>0.38</b>

Source: Physical Feature Survey, 2009

Road network has not developed in a planned manner and has not any definite street pattern. All the local roads are of irregular street pattern, which are also narrow and crooked in nature. The secondary/distributor roads are 16-20 feet width and the collector roads are 8-10 feet width. Road side vegetation and street light system were not found in the Paurashava area.

**Table 11-2: Hierarchy of roads in Dohar Paurashava**

Type of road	Width in feet	Surface type
Arterial or major thoroughfare	60	Pucca
Secondary/ distributor road	16 - 20	Pucca
Tertiary /Collector road	12 - 15	HBB & Katcha
Private road	8 - 10	Katcha
Pedestrian road	No	-

Source: Physical Feature Survey 2009

The regional highway and major thoroughfare of this Paurashava. The other major roads are Hospital road, Dohar bazaar road, College road, Thana road, Garail road and Paurashava road etc. which are treated here as distributor roads.

Motorized and non-motorized vehicles are operated in all the nodes of the planning area. The non-motorized vehicles are mainly operated within short distance and meet the local needs. The motorized vehicles are mostly intercity passenger buses and trucks, mainly carry agro product. Locally modified motorized transport vehicle named *Nosimon* also uses for short distance passenger and goods transportation.

### 11.3.2 Mode of Transport

Road is the only mode of transport in the Paurashava. The road is using for efficient movement and multi-dimensional purposes. As a result, transportation survey includes only the road transportation and the outcome of the survey is presented in the following paragraphs.

### 11.3.3 Intensity of Traffic Volume

Traffic volume studies are conducted to determine the number, movements and classifications of roadway vehicles at a given location. These data help to identify critical flow time periods and determine the influence of large vehicles on vehicular traffic flow, or document traffic volume trends. The counted traffic data for different intersections as

well as for different links at different time period and the generated PCU is presented in the following paragraphs.

Depending on the location and landuse around that location, traffic flow varies over different hours of the day. In this context, peak hour traffic flow has a special meaning. Depending on the landuse and socio-economic characteristics of the Paurashava, there could be 1 or 2 more peak hours in a day. Sometimes this peak hour could cover periods which are more than one hour. Highest peak hour traffic is usually taken in to account in determining the adequacy of the road section i.e. to determine whether the road section gets congested at certain hours of the day. Traffic flow survey has been carried out in selected intersections of the study area and the findings are presented in the following paragraphs.

#### **Intersection 01: Dohar to Dhaka Road**

The by-pass bus stand is situated at the intersection on Dhaka-Dohar Highway. At that intersection there is no ticket counter on the roadside and buses are available. The bus stand is connected with Paurashava office and main market area by a link road. Traffic volume survey has been conducted on this connected road. It is seen that on Haat day the number of traffic coming to the by-pass bus stand ('In' direction) is as same as the number of traffic going to the market area ('Out' direction) through that particular link road. In the Haat day, average traffic volume per hour in both direction ('In' and 'Out') on the road is 494 of which 409 is NMV (Non-Motorized Vehicle). So the contribution of MV (Motorized Vehicle) is not so much in the Haat day. Among the MVs, the contribution of motorcycle is dominating. On the other hand, there is a high contribution of rickshaw and bicycle in the composition of non-motorized vehicles. Traffic volume is higher from 10 am to 2 pm than any other times of the day. So 10 am to 2 pm is the peak hour for Haat day.

#### **Intersection 02: Bashtola More to Galimpur**

The old bus stand is situated at the end of main market area to the South. Traffic volume survey has been conducted on the Dhaka to Dohar link road. It is seen that on Haat day the number of traffic (50.3%) coming to the old bus stand ('In' direction) is as almost same as the number of traffic (49.7%) going to Gazipur/Dhaka ('Out' direction) from the old bus stand. The average traffic volume per hour in both directions ('In' and 'Out') on the link road is 403 out of which NMV and MV are 277 and 126 respectively. So the contribution of MV is significant in the Haat day. Among the MVs, the contribution of auto rickshaw is dominating. The other prominent motorized vehicles are motorcycle, bus, car/microbus and truck. On the other hand, rickshaw contributes higher (244) than bicycle (33/hr) in the composition of non-motorized vehicles (277/hr). From 9 am to 12 pm, traffic volume is higher than any other times of the day on the link.

#### **Intersection 03: Joypara to Dhaka**

Traffic volume survey has been conducted on the Joypara to Dhaka link road. It is seen that on Haat day the number of traffic coming to the old bus stand ('In' direction) is more (54.2%) than the number of traffic (45.8%) going to Dhaka ('Out' direction) from the old bus stand. The average traffic volume per hour in both directions ('In' and 'Out') on the link road is 394 out of which NMV and MV are 288 and 106 respectively. Among the MVs,



the contribution of motorcycle is dominating. The other prominent motorized vehicles are auto rickshaw, bus, car/microbus and truck. On the other hand, rickshaw contributes the highest in the composition of non-motorized vehicles. From 5 pm to 6 pm, 230 animal/pushcarts were found to move on the road. The peak period was found from 10 am to 1 pm.

#### 11.3.4 Level of Service: Degree of Traffic Congestion and Delay

Speed and delay survey is used to determine speed variations along a route at different times; number, location, cause, frequency and duration of delays, and overall speed and travel time along a route.

As traffic congestion is not very severe in Dohar Paurashava, generally delay of traffic movement is not common here.

These studies are used to determine speed variations along a route at different times; number, location, cause, frequency, duration of delays, overall speed and travel time along a route. Non-motorized vehicles like rickshaw, van and pushcart, waits at major intersection with a stoppage time on an average of 5 minutes. Those buses have 36 to 40 seats available for the passengers but they used to carry standing passengers. Three wheelers locally named *Nosimon* carries 14 to 16 passengers at a time and have a stoppage time of 2 to 5 minutes on major intersections.

The Origin-Destination (O-D) survey is conducted to collect information on travel and transportation generated between zones of a study area. The study also identifies passenger movements where and when trips are originated and ended, the socio-economic characteristic of the trip maker, the purpose of travel and the mode of travel. The following table-11.1 describes the purposes of trips generated with different modes from the origin of trip to the destination of Hat day and non-Hat day in Dohar Paurashava.

**Table 11-3: O-D matrix of surveyed trips (in %)**

Destinations		Percentage (%)
Within Dhaka District (9.93%)	a) Dhaka City Corporation	2.15
	b) Nawabganj	7.78
Outside of Dhaka District (9.36%)	a) Manikganj	2.10
	b) Faridpur	3.35
	c) Madaripur	4.10
	d) Munshiganj	4.55
Within Paurashava (75.81%)	Various Wards	78.91
Total		100

Source: O-D survey, 2009

The table above shows that the origin and destination survey result based on vehicle type. The table gave result on truck/Bus/car, Microbus as a transport mode. Rows indicate respondent's origin location and Columns indicates their destination. The data shows people of Dohar Paurashava have high percentage to travel from their own residence to the surrounding urban areas rather than attract people to come in that area.

**Table 11-4: O-D purposes matrix in generated trips (in %)**

Purpose	Origin	Destination
Working/Personal Business	10.59	8.82
School/College/University	2.35	2.35
Shopping	3.35	5.88
Home	15.29	12.94
Other	7.65	9.41
Total	100	100

Source: O-D survey, 2009

The above table 11.4 shows the travelers purposes in the study area. In both the cases, travelers going outside of the Paurashava and coming to the Paurashava are mainly for work/personal business, education or shopping and home purposes and they are the travelers who generate the regular trips. The purposes of the trips have been categorized as work/personal business, school/college/university, shopping, social/recreational/sports, home and others. It is found that trips for work/personal business are the maximum both at the origin and to the destination. 19.1% of the surveyed trips' origin is at home and it is the destination of 13.0% trips. For school/college/university 7.0% trips were found at origin and 12.2% trips were found to destination.

In Dohar Paurashava, a wide variety of modes have found to use by the people based on their destinations. General people use MVs to move to a distant place for attaining the purpose of work/personal business, social/ recreational/ sports etc. Trips to school/college/university and shopping purposes have found to choose NMVs. It is found that for work/personal business 30.6% trips are made by truck, 18.4% by bus, 8.2% by car/pickup/jeep/microbus, 10.2% by auto rickshaw/tempo, 10.2% are by rickshaw/van, 4.1% by bicycle and 14.3% trips are made by other means.

For school and college, rickshaw and bicycle are used as main transport mode. For shopping purpose, 46.2% trips are made by rickshaw and 30.8% trips are made by motorcycle. For

social/recreational/sports, main transport modes are bus, car/pickup/jeep/microbus and motorcycle. To come home 47.7% trips are generated by rickshaw and 33.3% trips are made by auto rickshaw/tempo. Mixed types of modes are used for miscellaneous purposes.

## **11.4 Analysis of Existing Deficiencies**

### **11.4.1 Roadway Capacity Deficiencies**

Primary Road : A Regional Highway(R820) named Dhaka - Kartikpur Bazar Highway passed through the North-South direction of the Dohar Paurashava is the Primary Road of this Paurashava. Its length is about 6.24 km and the pavement width is about 5.5 meter. Road standard (ROW) recommended in the is 100 feet, proves that the standard (ROW) of the existing primary road in the Paurashava is enough.

Secondary Road: Total 7.92 Km of secondary roads are in the Paurashava namely Joypara Main Road, Saheb Bazar Road and Dohar Bazar - Joypara Main Road. The pavement

width of these roads are 3.25 to 3.5 meter respectively. Recommended Road standard (ROW) 60 feet to 100 feet, proves that the standard (ROW) of the existing secondary roads in the Paurashava is lower than the standard (ROW) recommended. Moreover, in hat day and non-hat day, highest volume of traffic flows on those secondary roads is about 394 PCU/hour of which 288PCU/hour is non motorized vehicle. No deficiencies regarding the capacity of those secondary road exits at present.

Tertiary Road: Within the Paurashava major tertiary roads are Kathali Katha Road, paban bepari road, yousufpur road etc. with 2.5-3.5 meter road width. Recommended standard (ROW) for tertiary road is 20 feet to 40 feet, proves that the standard (ROW) of the existing tertiary roads in the Paurashava is lower than the standard (ROW) recommended.

Access road: Road standard (ROW) recommended for access road is 20 feet to 40 feet. in the Paurashava, all access roads are less than 12 feet and most of them are using as footway. Non-motorized vehicles named Van sometimes use those walkways. No deficiencies regarding the capacity of those access road exits.

**Table 11-5: Hierarchy of road**

Road ID	Name	Start	End	Length (km)	Avg. Width(m)	Road Type
1	Dhaka - Kartikpur Bazar Highway	North corner of the ward no-1	South corner of the ward no-9	6.61	5.5	Primary
2	Joypara Main Road	Bypass intersection	Eastern corner of ward no-6	3.55	3.5	Secondary
3	Saheb Bazar Road	Thana More	North corner of the ward no-2	1.77	3.25	Secondary
4	Dohar Bazar - Joypara Main Road	Dohar Bazar	Joypara Main Road	2.60	3.25	secondary

#### 11.4.2 Operational, Safety, Signal and other Deficiencies

- Traffic management system is absent in the Paurashava. No operational system yet being imposed on traffic movement.
- Due to the minimum PCU/hr. both in hat and non-hat day, availability of non-motorized vehicles and absent of available built-up area, road safety exists naturally in the Paurashava.
- Traffic signaling system is totally absent in the Paurashava. Generally, traffic signaling system will not be needed up to the limit of the planning period. On some specific point of primary and secondary roads, traffic signaling will be needed.

#### 11.5 Condition of other mode of transport (Rail/Water/Air)

There is no railway line in Dohar Paurashava. Although there is a River named Lotakhola which run through the Paurashava area, it is not used as waterway except in the case of rainy season when the river is full of water but still it is not a major transportation network. There is no airport in this Paurashava.

## 11.6 Future Projections

Road design standards are prescribed in the section 21 of the Public Roads Act, 2004. The regulations of the sections are:

The Government may declare design standards for roads by publication in the Official Gazette.

- The road design standards shall set out design requirements for roadways and road-related areas including structures located on roadways or road-related areas.
- A road authority shall comply with the road standards when carrying out works on a roadway, road-related area or when installing, modifying or maintaining a structure on a roadway or road-related area.
- Despite sub-section (3), a road authority is not required to comply with the road standards if:
  - o the road authority is carrying out maintenance and, in the view of the road authority, it would not be practicable to comply with the road design standards.
  - o the Government has, in writing, exempted the road authority from complying with the road design standards in relation to the works or structure.
- The Government may revoke or amend road design standards in the same manner as a declaration.
- The Urban Area Plan for Dhaka City has recommended road standards with the consideration of traffic volumes, which were not undertaken in conjunction with the Dhaka Integrated Transport Study (DITS). A wide range of standards was suggested for various classes of roads, ranging from 4 meters to 24 meters, as mentioned below. The required right of way (ROW) is also indicated:

- Main Road	24.0	meter	(78 ft) ROW
- Arterial Road	14.5	meter	(47.5 ft) ROW
- Collector Road	13.0	meter	(42.6 ft) ROW
- Access Road	9.0	meter	(29.5 ft) ROW
- Access Road	6.0	meter	(19.7 ft) ROW
- Non-motorized Road	4.0	meter	(13.4 ft) ROW
- Footpath	2.5	meter	(8.2 ft) ROW

In order to promote development of all roads in a systematic manner, new road standards were recommended for both built up areas, as well as for less built-up areas. These will replace the old standards, which were included in the Dhaka Metropolitan Development Plan (DMDP). The standards, when adopted will facilitate earmarking the right of way (ROW) for all major roads. The details of these standards used in this plan are indicated below.

**Table 11-6: Road standards for future development of the network**

Class of Roads	Standards recommended
Paurashava primary roads	150-100 ft.
Paurashava secondary roads	100-60 ft.
Paurashava local roads	40-20 ft.

Source: UTIDP, LGED, 2010.

### 11.6.1 Travel Demand Forecasting for Next 20 Years

Existing road network is quite enough for accommodating present volume of traffic. The study area is rural in nature. Katcha roads needs to be constructed as pucca or at least semi-pucca. Katcha roads become clayey in the rainy season and bring immense sufferings for the users. As a result, social, cultural and economic activities are disrupted significantly at that time. A very limited uses of small boats are found for transportation of goods within the short distance particularly on hat day. Due to the absence of effective alternatives, passengers and goods movement of the study area is largely dependent on road transportation. This dependency will be calculated according to the increase of accessibility, consideration of the missing links, volume of traffic movement, bulk density of the area and economic importance of the area. Growth direction is also a considerable component for the demand analysis of the road.

### 11.6.2 Transportation Network Considered

The physical feature survey has identified a number of problems constraining the development of the Paurashava, such as:

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

To establish a rational hierarchy of roads in the Paurashava, it will be needed to use development control to ensure that reserves of land, once established are maintained.

In the Transportation Plan, north, south, east and west direction links with the Paurashava have been considered. To maintain an effective linkage, the plan proposes one primary road and others are secondary and tertiary roads.

### 11.6.3 Future Traffic Volume and Level of Service

The roads presented in the Table-11.5 are the important roads of the Dohar Paurashava. Present population of the Paurashava is 71362 (2011) and in the year 2031 it will be 10609. Highest PCU/hr. at hat day is 1093 in Dhaka-Dohar regional highway. The scenario proves that traffic congestion is not alarming will in other roads. The income and other socio-economic condition of this area is not very poor. The scenario proves that the Paurashava dwellers have no capability to increase traffic volume provisioning motorized vehicles. They will increase non-motorized vehicles and Nosimon.

With the expansion of administrative services, motorized public vehicles will be increased and at the same time, traffic volume also increase.

At present, all of traffic is under the private sector and above 80% people enjoying by the non-motorized vehicles. It is expected that the scenario will change next 20 years and the percentage of motorized vehicle will increase.

## **11.7 Transportation Development Plan**

### **11.7.1 Plan for Road Network Development**

For an efficient road network development, implementation of some of the recommendations made by the Roads and Highways Department in 2008 would be essential. In order to serve the Paurashava, as well as the local traffic around Paurashava, an analysis will present in the proposals. It is found that many of the road links are not recommended by the Roads and Highways Department. Further analysis under the Transportation Plan will be revealed that most of the links suggested by this study are indeed required to be developed in a phased manner. Under the Transportation Plan, an attempt is being made to promote existing major link roads in the Paurashava which are Bamanhata Dhaka - Kartikpur Bazar Highway, Joypara Main Road, Saheb Bazar Road and Dohar Bazar - Joypara Main Road. The eastern part of the study area is in rural character and have road linkage with the central area. There is a need of some north-south and east-west link road. Ring road cum embankment along both side of the rivers has to be considered for easy traffic and river protection.

### **11.7.2 Road Network Plan**

The primary road will act as through-route, taking traffic from Paurashava to other centres in the region or the country and avoiding the need for this through-traffic to enter the internal road network of the Paurashava.

## **Map 11-1: Important Roads of Dohar Paurashava**





The route is intended to be high capacity and fast flowing. In the case of existing roads in Paurashava (designated as secondary and tertiary roads), this may require the introduction of side collector roads which restrict entry onto the main carriageways from roadside development. Without this, the road may not be able to fulfill the given function.

**Table 11-7: Roads proposed for improvement with sufficient ROW and pavement width.**

Road ID	Name	Length (km)	Existing Avg. Width(m)	Proposed Width(feet)	Road Type	Remarks
1	Dhaka - Kartikpur Bazar Highway	6.61	5.5	100 feet	Primary	-
2	Joypara Main Road	3.55	3.5	40 feet	Secondary	There is no scope to improve the road upto 60 feet or 80 feet
3	Saheb Bazar Road	1.77	3.25	40 feet	Secondary	There is no scope to improve the road upto 60 feet or 80 feet
4	Dohar Bazar – Joypara Main Road	2.60	3.25	40 feet	secondary	There is no scope to improve the road upto 60 feet or 80 feet

### **New Link Roads**

**Following are the major link road proposed for future urban development.**

Three major new north south link roads has proposed which are:

- i) A 80 feet wide road from Ghatia govt. primary school on regional highway to proposed industrial area at northern corner of ward no-06.
- ii) Two 60 wide north-south link road passes through Sultanpara at ward no-08 to northern corner of ward no-07 and north to south side of ward no-06.
- iii) Three no of 60 feet east-west link passes through ward no-01 to ward no-06, ward no-05 to ward no-07 and ward no-09 to ward no-08.
- iv) Ring road cum embankment along both side of the rivers have proposed for easy traffic and river protection.

Besides that a number of link road and road widening proposal were made in the plan.

### **Improvement of other local roads**

Improvement of other local roads which deserve priority attention and could contribute a lot in reducing pressure on the existing focal points of the Paurashava all tertiary road is essential all local roads has proposed for widening.

An initiative should be taken to develop an effective and efficient arterial road network, which could provide a gridiron system with lots of alternative links for movement in different directions.

### 11.7.3 Proposal for Improvement of the Existing Road Networks

For Dohar Paurashava three types of road has proposed which is 1) Primary road, 2) Secondary road, 3) Tertiary/Local road and 4) Access road

**1) Primary road:** In Paurashava the primary road is mainly the link road of porashava with other upazilla or district. It is mainly the national or regional highway. Tangail-Tarakandi Highway is the primary road of this Paurashava.

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

Alternative cross-sections for the primary road is –

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

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

For new road, the 48 meter reserve will be adopted in the short-term to prevent development encroaching in to it before construction of the road.

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

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

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

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

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

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

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

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

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

No non-road related development will be permitted within the road reserve. For new roads which will not be constructed in the foreseeable future, agricultural use of the reserve will be permitted until such times as the road is constructed. No permanent or temporary structure will be permitted.

In general, no direct access will be permitted onto the main carriageways (of secondary roads) with access gained only at controlled junctions. Occasionally, due to existing situations, access from a side road may be entertained. The number of junctions should be minimized with desired spacing being at 200 meter intervals. Again, this may vary according to necessity but where deviation from this desired spacing is necessary, the deviation should be small. Junctions will be in the form of roundabouts or traffic lights.

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

**3) Tertiary road:** are the collector and distributor of traffic to and from access roads from predominantly residential areas to other parts of the hierarchy;

- provide direct access to roadside landuses.

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

No development will be permitted within the 18 meter reserve.

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

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

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

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

Direct access from residential properties will be permitted. Considering the overall scenario and road improvement options the proposed road with for Dohar Paurashava are as follows:

**Table 11-8: Recommended road standards**

Sl.No.	Class of Roads	Standards recommended
1.	Primary Road	80 feet and above
2.	Secondary Road	40-60 feet
3.	Tertiary road/ Local Road	30 feet
4.	Access Road	20 feet

### **11.8 List of Proposed New Roads**

A number of new roads including improvement of existing roads are presented in the following table. In the Paurashava, one primary road named Regional Highway lying with length 6.61 km under the Paurashava jurisdiction.

All the roads may be constructed under the road development scheme approved by the government for the authorities named RHD, LGED and Paurashava. In total, 176.02 km roads existing in the Paurashava and 145.80km roads have been proposed for efficient accessibility of the Paurashava of which some are fully new road and others are road widening. Details of roads proposal and phasing are given in **Annexure-D**.

The process that the Paurashava/RHD can undertake to establish new road reserves for each of the proposed roads shown on the Transportation and Traffic Management Plan is described below:

- Initial step will be to determine two points between which the new road will be required. In certain instances, the precise intersection or connection point will be obvious, whilst in other cases only a generalized location is identifiable in the first instance. Determination of the exact connection points can only be made once further steps in the process have been undertaken.

- Having identified two connection points (either known or vague), next step will be to conduct a search of a wide area to identify a number of alternative routes. Width of the area subjected to this search will vary according to individual circumstances, with the area being relatively narrow in dense Paurashava locations (say 80 to 100 meters), but wider in more rural settings (say 200 to 300 meters).
- The number of alternative alignments to be identified will also vary, but as a general rule, a maximum of five alignments will be chosen. When identifying each of the different alignments, care will be taken to ensure that they are realistic and capable of accommodating the width of reserve required for the standard of road envisaged.

**Table 11-9: List of proposed new roads**

Sl No	Road Width (Feet)	Length Meter	Percentage	Type
1	100	9.145.55	6.27	Primary road
2	80	3947.38	2.71	
3	60	10968.11	7.52	Secondary road
4	50	3396.52	2.33	
5	40	45884.83	31.47	
6	30	38767.19	26.59	Tertiary road
7	20	33686.71	23.11	
Total		145796.29 (145.80 KM)	100.00	

During this stage of the process, number of buildings, other structures or natural environment affected by the proposal should be seen as a constraint, but not yet as a major constraint. That being said, following the rule for realism stated above, the alignments will need to respect as much existing permanent development as possible, aiming instead, in dense situations, to target gaps between developments rather than through them. Only where the avoidance of specific buildings or groups of buildings is unavoidable, to produce a worthwhile alignment, should their removal be seen as part of that alternative's cost.

Similarly, in rural locations or in areas of high natural environmental quality, extreme care should be exercised when choosing the alternatives to respect the natural environment and choose options that are going to minimize the visual impact of a new road or avoid destruction of areas of the highest environmental quality.

Having established the alternative alignments, these will now be assessed, against set criteria to enable the Paurashava to choose a preferred option. The criteria that must be taken into account during this exercise include:

**The impact of the alternative on existing properties:** whether these are permanent or temporary and the type of development that is being affected. This, in part, will identify the general scale of compensation that will accrue with each of the alignments and therefore the viability of a route to be chosen as the preferred option.



**Map 11-2: Proposed Circulation Network for Dohar Paurashava**





The impact that each alignment will have on the general and natural environment:

Routes which have a high visual impact in an area of natural beauty will, for example, score badly on this criteria.

**Amount of vacant public land available along each route:** more land the government owns, the easier the project will be to implement and equally the lower the cost of an option, as the need to compensate landowners will be reduced.

**The ease of construction:** each alignment will need to be considered with again easier solutions not requiring major development items – bridges – for example, being preferred to more difficult proposals which will increase the cost of construction.

**The severance of landuses and communities:** need to be assessed, with preference been given to those routes that minimize severance.

Other more localized criteria may be included at the time of assessment.

- The result of this assessment exercise will identify for the Paurashava the route that should be considered as its preferred alignment. The reserve for this alignment will then become the area within which no development, other than for agricultural use, will be permitted.

## 11.9 Plan for Transportation Facilities

### 11.9.1 Transportation Facilities Plan

Transportation facilities and services include Bus Terminal, Bus Stoppage with Shade, Ticket Counter, Waiting Place for Travelers, Parking Space for Motorized and Non-motorized Vehicles, Service Centre and Washing / Toilet Facilities. At present, no formal transportation facilities and services are available in the Paurashava.

A bus terminal, a truck terminal including loading unloading facilities, two tempo stand has proposed in the plan transportation facilities which are shown in table 11.8. Detailed ouza schedule are shown in chapter-10.

**Table 11.10: Proposed new transportation facilities.**

Proposed facilities	Ward No.	Area in Acre
Bus Terminal	4	2.86
Track Terminal & Load-Unload Area	4	7.65
Tampo Stand-1	1	0.56
Tampo Stand-2	1	0.32
Tampo Stand-3	9	0.35
<b>Total</b>		<b>11.74</b>

### 11.9.2 Parking and Terminal Facilities

Bus stand and intersections are using as bus stops including loading and unloading of man and materials. Those intersections are also using for parking both motorized and non-motorized vehicles. Informal economic activities also often encroaches road space. All those factors are together resulted in traffic congestions and also for a cause of accident. The proposed bus terminal will include the parking area and loading and unloading facilities.

### **11.9.3 Development of Facilities for Pedestrian, Bicycle and Rickshaw**

People of the Paurashava move using both sides of the roads. It is noted that the Paurashava is without any footpath for pedestrian movement. Pedestrian movements take place mostly on carriageway and right of way of the roads.

According to the standard for provisioning of footpath, 2.5 meter is necessary and it will be demarcated on both the sides of the road. Development of facilities for pedestrians, bicycles and rickshaws is relevant with the design criteria of the road.

### **11.9.4 Other Transportation Facilities**

Other transportation facilities includes launch/boat ghat. If water ways will be provisioned in the River, 1 boat ghats should be constructed. This ghat may be designed considering water-based tourism.

### **11.10 Waterway Development / Improvement Options**

There is no water way in the Paurashava. Construction materials such as sand brick and timber are carrying by boat from small growth centres adjacent to the Dohar Paurashava to other place by the river.

### **11.11 Proposal for Improvement of the Existing Waterway**

No waterway is in the Paurashava.

### **11.12 Proposal for New Waterway Development**

- Encourage private sector to involve with the construction of water ways. BOT (Build Operate and Transfer to the Government) system for private sector will appropriate.
- The Paurashava may, in collaboration with the Inland Water Transport Authority (IWTA), develop the water ways using the River.

### **11.13 Railway Development Options**

No railway present in the Paurashava, Bangladesh Railway may think to develop a commuter rail service network in this area.

### **11.14 Transportation System Management Strategy (TSMS)**

#### **11.14.1 Strategies for Facility Operations**

Following strategies will be adopted to operate the facilities related with the provisioning of suitable transportation system.

- An improved traffic management system should be imposed. All facilities involved with this system should be provisioned.
- The land uses at the intersections should be controlled with the provisioning of passenger shade, public toilet, ticket counter, tea stall and other necessary facilities.
- Parking facilities for motorized and non-motorized vehicles should be provisioned during construction of roads.

#### **11.14.2 Strategies for Traffic Flow and Safety**

Following strategies will be adopted to implement circulation network in the planning area:

- A comprehensive road network plan has been prepared for the Paurashava using a hierarchy of road network. Implementation will also be followed following this hierarchy.
- In case of local roads a participatory approach will be developed to realize at least a part of the development cost bears by the beneficiaries. This will also help to reduce delay and cost involved in land acquisition for road construction.
- Proposed roads in those areas will be chosen for immediate construction that is needed to promote growth in that area.
- Incremental Road Construction Approach will be adopted to get rid of unnecessary construction costs, where roads remain underutilized.
- Service roads will be constructed along with the major roads to allow free flow of long distance traffic.
- A restricted buffer zone will be created along primary roads passing through agriculture to discourage roadside development.

#### **11.14.3 Strategies for Traffic Management**

- Linking the missing links of primary, secondary and tertiary roads on priority, and widen some tertiary roads to make networks for efficient circulation.
- Provide adequate pedestrian facilities and off-street parking wherever needed.
- Not to allow any development within the right of way (ROW).
- Separate lane for non-motorized vehicles should be provisioned on the primary and secondary roads.

### **11.15 Plan Implementation Strategies**

#### **11.15.1 Regulations to Implement the Transportation Plan**

Following regulations will be needed for implementation of the plan.

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

- a) establish ownership and responsibilities for roads;
- b) establish the framework for managing the road network;
- c) establish general principles for road management;
- d) provide for general design and planning principles for roads;
- e) confer powers and responsibilities on road authorities;
- f) commit road authorities to provide and maintain safe roads, and to do so using resources efficiently;
- g) provide for the establishment and classification of public roads;
- h) provide for data bases of public roads, and public access to them;
- i) set out rights and duties of road users;

- j) control activities on roads;
- k) make special provision for restriction on access to roads;
- l) identify characteristics of new road types;
- m) provide a legal framework for private sector participation in road construction, operation and maintenance, including tolling of roads;
- n) establish defenses for civil liabilities; and
- o) create offences and provide for penalties.

Section 5 has defined public roads as-

- 1) The Government may declare a public road.
- 2) The declaration may be made in relation to land, whether or not it is currently used for passage by members of the public.
- 3) In the declaration, the Government shall classify the public road as:
  - (a) a national road; (b) a regional road; (c) a Zila road; (d) an urban road; (e) an Upazila road; (f) a union road; (g) a village road.

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

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

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

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

### **Map 11-3: Proposed Transport Infrastructure of Dohar Paurashava**



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

(2 a) The owner or occupier of land shall take all reasonable steps to ensure that a tree, shrub, hedge or other vegetation on the land is not a hazard or potential hazard to persons using a public road and that it does not obstruct or interfere with the safe use of a public road or the maintenance of a public road.

(b) Where a tree, shrub, hedge or other vegetation is a hazard or potential hazard to persons using a public road or where it obstructs or interferes with the safe use of a public road or with the maintenance of a public road, a road authority may serve a notice in writing on the owner or occupier of the land on which such tree, shrub, hedge or other vegetation is situated requiring the preservation, felling, cutting, lopping, trimming or removal of such tree, shrub, hedge or other vegetation within the period stated in the notice.

Again, section 71(1a) said that, any person who, without lawful authority or the consent of a road authority-

- (i) erects, places or retains a sign on a public road, or
- (ii) erects, places or retains on a public road any caravan, vehicle or other structure or thing (whether on wheels or not) used for the purposes of advertising, the sale of goods, the provision of services or other similar purpose, shall be guilty of an offence.

Section 76(1) of the **Highways Act of England and Wales** have provisioned regulations for a road authority and said, a road authority may-

- (a) construct and maintain drains in, on, under, through or to any land for the purpose of draining water from, or preventing water flowing onto, a public road,
- (b) use any land for the temporary storage or the preparation of any gravel, stone, sand, earth or other material required for the construction or maintenance of a public road.

### **11.15.2 Implementation, Monitoring, Evaluation and Coordination of the Plan**

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

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

and Traffic Management Plan. Second activity would be to analyze the source and availability of fund for the prioritized list of development projects.

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

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

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

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

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

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



### **Plan Monitoring**

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

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

### **Evaluation**

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

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

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

### **Co-ordination**

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

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

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

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

## CHAPTER-12

### DRAINAGE AND ENVIRONMENTAL MANAGEMENT PLAN

#### 12.1 Introduction

The consultant has made an extensive drainage network study in Dohar Paurashava to improve the living standard of urban dwellers. Major activities of drainage study include:

- Survey for the alignment of drains / drainage channels by using DGPS, Data Logger and Path Finder software;
- Survey for the cross sections of drains by using optical level;
- Survey for the bottom level and area of local depressions;
- Identification of outfalls and drainage structures with their conditions;
- Development of Maps showing drains (with drainage direction).

The study has conducted with the concern of Paurashava Mayor, Councilors and other Paurashava representatives as well as PMO, LGED as per ToR in concentrating on following major issues:

- Information regarding type of natural and man-made drains.
- Alignment and crest level of embankments, dykes and other drainage divides.
- Identification of missing links.
- Direction, depth of flow, maximum and minimum tidal level of river, flooding condition, condition of river side settlements during high tide and flood.
- Location, number and condition of pump station, sluice gates, drainage structures.
- Location and area of outfalls, ponds, tanks, ditches; condition in dry and wet season.

##### 12.1.1 Goals and Objectives

The objective of Drainage Plan is to find out the present functions of main and secondary drains and natural streams within the Dohar Paurashava. Secondly, to find out level of encroachment over drainage reservations responsible for flooding, water logging of neighborhoods during heavy rains. Thirdly, to find out, the existing roadside drainage pattern including capacities and collected gradients. Since planned development of Paurashava is very much desirable, Drainage Master Plan is necessary to ensure operation and maintenance of the present facilities including new proposal for future. For this, both short and long term project improvement plan involving area based drainage master plan is necessary to ensure proper drainage of the Paurashava.

##### 12.1.2 Methodology and Approach to Planning

In implementing various infrastructural developments, drainage is generally given less priority and is normally considered to be the last or final steps for development. Such scenario is particularly true for Bangladesh; although different types of drainage infrastructures are among others by far the heaviest impact on physical infrastructure network. As a result, physical environment, health, hygiene and standard of living suffer seriously. In development projects, Government, Semi-government and Public sector

allocated funds are mostly spend on buildings, roads and other more visible infrastructures and drainage comes as the last item of development. By the time, drainage development begins to start, there appears shortage of fund, consequently as a matter of policy-do little or do-nothing situation appears and as eyewash very little is done for drainage development. In case of urban development, if drainage is not given priority, sufferings of the inhabitants will continuously increase with the passage of time.

Drainage development for urbanization should start with drains. Drains can be classified as Plot drains, Block drains, Tertiary drains, Secondary drains and Primary drains. Other natural drainage infrastructure is lowland, outfall areas, khals and rivers. Man-made drains are Plot, Block, Tertiary, Secondary and Primary drains and others are natural drainage infrastructures. In planning for drainage network, care has given on road network in terms of conflict of drainage and waterways with roads. Drainage and environmental survey was followed the proto-type questionnaire supplied and suggested by the LGED.

### **Method Used**

Storm and used water: The drains are designed to collect excess rainfall that comes as surface runoff from urban area, convey the runoff and finally discharge them to outfalls. The design of drains involves hydrological computations of rainfall intensity, its frequency of occurrence, duration etc., and the total run off of a particular area. The modified rational method shall be used for calculation of peak runoff for a definite frequency and duration from particular drainage basin. One limitation of this method is that it cannot be used for catchment area greater than 320 acres. The Natural Resources Conservation Service (NRCS) method formerly the US Soil Conservation Service (SCS) method shall be used.

In Modified Rational Method, the overall watershed is divided into zones that contribute to hydraulically significant points of concentration. The boundary of the zones is established based upon local topographic boundaries such as streets, existing drainage systems, etc., using good engineering practice. The design flow rate by Modified Rational Formula is –

$$Q = C_s C_r I A$$

Where:

- Q = Design runoff flow rate (cfs)
- I = Rainfall intensity (in/hr)
- C<sub>s</sub> = Storage coefficient
- C<sub>r</sub> = Runoff coefficient
- A = Drainage area (acres)

Rainfall Intensity (I): The rainfall intensity is the average rainfall rate for a particular drainage basin or sub-basin. The intensity is selected on the basis of the design rainfall duration and return period. The return period is established by design standards as a design parameter. Rainfall intensity with 5 years return period is generally employed for design of primary drains and canal improvement. Rainfall intensity with 3 years return period is employed for design of secondary drains. The design duration is equal to the

time of concentration for the drainage area under consideration. Time of concentration is a critical parameter both for the Modified Rational Equation and SCS method. Time of concentration is generally defined as the longest runoff travel time for contributing flow to reach the outlet or design point, or other point of interest. It is frequently calculated along the longest flow path physically.

Estimating the time of concentration involves identification of an appropriate flow path or paths and estimating runoff travel times along the flow paths. Where post-development conditions include significant pervious surfaces, the time of concentration for just impervious portions of the basin may be required to calculate and compare peak flow response for the basin as a whole against that of the more rapidly-draining impervious surfaces alone. The Time of Concentration composed of the Initial Time of Concentration, sometimes referred to as the Inlet Time or Time of Entry and the Travel Time. Initial Time of Concentration is that time required for runoff to travel from the most remote point in the drainage area to the first point of concentration. This can be determined using the Kirpitch equation. The Initial Time of Concentration must be five minutes or longer. In instances where Initial Times of Concentration are estimated to be shorter than five minutes, five minutes shall be applied.

The second part of the Time of Concentration is the Travel Time that takes the flow to travel along the drain. Channel flow occurs in channels carrying integrated flows, pipes (flowing partially full), and streams. Where storage is not significant, Travel Times can be estimated by applying Manning's Equation, and using estimates of channel characteristics and appropriate roughness values for pipe, channel, or stream features as tabulated in Table-12.1

$$V = [1.49/n] [R^{2/3}] [S^{1/2}]$$

Where

- V = Velocity of flow, feet/second
- N = Manning's roughness coefficient for channel flow
- S = Slope, feet/foot
- R = Hydraulic radius, feet

And

$$T_t = V / (60L)$$

Where

- T<sub>t</sub> = Travel time, minutes
- V = Velocity, feet/second
- L = Length, feet

Manning's roughness coefficient for channel flow is listed in Table-3.1.

**Table 12-1: Manning's "N" Values for Channel Flow**

Conduit Material	Manning's "n"	Conduit Material	Manning's "n"
<b>Closed conduits</b>		Pipes	0.011-0.015
Asbestos-cement pipe	0.011-0.015	Liner plates	0.013-0.017
Brick	0.013-0.017	<b>Open Channels</b>	
Cement-lined & seal coated	0.011-0.015	<b>Lined channels</b>	

Concrete pipe	0.011-0.015	a. Asphalt	0.013-0.017
Helically corrugated metal pipe (12" – 48")	0.013-0.023	b. Brick	0.012-0.018
Plain annular	0.022-0.027	c. Concrete	0.011-0.020
Plan helical	0.011-0.023	d. Rubble or riprap	0.020-0.035
Paved invert	0.018-0.022	e. Vegetation	0.030-0.400
Spun asphalt lined	0.011-0.015	Earth, straight and uniform	0.020-0.030
Spiral metal pipe (smooth)	0.012-0.015	Earth, winding, fairly uniform	0.025-0.040
3 – 8 in. diameter	0.014-0.016	Rock	0.030-0.045
10 – 12 in. diameter	0.016-0.018	Un maintained	0.050-0.140
Larger than 12 in. diameter	0.019-0.021	Fairly regular section	0.030-0.070
Plastic pipe (smooth interior)	0.01-0.015	Irregular section with pools	0.040-0.100

Source: Municipality of Anchorage. *Drainage Design Guideline*, March 2007 ver.4.08 pp-62.

Storage Coefficient (Cs): Due to very flat topography of Bangladesh, the runoff is significantly slow. The rainfall after evaporation and infiltration accumulates first in the depressions, until these have been reached their capacity and then runoff. To take these effects a storage coefficient is used. The value of the storage coefficient is based on average ground slope and the nature of the ground surface. Some of the storage coefficients are listed in Table-12.2.

**Table 12-2: Storage Coefficients for flat land**

Characteristics of surface	Storage Coefficient		
	Slope < 1: 1000	Slope < 1: 500	Slope < 1: 500
Residential urban	0.70	0.80	0.90
Commercial	0.80	0.90	1.00
Industrial	0.70	0.80	0.90
Residential Rural nature	0.60	0.70	0.80
Agricultural	0.50	0.60	0.70
Forest/woodland	0.30	0.40	0.50
Aquatic land	0.30	0.40	0.50
Paved area/road	0.80	0.90	1.00

Source: Countywide Comprehensive Plan (Master Drainage Plan) Exhibit-VIII.

Runoff Coefficient (Cr): The runoff coefficient ( $C_r$ ) values shall be assigned to the various land use zoning classifications. The runoff coefficient values are based on the slope of the land surface, degree of imperviousness and the infiltration capacity of the land surface. The type of land use can greatly affect the amount of runoff. The quantity of runoff and peak flow rates are increased when the land is developed because the impervious surface area increases with the addition of roads, driveways, roofs, etc. The values of the runoff coefficient ( $C_r$ ) for each land use classification are listed in Table-12.3.

**Table 12-3: Modified Rational Method Runoff Coefficients**

Land use designation	Runoff Coefficient $C_r$
Residential rural	0.30
Residential semi urban	0.40
Residential urban	0.50~0.60
Apartment professional	0.70
Neighborhood Commercial	0.85
Community Commercial	0.85

Industrial	0.70~0.75
Slum area	0.50~0.55
Agricultural exclusive	0.25
Forest and watershed	0.20~0.25
Public facilities	0.3~0.60
Forest/ woodland	0.25
Paved area/road	0.99

Source: Countywide Comprehensive Plan (Master Drainage Plan) Exhibit-VIII.

Catchment Area: The size and shape of the catchment or sub-catchment for each drain shall be determined by plan metering topographic maps and by field survey. In determining the total runoff of a catchment area the following assumptions to be made:

- a. The peak rate of runoff at any point is a direct function of the average rainfall for the time of concentration to that point.
- b. The recurrence interval of the peak discharge is same as the recurrence interval of the average rainfall intensity.
- c. The Time of Concentration is the time required for the runoff to become established and flow from the most distant point of the drainage area to the point of discharge.

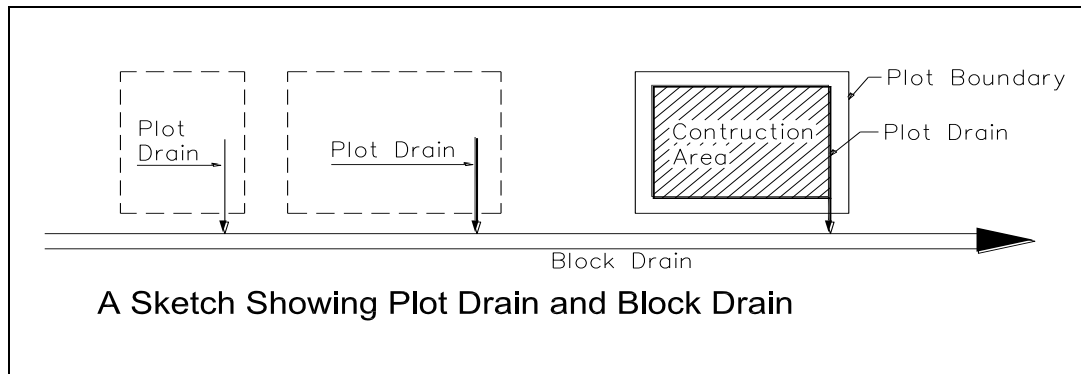
### Projection

In implementing various infrastructures for development, drainage is generally given less priority and is normally considered to be the last or final steps for development. Such scenario is particularly true for Bangladesh; although different types of drainage infrastructures are among others by far the heaviest impact on physical infrastructure network. As a result, physical environment, health, hygiene and standard of living suffer seriously. In development projects, Government, Semi-government and Public sector allocated funds are mostly spent on buildings, roads and other more visible infrastructures and drainage comes as the last item of development. By the time, drainage development begins to start, there appears shortage of fund, consequently as a matter of policy-do little or do-nothing situation appears and as eyewash very little is done for drainage development. In case of urban development, if drainage is not given priority, sufferings of the inhabitants will continuously increase with the passage of time.

Drainage development for urbanization should start with drains. Drains can be classified as Plot drains, Block drains, Tertiary drains, Secondary drains and Primary drains. Other natural drainage infrastructure is lowland, outfall areas, khals and rivers. Man-made drains are Plot, Block, Tertiary, Secondary and Primary drains and others are natural drainage infrastructures. In planning for drainage network, care will be given on 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 of drainage infrastructures are discussed and presented in lower to higher order which will be considered as a method for drainage plan.

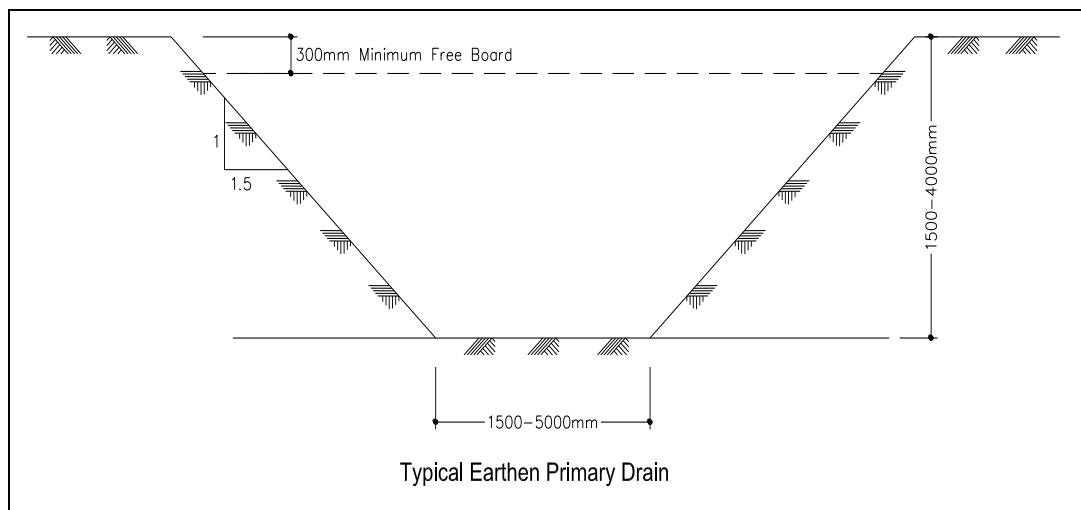
Plot Drains: Plot drains are provided around a building on a plot. In most cases, the drain is made of bricks and is rectangular in shape that can carry storm water generated in the plot and from the building. Plot drain is connected to the Block or Mohallah drain. The

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

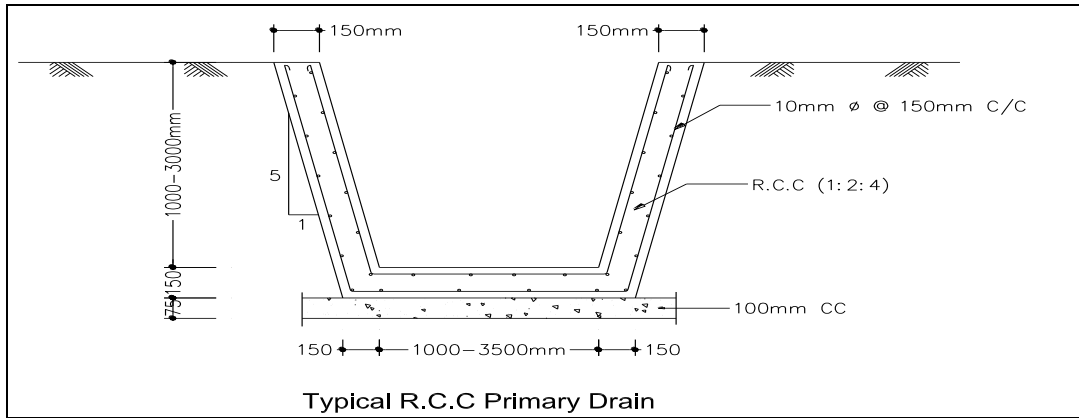


**Block Drain:** Block drain is provided at the outside of a block that accommodates several buildings of the block. The block drains are made of bricks like plot drains but bigger in size so that it can serve the storm water generated within the block and the buildings and open areas within the block.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

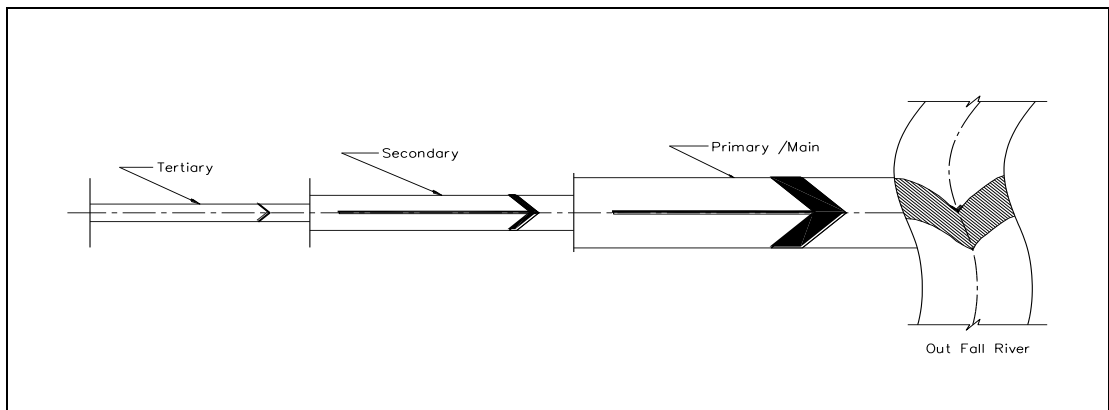
**Primary Drain:** Primary drains are also called main drains. Primary drains cover larger storm drainage area than tertiary and secondary drains. Sometimes primary drain bears local name. In ascending order its position is third. Its cross-section is larger than other types; carrying capacity is high 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. Sketch below shows the typical cross-section of the primary drain.





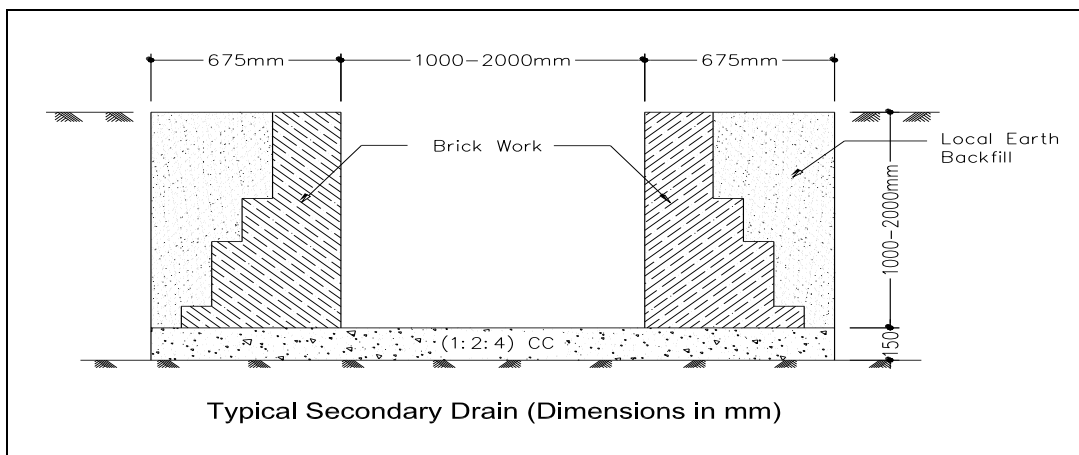


A schematic diagram showing the origin of Tertiary, Secondary and Primary drains and their destinations to the outfall river, presented above, are also presented here.

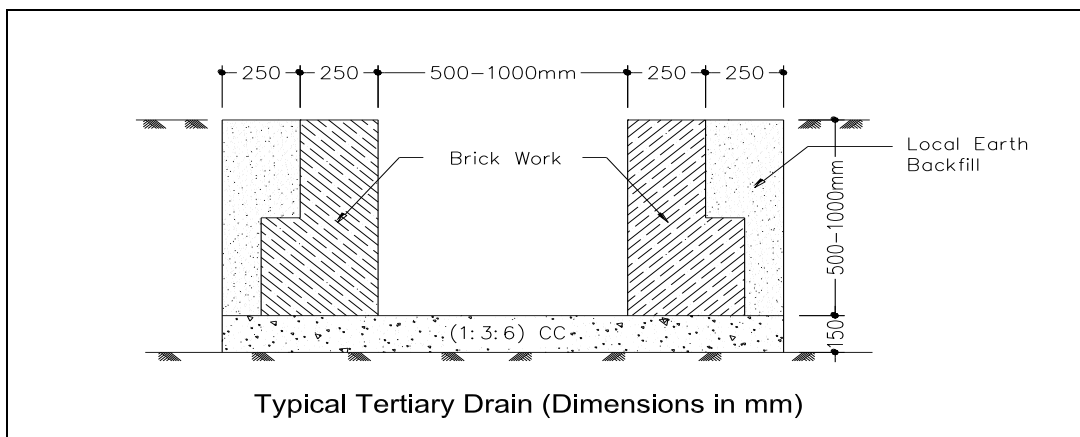


Schematic diagram of Tertiary, Secondary and Primary drains

**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 much bigger than tertiary drain. Like tertiary drain, 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.

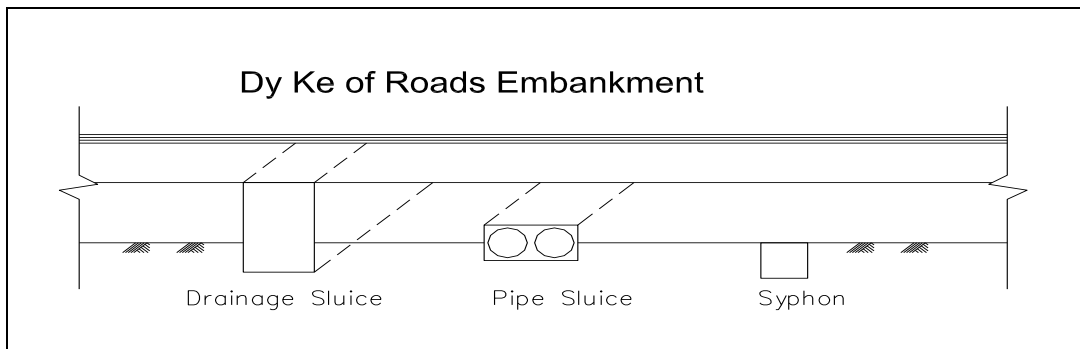


Tertiary Drain: Tertiary drain carry run-off or storm water received from the above mentioned plot drains and block or Mohallah drains. Their catchment area or storm water contributing area is bigger than Mohallah drains. In most Paurashava areas it is difficult to find such naming or classifications. However, such classifications can be seen in references. Tertiary drains generally are the under jurisdiction of Paurashava. Those drains or drainage networks are constructed and maintained directly by the Paurashava. These drains are constructed by bricks, cement concrete and sometimes by excavating earth in their alignments. These drains may run parallel to road or across the catchments 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 lined or channeled by brick works. Tertiary drains deliver its discharge usually to secondary drains. A typical tertiary drain is shown below.



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 study area free from flood.

However, storm water from rainfall-runoff within the area causes localized flood, drainage congestion and submergence. Sketch below shows a few of such structures. A schematic view of drainage sluice, pipe sluice and siphon on embankment, which relieve drainage congestion presents below.



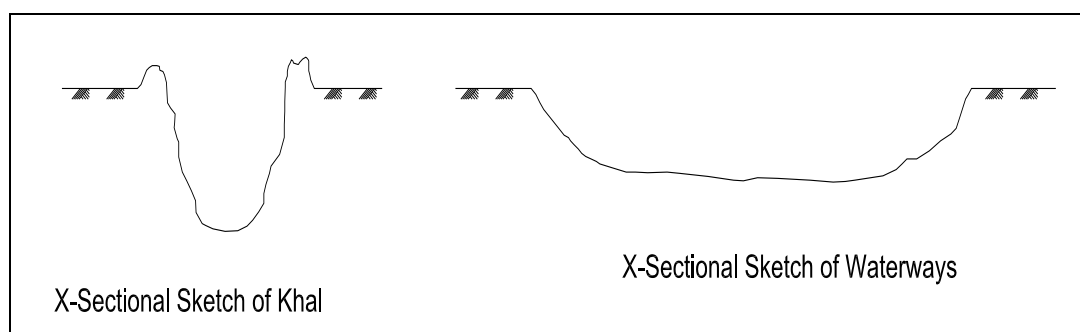
Rainfall is the source of storm drainage water irrespective of urban or rural catchments. Average annual rainfall in Dohar is about 2000mm. After infiltration, deep percolation and evaporation is about 50% of this rainfall water takes the form of drainage water for semi-urban and urban areas.

Sluice gates, Regulators and Navigation locks: These types of structures are provided on the flood control embankments. Sluice gates are functioning to vent out water from the countryside to the river. Flap gates are generally installed in the riverside so that river water cannot enter into the main land. On the other hand whenever the river water level becomes low and countryside water level is high, countryside water drains out through sluice.

Regulators also serve the similar purpose as sluice gates; however the size of regulators is much bigger than sluice gates. Regulators may have control gates in the countryside and in the riverside. Drainage of water to the river or flashing of water into countryside are possible by operating simultaneously countryside and riverside mechanical gates. Navigation lock sometimes is provided on the flood embankment to allow boat and ferry passages from the river and from the countryside. It is a simple structure with bigger chamber and large lift gates both at riverside and countryside. By operating these gates, boats and river crafts can be transferred from the river to countryside and vice versa.

Reservoirs: Large tanks, ponds, Dighis, lakes, etc. serve as immediate detention areas for storm water. Those structures are man-made and also natural; may be privately owned or government-owned or khas land. These structures function as drainage relief and source of water for emergency use, fisheries, duckeries, environment and nature preservation. For every mouza such reservoir is available. Physical feature survey maps and field survey maps (tank, pond and reservoir) show the existence of reservoirs and database shows their dimensions. Those structures should not be disturbed or removed by physical interventions by fillings or other means rather should be properly maintained and preserved.

Drainage Khals and Waterways: Khals and waterways are natural channels and act as drainage elements. In every mouza more or less such natural channel, khals and waterways carry the excess storm water to the connecting river lying further in the down stream. Sometimes old and silted-up khals are re-excavated to improve drainage efficiency. Most of the natural khals carry the local storm water particularly runoff from the Mouza / Mouzas those it passes through. Khals are narrow and deep in cross-sections; on the other hand waterways are shallow and wider. Physical feature survey maps, field survey maps (river, khal / drainage) show the drainage khals and waterways and their database shows the dimensions. The sketches below show the sectional view of khals and waterways.



## 12.2 Existing Drainage Network

### 12.2.1 Introduction

Existing drains in the Paurashava have not formed any network; only household centered construction to drain out waste water. Existing River, Canal, pond and ditches are trying to manage the drainage requirements. Lack of drainage network is causing water logging in the Paurashava area when it rains. All drainage networks require to be developed with primary, secondary and tertiary drains to mitigate the current water logging problem.

Further development of drain should follow the bulk density and construction is being proposed in the Drainage Plan. Length, width and depth of the drain have considered according to the density of population, road width and out falls. Slope of the drain should be maintained according to the slope of the area and the level of river water according to the seasons.

### 12.2.2 Existing Drainage System / Network

**Natural Drainage System:** There are 561 ponds, 435 ditches, 6 natural khals and a river covering 295.40 acres area of Dohar Paurashava. Existing canals are trying to serve the drainage requirements of the Paurashava. The entire drainage network is required to be developed with primary, secondary and tertiary drains to mitigate the water logging problem. There are linkages between natural and man-made drainage system. But how much effective and active the linkage is with the poorly maintained man-made drains is a question. Almost half of the depth of the man-made drain is filled with solid garbage; as a result, the channel is not properly functioning.

**Table 12-4: Summary of Water Bodies in Dohar Paurashava**

Water Bodies	Nos.	Area in Acre	% of Total Water Body
Pond	561	110.28	37.33
Ditch	435	37.36	12.65
Khal/Canal	6	49.59	16.79
River	1	98.17	33.23
Total	1003	295.4	100.00

Source: Physical Feature Survey, 2010

#### **Man-made Drains:**

The existing man made drainage network condition in the Paurashava has been highlighted in Table 6.6. These man-made drains are both Katcha and Pucca. Out of these nine Wards, Ward No 01, 02, 03, 04, 06 and 08 has Pucca drains. The Quality of these drains are very poor and without cover. It is mostly open drains. The total length is 2.72km. Total of 2.72 km of Pucca drain comprise in the man-made drainage network of Paurashava. Dohar Paurashava has 84 box culverts and 18 pipe culverts for maintaining the flow of natural flow of rain water.

## **Map 12-1: Existing Drainage Network of Dohar Paurashava**



## **Map 12-2: Land Level of Dohar Paurashava**





**Table 12-5: Existing man-made drains of the Dohar Paurashava**

Sl. No.	Types of Drain	Length (km)
1	Pucca Drain	2.72
2	Katcha Drain	-
<b>Total</b>		2.72

Source: Drainage and Environment Survey, 2009

Survey study demonstrates due to lack of proper planning of drainage central part, especially the bazaar road area, has the inundation problem. The average width of drain is 0.76 meter.

The drainage condition, the serviceability, structural conditions, obstruction, situation, blockage are all found in the man-made drain network. The bad or poor drains usually had damaged side walls, surfaces with obstruction, debris, solid waste, irregular water way etc.

All pucca drains are linked with the natural water bodies like canal and river as an outfall. As a result, waters of the river and canals are polluting through those discharging elements. This is the natural scenario of the country.

### 12.2.3 Analysis on Land Level Topographic Contour

The study area of Dohar Paurashava has been surveyed with RTK-GPS/DGPS and Total Station as per specification for spot interval given in the ToR. For this 199817 spot values were collected for the study area. A contour line/contour joins points of equal elevation (height) above mean sea level. A contour map is a map illustrated with contour lines which shows valleys and hills, and the steepness of slopes. The contour interval of a contour map is the difference in elevation between successive contour lines. The lowest spot height is 0.5 m PWD and the highest spot height is 11.624 m PWD. Average height of land of the surveyed area is 4.425 m PWD. Details of Land Levels and spot value are shown in the Table-12.6 and Table-12.7 below:

**Table 12-6: Spot Value and their Unit (Number of Spot (Z) Value and their Statistics)**

Sl. No.	Spot Unit	Value
1	Total Spot Number	1,99,817
2	Mean (Meter)	4.425
3	Maximum Height (Meter)	11.624
4	Minimum (Meter)	0.5
7	Standard Deviation	1.978

Source: Topographic Survey, 2009

**Table 12-7: Spot Interval and Frequency**

Sl. No.	Spot Interval	Spot Number (Frequency)	%
1	1.984 - 2.392	26071	13.05
2	2.393 - 2.652	3799	1.90
3	2.653 - 2.934	21926	10.97
4	2.935 - 3.250	36043	18.04
5	3.251 - 4.516	9203	4.61
6	4.517 - 4.969	879	0.44

7	4.970 - 5.401	7080	3.54
8	5.402 - 5.794	22889	11.45
9	5.795 - 6.164	23884	11.95
10	6.165 - 6.502	48043	24.04
Total		199817	100

Source: Topographic Survey, 2009

From the spot level values having the x, y and z values being determined for the surveyed area, a contour map of the surveyed area has been prepared. The dense contour areas were generally high lands, which are shown in Map 12.2. Medium dense contour areas were medium high land and low land area generally less dense contour value lands.

It is quite true that there would be some similarity between contour description and appearance with land level. Wherever, the contour map showed very few contours, its appearance was then white or blank and these were flat land areas. The flat lands may be medium high, medium low and lowland. The medium high lands exist with medium spacing of contours in all over the surveyed area. From the map 3.1 it is shown that Topography of different wards of Dohar Paurashava is almost same to mean elevation. In this connection, ward 03, 05 and 09 are of medium elevation (between 9.93m to 2.00m). On the other hand, a major portion of ward 07 has high elevation (11.02m). Summary result of contours generated is presented in table 12.8.

**Table 12-8: Contour derived from the spot elevation**

Sl. No.	Contour Unit	Value
1	Total Contour Number	12117
2	Mean (Meter)	4.14
3	Maximum Height (Meter)	10.5
4	Minimum (Meter)	0.6
5	Standard Deviation	1.52

Source: Topographic Survey, 2009

#### 12.2.4 Analysis of Peak Hour Run off Discharge and Identification of Drainage Outfalls

The rainy season occurs mainly from June to October. In 2009, the Paurashava had experienced 1875 mm rain of which about 72% occurred during the monsoon. The dry season extends from November to March and is cool and almost rainless, receiving less than an average of 120 mm for the total 5 months period. The duration of maximum rainfall was 16 days in July and the duration of minimum rainfall was 2 days in the month of November, December and January.

No peak hour run off storm water discharge is found. During rainy season, rain water is being drained through the natural drains. All pucca drains are linked with the Canals, rivers, ponds and natural water bodies as an outfall. As a result, waters of the river, canals and other water bodies are polluting through those discharging elements.

## 12.3 Plan for Drainage Management and Flood Control

### 12.3.1 Plan for Drain Network Development

Drainage network in the Paurashava is mostly under govt. initiative. There is no well organized, well constructed drainage pattern / network encompassing all the Wards of the Paurashava. Whatever drainage network that exists is mostly constructed by the Paurashava authority. Drainage aspects plays a vital role in clearing waste water but the survey finds most of the drainage network unable to function due to poor maintenance, design, debris accumulations and faulty gradients. Drainage must receive image priority in Ward Action Plan as water logging within selected places of Paurashava is saver, therefore, planning options for drainage of the future Paurashava area including Water Development and Flood Control Projects, should be seriously pursued. The present inefficient drainage needs to be well designed encompassing all the Wards right from household level to main road. There is no drain for household storm waste. Existing open drains are being obstructed with rubbish and reduce the discharge facilities, creating health hazards.

#### 12.3.1.1 Drain Network Plan

There is no natural canal in the Paurashava, So, there is a need to develop a planned drainage network. The activity for the relevant authority will be assisted by the preparation of the drainage master plan for the Paurashava which details the necessary corridors, sizes and generalized locations for:

- Primary Drain
- Secondary and tertiary drain
- Storage ponds
- Silt traps
- River embankment

Initially, the Paurashava will encourage implementation of the first phase recommendation of the drainage master plan. A brief summary of the proposals to be undertaken in Phase-1 is given below. Reference should be made to the Map for identification of the drainage areas referred in the text.

#### Phase-1 (Storm water drainage)

Improvements and the removal of obstacles from existing drainage areas and link up of the missing link of existing drainage. Conservation of all ditches and ponds above 0.25 acres for retaining the storm water under “**Play field, Open space, Park and Naural Water Reservoir Conservation Act, 2000**”. Mouza schedule for waterbody conservation has annexed in **Annexure-G**. Construction of new secondary and tertiary canals in drainage where necessary. The provision of flood control regulators in drainage areas marked as in the map.

#### Phase-2 (Rain water and household drainage)

- Construction of surface drain linked with the residences, may be covered or uncovered.
- Provide linkages with secondary and tertiary drains.

- Out-fall of such drains may be nearby low-lands and river.
- For discharging of rainwater from commercial areas, covered surface drain may be constructed and they will be linked with the secondary and tertiary canals.

### 12.3.1.2 Proposal for Improvement of the Existing Drain Networks

A wider scope for construction of a drainage system may be provisioned in the Paurashava. At least central areas are open for such development immediately and other areas may be followed for projected period as designed in the plan. Except the core area the Paurashava has wide scope for imposing drainage system. The principles required for drainage plan are available in the area. Land slope, nearness of the natural drainage, sparse population density and soil condition are in favour of drainage construction.

Drainage corridors: If a drainage network has to be installed, the drainage originating throughout the Paurashava would be carried by means of surface drains and culverts. These should be accommodated within road reserves.

**General location required:** For sewerage treatment plant, large plot will be needed, preferably on outskirts of the Paurashava. For sewerage pumping station, small plots throughout the Paurashava will be needed and a system should be introduced.

Maintaining of land slope: Important component of the drainage network is land slope, which was not maintained during the construction of existing drains. The slope of the Paurashava is found towards north-west to south-east. Slope of all drains should maintain this direction.

### 12.3.1.3 List of Proposed New Drains

For the removal of existing drainage congestion and provisioning of effective drainage system, a planned drainage network has been proposed. which are shown in the map 12.3 shows. A number of new primary and secondary drains have been prescribed. In the Paurashava, existing length of the drain is 6.10km. and about 145.69 km drain is being proposed of which 23.13 Km are primary drain, 87.68 Km are secondary drain and 34.88 Km are tertiary drain (**Annexure-E**). To develop a network, all Wards have been considered and in some places emphasize has given providing on missing links rather than new. These network should be develop with the development of the road network.

**Table 12-9: List of proposed new drains**

Sl.No	Type	Length (m)	Width(M)
1.	Primary	23126.38	3m and above
2.	Secondary	87676.09	1-3m
3.	Tertiary	34884.94	less than or equal 1 m
<b>Total</b>		<b>145687.41</b>	

## **Map 12-3: Proposed Drainage and Flood Control Components**



#### 12.3.1.4 List of Infrastructure Measures for Drainage and Flood Control Network

Different types of bridges and culverts have been identified from the physical feature survey. There are altogether 18 Bridge and 84 culverts (Box and Pipe culverts) in the Paurashava. Those culverts are located on the river, major canals and drainage channels.

No remarkable flood occurred during over the years at Dohar Paurashava. Water logging is common, dyke is an important issue for this Paurashava, but there is no dyke or embankment in the Paurashava.

Except the above infrastructure, more 2 bridges and 45 culverts will be needed on different proposed roads as presented in the map. Two sluice gates have been proposed to control intrusion of river water through the drain. Road cum embankment has proposed on both side of the Lauhajang River for prohibiting flood water intrusion.

**Table 12-10: List of existing and proposed infrastructures for drainage and flood control**

Name of infrastructure	Existing (No.)	Proposed (No.)
Bridge	18	2
Culvert/PipeBox	84	45
Sluice Gate	0	0
Flood Wall	0	0
Road cum Embankment	0	0

The utility services and facilities which are related to drainage and environmental management are shown in the table 12.11.

**Table 12-11: proposed new utility services.**

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area in Acre
Dumping Site	1	Latakhol_043_01	2 part, 3 part, 5 part	2.10
	4	Latakhol_043_01	13, 14 part, 15, 176, 177 part, 178 part, 179 part	2.89
Slaughter House	1	Joypara_057_03	3820 part	0.10
Public Toilet-1	1	Latgakhola_043_01	798 part, 799 part, 800 part	0.23
Public Toilet-2	1	Latgakhola_043_02	2595 part	0.08
Public Toilet-3	9	Sutarpara_063_01	1086 part	0.16
Waste Transfer Station-1	2	Joypara_057_01	352	0.45
Waste Transfer Station-2	3	Khalpar_058_02	1487-1789	0.60
Waste Transfer Station-3	8	Modhurchar_068_01	256	0.23
Water Station	1	Latakhol_043_02	2722-2723	0.24
<b>Total</b>				<b>7.08</b>

## 12.4 Plan Implementation Strategies

### 12.4.1 Regulations to Implement the Drainage and Flood Plan

The regulations which will be needed for the implement of drainage and flood plan are:

1. Section 3 of the Acquisition and Requisition of Immovable Property Ordinance, 1982 is needed for acquisition of land in view to construct drainage and flood control components. The Water Development Board, according to the demand, will apply to the Deputy Commissioner for such acquisition.
2. Water Development Board Ordinance, 1976 delegate power to the Water Development Board for construction of embankment. To control intrusion of flood water and improvement of drainage facilities, the Board is empowered to take necessary actions according to the regulations prescribed in the Ordinance.
3. Irrigation Act, 1876 has prescribed regulations for the improvement of irrigation facilities through the improvement of drainage facilities in view to increase agriculture production. Deputy Commissioner may enforce any regulations prescribed in the Act necessary for irrigation facilities.
4. Canal and Drainage Act, 1872 has enacted for excavation of canal and removal of drainage congestion from agriculture land. The Deputy Commissioner may authorize any person, through a written approval, for excavation of canal in view to improve irrigation facilities for agriculture practices.
5. Public Health (Emergency Provision) Ordinance, 1944 has enacted for the improvement of drainage and sanitation facilities. Department of Public Health Engineering (DPHE) is authorized to enforce the regulations prescribed in the Ordinance. The government approves project for DPHE mostly for the improvement of drainage and sanitation facilities in urban areas.

#### **12.4.2 Implementation, Monitoring, Evaluation and Coordination of the Plan**

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

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

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

**Implementation through Development Control:** Landuse zoning is one of several methods of plan implementation to be considered. In all cases where some form of



development, landuse control may be applied; careful consideration requires the following ideologies:

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

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

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

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

#### **Plan Monitoring**

The Urban Area Plan would simply be tools for guiding and encouraging the growth and development of an urban area in a preferred manner. In a rapidly changing urban environment, the Urban Area Plan would require to keep up to date. If this is not done,

within a few years it will be obsolete. Therefore, it is imperative that the requirement for regular updating of the Urban Area Plan be made a legal requirement.

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

### **Evaluation**

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

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

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

### **Co-ordination**

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

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

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

In spontaneous areas, while all out people's co-operation is needed for project implementation; there will also be some elements of negotiation. Negotiation will be particularly needed in case of road widening projects. It will be a crucial task for Paurashava to convince the affected people to give up their land for road use. Efforts

should be made to convince the land owners on the ground of enhancement of property value due to road widening. In case people refuse to offer land free of cost necessary arrangements may have to be made for payment of compensation. This process of negotiation will be very critical, cumbersome and time consuming, and therefore, has to be handled with utmost care and patience. The best results can be accrued only by winning people's confidence. In case the authority fails to get peoples co-operation they should exercise power of compulsory acquisition of land. Attempts may be made to engage NGOs / CBOs to work as catalysts in negotiation.

## **12.5 Environmental Management Plan**

### **12.5.1 Introduction**

The plan has documented Dohar Paurashava area's environmental conditions, determines potentiality for present and past site contamination (e.g., hazardous substances, petroleum products and derivatives) and identifies potential vulnerabilities (to include occupational and environmental health risks).

### **12.5.2 Goals and Objectives**

Based on the information and data on the air, water, noise, soil, drainage congestion, river erosion, garbage disposal and industrial and clinical wastes an effective and action oriented plan is required as prescribed in the ToR. Preparation of environmental management plan is the ultimate goal of this study.

### **12.5.3 Methodology and Approach to Planning**

Environmental survey has conducted following the standard methods and procedures to determine environmental pollutions. Elements of pollutions of environment are air, water, land and noise for the development of urban areas. The Consultants have taken necessary assistance and information from the Paurashava Mayor, Councilors, Engineers and other concerned officials as well as the general inhabitants to determine pollution in air, water, land and noise. Based on the information and data collected from the field and secondary sources, detailed report has been prepared. Data collection format and questionnaire was approved by the PD of UTIDP, LGED. The data collection procedure incorporates discussion meeting with the Paurashava Mayor, Councilors and other Paurashava representatives. Discussions were also made with other GOs like DPHE, BADC, etc. and NGOs representatives working in the Paurashava.

## **12.6 Existing Environmental Condition**

### **12.6.1 Introduction**

The Paurashava is a part of Dhaka district. Some information has collected from secondary materials and they are on geology, soil and sub-soil condition, climate, temperature, humidity, rainfall, wind direction and hydrology. Other relevant information is being collected from field survey and they are mostly on the environment pollution. Those information presents sequentially in the following paragraphs.

## 12.6.2 Geo-morphology

**Geology, Soil and Sub-soil Conditions:** Dohar Paurashava falls in the region of old Brahmaputra floodplain. In 1787, a remarkable change in the course of the Brahmaputra took place. In that year, the river shifted from a course around the eastern edge to the western side of the Dohar Tract. This new portion of the Brahmaputra is named Jamuna. The old course (Old Brahmaputra) between Bahadurabad and Bhairab shrank through silting into a small seasonal channel only two kilometers wide. The old river had already built up fairly high levees on either side over which the present river rarely spills. The old Brahmaputra floodplain stretching from the southwestern corner of the Garo Hills along the eastern rim of the Dohar Tract down to the Meghna exhibits a gentle morphology composed of broad ridges and depressions. The latter are usually flooded to a depth of more than one meter, whereas the ridges are subject to shallow flooding only in the monsoon season.

The ridge soils are medium to moderately fine textured, weakly to moderately structured, friable and easy to cultivate. The basin soils are usually fine textured and the surface soils set into very large hard clods on drying out during the dry season. Deep, fine and coarse textured soils as well as the very shallow phases of medium textured soils have only low amounts of plant available water. These soils, because of their low moisture storage capacity associated with very low rainfall yields of Robi crops. Other soils with a deep, heavy loam profile have much higher amounts of plant available water, ranging from 8-12 inches in 40 inches deep soil profile.

Soil types, strength and density characteristics based on Standard Penetration Test Values (N) have been mentioned for the different types of deposits at various depths.

Cohesive silt and clay layers having N-values less than 4 are very soft to soft and are not considered suitable to support any civil engineering structures without ground improvement. There are only a few areas near the waterfronts with such low N-values in the surface underlain by comparatively strong clay and sand soil strata. Sand layers with variable quantities of silt/clay having N-values less than 10 are considered very loose to loose. In a few locations such weak sandy layers occurred. They occurred usually in the surface layers.

The natural clay soils of investigated area can be divided into two major groups distinguished by their colours as under:

Red clay : Light brown to brick red and massive, containing ferruginous and calcareous nodules.

Mottled clay : Earthy grey with patches of orange, brown colour, massive and contains ferruginous and calcareous nodules.

Again, in the filled up areas (along the National Highway, from Dhaka to Kartikpur via Dohar) there are mixtures of many coloured soils carried from different borrowing areas. Consistency of cohesive soil deposits (plastic silts and clays) and relative density of cohesion less soil deposits (non-plastic silts and sands) have been described in

accordance with internationally accepted terms, which give approximate indication of strengths of the soil strata encountered at different depths.

**Table 12-12: SPT N-Values**

Consistency	SPT N-value	Allowable bearing Capacity (kPa)
Very soft	0–2	< 25
Soft	2–4	25–50
Medium	4–8	50–100
Stiff	4–15	100–200
Very stiff	15–30	200–400
Hard	> 30	> 400

For plastic silts and clays consistency terms like very soft, soft, medium stiff, stiff, very stiff and hard indicate the following approximate allowable bearing capacity of the different soil strata estimated on the basis of SPT N-values.

For cohesion less soil deposits (non-plastic silts and sands) relative density has been described with terms like very loose, loose, medium dense, dense and very dense on the basis of SPT N-values measured in the different cohesion less soils strata encountered within the explored depth of 15m. These relative density terms give the following approximate strength characteristics based on SPT N-values.

**Table 12-13: Strength Characteristics**

Relative Density	SPT N-Value	Estimated Shearing Angles	Strength Characteristics
Very loose	> 4	28°	Very poor
Loose	4–10	30°	Poor to fair
Medium dense	10–30	32°	Fair to good
Dense and Very dense	> 30	34°	Good to excellent

### Climate

The Paurashava of Dohar has a pronounced tropical monsoon climate. The mean temperature ranges from about 33.9°C in April to about 11.4°C in January. Mean annual temperature is about 25.6°C. Average annual rainfall is about 2148 mm of which occurs in seven months from April to October. Physically the Paurashava is characterized by alluvial formations caused by Shahebkhali River. The maximum temperature recorded in April is 33.9 degree Celsius and minimum temperature recorded in January is 11.4 degree Celsius.

### Temperature

Dohar Paurashava had three distinct seasons: winter (November-March), dry with temperature 11.4° to 18.7°C; the pre-monsoon season (April-May), gradually increasing rain and hot with temperature reaching up to 33.9°C; and the monsoon (June-October), very wet with temperature around 32°C.

### **Humidity**

Dohar Paurashava lies in the tropical monsoon climatic region and more specially, represents the climate of Dhaka district. Average annual rainfall is about 2148 mm of which occurs in seven months from April to October. The dry season extends from November to March and is cool and almost rainless, receiving less than an average of 120 mm for the total 5 months period. March to May is the pre-monsoon season, with high temperatures and periodic thunderstorms and the monsoon (June-October) is very wet season with heavy rains in regular interval.

### **Rainfall**

Dohar Paurashava lies in the tropical monsoon climatic region and more specially, represents the climate of Dhaka district. The rainy season occurs mainly from June to October. The dry season extends from November to March and is cool and almost rainless, receiving less than an average of 120 mm for the total 5 months period. April to May is the pre-monsoon season, with high temperatures and periodic thunderstorms. The maximum temperature recorded in April is 33.9 degree Celsius and the minimum temperature is 11.4 degree Celsius in January.

In 2009, the Paurashava had experienced 1875 mm rain of which about 72% occurred during the monsoon. The duration of maximum rainfall was 16 days in July and the duration of minimum rainfall was 2 days in the months of November, December and January. So it had rained in all the months of that year.

### **Wind Directions**

In Dhaka district, general direction of the wind is same as Jamuna Basin, south-west changing to east towards the head of the valley for the greater part of the year, with a north and north-west direction during the month of April and May. It is observed that winds are stronger in summer in the months of April and May (3 to 6.5 knots) than in winter in the month of November and December (1.5 to 3.0 knots).

### **Hydrology**

River, Canal/ Khal and pond are the hydrological components of the Paurashava. Those components are occupying 176.3 acres land of the Paurashava. The canals are linked with the rivers Paurashava surrounded by. In dry season, most of those canals are using as agriculture land and in the rainy season they submerges lowlands of the Paurashava. The ponds are spottedly located around the Paurashava. Small numbers of them are larger than one acre. In dry season, ponds water are using for bathing and washing purposes. Canal water generally uses for irrigation purposes.

## **12.6.3 Solid Waste and Garbage disposal**

### **12.6.3.1 Household Waste**

Condition of solid waste management system is not satisfactory. In fact, there is no waste management system exist in the municipality. People are found to dispose their waste to the nearby low land, ditches, drains or in the vacant land. There is no dustbin all over the municipality. People are dumping waste scatterdely, so there is need to develop a community based solid waste management system. Paurashava has not a planned dumping site. So

there is risk of land and water pollution. There is good opportunity of involving NGO and CBO in this process.

#### **12.6.3.2 Industrial Waste**

No industrial waste available in the Paurashava.

#### **12.6.3.3 Kitchen Market Waste**

Kitchen market waste is being dumped on the low lands available around the market.

#### **12.6.3.4 Clinical / Hospital Waste**

Existing health facilities are poor in number. There is no arrangement for clinical waste management in the Paurashava. The clinics and hospital used to dump solid wastes here and there or nearby ditches. This activity may bring serious health hazard to the inhabitants specially the nearby dwellers.

#### **12.6.3.5 Waste Management System**

Solid waste collection and disposal in Dohar Paurashava is the responsibility of Paurashava authority. The logistics for collection and disposal of solid wastes include 15 sweepers for collection and 1 garbage truck for transportation. Solid waste from the point of generation to the final disposal can be grouped into three functioned elements -

- Waste generation and storage
- Collection
- Final disposal

**Waste Generation and storage:** Households within the area are producing 2.00 tons of domestic solid wastes per day.

**Collection:** The waste collection is done in the following three stages:

- The residents themselves take domestic refuses from households to the intermediate dumping points.
- Street and drain wastes are collected and dumped at intermediate disposal points by the municipal sweepers and cleaners.
- Final collection from the intermediate points and its disposal to the dumping yard by the conservancy worker.

**Final disposal:** The authority used to dump in low lands on the basis of land owner's interest or nearest ditches.

#### **12.6.3.6 Latrine**

Toilet system of the study area is mostly categorized as pucca and katcha. In spite of this, Paurashava has a modest development of pucca toilets in government zones. Sewerage system has not been introduced on a trial basis as to their popularity and acceptance. Ownership of toilets varies widely in most of the Wards. Most of the households have their own toilets and at the same time there is joint toilets found in slum areas. Sanitary toilets or pucca toilets are comparatively good in all the Wards. Only 10% katcha toilet is found in the Paurashava and owner of those toilets are poor people.

#### **12.6.3.7 Industry**

Small number of light industrial agglomeration is found in the study area. Industries are located in nine Wards and those are of different types like Handloom industries, Rice mill, Brickfield, Saw mill, Textile mill and Oil mill, Biscuit Factory, Bakery etc. there are also some light industries. From the figure it is apparent that the percentage of Industrial usage at ward 01, 02, 03, 06 and 08 is 35.48%, 35.48%, 3.23%, 22.58% and 3.23% respectively

It is found that those establishments have problems and potentialities. Careful consideration will help to resolve those problems and adoption of necessary policy initiatives will help to flourish the existing units and draw more investors and entrepreneurs to set up new manufacturing industries, which will be based mainly on local agro-products.

#### **12.6.4 Brick Field**

There is only no brickfield is in the Paurashava premises.

#### **12.6.5 Fertilizer and Other Chemical Use**

The fertilizer and chemical uses in the agriculture field for increasing agriculture production are Urea, Potash, Gypsum and Nitrogen Sulphate, Bashudin, Diazinon, Sumithion and Padan. Those chemicals are being contaminated with the surface water and create water pollution. Those chemicals and insecticides are creating water pollution of the River.

#### **12.6.6 Pollutions**

Pollution is the introduction of contaminants into an environment that causes instability, disorder, harm or discomfort to the ecosystem i.e. physical systems or living organisms. Pollution can take the form of chemical substances, or energy, such as noise, heat or light energy. Pollutants, the elements of pollution, can be foreign substances or energies, or naturally occurring; when naturally occurring, they are considered contaminants when they exceed natural levels. The major forms of pollution are air pollution, water pollution, soil pollution and noise pollution.

##### **Water Pollution**

Water is considered polluted when it altered from the natural state in its physical condition or chemical and microbiological composition, so that it becomes unsuitable or less suitable for any safe and beneficial consumption. The used water of a community is called wastewater or sewage. If it is not treated before being discharged into waterways, serious pollution is the result. Water pollution also occurs when rain water runoff from urban and industrial areas and from agricultural land and mining operations makes its way back to receiving waters (river, lake or ocean) and into the ground.

The only source of drinking water in this Paurashava is ground water, which is extracted at the household level by tube-well. According to the report of Ground Water Task Force under Ministry of LGRDC (July, 2002) Dohar Paurashava is still Arsenic Safe. Presently, there are 2820 tube wells in the Paurashava. The report of CDIP under DPH (30



September, 2002) say that 42% tube wells are arsenic free, 49% are slightly arsenic free, 5% tub wells are arsenic contaminated and 4% tube wells are out of order. Iron is also a source of ground water pollution. About 20-30% tube wells are found with iron contamination. Survey found no salinity problem in its ground water. According to environmental study 2009 and collected data from Department of Public Health and Engineering (DPHE), water table fluctuates in the wet and dry season. In the wet season ground water table found within 15-20 ft and in the dry season it goes down to 35-50ft. The Paurashava also have drainage problem which create water logging as well as water pollution. Dohar Paurashava has no sufficient number of waste bins and dumping place for garbage management so this creates severe air and water pollution.

As Dohar Paurashava has no industry that could contribute to surface water pollution, there is no significant event of surface water pollution. Only run-off rainwater from built up area and some toilets directly opened to water bodies are the main cause of surface water pollution but the extent of pollution is trivial. In ward no. 3, mixed line of toilet and water channel is the main reason for surface water pollution.

#### **Air Pollution**

Sources of air pollution in Dohar Paurashava are not much. Survey result reveals that there are only two brickfields in the Paurashava but no other noxious air polluting industries. Only source of air pollution is heavy movement of vehicles on the Dhaka-Kartikpur Highway and the roads in and around the Market area. Paurashava has no medium to large Industry except small manufacturing developments e.g. saw mill, rice husking mill and poultry firms which creates huge column of smoke and hot gases. Air pollution depends on the level of concentration of pollutants in the air. In that consideration smoke of the vehicles cause little difference in the ambient air quality of Dohar Paurashava.

#### **Soil Pollution**

Soil pollution is basically about contaminating the land surface of the earth through dumping urban wastages indiscriminately, dumping of industrial waste, mineral exploitation and misusing the soil by harmful agricultural practices.

Soil pollution is occurring from extensive use of fertilizer in the agriculture lands and water logging. Extensive use of fertilizer is changing the bio-chemical composition and the lands are losing their productivity day by day. At the same way, water logging for four months in a year is settling non decomposable materials on lands and the lands are being polluted. Water logging, over time leads to the soaking of soils, impeding agricultural production. The water applied in excess as a stock pollutant accumulates in the underground hydrological system and causes damage to production.

#### **Noise Pollution**

Sound/Noise pollution is basically consists of unpleasant displeasing human, animal or machine created sound that disrupts the activity or balance of human or animal life. A common form of noise pollution is from transportation, principally motor vehicles. Other sources are car alarms, factory machinery, construction work, audio entertainment systems, loudspeakers and noisy people.

Sound pollution is occurred during day time specially three specific areas of this Paurashava. At Thana mour, in front of market area mass people with different transport modes make more noises than other times. Buses from Kapasia Road are putting down passengers in the front of Chandan Bari S. A. Pilot Girls High School (Upazila Intersection). That's why some commercial establishments are developing here gradually and the intersection also turns to a crowded area. Highway Bus Stand is also a crowded area for stoppage of buses and establishment of Hat area besides the intersection. Actually, this bus stand is non-authorized and do not have any specific area coverage. Buses are putting down passengers besides the road. So, there create congestions are the area turns to crowdie.

#### **Other Pollution**

From the field survey it is found that there is no arrangement for waste management. The people are used to dump solid wastes here and there or nearby ditches. This activity may bring serious health hazard to the inhabitants specially the nearby dwellers.

#### **12.6.7 Natural Calamities and Localized Hazards**

A disaster is the tragedy of a natural or human-made hazard (a hazard is a situation which poses a level of threat to life, health, property or environment) that negatively affects society or environment. Disaster can be classified into two categories: natural disaster and man-made disaster. A natural disaster is the effect of a natural hazard (e.g. flood, volcanic eruption, earthquake or landslide) that affects the environment and leads to financial, environmental or human losses. Man-made disasters are disasters resulting from an element of human intent, negligence, or error, or involving a failure of a man-made system.

There is no remarkable cyclone and earth quake occurred in Dohar Paurashava yet.

#### **Water Logging (Area, Duration, Reason, Causes, Etc)**

This municipality has 561 ponds, 435 ditches, 6 natural khals. This Paurashava is advantageous for having the Lotakhola River which accounts for a large portion of total water bodies in the Paurashava. It is an opportunity to use the rivers for draining out the rainwater. According to the environmental survey 2009, Dohar Paurashava suffers from water logging in the rainy season especially in the core area of ward no. 3. This water logging occurs due to blockage of drain. The main reason for this blockage is no or inadequate maintenance of the drains by the Paurashava authority.

#### **Flood**

No remarkable flood occurred during over the years at Dohar Paurashava.

#### **River Erosion**

Paurashava has slight problem of riverbank erosion on the bank of Lotakola River, especially during the rainy season. The occurrence of erosion is mentionable from Trimohon Shallowghat through Postokamuri Purbopara to Baoarkumarjani. Land loss by erosion and river siltation are the two unusual geological conditions that exist in the Paurashava area.

### **Soil Erosion**

In the study area, no remarkable soil erosion data has been found.

### **Fire Hazard**

No fire hazard record is found in the Dohar Paurashava. With the increase of population, chances of fire incidence may increase for offices, institutions, market places and industries. Electric short-circuit is mainly responsible for fire hazards in urban area. Human error may also cause incidence of fire hazard sometimes.

### **Other Hazards**

There is no arrangement for clinical waste management. The clinics, hospitals and diagnostic centers used to dump solid wastes here and there or nearby ditches. This activity may bring serious health hazard to the inhabitants specially the nearby dwellers. There is an up-coming issue of land filling in the Paurashava area which will cause serious problem in the future. Survey team found private initiatives of filling the low lands, water bodies in different places of the Paurashava for developing private housing without any planning intervention.

## **12.7 Plan for Environmental Management and Pollution Control**

### **12.7.1 Proposals for Environmental Issues**

In Dohar Paurashava, noise pollution is occurring from saw mills and rice husking mills. Air pollution is caused by dust emitted from saw mill, rice husking mills and furniture shops. Also flood water and water-logging are creating health hazards. Dysentery, diarrhea, etc. diseases occurs due to Water logging. These above varies are extremely important uses of concern for the Paurashava. Pragmatic planning / solution and proper Drainage Master Plan are very pertinent issues which will be of utmost importance in planning the Dohar Paurashava.

However, implementation of activities like roads, drainage, bridge / culverts, housing and industrial establishments and bazars will radically change the natural topography and landuse pattern. The agricultural land will be converted into urban and semi-urban area. Existing scenic beauty will disappear; water bodies will lost and general slope will be diminished for earth filling due to urbanization. Therefore, in the process of preparation of Master Plan, Structure Plan and Ward Action Plan, consideration of those factors will be made for keeping the natural environment.

For a better living environment above environmental phenomenon should be considered with the systematic planning principles and regulatory measures. With these views, people's awareness should be increased about the fair living environment through different public activities. Arrangement of landuses should be provisioned for all the public and private organizations as their necessities.

#### **12.7.1.1 Solid Waste Management Plan**

Solid waste management is a crucial problem for the Paurashava. The Dohar Paurashava does not have the sufficient capability to handle the huge waste generated by the residents due to narrowness of roads, lack of local collection sites stand as impediments

to waste management. Particularly in informal/spontaneous areas due to existence of narrow roads the garbage trucks can not enter for removal and transshipment of the garbage. In most places there is no road side open space for locating garbage bins. Garbage is often found to be disposed off on low lands. As a result rotten garbage spoils the local environment of the area posing health hazard of the local residents. No dustbin is in the Paurashava whereas the daily waste produced is about 2.00 tons and most of those garbages throw to the nearby low lands. A 4.99 acre dumping site was proposed near at ward 1 and ward 4 of the Paurashava.

For an efficient solid waste management system, it is recommended to engage, CBOs, NGOs and micro enterprises on contract basis for collection and disposal of solid waste and street sweeping.

#### **12.7.1.2 Open space, Wet-land and Relevant Features Protection Plan**

- One central park , stadium, neighbourhood park, playground has been proposed as open space for recreation of the city dwellers.
- The authority named Bangladesh Sports Council in collaboration with the Paurashava authority may construct the stadium. The stadium should use regularly with various programs.
- The land prescribed for tourism development, Bangladesh Parjatan Corporation should be the responsible authority to implement those tourism components. Domestic tourists should be emphasized rather than international in considering establishment of tourism components. Rainwater harvesting will be the major component of this tourism site. This sector can improve economic capability of the Paurashava dwellers rapidly.
- The embankment cum road proposed along both side of the river will control flood water intrusion. As a result, single-crop land (remain wet land in nine months of a year) available in the southern part of the Paurashava will be turned into triple-crop land.

#### **12.7.1.3 Pollution Protection Proposals**

##### **Industrial / Brickfield**

Small number of light industrial agglomeration is found in the study area. Industries are located in nine Wards and those are of different types like Hanloom industries, Rice mill, Brickfield, Saw mill, Textile mill and Oil mill, Biscuit Factory, Bakery etc. there are also some light industries. From the figure it is apparent that the percentage of Industrial usage at ward 01, 02, 03, 06 and 08 is 35.48%, 35.48%, 3.23%, 22.58% and 3.23% respectively. Following proposals have made for protection of industrial pollution:

- All the industries are in mixed-use areas. Some of them will be re-arranged and shifted to the proposed industrial site.
- A green buffer will create around the proposed industrial site; it will separate the area from adjacent landuses and at the same time, environment will be livable.
- In future, the proposed industrial site will also be identified as a site for polluting industry (as identified by the Directorate of Environment). In that, provision of recycling plant should be attached with the individual industry.
- Any brickfield should not be allowed in the Paurashava jurisdiction.

### **Air / Water / Land / Sound**

For a better living environment above environmental phenomenon should be considered with the systematic planning principles and regulatory measures. With these views, people's awareness should be increased about the fair living environment through different public activities. Arrangement of landuses should be provisioned for all the public and private organizations as their necessities.

The Paurashava is rural based urban area. River and ponds and other water bodies still below the danger level of pollution. Let it should not be increased. Still people awareness is possible for reducing contamination of ground water. People may aware about the use of pesticides in agriculture field, solid waste disposal in a systematic manner and improved sanitation facilities.

### **Other Pollution**

At present, control of urbanization and dumping of clinical wastes are the major concern of environment pollution of the Paurashava. Controlled urbanization according to this plan may remove the pollution through urbanization. Control on area / use density, height density and bulk density are the means of pollution protection through urbanization. A specific site within the compound of health services should be provisioned, thus pollution through clinical wastes will be controlled.

## **12.8 Natural Calamities and Regular Hazard Mitigation Proposals**

### **12.8.1 Protection Plans Addressing Natural Calamities**

Change in Topography and Mitigation: The main ground slope of the study area is northeast to southwest direction. Natural topography of the Paurashava has already been changed for urbanization. Implementation of Master Plan activities like roads, drainage, bridge/ culvert, housing and industrial estates, bazars and growth centers will radically change the natural topography and landuse pattern of the study area. Agricultural area will be converted into urban and semi-urban area. Present green scenic beauty will disappear, water bodies will be lost and general slope will be diminished for earth filling due to urbanization.

1. Careful planning will be needed to minimize the change of topography.
2. Avoid water bodies during planning 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 Paurashava.
5. Preserve the Beels with demarking buffer distance.

Landuse Change and Mitigation: Major portion of the study area is rural setup, with predominance of agricultural landuse. However, urban and semi-urban landuses are observed in the Paurashava and its surrounding areas. With implementation of the Master Plan, rural setup and agricultural landuse pattern will be changed radically into urban landuse type.

1. Keep water bodies and productive agricultural land free from urban development as long as possible. Vertical development may be encouraged rather than horizontal.
2. Careful planning is necessary to reduce change of agricultural land use and rural setup.
3. Economic use of land should be emphasized.

**Drainage Congestion and Mitigation:** Drainage congestion may increase further with urban sprawl development. Faulty design, solid waste and rubbish dumping, encroachment and un-authorized structures, siltation, lack of renovation and re-excavation are the main causes of drainage congestion. Drainage system that exists in the study area is not well enough to carry the surface run-off properly. The outlets of these drainage networks are mostly connected with nearest water body. These water body is filling up, as a result, drainage congestion generates. And thus many areas are subjected to water logging during the heavy rainfall causing inconvenience to the people of the area.

1. Make proper drainage network in new area considering the slope and local topographical condition.
2. Remove all unauthorized structures, which developed on drainage structures.
3. Prohibit the people in dumping of rubbish and solid waste in drain.
4. Regular cleaning and maintenance by the concerned authorities.
5. Demarcation of water bodies, which can act as retention pond to avoid water logging from heavy rainfall.

**Groundwater Table Declination and Mitigation:** Fall of groundwater table is a common phenomenon in the study area during dry period (February-May). With expansion of urbanization and industrialization through the Ward Action Plan, the groundwater table may further fall if present tradition of using groundwater is continued.

1. Introduce rainwater harvesting system and use in the study area.
2. Stop land filling of ponds and water bodies to maintain the groundwater level through recharge and leaching process.

**Groundwater Pollution and Mitigation:** Groundwater pollution due to manganese, iron and hardness is a major problem of the study area. With expansion of urban area, more dependency on groundwater sources may increase the pollution level of sub-surface water.

1. Use surface water of Rivers for supply water.
2. Introduce rainwater-harvesting system.
3. Reduce dependency on groundwater.
4. Preserve surface water in ponds, khals, Beels, ditches and rivers for irrigation.

**Noise Pollution and Mitigation:** Although there is no data available on noise pollution of the study area, however, it seems that present noise level does not exceed the Bangladesh Standard. More noisy area may be the Bus Terminal area and Industrial and

Market area. Hydraulic horn of buses and rickshaw bells are the main noise sources in the study area. However, some noises also generate during piling and construction works. Besides, welding workshops, saw mills, musical instruments and blacksmiths are also common sources of noise pollution in urban areas. With expansion of urban area, the noise pollution will be increased for increasing number of motor vehicles, market places, industries, etc.

1. Stop using hydraulic horn in buses, trucks and other motor vehicles.
2. Declare some areas like hospitals, schools, parks, etc. as silent zone.
3. Control abnormally high noise from saw mill, old machines should be repaired or replaced.
4. Foundation of machines should be specially prepared to reduce noise.
5. Special type of silencer may be attached with the machines to reduce noise.
6. Welding and blacksmith workshops can be fenced with glasses to protect the passersby from possible pollution effects.
7. People constantly working in welding and blacksmith workshops should wear earplugs and glasses. Regular medical checkups can be carried out to identify possible health problems.

**Air Pollution and Mitigation:** Present climatic condition of the study area is sub-tropical monsoon. With the implementation of Master Plan this climatic condition is expected to continue if further global climatic change does not occur. However, rainfall may slightly decrease in the study area for cutting of trees and diminishing of green vegetation for urban development. Trees and green vegetation keep environment cool and enhance precipitation and rainfall. Temperature may remain same as present. Urban development keeping vegetation, plants, water bodies and new social forestation in homesteads, educational organizations, roads, embankment and parks will help maintain the climatic condition same as present.

Air-pollution is not a serious problem in the study area. Vehicular emission is also insignificant in the area. Industries are the main sources of air pollution. However, the air pollution will be increased in near future with increase of motor vehicles and industries. With the implementation of Master Plan more industrial zones will be developed which will also induce air pollution in the study area.

1. Use catalytic converter in buses, trucks, taxis and tempos.
2. Use CNG instead of petrol and diesel.
3. Impose ban on movement of sand carrying trucks and conservancy vehicles during office period.

**Loss of Biodiversity and Mitigation:** Urbanization like roads, infrastructure development, housing, commercial places, industrialization, etc. will replace the existing natural green environment to man made environment. Trees will be cut down, water bodies will be filled up and polluted; sugarcane, paddy, banana, papaya and vegetable production will

be reduced and mango garden and bush will disappear for urban expansion in new area. Wild animals, birds and fishes will lose their habitats and as a result a big loss of biodiversity will happen for urban expansion.

1. Avoid critical ecological area and refugee sites from development activities.
2. Aware people for keeping some trees and bushes around the homesteads.
3. Increase tree plantation in roadsides and homesteads.
4. Preserve the Beels for aquatic birds and fishes and some bush areas as wildlife preservation sites.

**Parasitic Diseases and Mitigation:** Parasitic diseases like dengue, malaria and filaria are not common in the project area. However, with the expansion of urban area, the prevalence of these diseases may increase in the project area. During last 3 to 4 years, the country faces dengue problem although this problem was negligible. This problem may happen also in the Paurashava for increasing urbanization and industrialization.

1. Regular mosquito eradication program in the project area.
2. Dengue carrying mosquitoes live in fresh water of tire, cans, bottles and flower tubs. Segregation of old tires; cans and bottles are required before dumping.
3. Remove additional water of flower-tubs and refrigerator cans regularly.
4. Improve drainage system and remove waterlogged areas in the project.
5. Regular cleaning of drain and removal of water hyacinth and other aquatic plants are required from ponds, ditches, khals and Beels.
6. Use mosquito net during sleeping at both night and daytime.
7. Increase people's awareness on parasitic diseases and mosquito control.

#### **12.8.2 Protection Plan Addressing Regular Hazards**

- Most of the natural canals and water courses will be preserved and maintained. The ponds larger than 0.3 acres should be preserved as a water reservoir.
- To protect northern and southern part from annual flood, a road cum embankment including two sluice gates will be needed and these will be controlled by the Water Development Board.
- For the removal of drainage congestion, sufficient number of bridges and culverts should be provisioned during construction of roads.
- Indiscriminate land filling for expansion and construction of residential areas and buildings should be controlled with the imposition of agriculture policy.

#### **12.8.3 Protection Plan Addressing Encroachment and Other relevant issues**

- As a measure of protection from encroachment restrictive buffer zone will be created on both sides of natural canals, rivers and other watercourses (if necessary). Walkways and plantation will be needed for the protection of those buffer zones.



- Formation of appropriate legislation on solid waste management will be necessary. People encroaches canal and river through dumping of solid wastes. Encroachment on road, canal and river should be removed as early as possible with the formation of joined collaboration committee. This committee may be formed with the members from Paurashava, LGED, RHD and WDB.
- Using of waste as an unutilized resource and assisting in recycling of waste for conservation of resources and protection of environment.
- Introduces environmental education especially sanitary habits in school curriculum.

## 12.9 Plan Implementation Strategies

### 12.9.1 Regulations to Implement the Drainage and Flood Plan

The regulations which will be needed for the implement of drainage and flood plan are:

1. Section 3 of the **Acquisition and Requisition of Immovable Property Ordinance, 1982** is needed for acquisition of land in view to construct environmental components. The authority, according to the demand, will apply to the Deputy Commissioner for such acquisition.
2. Section 4 of the **Conservation of Environment Act, 1995** have prescribed duties and responsibilities of the Director. Most of those responsibilities are on the control of pollution.
3. Section 5 of the **Playfield, Open space, Garden and Natural Tank in Urban Areas Preservation Act, 2000** will be needed for the preservation of playfield, garden, open space and natural tank of the Paurashava.
4. Section 28 (1, 2 and 3) of the **Forest Act, 1927** has prescribed regulations on village forest, which is necessary for the formation of village / Paurashava forest.
5. **Water Hyacinth Act, 1936** was enacted for preventing the spread of water hyacinth in Bangladesh and for its destruction. It is said in the section 5 that, no person shall grow or cultivate water hyacinth in any garden or in any ornamental water or receptacle. Again, according to the section 8(1) said, with a view to facilitating the discovery or destruction of water hyacinth, an Authorized Officer may, subject to any rules made under this Act, by a notice served in the prescribed manner, direct an occupier of any land, premises or water within a notified area to cause-
  - (a) any branches of trees or shrubs on any such land or premises which overhang the edge of any river, stream, waterway, ditch, marsh, bil, lake, tank, pond, pool or pit to be cut back and any undergrowth or jungle thereon to be removed from such edge, within a distance specified in the notice, or
  - (b) any vegetation appearing above the surface of any such water to be removed from the water, within such period as may be specified in the notice.

6. Section 7 of the **Water Resources Planning Ordinance, 1992** will be needed for the development of water resources available in the Paurashava.

### 12.9.2 Implementation, Monitoring, Evaluation and Coordination of the Plan

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

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

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

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

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

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

**Implementation by Facilitating Private Investment:** Another approach that would be taken by government toward plan implementation will be to guide and facilitate

investments made by the private sector. Government can achieve this with relative ease and at very low cost by setting up a legal and operational framework, coupled with suitable incentives, to facilitate land consolidation, plot boundary readjustment, efficient lay out of plots and provision of local infrastructure by the private sector. The benefits of this approach would be:

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

### **Plan Monitoring**

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

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

### **Evaluation**

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

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

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

### **Co-ordination**

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

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

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

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

## CHAPTER-13

### PLAN FOR URBAN SERVICES

Sensible urban planning is critical to the healthy growth of cities. Unplanned growth leads a number of problems, creating misery for urban dwellers and making remedying of those difficulties. Yet flawed urban planning is little better, or perhaps worse, than no urban planning at all. It is thus important, when taking on such an enormous task as the drafting of an Urban Area Plan for a Paurashava, to ensure that the plan is well considered and likely to be conducive to good health and well-being of the urban dwellers. After completion of the Urban Area Plan under Paurashava Town Infrastructure Development Project, development of the Paurashava will be enhanced following some guiding principles.

#### 13.1 Range and Content of the Urban Services

The Plan for Urban Services covers planning area of Dohar Paurashava for a ten years time-frame (from 2011 to 2021). It also comprises a report and maps.

The Plan concern where services will be located (expected development). It also indicates how the Structure Plan policies will govern the areas and the standard for services calculated (based on the population forecast).

Outline of the Plan gives guidance to the Paurashava how the urban services will be developed and be promoted, maintained with a coordinated manner.

The Plan has been divided into five main parts i.e. existing condition and demand of the services, implementation strategies, proposal, regulations needed for establishment and management of the services, monitoring and evaluation of the plan. Water supply, sewerage facility, electricity, telephone and gas supply are the major concern of this plan.

#### 13.2 Analysis of Existing Condition and Demand of the Services

The Paurashava is too poor in development of urban services. With the development of physical condition of the Paurashava, substantial development will be needed for those services. Drinking water supply, sewerage and sanitation facilities and dumping of solid wastes should be emphasized as primary consideration. People are dependent on hand tubewell for drinking water. Absence of solid waste dumping ground creates health hazards. Absence of covered drain and sewerage system creates sanitation problem in the Paurashava. Those problems should be removed through the proper planning and design.

##### **Water Supply:**

An over head tank with a partial inactive water supply network has found in the Paurashava.

**Gas supply:**

Gas supply is not available in the Paurashava people are dependent on LPG for cooking and other use.

**Solid waste management:**

Solid waste collection and disposal in Dohar Paurashava is the responsibility of Paurashava authority. The Paurashava has only 1 garbage truck and 4 garbage van for collection and transportation of solid waste but no specific site for disposal of them. Households within the area dump solid waste in the nearby dustbins or open space. There is 20 dustbin within the Paurashava.

**Sewerage facility:**

The Sewerage system so far has not introduced in the Paurashava area. Maximum households build individual septic tanks for disposal of human excreta built on own initiatives. At present 94% people of the Paurashava use sanitary latrines. The sewerage system in the study area is to be developed in future with treatment plant.

**Other urban services:**

Waste transfer station, dumping site, public toilet, slaughter house should be considered as urban services.

## **Map 13.1: Existing Urban Services**





**Electricity:** The Rural Electrification Board (REB) at present is providing electricity facility within Paurashava area. The power is being distributed from *Palli Bidyut Samiti* sub-station through transmission line to the Paurashava area.

Electricity poles of different sizes exist in the study area to carry HT and LT line and the total number of poles is 1217. High voltage towers are distributed evenly and transformers are used to transform the high voltage to low voltage for distributing to the clients.

**Telecommunication:** There is a telephone exchange having a capacity of 500 lines maintained by Bangladesh Telecommunication Company Limited (BTCL) in the Paurashava area. There are also mobile phone networks of Grameenphone, Robi, Citycell, Banglalink and Teletalk which cover the entire study area. There are 48 telephone pole and 20 mobile phone tower in the Paurashava.

### Projection

The projection of utility service depends on the population growth and need assessment of the Paurashava inhabitants. After completion of population projection it is found that, population of the planning area will be 86977 in the year 2021. Projection on utility services also depends on present condition of urban services and future demand of those services.

Demand analysis: Existing utility facilities of the Paurashava are not sufficient and established without following any standard. Therefore, Team Leaders of all packages and urban planners from Project Management Office (PMO) have worked out and prepared different standards for projection of future facilities as per the requirement of Paurashava. Following of those standards have considered for the future demand with ensuring the quality and quantity of utility facilities.

**Table 13.1: Standard of utility facilities and future need**

Facility	Standard	Existing Facility (acre)	Requirement (acre)	Proposed Facility including Existing (acre, 2031)
Drainage	As per requirement	-	-	-
Water supply	1.00 acre/ 20,000 population	0.00	5.30	0.24
Gas Station	1.00 acre/ 20,000 population	-	5.30	0
Solid waste disposal	4-10 acres/ Upazila HQ	0.00	4.00	4.99
Waste transfer station	0.25 acres/ per transfer station	-	-	1.28
Electric sub-station	1.00 acre/ 20,000 population	0.18	5.30	0.18
Telephone exchange	.5 acre/ 20,000 population	0.05	2.65	0.05
Fuel station	.5 acre/ 20,000 population	0.06	2.65	0.06
Slaughter House	As per requirement	-	-	0.10
Public Toilet	As per requirement	-	-	0.47
Others	-	2.37	-	2.37
<b>Total</b>		<b>2.66</b>	<b>25.2</b>	<b>9.74</b>

### 13.3 Proposals for Addressing Urban Services and Implementation Strategies

#### 13.3.1 Introduction

Following strategies will be followed for implementation urban services in the planning area:

- Cost for service development will be promoted in phases, based on comprehensive plan for the demarcated entire Paurashava areas. This process will reduce cost.
- Some areas will be targeted as new urban areas where urbanization is likely to be rapid and imminent.
- Except waste disposal all other services (Water Supply, Sewerage, Electricity, telephone and Gas) will be provided by the concerned service giving agencies.

##### **Water supply:**

Location of water treatment plant may be on a large plot (on 0.30 acres of land) with good access, close to source of water. It should be located upstream of any polluting development. **Water reservation tanks** may be constructed on medium size plot in key locations throughout the Paurashava, preferably in an elevated positioning relation to the area it is intended to serve, so as to maintain / increase pressure.

**Sewerage facilities:** Location of **sewerage treatment plant** may be on large plot (on 0.30 acres of land), preferably on outskirts of the Paurashava. Sewerage pumping station may be located on small plots throughout the Paurashava and a system should be introduced.

**Electricity:** Existing **Electricity power station** may be developed into **132/33KV switching station**. These can be accommodated on the plots they serve (industries) or in road corridors.

**Telephone:** There is no need of **telephone exchange** for the Paurashava. If required, it will need a medium size plot (on 0.19 acres of land), unless it also has to accommodate a transmission / reception tower, in which case it will require a fairly large plot. Medium sized plot will be needed for **local exchange**, central to its catchment area. **Street exchange** may be located on small plot in road corridor.

**Gas supply:** The standard for **gas manifold station**, may be located on small to medium sized plot (on 0.30 acres of land) on the main ring. **Upazila regulator station** may be located on small plots throughout the Paurashava. These will be located at the break-off point on the main line, where smaller diameter spurs extend into the area that the gas will serve.

#### 13.3.2 Proposals for Urban Services

For existing urban services, the Paurashava will need to establish a communication with each of the appropriate implementing agencies the following:

- Which of the existing services run, not currently in road corridors, could or should be relocated into road corridors to facilitate planned development bearing in mind the cost implications of doing this?
- The corridor reservations that should be applied to the service networks that cannot be moved.

- The means of establishing and maintaining these reservations, free from other development.
- For future expansions of the networks (in case of sewerage, possibly a new network), the Paurashava will need to establish with the appropriate implementing agency what the future requirements are, so that reservations can be applied and maintained. The Paurashava will need as part of this process:
- Try to ensure that secondary, tertiary and where possible primary networks are located within existing or proposed road corridors to minimize the requirement for separate land reservations. In most cases, it is known that this can be achieved. The likely exception will be primary electricity networks. The scale of this will demand separate land reservations.
- Where this cannot be achieved, agree with the relevant agency about the size of the reservation required, its alignment and approximate time-scale of implementation.
- To adopt the agreed reservation and ensure that it is maintained. When development applications are received which impinge upon this reservation, the Paurashava should not permit the development within the reservation, but ensure that it will be made to setback to the limit of the reservation.

Types of urban services that will need to be considered within the Paurashava are indicated below:

**Water supply:** Within all road area there should be provision of installation of water supply network and about 0.30 acres of land has earmarked for office or relevant activity.

**Solid Waste Management:** A community waste management system has proposed for this Paurashava. Three transfer station with 1.28 acres of land and a dumping site with 4.99 acres of land were proposed for proper solid waste management.

**Sewerage facilities:** If a sewerage network were to be installed, the sewerage originating throughout the Paurashava would be carried by means of underground pipes and culverts. These should be accommodated within road reserves.

**Electricity: Primary networks;** principally 132KV, pylon supported power lines from the existing power stations which will enter the Paurashava at purpose built switching stations. The switching stations will usually be located at the fringe of the Paurashava.

**Secondary networks;** 33KV or 11KV pole mounted power lines, although in cases the 33KV lines can also be pylon mounted. The 33KV lines will originate at the above mentioned switching station and supply power around the Paurashava to smaller switching stations at key locations around the Paurashava where they will be down-sized to 11KV. These, in turn, will supply power to more localized electricity sub-stations. The pole mounted lines can be located within principle road corridors (primary and district distributors). Pylon mounted lines should be allocated their own reserve. **Tertiary networks;** at the localized sub-stations, the 11KV power will be down-sized for distribution to individual premises. Power leaving these sub-stations is usually carried by 415V pole mounted lines. These can be accommodated within road corridors.

**Telephone:** Telephone exchange lines can be either overhead, pole mounted or underground using newer Optical Fiber Cables. Both of these are carried to localized exchanges and then onto small roadside exchanges. From these connections are carried on poles to individual premises. All networks can be accommodated within road reserves.

**Gas supply:** All gas line will be supplied by varying diameter underground pipes. These can be accommodated in road reserves.

**Other urban services:** Waste transfer station, dumping site, public toilet, slaughter house should be considered as urban services.

**Table 13.1: Proposed new urban services.**

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area in Acre
Dumping Site	1	Latakholah_043_01	2 part, 3 part, 5 part	2.10
	4	Latakholah_043_01	13, 14 part, 15, 176, 177 part, 178 part, 179 part	2.89
Slaughter House	1	Joypara_057_03	3820 part	0.10
Public Toilet-1	1	Latgakhola_043_01	798 part, 799 part, 800 part	0.23
Public Toilet-2	1	Latgakhola_043_02	2595 part	0.08
Public Toilet-3	9	Sutarpara_063_01	1086 part	0.16
				0.47
Waste Transfer Station-1	2	Joypara_057_01	352	0.45
Waste Transfer Station-2	3	Khalpar_058_02	1487-1789	0.60
Waste Transfer Station-3	8	Modhurchar_068_01	256	0.23
				1.28
Water Station	1	Latakholah_043_02	2722-2723	0.24
<b>Total</b>				<b>7.08</b>

### 13.3.3 Regulations to Address the Proposals

**Local Government (Paurashava) Act, 2009 (Ordinance No. XLXVIII of 2009)** was enacted on 6<sup>th</sup> October 2009. According to the 2<sup>nd</sup> Schedule, Sl. No. 10, the Paurashava may provide supply of wholesome water sufficient for public and private purposes. Frame and execute water supply scheme for the construction and maintenance of such works for storage and distribution of water.

## **Map 13-2: Proposed Urban Services**



In case of private sources of water supply, it is said that, all private sources of water supply within the Paurashava shall be subject to control, regulation and inspection by the Paurashava. No new well, water pump or any other source of water for drinking purposes shall be dug, constructed or provided except with the sanction of the Paurashava.

The regulations, as discussed above, will be needed for provisioning of drinking water supply both Paurashava and private sources in the Paurashava.

The sewerage facilities may be provided by the Paurashava and Directorate of Public Health Engineering (DPHE). According to the 2<sup>nd</sup> Schedule, Sl. No. 12, of the Local Government (Paurashava) Act, 2009, Paurashava may provide an adequate system of public drains and all such drains shall be constructed, maintained, kept, cleared and emptied with due regard to the health and convenience of the public. All private drains shall be subject to control, regulation and inspection by the Paurashava.

Public Health (Emergency Provisions) Ordinance, 1944 (Ordinance No. XXI of 1944) was enacted in 20<sup>th</sup> May 1944. According to the section 2(e) "public health services" and "public health establishment" include respectively sanitary, water-supply, vaccination, sewage disposal, drainage and conservancy services and establishment maintained for the purposes of such services, and any other service or establishment of a local authority which the Government may by notification in the Official Gazette declare to be a public health service or public health establishment for any purpose of this Ordinance.

Based on the regulation, the Directorate of Public Health Engineering (DPHE) is performing activities for drinking water supply. If DPHE likes to render their service according to the water supply network as presented in this plan, the regulation will be the safeguard for them.

East Pakistan Water and Power Development Authority Rules, 1965 (No. 4-1(E) was prepared and notified in 12<sup>th</sup> July 1965. The Power Development Board (PDB) is empowered for power generation under the guidance of Electricity Act, 1910. At present, PDB and Rural Electrification Board (under the Rural Electrification Board Ordinance, 1977) is performing the role relevant with the electrification of the Paurashava. The existing authorities will be needed for electrification of the Paurashava according to the guidelines presented in the plan.

**Telegraph and Telephone Board Ordinance, 1975 (Ordinance No. XLVII of 1975)** was enacted in 30<sup>th</sup> August 1975. A Telegraph and Telephone Board (T&T Board) was composed through this Ordinance. Section 6(1) of the Ordinance has prescribed the functions of the Board and said, it shall be the function of the Board to provide efficient telegraph and telephone services and to do all acts and things necessary for the development of telegraphs and telephones. In the Paurashava, at present, a T & T Board is performing the functions prescribed in the section 6(1). T & T Board is the sole authority for performing the same and it will be continued in future also. But, the Mobile telephone system generates a revolution in the society. Most of the people are depended on the Mobile phone system. The plan does not consider this system.

### 13.3.4 Implementation, Monitoring and Evaluation of the Urban Services Plan

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

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

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

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

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

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



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

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

### **Plan Monitoring**

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

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

### **Evaluation**

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

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

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



## **CHAPTER-14**

### **WARD ACTION PLAN**

#### **INTRODUCTION**

Mere preparation of Ward Action Plan will not be sufficient due to resource constraint. Securing Right of Way (ROW) for circulation network and utility corridor needs huge funds which cannot be met from public exchequer. To minimize the cost of development Paurashava should involve the landowners in the development process. This can be achieved by declaring some of the developing corridors as concession for development through people's participation where landowners will become development partners and share the development cost through contribution of a portion of their land. Paurashava has to follow Ward Action Plan for those areas utilizing development techniques like Guided Land Development or Land Readjustment. Paurashava has to show strong determination and willingness as this is a very difficult task to accomplish involving hundreds of people. Paurashava has to increase its efficiency and do the work at the appropriate time.

#### **14.1 Background**

There are several patches of land in the Paurashava area where planned development can be achieved through use of different land development techniques. One of those techniques is Land Readjustment Technique, may be practiced for the development of Ward as a Ward Action Plan. The plan prepared for designated areas in conforming to the land development techniques is known as Action Area Plan.

It is also expected that following successful implementation of the Ward Action Plan in one side, management would be more efficient in handling projects and in another people residing in unplanned areas would feel the benefit of such Action Plan ensuring more effective community participation.

##### **14.1.1 Content and Form of Ward Action Plan**

The report has been divided in to five main parts. These are preceded by introductory chapters which explain the approach of the report and provide background with the linkage of Structure Plan and Urban Area Plan. Part two of the report identifies strategies and policies prescribed in the Structure Plan and Urban Area Plan and their uses for the preparation of Ward Action Plan. The chapter also covers prioritization in case of development needs and Ward-wise Action Plan for next five years. Ward-wise Action Plan is being presented in the next part of the report. Proposal, priority tasks and financial involvement with the infrastructural development as a priority basis are the outcome of this part. Implementation guidelines are the key issues of part four. Comparative Advantage of Master Plan and proposals for mitigation of identified issues are the components of last part of this report.

### **14.1.2 Linkage with the Structure and Urban Area Plan**

The Ward Action Plan for the Paurashava has been prepared on the basis of following principles relevant with the Structure Plan and Urban Area Plan:

- Environment friendly sustainable development of the area.
- Town functions to develop as per major landuse zones.
- Effective drainage system through minimum hindrance to Flood Flow zones.
- Safe residential areas at proximity to place of work or major communication routes.
- Smooth and effective functioning of industries, specially agro-based industries.
- Safe yet faster connectivity.
- Develop to serve the surrounding hinterlands.

### **14.1.3 Approach and Methodology**

For the preparation of Ward Action Plan the planning area has been sub-divided into Nine Planning Zones according to the individual Ward. Immediate necessary action will be required for Ward Action Plan and this is the key outcome of Ward Action Plan. Where, what type of action will be required and how the action will be performed prescribed in the plan.

#### **Pro-people Urban Planning**

The Ward Action Planning approach utilizes in the Paurashava Master Plan concentrating mainly on the building of infrastructure and roads to facilitate the movements of vehicles. In this scenario, Paurashava society would become steadily more privatized with private homes, offices and commercial activities, while all-important public component of urban life is likely to slowly disappear.

The landuse and transport interaction for a modern city should be directed toward “Planning for people, not for vehicles, roads or buildings”. Given the problems of alienation, crime, fear of strangers and the breakdown of civic life, it is increasingly important to make cities inviting so that people can meet their fellow citizens face-to-face and experience human contact with those unknown to and different from them directly through their senses. Public life in high quality public spaces is an important part of a democratic society and full life.

#### **Evidence-based vs. Arbitrary Planning Approach**

In the era of globalization, where information on any number of issues and about any number of places is readily accessible, there is no need for localities to continue making the same mistakes as they did when operating in an information and experience vacuum. While urban planning is of course a complicated process, it is also true that some universals exist in terms of what works and what does not. The experiences of urban areas adopting commercial-based and people-based approaches make clear the effects of either method, and many guides are now available on implementing planning approaches that are good for the natural environment and for urban dwellers.

Given the widespread availability of such information, it is highly regrettable that important landuse and transport policy-decisions should adopt either any knowledge-based or scientific analysis. Instead, arbitrary or so-called “common sense” approaches should not be utilized which may favour the rich, including bureaucrats and developers with little concern for the betterment of society overall.

Although, it is a demanding task to represent the complex dynamics of urban landuse changes that are consistent with observable data, significant progress has been made in recent years in the country in forecasting and evaluating landuse change on the basis of dynamic and causal relationships between such factors as transport and landuse, and built environment and socio-economic processes.

With the advance of the knowledge-base and technology-base, detailed and extensive urban form and function data is becoming increasingly available, with great potential to provide new insights for sustainable urban planning which preserves the eco-system and maintains or even increases social equity.

Yet no attempt was made in the preparation of Upazila Master Plan / Landuse Plan (in 1980s) to conduct any analytical or empirical analysis using data related to interactions between the built environment, transport, landuse and other socio-economic processes.

Again, in Paurashava Master Plan, the Geographic Information System (GIS)-based technology is mainly used for mapping and visual displays, which are limited to static displays of past and current data sets. That is, the displays only portray the current state of the system, with neither the reasons given for its condition nor possible alternate futures provided. As a result, policymakers and planners are now facing tremendous difficulties, lacking as they do any insight into future urban growth and the potential impacts of various models.

Hypothetical Planning Approach under Upazila Master Plan / Landuse Plan, no comprehensive data collection exercise was undertaken to estimate landuse requirements for the Paurashava. As a result, all the landuse proposals of that plan were hypothetical in nature, providing no insight into how the actual landuse demand for various purposes will meet in future.

Yet it is not logical to develop a Ward Action Plan, which represents the lowest tier of the planning hierarchy, without providing precise landuse allocations for different functional purposes.

Furthermore, in the Paurashava Plan, a significant portion of existing open space and agriculture land have been allocated for private developers required as per the 2031 population projection. This excess land for property developers is likely not only to create landuse speculation but also indiscipline in future landuse development. More importantly, the preservation of land for open space and agriculture is vital for the health and viability of the Paurashava and its inhabitants.

## **14.2 Prioritization**

Immediate action is being needed for the development of Wards. Those actions are presented here according to the priority:

### **1<sup>st</sup> Priority: Traffic Management and Engineering**

- Improvement of intersections on the regional road, including a ranked program of roundabout construction and a reduced role and operation of Zebra Crossing.
- Removal of bus and non-motorized vehicles stops from junctions, restrictions.
- Better traffic police enforcement and additional resources.
- Adoption of design guidelines for road improvement and for parking and access arrangements in new developments.
- Priority for footpath reinstatement, signing of national standards and corrections to serious local road surface irregularities such as pole-bases.
- Enforcement of development control on the National Highway.

### **2<sup>nd</sup> Priority: Improvement of transport services**

Encouragement of higher quality bus services by allowing higher fares for such services at least from Dohar to Dhaka.

### **3<sup>rd</sup> Priority: Improvement of drainage congestion**

- Improvement of drainage congestion as specified in the drainage plan especially in the areas where the drainage congestion is high.
- Control indiscriminate earth filling which may hamper natural drainage system of the Paurashava.
- Construction of box culverts before road construction/expansion as specified in the drainage plan.
- Remove encroachment from the natural drainage like ponds and rivers.
- Control earth filling activities on natural canals outside the Paurashava boundary.

### **4<sup>th</sup> Priority: Rainwater harvesting**

The ponds indiscriminately located in the Paurashava and their size is not less than 0.3 acre is proposed for rainwater harvesting. At the sametime, solar energy may be produced using those proposed lands.

Implementation of the above mentioned components will be selected as priority project. The priority project comprises all those works identified for implementation during the plan period. These are urgently needed to alleviate existing monsoon flooding and to prevent the risk of inundation. As a result of questionnaire survey to locate areas of flooding and discussions with Paurashava.

The storm water drainage priority project includes the provision of adequately – sized silt traps, removal of obstructions. The major component of work is construction of missing-links to carry water from Paurashava Town Centre to the River.

## **14.3 Ward-wise Action Plan for Next Five Years**

The priority mentioned in the Clause14.2 follows according to the Ward for next five years. Those priorities are the primary steps of development considering the year from 2014 to 2019. Possible ways of financing the Master Plan assumes that:

- Funds for construction of regional road and undertaking flood defence works will be obtained from GoB in the usual way and these will not be directly recovered from the beneficiaries in Paurashava.

- Funds for providing storm water drainage and construction of local road will be provided by loans for capital expenditure. These will be recovered from the Paurashava dwellers, primarily from taxes on property. Various loan conditions have been considered, the most onerous of which is GoB's standard on lending rate is 12.5% per annum interest, repayable over 20 years, including a 5-year grace period. It has been assumed that maintenance costs are directly recovered through local taxation.
- The implementation of Master Plan component will require funding either from grant or from increased local taxes.

#### 14.3.1 Action Plan for Ward No. 1

##### Existing Situation:

It is situated on the north-west part of the Paurashava, Ward No. 2 on the east and Ward No.4 on the south-west. This area consists a major portion of buildup area. Development pressure is comparatively high. Total planning area of the Ward is 384.60 acres. Among the total planning area, 122.14 acres land is under agriculture use, 188.63 acres residential, 9.23 acres commercial and others are in different category. There is a total of 19.71 km road in this ward of which 0.29 km are katcha.

##### Development proposals of Ward-1:

**Landuse Development:** For planned development considering the existing landuse and future demand landuse proposal has made. Within the total area 35.16% land proposed for residential use, only 1.14% are commercial use 24.80% mixed use, 3.40% are education & research, 9.33% agricultural and others are in different category which are shown in the following table.

**Table 14.1: Proposed landuse for Ward no-1**

Landuse Type	Area (Acre)	Percentage (%)
Agricultural Zone	35.88	9.33
Circulation Network	55.06	14.32
Commercial Zone	4.16	1.08
Community Facilities	1.19	0.31
Education & Research Zone	13.09	3.40
Health Services	0.36	0.09
Industrial Zone	0.83	0.22
Mixed Use Zone	95.27	24.77
Open Space	7.60	1.98
Residential Zone	135.41	35.21
Rural Settlement	1.78	0.46
Transportation Facilities	0.89	0.23
Utility Services	2.66	0.69
Waterbody	30.44	7.91
<b>Total</b>	<b>384.60</b>	<b>100.00</b>

The proposed facilities considering the demand of the ward were shown in the following table including phasing. The proposed facilities under different category of land uses are also shown in the following table.

**Table 14.2: Proposed facilities for ward no -1**

Proposed facilities	Phase	CS Mouza Name	Plot No.	Area (Acre)
Tampo Stand-1	1 <sup>st</sup>	Latakhola_043_01	798 part, 800	0.56
Tampo Stand-2	1 <sup>st</sup>	Latakhola_043_01	599 part, 600 part	0.32
		Latakhola_043_02	2595 part	
College-1	3 <sup>rd</sup>	Latakhola_043_01	1312, 1340-1348, 1362	7.37
		Latakhola_043_02	2659-2662, 2676, 2911	
Primary School-1	2 <sup>nd</sup>	Latakhala_043_01	1226-1230	2.48
Community Park-1	1 <sup>st</sup>	Latakhola_043_02	2578, 2593 part, 2594 part	1.93
Dumping Site	1 <sup>st</sup>	Latakhola_043_01	2 part, 3 part, 5 part	2.10
Public Toilet-1	1 <sup>st</sup>	Latakhola_043_01	798 part, 799 part, 800 part	0.23
Public Toilet-2	1 <sup>st</sup>	Latakhola_043_02	2595 part	0.08
Water Station	1 <sup>st</sup>	Latakhola_043_02	2722-2723	0.24
Ward Center	1 <sup>st</sup>	Latakhola_043_02	1616 part	0.05

**Proposal for road development:**

A total of 19.43 km road has proposed for road network development of this ward of which some are new and some are widening. Within all roads 9.84 km road will construct within 1<sup>st</sup> phase. Recommended road network are shown in the following table.

**Table 14.3: Proposed road for ward no-1**

Road ID	Width (feet)	Length (m)	Phase	Type
RS100	40	282.805	1st	W
RS101	40	18.745	1st	W
RS102	40	347.103	1st	W
RS103	40	321.251	1st	W
RS104	40	191.809	1st	W
RS105	40	665.415	1st	N
RS107	40	101.852	1st	W
RA110	20	213.425	1st	W
RA111	20	155.890	1st	W
RS132	40	154.298	1st	W
RS152	40	732.599	1st	W
RS158	40	115.191	1st	W
RL167	30	121.525	1st	W
RL193	30	994.966	1st	W
RA210	20	160.292	1st	W
RA211	20	4.913	1st	W
RA214	20	4.869	1st	W
RA215	20	316.558	1st	W
RA216	20	3.281	1st	W
RA228	20	238.598	1st	W
RA229	20	297.830	1st	W
RA231	20	540.405	1st	W
RA235	20	417.421	1st	W
RA236	20	238.507	1st	W
RA237	20	217.685	1st	W
RA25	20	362.811	1st	W
RS26	40	337.752	1st	W
RL27	30	356.723	1st	W



Road ID	Width (feet)	Length (m)	Phase	Type
RL28	30	352.853	1st	W
RL29	30	234.971	1st	W
RA30	20	55.706	1st	W
RA31	20	244.923	1st	W
RA32	20	236.441	1st	N
RS33	50	601.421	1st	W
RS99	40	201.362	1st	W
RL180	30	823.192	2nd	W
RA208	20	391.168	2nd	W
RA209	20	241.331	2nd	W
RA212	20	196.947	2nd	W
RS23	40	1,891.967	2nd	N
RA230	20	126.880	2nd	W
RA232	20	248.063	2nd	W
RA233	20	262.303	2nd	W
RA234	20	373.406	2nd	W
RS24	40	390.452	2nd	N
RS39	40	280.667	2nd	N
RS92	40	27.110	2nd	W
RL97	30	15.189	2nd	N
RI98	30	1,601.336	2nd	N
RP01	100	1,491.336	3rd	W
RP02	100	364.889	3rd	W
RS164	40	7.205	3rd	W
RL90	30	79.575	3rd	W
RL91	30	36.012	3rd	W
RS93	40	19.372	3rd	W
RL96	30	716.548	3rd	W
Total		19,427.144		

\*Note: W= widening, N= New Road

#### Proposal for drainage development:

A total of 19.43 km drain has proposed for drainage network development of this ward of which almost all are new. Within all drains 4.66 km drain will construct within 1<sup>st</sup> phase. Recommended drains are shown in the following table.

**Table 14.4: Proposed drainage for ward no-1**

Drain ID	Type	Length (m)	Phase
DS100	Secondary	280.674	1st
DS101	Secondary	18.745	1st
DS102	Secondary	347.187	1st
DS103	Secondary	320.309	1st
DS104	Secondary	192.666	1st
DS105	Secondary	665.415	1st
DS107	Secondary	101.852	1st
DT110	Tertiary	212.413	1st
DT111	Tertiary	156.902	1st
DS132	Secondary	154.298	1st
DS152	Secondary	732.599	1st
DS158	Secondary	115.191	1st

Drain ID	Type	Length (m)	Phase
DS167	Secondary	121.525	1st
DS193	Secondary	994.966	1st
DT210	Tertiary	160.292	1st
DT211	Tertiary	4.913	1st
DT214	Tertiary	4.869	1st
DT215	Tertiary	316.558	1st
DT216	Tertiary	3.281	1st
DT228	Tertiary	238.598	1st
DT229	Tertiary	297.830	1st
DT231	Tertiary	540.405	1st
DT235	Tertiary	417.421	1st
DT236	Tertiary	238.507	1st
DT237	Tertiary	217.685	1st
DT25	Tertiary	362.811	1st
DS26	Secondary	337.752	1st
DS27	Secondary	356.694	1st
DS28	Secondary	352.017	1st
DS29	Secondary	235.836	1st
DT30	Tertiary	57.112	1st
DT31	Tertiary	243.517	1st
DT32	Tertiary	236.441	1st
DS33	Secondary	601.421	1st
DS99	Secondary	203.493	1st
DS180	Secondary	823.192	2nd
DT208	Tertiary	391.168	2nd
DT209	Tertiary	241.331	2nd
DT212	Tertiary	196.947	2nd
DS23	Secondary	1,892.548	2nd
DT230	Tertiary	126.880	2nd
DT232	Tertiary	248.063	2nd
DT233	Tertiary	262.303	2nd
DT234	Tertiary	373.406	2nd
DS24	Secondary	389.870	2nd
DS39	Secondary	280.667	2nd
DS92	Secondary	27.110	2nd
DS97	Secondary	14.427	2nd
DS98	Secondary	1,602.099	2nd
DP01	Primary	1,491.336	3rd
DP02	Primary	364.889	3rd
DS164	Secondary	7.205	3rd
DS90	Secondary	80.742	3rd
DS91	Secondary	35.719	3rd
DS93	Secondary	19.372	3rd
DS96	Secondary	716.548	3rd
Total		19,428.017	

**Map 14.1: Landuse Proposal for Ward No. 01**



**Map 14.2: Proposed Road, Drainage and Utility Services Plan for Ward No. 01**



### 14.3.2 Action Plan for Ward No. 2

#### Existing Situation:

It is situated on the north-east part of the Paurashava and Ward No. 1 on the west and Ward No.3 on the east. The major commercial area of the Paurashava is located at the southern part of the Paurashava. Development pressure is comparatively high.

Ward No. 2 is also important for vast agriculture land. Total planning area of the Ward is 407.91 acres. Among the total planning area, 220.87 acres land is under agriculture use, 127.15 acres residential, 13.56 acres commercial, 9.03 acres are industrial and others are in different category. There is a total of 15.31 km road in this ward of which 0.95 km are katcha.

Proposals and Plans for Ward No. 2

**Landuse Development:** For planned development considering the existing landuse and future demand landuse proposal has made. Within the total area 33.33% land proposed for residential use, 2.54% are commercial use, only 0.24% are community facilities and others are in different category which are shown in the following table.

**Table 14.5: Proposed landuse for Ward no-2**

Landuse Type	Area (Acre)	Percentage (%)
Agricultural Zone	147.29	36.11
Circulation Network	38.68	9.48
Commercial Zone	10.28	2.52
Community Facilities	0.94	0.23
Education & Research Zone	3.55	0.87
Industrial Zone	7.01	1.72
Mixed Use Zone	25.92	6.35
Open Space	10.25	2.51
Recreational Facilities	0.27	0.07
Residential Zone	136.07	33.36
Rural Settlement	6.21	1.52
Utility Services	0.46	0.11
Waterbody	20.99	5.15
<b>Total</b>	<b>407.91</b>	<b>100.00</b>

The proposed facilities considering the demand of the ward were shown in the following table including phasing. The proposed facilities under different category of land uses are also shown in the following table.

**Table 14.6: Proposed facilities for ward no -2**

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area (Acre)
Primary School-2	2	Khalpar_058_02	681-683, 691-693, 694-696	2.36
Community Park-2	2	Khalpar_058_02	726 part, 727 part, 728-734, 744-751, 1818	4.38
Slughter House	2	Joypara_057_03	3820 part	0.10
Waste Transfer Station-1	2	Joypara_057_01	352	0.45

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area (Acre)
Ward Center	2	Joypara_057_01	108 part	0.08

**Proposal of road development:**

A total of 14.45 km road has proposed for road network development of this ward of which some are new and some are widening. Within all roads only 3.72 km road will construct within 1<sup>st</sup> phase. Recommended road network are shown in the following table.

**Table 14.7: Proposed road for ward no-2**

Road ID	Width (feet)	Length (m)	Phase	Type
RS100	40	127.439	1st	W
RS101	40	524.280	1st	W
RS105	40	228.227	1st	N
RS106	40	166.214	1st	N
RA109	20	222.698	1st	W
RS152	40	1.325	1st	W
RS162	40	43.872	1st	W
RS163	40	1,286.557	1st	W
RA211	20	83.389	1st	W
RA213	20	188.292	1st	W
RA214	20	176.003	1st	W
RA216	20	218.977	1st	W
RA227	20	244.667	1st	W
RS33	50	209.794	1st	W
RS99	40	0.315	1st	W
RS108	40	546.133	2nd	W
RS140	40	114.883	2nd	W
RS156	40	1,248.136	2nd	W
RS157	40	183.865	2nd	W
RL174	30	489.501	2nd	N
RL181	30	1,288.745	2nd	W
RS24	40	3,741.440	2nd	N
RS39	40	90.228	2nd	N
RL130	30	148.369	3rd	W
RL131	30	93.267	3rd	W
RL182	30	843.950	3rd	W
RL183	30	954.074	3rd	W
RA196	20	326.596	3rd	W
RA238	20	230.902	3rd	W
RA239	20	426.121	3rd	W
Total		14,448.259		

Note: W= widening, N= New Road

**Proposal for drainage development:**

A total of 14.46 km drain has proposed for drainage network development of this ward of which almost all are new. Within all drains 0.71km drain will construct within 1<sup>st</sup> phase. Recommended drains are shown in the following table.



### **Map 14.3: Landuse Proposal for Ward No. 02**



**Map 14.4: Proposed Road, Drainage and Utility Services Plan for Ward No. 02**



**Table 14.8: Proposed drainage for ward no-2**

Drain ID	Type	Length (m)	Phase
DS100	Secondary	123.663	1st
DS101	Secondary	528.056	1st
DS105	Secondary	229.017	1st
DS106	Secondary	165.424	1st
DT109	Tertiary	222.698	1st
DS152	Secondary	1.325	1st
DS162	Secondary	43.872	1st
DS163	Secondary	1,286.557	1st
DT211	Tertiary	83.389	1st
DT213	Tertiary	188.292	1st
DT214	Tertiary	176.003	1st
DT216	Tertiary	218.977	1st
DT227	Tertiary	244.667	1st
DS33	Secondary	222.196	1st
DS99	Secondary	0.315	1st
DS108	Secondary	546.133	2nd
DS140	Secondary	114.883	2nd
DS156	Secondary	1,248.136	2nd
DS157	Secondary	183.865	2nd
DS174	Secondary	489.501	2nd
DS181	Secondary	1,288.745	2nd
DS24	Secondary	3,741.440	2nd
DS39	Secondary	90.228	2nd
DS130	Secondary	146.077	3rd
DS131	Secondary	95.559	3rd
DS182	Secondary	843.950	3rd
DS183	Secondary	954.074	3rd
DT196	Tertiary	326.596	3rd
DT238	Tertiary	230.902	3rd
DT239	Tertiary	426.121	3rd
Total		14,460.661	

### 14.3.3 Action Plan for Ward No. 3

#### Existing Situation:

The Ward is situated at north east side of the Paurashava. Shahebkhali River at the north-west and Ward No. 5 at the southern part of this Ward. It is an urban fringe area. Total area of the Ward is 582.60 acres. Among the total area, agriculture use is 288.01 acres, residential 216.34 acres and 2.66 acres are commercial area. There is a total of 21.01 km road in this ward of which all are pucca and semi pucca.

#### Proposals and Plans for Ward No. 3

**Landuse Development:** For planned development considering the existing landuse and future demand landuse proposal has made. Within the total area 46.00% land proposed for residential use, only 0.24% are commercial use, only 0.01% mixed use,

13.77% industrial zone, only 14.04% agricultural and others are in different category which are shown in the following table.

**Table 14.9: Poposed landuse for Ward no-3**

Landuse Type	Area (Acre)	Percentage (%)
Agricultural Zone	81.71	14.02
Circulation Network	49.55	8.50
Commercial Zone	1.40	0.24
Community Facilities	2.69	0.46
Education & Research Zone	4.47	0.77
Government Office	0.30	0.05
Industrial Zone	80.20	13.77
Mixed Use Zone	0.04	0.01
Open Space	24.46	4.20
Residential Zone	268.29	46.05
Rural Settlement	16.16	2.77
Transportation Facilities	0.06	0.01
Utility Services	0.66	0.11
Waterbody	52.63	9.03
<b>Total</b>	<b>582.60</b>	<b>100.00</b>

The proposed facilities considering the demand of the ward were shown in the following table including phasing. The proposed facilities under different category of land uses are also shown in the following table.

**Table 14.10: Proposed facilities for ward no -3**

Proposed facilities	Phase	CS Mouza Name	Plot No.	Area (Acre)
Play Ground-1	2 <sup>nd</sup>	Joypara_057_01	734 part, 739, 741 part, 746 part, 1483	1.33
Community Park/ Play Ground	1 <sup>st</sup>	Khalpar_058_02	1042-1052, 1054 part, 1059-1064, 1065 part, 1066 part, 1072-1084, 1089-1092, 1099	7.88
Community Park-3	2 <sup>nd</sup>	Joypara_057_01	497, 948 part, 949-952	0.54
Waste Transfer Station-2	2 <sup>nd</sup>	Khalpar_058_02	1487-1789	0.60
Industrial Zone-1	3 <sup>rd</sup>	Khalpar_058_02	899 part, 905 part, 906, 907 part, 922-949, 950 part, 951-952, 953 part, 998-1000, 1001 part, 1008 part, 1011-1033, 1598-1680, 1682 part, 1796-1800, 1805-1807	79.96
		Khalpar_058_03	2180, 2183-2187, 2189-2199, 2201, 2203, 2206 part, 2210-2286	
Ward Center	1 <sup>st</sup>	Joypara_057_01	827 part	0.15

**Proposal for road development:**

A total of 18.88km road has proposed for road network development of this ward of which some are new and some are widening. Within all roads only 3.66 km road will construct within 1<sup>st</sup> phase. Recommended road network are shown in the following table.

**Table 14.11: Proposed road for ward no-3**

Road ID	Width (feet)	Length (m)	Phase	Type
RS135	40	683.300	1st	W
RL137	30	76.915	1st	W

Road ID	Width (feet)	Length (m)	Phase	Type
RA219	20	170.936	1st	W
RA245	20	236.558	1st	W
RA246	20	412.844	1st	W
RA250	20	840.112	1st	W
RA41	20	88.628	1st	W
RA42	20	133.749	1st	W
RS43	40	5.015	1st	W
RS44	40	392.378	1st	W
RL45	30	199.982	1st	W
RA46	20	418.156	1st	W
RA47	20	2.164	1st	W
RS07	40	1,036.761	2nd	N
RS136	40	346.666	2nd	W
RS140	40	8.541	2nd	W
RS149	40	388.673	2nd	N
RS15	60	1,224.843	2nd	N
RL174	30	533.543	2nd	N
RL185	30	493.014	2nd	W
RL188	30	1,210.855	2nd	W
RS24	40	252.430	2nd	N
RA243	20	433.712	2nd	W
RS35	40	743.844	2nd	W
RA36	20	819.644	2nd	W
RS39	40	2,685.585	2nd	N
RS40	40	9.455	2nd	N
RP03	80	728.588	3rd	N
RL05	30	38.796	3rd	W
RS147	60	3.441	3rd	N
RL183	30	0.122	3rd	W
RL184	30	30.532	3rd	W
RA217	20	255.363	3rd	W
RA220	20	175.053	3rd	W
RA221	20	215.334	3rd	W
RA222	20	318.597	3rd	W
RA225	20	135.821	3rd	W
RA226	20	123.226	3rd	W
RA240	20	180.842	3rd	W
RA241	20	160.602	3rd	W
RA242	20	182.550	3rd	W
RA244	20	457.831	3rd	W
RA248	20	275.424	3rd	W
RA249	20	504.837	3rd	W
RA34	20	284.927	3rd	W
RA37	20	349.538	3rd	W
RL88	30	454.032	3rd	W
RA89	20	153.794	3rd	W
Total		18,877.553		

\*Note: W= widening, N= New Road

**Proposal for drainage development:**

A total of 18.88 km drain has proposed for drainage network development of this ward of which almost all are new. Within all roads 5.30 km drain will construct within 1<sup>st</sup> phase. Recommended drains are shown in the following table.

**Table 14.12: Proposed drainage for ward no-3**

Drain ID	Type	Length (m)	Phase
DS135	Secondary	684.241	1st
DS137	Secondary	76.915	1st
DT219	Tertiary	170.936	1st
DT245	Tertiary	236.558	1st
DT246	Tertiary	412.844	1st
DT250	Tertiary	840.112	1st
DT41	Tertiary	88.436	1st
DT42	Tertiary	133.941	1st
DS43	Secondary	5.464	1st
DS44	Secondary	390.988	1st
DS45	Secondary	199.982	1st
DT46	Tertiary	418.156	1st
DT47	Tertiary	2.164	1st
DS07	Secondary	1,034.998	2nd
DS136	Secondary	346.666	2nd
DS140	Secondary	8.541	2nd
DS149	Secondary	388.673	2nd
DP15	Primary	1,224.843	2nd
DS174	Secondary	533.543	2nd
DS185	Secondary	493.014	2nd
DS188	Secondary	1,210.855	2nd
DS24	Secondary	252.430	2nd
DT243	Tertiary	433.712	2nd
DS35	Secondary	743.844	2nd
DT36	Tertiary	819.644	2nd
DS39	Secondary	2,686.781	2nd
DS40	Secondary	10.023	2nd
DP03	Primary	728.588	3rd
DS06	Secondary	38.796	3rd
DP147	Primary	3.441	3rd
DS183	Secondary	0.122	3rd
DS184	Secondary	30.532	3rd
DT217	Tertiary	255.363	3rd
DT220	Tertiary	175.053	3rd
DT221	Tertiary	215.334	3rd
DT222	Tertiary	318.597	3rd
DT225	Tertiary	135.821	3rd
DT226	Tertiary	123.226	3rd
DT240	Tertiary	180.842	3rd
DT241	Tertiary	160.602	3rd
DT242	Tertiary	182.550	3rd
DT244	Tertiary	457.831	3rd
DT248	Tertiary	275.424	3rd
DT249	Tertiary	504.837	3rd
DT34	Tertiary	284.927	3rd
DT37	Tertiary	349.538	3rd
DS88	Secondary	454.032	3rd
DT89	Tertiary	153.794	3rd
Total		18,877.554	



**Map 14.5: Landuse Proposal for Ward No. 03**



**Map 14.6: Proposed Road, Drainage and Utility Services Plan for Ward No. 03**



#### 14.3.4 Action Plan for Ward No. 4

##### Existing Situation:

It consists a vast agricultural area with a major portion of builtup area. Latakhola river passes over this ward. Ward 01 located at the northern side of this Ward, Ward No. 5 at the east and Ward 07 at the south of the Ward.

It is mainly core area of the paurashava. Total area of the Ward is 681.14 acres. Among the total area, agriculture use is 436.56 acres, residential 172.18 acres, 2.62 acres are governmental services and 5.56 acres are commercial area. There is a total of 20.67 km road in this ward of which 8.69 km are katcha.

Proposals and Plans for Ward No. 4

**Landuse Development:** For planned development considering the existing landuse and future demand landuse proposal has made. Within the total area 19.23% land proposed for residential use, only 2.36 % is commercial use, 37.90 % agricultural and others are in different categories which are shown in the following table.

**Table 14.13: Proposed land use for Ward no-4**

Landuse Type	Area (Acre)	Percentage (%)
Agricultural Zone	258.18	37.91
Circulation Network	46.28	6.79
Commercial Zone	16.07	2.36
Community Facilities	2.43	0.36
Education & Research Zone	13.66	2.01
Government Office	2.71	0.40
Health Services	0.71	0.10
Mixed Use Zone	59.00	8.66
Open Space	8.64	1.27
Residential Zone	131.14	19.26
Rural Settlement	32.65	4.79
Transportation Facilities	10.87	1.60
Urban Deferred	60.59	8.90
Utility Services	3.09	0.45
Waterbody	35.06	5.15
<b>Total</b>	<b>681.04</b>	<b>100.00</b>

The facilities considering the demand of the ward were shown in the following table including phasing. The proposed facilities under different category of land uses are also shown in the following table.

**Table 14.14: proposed facilities for ward no-4**

Proposed facilities	Phase	CS Mouza Name	Plot No.	Area (Acre)
Planned Residential Area	3 <sup>rd</sup>	Batia_055_00	66, 71-76, 81-92, 113-125, 207-241, 250-253, 305, 310-311, 314	24.25
Poura New Market	2 <sup>nd</sup>	Nurpur_056_00	190-199, 201 part, 207, 208 part, 386-390, 391 part	3.59
Poura Super Market-1	3 <sup>rd</sup>	Joypara_057_02	2071	2.60
Wholesale Market	2 <sup>nd</sup>	Nurpur_056_00	38 part, 45-52, 53 part, 60-65, 66 part, 70-72	7.49

Proposed facilities	Phase	CS Mouza Name	Plot No.	Area (Acre)
Bus Terminal	1 <sup>st</sup>	Joypara_057_02	2283-2285, 2286 part, 2287-2289, 2291	2.86
Track Terminal & Load-Unload Area	3 <sup>rd</sup>	Nurpur_056_00	66 part, 67-69, 202-203, 206, 212 part, 213-220, 221 part, 222-225, 231 part	7.65
High School-1	3 <sup>rd</sup>	atakhala_043_01	41, 43-56	3.67
High School-2	3 <sup>rd</sup>	Joypara_057_02	2413-2414, 2426-2431	2.24
Primary School-3	2 <sup>nd</sup>	Latakhala_043_01	57-64, 69	1.58
Dumping Site	1 <sup>st</sup>	Latakhola_043_01	13, 14 part, 15, 176, 177 part, 178 part, 179 part	2.89
Cremation	1 <sup>st</sup>	Latakhola_043_02	2799, 2805, 2806 part, 2812, 2816	2.17
Urban Defferd	1 <sup>st</sup>	Nurpur_056_00	20 part, 21 part, 39-44, 183-188, 208 part, 209-211, 212 part, 226-230, 231 part, 233-255, 256 part, 257-261, 262 part, 264-275, 347-385, 391 part, 392 part, 393-435, 438-443	60.59
Ward Center	1 <sup>st</sup>	Joypara_057_02	2293 part	0.06

#### Proposal for road development:

A total of 13.63 km road has proposed for road network development of this ward of which some are new and some are widening. Within all roads only 1.17 km road will construct within 1<sup>st</sup> phase. Recommended road network are shown in the following table.

**Table 14.15: Proposed road for ward no-4**

Road ID	Width (feet)	Length (m)	Phase	Type
RL138	30	330.994	1st	W
RA218	20	200.292	1st	W
RS51	40	36.413	1st	W
RA83	20	277.212	1st	W
RA84	20	323.853	1st	W
RS04	60	32.952	2nd	N
RL112	30	245.563	2nd	W
RL113	30	554.487	2nd	W
RS114	40	405.257	2nd	N
RS115	40	233.995	2nd	N
RP12	100	25.653	2nd	W
RS133	40	284.774	2nd	W
RS161	40	741.807	2nd	W
RS165	40	943.075	2nd	W
RL169	30	319.885	2nd	W
RL170	30	186.777	2nd	W
RS23	40	85.874	2nd	N
RA255	20	6.705	2nd	W
RS38	40	2,218.955	2nd	N
RS39	40	86.060	2nd	N
RS92	40	463.901	2nd	W
RL97	30	1,047.772	2nd	N
RL98	30	263.571	2nd	N
RP01	100	1,954.217	3rd	W
RP01	100	0.007	3rd	W
RP03	80	6.168	3rd	N
RS164	40	1,495.111	3rd	W
RL187	30	13.870	3rd	W
RL90	30	298.932	3rd	W
RS93	40	145.939	3rd	W
RA94	20	403.684	3rd	W
<b>Total</b>		<b>13,633.755</b>		

\*Note: W= widening, N= New Road

**Map 14.7: Landuse Proposal for Ward No. 04**





**Map 14.8: Proposed Road, Drainage and Utility Services Plan for Ward No. 04**



### 14.3.5 Action Plan for Ward No. 5

#### Existing Situation:

It consists a major portion of builtup area. Thana health complex, Paurashava Bhanban, upazilla health complex are located in this area. Ward 03 located at the north side of this Ward, Ward No. 4 at the weast and Ward 07 at the south of the Ward. Total area of the Ward is 404.85 acres. Among the total area, agriculture use is 140.87 acres, residential 193.46 acres, 6.69 acres are governmental services and 5.76 acres are commercial area. There is a total of 19.86 km road in this ward of which 12.62 km are katcha and only 0.70 km road are pucca.

**Landuse Development:** For planned development considering the existing landuse and future demand landuse proposal has made. Within the total area 62.26% land proposed for residential use, 0.88% commercial use, 9.09% mixed use, only 0.01% agricultural and others are in different category which is shown in the following table.

**Table14.16: Proposed land use for Ward no-5**

Landuse Type	Area (Acre)	Percentage (%)
Agricultural Zone	0.03	0.01
Circulation Network	43.78	10.81
Commercial Zone	3.56	0.88
Community Facilities	3.25	0.80
Education & Research Zone	11.16	2.76
Government Office	5.98	1.48
Health Services	3.06	0.76
Mixed Use Zone	37.18	9.18
Open Space	14.76	3.65
Residential Zone	251.99	62.24
Transportation Facilities	0.04	0.01
Utility Services	0.41	0.10
Waterbody	29.67	7.33
<b>Total</b>	<b>404.85</b>	<b>100.00</b>

The facilities considering the demand of the ward were shown in the following table including phasing. The proposed facilities under different category of land uses are also shown in the following table.

**Table 14.17: Proposed facilities for ward no -5**

Proposed facilities	Phase	CS Mouza Name	Plot No.	Area (Acre)
Planned Residential Area	3 <sup>rd</sup>	Joypara_057_02	2527-2529, 2562-2565, 2610-2684, 2692-2725, 2728 part, 2729-2731, 3439-3457, 3479-3480	36.95
		Nurpur_056_00	106-112, 114, 119-122, 130, 133-135	
Primary School-4	1 <sup>st</sup>	Joypara_057_02	2411-2412, 2443-2445	2.05
IT Park Cum Public Library	2 <sup>nd</sup>	Joypara_057_01	1374	0.24
Stadium/Sports Complex	3 <sup>rd</sup>	Joypara_057_02	2687 part, 2688 part, 2689, 2690 part, 2726-2728, 2733-2734, 2737-2749, 2754-2757, 2762-2764, 2789 part, 2790 part, 2791 part, 2792-2803, 2804 part	10.26

Proposed facilities	Phase	CS Mouza Name	Plot No.	Area (Acre)
Community Park-4	2 <sup>nd</sup>	Joypara_057_02	2846-2850	1.30
Fire Service	1 <sup>st</sup>	Batia_055_00	280, 284 part	0.44
Community Centre	1 <sup>st</sup>	Joypara_057_02	3340 part, 3341-3343, 3344 part, 3345-3348, 3352-3353	1.86
Ward Center	1 <sup>st</sup>	Joypara_057_02	3351, 3354 part, 3355 part	0.29

#### Proposal for road development:

A total of 11.19 km road has proposed for road network development of this ward of which some are new and some are widening. Within all roads 5.31 km road will construct within 1<sup>st</sup> phase. Recommended road network are shown in the following table.

**Table 14.18: Proposed road for ward no-5**

Road ID	Width (feet)	Length (m)	Phase	Type
RL137	30	173.681	1st	W
RL138	30	141.965	1st	W
RA139	20	130.443	1st	W
RS148	40	386.333	1st	W
RS16	50	1,212.948	1st	W
RL168	30	212.861	1st	W
RL176	30	197.732	1st	W
RA218	20	95.494	1st	W
RA250	20	14.821	1st	W
RA251	20	55.262	1st	W
RS43	40	161.402	1st	W
RA47	20	148.467	1st	W
RS48	40	249.657	1st	W
RA49	20	108.331	1st	W
RA50	20	407.333	1st	W
RS51	40	645.953	1st	W
RA52	20	649.248	1st	W
RA53	20	50.195	1st	W
RL82	30	111.879	1st	W
RA84	20	158.994	1st	W
RS04	60	1,201.504	2nd	N
RL113	30	24.747	2nd	W
RP12	100	979.921	2nd	W
RL128	30	217.915	2nd	W
RS153	40	564.944	2nd	W
RS161	40	61.306	2nd	W
RL189	30	330.555	2nd	W
RL21	30	22.707	2nd	N
RA255	20	48.727	2nd	W
RS39	40	488.596	2nd	N
RP01	100	432.201	3rd	W
RP03	80	301.108	3rd	N
RL141	30	371.158	3rd	W
RS150	40	652.644	3rd	N
RL187	30	180.473	3rd	W
Total		11,191.505		

\*Note: W= widening, N= New Road

## **Map 14.9: Landuse Proposal for Ward No. 05**



**Map 14.10: Proposed Road, Drainage and Utility Services Plan for Ward No. 05**





**Proposal for drianage development:**

A total of 11.02 km drain has proposed for drianage network development of this ward of which almost all are new. Wihin all roads 5.16 km drain will construct within 1<sup>st</sup> phase. Recommended drains are shown in the following table.

**Table 14.19: Proposed drainage for ward no-5**

Drain ID	Type	Length (m)	Phase
DS137	Secondary	175.093	1st
DS138	Secondary	140.553	1st
DT139	Tertiary	130.237	1st
DS148	Secondary	416.928	1st
DS16	Secondary	1,222.862	1st
DS168	Secondary	212.861	1st
DT218	Tertiary	95.494	1st
DT250	Tertiary	14.821	1st
DT251	Tertiary	55.262	1st
DS43	Secondary	161.402	1st
DT47	Tertiary	148.467	1st
DS48	Secondary	227.128	1st
DT49	Tertiary	107.333	1st
DT50	Tertiary	408.331	1st
DS51	Secondary	645.953	1st
DT52	Tertiary	648.778	1st
DT53	Tertiary	50.278	1st
DS82	Secondary	111.879	1st
DT84	Tertiary	158.994	1st
DP04	Primary	1,201.504	2nd
DS113	Secondary	24.747	2nd
DP12	Primary	985.095	2nd
DS128	Secondary	217.915	2nd
DS153	Secondary	564.944	2nd
DS161	Secondary	61.306	2nd
DS189	Secondary	330.555	2nd
DS21	Secondary	22.707	2nd
DT255	Tertiary	48.727	2nd
DS39	Secondary	488.596	2nd
DP01	Primary	432.201	3rd
DP03	Primary	301.108	3rd
DS141	Secondary	371.158	3rd
DS150	Secondary	652.644	3rd
DS187	Secondary	180.473	3rd
Total		11,016.334	

### 14.3.6 Action Plan for Ward No. 6

#### Existing Situation:

Ward No. 6 is the preferential ward and located at the north-eastern side of the paurashava. Ward 03 located at the north-west side of this Ward and Ward No. 7 at the southern side of the Ward.

Total area of the Ward is 995.13 acres. Among the total area, agriculture use is 779.11 acres, residential 132.27 acres and 2.38 acres are commercial area. There is a total of 25.41 km road in this ward of which 7.18 km are katcha.

#### Proposals and Plans for Ward No. 6

##### Landuse Development:

For planned development considering the existing landuse and future demand landuse proposal has made. Within the total area 9.39% land proposed for residential use, 11.47% Industrial, 33.19% agricultural and others are in different category.

**Table 14.20: Proposed land use for Ward no-6**

Landuse Type	Area (Acre)	Percentage (%)
Agricultural Zone	330.71	33.23
Circulation Network	76.40	7.68
Commercial Zone	6.12	0.61
Community Facilities	3.74	0.38
Education & Research Zone	81.14	8.15
Government Office	18.12	1.82
Health Services	20.03	2.01
Industrial Zone	114.14	11.47
Mixed Use Zone	0.16	0.02
Open Space	44.34	4.46
Recreational Facilities	3.71	0.37
Residential Zone	255.10	25.64
Waterbody	41.40	4.16
<b>Total</b>	<b>995.13</b>	<b>100.00</b>

The facilities considering the demand of the ward were shown in the following table including phasing. The proposed facilities under different category of land uses are also shown in the following table.

**Table 14.21: Proposed facilities for ward no -6**

Proposed facilities	Phase	CS Mouza Name	Plot No.	Area (Acre)
Administration Area-1	2 <sup>nd</sup>	Yousfpur_060_02	746 part, 747-756, 760-761	10.86
		Ghata_061_01	54-57, 73-86, 87 part	
Administration Area-2	3 <sup>rd</sup>	Ghata_061_01	1115, 1124-1135, 1190-1191, 1193-1204,	7.26
Low Income Houseing Area	2 <sup>nd</sup>	Yousfpur_060_01	6, 8-10, 18, 19 part, 20-34, 55 part, 56, 57 part, 58 part, 59 part, 60-92	29.48
Re-Settlement Residential Zone	2 <sup>nd</sup>	Yousfpur_060_01	57 part, 58 part, 59 part, 61-62, 97-109, 110 part, 146-166, 363	55.37
		Laskarkanda_059_00	590-591, 596-597600 part, 601, 624-	

Proposed facilities	Phase	CS Mouza Name	Plot No.	Area (Acre)
			698, 707-718	
Poura Super Market-2	3 <sup>rd</sup>	Ghata_061_01	773-776, 783-789, 840-841, 843-848	4.98
Agriculture University	1 <sup>st</sup>	Ghata_061_01	813 part, 814 part, 815-817, 821-824, 829-831, 853, 854 part, 855-870, 872-890, 891 part, 892-893, 894 part, 895 part	10.55
Vocational Training Institution	2 <sup>nd</sup>	Laskarkanda_059_00	537-553, 554 part, 572-589, 590 part, 592-595, 596 part, 598-599, 763	13.62
Medical College	3 <sup>rd</sup>	Yousufpur_060_02	1018-1022, 1045-1053, 1055-1071, 1074-1081, 1168-1201	41.49
		Ghata_061_01	273-335	
College-2	3 <sup>rd</sup>	Ghata_061_01	23-38, 39 part, 40, 42 part	8.12
Primary School-5	2 <sup>nd</sup>	Yousufpur_060_01	167-171	5.87
Play Ground-2	2 <sup>nd</sup>	Yousufpur_060_01	172-173	2.73
Community Park-5	1 <sup>st</sup>	Yousufpur_060_02	945-947, 950-952	1.55
Community Park-6	1 <sup>st</sup>	Laskarkanda_059_00	554, 556-571, 699-706, 753-754	13.60
Industrial Zone-1	3 <sup>rd</sup>	Laskarkanda_059_00	60 part, 61 part, 62 part, 65 part, 66 part, 67-80, 82 part, 163-228, 314, 323 part, 324-326, 329-438, 474-486, 608 part, 609 part, 610 part, 612-623	111.24
		Yousufpur_060_01	5 part, 11-17, 19 part, 36-54, 113-145	
Hospital Zone	3 <sup>rd</sup>	Laskarkanda_059_00	126 part, 127-137	20.03
		Yousufpur_060_02	852-862, 875-907, 917 part, 918 part, 919, 932	
Poura Graveyard	1 <sup>st</sup>	Yousufpur_060_02	1165, 1220-1221, 1230-1231	2.66
Ward Center	1 <sup>st</sup>	Ghata_061_01	894 part	0.08

#### Proposal for road development:

A total of 22.02 km road has proposed for road network development of this ward of which some are new and some are widening. Within all roads 1.37 km road will construct within 1<sup>st</sup> phase. Recommended road network are shown in the following table.

**Table 14.22: Proposed road for ward no-6**

Road ID	Width (feet)	Length (m)	Phase	Type
RS16	50	449.265	1st	W
RS19	50	923.090	1st	W
RS04	60	394.951	2nd	N
RL10	30	951.424	2nd	W
RP12	100	454.906	2nd	W
RP13	100	344.122	2nd	W
RL14	30	418.085	2nd	W
RS146	60	11.929	2nd	N
RS15	60	243.848	2nd	N
RS159	40	959.584	2nd	W
RS160	40	914.150	2nd	W
RS17	60	977.016	2nd	W
RL174	30	94.444	2nd	N
RS18	60	484.671	2nd	W
RL189	30	644.182	2nd	W

Road ID	Width (feet)	Length (m)	Phase	Type
RL20	30	252.793	2nd	W
RL21	30	804.996	2nd	N
RA36	20	38.620	2nd	W
RS40	40	99.807	2nd	N
RL42	30	408.194	2nd	W
RL85	30	550.384	2nd	W
RP03	80	2,021.495	3rd	N
RL05	30	325.934	3rd	W
RL06	30	1,060.523	3rd	W
RL09	30	352.188	3rd	W
RS129	40	358.228	3rd	W
RS147	60	1,799.532	3rd	N
RS154	40	207.896	3rd	W
RS155	40	500.630	3rd	W
RL175	30	371.177	3rd	W
RL176	30	264.293	3rd	W
RL177	30	301.136	3rd	W
RL178	30	91.047	3rd	W
RL179	30	120.154	3rd	W
RL186	30	176.050	3rd	W
RA223	20	323.441	3rd	W
RA224	20	230.389	3rd	W
RA248	20	215.789	3rd	W
RS258	60	927.966	3rd	N
RL259	30	1,202.016	3rd	N
RA34	20	50.277	3rd	W
RA86	20	471.450	3rd	W
RA87	20	238.341	3rd	W
Total		22,030.413		

\*Note: W= widening, N= New Road

#### Proposal for drianage development:

A total of 22.10 km drain has proposed for drainage network development of this ward of which almost all are new. Wihin all drains 3.25 km drain will construct within 1<sup>st</sup> phase. Recommended drains are shown in the following table.

**Table 14.23: Proposed drainage for ward no-6**

Drain ID	Type	Length (m)	Phase
DS16	Secondary	452.302	1st
DS19	Secondary	920.053	1st
DP04	Primary	396.183	2nd
DS10	Secondary	949.157	2nd
DP12	Primary	452.293	2nd
DP13	Primary	346.710	2nd
DS14	Secondary	420.618	2nd
DS142	Secondary	404.478	2nd
DP146	Primary	11.929	2nd
DP15	Primary	244.076	2nd
DS159	Secondary	959.584	2nd
DS160	Secondary	914.150	2nd
DP17	Primary	976.787	2nd
DS174	Secondary	94.444	2nd

Drain ID	Type	Length (m)	Phase
DP18	Primary	483.440	2nd
DS189	Secondary	644.182	2nd
DS20	Secondary	256.509	2nd
DS21	Secondary	802.464	2nd
DT36	Tertiary	38.620	2nd
DS40	Secondary	99.807	2nd
DS85	Secondary	554.447	2nd
DP03	Primary	2,021.495	3rd
DS06	Secondary	1,456.583	3rd
DS09	Secondary	350.393	3rd
DS129	Secondary	358.228	3rd
DP147	Primary	1,799.532	3rd
DS154	Secondary	207.896	3rd
DS155	Secondary	500.630	3rd
DS175	Secondary	371.177	3rd
DS176	Secondary	260.693	3rd
DS177	Secondary	301.136	3rd
DS178	Secondary	91.047	3rd
DS179	Secondary	120.154	3rd
DS186	Secondary	176.050	3rd
DT223	Tertiary	323.441	3rd
DT224	Tertiary	230.389	3rd
DT248	Tertiary	215.789	3rd
DP258	Primary	927.966	3rd
DT259	Tertiary	1,202.016	3rd
DT34	Tertiary	50.277	3rd
DT86	Tertiary	469.229	3rd
DT87	Tertiary	240.562	3rd
Total		22,096.916	



**Map 14.11: Landuse Proposal for Ward No. 06**





**Map 14.12: Proposed Road, Drainage and Utility Services Plan for Ward No. 06**



### 14.3.7 Action Plan for Ward No. 7

#### Existing Situation:

Ward No. 7 is a important ward of the Paurashava with a major portion of builtup area. Dohar bazar is located in this ward. Ward 06 located at the northern side of this Ward and Ward No. 8 is at the southern side of the Ward. Total area of the Ward is 461.52 acres. Among the total area, agriculture use is 241.93 acres and 172.57 acres are residential area. There is a total of 17.94 km road in this ward of which 13.18 km are katcha and rest are semipucca no pucca road have found in this ward.

#### Proposals and Plans for Ward No. 7

**Landuse Development:** For planned development considering the existing landuse and future demand landuse proposal has made. Within the total area 39.02% land proposed for residential use, only 0.36% are commercial use, 3.31% mixed use, 22.33% agricultural and others are in different category which are shown in the following table.

**Table 14.24: Proposed land use for Ward no-7**

Landuse Type	Area (Acre)	Percentage (%)
Agricultural Zone	99.61	21.58
Circulation Network	52.75	11.43
Commercial Zone	1.65	0.36
Community Facilities	1.01	0.22
Education & Research Zone	7.10	1.54
Industrial Zone	35.33	7.66
Mixed Use Zone	15.30	3.31
Open Space	30.80	6.67
Residential Zone	179.96	38.99
Transportation Facilities	0.21	0.04
Urban Deferred	14.92	3.23
Waterbody	22.90	4.96
<b>Total</b>	<b>461.52</b>	<b>100.00</b>

The facilities considering the demand of the ward were shown in the following table including phasing. The proposed facilities under different category of land uses are also shown in the following table.

**Table 14.25: Proposed facilities for ward no -7**

Proposed facilities	Phase	CS Mouza Name	Plot No.	Area (Acre)
Primary School-6	2 <sup>nd</sup>	Ghata_061_02	2791 part, 2792 part, 2794 part, 2795 part, 2796-2797, 2806 part, 2807, 2811 part, 2812	2.69
Central Park	3 <sup>rd</sup>	Ghata_061_01	1163-1172, 1175-1186, 1215-1217, 1222-1277	21.28
Community Park-7	2 <sup>nd</sup>	Ghata_061_02	2606 part, 2610, 2617-2618, 2621 part, 2621 part, 2622-2629	2.73
Industrial Zone-2	3 <sup>rd</sup>	Ghata_061_01	1218-1220, 1314-1348, 1351 part, 1352-1353, 1354 part, 1356 part, 1357-1375, 1385-1392, 1412 part, 1413-1464	35.22
Ward Center	1 <sup>st</sup>	Kazirchar_062_00	60 part	0.15

**Proposal for road development:**

A total of 14.10 km road has proposed for road network development of this ward of which some are new and some are widening. Within all roads 1.27 km road will construct within 1<sup>st</sup> phase. Recommended road network are shown in the following table.

**Table 14.26: Proposed road for ward no-7**

Road ID	Width (feet)	Length (m)	Phase	Type
RS08	40	615.014	1st	W
RS79	40	651.118	1st	W
RL11	30	325.695	2nd	W
RS116	40	851.927	2nd	W
RL119	30	157.629	2nd	W
RS123	40	424.775	2nd	W
RL126	30	722.900	2nd	W
RS127	40	468.271	2nd	W
RP13	100	754.110	2nd	W
RS133	40	388.341	2nd	W
RS151	40	22.926	2nd	W
RS153	40	127.845	2nd	W
RS166	40	1,203.780	2nd	W
RA198	20	136.963	2nd	W
RA199	20	200.278	2nd	W
RL20	30	228.127	2nd	W
RA255	20	788.924	2nd	W
RA256	20	435.242	2nd	W
RS38	40	678.909	2nd	N
RA54	20	440.104	2nd	W
RA55	20	245.013	2nd	W
RA56	20	194.974	2nd	W
RL57	30	113.207	2nd	W
RS63	40	97.762	2nd	W
RS80	40	190.318	2nd	W
RS81	40	49.566	2nd	W
RP01	100	964.808	3rd	W
RP03	80	890.024	3rd	N
RS144	60	807.764	3rd	N
RS147	60	2.955	3rd	N
RS155	40	24.860	3rd	W
RL171	30	382.152	3rd	W
RL173	30	20.691	3rd	N
RA247	20	385.632	3rd	W
RL78	30	110.814	3rd	W
Total		14,103.418		

\*Note: W= widening, N= New Road

**Proposal for drianage development:**

A total of 14.08 km drain has proposed for drainage network development of this ward of which almost all are new. Within all roads 7.41 km drain will construct within 1<sup>st</sup> phase. Recommended drains are shown in the following table.

**Map 14.13: Landuse Proposal for Ward No. 07**



**Map 14.14: Proposed Road, Drainage and Utility Services Plan for Ward No. 07**





**Table 14.27: Proposed drainage for ward no-7**

Drain ID	Type	Length (m)	Phase
DS08	Secondary	615.274	1st
DS79	Secondary	650.858	1st
DS11	Secondary	327.110	2nd
DS116	Secondary	851.927	2nd
DS119	Secondary	157.629	2nd
DS123	Secondary	424.775	2nd
DS126	Secondary	721.485	2nd
DS127	Secondary	468.271	2nd
DP13	Primary	737.938	2nd
DS133	Secondary	388.341	2nd
DS151	Secondary	22.926	2nd
DS153	Secondary	127.845	2nd
DS166	Secondary	1,203.780	2nd
DT198	Tertiary	136.963	2nd
DT199	Tertiary	200.278	2nd
DS20	Secondary	228.127	2nd
DT255	Tertiary	435.242	2nd
DT255	Tertiary	788.924	2nd
DS38	Secondary	678.909	2nd
DT54	Tertiary	440.104	2nd
DT55	Tertiary	245.013	2nd
DT56	Tertiary	194.974	2nd
DS57	Secondary	113.207	2nd
DS63	Secondary	97.762	2nd
DS80	Secondary	190.912	2nd
DS81	Secondary	48.972	2nd
DP01	Primary	964.808	3rd
DP03	Primary	890.024	3rd
DP144	Primary	807.764	3rd
DP147	Primary	2.955	3rd
DS155	Secondary	24.860	3rd
DS171	Secondary	382.152	3rd
DS173	Secondary	20.691	3rd
DT247	Tertiary	385.632	3rd
DS78	Secondary	110.814	3rd
Total		14,087.246	

### 14.3.8 Action Plan for Ward No. 8

#### Existing Situation:

Ward No. 8 is the perefieral ward and located at the south-east side of the paurashava. Ward 07 located at the northern side of this Ward and Ward No. 9 is at the southern side of the Ward. Total area of the Ward is 560.49 acres. Among the total area, agriculture use is 386.31 acres and 103 acres are residential area. There is a total of 13.434 km road in this ward of which 10.31 km are katcha and rest are semipucca no pucca road have found in this ward.

#### Proposals and Plans for Ward No. 8

**Landuse Development:** For planned development considering the existing landuse and future demand landuse proposal has made. Within the total area only 10.35% land proposed for residential use, 0.18% are commercial use, 1.28% mixed use, 59.18 % agricultural and others are in different category which are shown in the following table.

**Table 14.28: Proposed land use for Ward no-8**

Landuse Type	Area (Acre)	Percentage (%)
Agricultural Zone	329.56	58.80
Circulation Network	39.30	7.01
Commercial Zone	0.99	0.18
Community Facilities	12.12	2.16
Education & Research Zone	6.96	1.24
Industrial Zone	0.04	0.01
Mixed Use Zone	7.23	1.29
Open Space	21.09	3.76
Recreational Facilities	0.17	0.03
Residential Zone	58.05	10.36
Rural Settlement	58.54	10.45
Utility Services	0.57	0.10
Waterbody	25.84	4.61
<b>Total</b>	<b>560.44</b>	<b>100.00</b>

The facilities considering the demand of the ward were shown in the following table including phasing. The proposed facilities under different category of land uses are also shown in the following table.

**Table 14. 29: proposed facilities for ward no -8**

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area (Acre)
College-3	3 <sup>rd</sup>	Sutarpara_063_01	179 part, 180 part, 283-286, 289 part, 290 part, 291 part, 365-371, 459-462, 485	4.64
Play Ground-3	2 <sup>nd</sup>	Modhurchar_068_01	361-364, 366 part, 370	2.48
Community Park-8	1 <sup>st</sup>	Sutarpara_063_01	1, 2 part, 3 part, 4 part, 5 part, 6-9, 11 part, 12-13, 14 part, 17-18, 19 part	4.43
Waste Transfer Station-3	1 <sup>st</sup>	Modhurchar_068_01	256	0.23

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area (Acre)
Ward Center	1 <sup>st</sup>	Sutarpara_063_01	1037 part	0.06

**Proposal for road development:**

A total of 13.84 km road has proposed for road network development of this ward of which some are new and some are widening. All roads are proposed for development in second and 3<sup>rd</sup> phase. Recommended road network are shown in the following table.

**Table 14. 30: Proposed road for ward no-8**

Road ID	Width (feet)	Length (m)	Phase	Type
RL119	30	389.463	2nd	W
RL120	30	1,050.057	2nd	W
RS122	40	332.215	2nd	W
RS123	40	37.244	2nd	W
RA134	20	189.241	2nd	W
RS145	60	341.297	2nd	N
RL190	30	102.302	2nd	W
RA201	20	119.806	2nd	W
RA202	20	7.896	2nd	W
RA254	20	352.891	2nd	W
RS38	40	57.503	2nd	N
RL58	30	374.170	2nd	W
RL59	30	938.007	2nd	W
RS62	40	91.133	2nd	W
RL68	30	617.349	2nd	W
RA73	20	7.912	2nd	W
RA76	20	146.261	2nd	W
RA77	20	2.212	2nd	W
RS81	40	730.562	2nd	W
RP01	100	783.697	3rd	W
RS117	40	575.112	3rd	W
RS118	40	530.884	3rd	W
RS121	40	783.611	3rd	W
RS144	60	340.782	3rd	N
RS144	60	206.706	3rd	N
RL173	30	417.758	3rd	N
RA195	20	434.850	3rd	W
RA197	20	328.215	3rd	N
RA205	20	56.934	3rd	W
RA206	20	889.294	3rd	W
RA207	20	110.368	3rd	W
RA22	20	643.700	3rd	W
RA252	20	186.815	3rd	W
RA253	20	259.173	3rd	W
RA67	20	762.194	3rd	W
RA71	20	185.534	3rd	W
RL72	30	452.340	3rd	W
Total		13,835.488		

\*Note: W= widening, N= New Road

**Proposal for drianage development:**

A total of 13.84 km drain has proposed for drainage network development in this ward of which almost all are new. Wihin all roads 2.78 km drain will construct within 1<sup>st</sup> phase. Recommanded drains are shown in the following table.

**Table 14. 31: Proposed drainage for ward no-8**

Drain ID	Type	Length (m)	Phase
DS119	Secondary	388.555	2nd
DS120	Secondary	1,050.966	2nd
DS122	Secondary	335.463	2nd
DS123	Secondary	33.996	2nd
DT134	Tertiary	189.241	2nd
DP145	Primary	341.297	2nd
DS190	Secondary	102.302	2nd
DT201	Tertiary	119.806	2nd
DT202	Tertiary	7.896	2nd
DT254	Tertiary	352.891	2nd
DS38	Secondary	57.503	2nd
DS58	Secondary	375.890	2nd
DS59	Secondary	936.288	2nd
DS62	Secondary	91.133	2nd
DS68	Secondary	617.349	2nd
DT73	Tertiary	7.912	2nd
DT76	Tertiary	146.558	2nd
DT77	Tertiary	1.915	2nd
DS81	Secondary	730.562	2nd
DP01	Primary	783.697	3rd
DS117	Secondary	577.160	3rd
DS118	Secondary	528.836	3rd
DS121	Secondary	783.611	3rd
DP144	Primary	342.649	3rd
DP144	Primary	207.044	3rd
DS173	Secondary	417.758	3rd
DT195	Tertiary	434.850	3rd
DT197	Tertiary	328.215	3rd
DT205	Tertiary	56.934	3rd
DT206	Tertiary	889.294	3rd
DT207	Tertiary	110.368	3rd
DT22	Tertiary	643.700	3rd
DT252	Tertiary	186.815	3rd
DT253	Tertiary	259.173	3rd
DT67	Tertiary	762.194	3rd
DT71	Tertiary	185.534	3rd
DS72	Secondary	452.340	3rd
Total		13,837.695	

**Map 14.15: Landuse Proposal for Ward No. 08**



**Map 14.16: Proposed Road, Drainage and Utility Services Plan for Ward No. 08**





### 14.3.9 Action Plan for Ward No. 9

#### Existing Situation:

Ward No. 9 is the preferential ward and located at the southern side of the paurashava. Ward 08 located at the northern side of this Ward. Total area of the Ward is 405.78 acres. Among the total area, agriculture use is 386.31 acres, 130.92 acres are residential area, and 1.76 acres are commercial area. There is a total of 22.67 km road in this ward of which 19.00 km are katcha and rest is semipucca no pucca road has found in this ward.

#### Proposals and Plans for Ward No. 9

##### Landuse Development:

For planned development considering the existing landuse and future demand landuse proposal has made. Within the total area 30.12% land proposed for residential use, 45.34% agricultural and others are in different category which are shown in the following table.

**Table 14. 32: Proposed land use for Ward no-9**

Landuse Type	Area (Acre)	Percentage (%)
Agricultural Zone	184.02	45.35
Circulation Network	37.98	9.36
Commercial Zone	1.60	0.39
Community Facilities	1.35	0.33
Education & Research Zone	16.17	3.98
Government Office	0.11	0.03
Health Services	0.28	0.07
Mixed Use Zone	4.61	1.14
Open Space	17.37	4.28
Residential Zone	122.26	30.13
Transportation Facilities	0.35	0.09
Utility Services	0.16	0.04
Waterbody	19.50	4.81
<b>Total</b>	<b>405.75</b>	<b>100.00</b>

The facilities considering the demand of the ward were shown in the following table including phasing. The proposed facilities under different category of land uses are also shown in the following table.

**Table 14. 33: Proposed facilities for ward no -9**

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area (Acre)
Tampo Stand-3	1 <sup>st</sup>	Sutarpara_063_01	1085 part, 1086 part	0.35
College-3	1 <sup>st</sup>	Sutarpara_063_01	361-364, 463-464, 465 part, 466-470	7.14
Play Ground-4	2 <sup>nd</sup>	Sutarpara_063_01	293-296, 300 part, 301-302, 334, 342-346, 347 part, 348-355, 356 part	5.04
Public Toilet-3	2 <sup>nd</sup>	Sutarpara_063_01	1086 part	0.16
Ward Center	1 <sup>st</sup>	Sutarpara_063_01	1323 part, 1324 part	0.15

### Proposal for road development:

A total of 14.62 km road has proposed for road network development of this ward of which some are new and some are widening. All roads km road will construct at 2<sup>nd</sup> and 3<sup>rd</sup> phase . Recommended road network are shown in the following table.

**Table 14. 34: Proposed road for ward no-9**

Road ID	Width (feet)	Length (m)	Phase	Type
RS145	60	1,452.293	2nd	N
RS151	40	403.962	2nd	W
RL172	30	442.189	2nd	W
RL190	30	601.888	2nd	W
RL191	30	202.327	2nd	W
RL192	30	1,286.903	2nd	W
RL194	30	1,250.954	2nd	W
RA200	20	170.959	2nd	W
RA201	20	61.363	2nd	W
RA202	20	315.987	2nd	W
RA203	20	197.480	2nd	W
RA204	20	276.950	2nd	N
RA254	20	221.756	2nd	W
RA257	20	1,744.770	2nd	W
RL60	30	324.453	2nd	W
RL61	30	78.812	2nd	W
RS62	40	785.450	2nd	W
RS63	40	214.735	2nd	W
RA64	20	639.831	2nd	W
RA65	20	417.692	2nd	W
RA66	20	424.441	2nd	W
RA69	20	266.697	2nd	W
RA70	20	181.658	2nd	W
RA73	20	150.634	2nd	W
RA74	20	256.973	2nd	W
RL75	30	222.716	2nd	W
RA76	20	64.191	2nd	W
RA77	20	270.758	2nd	W
RP01	100	523.244	3rd	W
RS117	40	111.226	3rd	W
RS121	40	125.003	3rd	W
RA124	20	98.925	3rd	W
RA125	20	141.896	3rd	W
RS144	60	444.378	3rd	N
RA252	20	155.442	3rd	W
RA253	20	90.674	3rd	W
Total		14,619.610		

\*Note: W= widening, N= New Road

### Proposal for drianage development:

A total of 14.62 km drain has proposed for drainage network development of this ward of which almost all are new. Wihin all drains 4.96 km drain will construct within 1<sup>st</sup> phase. Recommended drains are shown in the following table.

**Map 14.17: Landuse Proposal for Ward No. 09**



**Map 14.18: Proposed Road, Drainage and Utility Services Plan for Ward No. 09**



**Table 14. 35: Proposed drainage for ward no-9**

Drain ID	Type	Length (m)	Phase
DP145	Primary	1,452.293	2nd
DS151	Secondary	403.962	2nd
DS172	Secondary	442.189	2nd
DS190	Secondary	601.888	2nd
DS191	Secondary	202.327	2nd
DS192	Secondary	1,286.903	2nd
DS194	Secondary	1,250.954	2nd
DT200	Tertiary	170.959	2nd
DT201	Tertiary	61.363	2nd
DT202	Tertiary	315.987	2nd
DT203	Tertiary	197.480	2nd
DT204	Tertiary	276.950	2nd
DT254	Tertiary	221.756	2nd
DT257	Tertiary	1,744.770	2nd
DS60	Secondary	325.453	2nd
DS61	Secondary	77.812	2nd
DS62	Secondary	786.615	2nd
DS63	Secondary	213.571	2nd
DT64	Tertiary	639.831	2nd
DT65	Tertiary	417.692	2nd
DT66	Tertiary	424.441	2nd
DT69	Tertiary	266.697	2nd
DT70	Tertiary	181.658	2nd
DT73	Tertiary	151.658	2nd
DT74	Tertiary	255.949	2nd
DS75	Secondary	222.716	2nd
DT76	Tertiary	64.191	2nd
DT77	Tertiary	270.758	2nd
DP01	Primary	523.244	3rd
DS117	Secondary	111.226	3rd
DS121	Secondary	125.003	3rd
DT124	Tertiary	99.437	3rd
DT125	Tertiary	141.384	3rd
DP144	Primary	444.378	3rd
DT252	Tertiary	155.442	3rd
DT253	Tertiary	90.674	3rd
Total		14,619.611	

#### 14.4 Implementation Guidelines

Implementation of the Ward Action Plan should follow the development control procedures for determining planning applications by use of the simple and standard planning application procedures. A simple application will be assessed quickly against a given set of criteria, essentially consisting of the following:

- The proposed development confirms all respects mentioned in the policies of the Structure Plan and Urban Area Plan.
- The usage identified in the application is being considered appropriate for inclusion in an area demarcated in the Ward Action Plan. An indicative list of uses considered appropriate is below:

- buildings are a maximum of four-storied;
- no single building or related group of buildings is 1000 sq. m. of gross floor area; and
- access and utility corridors are not impinged.

Provided that the planning application meets above criteria and the application will be approved and planning permission is given.

Planning applications that do not meet the above criteria or are considered marginal cases (to be known as an invalid simple application) will be subjected to a more detailed examination in considering standard procedure.

Following development and landuses are indicative of those appropriate in the Ward Action Plan:

- Residential development up to four-storied.
- Small-scale shops.
- Primary schools/kindergartens.
- Mosques (or other religious facilities) servicing a local area plus small graveyard if required.
- Recreational development.
- Local health facilities (clinics rather than hospital).
- Small-scale office (may be public or private) development.
- Workshops (small-scale workshops with operations only) in daylight hours and low traffic generators.
- Open space (playgrounds, parks, etc.)
- Access roads.
- Utilities; and
- Drainage channels.

When considering a standard planning application within areas zoned for Ward Action Plan, the Paurashava will need to undertake a two-stage process. First, before considering site specific issues, the Paurashava will need, on receipt of the planning application, to consider the wider context and determine issues relating to the overall area into which the application falls. The Paurashava will need to:

- Determine the boundaries of the wider area. These will usually be formed by some distinctive natural or man-made feature, for example a khal, river or road which provides access into the area. Such areas will vary in shape and size.
- Identify the existing landuses within these boundaries. In Ward Action Plan, the predominant use will be residential but other uses will present in the vicinity of the application.
- Identify and assess the existing access and circulation arrangements of the area. Preferably, the area should be served by 10 meter access roads which run through the entire area providing access to all Wards. These access roads should be linked to local roads. If this is not the case and access roads of sufficient width, are not available, the Paurashava shall consider whether or not further development is appropriate. New development may result in increased vehicular congestion and increased demand for utility services, where this could be difficult to supply.



In these instances, the Paurashava will consider refusal of application or at least a delay until access and utility provision can be made. This may require acquisition of land.

- Identify the need for community facilities (schools, clinics, religious facilities, open spaces, etc.) or plots for utility services. Do sufficient already exist or should more land be sought for increased provision to the existing population? In this latter instance, the Paurashava will again need to consider acquisition of land including the land, either in part or in full, under consideration for development.
- Consider areas of high landscape quality in the locality which should be preserved and the potential impact of the proposed development on those areas.

If there is doubt in the mind of the Paurashava as to the answers to the above questions, the planning application will require a more detailed assessment.

**Secondly**, the Paurashava will need to consider issues relating to the individual site and application. These can only be determined once the overall context of the area has been established. The questions the Paurashava will need to ask are:

- Can the proposed use of land be considered a “good neighbour”, defined in this situation as a use which can be carried out in any residential area without detriment to the amenities of the area by reason of noise, vibration, smell, fumes, smoke, soot, ash, dust or grit?
- Is the use likely to generate excessive volumes of traffic which either cannot be accommodated on the existing road system or which are likely to disturb its neighbours?
- Will the working hours of the use (if non-residential) cause a disturbance to residential neighbours (with working late in to the evening or night or 24-hours operations likely to cause a nuisance and therefore not being permitted)?
- If yes to any of the above, the application should be rejected and directed to a more suitable location.
- Is the use in conformity with the surrounding uses or with those that are compatible with a site in a predominantly residential area?
- Does the proposed boundary of the application impinge upon a road corridor, utility reserve or drainage channel reserve? If it does, it should be relocated outside such a reserve, even if this constitutes a reduction in the overall size of the plot. If excessive land will be lost as a result, implying that the development can no longer proceed, the application will need to be rejected.
- Does the application provide for adequate site access from, preferably as minimum, a 6 meter access road? Does it have sufficient on-site or off-site parking facilities to cater for the potential demand? If it does not, the plans should be amended or the application refused.
- Will the development destroy landscape unique to the location? If it does, its design will need to be altered to protect the landscape, or the application will need to be refused.
- Is the scale of development proposed in keeping with its neighbours? If too large, it should be reduced. Does it impinge upon the privacy of others? If it does, the design / layout / size should be changed. If it can not be appropriately modified, it should be refused.
- Will the proposed development negatively impact upon utility provision in the area i.e. will it overload the system for some reason (like high electricity demand or high

water consumption)? Will pollution from the proposed activities cause a problem in the neighbourhood? If this is likely to occur, the application should be refused.

If the application is for a major development, have the utility authorities being contacted to give their assessment and approval for the infrastructure works that will be required?

Given the existing situation in some of the Ward Action Plan, where for example, access is already poor or there is insufficient space available to provide adequate infrastructure, the Paurashava will aim to ensure that its decision will not make the situation worse.

The Paurashava will need to process each application within one month, at the end of which time they will either need to:

- approve the application unconditionally;
- approve the application subject to a number of conditions; or
- refuse the application.

#### **14.5 Concluding Remarks**

The Master Plan is prepared for managing and promoting development over medium terms following the broad guidelines set by the longer term Structure Plan. It shows the structure of sub-system in space over the medium term and identifies broad programs of direct action especially related to infrastructural development, institutional issues as well as broad financing strategies. The plan also outlines more specific Ward-wise development policies to guide development over the medium terms. One major objective of preparing Master Plan is the consolidation of development activities by various agencies in areas that have strongest potential for growth in the medium term and can accommodate anticipated volume of growth. Other purpose of preparing Master Plan is to facilitate the development control function. It shows the broad landuse zones on a more detailed scale of maps as derived from Structure Plan. The plan provides details of landuse zoning and building controls, the development control function becomes easier to implement with a Master Plan. It also shows land reservations required for essential uses and major infrastructure development.

## **ANNEXURE-A**

### **Paurashava Gazette**



## ANNEXURE-B Permitted Landuse

### Urban Residential Landuse

#### Landuse Permitted

The following uses in the tables are proposed to be applicable for this zone only.

**Table No. A.1: Landuse Permitted**

<b>Permitted</b>
Artisan's Shop
Assisted Living or Elderly Home
Confectionery Shop
Barber Shop
Child Daycare \ Preschool
Cleaning \ Laundry Shop
Communication Service Facilities
Communication Tower Within Permitted Height
Condominium or Apartment
Cottage
Cyber Café
Daycare Center (Commercial or Nonprofit)
Drug Store or Pharmacy
Employee Housing (Guards \ Drivers) \ Ancillary Use
General Store
Grocery Store
High School
Household Appliance and Furniture Repair Service (No Outside Storage)
Housing For Seasonal Firm Labor
Landscape and Horticultural Services
Mosque, Place Of Worship
Newspaper Stand
Nursery School
Orphanage
Eidgah
Photocopying and Duplicating Services (No Outside Storage)
Pipelines and Utility Lines
Playing Field
Primary School
Private Garages (Ancillary Use)
Project Identification Signs
Property Management Signs
Public Transport Facility
Satellite Dish Antenna
Shelter (Passers By)
Shoe Repair or Shoeshine Shop (Small)
CBO Office
Special Dwelling
Temporary Tent
Temporary Pandle for Permitted Function
Newspaper Stand
Specialized School: Dance, Art, Music, Physically Challenged & Others
Transmission Lines
Urban-Nature Reserve

<b>Permitted</b>
Utility Lines
Woodlot
Children's Park (Must Have Parking)
ATM Booth
Water Pump \ Reservoir
Monument (Neighborhood Scale)
Bill Payment Booth
Boarding and Rooming House
Dormitory
Memorial Structure (Ancillary)
<b>Neighborhood Center*</b> (Where Neighborhood Center exists)
<b>Permitted</b>
Community Center
Doctor \ Dentist Chamber
Cultural Exhibits and Libraries
Fast Food Establishment \ Food Kiosk
Flowers, Nursery Stock and Florist Supplies
Fitness Centre
Gaming Clubs
Departmental Stores
Retail Shops \ Facilities

\*Permission of Neighborhood Center Facilities in absence of formal neighborhood should be subject to Landuse Permit Committee Source: Compiled by the Consultants

### Landuse Conditionally Permitted

The following uses may be permitted or disallowed in this zone after review and approval by the authority/committee following appropriate procedure while the application meets the criteria mentioned in the requirement.

**Table No. A.2: Landuse Conditionally Permitted**

<b>Conditional</b>
Addiction Treatment Center
Amusement and Recreation (Indoors)
Funeral Services
Art Gallery, Art Studio \ Workshop
Automobile Driving Academy
Beauty and Body Service
Billiard Parlor \ Pool Hall
Book or Stationery Store or Newsstand
Building Maintenance \ Cleaning Services, No Outside Storage
Bus Passenger Shelter
Graveyard \ Cemetery
Coffee Shop \ Tea Stall
Correctional Institution
Courier Service
Crematorium
Plantation (Except Narcotic Plant)
Furniture & Variety Stores
Emergency Shelter
Energy Installation
Garages
Garden Center or Retail Nursery
Fire Brigade Station
Police Station
Temporary Rescue Shed

<b>Conditional</b>
Guest House
Slaughter House
Static Transformer Stations
Tourist Home or Resort
Market (Bazar)
Optical Goods Sales
Outdoor Café
Outdoor Fruit and Vegetable Markets
Community Hall
Neighborhood Co-Operative Office
Overhead Water Storage Tanks
Row House
Paints and Varnishes Store
Parking Lot
Patio Homes
Photofinishing Laboratory
Post Office
Postal Facilities
Sports and Recreation Club
Tennis Club
Flood Management Structure
Telephone Sub Station
Electrical Sub Station

Source: Compiled by the Consultants

### Restricted Uses

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

### General Industrial Zone

#### Landuse Permitted

The following uses in the tables are proposed to be applicable for this zone only.

**Table No. A.3: Landuse Permitted**

<b>Permitted</b>
Confectionery Shop
Bank & Financial Institution
Bicycle Assembly, Parts and Accessories
Blacksmith
Bus Passenger Shelter
Communication Tower Within Permitted Height
Freight Transport Facility
Police Box \ Barrack
Fire \ Rescue Station
Grocery Store
Household Appliance and Furniture Repair Service
Machine Sheds
Meat and Poultry (Packing & Processing)
Mosque, Place Of Worship
Newspaper Stand
Photocopying and Duplicating Services
Pipelines and Utility Lines
Printing, Publishing and Distributing
Public Transport Facility
Restaurant

<b>Permitted</b>
Retail Shops \ Facilities
Salvage Processing
Salvage Yards
Satellite Dish Antenna
Sawmill, Chipping and Pallet Mill
Shelter (Passers By)
Television, Radio or Electronics Repair (No Outside Storage)
Transmission Lines
Truck Stop & Washing or Freight Terminal
Utility Lines
Wood Products
Woodlot
ATM Booth
Water Pump \ Reservoir
Effluent Treatment Plant
Social Forestry

Source: Compiled by the Consultants

### **Landuse Conditionally Permitted**

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

**Table No. A.4: Landuse Conditionally Permitted**

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

Source: Compiled by the Consultants

### **Restricted Uses**

All uses except permitted and conditionally permitted uses.



## Commercial Zone (Business)

### Landuse Permitted

Commercial office zone is mainly intended for supporting the official works. There are several functions that are permitted in this zone.

**Table No. A.5: Landuse Permitted**

<b>Permitted</b>
Accounting, Auditing or Bookkeeping Services
Billboards, Advertisements & Advertising Structure
Agri-Business
Agricultural Sales and Services
Ambulance Service
Antique Shop
Appliance Store
Auction Market
Auditorium, Coliseum, Meeting Halls, and Conference Facilities, Convention
Auto Leasing or Rental Office
Auto Paint Shop
Auto Parts and Accessory Sales (Indoors)
Auto Repair Shop (With Garage)
Automobile Wash
Automobile Sales
Confectionery Shop
Bakery or Confectionery Retail
Bank & Financial Institution
Bar (Licensed)
Barber Shop
Beauty and Body Service
Bicycle Shop
Billiard Parlor \ Pool Hall
Book or Stationery Store or Newsstand
Building Material Sales or Storage (Indoors)
Bulk Mail and Packaging
Bus Passenger Shelter
Cinema Hall
Communication Service Facilities
Communication Tower Within Permitted Height
Computer Maintenance and Repair
Computer Sales & Services
Conference Center
Construction Company
Courier Service
Cyber Café
Daycare Center (Commercial or Nonprofit)
Department Stores, Furniture & Variety Stores
Doctor \ Dentist Chamber
Drug Store or Pharmacy
Electrical and Electronic Equipment and Instruments Sales
Fast Food Establishment \ Food Kiosk
Freight Handling, Storage & Distribution
Freight Transport Facility
Freight Yard
General Store
Grocery Store
Guest House
Hotel or Motel

<b>Permitted</b>
Inter-City Bus Terminal
Jewelry and Silverware Sales
Junk \ Salvage Yard
Super Store
Market (Bazar)
Mosque, Place Of Worship
Motorcycle Sales Outlet
Multi-Storey Car Park
Newspaper Stand
Outdoor Fruit and Vegetable Markets
Outdoor Recreation, Commercial
Parking Lot (Commercial)
Pet Store
Photocopying and Duplicating Services
Photofinishing Laboratory & Studio
Pipelines and Utility Lines
Post Office
Preserved Fruits and Vegetables Facility \ Cold Storage
Printing, Publishing and Distributing
Project Identification Signs
Property Management Signs
Public Transport Facility
Refrigerator or Large Appliance Repair
Resort
Restaurant
Retail Shops \ Facilities
Salvage Processing
Salvage Yards
Satellite Dish Antenna
Sawmill, Chipping and Pallet Mill
Shelter (Passers By)
Shopping Mall \ Plaza
Slaughter House
Software Development
Sporting Goods and Toys Sales
Taxi Stand
Telephone Exchanges
Television, Radio or Electronics Repair (No Outside Storage)
Theater (Indoor)
Transmission Lines
Utility Lines
Vehicle Sales & Service, Leasing or Rental
Veterinarian Clinics, Animal Hospitals, Kennels and Boarding Facilities
Warehousing
Wood Products
Woodlot
ATM Booth
Water Pump \ Reservoir
Agro-Based Industry (Rice Mill, Saw Mill, Cold Storage)
Social Forestry

Source: Compiled by the Consultants

### **Landuse Conditionally Permitted**

Some functions are permitted with some condition in this zone.

**Table No. A.6: Landuse Conditionally Permitted**

<b>Conditional</b>
Amusement and Recreation (Indoors)
Bicycle Assembly, Parts and Accessories
Broadcast Studio \ Recording Studio (No Audience)
Coffee Shop \ Tea Stall
Concert Hall, Stage Shows
Construction, Survey, Soil Testing Firms
Trade Shows
Craft Workshop
Plantation (Except Narcotic Plant)
Energy Installation
Firm Equipment Sales & Service
Agricultural Chemicals, Pesticides or Fertilizers Shop
Fitness Centre
Flowers, Nursery Stock and Florist Supplies
Forest Products Sales
Fuel and Ice Dealers
Garages
Garden Center or Retail Nursery
Police Box \ Barrack
Fire \ Rescue Station
Grain & Feed Mills
Household Appliance and Furniture Repair Service
Incineration Facility
Indoor Amusement Centers, Game Arcades
Indoor Theatre
Lithographic or Print Shop
Motor Vehicle Fuelling Station \ Gas Station
Musical Instrument Sales or Repair
Optical Goods Sales
Painting and Wallpaper Sales
Paints and Varnishes
Parking Lot
Patio Homes
Postal Facilities
Poultry
Private Garages
Professional Office
Retail Shops Ancillary To Studio \ Workshop
Stone \ Cut Stone Products Sales

**Restricted Uses**

All uses except permitted and conditionally permitted uses.

**Rural Settlement Zone**

**Landuse Permitted**

The following uses in the tables are proposed to be applicable for this zone only.

**Table No. A.7: Landuse Permitted**

<b>Permitted</b>
Agricultural Dwellings
Animal Husbandry
Animal Shelter
Graveyard \ Cemetery

<b>Permitted</b>
Child Daycare \ Preschool
Primary School
Communication Tower Within Permitted Height
Cottage
Crematorium
Dairy Farming
General Store
Grocery Store
Handloom (Cottage Industry)
Housing For Seasonal Firm Labor
Mosque, Place Of Worship
Newspaper Stand
Nursery School
orphanage
Outdoor Religious Events (Eidgah)
Playing Field
Satellite Dish Antenna
NGO \ CBO Facilities
Special Dwelling (E.G. Dorm For Physically Challenged Etc.)
Temporary Shed \ Tent
Specialized School: Dance, Art, Music, Physically Challenged & Others
Static Electrical Sub Stations
Transmission Lines
Utility Lines
Woodlot
Plantation (Except Narcotic Plant)
Social Forestry
Memorial Structure

Source: Compiled by the Consultants

### Landuse Conditionally Permitted

The following uses may be permitted or disallowed in this zone after review and approval by the authority/committee following appropriate procedure while the application meets the criteria mentioned in the requirement.

**Table No. A.8: Landuse Conditionally Permitted**

<b>Conditional</b>
Artisan's Shop (Potter, Blacksmith, and Goldsmith Etc.)
Research organization (Agriculture \ Fisheries)
Energy Installation
Fish Hatchery
Garden Center or Retail Nursery
Emergency Shelter
Sports and Recreation Club, Firing Range: Indoor

Source: Compiled by the Consultants

### Restricted Uses

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

### Mixed use zone

#### Landuse Permitted

The following uses in the tables are proposed to be applicable for this zone only.

**Table No. A.11: Landuse Permitted**

<b>Permitted</b>
Accounting, Auditing or Bookkeeping Services
Addiction Treatment Center
Billboards, Advertisements & Advertising Structure
Agricultural Sales and Services
Antique Store
Appliance Store
Art Gallery, Art Studio \ Workshop
Artisan's Shop
Assisted Living or Elderly Home
Auditorium, Coliseum, Meeting Halls, and Conference Facilities, Convention
Auto Leasing or Rental Office
Automobile Wash
Automobile Driving Academy
Confectionery Shop
Bakery or Confectionery Retail
Bank & Financial Institution
Barber Shop
Bicycle Shop
Billiard Parlor \ Pool Hall
Blacksmith
Boarding and Rooming House
Book or Stationery Store or Newsstand
Bus Passenger Shelter
Child Daycare \ Preschool
Cleaning \ Laundry Shop
Commercial Recreational Buildings
Communication Service Facilities
Communication Tower Within Permitted Height
Community Center
Condominium or Apartment
Correctional Institution
Courier Service
Cyber Café
Daycare Center (Commercial or Nonprofit)
Doctor \ Dentist Chamber
Employee Housing
Fabric Store
Fast Food Establishment \ Food Kiosk
Funeral Services
General Store
Grocery Store
Guest House
Hospital
Jewelry and Silverware Sales
Landscape and Horticultural Services
Mosque, Place Of Worship
Newspaper Stand
Nursery School
Photocopying and Duplicating Services
Pipelines and Utility Lines
Primary School
Project Identification Signs
Property Management Signs
Public Transport Facility

<b>Permitted</b>
Resort
Satellite Dish Antenna
Shelter (Passers By)
Shoe Repair or Shoeshine Shop (Small)
Slaughter House
Social organization
Software Development
Special Dwelling
Toys and Hobby Goods Processing and Supplies
Training Centre
Transmission Lines
Utility Lines
Vehicle Sales & Service, Leasing or Rental
Warehousing
Woodlot
Children's Park
ATM Booth
Water Pump \ Reservoir
Social Forestry
Dormitory
Rickshaw \ Auto Rickshaw Stand

Source: Compiled by the Consultants

#### **Landuse Conditionally Permitted**

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

**Table No. A.12: Landuse Conditionally Permitted**

<b>Conditional</b>
Agricultural Chemicals, Pesticides or Fertilizers Shop
Amusement and Recreation (Indoors)
Beauty and Body Service
Broadcast Studio \ Recording Studio (No Audience)
Building Maintenance \ Cleaning Services, No Outside Storage
Building Material Sales or Storage (Indoors)
Graveyard \ Cemetery
Coffee Shop \ Tea Stall
Computer Maintenance and Repair
Computer Sales & Services
Concert Hall, Stage Shows
Conference Center
Construction Company
Construction, Survey, Soil Testing Firms
Cottage
Counseling Services
Craft Workshop
Crematorium
Plantation (Except Narcotic Plant)
Cultural Exhibits and Libraries
Department Stores, Furniture & Variety Stores
Drug Store or Pharmacy
Energy Installation
Fitness Centre
Flowers, Nursery Stock and Florist Supplies
Freight Handling, Storage & Distribution
Freight Transport Facility

<b>Conditional</b>
Gaming Clubs
Garages
Garden Center or Retail Nursery
Commercial Office
Project Office
Government Office
Hotel or Motel
Household Appliance and Furniture Repair Service
Indoor Amusement Centers, Game Arcades
Indoor Theatre
Lithographic or Print Shop
Market (Bazar)
Health Office, Dental Laboratory, Clinic or Lab
Musical Instrument Sales or Repair
Optical Goods Sales
Outdoor Café
Outdoor Fruit and Vegetable Markets
Painting and Wallpaper Sales
Paints and Varnishes
Patio Homes
Photofinishing Laboratory & Studio
Poultry
Printing, Publishing and Distributing
Psychiatric Hospital
Retail Shops Ancillary To Studio \ Workshop
Radio \ Television or T&T Station With Transmitter Tower
Refrigerator or Large Appliance Repair
Restaurant
Retail Shops \ Facilities
Sporting Goods and Toys Sales
Sports and Recreation Club, Firing Range: Indoor
Telephone Exchanges
Television, Radio or Electronics Repair (No Outside Storage)

Source: Compiled by the Consultants

### Restricted Uses

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

### Institutional Zone

#### Landuse Permitted

The following uses in the tables are proposed to be applicable for this zone only.

**Table No. A.13: Landuse Permitted**

<b>Permitted</b>
Addiction Treatment Center
Billboards, Advertisements & Advertising Structure
Art Gallery, Art Studio \ Workshop
Automobile Driving Academy
Confectionery Shop
Bus Passenger Shelter
Child Daycare \ Preschool
College, University, Technical Institute
Communication Service Facilities
Communication Tower Within Permitted Height
Conference Center
Correctional Institution

<b>Permitted</b>
Cultural Exhibits and Libraries
Cyber Café
Freight Transport Facility
General Store
Grocery Store
High School
Hospital
Lithographic or Print Shop
Mosque, Place Of Worship
Multi-Storey Car Park
Newspaper Stand
Nursery School
Outdoor Religious Events
Photocopying and Duplicating Services
Post Office
Primary School
Professional Office
Project Identification Signs
Property Management Signs
Public Transport Facility
Satellite Dish Antenna
School (Retarded)
Scientific Research Establishment
Shelter (Passers By)
Specialized School: Dance, Art, Music & Others
Training Centre
Transmission Lines
Utility Lines
Vocational, Business, Secretarial School
Woodlot
ATM Booth
Water Pump \ Reservoir
Social Forestry
Dormitory
Veterinary School \ College and Hospital

Source: Compiled by the Consultants

#### **Landuse Conditionally Permitted**

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

**Table No. A.14: Landuse Conditionally Permitted**

<b>Conditional</b>
Auditorium, Coliseum, Meeting Halls, and Conference Facilities, Convention
Bank & Financial Institution
Barber Shop
Boarding and Rooming House
Book or Stationery Store or Newsstand
Coffee Shop \ Tea Stall
Counseling Services
Courier Service
Plantation (Except Narcotic Plant)
Daycare Center (Commercial or Nonprofit)
Doctor \ Dentist Chamber
Drug Store or Pharmacy



<b>Conditional</b>
Fast Food Establishment \ Food Kiosk
Flowers, Nursery Stock and Florist Supplies
Gallery \ Museum
Garages
Indoor Theatre
orphanage
Outdoor Café
Parking Lot
Pipelines and Utility Lines
Postal Facilities
Psychiatric Hospital

Source: Compiled by the Consultants

### Restricted Uses

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

### Administrative Zone

#### Landuse Permitted

The following uses in the tables are proposed to be applicable for this zone only.

**Table No. A.15: Landuse Permitted**

<b>Permitted</b>
Accounting, Auditing or Bookkeeping Services
Billboards, Advertisements & Advertising Structure
Confectionery Shop
Bus Passenger Shelter
Civic Administration
Communication Service Facilities
Communication Tower Within Permitted Height
Construction, Survey, Soil Testing Firms
Cultural Exhibits and Libraries
Cyber Café
Emergency Shelter
Freight Transport Facility
General Store
Project Office
Government Office
Grocery Store
Guest House
Multi-Storey Car Park
Newspaper Stand
Outdoor Religious Events
Photocopying and Duplicating Services
Post Office
Professional Office
Public Transport Facility
Satellite Dish Antenna
Scientific Research Establishment
Shelter (Passers By)
Training Centre
Transmission Lines
Utility Lines
Woodlot
ATM Booth

<b>Permitted</b>
Water Pump \ Reservoir
Social Forestry

Source: Compiled by the Consultants

### Landuse Conditionally Permitted

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

**Table No. A.16: Landuse Conditionally Permitted**

<b>Conditional</b>
Amusement and Recreation (Indoors)
Auditorium, Coliseum, Meeting Halls, and Conference Facilities, Convention
Bank & Financial Institution
Boarding and Rooming House
Book or Stationery Store or Newsstand
Coffee Shop \ Tea Stall
Conference Center
Courier Service
Plantation (Except Narcotic Plant)
Daycare Center (Commercial or Nonprofit)
Detention Facilities
Doctor \ Dentist Chamber
Energy Installation
Fast Food Establishment \ Food Kiosk
Flowers, Nursery Stock and Florist Supplies
Freight Handling, Storage & Distribution
Freight Yard
Gallery \ Museum
Garages
Police Box \ Barrack
Fire \ Rescue Station
Lithographic or Print Shop
Mosque, Place Of Worship
Outdoor Café
Parking Lot
Parking Lot (Commercial)
Pipelines and Utility Lines
Postal Facilities

Source: Compiled by the Consultants

### Restricted Uses

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

### Agricultural Zone

#### Landuse Permitted

The following uses in the tables are proposed to be applicable for this zone only.

**Table No. A.17: Landuse Permitted**

<b>Permitted</b>
Food Grain Cultivation
Vegetable Cultivation
Cash Crop Cultivation
Horticulture

<b>Permitted</b>
Arboriculture
Dairy Farming
Deep Tube Well
Shallow Tube Well
Irrigation Facilities (Irrigation Canal, Culvert, Flood Wall etc)
Temporary Structure (Agricultural)
Animal Shelter
Duckery
Aquatic Recreation Facility (Without Structure)
Tree Plantation (Except Narcotic Plant)
Aquaculture
Static Transformer Stations
Transmission Lines
Utility Lines
Woodlot
Social Forestry

Source: Compiled by the Consultants

### **Landuse Conditionally Permitted**

**Table No. A.18: Landuse Conditionally Permitted**

<b>Conditional</b>
Graveyard \ Cemetery
Communication Tower Within Permitted Height
Crematorium
Fish Hatchery
Garden Center or Retail Nursery
Poultry

Source: Compiled by the Consultants

### **Restricted Uses**

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

### **Open Space**

#### **Landuse Permitted**

The following uses in the tables are proposed to be applicable for this zone only.

**Table No. A.19: Landuse Permitted**

<b>Permitted</b>
Botanical Garden & Arboretum
Bus Passenger Shelter
Caravan Park \ Camping Ground
Carnivals and Fairs
Circus
Plantation (Except Narcotic Plant)
Landscape and Horticultural Services
Open Theater
Park and Recreation Facilities (General)
Pipelines and Utility Lines
Playing Field
Special Function Tent
Tennis Club
Transmission Lines
Urban-Nature Reserve
Utility Lines

<b>Permitted</b>
Woodlot
Zoo
Roadside Parking
Social Forestry
Memorial Structure

Source: Compiled by the Consultants

### Landuse Conditionally Permitted

**Table No. A.20: Landuse Conditionally Permitted**

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

Source: Compiled by the Consultants

### Restricted Uses

All uses except permitted and conditionally permitted uses are restricted.

### Water Retention Area

Retaining water is the main purpose of this type of Landuse.

### Landuse Permitted

The following uses in the tables are proposed to be applicable for this zone only.

**Table No. A.21: Landuse Permitted**

<b>Permitted</b>
Aquatic Recreation Facility (Without Structure)
Fishing Club
Utility Lines
Water Parks
Memorial Structure

Source: Compiled by the Consultants

### Landuse Conditionally Permitted

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

**Table No. A.22: Landuse Conditionally Permitted**

<b>Conditional</b>
Plantation (Except Narcotic Plant)
Marina \ Boating Facility
Motorized Recreation

Source: Compiled by the Consultants

## Water body

### Landuse Permitted

The following uses in the tables are proposed to be applicable for this zone only.

**Table No. A.23: Landuse Permitted**

<b>Permitted</b>
Aquatic Recreation Facility (Without Structure)
Fishing Club
Utility Lines
Water Parks
Memorial Structure

*Source: Compiled by the Consultants*

### Landuse Conditionally Permitted

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

**Table No. A.24: Landuse Conditionally Permitted**

<b>Conditional</b>
Plantation (Except Narcotic Plant)
Marina \ Boating Facility
Motorized Recreation

*Source: Compiled by the Consultants*

### Restricted Uses

All uses except permitted and conditionally permitted uses are restricted.



## **ANNEXURE-C**

### **Resolution of Final Consultation Meeting and Attendance**





## ANNEXURE-D: Details Road Network Proposal

Road ID	Road With (feet)	Length (m)	Ward No.	Phase	Type
RP01	100	71.871	Outside	3rd	W
RP02	100	0.564	Outside	3rd	W
RP01	100	1,491.336	Ward No. 01	3rd	W
RP02	100	364.889	Ward No. 01	3rd	W
RP12	100	25.653	Ward No. 04	2nd	W
RP01	100	1,954.217	Ward No. 04	3rd	W
RP01	100	0.007	Ward No. 04	3rd	W
RP12	100	979.921	Ward No. 05	2nd	W
RP01	100	432.201	Ward No. 05	3rd	W
RP12	100	454.906	Ward No. 06	2nd	W
RP13	100	344.122	Ward No. 06	2nd	W
RP13	100	754.110	Ward No. 07	2nd	W
RP01	100	964.808	Ward No. 07	3rd	W
RP01	100	783.697	Ward No. 08	3rd	W
RP01	100	523.244	Ward No. 09	3rd	W
RP03	80	728.588	Ward No. 03	3rd	N
RP03	80	6.168	Ward No. 04	3rd	N
RP03	80	301.108	Ward No. 05	3rd	N
RP03	80	2,021.495	Ward No. 06	3rd	N
RP03	80	890.024	Ward No. 07	3rd	N
RS145	60	9.103	Outside	2nd	N
RS146	60	60.182	Outside	2nd	N
RS15	60	1,224.843	Ward No. 03	2nd	N
RS147	60	3.441	Ward No. 03	3rd	N
RS04	60	32.952	Ward No. 04	2nd	N
RS04	60	1,201.504	Ward No. 05	2nd	N
RS04	60	394.951	Ward No. 06	2nd	N
RS146	60	11.929	Ward No. 06	2nd	N
RS15	60	243.848	Ward No. 06	2nd	N
RS17	60	977.016	Ward No. 06	2nd	W
RS18	60	484.671	Ward No. 06	2nd	W
RS147	60	1,799.532	Ward No. 06	3rd	N
RS258	60	927.966	Ward No. 06	3rd	N
RS144	60	807.764	Ward No. 07	3rd	N
RS147	60	2.955	Ward No. 07	3rd	N
RS145	60	341.297	Ward No. 08	2nd	N
RS144	60	340.782	Ward No. 08	3rd	N
RS144	60	206.706	Ward No. 08	3rd	N
RS145	60	1,452.293	Ward No. 09	2nd	N
RS144	60	444.378	Ward No. 09	3rd	N
RS33	50	601.421	Ward No. 01	1st	W
RS33	50	209.794	Ward No. 02	1st	W
RS16	50	1,212.948	Ward No. 05	1st	W
RS16	50	449.265	Ward No. 06	1st	W
RS19	50	923.090	Ward No. 06	1st	W

RS79	40	0.652	Outside	1st	W
RS108	40	21.085	Outside	2nd	W
RS140	40	11.650	Outside	2nd	W
RS156	40	11.949	Outside	2nd	W
RS157	40	8.358	Outside	2nd	W
RS159	40	24.417	Outside	2nd	W
RS23	40	70.821	Outside	2nd	N
RS24	40	6.143	Outside	2nd	N
RS38	40	639.254	Outside	2nd	N
RS40	40	87.321	Outside	2nd	N
RS81	40	1.235	Outside	2nd	W
RS92	40	35.299	Outside	2nd	W
RS164	40	57.790	Outside	3rd	W
RS100	40	282.805	Ward No. 01	1st	W
RS101	40	18.745	Ward No. 01	1st	W
RS102	40	347.103	Ward No. 01	1st	W
RS103	40	321.251	Ward No. 01	1st	W
RS104	40	191.809	Ward No. 01	1st	W
RS105	40	665.415	Ward No. 01	1st	N
RS107	40	101.852	Ward No. 01	1st	W
RS132	40	154.298	Ward No. 01	1st	W
RS152	40	732.599	Ward No. 01	1st	W
RS158	40	115.191	Ward No. 01	1st	W
RS26	40	337.752	Ward No. 01	1st	W
RS99	40	201.362	Ward No. 01	1st	W
RS23	40	1,891.967	Ward No. 01	2nd	N
RS24	40	390.452	Ward No. 01	2nd	N
RS39	40	280.667	Ward No. 01	2nd	N
RS92	40	27.110	Ward No. 01	2nd	W
RS164	40	7.205	Ward No. 01	3rd	W
RS93	40	19.372	Ward No. 01	3rd	W
RS100	40	127.439	Ward No. 02	1st	W
RS101	40	524.280	Ward No. 02	1st	W
RS105	40	228.227	Ward No. 02	1st	N
RS106	40	166.214	Ward No. 02	1st	N
RS152	40	1.325	Ward No. 02	1st	W
RS162	40	43.872	Ward No. 02	1st	W
RS163	40	1,286.557	Ward No. 02	1st	W
RS99	40	0.315	Ward No. 02	1st	W
RS108	40	546.133	Ward No. 02	2nd	W
RS140	40	114.883	Ward No. 02	2nd	W
RS156	40	1,248.136	Ward No. 02	2nd	W
RS157	40	183.865	Ward No. 02	2nd	W
RS24	40	3,741.440	Ward No. 02	2nd	N
RS39	40	90.228	Ward No. 02	2nd	N
RS135	40	683.300	Ward No. 03	1st	W
RS43	40	5.015	Ward No. 03	1st	W
RS44	40	392.378	Ward No. 03	1st	W
RS07	40	1,036.761	Ward No. 03	2nd	N
RS136	40	346.666	Ward No. 03	2nd	W

RS140	40	8.541	Ward No. 03	2nd	W
RS149	40	388.673	Ward No. 03	2nd	N
RS24	40	252.430	Ward No. 03	2nd	N
RS35	40	743.844	Ward No. 03	2nd	W
RS39	40	2,685.585	Ward No. 03	2nd	N
RS40	40	9.455	Ward No. 03	2nd	N
RS51	40	36.413	Ward No. 04	1st	W
RS114	40	405.257	Ward No. 04	2nd	N
RS115	40	233.995	Ward No. 04	2nd	N
RS133	40	284.774	Ward No. 04	2nd	W
RS161	40	741.807	Ward No. 04	2nd	W
RS165	40	943.075	Ward No. 04	2nd	W
RS23	40	85.874	Ward No. 04	2nd	N
RS38	40	2,218.955	Ward No. 04	2nd	N
RS39	40	86.060	Ward No. 04	2nd	N
RS92	40	463.901	Ward No. 04	2nd	W
RS164	40	1,495.111	Ward No. 04	3rd	W
RS93	40	145.939	Ward No. 04	3rd	W
RS148	40	386.333	Ward No. 05	1st	W
RS43	40	161.402	Ward No. 05	1st	W
RS48	40	249.657	Ward No. 05	1st	W
RS51	40	645.953	Ward No. 05	1st	W
RS153	40	564.944	Ward No. 05	2nd	W
RS161	40	61.306	Ward No. 05	2nd	W
RS39	40	488.596	Ward No. 05	2nd	N
RS150	40	652.644	Ward No. 05	3rd	N
RS159	40	959.584	Ward No. 06	2nd	W
RS160	40	914.150	Ward No. 06	2nd	W
RS40	40	99.807	Ward No. 06	2nd	N
RS129	40	358.228	Ward No. 06	3rd	W
RS154	40	207.896	Ward No. 06	3rd	W
RS155	40	500.630	Ward No. 06	3rd	W
RS08	40	615.014	Ward No. 07	1st	W
RS79	40	651.118	Ward No. 07	1st	W
RS116	40	851.927	Ward No. 07	2nd	W
RS123	40	424.775	Ward No. 07	2nd	W
RS127	40	468.271	Ward No. 07	2nd	W
RS133	40	388.341	Ward No. 07	2nd	W
RS151	40	22.926	Ward No. 07	2nd	W
RS153	40	127.845	Ward No. 07	2nd	W
RS166	40	1,203.780	Ward No. 07	2nd	W
RS38	40	678.909	Ward No. 07	2nd	N
RS63	40	97.762	Ward No. 07	2nd	W
RS80	40	190.318	Ward No. 07	2nd	W
RS81	40	49.566	Ward No. 07	2nd	W
RS155	40	24.860	Ward No. 07	3rd	W
RS122	40	332.215	Ward No. 08	2nd	W
RS123	40	37.244	Ward No. 08	2nd	W
RS38	40	57.503	Ward No. 08	2nd	N
RS62	40	91.133	Ward No. 08	2nd	W

RS81	40	730.562	Ward No. 08	2nd	W
RS117	40	575.112	Ward No. 08	3rd	W
RS118	40	530.884	Ward No. 08	3rd	W
RS121	40	783.611	Ward No. 08	3rd	W
RS151	40	403.962	Ward No. 09	2nd	W
RS62	40	785.450	Ward No. 09	2nd	W
RS63	40	214.735	Ward No. 09	2nd	W
RS117	40	111.226	Ward No. 09	3rd	W
RS121	40	125.003	Ward No. 09	3rd	W
RL120	30	465.032	Outside	2nd	W
RL174	30	77.791	Outside	2nd	N
RL192	30	20.908	Outside	2nd	W
RL59	30	594.143	Outside	2nd	W
RL68	30	4.318	Outside	2nd	W
RL97	30	15.995	Outside	2nd	N
RL98	30	25.428	Outside	2nd	N
RL173	30	850.708	Outside	3rd	N
RL182	30	74.832	Outside	3rd	W
RL167	30	121.525	Ward No. 01	1st	W
RL193	30	994.966	Ward No. 01	1st	W
RL27	30	356.723	Ward No. 01	1st	W
RL28	30	352.853	Ward No. 01	1st	W
RL29	30	234.971	Ward No. 01	1st	W
RL180	30	823.192	Ward No. 01	2nd	W
RL97	30	15.189	Ward No. 01	2nd	N
RL98	30	1,601.336	Ward No. 01	2nd	N
RL90	30	79.575	Ward No. 01	3rd	W
RL91	30	36.012	Ward No. 01	3rd	W
RL96	30	716.548	Ward No. 01	3rd	W
RL174	30	489.501	Ward No. 02	2nd	N
RL181	30	1,288.745	Ward No. 02	2nd	W
RL130	30	148.369	Ward No. 02	3rd	W
RL131	30	93.267	Ward No. 02	3rd	W
RL182	30	843.950	Ward No. 02	3rd	W
RL183	30	954.074	Ward No. 02	3rd	W
RL137	30	76.915	Ward No. 03	1st	W
RL45	30	199.982	Ward No. 03	1st	W
RL174	30	533.543	Ward No. 03	2nd	N
RL185	30	493.014	Ward No. 03	2nd	W
RL188	30	1,210.855	Ward No. 03	2nd	W
RL05	30	38.796	Ward No. 03	3rd	W
RL183	30	0.122	Ward No. 03	3rd	W
RL184	30	30.532	Ward No. 03	3rd	W
RL88	30	454.032	Ward No. 03	3rd	W
RL138	30	330.994	Ward No. 04	1st	W
RL112	30	245.563	Ward No. 04	2nd	W
RL113	30	554.487	Ward No. 04	2nd	W
RL169	30	319.885	Ward No. 04	2nd	W
RL170	30	186.777	Ward No. 04	2nd	W
RL97	30	1,047.772	Ward No. 04	2nd	N

RL98	30	263.571	Ward No. 04	2nd	N
RL187	30	13.870	Ward No. 04	3rd	W
RL90	30	298.932	Ward No. 04	3rd	W
RL137	30	173.681	Ward No. 05	1st	W
RL138	30	141.965	Ward No. 05	1st	W
RL168	30	212.861	Ward No. 05	1st	W
RL176	30	197.732	Ward No. 05	1st	W
RL82	30	111.879	Ward No. 05	1st	W
RL113	30	24.747	Ward No. 05	2nd	W
RL128	30	217.915	Ward No. 05	2nd	W
RL189	30	330.555	Ward No. 05	2nd	W
RL21	30	22.707	Ward No. 05	2nd	N
RL141	30	371.158	Ward No. 05	3rd	W
RL187	30	180.473	Ward No. 05	3rd	W
RL10	30	951.424	Ward No. 06	2nd	W
RL14	30	418.085	Ward No. 06	2nd	W
RL174	30	94.444	Ward No. 06	2nd	N
RL189	30	644.182	Ward No. 06	2nd	W
RL20	30	252.793	Ward No. 06	2nd	W
RL21	30	804.996	Ward No. 06	2nd	N
RL42	30	408.194	Ward No. 06	2nd	W
RL85	30	550.384	Ward No. 06	2nd	W
RL05	30	325.934	Ward No. 06	3rd	W
RL06	30	1,060.523	Ward No. 06	3rd	W
RL09	30	352.188	Ward No. 06	3rd	W
RL175	30	371.177	Ward No. 06	3rd	W
RL176	30	264.293	Ward No. 06	3rd	W
RL177	30	301.136	Ward No. 06	3rd	W
RL178	30	91.047	Ward No. 06	3rd	W
RL179	30	120.154	Ward No. 06	3rd	W
RL186	30	176.050	Ward No. 06	3rd	W
RL259	30	1,202.016	Ward No. 06	3rd	N
RL11	30	325.695	Ward No. 07	2nd	W
RL119	30	157.629	Ward No. 07	2nd	W
RL126	30	722.900	Ward No. 07	2nd	W
RL20	30	228.127	Ward No. 07	2nd	W
RL57	30	113.207	Ward No. 07	2nd	W
RL171	30	382.152	Ward No. 07	3rd	W
RL173	30	20.691	Ward No. 07	3rd	N
RL78	30	110.814	Ward No. 07	3rd	W
RL119	30	389.463	Ward No. 08	2nd	W
RL120	30	1,050.057	Ward No. 08	2nd	W
RL190	30	102.302	Ward No. 08	2nd	W
RL58	30	374.170	Ward No. 08	2nd	W
RL59	30	938.007	Ward No. 08	2nd	W
RL68	30	617.349	Ward No. 08	2nd	W
RL173	30	417.758	Ward No. 08	3rd	N
RL72	30	452.340	Ward No. 08	3rd	W
RL172	30	442.189	Ward No. 09	2nd	W
RL190	30	601.888	Ward No. 09	2nd	W

RL191	30	202.327	Ward No. 09	2nd	W
RL192	30	1,286.903	Ward No. 09	2nd	W
RL194	30	1,250.954	Ward No. 09	2nd	W
RL60	30	324.453	Ward No. 09	2nd	W
RL61	30	78.812	Ward No. 09	2nd	W
RL75	30	222.716	Ward No. 09	2nd	W
RA257	20	6.039	Outside	2nd	W
RA205	20	0.376	Outside	3rd	W
RA22	20	262.289	Outside	3rd	W
RA67	20	111.398	Outside	3rd	W
RA94	20	2.194	Outside	3rd	W
RA110	20	213.425	Ward No. 01	1st	W
RA111	20	155.890	Ward No. 01	1st	W
RA210	20	160.292	Ward No. 01	1st	W
RA211	20	4.913	Ward No. 01	1st	W
RA214	20	4.869	Ward No. 01	1st	W
RA215	20	316.558	Ward No. 01	1st	W
RA216	20	3.281	Ward No. 01	1st	W
RA228	20	238.598	Ward No. 01	1st	W
RA229	20	297.830	Ward No. 01	1st	W
RA231	20	540.405	Ward No. 01	1st	W
RA235	20	417.421	Ward No. 01	1st	W
RA236	20	238.507	Ward No. 01	1st	W
RA237	20	217.685	Ward No. 01	1st	W
RA25	20	362.811	Ward No. 01	1st	W
RA30	20	55.706	Ward No. 01	1st	W
RA31	20	244.923	Ward No. 01	1st	W
RA32	20	236.441	Ward No. 01	1st	N
RA208	20	391.168	Ward No. 01	2nd	W
RA209	20	241.331	Ward No. 01	2nd	W
RA212	20	196.947	Ward No. 01	2nd	W
RA230	20	126.880	Ward No. 01	2nd	W
RA232	20	248.063	Ward No. 01	2nd	W
RA233	20	262.303	Ward No. 01	2nd	W
RA234	20	373.406	Ward No. 01	2nd	W
RA109	20	222.698	Ward No. 02	1st	W
RA211	20	83.389	Ward No. 02	1st	W
RA213	20	188.292	Ward No. 02	1st	W
RA214	20	176.003	Ward No. 02	1st	W
RA216	20	218.977	Ward No. 02	1st	W
RA227	20	244.667	Ward No. 02	1st	W
RA196	20	326.596	Ward No. 02	3rd	W
RA238	20	230.902	Ward No. 02	3rd	W
RA239	20	426.121	Ward No. 02	3rd	W
RA219	20	170.936	Ward No. 03	1st	W
RA245	20	236.558	Ward No. 03	1st	W
RA246	20	412.844	Ward No. 03	1st	W
RA250	20	840.112	Ward No. 03	1st	W
RA41	20	88.628	Ward No. 03	1st	W
RA42	20	133.749	Ward No. 03	1st	W

RA46	20	418.156	Ward No. 03	1st	W
RA47	20	2.164	Ward No. 03	1st	W
RA243	20	433.712	Ward No. 03	2nd	W
RA36	20	819.644	Ward No. 03	2nd	W
RA217	20	255.363	Ward No. 03	3rd	W
RA220	20	175.053	Ward No. 03	3rd	W
RA221	20	215.334	Ward No. 03	3rd	W
RA222	20	318.597	Ward No. 03	3rd	W
RA225	20	135.821	Ward No. 03	3rd	W
RA226	20	123.226	Ward No. 03	3rd	W
RA240	20	180.842	Ward No. 03	3rd	W
RA241	20	160.602	Ward No. 03	3rd	W
RA242	20	182.550	Ward No. 03	3rd	W
RA244	20	457.831	Ward No. 03	3rd	W
RA248	20	275.424	Ward No. 03	3rd	W
RA249	20	504.837	Ward No. 03	3rd	W
RA34	20	284.927	Ward No. 03	3rd	W
RA37	20	349.538	Ward No. 03	3rd	W
RA89	20	153.794	Ward No. 03	3rd	W
RA218	20	200.292	Ward No. 04	1st	W
RA83	20	277.212	Ward No. 04	1st	W
RA84	20	323.853	Ward No. 04	1st	W
RA255	20	6.705	Ward No. 04	2nd	W
RA94	20	403.684	Ward No. 04	3rd	W
RA139	20	130.443	Ward No. 05	1st	W
RA218	20	95.494	Ward No. 05	1st	W
RA250	20	14.821	Ward No. 05	1st	W
RA251	20	55.262	Ward No. 05	1st	W
RA47	20	148.467	Ward No. 05	1st	W
RA49	20	108.331	Ward No. 05	1st	W
RA50	20	407.333	Ward No. 05	1st	W
RA52	20	649.248	Ward No. 05	1st	W
RA53	20	50.195	Ward No. 05	1st	W
RA84	20	158.994	Ward No. 05	1st	W
RA255	20	48.727	Ward No. 05	2nd	W
RA36	20	38.620	Ward No. 06	2nd	W
RA223	20	323.441	Ward No. 06	3rd	W
RA224	20	230.389	Ward No. 06	3rd	W
RA248	20	215.789	Ward No. 06	3rd	W
RA34	20	50.277	Ward No. 06	3rd	W
RA86	20	471.450	Ward No. 06	3rd	W
RA87	20	238.341	Ward No. 06	3rd	W
RA198	20	136.963	Ward No. 07	2nd	W
RA199	20	200.278	Ward No. 07	2nd	W
RA255	20	788.924	Ward No. 07	2nd	W
RA256	20	435.242	Ward No. 07	2nd	W
RA54	20	440.104	Ward No. 07	2nd	W
RA55	20	245.013	Ward No. 07	2nd	W
RA56	20	194.974	Ward No. 07	2nd	W
RA247	20	385.632	Ward No. 07	3rd	W

RA134	20	189.241	Ward No. 08	2nd	W
RA201	20	119.806	Ward No. 08	2nd	W
RA202	20	7.896	Ward No. 08	2nd	W
RA254	20	352.891	Ward No. 08	2nd	W
RA73	20	7.912	Ward No. 08	2nd	W
RA76	20	146.261	Ward No. 08	2nd	W
RA77	20	2.212	Ward No. 08	2nd	W
RA195	20	434.850	Ward No. 08	3rd	W
RA197	20	328.215	Ward No. 08	3rd	N
RA205	20	56.934	Ward No. 08	3rd	W
RA206	20	889.294	Ward No. 08	3rd	W
RA207	20	110.368	Ward No. 08	3rd	W
RA22	20	643.700	Ward No. 08	3rd	W
RA252	20	186.815	Ward No. 08	3rd	W
RA253	20	259.173	Ward No. 08	3rd	W
RA67	20	762.194	Ward No. 08	3rd	W
RA71	20	185.534	Ward No. 08	3rd	W
RA200	20	170.959	Ward No. 09	2nd	W
RA201	20	61.363	Ward No. 09	2nd	W
RA202	20	315.987	Ward No. 09	2nd	W
RA203	20	197.480	Ward No. 09	2nd	W
RA204	20	276.950	Ward No. 09	2nd	N
RA254	20	221.756	Ward No. 09	2nd	W
RA257	20	1,744.770	Ward No. 09	2nd	W
RA64	20	639.831	Ward No. 09	2nd	W
RA65	20	417.692	Ward No. 09	2nd	W
RA66	20	424.441	Ward No. 09	2nd	W
RA69	20	266.697	Ward No. 09	2nd	W
RA70	20	181.658	Ward No. 09	2nd	W
RA73	20	150.634	Ward No. 09	2nd	W
RA74	20	256.973	Ward No. 09	2nd	W
RA76	20	64.191	Ward No. 09	2nd	W
RA77	20	270.758	Ward No. 09	2nd	W
RA124	20	98.925	Ward No. 09	3rd	W
RA125	20	141.896	Ward No. 09	3rd	W
RA252	20	155.442	Ward No. 09	3rd	W
RA253	20	90.674	Ward No. 09	3rd	W
Total		145,796.290			

**Note:**

- W= widening, N= New Road
- The drain which is outside but very close to the boundary of the Paurashava but very essential for the network Indicated as Outside Road.



## ANNEXURE-E

### Details Drianage Network Proposal

Drain ID	Type	Length (m)	Ward No.	Phase
DP01	Primary	71.871	Outside	3rd
DP02	Primary	0.564	Outside	3rd
DP146	Primary	60.182	Outside	2nd
DP145	Primary	9.103	Outside	2nd
DP01	Primary	0.291	Outside	3rd
DP01	Primary	1,491.336	Ward No. 01	3rd
DP02	Primary	364.889	Ward No. 01	3rd
DP15	Primary	1,224.843	Ward No. 03	2nd
DP03	Primary	728.588	Ward No. 03	3rd
DP147	Primary	3.441	Ward No. 03	3rd
DP04	Primary	32.952	Ward No. 04	2nd
DP12	Primary	21.625	Ward No. 04	2nd
DP01	Primary	1,957.501	Ward No. 04	3rd
DP01	Primary	2.876	Ward No. 04	3rd
DP03	Primary	6.168	Ward No. 04	3rd
DP04	Primary	1,201.504	Ward No. 05	2nd
DP12	Primary	985.095	Ward No. 05	2nd
DP01	Primary	432.201	Ward No. 05	3rd
DP03	Primary	301.108	Ward No. 05	3rd
DP04	Primary	396.183	Ward No. 06	2nd
DP12	Primary	452.293	Ward No. 06	2nd
DP13	Primary	346.710	Ward No. 06	2nd
DP146	Primary	11.929	Ward No. 06	2nd
DP15	Primary	244.076	Ward No. 06	2nd
DP17	Primary	976.787	Ward No. 06	2nd
DP18	Primary	483.440	Ward No. 06	2nd
DP03	Primary	2,021.495	Ward No. 06	3rd
DP147	Primary	1,799.532	Ward No. 06	3rd
DP258	Primary	927.966	Ward No. 06	3rd
DP13	Primary	737.938	Ward No. 07	2nd
DP01	Primary	964.808	Ward No. 07	3rd
DP03	Primary	890.024	Ward No. 07	3rd
DP144	Primary	807.764	Ward No. 07	3rd
DP147	Primary	2.955	Ward No. 07	3rd
DP145	Primary	341.297	Ward No. 08	2nd
DP01	Primary	783.697	Ward No. 08	3rd
DP144	Primary	342.649	Ward No. 08	3rd
DP144	Primary	207.044	Ward No. 08	3rd
DP145	Primary	1,452.293	Ward No. 09	2nd
DP01	Primary	523.244	Ward No. 09	3rd
DP144	Primary	444.378	Ward No. 09	3rd
DS98	Secondary	25.428	Outside	2nd
DS24	Secondary	6.143	Outside	2nd
DS79	Secondary	0.652	Outside	1st
DS164	Secondary	57.790	Outside	3rd
DS92	Secondary	35.299	Outside	2nd

Drain ID	Type	Length (m)	Ward No.	Phase
DS140	Secondary	11.650	Outside	2nd
DS108	Secondary	21.085	Outside	2nd
DS192	Secondary	20.908	Outside	2nd
DS120	Secondary	465.032	Outside	2nd
DS59	Secondary	594.143	Outside	2nd
DS159	Secondary	24.417	Outside	2nd
DS157	Secondary	8.358	Outside	2nd
DS156	Secondary	11.949	Outside	2nd
DS182	Secondary	74.832	Outside	3rd
DS174	Secondary	77.791	Outside	2nd
DS68	Secondary	4.318	Outside	2nd
DS173	Secondary	850.708	Outside	3rd
DS81	Secondary	1.235	Outside	2nd
DS23	Secondary	70.821	Outside	2nd
DS38	Secondary	639.254	Outside	2nd
DS40	Secondary	87.321	Outside	2nd
DS100	Secondary	280.674	Ward No. 01	1st
DS101	Secondary	18.745	Ward No. 01	1st
DS102	Secondary	347.187	Ward No. 01	1st
DS103	Secondary	320.309	Ward No. 01	1st
DS104	Secondary	192.666	Ward No. 01	1st
DS105	Secondary	665.415	Ward No. 01	1st
DS107	Secondary	101.852	Ward No. 01	1st
DS132	Secondary	154.298	Ward No. 01	1st
DS152	Secondary	732.599	Ward No. 01	1st
DS158	Secondary	115.191	Ward No. 01	1st
DS167	Secondary	121.525	Ward No. 01	1st
DS193	Secondary	994.966	Ward No. 01	1st
DS26	Secondary	337.752	Ward No. 01	1st
DS27	Secondary	356.694	Ward No. 01	1st
DS28	Secondary	352.017	Ward No. 01	1st
DS29	Secondary	235.836	Ward No. 01	1st
DS33	Secondary	601.421	Ward No. 01	1st
DS99	Secondary	203.493	Ward No. 01	1st
DS180	Secondary	823.192	Ward No. 01	2nd
DS23	Secondary	1,892.548	Ward No. 01	2nd
DS24	Secondary	389.870	Ward No. 01	2nd
DS39	Secondary	280.667	Ward No. 01	2nd
DS92	Secondary	27.110	Ward No. 01	2nd
DS97	Secondary	14.427	Ward No. 01	2nd
DS98	Secondary	1,602.099	Ward No. 01	2nd
DS164	Secondary	7.205	Ward No. 01	3rd
DS90	Secondary	80.742	Ward No. 01	3rd
DS91	Secondary	35.719	Ward No. 01	3rd
DS93	Secondary	19.372	Ward No. 01	3rd
DS96	Secondary	716.548	Ward No. 01	3rd
DS100	Secondary	123.663	Ward No. 02	1st
DS101	Secondary	528.056	Ward No. 02	1st
DS105	Secondary	229.017	Ward No. 02	1st

Drain ID	Type	Length (m)	Ward No.	Phase
DS106	Secondary	165.424	Ward No. 02	1st
DS152	Secondary	1.325	Ward No. 02	1st
DS162	Secondary	43.872	Ward No. 02	1st
DS163	Secondary	1,286.557	Ward No. 02	1st
DS33	Secondary	222.196	Ward No. 02	1st
DS99	Secondary	0.315	Ward No. 02	1st
DS108	Secondary	546.133	Ward No. 02	2nd
DS140	Secondary	114.883	Ward No. 02	2nd
DS156	Secondary	1,248.136	Ward No. 02	2nd
DS157	Secondary	183.865	Ward No. 02	2nd
DS174	Secondary	489.501	Ward No. 02	2nd
DS181	Secondary	1,288.745	Ward No. 02	2nd
DS24	Secondary	3,741.440	Ward No. 02	2nd
DS39	Secondary	90.228	Ward No. 02	2nd
DS130	Secondary	146.077	Ward No. 02	3rd
DS131	Secondary	95.559	Ward No. 02	3rd
DS182	Secondary	843.950	Ward No. 02	3rd
DS183	Secondary	954.074	Ward No. 02	3rd
DS135	Secondary	684.241	Ward No. 03	1st
DS137	Secondary	76.915	Ward No. 03	1st
DS43	Secondary	5.464	Ward No. 03	1st
DS44	Secondary	390.988	Ward No. 03	1st
DS45	Secondary	199.982	Ward No. 03	1st
DS07	Secondary	1,034.998	Ward No. 03	2nd
DS136	Secondary	346.666	Ward No. 03	2nd
DS140	Secondary	8.541	Ward No. 03	2nd
DS149	Secondary	388.673	Ward No. 03	2nd
DS174	Secondary	533.543	Ward No. 03	2nd
DS185	Secondary	493.014	Ward No. 03	2nd
DS188	Secondary	1,210.855	Ward No. 03	2nd
DS24	Secondary	252.430	Ward No. 03	2nd
DS35	Secondary	743.844	Ward No. 03	2nd
DS39	Secondary	2,686.781	Ward No. 03	2nd
DS40	Secondary	10.023	Ward No. 03	2nd
DS06	Secondary	38.796	Ward No. 03	3rd
DS183	Secondary	0.122	Ward No. 03	3rd
DS184	Secondary	30.532	Ward No. 03	3rd
DS88	Secondary	454.032	Ward No. 03	3rd
DS138	Secondary	330.994	Ward No. 04	1st
DS51	Secondary	36.413	Ward No. 04	1st
DS112	Secondary	245.056	Ward No. 04	2nd
DS113	Secondary	554.994	Ward No. 04	2nd
DS114	Secondary	407.301	Ward No. 04	2nd
DS115	Secondary	231.951	Ward No. 04	2nd
DS133	Secondary	284.774	Ward No. 04	2nd
DS161	Secondary	741.807	Ward No. 04	2nd
DS165	Secondary	943.075	Ward No. 04	2nd
DS169	Secondary	319.885	Ward No. 04	2nd
DS170	Secondary	186.777	Ward No. 04	2nd

Drain ID	Type	Length (m)	Ward No.	Phase
DS23	Secondary	85.874	Ward No. 04	2nd
DS38	Secondary	2,221.850	Ward No. 04	2nd
DS39	Secondary	83.166	Ward No. 04	2nd
DS92	Secondary	463.901	Ward No. 04	2nd
DS97	Secondary	1,047.772	Ward No. 04	2nd
DS98	Secondary	263.571	Ward No. 04	2nd
DS164	Secondary	1,495.111	Ward No. 04	3rd
DS187	Secondary	13.870	Ward No. 04	3rd
DS90	Secondary	298.932	Ward No. 04	3rd
DS93	Secondary	145.939	Ward No. 04	3rd
DS137	Secondary	175.093	Ward No. 05	1st
DS138	Secondary	140.553	Ward No. 05	1st
DS148	Secondary	416.928	Ward No. 05	1st
DS16	Secondary	1,222.862	Ward No. 05	1st
DS168	Secondary	212.861	Ward No. 05	1st
DS43	Secondary	161.402	Ward No. 05	1st
DS48	Secondary	227.128	Ward No. 05	1st
DS51	Secondary	645.953	Ward No. 05	1st
DS82	Secondary	111.879	Ward No. 05	1st
DS113	Secondary	24.747	Ward No. 05	2nd
DS128	Secondary	217.915	Ward No. 05	2nd
DS153	Secondary	564.944	Ward No. 05	2nd
DS161	Secondary	61.306	Ward No. 05	2nd
DS189	Secondary	330.555	Ward No. 05	2nd
DS21	Secondary	22.707	Ward No. 05	2nd
DS39	Secondary	488.596	Ward No. 05	2nd
DS141	Secondary	371.158	Ward No. 05	3rd
DS150	Secondary	652.644	Ward No. 05	3rd
DS187	Secondary	180.473	Ward No. 05	3rd
DS16	Secondary	452.302	Ward No. 06	1st
DS19	Secondary	920.053	Ward No. 06	1st
DS10	Secondary	949.157	Ward No. 06	2nd
DS14	Secondary	420.618	Ward No. 06	2nd
DS142	Secondary	404.478	Ward No. 06	2nd
DS159	Secondary	959.584	Ward No. 06	2nd
DS160	Secondary	914.150	Ward No. 06	2nd
DS174	Secondary	94.444	Ward No. 06	2nd
DS189	Secondary	644.182	Ward No. 06	2nd
DS20	Secondary	256.509	Ward No. 06	2nd
DS21	Secondary	802.464	Ward No. 06	2nd
DS40	Secondary	99.807	Ward No. 06	2nd
DS85	Secondary	554.447	Ward No. 06	2nd
DS06	Secondary	1,456.583	Ward No. 06	3rd
DS09	Secondary	350.393	Ward No. 06	3rd
DS129	Secondary	358.228	Ward No. 06	3rd
DS154	Secondary	207.896	Ward No. 06	3rd
DS155	Secondary	500.630	Ward No. 06	3rd
DS175	Secondary	371.177	Ward No. 06	3rd
DS176	Secondary	260.693	Ward No. 06	3rd

Drain ID	Type	Length (m)	Ward No.	Phase
DS177	Secondary	301.136	Ward No. 06	3rd
DS178	Secondary	91.047	Ward No. 06	3rd
DS179	Secondary	120.154	Ward No. 06	3rd
DS186	Secondary	176.050	Ward No. 06	3rd
DS08	Secondary	615.274	Ward No. 07	1st
DS79	Secondary	650.858	Ward No. 07	1st
DS11	Secondary	327.110	Ward No. 07	2nd
DS116	Secondary	851.927	Ward No. 07	2nd
DS119	Secondary	157.629	Ward No. 07	2nd
DS123	Secondary	424.775	Ward No. 07	2nd
DS126	Secondary	721.485	Ward No. 07	2nd
DS127	Secondary	468.271	Ward No. 07	2nd
DS133	Secondary	388.341	Ward No. 07	2nd
DS151	Secondary	22.926	Ward No. 07	2nd
DS153	Secondary	127.845	Ward No. 07	2nd
DS166	Secondary	1,203.780	Ward No. 07	2nd
DS20	Secondary	228.127	Ward No. 07	2nd
DS38	Secondary	678.909	Ward No. 07	2nd
DS57	Secondary	113.207	Ward No. 07	2nd
DS63	Secondary	97.762	Ward No. 07	2nd
DS80	Secondary	190.912	Ward No. 07	2nd
DS81	Secondary	48.972	Ward No. 07	2nd
DS155	Secondary	24.860	Ward No. 07	3rd
DS171	Secondary	382.152	Ward No. 07	3rd
DS173	Secondary	20.691	Ward No. 07	3rd
DS78	Secondary	110.814	Ward No. 07	3rd
DS119	Secondary	388.555	Ward No. 08	2nd
DS120	Secondary	1,050.966	Ward No. 08	2nd
DS122	Secondary	335.463	Ward No. 08	2nd
DS123	Secondary	33.996	Ward No. 08	2nd
DS190	Secondary	102.302	Ward No. 08	2nd
DS38	Secondary	57.503	Ward No. 08	2nd
DS58	Secondary	375.890	Ward No. 08	2nd
DS59	Secondary	936.288	Ward No. 08	2nd
DS62	Secondary	91.133	Ward No. 08	2nd
DS68	Secondary	617.349	Ward No. 08	2nd
DS81	Secondary	730.562	Ward No. 08	2nd
DS117	Secondary	577.160	Ward No. 08	3rd
DS118	Secondary	528.836	Ward No. 08	3rd
DS121	Secondary	783.611	Ward No. 08	3rd
DS173	Secondary	417.758	Ward No. 08	3rd
DS72	Secondary	452.340	Ward No. 08	3rd
DS151	Secondary	403.962	Ward No. 09	2nd
DS172	Secondary	442.189	Ward No. 09	2nd
DS190	Secondary	601.888	Ward No. 09	2nd
DS191	Secondary	202.327	Ward No. 09	2nd
DS192	Secondary	1,286.903	Ward No. 09	2nd
DS194	Secondary	1,250.954	Ward No. 09	2nd
DS60	Secondary	325.453	Ward No. 09	2nd

Drain ID	Type	Length (m)	Ward No.	Phase
DS61	Secondary	77.812	Ward No. 09	2nd
DS62	Secondary	786.615	Ward No. 09	2nd
DS63	Secondary	213.571	Ward No. 09	2nd
DS75	Secondary	222.716	Ward No. 09	2nd
DS117	Secondary	111.226	Ward No. 09	3rd
DS121	Secondary	125.003	Ward No. 09	3rd
DT257	Tertiary	6.039	Outside	2nd
DT94	Tertiary	2.194	Outside	3rd
DT205	Tertiary	0.376	Outside	3rd
DT22	Tertiary	262.289	Outside	3rd
DT67	Tertiary	111.398	Outside	3rd
DT110	Tertiary	212.413	Ward No. 01	1st
DT111	Tertiary	156.902	Ward No. 01	1st
DT210	Tertiary	160.292	Ward No. 01	1st
DT211	Tertiary	4.913	Ward No. 01	1st
DT214	Tertiary	4.869	Ward No. 01	1st
DT215	Tertiary	316.558	Ward No. 01	1st
DT216	Tertiary	3.281	Ward No. 01	1st
DT228	Tertiary	238.598	Ward No. 01	1st
DT229	Tertiary	297.830	Ward No. 01	1st
DT231	Tertiary	540.405	Ward No. 01	1st
DT235	Tertiary	417.421	Ward No. 01	1st
DT236	Tertiary	238.507	Ward No. 01	1st
DT237	Tertiary	217.685	Ward No. 01	1st
DT25	Tertiary	362.811	Ward No. 01	1st
DT30	Tertiary	57.112	Ward No. 01	1st
DT31	Tertiary	243.517	Ward No. 01	1st
DT32	Tertiary	236.441	Ward No. 01	1st
DT208	Tertiary	391.168	Ward No. 01	2nd
DT209	Tertiary	241.331	Ward No. 01	2nd
DT212	Tertiary	196.947	Ward No. 01	2nd
DT230	Tertiary	126.880	Ward No. 01	2nd
DT232	Tertiary	248.063	Ward No. 01	2nd
DT233	Tertiary	262.303	Ward No. 01	2nd
DT234	Tertiary	373.406	Ward No. 01	2nd
DT109	Tertiary	222.698	Ward No. 02	1st
DT211	Tertiary	83.389	Ward No. 02	1st
DT213	Tertiary	188.292	Ward No. 02	1st
DT214	Tertiary	176.003	Ward No. 02	1st
DT216	Tertiary	218.977	Ward No. 02	1st
DT227	Tertiary	244.667	Ward No. 02	1st
DT196	Tertiary	326.596	Ward No. 02	3rd
DT238	Tertiary	230.902	Ward No. 02	3rd
DT239	Tertiary	426.121	Ward No. 02	3rd
DT219	Tertiary	170.936	Ward No. 03	1st
DT245	Tertiary	236.558	Ward No. 03	1st
DT246	Tertiary	412.844	Ward No. 03	1st
DT250	Tertiary	840.112	Ward No. 03	1st
DT41	Tertiary	88.436	Ward No. 03	1st

Drain ID	Type	Length (m)	Ward No.	Phase
DT42	Tertiary	133.941	Ward No. 03	1st
DT46	Tertiary	418.156	Ward No. 03	1st
DT47	Tertiary	2.164	Ward No. 03	1st
DT243	Tertiary	433.712	Ward No. 03	2nd
DT36	Tertiary	819.644	Ward No. 03	2nd
DT217	Tertiary	255.363	Ward No. 03	3rd
DT220	Tertiary	175.053	Ward No. 03	3rd
DT221	Tertiary	215.334	Ward No. 03	3rd
DT222	Tertiary	318.597	Ward No. 03	3rd
DT225	Tertiary	135.821	Ward No. 03	3rd
DT226	Tertiary	123.226	Ward No. 03	3rd
DT240	Tertiary	180.842	Ward No. 03	3rd
DT241	Tertiary	160.602	Ward No. 03	3rd
DT242	Tertiary	182.550	Ward No. 03	3rd
DT244	Tertiary	457.831	Ward No. 03	3rd
DT248	Tertiary	275.424	Ward No. 03	3rd
DT249	Tertiary	504.837	Ward No. 03	3rd
DT34	Tertiary	284.927	Ward No. 03	3rd
DT37	Tertiary	349.538	Ward No. 03	3rd
DT89	Tertiary	153.794	Ward No. 03	3rd
DT218	Tertiary	200.292	Ward No. 04	1st
DT83	Tertiary	279.288	Ward No. 04	1st
DT84	Tertiary	321.776	Ward No. 04	1st
DT255	Tertiary	6.705	Ward No. 04	2nd
DT94	Tertiary	400.499	Ward No. 04	3rd
DT139	Tertiary	130.237	Ward No. 05	1st
DT218	Tertiary	95.494	Ward No. 05	1st
DT250	Tertiary	14.821	Ward No. 05	1st
DT251	Tertiary	55.262	Ward No. 05	1st
DT47	Tertiary	148.467	Ward No. 05	1st
DT49	Tertiary	107.333	Ward No. 05	1st
DT50	Tertiary	408.331	Ward No. 05	1st
DT52	Tertiary	648.778	Ward No. 05	1st
DT53	Tertiary	50.278	Ward No. 05	1st
DT84	Tertiary	158.994	Ward No. 05	1st
DT255	Tertiary	48.727	Ward No. 05	2nd
DT36	Tertiary	38.620	Ward No. 06	2nd
DT223	Tertiary	323.441	Ward No. 06	3rd
DT224	Tertiary	230.389	Ward No. 06	3rd
DT248	Tertiary	215.789	Ward No. 06	3rd
DT259	Tertiary	1,202.016	Ward No. 06	3rd
DT34	Tertiary	50.277	Ward No. 06	3rd
DT86	Tertiary	469.229	Ward No. 06	3rd
DT87	Tertiary	240.562	Ward No. 06	3rd
DT198	Tertiary	136.963	Ward No. 07	2nd
DT199	Tertiary	200.278	Ward No. 07	2nd
DT255	Tertiary	435.242	Ward No. 07	2nd
DT255	Tertiary	788.924	Ward No. 07	2nd
DT54	Tertiary	440.104	Ward No. 07	2nd

Drain ID	Type	Length (m)	Ward No.	Phase
DT55	Tertiary	245.013	Ward No. 07	2nd
DT56	Tertiary	194.974	Ward No. 07	2nd
DT247	Tertiary	385.632	Ward No. 07	3rd
DT134	Tertiary	189.241	Ward No. 08	2nd
DT201	Tertiary	119.806	Ward No. 08	2nd
DT202	Tertiary	7.896	Ward No. 08	2nd
DT254	Tertiary	352.891	Ward No. 08	2nd
DT73	Tertiary	7.912	Ward No. 08	2nd
DT76	Tertiary	146.558	Ward No. 08	2nd
DT77	Tertiary	1.915	Ward No. 08	2nd
DT195	Tertiary	434.850	Ward No. 08	3rd
DT197	Tertiary	328.215	Ward No. 08	3rd
DT205	Tertiary	56.934	Ward No. 08	3rd
DT206	Tertiary	889.294	Ward No. 08	3rd
DT207	Tertiary	110.368	Ward No. 08	3rd
DT22	Tertiary	643.700	Ward No. 08	3rd
DT252	Tertiary	186.815	Ward No. 08	3rd
DT253	Tertiary	259.173	Ward No. 08	3rd
DT67	Tertiary	762.194	Ward No. 08	3rd
DT71	Tertiary	185.534	Ward No. 08	3rd
DT200	Tertiary	170.959	Ward No. 09	2nd
DT201	Tertiary	61.363	Ward No. 09	2nd
DT202	Tertiary	315.987	Ward No. 09	2nd
DT203	Tertiary	197.480	Ward No. 09	2nd
DT204	Tertiary	276.950	Ward No. 09	2nd
DT254	Tertiary	221.756	Ward No. 09	2nd
DT257	Tertiary	1,744.770	Ward No. 09	2nd
DT64	Tertiary	639.831	Ward No. 09	2nd
DT65	Tertiary	417.692	Ward No. 09	2nd
DT66	Tertiary	424.441	Ward No. 09	2nd
DT69	Tertiary	266.697	Ward No. 09	2nd
DT70	Tertiary	181.658	Ward No. 09	2nd
DT73	Tertiary	151.658	Ward No. 09	2nd
DT74	Tertiary	255.949	Ward No. 09	2nd
DT76	Tertiary	64.191	Ward No. 09	2nd
DT77	Tertiary	270.758	Ward No. 09	2nd
DT124	Tertiary	99.437	Ward No. 09	3rd
DT125	Tertiary	141.384	Ward No. 09	3rd
DT252	Tertiary	155.442	Ward No. 09	3rd
DT253	Tertiary	90.674	Ward No. 09	3rd
Total		145,669.879		

**Note:**

- 1) The drain which is outside but very close to the boundary of the Paurashava but very essential for the network Indicated as Outside Drain.



## ANNEXURE-F

### Mouza Schedul of Development Proposals

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area in Acre
<b>Administration</b>				
Administration Area-1	6	Yousfpur_060_02	746 part, 747-756, 760-761	10.86
		Ghata_061_01	54-57, 73-86, 87 part	
Administration Area-2	6	Ghata_061_01	1115, 1124-1135, 1190-1191, 1193-1204,	7.26
<b>Residential</b>				
Planned Residential Area-1	1	Latakhola_043_01	1243-1244, 1247-1256, 1259-1263, 3-15, 1317-1339	11.63
Planned Residential Area-2	3	Joypara_057_01	828-830, 832, 893-900, 904-911, 915-924, 967, 990-992	10.65
Planned Residential Area-3	3	Joypara_057_01	871-872, 880-884, 887-889, 891, 925-936, 964	6.22
Planned Residential Area-4	3	Joypara_057_01	833-834, 838-847, 850-858, 867-870, 1239, 1265-1269	11.36
Planned Residential Area-5	4	Batia_055_00	66, 71-76, 81-92, 113-125, 207-241, 250-253, 305, 310-311, 314	24.25
Planned Residential Area-6	5	Joypara_057_02	2465-2469, 2540-2561, 2678-2688, 2690-2691, 2750-2753, 2758-2761, 2765-2771	13.17
Planned Residential Area-7	5	Joypara_057_02	2527-2529, 2562-2565, 2610-2684, 2692-2725, 2728 part, 2729-2731, 3439-3457, 3479-3480	36.95
		Nurpur_056_00	106-112, 114, 119-122, 130, 133-135	
Low Income Houseing Area	6	Yousfpur_060_01	6, 8-10, 18, 19 part, 20-34, 55 part, 56, 57 part, 58 part, 59 part, 60-92	29.48
Re-Settlement Residential Zone	6	Yousfpur_060_01	57 part, 58 part, 59 part, 61-62, 97-109, 110 part, 146-166, 363	55.37
		Laskarkanda_059_00	590-591, 596-597600 part, 601, 624-698, 707-718	
<b>Commercial Facility</b>				
Poura New Market	4	Nurpur_056_00	190-199, 201 part, 207, 208 part, 386-390, 391 part	3.59
Poura Super Market-1	4	Joypara_057_02	2071	2.60
Poura Super Market-2	6	Ghata_061_01	773-776, 783-789, 840-841, 843-848	4.98
Wholesale Market	4	Nurpur_056_00	38 part, 45-52, 53 part, 60-65, 66 part, 70-72	7.49
<b>Transportation</b>				
Bus Terminal	4	Joypara_057_02	2283-2285, 2286 part, 2287-2289, 2291	2.86
Track Terminal & Load-Unload Area	4	Nurpur_056_00	66 part, 67-69, 202-203, 206, 212 part, 213-220, 221 part, 222-225, 231 part	7.65
Tampo Stand-1	1	Latakhola_043_01	798 part, 800	0.56
Tampo Stand-2	1	Latakhola_043_01	599 part, 600 part	0.32

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area in Acre
		Latakhola_043_02	2595 part	
Tampo Stand-3	9	Sutarpara_063_01	1085 part, 1086 part	0.35
<b>Educational Institution</b>				
Agriculture University	6	Ghata_061_01	813 part, 814 part, 815-817, 821-824, 829-831, 853, 854 part, 855-870, 872-890, 891 part, 892-893, 894 part, 895 part	10.55
Vocational Training Institution	6	Laskarkanda_059_00	537-553, 554 part, 572-589, 590 part, 592-595, 596 part, 598-599, 763	13.62
Medical College	6	Yousufpur_060_02	1018-1022, 1045-1053, 1055-1071, 1074-1081, 1168-1201	41.49
		Ghata_061_01	273-335	
College-1	1	Latakhola_043_01	1312, 1340-1348, 1362	7.37
		Latakhola_043_02	2659-2662, 2676, 2911	
College-2	6	Ghata_061_01	23-38, 39 part, 40, 42 part	8.12
College-3	8	Sutarpara_063_01	179 part, 180 part, 283-286, 289 part, 290 part, 291 part, 365-371, 459-462, 485	4.64
	9	Sutarpara_063_01	361-364, 463-464, 465 part, 466-470	7.14
High School-1	4	Latakhala_043_01	41, 43-56	3.67
High School-2	4	Joypara_057_02	2413-2414, 2426-2431	2.24
Primary School-1	1	Latakhala_043_01	1226-1230	2.48
Primary School-2	2	Khalpar_058_02	681-683, 691-693, 694-696	2.36
Primary School-3	4	Latakhala_043_01	57-64, 69	1.58
Primary School-4	5	Joypara_057_02	2411-2412, 2443-2445	2.05
Primary School-5	6	Yousufpur_060_01	167-171	5.87
Primary School-6	7	Ghata_061_02	2791 part, 2792 part, 2794 part, 2795 part, 2796-2797, 2806 part, 2807, 2811 part, 2812	2.69
IT Park Cum Public Library	5	Joypara_057_01	1374	0.24
<b>Open Spce</b>				
Stadium/Sports Complex	5	Joypara_057_02	2687 part, 2688 part, 2689, 2690 part, 2726-2728, 2733-2734, 2737-2749, 2754-2757, 2762-2764, 2789 part, 2790 part, 2791 part, 2792-2803, 2804 part	10.26
Central Park	7	Ghata_061_01	1163-1172, 1175-1186, 1215-1217, 1222-1277	21.28
Play Ground-1	3	Joypara_057_01	734 part, 739, 741 part, 746 part, 1483	1.33
Play Ground-2	6	Yousufpur_060_01	172-173	2.73
Play Ground-3	8	Modhurchar_068_01	361-364, 366 part, 370	2.48
Play Ground-4	9	Sutarpara_063_01	293-296, 300 part, 301-302, 334, 342-346, 347 part, 348-355, 356 part	5.04
Community Park/Play Ground	3	Khalpar_058_02	1042-1052, 1054 part, 1059-1064, 1065 part, 1066 part, 1072-1084,	7.88

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area in Acre
			1089-1092, 1099	
Community Park-1	1	Latakholo_043_02	2578, 2593 part, 2594 part	1.93
Community Park-2	2	Khalpar_058_02	726 part, 727 part, 728-734, 744-751, 1818	4.38
Community Park-3	3	Joypara_057_01	497, 948 part, 949-952	0.54
Community Park-4	5	Joypara_057_02	2846-2850	1.30
Community Park-5	6	Yousufpur_060_02	945-947, 950-952	1.55
Community Park-6	6	Laskarkanda_059_00	554, 556-571, 699-706, 753-754	13.60
Community Park-7	7	Ghata_061_02	2606 part, 2610, 2617-26182621 part, 2621 part, 2622-2629	2.73
Community Park-8	8	Sutarpara_063_01	1, 2 part, 3 part, 4 part, 5 part, 6-9, 11 part, 12-13, 14 part, 17-18, 19 part	4.43
<b>Utility &amp; service facility</b>				
Dumping Site	1	Latakholo_043_01	2 part, 3 part, 5 part	2.10
	4	Latakholo_043_01	13, 14 part, 15, 176, 177 part, 178 part, 179 part	2.89
Cremation	4	Latakholo_043_02	2799, 2805, 2806 part, 2812, 2816	2.17
Slughter House	1	Joypara_057_03	3820 part	0.10
Public Toilet-1	1	Latgakhola_043_01	798 part, 799 part, 800 part	0.23
Public Toilet-2	1	Latgakhola_043_02	2595 part	0.08
Public Toilet-3	9	Sutarpara_063_01	1086 part	0.16
Waste Transfer Station-1	2	Joypara_057_01	352	0.45
Waste Transfer Station-2	3	Khalpar_058_02	1487-1789	0.60
Waste Transfer Station-3	8	Modhurchar_068_01	256	0.23
Water Station	1	Latakholo_043_02	2722-2723	0.24
<b>Industrial</b>				
Industrial Zone-1	3	Khalpar_058_02	899 part, 905 part, 906, 907 part, 922-949, 950 part, 951-952, 953 part, 998-1000, 1001 part, 1008 part, 1011-1033, 1598-1680, 1682 part, 1796-1800, 1805-1807	79.96
		Khalpar_058_03	2180, 2183-2187, 2189-2199, 2201, 2203, 2206 part, 2210-2286	
	6	Laskarkanda_059_00	60 part, 61 part, 62 part, 65 part, 66 part, 67-80, 82 part, 163-228, 314, 323 part, 324-326, 329-438, 474-486, 608 part, 609 part, 610 part, 612-623	111.24
		Yousufpur_060_01	5 part, 11-17, 19 part, 36-54, 113-145	
Industrial Zone-2	7	Ghata_061_01	1218-1220, 1314-1348, 1351 part, 1352-1353, 1354 part, 1356 part, 1357-1375, 1385-1392, 1412 part, 1413-1464	35.22
<b>Helath Facilities</b>				
Hospital Zone	6	Laskarkanda_059_00	126 part, 127-137	20.03

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area in Acre
		Yousufpur_060_02	852-862, 875-907, 917 part, 918 part, 919, 932	
<b>Urban Deffard</b>				
Urban Defferd	4	Nurpur_056_00	20 part, 21 part, 39-44, 183-188, 208 part, 209-211, 212 part, 226-230, 231 part, 233-255, 256 part, 257-261, 262 part, 264-275, 347-385, 391 part, 392 part, 393-435, 438-443	60.59
	7	Kazirchar_062_00	39-47, 66-69, 71, 73-88	14.83
<b>Community Facilities</b>				
Fire Service	5	Batia_055_00	280, 284 part	0.44
Community Centre	5	Joypara_057_02	3340 part, 3341-3343, 3344 part, 3345-3348, 3352-3353	1.86
Poura Graveyard	6	Yousufpur_060_02	1165, 1220-1221, 1230-1231	2.66
Ward Center	1	Latakhola_043_02	1616 part	0.05
	2	Joypara_057_01	108 part	0.08
	3	Joypara_057_01	827 part	0.15
	4	Joypara_057_02	2293 part	0.06
	5	Joypara_057_02	3351, 3354 part, 3355 part	0.29
	6	Ghata_061_01	894 part	0.08
	7	Kazirchar_062_00	60 part	0.15
	8	Sutarpara_063_01	1037 part	0.06
	9	Sutarpara_063_01	1323 part, 1324 part	0.15

## ANNEXURE-G

### Mouza Schedule of Waterbody

Ward No	CS Mouza Name	Plot No.	Area in Acres
Ward No. 01	Latakhola_043_01	A Part of 811,821,946,804,805,807,808,809,925,933,328,326,327,325,97 4,971,973,965,962,966,965,1223,1222,1221,871,869,870,867,3 1,865,864,456,769,773,341,338,336,334,333,304,332,306,1380 ,307,308,309,310,315,311,316,327,981,792,460,297,1,470,448, 447,347,343,348,354,349,355,356,299,300,301,302,303,327,29 4,295,259,335,917,918,913,914,915,1382,441,1358,260,257,25 8,259,439,440,903,911,1220,1216,1223,992,895,908,893,894,9 10,909,908,489,996,910,997,2,3,472,890,893,894,120,119,118, 406,222,1374,221,219,220,212,211,228,216,233,234,237,238,2 41,242,244,247,248,188,1399,250,189,251,12,5,6,11,10,4,253, 372,390,894,895,745,1014,1015,1013,3,1020,878,12,5,428,429 ,1057,1055,1054,1053,1052,1051,1050,1049,1045,1048,1044, 1041,1040,1039,1035,1036,1032,1020,889,888,887,886,1004, 885,884,881,1003,880,879,1000,999,1001,1303,1268,1267,12 15,1235,1214,727,726,506,424,426,1210,1212,1204,1203,120 6,1207,1213,1303,1212,1189,1187,1058,1188,1063,1065,1066 ,1058,1256,1260,1259,1258,1060,1251,1243,1254,1173,1250, 1244,1163,1164,1168,1169,1213,1303,1184,1266,1077,1075,1 155,583,582,577,576,1403,1402,542,540,1404,530,529,526,54 3,1374,1263,1264,1157,1274,1276,1265,1272,693,706,1153,1 154,1148,1155,1159,1278,1277,1275,654,680,651,681,676,67 9,1283,1130,1140,1141,1139,1138,1137,1213,1303,649,1350, 1349,1348,1093,1092,1090,1128,1129,645,1121,642,644,1311 ,1313,621,1308,615	20.403
	Latakhola_043_02	A Part of 2932,2577,2576,2924,2931,2625,2624,2625,2680,2674,2650,2 655,2651,2652,2653,2633,2632,2634,2572,2573,2428,2723,24 27,2574,2927,2926,2426,2932,2576,2794,2789,2792,2928,279 0,2788,2795,2791,2725,2787,2726	9.767
Ward No. 02	Joypara_057_01	A Part of 137,1517,136,9999,135,126,128,127,129,131,132,133,134,137, 9999,26,24,23,123,122,121,127,118,113,112,73,72,30,43,163,4 8,47,51,37,42,1502,38,39,41,40,507,508,511,512,387,386,385, 256,251,250,331,164,145,143,144,48,1501,220,221,169,161,16 0,159,162,156,164,158,157,154,153,165,191,192,191,190,203, 202,201,194,200,195,194,277,262,261,263,286,288,285,282,31 6,315,317,319,293,297,292,288,314,355,390,393,389,391,366, 359,368,369,394,393,523,526,524,525,1512,424,423,1523,442, 441,442,441,442,440,469	6.094
	Joypara_057_03	A Part of 3834,3792,3833	3.002
	Khalpar_058_01	A Part of 127,24,2,1,57,50,51,49,60,95,72,84,83,80,24,154,105,104,95,6 8,145,146,147,105,114,113,88,89,147,136	2.084
	Khalpar_058_02	A Part of 1329,1328,1322,1265,1262,1263,1238,1216,1215,1214,655,68 7,688,686,685,799,809,806,808,810,811,813,805,815,816,818,	9.614

Ward No	CS Mouza Name	Plot No.	Area in Acres
		821,819,820,839,840,877,847,9999,848,876,873,874,871,870,631,793,794,785,9999,645,785,784,781,644,779,778,780,773,738,632,631,647,648,684,574,571,568,541,540,558,557,589,535,512,513,511,507,506,526,525,527,505,529,531,528,501,503,530,535,542,555,556,570,569,504,551,547,548,545,517,518,1290,1281,1300,1290,519,1293,1294,1292,1286,1302,1238,1237,1236,1235,1231,1274,1240,1238,1238,1310,1247,1335,1333,1335,1337,1341,1390,1395,1395,1378,1329,1330,1396	
Ward No. 03	Joypara_057_01	A Part of 1040,1046,1051,582,602,603,604,605,606,620,621,139,1027,1040,1048,1060,1039,1042,1488,1038,1045,1030,1040,1046,1061,626,1065,1066,1063,1022,1023,530,531,532,535,536,537,538,539,540,541,542,543,544,545,546,547,548,549,552,529,572,580,139,1077,1076,1068,1488,1064,1065,1066,1061,1102,1076,1017,1016,1018,1015,1020,596,598,597,599,630,629,597,1075,1072,1093,1070,1072,1073,655,654,630,629,1092,1083,1075,1107,570,1095,1092,1004,1083,656,1084,937,936,946,1084,999,996,1000,1001,644,945,938,686,684,683,675,676,938,968,967,975,968,661,660,1118,1117,1480,1486,1485,966,965,964,1116,1115,939,675,933,936,1142,1143,1141,1086,1087,714,675,1122,1127,1113,1125,1124,1114,1123,665,998,942,943,930,941,940,707,718,709,710,708,666,667,1135,1137,1136,1138,1144,900,704,705,1481,672,1481,715,1132,904,901,1184,1131,1146,1130,1151,1150,1149,1148,1146,736,737,876,877,723,722,721,1146,1149,1148,875,876,879,877,1154,1156,1154,734,734,1155,1154,1156,1157,747,740,1166,1165,1169,1161,1155,1157,1170,1169,1155,1153,749,748,752,827,742,745,1183,1167,1166,865,858,866,867,1164,868,1163,743,745,744,750,748,745,776,777,775,1173,1179,1173,1176,762,1184,1181,183,1182,835,786,784,807,809,810,818,862,863,864,1175,1174,1173,862,1271,837,836,1179,1176,805,815,814,816,1187,1185,1186,1218,1214,1211,1210,1228,647,1185,1271,816,1271,815,816,1263,1270,1514,788,1513,793,1206,647,1185,1236,1195,1237,848,1241,1234,1242,1238,1263,798,799,800,794,801,802,1276,1277,1232,1234,1242,1235,1236,1229,1197,1198,1196,1317,1313,1319,1318,1245,1243,1233,1261,1296,1303,1213,1211,1216,1226,1227,1215,1320,1318,1216,1226,1227,1225,1328,1516,1323,1223,1220,1219,1326,1219	28.121
	Khalpar_058_02	A Part of 1414,1406,1400,1416,1419,1420,1424,1425,1426,1427,1464,1415,1212,1211,1210,1209,1171,1170,1168,1213,1167,1166,1165,1135,1070,1069,1068,1067,1057,1059,1066,1056,1060,1065,981,980,979,978,977,976,975,966,893,917,991,972,955,970,969,957,958,1054,1004,1133,1132,1004,1145,1151,1145,1155,1158,1156,1157,1151,1149,1174,1159,1164,1575,1693,1692,1541,1540,1703,1705,1704,1438,1400,1740,1739,1785,1788,1789,1803,1751,1750,1762,1764,1784,1785,1763,1745,1737,1743,1736,1760,1761,1746,1745	20.589
	Khalpar_058_03	A Part of 2182,2177,2188,2174,2176,2137,2173,2175,2170,2172,2171,2169,2287,2202,2138,2168,2288,2167,2166,2204,2160,2165,22	3.576

Ward No	CS Mouza Name	Plot No.	Area in Acres
		89,2162,2164,2163,2144,2161,2148,2145,2153,2147,2149,2152,2036,2001	
Ward No. 04	Batia_055_00	A Part of 41,27,26,334,271,272,3,2,271,34,67,244,245,255,74,73,297,80,79,312,309,312,183,138,137,322,316,189,198,187,326,166,167,190,191,159,160,165,160,156,153,153	5.372
	Joypara_057_02	A Part of 2142,2140,2067,2182,2068,2066,2233,2993,2992,2228,2226,2227,2218,2230,2231,2229,2216,2178,2179,2178,2243,2254,2255,2244,2245,2246,2256,2253,2170,2171,2266,2267,2169,2162,2163,2164,2165,2166,2168,2169,2144,2143,2141,2140,2155,2154,2158	4.500
	Latakhola_043_01	A Part of 215,208,207,14,19,21,19,105,104,131,130,137,77,76,103,105	0.687
	Latakhola_043_02	A Part of 2112,2899,2096,2101,2111,2137,2138,2139,2112,2140,2111,2137,2138,2112,2136,2137,2138,2139,2151,2217,2220,2925,2155,2156,2136,2154,2205,2212,2211,2216,2174,2215,2217,2925,2532,2537,2546,2545,2550,2549,2547,2890,2556,2820,2561,2562,2819,2563,2815,2816,2568,2814,2569,2813,2571,2804,2803,2802,2429,2801,2800,2798,2797,2821,2425,2867,2866,2421,2422,2395,2420,2431,2422,2385,2384,2386,2385,2383,2384,2346,2345,2344,2383,2384,2874,2839,2478,2477,2476,2475,2543,2551,2474,2360,2473,2544,2472,2471,2550,2552,2549,2359,2888,2890,2540,2922,2518,2517,2516,2526,2527,2527,2514	14.952
	Nurpur_056_00	A Part of 306,300,457,298,291,299,292,99999,295,293,297,294,296,302,282,13,12,11,10,5,484,6,7,73,344,345,347,346,338,352,481,462,480,355,466,334,465,464,337,333,335,336,321,319,318,251,320,252,317,306,307,291,290,339,186,187,188	9.538
Ward No. 05	Batia_055_00	A Part of 280,279,278,273,277,274,290,288,289,287,296	0.509
	Joypara_057_01	A Part of 1497,1347,1345,1346,1344,1341,1340,1465,1340,1475,1474,1469,1468,1340,1366,1365,1340,1452,1451,1446,1450,1447,1448,1445,1434,1510,1340,1343,1342,1341,1384,1392,1383,1382,1394,1411,1340,1458,1457,1462,1470,1467,1475,1474,1461,1462,1433,1432,1375,1374,1387,1388,1385,3144,1373,1372,1374,1371,1370,1369,1357,1377,1367,1368,1358,1379,1366,1459,1461,1441,1439,1438,1438,1440,1441,1442,1429,1430,1420	5.739

Ward No	CS Mouza Name	Plot No.	Area in Acres
	Joypara_057_02	A Part of 3241,3240,182,2026,2023,3239,3240,3248,3249,3235,3032,3039,3040,3217,3221,3224,3226,3222,3049,3050,3143,3058,3250,3248,3249,3247,3058,3246,3247,3014,3013,3012,3221,3023,3031,3027,3026,3025,3024,3034,3075,3214,3215,3249,3083,3080,3135,3205,3208,3210,3209,3212,3211,3213,3214,3153,3068,3067,3066,3065,3279,3278,3260,3259,182,2968,2969,2967,2966,3006,3029,3011,3294,3293,3011,3264,3263,3122,3272,3264,3263,3262,3119,3122,3006,3127,3106,3130,3129,3266,3265,2923,2925,2924,3501,3502,3493,3294,3293,2966,2967,3180,3189,3190,2956,2959,3184,3186,3185,3172,3112,3114,3113,2987,2995,3268,2938,2915,2937,2936,2932,2929,2931,2934,2935,3291,3184,3183,2987,2921,3294,3293,2939,2938,2988,2989,2921,3294,2958,2908,2889,2977,2976,2901,2900,2907,2906,2910,2909,2974,3303,3302,3299,3300,3282,3294,3293,2990,2989,2985,2882,2884,2885,2886,2872,2981,2990,2989,3300,2867,2868,2384,2894,2323,2860,2865,2405,2404,2403,2402,2389,2388,2390,2386,2379,2336,2843,2844,2845,2895,2336,3484,2858,2860,2855,2861,2853,2862,2851,2852,3314,3311,3313,3310,3322,3323,3320,2333,2335,2333,2856,2854,2841,2842,2368,2377,2837,2838,3333,2817,2818,2822,2318,2306,2826,2825,2373,2318,2314,2827,2826,3336,3337,3338,3335,3334,3330,2299,2300,2301,2823,2816,2817,2782,2824,2341,2809,2816,2342,2343,3339,3340,3336,3337,2834,2829,2364,2365,2362,2364,2806,2805,2807,2786,2788,2779,2346,2345,2772,2773,2774,2832,2361,2362,2360,3376,3375,2454,2356,3365,3364,3366,3368,3369,3363,3362,3361,3489,2495,2494,2493,2492,2491,2354,2352,2353,2355,2359,2736,2802,2474,2483,2475,2476,2477,3482,3426,3425,3419,3418,3417,3416,3415,3412,3411,3398,3392,3383,3466,2351,2502,3389,3388,2507,2508,2500,3396,3395,3394,3397,3393,2505,2504,2503,2501,3401,3397,2520,2506,3475,3401,3400,2513,2514,2530,3406,3404,3405,3407,2519,2520,2528,3406,2715,2717,2716,3478,2582,2581,3441,2704,2712,2705,2711,2710,3466,3432,3437,3432,3438,2596,2594,2593,2596,2598,2597,3462,3463,2605,2604,3461,3460,3462,2631,2636,3458,3480,3479,2629	20.233
	Nurpur_056_00	A Part of 134,130,135,131,132,133,77,76,83,102,111,108,114,159,160,137,84,149,163,127,162,128,175,174,87,85,86,88,86,156,155,151,150,177,176,178,158	3.018
Ward No. 06	Ghata_061_01 (Part)	A Part of 271,272,273,274,44,43,24,23,25,26,42,2,3,4,5,22,2,2,58,271,222,229,232,59,233,58,268,631,255,254,614,261,256,163,164,249,250,255,168,167,191,192,189,188,187,186,166,182,173,176,239,155,162,163,714,724,715,179,171,172,166,748,728,749,239,751,750,655,656,709,655,710,751,748,661,706,660,708,222,146,934,778,779,780,781,679,673,674,671,670,669,769,767,794,793,758,757,756,759,758,759,795,794,207,790,791,792,771,770,769,208,803,806,802,834,801,801,935,2026,933,938,3466,939,931,930,929,927,934,926,190,189,194,190,877,878,879,885,886,892,893,894,865,864,814,926,2037,911,910,1117,1118,1	11.669



Ward No	CS Mouza Name	Plot No.	Area in Acres
		119,1120,851,850,849,934,782,783,1136,1149,1189,1188,1193,1194,1197,1200,1201,1209,1210,1187,870,859,858,857,934,1106,1108,1107,940,1068,1069,920,872,918,921,934,1071,1072,1073,3466,1070,1063,1064,1065,1066,1069,1061,1071,3466,962,963,962,961,969,972,973,965,966,969,972,973,1142,1084,1055,1056,993,992,3466,1145,1029,1050,1051,1028,1201,3466	
	Laskarkanda_059_00	A Part of 1307,751,743,742,741,740,728,16,17,64,1,15,16,63,1,15,28,58,27,59,30,12,83,56,55,57,28,84,83,33,7,31,611,603,602,40,39,35,763,601,142,101,100,97,98,602,94,96,93,49,452,456,458,457,603,450,449,448,447,528,529,535,567,147,98,147,98,91,250,251,252,535,154,523,536,535,151,246,256,255,245,244,247,248,249,250,508,507,502,503,501,498,151,246,147,1120,512,513,536,817,113,114,117,120,118,119,99999,111,291,292,292,131,132,137,136,111,1257,1239,1257,1257,264,291	5.580
	Yousufpur_060_01	A Part of 175,176,179,178,181,196,180,200,195,192,183,182,191,190,208,209,210,211,212,213,214	1.451
	Yousufpur_060_02	A Part of 1309,1310,1317,1323,1324,603,602,601,1337,607,608,625,942,937,936,943,947,950,948,942,949,1126,632,624,615,614,611,610,607,625,1124,1125,817,607,606,940,944,941,942,944,945,946,943,942,973,979,980,1116,981,983,984,931,930,982,1117,929,928,955,138,1116,1115,1112,1111,1110,1130,1117,1131,1133,1134,1129,1135,1136,1234,1235,1255,1254,1247,1258,1259,1260,1261,1246,1245,1239,1238,1237,1236,1257,1305,1308,1309,1351,1306,1350,1307,1310,1311,1312,1118,1117,1118,982,620,621,958,957,961,956,618,619,969,974,972,622,620,970,971,992,975,976,978,977,979,975,974,973,961,622,620,1097,990,991,989,986,638,638,968,967,992,963,964,968,992,916,965,962,963,918,964,638,817,799,639,635,638,965,966,968,967,796,797,663,1476,662,653,646,648,645,633,993,994,995,910,909,916,915,962,1004,1371,966,1371,914,915,996,995,991,1096,996,991,798,641,640,639,794,795,796,797,795,1148,1002,1001,913,1005,1006,914,1092,1098,1202,1167,1219,997,1096,996,1098,1099,1044,1043,1048,1026,1053,1054,1025,1022,1018,1017,1019,1071,1069,1070,1068,1007,1067,1073,1078,1072,1077,1076,1080,1081,1168,1079,1169,1181,1182,1183,1184,1201,1167,1004,1005,1203,1003,1000,659,658,654,653,652,651,666,657,663,664,660,661,1008,1009,1015,1016,906,1007,906,666,657,778,774,776,773,906,683,682,777,773,701,699,698,1476,679,668,1027,1028,1029,1012,1011,694,679,675,696,678,698,697,677,676,695,696,694,770,771,686,685,684,1476,707,708,706,712,714,715,714	21.387
Ward No. 07	Ghata_061_01 (Part)	A Part of 595,596,603,1398,1399,1406,1401,1399,1402,1401,1400,1409,1404,1405,1412,1411,1403,1403,1468,1471,1472,1412,1218,1182,1183,1186,1268,1267,1266,1265,1231,1230,1226,1215,1214,1339,1337,1338,1340,1899,1900,1901,1902,1903,1896,1897,1898,1899,1687,1222,1871,1688,1842,1844,1848,1849,186	3.700

Ward No	CS Mouza Name	Plot No.	Area in Acres
		6,1867,1871,1693,1242,1243,1241,1222,1726,1316,1312,1313,1315,1825,1841,1824,1823,1820,1819,1776,1780,1781,1782,1783,1784,1785,1798,1311,1726,1798,1818,1770,1769,1775,1787,1801,1797,1800,1786,1305,1306,1811,1813,1812,1801,1815,1816,1791,1796,1787,1801,1797,1800,1748,1751,1749,1750,1733,1734,1735,1736,1732,1733,1802,1045,1046,1047,1048,1044,1045,1732,1735,1729,1735,1736	
	Ghata_061_02 (Part)	A Part of 2351,2350,2349,2330,2329,2327,2315,2309,2305,2304,2301,3466,3005,2776,2784,2799,2788,2789,2786,2787,2800,2801,3009,3008,3005,2774,2742,2310,2303,2714,2745,2744,2743,2742,2772,2773,2774,2794,2781,2776,2782,2793,2749,2748,2755,2754,2753,2747,2733,2751,2750,2749,2772,2826,2815,2814,2778,2769,2777,2776,2708,2707,2709,2710,2756,2755,2747,2771,2712,2713,2727,2714,2345,2343,2342,2346,2333,2348,2347,2330,2344,2345,2691,2692,2815,2398,2394,2399,2402,2403,2401,2346,2344,2345,2404,2403,2707,2404,2396,2397,2394,2348,2404,2649,2647,2650,2651,2660,2659,2661,2681,2683,2689,2684,2690,2826,2691,2679,2688,2680,2687,2700,2690,2672,2670,2677,2678,2679,2700,2352,2387,2388,2393,2351,2350,2355,2356,2683,2360,2356,2357,2360,2411,2397,2407,2410,2409,2354,2670,2415,2414,2670,2406,2449,2442,2441,2438,2380,2381,2383,2379,2382,2412,2413,2386,2411,2352,2387,2392,2395,2352,2387,2352,2363,2448,2447,2449,2375,2376,2377,2420,2670,2664,2666,2421,2429,2437,2433,2430,2431,2365,2374,2364,2423,2420,2488,2647,2487,2473,2485,2486,2472,2483,2479,2482,2480,2481,2469,2425,2470,2471,2436,2435,2434,2443,2442,2440,2423,2441,2427,2428,2653,2655,2375,2451,2450,2449,2375,2443,2466,2594,2595,2596,2603,2620,2621,2622,2635,2648,2647,2467,2463,2489,2476,2488,2645,2489,2646,2476,2644,2490,2498,2633,2634,2635,2636,2643,2644,2501,2504,2633,2636,2630,2631,2632,2636,2515,2514,2511,2512,2616,2617,2623,2624,2626,2625,3147,2627,2629,2636,2516,2511,2523,2542,2638,2495,2542,2558,2540,2543,2637,2614,2615,2536,2535,2538,2537,2557,2610,2611,2590,2593,2599,2584,2583,2584,2550,2551,2591,2589,2592,2587,2586,2564,2563,2573,2574,2575,2572,2570,2576,2577,2569,2568,2566,2579,2565,2582,2581,2580	16.106
	Kazirchar_062_00 (Part)	A Part of 103,102,101,30,31,122,121,137,282,136,135,134,288,287,286,137	0.693
Ward No. 08	Ghata_061_02 (Part)	A Part of 3023,3015,3016,2862,2861,2860,2858,2857,2841,2840,2839,2838,2837,2827,3031,3032,2868,2860,2861,2876,2588	0.375
	Kazirchar_062_00 (Part)	A Part of 298,301,253,257,296,254,256,293,295,294,262,258,261,279,259,292,290,260,263,273,281,280,265,271,268,291,255,289,251,341,305,252,339,341,339,310,308,307,306,321,319,320,308,307,316,317,362,360,359,357,332,331,337,459,324,460,449,441,442,444,454,453,452,455,447	3.659

Ward No	CS Mouza Name	Plot No.	Area in Acres
	Modhurchar_068_01 (Part)	A Part of 69,129,127,126,110,108,90,91,102,106,128,101,100,99,98,84,69,57,60,61,431,436,74,134,59,43,24,51,47,46,49,48,49,358,359,195,192,190,145,144,39,187,188,143,189,146,41,142,40,140,42,141,139,215,219,360,37,38,359,34,39,234,224,24,257,249,360,360,38,279,253,254,252,244,243,372,373,364,357,378,371,372,377,392,397,368,380,381,382,379,412,409,410,408,407,406,412,415,409,414,413,394,426,425,422,420,421,418	11.708
	Sutarpara_063_01 (Part)	A Part of 84,83,97,98,116,118,119,121,122,123,126,127,128,129,130,407,408,117,411,412,413,420,421,423,424,425,426,427,428,429,704,646,694,67,39,59,60,62,66,117,23,22,21,20,19,16,15,14,12,10,11,9,5,7,4,3,1,2588,2,24,117,96,97,98,39,81,82,101,90,15,14,30,47,49,46,19,16,15,17,27,28,30,73,26,27,27,28,483,484,492,486,491,227,226,226,234,233,243,241,264,265,245,261,258,253	9.816
Ward No. 09	Sutarpara_063_01 (Part)	A Part of 900,889,887,886,2588,860,861,875,876,480,875,847,847,895,896,1159,1477,1165,1160,1164,1121,1163,1369,1487,1488,748,747,729,730,1110,734,725,735,724,848,847,841,840,846,837,878,847,846,897,934,1566,880,934,879,910,911,906,905,2588,932,472,473,954,1565,760,759,757,1487,1156,1157,1162,760,753,1110,954,962,961,936,937,935,946,963,962,935,1032,1030,1028,2588,1110,960,972,961,1164,785,1122,1125,1124,1127,1147,1128,1148,1149,1121,1110,357,295,358,949,836,974,833,973,976,980,1472,1369,1167,1166,916,917,918,986,1148,1148,827,826,1041,1039,1025,1034,1023,1021,1025,1121,829,828,834,834,1428,1459,1464,1465,1469,1369,307,306,917,1121,1137,1144,829,820,829,828,1553,1228,1121,1550,996,1555,1045,819,819,1010,806,310,1003,1002,1002,1010,1111,1109,1108,1106,1105,1055,792,797,795,790,791,796,785,1110,105,1050,1013,1012,1010,1011,1009,1104,1102,1103,1055,800,804,1054,809,808,805,807,1220,1217,1221,1222,789,793,1120,1243,1234,1261,804,1234,1237,1236,1255,1259,1260,1062,1089,1102,1104,1060,1060,1057,1114,1211,1212,1290,1098,1073,1297,1285,1432,1433,1074,1073,1429,1428,1369,1307,1279,1278,1302,1369,1095,1094,1096,1110,1303,1086,1081,1080,1073,1424,1533,1087,1415,1416,1302,1369,1359,1360,1366,1397,1367,1368,1302,1369,1533,1540,1330,1364,1364,1328,1361,1407,1397,1350,1336,1358	19.458



## **ANNEXURE-H**

### **List of Photographs**

