Government of the People's Republic of Bangladesh

Ministry of Local Government, Rural Development & Cooperatives

Local Government Division

JIBANNAGAR PAURASHAVA

MASTER PLAN: 2011-2031

March 2015

Technical Assistance: Local Government Engineering Department (LGED)

Government of the People's Republic of Bangladesh

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JIBANNAGAR 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

JIBANNAGAR PAURASHAVA

JIBANNAGAR, CHUADANGA

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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, Jibannagar 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 Jibannagar Paurashava.

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

(Md. Nawab Ali)

Mayor

Jibannagar Paurashava
Jibannagar, Chuadanga.

EXECUTIVE SUMMARY

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

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

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

This is the primary effort of planned development for the Jibannagar Paurashava, guided by the LGED under Package–12 of the Upazila Towns Infrastructure Development Project (UTIDP). It is expected that the implementation of the plan will induce higher level of development, ensure planned life, good community and better future of the Paurashava inhabitants.

Jibannagar Paurashava is located within the Jibannagar Upazila under the Chuadanga District at a distance about 30 km from the District Town and on South-Western region of Bangladesh. It lies between 23º25´00´´ north latitude and 88´º49´00´´ east longitudes (source: physical feature survey, 2010). It is bounded from the north by Chuadanga Sadar, from the south by Maheshpur

Union, from the east by Madhabpur/Kotchandpur and from the west by the Gopalbari. Jibannagar Paurashava was established in 8 October 1997 as 'B' category Paurashava. According to survey, total area of the Paurashava is 16.92 km2 with 9 wards and following 7 mouzas, namely Jibannagar (7 sheets), Baka (3 sheets), Narayanpur (2 sheets), Laxmipur, Protappur, Subalpur (2 sheets) and Tetulia (1 sheet).

According to the Census Year 2011, 25518 populations are living in the planning area with gross density 6 persons per acre and it will be 30466 in 2031 with gross density 7 persons per acre.

In Jibannagar Paurashava, major landuse is agriculture (80.04%). Residential landuse is 10.59% and only 1.50% landuse is under circulation network category.

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 1 to 2 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.

Jibannagar Paurashava bears rural influences and agriculture is the major source of income. Most of the households fall into Tk.3501 to Tk.8000 income group. 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 Jibannagar Paurashava. The proposed set of plans consists of Structure Plan, Urban Area Plan and Ward Action Plan.

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

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

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

MASTER PLAN REPORT FOR JIBANNAGAR 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

INTRODUCTION TO MASTER PLAN

Introduction

In Bangladesh the present average urban growth rate is about 2.85% (World Bank, 2010). Present trend of population increase indicates that by 2020 about 40% of the total population will live in urban areas. According to a recent survey it was revealed that 45% of urban populations have access to potable water while have limited access to sewerage facilities. In addition inefficient transport management greatly contributes to the problems in traffic and transportation system. These aspects are not only influence our urban life but also arrest the national economic growth of the country. On the other hand, demand for urban service facilities has increased substantially because of the population expansion in urban areas. The expansion of urban economy leads to the growth of urban population and concomitant haphazard urban spatial growth without planning.

The urban centers are going to be the focus of future employment and economic regeneration. The population and economic growth, particularly, in large urban centers is likely to boost in next few decades creating increased burden on them. The smaller urban centers imbued with opportunities for investment and livable environment can help release pressure on big cities at the same time serve as growth poles for development of undeveloped hinterlands. Without adequate infrastructure and services provision to support the increasing population and activities the small urban centers, it would be difficult to turn urban centers as environmentally congenial livable places. Planned development of infrastructure and services and development control through land use plan is essential.

The present infrastructure provisions in Paurashavas are in a precarious state. Drains are mostly clogged that cannot drain out water during heavy rains, 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 keep pace with the growing demand for movement; as a result congestion becomes a common problem. Road networks has 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 environment deterioration. Building Construction Rules has not effectively enforced in Paurashavas.

It is high time to think about problems that might be emerged in future if they are not addressed now. To overcome all likely problems to come in future, the Paurashava should go for planned development through preparation of a master plan and move the development forward accordingly. The master plan can be prepared exercising the power conferred to them by the Local Government (Paurashava) Act, 2009. The Upazila Towns Infrastructure Development Project aims to prepare master plan for 223 Paurashava upazila as for a period of next 20 years. The project keeps provision for a separate plan for land use control, drainage and environment, traffic and transportation management and improvement. The project aims to prepare a Ward Action Plan to ensure systematic execution of infrastructure development projects in future. There is also aim to prepare

proposals to enhance Paurashava revenue so that it becomes more capable of meeting its own capital needs. The master plan of Jibannagar Paurashava will suggest development of new roads and bridges/culverts, drainage facilities, streetlights, markets, bus stands, solid waste management, sanitation, water supply and other infrastructure facilities to face future needs.

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.

Objectives of the Master Plan

The objectives of Paurashava Master Plan are to:

Find out development issues and potentials of the Jibannagar 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 Jibannagar 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; and

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

Approach and Methodology

The approach and methodology of planning that has been followed is worth mentioning here. Various studies are the integral part of the planning process, while the planning method covers a wide range of issues duly considered during the process of planning. In this Master Plan Preparation exercise, following Several-phases of planning methodology have been followed.

The methodology related for preparing the Master Plan/Urban Area Plan including Land Use Plan, Transportation and Traffic Management Plan, Drainage and Environmental Plan

and Ward Action Plan for Jibannagar Paurashava was taken under the following sequential way.

Phase 1: Preliminary Visit to the Paurashava

At first, the planning goals and objectives were conceived, preparations were made. A preliminary visit was made by the team of consultants to acquire basic idea about the areas to be planned. The goal in this step was to conceptualize the planning process and the operational activities.

Phase 2: Organize Inception Seminar

After conceptualize the planning inception, Seminar was held at the Jibannagar Paurashava in which stakeholders was informed about the scope and Terms of Reference (*ToR*) for the preparation of Master Plan and the output in this step was the preparation of an Inception Report.

Phase 3: Delineation of the Planning Area

Under the project (UTIDP), basing on existing condition, demand of Jibannagar Paurashava and potential scope for future development, study area have been delineated. Methodology involved in the process of establishment of Bench Marks (BM) and demarcation of existing Paurashava boundary and proposed planning area for Jibannagar Paurashava is as follows:

Collection of Paurashava Gazette to identify the Existing Paurashava Area

a) Reconnaissance survey about Paurashava Growth Trend
b) Establishment of Bench Marks (BM)
    - Site selection
    - Construction and Installation of BM pillars
    - Establishment of Coordinate of BM Pillars (x,y,z i.e. Northing, Easting and RL in meter)
c) Establishment of Ground Control Points (GCPs)
d) Demarcation of Paurashava and Planning Area
    - Collection, Scanning and Digitizing of Mouza Maps
    - Edit Plot Checking of Digitized Mouza Maps
    - Geo-referencing of Mouza Maps
    - Joining and Edge-matching of Mouza Maps
e) Participation of Paurashava in the Demarcation of Paurashava and Planning Area.
f) Preparation of GIS Map Layout.

Phase 4: Carry out Detailed Survey for Jibannagar Paurashava

A number of studies were conducted in order to prepare a database and get an insight into the existing conditions. The studies, however, have focused on three different but inter-related aspects; the physical condition of the town, the economic and social conditions of the people, and their perceptions about the problems and prospects of the town.

Data and information collected includes topography, physical features, physical infrastructures, land use, socio-economic and traffic and transportation situation of the study area. Detail Socio economic, Physical Feature, Traffic and Transport, Environment survey of Jibannagar Paurashava area have been conducted according to the approved format of *ToR*. Other relevant data have also been collected from primary and secondary sources. These surveys and analysis of data and information have helped to find out possible area of intervention to accommodate future population of the Paurashava.

Total station based advanced technology for topographic, physical features; land use surveys done along with household sample survey for socio-economic information were used in the study. The Physical Feature Surveys were conducted covering the entire area under the jurisdiction of Jibannagar Paurashava. The stepwise works for survey and mapping are as follows:

- Reconnaissance survey;
- Collection of Mouza maps;
- Identification of Ground Control Point (GCP) on the Mouza maps;
- Geo-referencing of Mouza maps;
- Preparation of Arc/Info coverage;
- Preparation Edit Plot of Mouza maps;
- Planning Area Demarcation from Paurashava Gazette and detail information from the Paurashava authority;
- Establishment of Reference Bench Marks in the Project area;
- Detailed Physical feature Survey (Point, Line, Closed boundary);
- Spot level/Land level survey
- Detailed Land Use, Socio-economic, Drainage & Environment, Traffic and Transport survey;
- Survey Data processing and Preparation of GIS database;
- Preparation of GIS based physical feature survey Map layout;
- Verification of map at field level;
- Map production (all Categories).

All these information were collected using the modern survey equipments (*i.e. Total Station, RTK-GPS, etc.*). As per *ToR*, to collect the topographic information, RTK-GPS and Total Station (*TS*) were used as advanced survey techniques.

The following variables were measured in topographic survey: Land level/spot level at an interval of 50m in general cases but for high undulated areas this regular interval were decreased as necessary. Alignment and crest levels (*not exceeding 50m*) of road, embankment and drainage divides were also considered during taking spot levels. Contour map was prepared using 0.3m contour interval. Besides, alignment of s, lakes, canals drainage channels and outline of bazars, water body, swamps etc. were also recorded in the physical feature survey.

Land use survey covered different uses of land i.e. agricultural, residential, commercial, industrial, community services, educational, transport and communication, water body, vacant land and circulation network etc. Land Use Surveys were conducted by recording

the current use of the land within the project area. Physical feature survey data and maps were used as the basis for land use survey.

The drainage information was primarily collected from the topographic and physical feature surveys. Some additional information has also been collected through key Informant Survey of knowledgeable personal of the Paurashava using an unstructured questionnaire.

Through the socio-economic survey data on population, family size, distribution of age/sex, occupation, household structure, dwelling occupancy, migration pattern, education status, Income and expenditure level, land ownership pattern, land value, health facilities, recreational facilities etc. were collected. Detailed traffic and transportation survey was conducted through traffic volume survey, origin destination (*O-D*) survey and speed survey, Congestion point, inventory of road networks etc.

Phase 5: Preparation of Base Maps and Survey Report

After conducting the all sorts of survey, processing and analysis of survey data of the planning area, base maps incorporating all the natural features and man-made infrastructures along with their alignment and essential attribute were prepared by the consultant. The final outcome of this phase is preparation of survey report which illustrates the components of survey in order to understand the existing condition of the project area.

Phase 6: Preparation of Interim Report

This is an intermediary phase towards preparation of Master Plan for Jibannagar Paurashava which involves projection of population and landuse, thorough review of existing policies relevant to the different development sectors, assessment of institutional capacity of the Paurashava. An overview of recent past budget and the list of existing/recent past infrastructure related development schemes undertaken by the Paurashava have also been reviewed at this phase to get an idea of financial capacity of the Paurashava Authority.

Phase 7: Analysis and Projection of Existing and Future Condition

This phase involves analysis of existing trend of growth based on maps, BBS data and other primary and secondary data relevant to the project area and projection of future requirement through assessing the growth direction, planning standards provided by LGED and the projected population for the planning period.

Phase 8: Public Consultation Meeting

The eighth phase of the methodology of Master Plan is to conduct '*Public Consultation Meeting*' where discussion on existing facilities and services, future requirements, identification of proposals on maps and field verification have been conducted. The proposals have been finalized after conforming and incorporating the views and ideas of the stakeholders.

Phase 9: Preparation of Master Plan for Jibannagar Paurashava

The ninth phase of the methodology is '*Preparation of Master Plan Report*'. This portion of the methodology is directly linked with three different issues, which are–Structure Plan, Urban Area Plan and Ward Action Plan.

In the **Structure Plan**, Paurashava's existing trend of growth and the development problems are identified; whereas, the future land use, future population and the future growth by 2031 of Jibannagar is projected. Finally, a Policy Zoning Map is prepared and optimum use of urban resource strategy is taken to implement and ensure better urban environment.

The **Urban Area Plan** is composed with four parts, which are Land Use Plan, Transportation and Traffic Management Plan, Drainage and Environmental Management Plan and Plan for Urban Services.

Land requirements for each broad category of land uses have been determined based on projected population for a time period of 20 years and the recommended Planning Standards provided by LGED in the **Land Use Plan**. After estimating land requirements, allocation of uses is made based on land suitability. A land suitability analysis is performed on a qualitative basis through field visits, consultation meeting, analysis of topographic map, physical feature map and soil condition to justify the suitability of land for a specific use. Land allocation is a process which depends on the demand and supply of land. Whereas land suitability yields information on supply, land requirements indicate demand of land available for development. Final land allocation or land use recommendation for competing uses is then shown on proposed land use plan map and described in detail in the explanatory report.

The first step of the methodology of **Transportation and Traffic Management Plan** is to identify the existing transport condition, which is the result of O-D survey, traffic survey at intersection, traffic survey at links and speed study; have already described in the survey report. In the next step, the future projection of transportation network and traffic demand is identified, which is described in the interim report. The third phase of the study is to adopt new traffic and transportation management plan, which is prepared based on future projection. After that, some strategies on transportation system management (*TSM*) are undertaken. Finally, plan implementation strategies are espoused based on both transportation management plan and transportation system management.

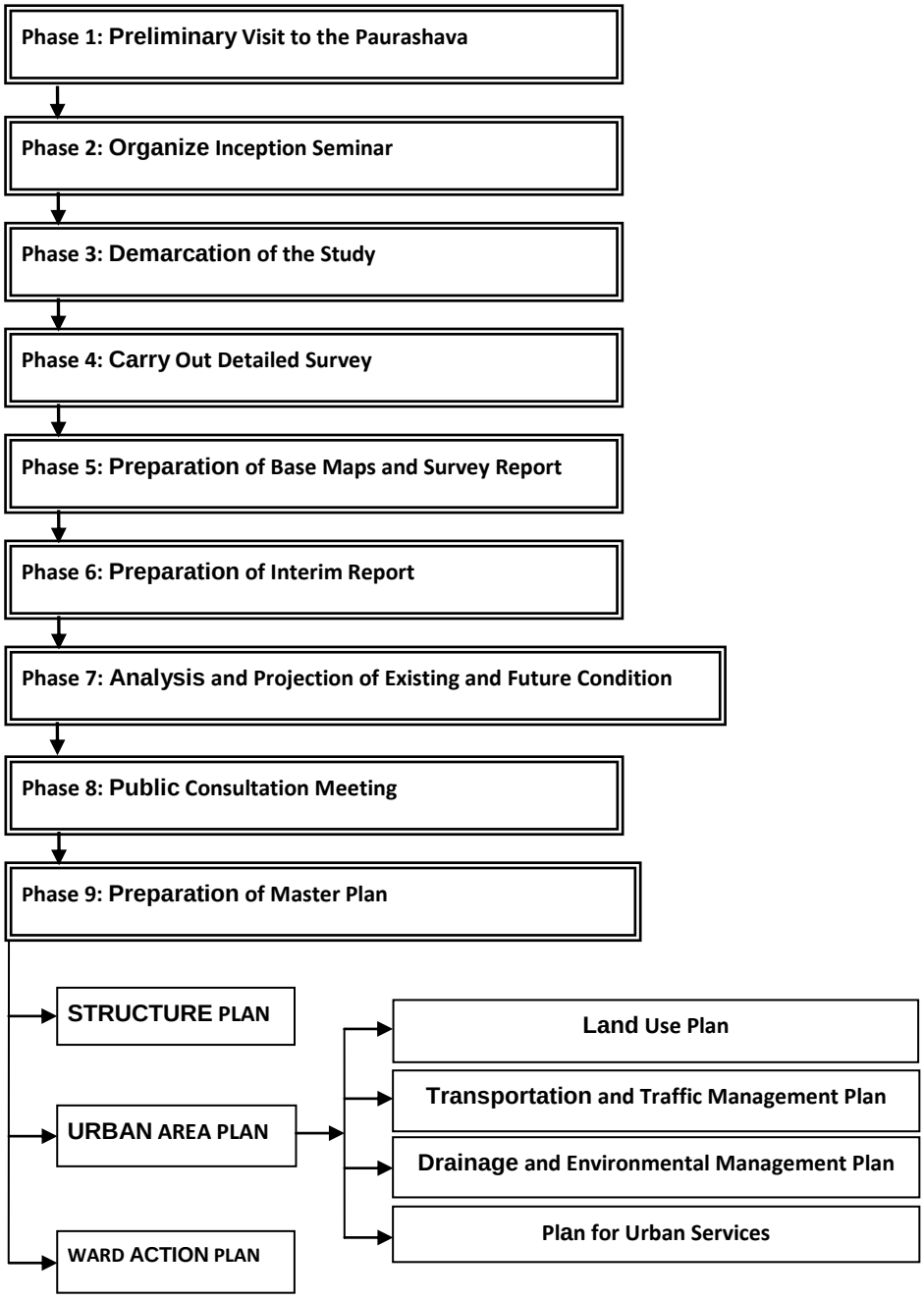
Preparation of the **Drainage Plan** involves (I) analyzing the existing conditions related to drainage facilities and the flood management (II) identifying major drainage outfalls and on the basis of the outfalls splitting the total drainage area into a number of drainage zones (III) defining all pertinent design criteria and (IV) defining drainage facility requirements and sizing. 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 runoff of a particular area.

The **Environmental Management Plan** consists of the Supplementary Living Environment Survey, the Comprehensive Ecological Survey and the Water Quality Survey. The Supplementary Living Environment includes water supply, land pollution, sewerage and sanitation, solid waste management, and resettlement of population due to construction of canals and primary drains. The Comprehensive Ecological Survey aims at facilitating comprehensive environmental assessment by subsequent urbanization and implementation of the drainage on the ecological elements of fauna and flora, agricultural and aqua cultural resources etc. The Water Quality Survey is the sampling and analysis of

surface water from rivers, natural canals, ponds etc., and from ground water. These are required to be done to ensure necessary urban environment enhancement measures.

In case of **Urban Services**, the existing condition of urban services is analyzed. After that, future urban service requirement is estimated and some proposal has provided. Finally, to implement the proposal some strategies are undertaken.

The last step of the methodology is **Ward Action Plan**; conceptualize the content and background of the plan. In the next step, the linkage with Structure Plan & Urban Area Plan is identified. The final phase of the study is to adopt ward action plan in details. The proposal and planning, priority tasks and cost estimation are incorporated here to get a pictorial view of the Ward Action Plan.



Flow Chart of Methodology

Scope of work

The scope of work under this Consultancy services will cover all aspects related to the preparation of Master Plan/ Urban Area Plan which will include, land Use Plan, Traffic Management Plan, Drainage and Environment Plan and Ward Action Plan for the listed Upazila Town. In order to prepare plan the activity will contain but not limited to the following:

- Visit the Paurashava included under the package work and list the passive name of Paurashava that will undertake preparation of Master Plan. In case if any Paurashava has already prepared Master Plan it has no need for Paurashava of Master Plan then it will be excluded from the package, written opinion of the concerned Chairman of the Paurashava whether or not Master plan Preparation will be included. A copy of list of Paurashavas feasible for preparation of Master Plan will be submitted to the office of the PD, UTIDP.
- Organize an inception Seminar at the Paurashava level and inform of the Paurashava about the scope and terms of reference for the preparation of Master Plan. Make a thorough investigation and based on potential scope and opportunities available in the Paurashava develop a 20 years development vision for the Paurashava liking the ideas and view of the Paurashava.
- Determine the study area based on exciting condition, demand of the Paurashava and potential scope for future development. Carry out detailed socio-economic Demographic and Topographic survey of the Paurashava area following approved format and collect data from primary and secondary sources. Analyze such data and information, find out possible area of intervention to forecast future population of such Paurashava (15-20 years), vis-a-vis assess their requirement for different services, physical and social infrastructure facilities, employment generation, housing right of way and land requirement for the existing and proposed roads, drains, play grounds, recreation centers and other environmental and social infrastructure.
- Identify and investigate the existing natural and manmade drains, natural river system, assess the extent and frequency of flood, determine area of intervention. Study the contour and topographic map produced by the relevant agencies and also review any previous Drainage Master plan available for the Paurashava.
- Prepare a comprehensive (storm water) Drainage master plan for a plan period of 20 years. In such exercise consider all relevant issues including discharge calculation, catchment area, design of main and secondary drains along with their sizes, types and gradients and retention areas with primary cost estimates for the proposed drainage system.
- Recommend Planning, institution and legal mechanism to ensure provision of adequate land for the establishment of proper right of way of (storm water) drainage system in the Paurashava.
- Collect and assess the essential data relating to existing transport land use Plan, relevant regional and natural highway development plan, accident statistics, number and type of vehicle registered of each Paurashava.

- Assess requirements of critical data and collect data through reconnaissance and traffic survey, which should estimate present traffic volume, forecast the future traffic growth, identification travel pattern, areas of traffic conflict and their underlying cause.
- Study the viability of different solution for traffic management and develop a practical short term traffic management plan, including one way systems, restricted access for large vehicles, improved signal system traffic islands, roundabouts, pedestrians crossing and deceleration lanes for turning traffic, suitable turning radius, parking policies and separation of pedestrians and rickshaws etc.
- Assess the non-pedestrian traffic movements that are dominated by cycle rickshaw. Special recommendations should be made of as to how best to utilize this form to transport without causing unnecessary to other vehicles. Proposal should also consider pedestrians and their safety, with special children.
- Assess the current land use with regard to road transportation, bus & truck station, railway station etc, and recommend action to optimize this land use.
- Prepare a road net work plan based on topographic and base map prepared under the project. Recommend road development standards, which will serve as a guide for the long and short term implementation of road. Also suggest Traffic and transportation management plan and also suggest a traffic enforcement measure to be taken.
- Prepare the Master Plan with all the suitable intervention, supported by appropriate strategic policy, outline framework, institutional arrangement and possible source of fund for effective implementation of the plan.
- Prepare a plan to set out proposed Master Plan at 3-levels namely Structure Plan, Master Plan/ Urban Area plan and Ward Action Plan.
- At the first level, work out frame strategy policy for the preparation of a structure plan for each Paurashavas under the package. As a follow up of structure Plan prepare a master plan consisting a land use plan. Transportation and traffic Management Plan, Drainage and Environment Management Plan and Ward Action plan.
- Make a total list of primary and secondary roads, drains, and other social infrastructures for each Paurashava for a plan period of 20 years. Examine and classify according to the existing condition, propose long, medium and short-term plan and estimate cost for improvement of the drain and alignment and other infrastructures.
- In line with the proposed Master plan propose a Word Action Plan with list of Priority schemes for the development of roads, drain, traffic management and other social infrastructures for implementation during the first five years of the period.
- Organize with the help of concerned Paurashava at least 2 public consultation meeting/seminar one for discussion on interim report and the other on draft final Report on the proposed Master plan. Integrate beneficiary's point of view in the plan with utmost careful consideration.

- Prepare and submit Master plan and Report with required standards as required by the TOR.

Organization of the Report

The Jibannagar Paurashava Master plan Report is organized into three main parts namely- Part A: The Structure Plan, Part B: The Urban Area Plan and Part C: The Word Action Plan.

Part A: is the Structure Plan is a policy guideline plan for next 20 years period. It describes Paurashava's existing trend of growth and the development problems are identified; whereas, the future land use, future population and the future growth by 2031 of Jibannagar is projected. Finally, a Policy Zoning Map is prepared and optimum use of urban resource strategy is taken to implement and ensure better urban environment.

Part B: is the Urban Area Plan. The Urban Area Plan is for 10 years period up to 2021. It has been divided into four main sub-parts as follows: 1) Land use Plan, 2) Transportation and Traffic Management Plan, 3) Drainage & Environmental Management Plan and 4) Plan for Urban Services.

1) The Land use Plan identifies approaches of planning, existing and projected land use and proposed land use. Requirement of land for different purposes, land use zoning and plan implementation strategies are also included here.

2) 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.

3) Drainage and Environmental Management Plan again subdivided into two parts - Drainage part and Environment part.

Drainage Management Plan describes the 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.

Environmental Management Plan describes the 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.

4) Plan for Urban Services describes the 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.

Part C: is the Ward Action Plan. The Ward Action Plan is spanning for the 5 years period. The Structure Plan paints the broad picture on the future pattern of housing, jobs, transport, services and the environment. Ward Action Plan is much more specific. They tackle the problems and opportunities associated with individual communities and show exactly where it apply. The proposal and planning, priority tasks and cost estimation are incorporated here to get a pictorial view of the Ward Action Plan.

CHAPTER-1

STRUCTURE PLAN

1.1 Background of the Paurashava

As per the Local Government (Paurashava) Act 2009, the Paurashavas of Bangladesh categorize as A, B and C classes based on annual income of the Paurashava. There is also a separate category called "Special Class", for industrial and commercial hubs of Narayanganj and Tongi within the Dhaka Metropolitan Development Area (DMDA). Jibannagar Paurashava was established in 8 October 1997 as 'B' category Paurashava. According to physical feature survey (2009-2010) it is 16.92 km^2 with 9 wards and following 7 mouzas, namely Jibannagar (7 sheets), Baka (3 sheets), Narayanpur (2 sheets), Laxmipur, Protappur, Subalpur (2 sheets) and Tetulia (1 sheet).

Jibannagar Paurashava is located within the Jibannagar Upazila under the Chuadanga District at a distance about 30 km from the District Town and on South-Western region of Bangladesh. It lies on 23º25´00´´ north latitude and 88´º49´00´´ east longitudes (source: physical feature survey, 2010). It is bounded from the north by Chuadanga Sadar, from the south by Maheshpur Union, from the east by Madhabpur/Kotchandpur and from the west by the Gopalbari.

During demarcation of planning area for Structure Plan, the urban development along both sides of the major inter-district road network and around the market places was given importance.

The area considered for structure plan area is lower than the area prescribed through the Gazette Notification. Cause of such change is the river erosion.

Nature of the plan means that its contents should remain valid for the duration of the plan. However, in the rapidly changing circumstances of urban development in Bangladesh, it is prudent that the plan is reviewed at regular intervals, of say 5 years.

Table 1-1: Basic Information of the Structure Plan and Planning Area

Location	Area (acre)	Area (sq.km.)	2011		2031	
			Population	Gross density / acre	Population	Gross density / acre
Jibannagar Paurashava (Planning area)	4178.49	16.92	25518	6	28533	7

Source: Bangladesh Population Census, 2011 and estimated by the Consultant.

1.2 Objectives of the Structure Plan

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

- Description of the Paurashava's administrative, economic, social, physical environmental growth, functional linkage and hierarchy in the national and regional context; catchment 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 Jibannagar 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 Jibannagar 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.

1.3 Concepts, Content and Format of the Structure Plan Conceptualization

Concepts

Structure Plan is a kind of guide plan, or framework plan, or an indicative plan that is presented with maps and explanatory texts in a broader planning perspective than other components of Master Plan. Structure Plan indicates the broad magnitudes and directions of urban growth, including infrastructure networks, the placement of major facilities such as hospitals and upazila complex. A Structure Plan is not intended to specify detailed lot by lot land use or local road configurations and development proposals. Rather it identifies the areas where growth and change are such that more detailed local and action plans are needed. Structure Plan does not require excessive effort in gathering data and it is flexible and dynamic and can be changed to accommodate demanded changes. The present Structure Plan is an overall long term strategic plan for the Paurashava *Shahar* (*Town*), Jibannagar. Structure Plan is the 1st component of the Master Plan package. The other two lower level components are Urban Area Plan and Ward Action Plan. Structure Plan lays down the framework of the future plan including strategy and the sectoral policies. The Urban Area Plan and the Ward Action Plan detail out development proposals under the framework of Structure Plan. No extended area was selected in consultation with the Paurashava to accommodate population and services during Structure Plan period, that is, up to the year 2031.

Map 1.1: Location of Jibannagar Paurashava in context of Bangladesh

Map 1. 2: Location Map in Context of District

Content and Format of the Structure Plan

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

1.4 Approach and Methodology

The approach and methodology of structure plan is basically the same as stated in the introductory section.

1.5 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. Duration of the structure Plan period is equal to two Urban Area Plans for the time period of 10 years each and is equal to four Ward Action Plan for the time period of 5 years each. There is a provision of revision of the plan every five years.

1.6 Structure Plan Area

The total area of Jibannagar Structure Plan is 4178.49 acres (16.92 sq. km) that include total area of Jibannagar Paurashava, and there is no extension area in the structure plan of Jibannagar Paurashava. All the nine wards of the Paurashava are covered by Structure Plan area.

CHAPTER-2

PAURASHAVA'S EXISTING TREND OF GROWTH

2.1 Social Development

Age-sex structure: Age and gender distribution indicates that population mostly increase naturally. The age-sex distribution implies that female population is less than male population in the Paurashava. From the male female ratio, it is observed that in all the Wards number of males are greater than the number of females. Highest population goes under the range of years 18 to 34 age group. So, in all the Wards number of young Sex ratio can be expressed as percentage of male and female. The percentage of male and female population has been shown for each ward of the Paurashava. The difference between the percentage of male and female population is the highest in Ward No.04. In other words, male-female ratio is the highest (114.9) in Ward No. 06. On the other hand, male-female ration is the lowest (98.38) in Ward No. 05. It is also seen that the percentage of male population is higher than that of the female in Jibannagar Paurashava. The overall male-female ratio is 105.04.

Household size: Out of total households 2.81%, 8.26%, 18.08%, 24.18%, 19.64%, 11.88%, 6.94%, 3.83%, 1.96%, 1.84%, and 0.59% of with 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 and 11 above person respectively. The average size of household is 4.77.

Family size ranges from 1-4, 5-8, 9-11and 11+ members, but most prevalent size is 1-4 and 5-8 members in the Paurashava and also in Bangladesh. There are both single and joint family systems in the study area. Most of the family in the Paurashava is single family.

Marital status: In the Paurashava 21.85% male and 13.08% female population of age 10 years and over was never married. In the same age group percentage of married male and female were 29.72% and 30.68% respectively. Percentage of widowed and divorced male was 0.21% and 0.05% respectively and percentage of widowed and divorced female was 3.51% and 0.90% respectively.

Migration: The number of in-migrated population is rising very fast. In every Ward there are some midrated people except Ward No. 06. In Ward No. 01, 02, 03, 04, 05, 06, 07, 08 and 09, the percentages of migrated population in the Paurashava are 2.0%, 3.67%, 1.0%, 4.66%, 1.33%, 0.00%, 0.33%, 2.67% and 2.0% respectively. Reason for migration are both service/transfer and There are various reasons for migration like inadequacy of employment opportunity, economic backwardness, social persecution, politico-religious disturbances in the area where they migrated from and ambition like better business opportunity. But mostly, as survey finds out, migration in the study area occurred due to work prospects i.e. for job purpose or transfer of the service, business/commerce purposes.

Educational status: Literacy rate for population 7 years and above in the Paurashava is 49.66%. The literacy rates in this category are 50.56% in Ward No. 01, 44.63% in Ward

No. 02, 48.47% in Ward No. 03, 55.35% in Ward No. 04, 29.21% in Ward No. 05, 62.64% in Ward No. 06, 60.53% in Ward No. 07, 52.65% in Ward No. 08 and 42.94% in Ward No. 09 (source: Bangladesh Bureau of Statistics, 2001). School attendance at the age group 5-24 can be seen in each ward of the Paurashava. It is evident from the table that school attendance in the Paurashava was 28.09% for male and 29.64% for female in the age group 5 to 9 years. On the other hand, in the age group 10 to 14 years school attendance in the Paurashava was 35.81% and 37.01% for male and female respectively and in the age group 15 to 24 years it was 15.91% and 11.47% for male and female respectively.

By considering education status, about 24.67% household head in Jibannagar Paurashava are in class VI-X, 29.67% household head are in class I-V, 6.67% household head are in HSC/equivalent, 6.00% household head are in BSS/equivalent, 27.33% household head are in SSC/equivalent, 4.00% household head are in illiterate, only 0.33% household head are in MSS/equivalent and there is no household head above MSS.

Religion: According to population census report (2001), 97.52% of the population of this Paurashava belongs to Muslim community and 2.47% to Hindu community. Population belonging to other religion such as Buddhist and Christian are very insignificant in number.

Occupational Status

Primary occupation: Primary occupation means work that involves taking raw material from the environment such as farmers, fisherman, miners etc. With 45% of the workforce engaged in the primary sector (Economy Watch, 2008); Bangladesh can be called an agrarian economy. Agriculture contributes 30% of the country's GDP and enables Bangladesh to achieve its macroeconomic objectives, including food security, poverty alleviation, human resources development and employment generation. Cooperatives are increasingly motivating farmers to employ modern machinery. Bangladesh primarily produces jute, rice, tobacco, tea, sugarcane, pulses and wheat. According to the composition of sub sectors, the crop sector contributes 72% of the production, followed by Fisheries at 10.33%, livestock at 10.11% and forestry at 7.33%. The unpredictable weather and natural calamities disrupt the country’s economy frequently. To overcome this problem, the government has constructed several irrigation projects to conserve rainwater and control floods. The projects also include controlling pests and using high quality seeds.

In Jibannagar Paurashava main primary occupation is Business, Agriculture, Fishing and Farming. The main agro base products are Rice, Maize, and other home base crops like Potatoes, pulse, nuts etc. Again an enormous variety of water bodies, including Rivers, irrigation canals, flood plains, beels (large depressions), ox bow lakes and ponds are dispersed throughout the Paurashava and many people engaged with fishing. People of Jibannagar Paurashava also engaged with farming like poultry, dairy etc. According to the BBS report 2001 primary level occupation like small business found 27.84% in Jibannagar Paurashava. From the Socio economic survey during the period of 2009 occupation like small business is found highest and it is 53.67% among other occupations. Ward No. 9 has the highest agricultural workers and the percentage is 51.61% due to the River which facilitates the farming.

Table 2.1: Occupations by Ward (in %)

Occupation Type	Ward No.								
	1	2	3	4	5	6	7	8	9
Govt. officer	5.56	3.03	15.15	0.00	3.03	2.13	0.00	0.00	0.00
Other govt. employee	5.56	3.03	27.27	0.00	0.00	0.00	0.00	0.00	3.23
Teaching	0.00	0.00	3.03	2.63	0.00	0.00	0.00	0.00	0.00
Farming/ Agriculture	38.89	9.09	21.21	28.95	30.30	6.38	8.82	36.36	51.61
Housewife	0.00	3.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Large business	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.03	3.23
Small business	38.89	60.61	27.27	57.89	54.55	78.72	70.59	42.42	32.26
Private service	0.00	15.15	0.00	10.53	6.06	12.77	17.65	15.15	6.45
Skilled labor	11.11	5.56	3.03	0.00	6.06	0.00	2.94	3.03	0.00
Unskilled labor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.23
Rickshaw/ Van puller/ Driver	0.00	0.00	3.03	0.00	0.00	0.00	0.00	0.00	0.00
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: Socio-economic Survey by DDC, 2009

Secondary occupation: Secondary occupation means occupation which some one undertakes any work after taking a primary occupation. In Jibannagar Paurashava a number of households do secondary jobs seasonally to raise their family income. Mostly the low income groups take secondary occupations during off season when they do not have any regular jobs. Secondary jobs include, day labouring, farmimg and similar other occupations.

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 Jibannagar Paurashava.

Table 2.2: Mouza-wise land value in the Study Area, 2011

Sl. No	Mouza name	Type of land (Tk. / decimal)		
		Krisi	Doba	Viti/Home
1.	Jibannagar	65546	45500	209766
2.	Laxmipur	40586	6060	33925
3.	Subalpur	14334	12000	17000
4.	Narayanpur	31913	8066	96620
5.	Protappur	50020	2631	107352
6.	Baka	15561	8590	40374
7.	Tetulia	28337	8379	93333

Source: Jibannagar Sub-Registry Office 2011

In this study, nine types of land in twenty two 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. Land value is low (Tk.2631 to Tk. 45,500 per decimal) for Doba and Fallow type of 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.

Existing Practice / Unofficial Value: Average value of different types of land for the Paurashava is shown in Figure 4.1 in Interim Report. It is clearly observed that land value increases with the position of the land. It increases from core to fringe area land. The maximum mean value is found for the potential core area land (Tk. 90000 per decimal) and lowest for the potential core land (Tk. 17400per decimal). Average land value in the Paurashava is Tk.44111.11 per decimal.

In Ward-wise scenario of average land value is highest in Ward No. 6, 7 (Tk.82000.00 per decimal) which implies the significance of core area. On the other hand land value is lowest in Ward No. 9 (Tk. 17500per decimal) which implies that this Ward has abundant agricultural low land.

Land Ownership Types and Patterns: Status of residence or ownership of dwelling units/ land is a key socio-economic indicator. Residential status varies in the study area. The land ownership pattern often determines social power and position.

Almost every household has their own land. Among these lands 49.7% is habitable land, 6.0% is low land, 5.7% is medium high land and 383.7% is high land. 46.33% of households in Jibannagar Paurashava contain 1-5 decimals land, 26.33% households contain 6-10 decimal land, 22.00% households contain 11-15 decimal land, 4.00% households contain 16.-20 decimal land, 0.67% households contain 21-25 decimal land and 0.67% households contain more than 25 decimal land.

2.2 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 (Chuadanga-Jessore) passes through the middle of the Paurashava and both the sides of the highway is occupied by huge 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.

Income level: In Jibannagar Paurashava major portion of the households earn from business, agriculture or service. In Ward No. 02, Ward No. 03, Ward No. 04, Ward No. 05, Ward No. 06, Ward No. 07 and Ward No. 08, business is the main source of income. In Ward No. 01 and Ward No. 09, agriculture is the main source of income with 38.89% and 51.61% respectively. In this ward No. 08, 36.36% households earn from agriculture. In Ward No. 02, business is the main source of income that is accounted for 60.61% households. In this ward 5.56% households earn from skilled labor, 15.15% earn from

service and only 9.09% earn from agriculture. In Jibannagar Paurashava, the highest percentage of households is 60.33% which is accounted for those households that earn Tk.3501-8000 per month. 30.33% of the households earn monthly Tk.8001-13000, 6.00% households earn monthly Tk.13001-18000, 1.00% households earn monthly Tk.18001-25000, 0.67% households earn monthly more than Tk.25000 and 1.67% households earn monthly Tk.0-3500.

Expenditure level: 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. In Jibannagar Paurashava, minimum value of monthly food expenditure is Tk. 500; median value is Tk. 4301.67 and maximum value is Tk. 15000.

Industry: Major industrial/manufacturing concentration is seen in Ward No. 05, Ward No. 07 and Ward No. 08 and maximum of them is rice mill.

The small industrial output produces in the local market. It is also 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 raw materials.

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/bazaar, etc. Major part of trade and commerce of the study area is conducted through hat/ bazaar where agriculture produces, consumer items, merchandise for household and other farm and non-farm items are transacted. The market/ bazaar performs significant role on the Paurashava economy. It is observed that market/ bazaar provide good number of employment and act as an economic centre for the area of influence of the market/ bazaar. This market/ bazaar 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/ bazaar is the key supplying centers of all sorts of agro-products to the urban areas and other non-producing areas of the country, and similarly this market/ bazaar is the major distribution centers of industrial products to the vast majority of the rural people throughout the country at consumer levels. Importance of the market/ bazaar place can not be ignored, rather needs to be facilitated with provision of infrastructure facilities.

That hat/ bazaar are taking place in the core part of the Paurashava along with the road; tin-shed semi-pucca structures with parcels of open lands. Those hat / bazaars are prominent due to its availability of agro-product and fish. People from different Upazilas, Zilas accumulate in those hat/ bazaars 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. There are some makeshift type structures also.

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.

Agriculture: Agricultural land occupies 3344.57 acres (80.93%) of the total of Paurashava. Agriculture nursery and horticulture farming are most commonly used within the agricultural service holders. Among agricultural products, important items besides paddy are wheat, jute, potato, pulse, oil seeds, sugarcane, vegetables, and fruits production such as mango, jackfruit, papaya, guava, carrots etc. Among the agriculture products, paddy, local fruits, mustards and vegetables are consumed locally and a considerable percent goes to the local market of Dhaka.

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. Local woods are being processed in the Saw Mill and locally produced paddy are using in the Rice Mill.

Employment Pattern: In the Paurashava, 27.84% of the dwelling households depend on Business as the main source of household income with 24.58%as agricultural labor. Other sources of household income are non-agricultural labor (2.92%), agri/forestry/livestock (14.27%), service (9.19%), construction (4.17%) and transport and communication (6.62%).

Informal Economic Sectors: 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.

2.3 Physical Infrastructure Development

Jibannagar Paurashava is comparatively a large sized Paurashava (16.92 sq. km.) than the other Paurashava of the Chuadanga Zila. A trend of urban growth is found around the Jibannagar Bazar and the road laying mainly the Highway. A development trend is generating towards the Jibannagar just for agro based product. A development wave from Dhaka to Jibannagar also found after construction of Lalonshah Bridge.

The jurisdiction of Jibannagar Paurashava is in regular shape. The bus station in the Paurashava boundary will be developed as a growth centre in future. A linear development is found along the existing Regional Highway (Jessore-Chuadanga) 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.

Road: There are three types of road. These are Pucca road, semi-pucca road and katcha road. In total, there in Jibannagar Paurashava roads under three categories coursing 83.23 km in length and 62.56 acre of land.Ward No. 09 has the highest road length in total which is 13.24 km with an area of 12.05 acre. On the other hand, Ward No. 06 has the lowest road length in total which is only 3.8 km. The length of Pucca road is high in Ward No. 07 and Ward No. 02 and lowest in Ward No. 06. Katcha road length is the highest in Ward No. 08 that is accounted for about 3.13 km.

Waterway: No waterway is available in the Paurashava. Different types of bridges and culverts have been identified from the physical feature survey. There are altogether 32 box culverts in the Paurashava. Highest number of bridges and culverts are found in Ward No. 01, 07, 08 and 09. Those bridges and culverts are located on the major canals and drainage channels.

Railway: No railway facility is in the Paurashava.

Airway: No airway facility is in the Paurashava.

2.4 Environmental Growth

The plan has documented Jibannagar 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).

2.5 Population

Population of Jibannagar Paurashava was 25518 according to Population Census, 2011. Density of population per acre was 6.11 persons. Total household number was 6699. Highest number (1169 households) of households is found in the Ward No. 8 and highest concentration of population is found in Ward No. 7.

Table 2.3: Household and population of the Paurashava according to the Ward

Ward No.	Household (2011)	Area (Acre)	Area (skm)	Population (2011)	Density /Acre	Density /skm
1	328	490.8	1.99	1365	2.78	687
2	680	623.63	2.52	2755	4.42	1092
3	778	495.41	2.01	3019	6.09	1506
4	733	246.26	0.99	2848	11.57	2857
5	743	193.39	0.78	2731	14.12	3488
6	753	314.11	1.27	2472	7.87	1946
7	667	120.88	0.49	2616	21.64	5339
8	1169	829.22	3.36	4475	5.40	1333
9	848	864.91	3.50	3237	3.74	925
Total	6699	4178.49	16.92	25518	6.11	1508

Source: BBS (Community Series: Chuadanga-2011)

Population density: In the Paurashava, average population density is 6.11 persons per acre according to the statistics of Population Census, 2011. Ward No. 5 and 7 seems highly population concentrated areas and density of population in those Wards are 3488 and 5339 persons per sq. km respectively.

2.6 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 Paurashava Ordinance, 2009 existing capacity of the Jibannagar 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: Strength of the Paurashava can be assessed from its employment structure and budget. The employment structure indicate the weakness as some of the important positions are lying vacant and development control function is unattended which is demonstrated in the absence of Town Planning Division. The manpower allocated for the Jibannagar Paurashava by the Government except the Mayor and nine Counselors are as follows:

Existing Manpower: Existing manpower except the Mayor and Councilors in the Jibannagar Paurashava is presented in the Table-2.4. In total 22 employees as permanent staffs are in the Jibannagar Paurashava. Those employees are under the Administrative division, Health division and Engineering division.

Table 2.4: Comparison between Allocated & Existing manpower of Jibannagar Paurashava (permanent)

No.	Department/ Section/ Designation	Allocated Manpower of the Paurashava	Existing Manpower of the Paurashava
Engineering Department		32	4
1	Executive Engineer	1	0
2	Asst. Engineer	1	1
3	Sub- Asst. Engineer	3	0
4	Other Staffs	27	3
Administrative Department		74	-
5	Secretary	1	-
General Section		14	3
6	Administrative Officer	1	0
7	Head Assistant	1	1
8	Other Staffs	12	2
Accounts Section		4	2
9	Accounts Officer	1	1
10	Accounts Assistant	1	0
11	Other Staffs	2	1
Assessment Section		3	1
12	Assessor (Tax)	1	1
13	Assistant Assessor	1	0
14	M.L.S.S	1	0
Tax Collection/ Bazar Section		10	3
15	Tax Collector	1	1
16	License Inspector	1	1
17	Asst Collector	6	0
18	Other Staffs	2	0
	Market Inspection Section	3	1
19	Market Inspector	1	0
20	Collector	1	0
Education/ Cultural/ Library Section		18	0
21	Education and cultural Officer	1	0
22	Librarian	1	0
23	Teacher	10	0
24	Other Staffs	6	0
Health, Family Planning and Sanitary Department		22	9
25	Health Officer	1	0
26	Conservancy Inspector	2	0
27	Sanitary Inspector	1	0
28	Health Assistant	2	2
29	Vaccination Supervisor	1	1
30	Booster	6	0
31	Other Staffs	9	6

Source: Paurashava Ordinance, 2009.

Logistic Support: Logistic support and necessary equipment is limited for Jibannagar Paurashava which should be a really big concern. One garbage truck and 5 sweepers (on contact basis) are the only means of conservancy services. Except those trucks and road roller, other equipments are using for Paurashava administration.

Paurashava Office: The Paurashava building is newly constructed. Single two-storied building is using as administrative building of the Paurashava. About 0.517 acre land has

been acquired for this purpose. The building is known as Paurashava Office and located by the side of main bazar. Other administrative buildings are adjacent with the Poura Building. Further provision for extension of the Paurashava office boundary is possible and other administrative buildings may not be constructed in the same compound of the Paurashava office.

2.7 Urban Growth Area

A trend of urban growth is found around the Jibannagar Bus Stand and the road laying mainly the regional highway. A tremendous development trend is generating in the Paurashava after acheiveing the status as a Paurashava. A development wave from Kushtia to Chuadanga as well as Jibannagar also found after construction of Lalonshah Bridge.

After the year of 1980, when Upazila system imposes in consideration of the decentralization of administration, no internal road 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, market areas etc.

2.8 Catchment area

Catchment area of the Jibannagar Paurashava is calculated according to the agriculture commodities and movement of dwellers for rendering services. From Jibannagar Paurashava, agriculture commodities marketed to the Kushtia, Chuadanga, Jhenaidah and Jessore. Rice, jute, onion, mustard and sugarcane are the major agriculture products marketed in those areas. Except agriculture production, fish and poultry productions also distributes in those areas.

2.9 Landuse and Urban Services

Landuse

Existing land uses are categorized on the basis of functional activities perform in Jibannagar Paurashava. In this Paurashava agriculture occupies 3344.57acres of total land. Residential and circulation network occupy 442.58 and 62.48 acres of land respectively. An area of 116.32 acres is covered with water bodies. In this Paurashava, major built up part of the Paurashava area is using for Agriculture purpose. According to the land use survey table (Table 2.5) of the study area, it has been ascertained that 3344.57 acres (80.04%) of land is presently under Agricultural use. Residential and water body occupied 442.58 acres (10.59%) and 116.32 acres (2.78%) respectively. Circulation network occupied 62.48 acres (1.50%). There 34.65 acres (0.83%) of land for commercial and only 29.36 acres (0.70%) of land for industrial activities have been found in the land use survey.

Table 2.5: Landuse pattern of the Jibannagar Paurashava

Land Use Category	Ward No									Total	
	1	2	3	4	5	6	7	8	9	Area (acre)	(%)
Agricultural	441.4	528.4	401	150.7	122.1	199	43.84	711.4	746.8	3344.57	80
Circulation Network	3.24	7.91	6.79	4.29	4.63	11.7	5.19	6.7	12.04	62.48	1.5
Commercial	0.48	2.06	3.62	4	1.85	13.59	5.59	1.49	1.98	34.65	0.83
Community Services	0.49	1.33	0.68	0.37	0.57	0.71	0.3	0.54	0.84	5.83	0.14
Education & Research	2.09	0.95	2.77	0	0.88	3.35	4.87	2.24	0.54	17.7	0.42
Government Services	0	0	0.73	0.6	0	16.82	1.65	0.08	0	19.87	0.48
Industrial Processing & Manufacturing	0	4.88	1.21	0.08	13.51	1.4	1.31	6.62	0.35	29.36	0.7
Mixed Use	0.32	0.13	0.05	0.33	0.16	5.04	5.41	0	0	11.44	0.27
Non Government Services	0	0	0.05	0.17	0.56	0	0.04	0.08	0	0.9	0.02
Recreational Facilities	0	0	0	0.07	0	0.09	0	0	0	0.16	0
Residential	28.26	59.9	55.84	38.12	43.58	33.71	45.32	65.6	72.27	442.58	10.6
Restricted Area	0	0	0	0	0	0	0	1.56	0	1.56	0.04
Service Activity	0	0	0	0.09	0	5.78	0.44	0	0	6.31	0.15
Transport and Communication	0	0	0	0	0	0.29	0	0.46	0.4	1.15	0.03
Urban Green Space	0.03	0.04	0.1	8.05	0	0.11	0.01	1.98	0.05	10.38	0.25
Vacant Land	5.53	9.48	9.51	3.35	3.48	9.02	2.96	14.89	15.1	73.33	1.75
Water body	8.99	8.57	13.16	36.05	2.07	13.43	3.94	15.59	14.59	116.32	2.78
Forest Area	0	0	0	0	0	0	0	0	0	0	0
Miscellaneous / Others	0	0	0	0	0	0	0	0	0	0	0
Total	490.8	623.6	495.5	246.3	193.4	314.1	120.9	829.2	864.9	4178.49	100

Source: Land Use Survey, 2010

Residential: Residential landuse includes urban housing, rural homestead, flats or apartments, mess / boarding houses and informal housing (comprising thatch, katcha and semi-pucca structures) areas. Residential use includes residential house, residential quarters, rest house, slum, mess etc. It has been appeared that Ward No. 09 has the highest residential concentration (16.33%) while Ward No. 01 has the lowest concentration, i.e. 6.39%.

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 purposes. Survey result depicts that commercial activities are mainly concentrated in Ward 6, which is 39.23% of the commercial uses of the entire Paurashava. Ward 1 has the second highest commercial uses of land (1.39%).

Industrial: Survey revealed that there are several rice and saw mills in Paurashava area. Industrial/Processing and Manufacturing activity in Jibannagar Paurashava mainly includes rice mill, saw mill, brick field, ice factory, seed processing industry, bakery factory and other manufacturing and processing activities. Major industrial/manufacturing concentration is seen in Ward No. 02, Ward No. 05 and Ward No. 08 and maximum of them is rice mill.

Agricultural: Around 3344.57 acres of land is under agricultural use in Jibannagar Paurashava. It has been appeared from the field survey that Ward No. 08, Ward No. 09 and Ward No. 02 have maximum agricultural land. In Ward No. 08, Ward No. 09 and Ward No. 02, there are 21.27% (711.38 acres), 22.33% (746.76 acres) and 15.80% (528.39 acres) of total agricultural land respectively. The amount of agricultural land is the lowest in Ward No. 07 that are accounted for 1.31% (43.84 acres) of total agricultural land.

Education: Land that used for Colleges, High School, Primary School, NGO School, Madrasa and Educational Research Institution are considered in this section. Major concentration of educational land use is found in Ward No. 07 (27.52%), Ward No. 06 (18.93%) and Ward No. 03 (15.67%). The lowest educational land use is found in Ward No. 04. However, educational institutes spread over most of the wards of this Paurashava at certain percentage.

Public Land: This category includes all types of government offices like DC office, Zila Parishad, Upazila Parishad, LGED, DPHE, Fisheries, Social Welfare, Statistical Bureau, Health office, etc.

Land under other Govt. Institutions: 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, 06, 07 and 08. Paurashava Office is situated at Ward No. 06 and this Ward occupies the largest amount (84.62%) of this type land use.

Khas land: The Paurashava is not maintaining the khas land record. Upazila Nirbahi Officer is the custodian to maintain the khas land record and his office denied supplying any information on khas land of Jibannagar Paurashava.

Other (Abandoned, etc.): In the Paurashava, NGOs are found with multi-disciplinary social development activities. Most of those offices are located in the residential areas and same compound in a residential building. The NGOs are separated from the residential buildings and established independently. Total areas under non-government services are 0.90 acres.

Water Bodies: Jibannagar Paurashava has river and many pond, ditches, khals, dighies, lakes, marshland, irrigation canal, etc. Total area under such water body stands at 116.32 acres. Although there is a River named Bhairab which runs through the Paurashava area, it is not used as waterway. In the rainy season, when the river is full of water, some people may use this river for transportation but not so frequent.

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 landuses. However, other admixture of diverse landuses 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 landuses prevail for long till one fully takes over the other. In such areas usually commerce gradually takes over residential use.

2.10 Paurashava Functional Linkage with Regional and National network

National: National development plans are based on the overall needs and aspirations of the nation as a whole. In plans policies, strategies and objectives are drawn up and budget allocations are made to materialise development targets. Programs and projects are prepared under each sector. Any development initiative at the local level must relate to the national level plans in order to achieve cohesion and integrity with overall development of the country to attain the national development objectives. It is therefore necessary to study how the Jibannagar Paurashava Master Plan is related to the national development plans of the country.

Jibannagar Paurashava has a connection with Khulna-Jessore-Jhenaidah highway and a good communication facility of the Paurashava is being developed as an important centre for agriculture, horticulture, trade and commerce. Jibannagar Paurashava has good prospects of varies industrial growth such as agriculture based industries and textile industries. The major problems of the Paurashava are lack of community and utility facilities, lack of infrastructure facilities, unplanned drainage system, unplanned residential development etc. General expectation of the Paurashava inhabitants is a better planned Urban Area Plan for Paurashava as well as an effective Land use Plan and Ward Action Plan including indication of development control measures.

Regional: A regional highway (Jessore-Chuadanga) passes through the Paurashava and therefore it has a good communication facility. Jibannagar Paurashava has high prospects of agricultural crops production such as paddy, wheat, jute, potato, pulse, oil seeds, sugarcane, vegetables, and fruits production such as mango, jackfruit, papaya, guava, carrots etc. Plenty amount of paddy and other agricultural crops grow in this Paurashava. So in the regional context, this Paurashava plays an impotent role in agro economic sector. There is a mentionable amount of agro-based industries such as rice mills, flours mills and oil mills are located in this Paurashava. So the Paurashava has a great amount of contribution in agricultural products of the whole regional.

2.11 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 2.6: 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 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.

Map 2.1: Linkage of the Paurashava in the Regional and National Setup

CHAPTER-3

PROJECTION OF FUTURE GROWTH BY 2031

3.1 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 2011 to 2031. In case of population and landuse, projection has been presented but in case of economy, opportunities have been considered. For the Jibannagar 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, livestock and poultry, local fruits and availability of labour force considers as a basic components of the economic opportunities.

3.2 Projection of Population

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

For population projection, several discussions were made with experts and BBS officials. Following the annual growth rate for the study area available from the 2011 Population Census, the projection up to the year 2031 with five years interval has been made. The growth rate scenario of Jibannagar Paurashava according to the BBS 2011 has been shown in the following Table.

Table 3.1: Growth Rate Scenario

Administrative Unit	Growth Rate
Chuadanga Zila	1.13 (BBS 2011)
Jibannagar Upazila	0.89 (BBS 2011)

Before calculating future population, growth rate should be calculated first. To calculate the growth rate, the following formula is used.

$r = (P11/P01)^{1/t} - 1$ where,

P11=Population of year 2011

P01= Population of year 2001

t =time period

r =annual growth rate

According to the formula, considering population of year 2011 (25518) and population of year 2001 (24128) the annual growth rate for Jibannagar Paurashava is

$r = (25518/24128)^{1/10} - 1$

= 0.0056, which is so low for an Upazila level Paurashava.

For this reason Upazila growth rate (0.89) has been considered for the population projection.

Basis of population projection: The growth rate is (0.89), as considered for the population projection. According to the BBS (2011) in this Paurashava population is about 25518. The population is projected by considering the base population of 2011 and annual growth rate 0.89.

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

$Pn = Po (1+ r)^t$ where,

Po =the base year population

Pn =the projected year population

t =time period

r =annual growth rate

According to the formula, population of Jibannagar Paurashava in the year 2031 is

$Pn = 25518 (1+ (0.89/100))^{20}$

=30466

The projection shows that the population of the study area will be 26674 in 2016, 27882 in 2021, 29145 in 2026 and 30466 in 2031. The scenario proves that in next 20 years the Paurashava population will be increased and it may be double. The projection is showing normal increase of population. In special case, for construction of Jamuna Bridge, 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 3.2: Population projection

Ward No.	Area in acre	Population 2001	Population 2011	Projected population			
				2016	2021	2026	2031
1	490.80	1322	1365	1427	1491	1559	1630
2	623.63	2587	2755	2880	3010	3147	3289
3	495.41	2735	3019	3156	3299	3448	3604
4	246.26	2735	2848	2977	3112	3253	3400
5	193.39	2571	2731	2855	2984	3119	3260
6	314.11	2798	2472	2584	2701	2823	2951
7	120.88	2846	2616	2735	2858	2988	3123
8	829.22	3668	4475	4678	4890	5111	5343
9	864.91	2866	3237	3384	3537	3697	3865
Total	4178.49	24128	25518	26674	27882	29145	30466

Source: BBS 2011

3.3 Identification of Future Economic Opportunities

Most of the entrepreneurs expressed their desire of implementing future development plan. A major portion mentioned that their development plan is the expansion of their enterprises (90%) and others intend to increase their production (10%). Expansion of existing industries and establishment of new industries will create more jobs and thus have multiplier effect in the overall economy leading to create more consumption capacity,

investment opportunities in diversified economic fields and thus push the economy upward.

Some small-scale pisciculture is located in the Jibannagar Paurashava area. About 120 households are involved with such pisciculture. The production mostly uses in the Chuadanga and Jhenaidah City. Investment in this field will bring huge prospects of the Paurashava. Other economic prospect summarizes in the following discussions:

Availability of unskilled and cheap manpower.

Availability of river.

- Availability of agricu Bridgelture land. The land may be used for different agricultural production and those productions may be used for the input of agro-based industries.
- Due to the nearness of Chuadanga City, the Paurashava may be developed as the fringe area of Chuadanga City. This fringe area with its agriculture production will support to the Chuadanga City where marketing for those productions are available.
- The Paurashava has been developed as growth centre concept. Some cluster development is found around this growth centre. Planned development through this master plan 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.

3.4 Projection of Landuse

Landuse requirement: In Jibannagar Paurashava, major landuse is agriculture (80.04%). Residential landuse occupies second position (10.59%) of the category. Only 1.50% land is using for circulation network. Though, agriculture landuse dominates the Paurashava but, after the preparation of Master Plan, a radical change in physical development will proceed. In consideration of such concept, the Master Plan will be delighted in favour to save the agriculture land.

The determining factors of landuse change is the income of the people, government policy, new establishment like industry, higher level educational institute, construction of road and embankment and availability of services. The Paurashava was developed as a growth centre long before, than a police station. In the year 1997 it is notified as Paurashava. Radical change of landuse in the Paurashava is not found. Before it known as Paurashava, agricultural domination was the key landuse. During last ten years, the landuse scenarios remain same.

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 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.

Basis for Projection: The projection of landuse depends on the growth of population. After population projection it is found that, population of this area will be 30466 (according to the linear method) that belong to the trend line method in the year 2031. Projection on landuse also depends on present trend of migration.

Demand Analysis: 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. Density of population is considered lower than LGED standard. Because according to LGED standard required residential land is less than existing residential land. Besides in Paurashava level residential development practice is basically horizontal development. Though, vertical expansion will be emphasized rather than horizontal in future. 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.

Table 3.3: Standard of landuse and future need

Types of Land Uses	Recommended Standard Provision unit)	Existing (acre)	Land requirement (acre)			
			2016	2021	2026	2031
Residential		442.58	399.41	418.23	437.18	456.99
- General residential	100 – 150 persons/1 acre		266.27	278.82	291.45	304.66
- Real Estate – Public/Private	200 population/ 1 acre		133.14	139.41	145.73	152.33
Roads		62.48				
- Paurashava primary roads	150 – 100 feet					
- Paurashava secondary roads	00 – 60 feet					
- Paurashava local roads	40 - 20 feet					
Education		17.70	38.61	40.43	42.26	44.18
- Nursery	0.5 acre/10,000 population		1.33	1.39	1.46	1.52
- Primary School/ kindergarten	2.00 acres/5000 population		10.65	11.15	11.66	12.19
- Secondary/High School	5.00 acres /20,000 population		6.66	6.97	7.29	7.62
- College	10.00 acres/20,000 population		13.31	13.94	14.57	15.23
- Vocational Training Centre	5 - 10 acres / Upazila		0.00	0.00	0.00	0.00
- Other	5.00 acres / 20,000 population		6.66	6.97	7.29	7.62
Open Space		1.952	58.58	61.34	64.12	67.03
- Play field/ground	3.00 acres/20,000 population		3.99	4.18	4.37	4.57
- Park	1.00 acre /1000 population		26.63	27.88	29.15	30.47
- Neighborhood park	1.00 acre /1000 population		26.63	27.88	29.15	30.47
- Stadium/sports	5 – 10 acres/Upazila HQ		0.00	0.00	0.00	0.00

Types of Land Uses	Recommended Standard Provision unit)	Existing (acre)	Land requirement (acre)			
			2016	2021	2026	2031
complex						
- Cinema/ Theatre	1.0 acre /20,000 population		1.33	1.39	1.46	1.52
Health		5.34	5.33	5.58	5.83	6.09
- Upazila health complex/ hospital	10 -20 acres/Upazila HQ		0.00	0.00	0.00	0.00
- Health centre/Maternity clinic	1.00 acre/ 5,000 population		5.33	5.58	5.83	6.09
Community Facilities		5.83	12.16	12.47	12.79	13.12
- Mosque/Church/Temple	0.5 acre /20,000 population		0.67	0.70	0.73	0.76
- Eidgah/	1.0 acre/20,000 population		1.33	1.39	1.46	1.52
- Graveyard	1.00 acre /20,000 population		1.33	1.39	1.46	1.52
- Community centre	1.00 acre /20,000 population		1.33	1.39	1.46	1.52
- Police Station	3 – 5 acres/Upazila HQ		5.00	5.00	5.00	5.00
- Police Box/outpost	0.5 acre/ per box		0.50	0.50	0.50	0.50
- Fire Station	1.00 acre/ 20,000 population		1.33	1.39	1.46	1.52
- Post office	0.5 acre /20,000 population		0.67	0.70	0.73	0.76
Commerce and Shopping		34.65	37.79	39.17	40.56	42.01
- Wholesale market	1.0 acres/ 10000 population		2.66	2.79	2.91	3.05
- Retail sale market	1.0 acres/ 1000 population		26.63	27.88	29.15	30.47
- Corner shops	0.25 acre/per corner shop		0.00	0.00	0.00	0.00
- Neighborhood market	1.00 acre/per neighborhood market		7.00	7.00	7.00	7.00
- Super Market	1.50 – 2.50 acres/per super market		1.50	1.50	1.50	1.50
Industry		29.36	66.57	69.71	72.86	76.17
- Small scale	1.50 acres /1000 population		39.94	41.82	43.72	45.70
- Cottage/agro-based	1.00 acres /1000 population		26.63	27.88	29.15	30.47
Transportation		1.15	3.33	3.49	3.64	3.80
- Bus terminal	1 acre /20,000 population		1.33	1.39	1.46	1.52
- Truck terminal	0.50 acre /20,000 population		0.67	0.70	0.73	0.76
- Launch/steamer terminal	1.00 acre /20,000 population		1.33	1.39	1.46	1.52
- Railway station	4.00 acre / per Station		0.00	0.00	0.00	0.00
- Baby taxi/tempo stand	0.25 acre /one baby taxi/tempo stand		0.00	0.00	0.00	0.48
- Rickshaw/van stand	0.25 acre / stand		0.00	0.00	0.00	0.48
- Passenger Shed	0.25 acre / stand		0.00	0.00	0.00	0.48
Administration		1.838	0.00	0.00	0.00	0.00
- Upazila complex	15.00 acres		0.00	0.00	0.00	0.00
- Paurashava office	3 – 5 acres		0.00	0.00	0.00	0.00
- Jail/Sub-Jail	10 acres/Upazila HQ		0.00	0.00	0.00	0.00

3.5 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. The dwellings, comprising homesteads, encompass larger areas having low density. The highest ward wise net population density in the Paurashava is 75 persons per acre (Ward 4). Buildings in the Paurashava are dominated by semipucca structure (42.92%). However, owners of the buildings have been found violated the setback rule by the

construction. Except labour charge there is very little variation in building construction cost between Tangail and Jibannagar Paurashava.

Problems relating to the housing are mostly concerned with the poor community. Due to their low level of income a vast number of poor are squatting in public land. They are not only deprived of minimum housing but also from the personal security that endanger their health and working efficiency. Regular income can solve most of their housing problems. 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. In the Paurashava, above 96 percent housing structures are one-storied that includes semi-pucca, katcha and Jhupri type houses.

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 50 persons per acre and there is no standard for industrial use, commercial use, etc.

Demand analysis: It is estimated that housing demand stands at 609.30 acres at the end of project period 2031. The estimate is based on the assumption that the standard supplied by the LGED for housing estimation where density is declared around 150 or 100 per acre. But for Jibannagar Paurashava it is not possible to follow the standard properly, because the existing residential land is more than the requirement calculated for year 2031. The Paurashava undeveloped horizontal development is taking part rather than the vertical expansion. By considering all these facts, the density in this Paurashava is considered 50 persons per acre. Projected area is shown in Table 3.4.

Table 3. 4: Ward-wise demand of housing areas

Ward No.	Existing Housing Area (acre), 2011	Estimated housing demand (acre)			
		2016	2021	2026	2031
1	28.26	28.54	29.82	31.18	32.60
2	59.90	57.60	60.20	62.94	65.78
3	55.84	63.12	65.98	68.96	72.08
4	38.12	59.54	62.24	65.06	68.00
5	43.58	57.10	59.68	62.38	65.20
6	33.71	51.68	54.02	56.46	59.02
7	45.32	54.70	57.16	59.76	62.46
8	65.60	93.56	97.80	102.22	106.86
9	72.27	67.68	70.74	73.94	77.30
Total	442.58	533.52	557.64	582.90	609.30

Source: Landuse Survey, 2010 and population projection

CHAPTER-4

DEVELOPMENT PROBLEMS OF THE PAURASHAVA

4.1 Physical Infrastructure

Most of the lands in the Paurashava are acting an important role on the supply of agriculture commodities in different Paurashavas and Zilas. All of those lands submerge in rainy season. On the other hand, development activities are reducing 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 1 to 2 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. Some of the roads submerge in rainy season. Widths of all semi-pucca and katcha roads are between 3 to 6 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 and sanitation will not be possible to construct in those narrow roads.

Most of the areas in the Paurashava are low land needs sufficient earth filling activities (at least 1 to 10 meter) to provide urban services. As a result, heavy construction cost should be considered to provide those facilities.

Problems will be prevailed to provide central water supply and drainage system due to the presence of ditches and char lands (sandy soil, eroded every year), only the land along with the Regional Highway appropriate for those services.

4.2 Socio-economic

There was a total of 24128 population in Jibannagar Paurashava in 2001. Ward-wise distribution of population has been shown in the figure 7.1. It is clear that the number of population is the highest (3668) in Ward No. 08 and lowest (1322) in Ward No. 01. There is also a little difference between the numbers of population of Ward No. 02, Ward No. 03 and Ward No. 06. The numbers of population of Ward No. 07 and Ward No. 09 are also

almost same. In these two Wards, the numbers of population were 2846 and 2866 respectively.

Maximum people in Jibannagar Paurashava are not conscious about their transportation problem but narrow road inadequate numbers of roads etc. are the major transport problem for this Paurashava which are hampering the socio-economic situation of that Paurashava. There is no access to National supplied gas. As there is no piped water supply provision of Jibannagar Paurashava authority, the households themselves establish electric motor instead of hand tube well for piped water supply to meet individuals' water demand. People of Jibannagar Paurashava are gradually being motivated themselves by increasing their willingness in participation of development activities through contributing land, labor, money, advice and others matter. It's a positive sign for Paurashava for developing socioeconomic situation.

Drainage Facility: In most of the wards of Jibannagar Paurashava, drainage is available except Ward No. 06. Very few households in these Wards enjoy drainage facility which is Pucca drains. Overall 96.7% households are lacking drainage facility in the Paurashava.

Sewerage Facility: The Sewerage system so far has not introduced in the Paurashava area. There are few open roadside drains and channels provided by Jibannagar Paurashava, which cannot serve the requirement of wastewater discharge. The sewerage system in the study area is to be improved in future by proper drainage network. Maximum households build individual septic tanks for disposal of human excreta built on own initiatives. At present 95% people of the Paurashava use sanitary latrines. (Socio-economic Survey, 2011)

Toilet Facility: In Jibannagar Paurashava only 95% of the households had sanitary toilet facility and 5% had non-sanitary toilet facility.

Water supply: Water supply network is not available in the Paurashava area. 100% of the households are using hand tube wells as main source of water supply for drinking and cooking purpose. A significant portion of the residents use pond water for washing and bathing purpose. About 386 deep tube wells are available in the entire Paurashava area. Most of them are active. Ground water level during dry and wet seasons are 21ft and 10ft respectively. Hand tube wells are mostly used for drinking water purpose. Other sources of water are, pond, well, river, khal, etc.

4.3 Environmental

In Jibannagar Paurashava, noise pollution is occurring by three wheelers and sound generated from saw mills and rice husking mills. Air pollution is caused by dust emitted from saw mill, rice hushing mills and furniture shops. Also flood water and water logging creates health hazards. Dysentery, diarrhea, etc. diseases occurs due to flood and water logging. Habitual inundations, especially in monsoon, due to external floods from canals are another threat to environment. These above varies are extremely important uses of concern for the Paurashava. Pragmatic planning / solution and proper Drainage Plan are very pertinent issues which will be of utmost importance in planning the Jibannagar 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 Structure Plan, Urban Area Plan and Ward Action Plan, consideration of those factors will be made for keeping the natural environment livable.

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 Jibannagar 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 80% land of the Jibannagar 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 Jibannagar 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 upgradable and environmentally appropriate.
- Provide government support for extension of infrastructure based on the participation of the people and private developers, NGOs, CBOs or on innovative systems of infrastructure leasing.
- Provide Government assistance to the local bodies for adequate cost recovery of investment on infrastructure, proper maintenance of services and upgradation of the capability of the personnel in local bodies and functional agencies.
- Provide opportunity for community participation and recognize people's initiative in the design, installation and the upkeep of services within the framework of the development programmes.

Strategies

The salient features of the housing strategy are:

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

enhancement, housing loans at especially low interest, access to space for running workshops or business and such other facilities.

- Improvements and rehabilitation of the existing housing stock will be given priority by the Government alongside new housing.
- Encroachments on public land and formation of unauthorized constructions will be discouraged.
- Austerity will be maintained in building houses and efforts will be made to economize housing costs, discourage extravagant construction, facilitate incremental house building and ensure wider application of low cost technology and optimum use of resources at the individual and national levels both in public and private sectors.
- Regeneration of forest-based building materials would be planned and environmental conservation given due consideration.
- Due attention would be given to construction, protection, replacement and rehabilitation of shelter in disaster affected and fire prone areas.
- Special care would be taken for the preservation of cultural heritage and promotion of vernacular architecture in new housing projects.
- Universities, research institutes and centres will be encouraged to conduct research on housing issues.
- The National Housing Policy will be co-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 6in 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 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 lime to facilitate easy and rapid flow of domestic private and foreign direct investment. Appropriate legal framework will be put in place to protect both investor and consumer rights to ensure proper market operation and consequently, for lowering cost of doing business.

- There will be no discrimination between domestic and foreign investment. Due emphasis will be given to promotion of regional and sub-regional cooperation.
- Existing public sector enterprises will be progressively privatized and public industrial investment will be limited to only those cases where there is special need to complement private investment or where there is an overriding social and national objective to be achieved.
- The capital market will be developed and strengthened to mobilize domestic savings and to attract foreign investment.
- Development of the infrastructure including port facilities, energy, transport and communication and human resource development will receive high priority Private investment including "Build, Operate and Own" (BOO) and "Build Operate and Transfer" (BOT) methods will be particularly encouraged in these sectors.

- Intensive industrial zones development will be undertaken together with balanced geographical dispersal of the zones in areas with growing potential to the utilization of local resources as more infrastructural and other facilities are put in place.
- Consistent with the charter of World Trade Organization (WTO), protection to domestic industries from external competition will be rationalized.
- To retain the competitive edge of domestic products, wage increases will he 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 Jibannagar 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 dieses. Such concept will be included with different programs.

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

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

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:

1. Food for Works Program
2. G.R Program (Gratuitous Relief Program)
3. T.R Program (Test Relief Program)
4. V.G.D Program (Vulnerable Group Development Program)
5. V.G.F Program (Vulnerable Group Feeding Program)
6. Single-House Single-Farm Program
7. Back to home Program
8. Food for Education Program
9. Rural Occupational Project
10. Poverty Reduction Project
11. Self-employment Program for Women
12. Women Empowerment Program
13. Coordinated Women Development Program
14. Peace Home Program
15. Shelter Support Program
16. Educational Allowance Program
17. Aged-allowance Program
18. Micro-credit Program
19. Allowances for Widowed, Poor and Husband-renouncement Women Program

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

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 is re-named as Local Government (Paurashava) Ordinance, 2009 but the name remains same.

The Local Government (Paurashava) Ordinance, 2009 (Ordinance No. XLXVIII of 2009) was enacted in 6th October 2009 and this is the only regulation executes by the Paurashava authority. The Paurashava authority may provide the functions as prescribed in the Ordinance, no provision is being outlined to control and manage those functions. The jurisdiction of this Ordinance on other regulations includes following Acts and Ordinances. The Paurashava may enforce those regulations according to their capacity.

1. Cantonments Act, 1924 (Act No. II of 1924)
2. District Act, 1836 (Act No. I of 1836)
3. The Penal Code, 1890 (Act No. XLV of 1890);
4. Prevention of Corruption Act, 1947 (Act No. II of 1947)

5. The Bangladesh Shilpa Rin Sangstha Order, 1972 (P.O. No. 128 of 1972)
6. The Bangladesh Shilpa Bank Order, 1972 (P.O. No. 129 of 1972)
7. The Bangladesh House Building Finance Corporation Order, 1973 (P.O. No. 17 of 1973)
8. The Bangladesh Krishi Bank Order, 1973 (P.O. No. 27 of 1973)
9. The Investment Corporation of Bangladesh Ordinance, 1976 (Ordinance No. XL of 1976)
10. The Rajshahi Krishi Unnayan Bank Ordinance, 1986 (Ordinance No. LV III of 1986)
11. Local Government (Paurashava) Ordinance, 2009 (Ordinance No. XLXVIII of 2009)
12. Evidence Act, 1872 (Act No. I of 1872) (see section 131)

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 Act, 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, Garden and Natural Tank in Urban Areas Preservation Act, 2000 (Act No. XXXVI of 2000), enacted in 18th September 2000. In short, this Act may be called as National Reservoir Protection Act. The jurisdiction of this Act is covered Metropolitan

City, Divisional and District level Cities and all urban areas including Paurashava area. Aim of the Act is to preserve play field, open space, park / garden and natural water reservoir. For the Paurashava premises, Paurashava Authority is empowered for enforcement of the said Act.

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

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.

Conservation of Environment Act, 1995

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

Rural Electrification Board Ordinance, 1977

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

(a) To establish electricity generation transmission, transformation and distributionsystems 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.

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.

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 Act, 2004

The Act was enacted on 1st March 2004 to control land under private housing and develop accordingly. The authority who has prepared master plan, the Act will be enforced on those areas. It is said in the section 1(2) of this Act that, this Act will be enforced under the jurisdiction of the master plan areas prepared under the guidance of The Town Improvement Act, 1953 (E.B.Act XIII of 1953) and The Building Construction Act, 1952 (E.B.Act II of 1952)." According to the regulation prescribed above, the private housing construction in the Paurashava area may be controlled through this Act but, an amendment will be necessary to include the name of Paurashava Ordinance, 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 21st May 1976 to provide for the constitution of Thana Parishad. Paurashava Ordinance 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 Paurashava Ordinance, 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) Ordinance, 2009

Major activity	Specific functions	Functions in brief
Town planning	Master plan	The Paurashava shall draw up a master plan for the city which shall provide for a survey of the Paurashava including its history, statistics, public services and other prescribed particulars. Development, expansion and improvement of any area within the city; and restrictions; regulation and prohibitions to be imposed with regard to the development of sites, and the erection and re-erection of buildings within the Paurashava.
	Site development schemes	Where a master plan has been drawn up and approved by the government, no owner of lands exceeding such area as may be specified in this behalf in the master plan, shall develop the site or errect a building or any plot of land covered by the provisions of a site development scheme sactioned 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 aquired by the Paurashava; (e) the price of plots; (f) the works that shall be excuted at the costof the owner or owners of the site or sites; and (g) the period during which the area shall be developed.
	Execution of Site Development Schemes	If any area is developed or otherwise dealt with in contravention of the provisions of the sanctioned Site Development Scheme, the Paurashava may by notice require the owner of such area or the person who has contravened the provisions to make such alteration in the site may be specified in the notice as where such alteration is not made or for any reason cannot be carried out, the Paurashava may, in the prescribed manner require and enforce the demolition of the offending structure; and notwithstanding anything to the country contained in any law, no compensation shall be payable for such demolition.
Building construction	Building construction and re-construction	Without approval of the building site and plan by the Paurashava, nobody can construct, re-construct any building in the Paurashava area. The Paurashava will approve the plan within sixty days or refund it within that specified time frame; otherwise the plan will be considered as approved.
	Completion of construction and change, etc.	After completion of the approved building, the owner will notify to the Paurashava within 15 days. The Paurashava may inspect the building and if found any violation of the provision

Major activity	Specific functions	Functions in brief
		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.
Development	Development plans	The Paurashava shall prepare and implement development plans for specific time. Such Plans shall provide for- (a) the promotion, improvement and development of such function or functions of the Paurashava as may be specified; (b) the manner in which the plans shall be financed, executed, implemented and supervised; (c) the agency through which the plans shall be executed and implemented; and (d) such other matters as may be necessary.
	Community Development Projects	The Paurashava may, sponsor or promote community development projects for the Paurashava or any part thereof and may in this behalf perform such functions as may be prescribed.
	Commercial schemes	The Paurashava may, with the previous sanction of the Government, promote, administer, execute and implement schemes for undertaking any commercial or business enterprise.
Street	Public streets	The Paurashava shall provide and maintain such public street and other means of public commutation as may be necessary for the comfort and convenience of the inhabitants of the Paurashava and of the visitors thereto.
	Streets	No new street shall be laid out except with the previous sanction of the Paurashava. The Paurashava may by notice required that any street may be paved, matalled, drained, channeled, improved or lighted in such manner as may be specified in the notice, and in the event of default, the Paurashava may have the necessary work done through its agency, and the cost incurred thereon by the Paurashava shall be deemed to be a tax levied on the person concerned.
	General provisions about streets	The Paurashava may assign names to streets and paint the names or fix the nameplates on or at conspicuous places at or near the end corner or entrance of the street. No person shall destroy, deface or in any way injure any street, name or name 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

Major activity	Specific functions	Functions in brief
		and regulation of traffic necessary to prevent danger and ensure the safety, convenience and comfort of the public.
	Public vehicles	No person shall keep or let for hire or drive or propel within the limits of the Paurashava any public vehicle other than a motor vehicle except under a license granted by the Paurashava, and in conformity with the conditions of such license. No horse or other animal shall be used for drawing a public vehicle within the limits of the Paurashava except under a license granted by the Paurashava.
Water supply and drainage	Water supply	The Paurashava may provide supply of wholesome water sufficient for public and private purposes. Frame and execute water supply scheme for the construction and maintenance of such works for storage and distribution of water.
	Private sources of water supply	All private sources of water supply within the Paurashava shall be subject to control, regulation and inspection by the Paurashava. No new well, water pump or any other source of water for drinking purposes shall be dug, constructed or provided except with the sanction of the Paurashava.
	Drainage	The Paurashava shall provide an adequate system of public drains in the and all such drains shall be constructed, maintained, kept, cleared and emptied with due regard to the heal and convenience of the public. All private drains shall be subject to control, regulation and inspection by the Paurashava
	Drainage scheme	The Paurashava may prepare a drainage scheme in the prescribed manner of the construction of drains at public and private expense. The drainage scheme as approved by the government shall be executed and implemented within specified period.
	Bathing and washing place	The Paurashava may from time to time set a suitable place for use by the public for bathing, washing cloths, or for drying cloth. Specify the time at which and the sex of persons by whom such places may be used. No person shall establish, maintain or run a bath for public use except under a license granted by the Paurashava.
	Dhobi ghat and washer men	The Paurashava may provide dhobi ghats for the exercise of their calling by washer men, and may regulate the use of dhobi ghats and levy fees for their use.
	Public water-course	The Paurashava may declare any source of water, spring, river, tank, pond, or public stream, or any part thereof within the Paurashava, which is not private property, to be a public 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 likely to arise after construction of two lane of internal bypass, supply of safe drinking water, providing safe and easy accessibility, use of agriculture production in income generating activities and create provision for further investment.

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

To increase the agro-product and use them in income generating activities, a vast agriculture land will be used and at the 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

CRITICAL PLANNING ISSUES

6.1 Transport

Van and three wheelers are two major transport modes in the study area. 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 planning area. The peak hour traffic movement is found in morning from 9am to 10am and in the afternoon from 4pm to 6pm in general. Overall traffic congestion is low, let it should not be increased. The movements of Nosimon which is very risky need to restrict to keep the urban area risk free, clean and sound. Establishment of bus route within the study area is another prior demand of the people.

The hat / bazar in the study area serves 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 low dominated by mixed type of vehicles including non-motorized. Generally, surface of the highways excepting for a larger part is excellent. The road network is not facilitated by designated parking area, bus terminal and bus bay. As a result, sometimes congestions and chaotic situation occurs for a little while. In spite of this situation, present road network is functioning well.

6.2 Environment

In the Paurashava, water pollution and solid wastes are the major environmental problems. Pesticides use in agriculture land, chemicals and food use in pisciculture, poultry feed use in poultry farming and bathing and washing in river water are the causes of water pollution. Household garbages, kitchen market garbages and garbages produce by the pedestrians are producing solid waste problems. Systematic approaches will be needed to remove those problems.

6.3 Landuse Control

Accommodation of future thrust of growth likely to arise 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 should 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 needed and therefore, 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 should 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.
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. The main drainage congestion occurs in Jibannagar bazaar 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. Most of those are government lands. Vehicular accessibility became zero in those areas.
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.

6.4 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 Jibannagar Upazila has been affected by the several major natural disasters ranging from Cyclone, Flood to Water-logging and Draughts, etc. 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 the Jibannagar 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.

6.5 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 East Bengal 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 regarding EBBC Act, 1952. 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 Paurashava Ordinance, 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, 80.04% (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 East Pakistan, 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-7

LAND USE ZONING POLICIES AND DEVELOPMENT STRATEGIES

7.1 Strategies for Optimum use of Urban Land Resources

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.

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 National Highways, 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 and cluster development will be effective for new formation, not for the mixed-use areas where most of the roads are 8 to 10 feet width.

Prior to planning, strategies have been developed for issues like, utilities, circulation and drainage both for core urban areas and urban fringe areas. The steps of strategies for formulation master plan are based on the policy recommendations and standards suggested by the LGED. All those aspects are very vital for creating livability in Paurashava area.

Policies and Strategies

In relation to the landuses, the expected cluster development policies are:

Review the selected clusters and prepare guidelines for their development: In carrying out this task, Paurashava will pay particular attention to the scale of growth to be accommodated in each cluster. This will be influenced by the local pressures for growth and capacity of each cluster to absorb such growth. In relation to the tentative list of clusters identified in the Chapter-3, the following comments need to be made:

First priority clusters are the market areas. Variations between the scales of growth to be accommodated in each of the markets will be found. Second priority clusters are located on the fringes of the existing Paurashava town centre. They are areas where pressure for growth is already strong. Their inclusion in the list is therefore almost inevitability.

Limit industrial use outside the existing town centre and the proposed extensions to the town centre: Location of manufacturing activity may have benefits to the local communities in which the manufacturing activity is located – through provision of direct or indirect employment and benefits to the entrepreneur in terms of reduced costs. However, it may also have disadvantages, say, for example, if the infrastructure is not available to deal with the effluent (whether it be air borne, water borne or in the form of solid waste) of the manufacturing processes being undertaken in these relatively remote locations.

Encourage the development of non-urban uses such as agriculture and forestry on land on the periphery of the Town centre which is unsuitable for urban development.

Optimization of the existing urban land resources

Jurisdiction of the Jibannagar Paurashava is 4178.49 acres (16.92 sq. km.); population is 25518 (2011) with gross density 6 persons per acre. In the year 2031, the population will be 30466 with gross density 7 persons per acre if growth rate remain 0.89%.

At present, agriculture and water body includes 60% and 9% land respectively. Some important landuse determining factors like government policy, industrial establishment, construction of road including embankment and availability of services may change the agriculture domination in next 20 years. Question raises that how much this change will affect the present land resources?

During last ten years, the landuse scenarios remain same. A normal character of landuse change is found due to the construction of Jessore-Chuadanga Highway. Except this, present population distribution and growth including migration shows that the area is developing significantly in terms of trade and large business and trying to get out of agriculture based activity.

After preparation and implementation of master plan / urban area plan changes in the physical character of the Paurashava will be viewed. These changes will be provided by the infrastructural and community services development. According to the Master Plan / Urban Area Plan and Ward Action Plan this change should not exceed 5% to 10% from the total land of the Paurashava for next 20 years. Conversion of agriculture land in to infrastructural development may be considerable only for construction of embankment and road.

Zoning Policies and Strategies

Zoning is an effective guideline for the preparation of landuse plan. According to this guideline, specific use should be in specific area; height of the building will be controlled for easy access of sunlight and wind flow and ensuring availability of open spaces in every lot with the controlling of building density. For the sake of zoning provision in the Paurashava, core area, fringe area, peripheral area and new urban area is being demarcated accordingly.

Urban Core area

Policies: Existing town centre will be defined as core area. Mostly mixed-use areas are the important characteristics of the core area. Size of the core area is 259.61 acres. With the increasing of density, this area will lost living environment. Further expansion of the core area will be discouraged in the plan.

Strategies: Let the core area remain up to the plan period. No physical development provision will be initiated by the Paurashava. Vertical and horizontal expansion of the structure or establishment may be approved by the Paurashava with high rate.

Table 7.1: Structure Plan Policy Zoning

Zoning	Description of the Zone	Area (acre)	%
Agriculture	Agricultural land (also *agricultural area*) denotes the land suitable for agricultural production, both crops and livestock. It is one of the main resources in agriculture. The land under annual crops, such as cereals, other technical crops, potatoes, vegetables, and melons; also includes land left temporarily fallow; land under permanent crops (e.g., fruit plantations); areas for natural grasses and grazing of livestock.	2720.06	65.10
Circulation Network	It covers all the major roads within the structure plan areas.	314.42	7.52
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.	259.61	6.21
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.	168.76	4.04
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.	110.15	2.52
Peripheral Urban 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.	503.99	12.06
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.	100.15	2.41
Total		4178.49	100.00

Fringe area

Policies: The area, adjacent with the core area, ideal for rapid urbanization is considered as fringe area. Total area is 168.76 acres. Important community facilities, utility services and residential development will be the basic components of the fringe area. Improved transportation and communication linkages, better water supply and drainage facilities including rain water reservoirs will be the planning components.

Strategies: The guidelines set in the policy may be implemented by the different public authorities. A close coordination among those authorities should be maintained during implementation of the planning component. Any change of the planning should instantly be resolved with the involvement of the Paurashava authority.

Peripheral area

Policies: Agriculture domination will be the prime characteristic of the peripheral area. Rural homesteads, spotted important development like park, dumping ground, stadium and agro-industries are the important planning components of this area. Total area is 503.99 acres. Any contrast regarding the implementation of those planning components should not be encouraged.

Strategies: Phase-wise development will be encouraged. Individual authority may implement individual component. Coordination among the authorities is not mandatory. Locational change of the proposed components should be discouraged.

New Urban Area

Policies: Planned development will be the prime characteristic of the new urban area. Hosing with greeneries, important development like park, commercial centre, educational institute, improved health facities, community centre, road with footpath including drainage facilities, water supply and fire service are the important planning components of this area. Around 110.15 acre of land is identified as new urban area. Any contrast regarding the implementation of those planning components should not be encouraged.

Strategies: Phase-wise development will be encouraged. Individual authority may implement individual component. Coordination among the authorities is not mandatory. Locational change of the proposed components should be discouraged.

Agriculture

Policies: Agricultural domination will be the prime characteristic of the Agriculture zone. Agricultural commodities as mentioned earlier are the important components of this area. Total area is 2720.06 acres. Any cropping combination may be encouraged.

Strategies: Any agricultural practice will be encouraged. Individual authority may supervise and subsidize agricultural inputs to the farmers for increasing the produuction. Coordination among the authorities is not mandatory. Any physical development should be controlled by the Pourashasva (except bridge, culvert, drain and road).

Waterbody

Water body contains 100.15 acres excluding khal, pond, irrigation canal and river.

Policies: Rainwater harvesting and pisciculture will be the prime characteristic of the pond and river will be preserved for outfall of the drainage system including irrigation purposes and water ways. Any contrast regarding the implementation of those components should not be encouraged.

Strategies: Individual authority may control individual component such as pondvby the Paurashava and river by the Water Development Board. Coordination among the authorities is not mandatory. Any change of the components should be discouraged.

Major Circulation

Major circulation contains major road network with regional and national settings.

Policies: Essy accessibility with national, regional and local will be the prime characteristic of the circulation network. All transportation infrastructures should be incorporated as the

important planning components. Total area is 314.42 acres. Any encroachment or contrast regarding the implementation of those transportation infrastructures should not be encouraged.

Strategies: Phase-wise development will be encouraged. Individual authority may implement individual component. Coordination among the authorities is not mandatory. Locational change of the proposed components should be discouraged.

7.2 Plans for New Area Development

The Paurashava is not an ideal township due to the agriculture domination. Agriculture based township should be encouraged in the preparation of Master Plan / Urban Area 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. 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.

The agriculture land should be preserved (according to the Agriculture Policy) from any type of physical development. It should not be decreased with the expansion of habitable area or formation of new settlement, may be increased with the formation of char lands. In case of road, embankment, drainage and new urban area, the agriculture land may be used but such use should be guided according to this plan. For the development of pisciculture, all ponds (not lower than 0.15 acres) and ditches may be preserved, in some exceptional cases; small number of ditches and ponds may be used for physical development activities.

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.

Policies and Strategies

A large number of constraints are involved with the development of new area. Following strategies are involved with the development of new areas:

- Low incomes;
- Difficulties associated with assembling parcels of land which are large enough to make viable development sites;

- Disputes over ownership;
- Absence of private sector land developers;
- Lack of access (capable of resolution often only by works on land under the control of others); and
- The need in most cases for land to be prepared in some way prior development either by filling where it is subject to flooding or by earth moving where it is too steep to develop. In both cases, drainage works have to form an essential part of the land preparation task.

The policies and strategies of the Paurashava related to new area development are –

Explore and Implement means of increasing the number and pace of public sector land development projects: This is one area where government can have a direct influence on accelerating the rate of conversion of non-urban to urban land.

Explore and Implement, with the private sector, means of increasing the number and pace of private sector land development projects: In moving towards realization of the objective of government supporting the private sector in its development role (i.e. acting as an enabler rather than a provider), the Paurashava will examine, with the private sector, the means of overcoming the constraints to new area development.

Realization of the above two strategies is likely to require changes in legislation and administrative procedures at the national level. The other strategies of the Paurashava relating to new area development are set out below.

Promote upgrading of the existing urban area: As densities within the existing Paurashava Town increase, there will be growing pressure for upgrading to ensure that infrastructure provision is adequate and that living conditions are acceptable.

Most of the parts of the Paurashava are in agriculture practice and few parts are in urban area will require no upgrading at all. Accordingly the Paurashava will set priorities throughout the study area and ensure, through its own efforts or the efforts of others, that upgrading projects are necessary. Obvious areas for early consideration will be slum and squatter settlements. Local community and NGOs may involve with the upgrading projects.

Assist the transition of areas on the fringes of the extension urban areas from non-urban to urban use: The main priority here seems to be space for adequate access and drainage. Once this space is available, the roads, drains and other services can be installed as and when the resources are available to provide them. But without this space, rational development of such areas is impossibility, environmental problems occur and the pace of development is often seriously impeded.

If the Paurashava has the resources and to achieve this by acquiring land (either through negotiation or compulsory purchase) and ensuring that it remains free from development until needed, then the Paurashava will purchase this as a policy. If not, then a potential alternative approach is to work with the local community, particularly the landowners, to see if the space can be made available by readjustment of existing ownerships. Given the importance of this task the Paurashava will pursue an active policy of assisting the rational development of the fringe areas, by whatever means proves workable.

Ensure that land is available for all income groups: In accordance with Government's commitment to poverty alleviation, as expressed in the Poverty Reduction Strategy and the objectives of the National Housing Policy, a further major task facing the Paurashava is to ensure that land is made available for all income groups.

Reconsider the role that development control plays in the planning and management of new area: Where development control is institutionally well-established (with adequate legislation, administrative resources and enforcement power) it can be a very effective 'tool' in restricting new area development where it is considered unsuitable; encouraging it in areas where it is considered suitable; and influencing the type of development that takes place in any particular location. It can attempt to strengthen development control institutionally to enable it to perform its role more adequately. On the other hand, it can consider restricting the role of development control to those functions which it considers critical such as ensuring that development does not take place in corridors required for new road construction or road widening, or ensuring that polluting industry takes place only in areas which are suitable for it.

Encourage the development of unused or underutilized land rather than new areas: The Paurashava is characterized by having much unused or underutilized land within the heart of the town. This land represents a wasting asset. If maximum use is to be made of the existing investment in infrastructure and if journey times are to be kept short, then fuller utilization of this land is essential. The Paurashava will examine the reasons why such land remains unused or underutilized and will endeavour to overcome the constraints to its development.

7.3 Areas for Conservation and Protection

Type of area and structure which will conserve and protect is presented here.

- Historical building, monument, sculpture or any other related articles.
- Park, important playfield or any other active recreational areas.
- Government buildings like Dakbanglow, Court Building, Circuit House, D.C office, Paurashava office and official residence of the Paurashava Mayor.
- Riverfront areas where people spent their leisure time.
- Any other public establishment like Zoo, Museum, Flood shelter, etc.
- BM Pillars.
- Rail station, Bus Terminal and Launch / boat ghat.

Policies and strategies

For the conservation and protection areas, following policies and strategies are considered:–

Take environmental issues into account in all decisions related to the future development: By considering environmental issues in its entire decision making, the Paurashava aims to ensure that progress is made towards resolving the environmental problems exist and towards resisting the further deterioration of conditions beyond their present level.

The issue of polluting manufacturing processes is best dealt with by legislation at the national level. However, the Paurashava has a valid and important role to play in deciding the location of industry. It can confine polluting industry to a single or a limited number of locations, where prevailing winds will not carry airborne pollution over the Paurashava Town and where facilities for dealing with water borne effluent and solid waste disposal have a greater chance of being provided.

Impose restrictions on the location of new polluting manufacturing processes and identify suitable locations for their establishment: A long term program of controlling the emission of pollutants from existing industrial activities and removing chronic polluting industry from unsuitable locations can also be pursued in association with the appropriate authorities. To be effective, this will need the force of law. One case is break-making. It is of value to the economy but is understood to have adverse environmental consequences. This is carried out in some locations throughout the study area.

Monitor adverse environmental impacts of existing manufacturing processes and take measures to reduce such impacts to acceptable levels: The issues of the health hazard caused by current methods of solid waste disposal and sewage disposal can be addressed by improving the existing methods of providing these services.

Reduce noise levels from the worst noise nuisances: The issue of pollution from vehicles is unfortunately likely to get worse – as the rates of vehicle ownership and usage increase – before it gets better. Some relief may however be afforded by improvements in the quality of emissions, as older vehicles are replaced by newer ones, and as technological developments continue to be made in emission control.

Identify and protect areas of ecological significance: It is important that such areas are protected before they are inadvertently destroyed. This policy will extend to areas of forest / bushes and areas of un-spoilt river line. Once the initial priority of protection is successfully achieved, measures can be taken to enhance the quality of these areas.

Conserve buildings and monuments of cultural, architectural and historic interest: Such buildings and monuments are an important legacy of the past, reflecting different historical, cultural and national influences. The Paurashava will arrange for such buildings and monuments to be identified and listed. Following this, it will be necessary to draw up a program for their conservation. This program will need to consider the scope for enhancing the settings of the buildings and monuments, as well as ensuring preservation of their fabrics.

Protect and enhance significant areas of open space within the Paurashava Town: The open spaces create character of Paurashava, distinguishing it from other Paurashavas in the country. Unless such spaces are protected, there is a strong likelihood that they will be gradually converted to urban uses and thus lost for the benefit of the community as a whole.

Map 7.1: Structure Plan of Jibannagar Paurashava

CHAPTER-8

STRATEGIES AND POLICIES FOR SECTORAL DEVELOPMENT OF THE PAURASHAVA

8.1 Socio-economic Sectors

8.1.1 Population

The policies in relation to population are set out below.

Expected growth of population and changes of socio-economic characteristics: The population projection will need to be reviewed time to time in the light of new evidence. At a minimum this will need to be done at ten years intervals, as the results of Censuses become available. The Paurashava authority will need to monitor the factors affecting population growth – namely fertility, mortality and net inward migration and the factors reflecting changes in its socio-economic characteristics.

Rational distribution of population within the Paurashava: One of the main purposes of a master plan / development plan is to provide for the rational distribution of population, in relation to other urban activities and suitability of land for urban purposes. The Paurashava will pursue the policies required to achieve the spatial development strategy. It will also monitor change, assess the effectiveness of the policies being pursued and review the strategy as and when necessary.

Ensure availability of land, services and facilities according to the needs of the population: As the body responsible for planning and managing urban development, the Paurashava will ensure that land, services and facilities reflect the build up of population and changes in its requirements. This is a task for which it will require the co-operation of many agencies involved in urban development in the Paurashava.

8.1.2 Economic Development

The prospect related to economic activities summarizes in the following discussions:

Some small-scale pisciculture is located in the Jibannagar Paurashava area. About 120 households are involved with such pisciculture. The production mostly uses in the Chuadanga City and Jhenaidah Zila. Investment in this field will bring huge prospects of the Paurashava. Other economic prospect summarizes in the following discussions:

- Availability of unskilled and cheap manpower.
- Due to the nearness of Chuadanga City, the Paurashava may be developed as the fringe area of Chuadanga City. This fringe area with its agriculture production will support to the Chuadanga City where marketing for those productions are available.
- Availability of agriculture land. The land may be used for different agricultural production and those productions may be used for the input of agro-based industries.

- The Paurashava has been developed as growth centre concept. Some cluster development is found around this growth centre. Planned development through this master plan 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.

Most of the entrepreneurs expressed their desire of implementing future development plan. A major portion mentioned that their development plan is the expansion of their enterprises (65%) and others intend to increase their production (35%). Expansion of existing industries and establishment of new industries will create more jobs and thus have multiplier effect in the overall economy leading to create more consumption capacity, investment opportunities in diversified economic fields and thus push the economy upward.

If the standard of living of the people of the Paurashava is not to deteriorate as the additional population discussed before, then the economy of the Paurashava must expand at least in step with the growth of population. For unless the population have the financial resources (through employment of business) to pay for the urban services and facilities they want, they will either have to rely on Government subsidy or they will go without.

Policies and Strategies

Given emphasize on the above situation following policies have been identified. These are all additional to the general requirement to ensure that land and infrastructure are available to support the wealth generating elements of urban development.

Encourage national business to locate in Jibannagar Upazila / Chuadanga Zila: If national business can be encouraged to locate in promoting Paurashava / Upazila / Zila, they will provide not only earning capacity for their locally recruited employees but the opportunity for services to be provided to support the business. The Paurashava will, therefore, assist central government in promoting Paurashava as a potential location for inward investment of this type.

Encourage central government to decentralize facilities from Dhaka: Central Government has control over the location of many facilities which are currently located in Dhaka, such as Government departments, the headquarters of nationalized or Government banks and quasi Government bodies. The Paurashava will encourage Central Government to offset the current strong tendency towards centralization of facilities in the Capital by relocating some of these facilities to Paurashava / Upazila / Zila.

Overcome the constraints on compatible landuse: Where established agricultural, industrial and commercial operations are compatible with the objectives of the Structure Plan, the Paurashava will work with these operations to overcome the constraints to their expansion. Where wealth generating activities are constrained in their desire for expansion by lack of land, access or infrastructure provision, the Paurashava will, in conjunction with the other relevant authorities, endeavour to overcome these constraints.

8.1.3 Employment Generation

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 passes through 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.

It is found from the study that the entrepreneurs of the study area generally suffer from the following common problems:

- Lack of cheap and dependable source of energy (gas supply).
- Unreliable electricity supply.
- Absence of better access facilities with the capital city.
- Absence of railway connection with the capital city and with surrounding Zilas.
- Insufficient communication infrastructure.
- Shortage of skilled manpower.
- Complex official procedures in setting up a new industry (cumbersome processes of
- Getting infrastructural and utility services connections, lack of manufacturing-
- Investment-friendly banking / credit system).
- Lack of government initiatives.

Once the area developed as a trade centre based on the river communication. The traders who bring their commodities through the river the market of the Paurashava acted as a boat ghat after the unloading of commodities from the boat. From then, development activities started along the riverside. This trend has been continued up to the recent years.

Policies and Strategies

Improve industrial areas and ensure their full utilization: Conditions in the existing industrial areas of the Paurashava especially environmental ones associated with the disposal of effluent and waste are currently poor. It is the policy of the Paurashava to improve these conditions and to reduce pollution from the worst offenders to acceptable levels. In certain cases this may require cessation of an existing activity or removal to another location.

Within each of the existing industrial areas there are vacant and underutilized areas. It is the policy of the Paurashava to ensure that the spare capacity available within these is utilized to the full. In the short and medium term these represents a better use of resources than identify new areas.

Locations for new industrial areas: For the longer term it is expected that new industrial areas will be required. Given the fact that the Paurashava wishes to encourage inward

investment to the Paurashava, it will identify suitable locations for such industrial areas, will reserve them for industrial use and will plan for provision of the required infrastructure.

Provide assistance to small-scale industrial and commercial operations: Considerable potential for growth of the economy rests with small-scale industrial and commercial operations. The Paurashava will, in conjunction with other relevant authorities, provide assistance to such operations by promoting the establishment of estates specifically suited to their needs. These will probably need to be small in size and located within or close to residential areas.

The Paurashava will also consider the other needs of small-scale industrial and commercial operations and endeavour, through others, to ensure that these needs such as for credit are available.

8.1.4 Housing and Slum Improvement

Housing is one of the vital components of urban life. It is a source of security, safety and everyday comfort. Rural housing components are prevailing in the Paurashava. In most cases, housing in growth centre is appropriate for the study of housing in the Paurashava. **Housing in rural environment (called rural homestead) according to the trend of primitive society is the suitable word for the identification of Paurashava housing.** Amulgation of pucca, semi-pucca and katcha housing or semi-pucca and katcha housing in a house is viewed in most of the Wards.

Residential areas in Jibannagar Paurashava have been developed sparsely following some degree of uniformity. According to the number of residential buildings Ward No. 7 dominate the highest number of residential buildings and it is highly congested area. All pucca residential buildings are developed on and around the commercial hub. Data obtained from survey indicates, about 50% of the dwellings in the Paurashava are in good condition. About 10% needed to be demolished due to their dilapidated conditions, while about 40% is new construction.

Building materials used

Residential ownership is a key socio-economic indicator. Different types of residential status are found in the Paurashava. Households almost all the Wards own semi-pucca building (42.29%) followed by katcha building (40.47%) and pucca building (17.24%). All the respondents own the houses they live in.

Floor area

About 1708 structures are pucca and among them, 1383 are one-storied, 286 two-storied and 39 three-storied and above. Floor area of those pucca structures are varied from 1000 sq. ft. to 2000 sq. ft. The semi-pucca structures are preserving two characters according to the location; where semi-pucca structures are in rural areas deserve large floor area rather than semi-pucca structures in urban area. In rural area, floor area of the semi-pucca structures are varied between 1500 sq. ft. to 2000 sq. ft. but in urban area it is within 800 sq. ft. to 1100 sq. ft. Comparatively, floor area of the katcha structures are larger than the floor area of the pucca and semi-pucca structures. Most of those structures are living room and located in the rural environment of the Paurashava.

Housing finance

In respect to housing finance, the overriding urban housing problems is the inadequacy of income of large numbers of households to pay for housing and basic utility facilities The institutional arrangements governing the housing finance is solely depended on lending agencies like banks in the Paurashava. There is no mortgage market in the small scale Paurashava like Jibannagar in Bangladesh. Also absent is micro-finance housing lending agencies who offer non-collateral based credit for housing to low-income people. This sort of facility is limited to larger district towns, Divisional headquarters and capital of the country. Therefore, there is hardly any facility in this respect.

The Housing finance is done mostly with the initiatives of people themselves in the Paurashava. Institutional loan can only be avail by the well off classes. But for low-income people/classes this limited supply of institutional loan is very hard to get.

Problems concerning 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. The dwellings, comprising homesteads, encompass larger areas having low density. The highest ward wise net population density in the Paurashava is 75 persons per acre (Ward 4). Buildings in the Paurashava are dominated by semipucca structure (42.29%). No building is found approved from Paurashava. However, owners of the buildings have been found violated the setback rule by the construction. Except labour charge there is very little variation in building construction cost between Chuadanga and Jibannagar Paurashava.

Problems relating to the housing are mostly concerned with the poor community. Due to their low level of income a vast number of poor are squatting in public land. They are not only deprived of minimum housing but also from the personal security that endanger their health and working efficiency. Regular income can solve most of their housing problems. 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.

In the Paurashava, over 96.40 percent housing structures are one-storied that includes semi-pucca, katcha and Jhupri type houses.

Prospects concerning housing

In the study area above 94 percent of the households became land owners through inheritance, while about 6 percent became owners by way of purchase.

Land value in the Paurashava is very low compared with Chuadanga and Jhenaidah. In spontaneous housing areas of the core area, habitable land sells between Tk. 80,000 to Tk. 1, 00,000 per decimal. Almost every household is found to live in their own house and some households living in govt. quarter are found in Ward No. 01, 02 and 03.

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. To realize the development and service costs of public sector infrastructure projects from the beneficiaries it is

necessary to evolve new mechanism. If real estate developers encourage coming up with housing projects the Paurashava should maintain some control over them to safeguard public interest. Public sector may take up innovative cost recovery housing programs for the rural poor.

Policies and Strategies

The National Housing Policy, 2004 could have a major impact on the quality of life for Paurashava inhabitants. In this context, the Paurashava will pursue the following four policies. These are all geared to lessening the gap between need and provision of housing.

Identification and development of sites for government housing schemes: Where, as part of National Housing Policy, the Government embarks on further housing schemes either for the construction of completed units or for the provision of serviced plots, the Paurashava will assist the relevant body with the identification and development of appropriate sites.

Identification and development of sites for private sector housing schemes: Where housing is to be provided by the private sector, the Paurashava will ensure that, either by its own efforts or by the efforts of others, the legal, technical and financial support required by the private sector is available – to enable it to assemble sites, to carryout the earthworks and drainage works needed for the development of the sites, to provide the necessary tertiary infrastructure, and to provide the units of accommodation required. The Paurashava would, in this instance, be acting as an enable to the private sector.

Provision of sites and services schemes for the low and lowest income groups: In line with National Housing Policy, greater priority needs to be given to the low and lowest income groups. Accordingly, the Paurashava will, therefore promote, either by its own efforts or by the efforts of others, the provision of sites and services schemes for these income groups.

Upgrading of slum and squatter settlements: The most disadvantaged people, in terms of access to housing, live in slum and squatters. Modest investment in terms of provision of facilities such as water supply, drainage, sanitation facilities, electricity and dry access-ways can make a considerable improvement to the living conditions of a large number of people. The Paurashava will, therefore promote, either by its own efforts or by the efforts of others, the upgrading of slum and squatter areas.

An important contribution that the Paurashava can make to meet housing, as well as other urban needs, is in exploring ways by which the process of converting land from an unimproved agricultural state to an improved state on which individuals can build their homes – can be speeded up. Because, housing is such an important landuse both in terms of the total area of land it occupies in urban and in terms of being a major determinant of the quality of life of its inhabitants, the Paurashava may pursue a further policy.

8.1.5 Social Amenities and Community Facilities

The Regional Highway (Jessore-Chuadanga) passes near the Paurashava is the destination of all north-east movements. The activities around the Bus stand will generate employment in commercial sector. This effort will be faster with the commissioning of

Regional Highway in two separate lanes. New investment will gear up in to Jibannagar creating new jobs. This will enhance income of the local people and raise their standard of living. Investment and employment will take place in transport, industry, construction, trade and service sectors. There is a large scope for agro-based development in Jibannagar. This will generate new employment.

Policies and Strategies

A most important initial role of the Paurashava will be to appraise itself of the situation with regard to both the need for and supply of community facilities in the Paurashava. With this in mind, the Paurashava will pursue the following policies.

Monitoring the principal aspects of community facility provision in the Paurashava: The organizations responsible for the provision of community facilities in the Paurashava will co-operate with the Paurashava in supplying information needs to pursue the policy. At a later stage, according to the needs of the population, the Paurashava can extend this policy to include contributions to meeting the needs such as identifying areas where demand is higher, identifying appropriate targets for provision, identifying sites and assisting in ensuring that any obstacles to the development of a site can be overcome.

Until the Paurashava is in a position to devise policies which will make a positive contribution to ensuring that the supply of community facility provision is geared to the areas and the groups of the population most is need, it is recommended that the Paurashava pursue only two further policies, such as –

Assist with the identification and development of sites for public community facilities: Where needed, the Paurashava will work with the public agency responsible for the provision of community facilities to ensure that a suitable site is chosen and developed. In some instances the Paurashava will play the lead role in the establishment of a public community facility. As an example, establishment of wholesale or retail markets to serve local communities.

Assist with the identification and development of sites for private sector community facilities: Where a private sector sponsor is encountering difficulties in providing a community facility, the Paurashava will also work with the sponsor to ensure that a suitable site is chosen and developed.

8.1.6 Tourism and Recreation Facilities

Recreational facilities like Cinema Hall, Theater, Shishu Park, Picnic spot, etc. are included in this category. No recreational facility is found in the Paurashava. Policy for tourism and recreational facilities may follow the policies prescribed before on the social and community facilities.

8.1.7 Safety and Security

Cantonment, however, is governed by its own Act, BDR, Police, etc. areas have to be safeguarded from any possible incompatible development. The key point installations including radio, television, water treatment and pump station and power station sites, Circuit House will have to be safeguarded from any possible undesirable development around these areas that can endanger their security.

8.2 Physical Infrastructure Sectors

8.2.1 Transport

Transportation infrastructure is a very important element to make an urban area livable. For transportation of agro-products efficient road network is also of prime importance. The study area is a centre of agro-product and pisciculture, need good transportation linkages for their transportation in time. The potential economic activities due to agro-product oriented industry. The potential economic (including agriculture) development envisages improvement of the transportation network to facilitate development that can meet the demand on regional basis. Actually, the area is served by only one Regional Highway. Several new roads will be needed for efficient movement of man and goods towards regional centres.

Policies and Strategies

Following strategies will be adopted to promote circulation network:

- A comprehensive road network will be prepared for the Paurashava using a hierarchy of road network.
- In case of local roads, a participatory approach will be developed to realize at least a part of the cost of development from the beneficiaries. This will also help to reduce delay and cost involved in land acquisition procedure.
- Proposed roads in those areas will be chosen for immediate developments that deserves growth potentiality.
- Incremental development approach will be adopted to get rid of unnecessary costs in development of roads (the road remain underutilized).
- Service roads will be created along with major roads to allow free flow of long distance traffic.
- A restricted buffer zone will be proposed along primary roads passing through agriculture and discourage roadside development.

Role of Bangladesh Inland Water Transport Authority

The Bhairab River is flowing on the northern part of the Paurashava. Bangladesh Inland Water Transport Authority (BIWTA) is responsible for maintaining its navigable character. Unauthorized encroachment in different locations of this river is performing by the dwellers. At present, the BIWTA is not performing any responsibility regarding this river. Apparently no major problem in the area of water transport services is found.

8.2.2 Utility services

Utility services found through topographic and physical feature indicates that the Paurashava is too poor in development of those services. With the development of physical condition of the Paurashava, substantial development will be needed for utility services. Piped water supply is not available in the Paurashava. 100% of the households are using hand tube wells as main source of water supply for drinking and cooking purpose. From a study of DPHE (30 September, 2002) it is known 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. In the wet season ground water table found within 15-20 ft and in the dry season it goes down to 35-50ft

Policies

In the Jibannagar Paurashava, average height of the Wards is 10.157 meter and differences among the Wards are 4.876 meter to 14.008 meter, but outside the Paurashava boundary lowest land level value is lower than 4.876 meter. It means a steep slope from 4.876 meter to 14.008 meter prevails in the Paurashava and its surrounding areas. Such type of land level is ideal for construction of drain and sewerage facilities.

Due to the presence of vast agriculture land (about 80.04%), township should not be expanded on those lands because height of those lands are four to five meter lower than the habitable land and five to eight meter lower than the regional highway. Substantial earth filling will be needed for creating living construction on those agriculture lands.

Strategies

Based on the above understandings, following strategies follows for planning of utility services:

- Low-cost development will be promoted in phases, based on comprehensive plan for the demarcated areas.
- Only those areas will be targeted as new urban areas where urbanization is likely to be rapid and imminent.
- Except waste disposal, all other services will deliver by the concerned service giving agencies.

8.2.3 Flood Control and Drainage

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. The Paurashava is a barren field 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.

Projection of Drains

Existing drains in the Paurashava have not formed any network; only household centered construction to drain out waste water. Existing canal is trying to manage the drainage requirements. The canal is not well linked with man-made drain and river. No pond / ditch have been found to be connected with existing drains / canals. Lack of drainage network is causing water logging for 4 months in the Paurashava area when it rains. The entire drainage network is required to be developed with primary, secondary and tertiary drains to mitigate the current water logging problem.

Further development of drain will be followed the bulk density and establishment will be proposed in the Master Plan. Length, width and depth of the drain will be considered according to the density of population, road width and out falls. Slope of the drain will be

maintained according to the slope of the area and the level of river water according to the seasons.

8.3 Environment Issues

8.3.1 Natural Resources

Specific natural resources is absent in the Paurashava. Furthermore, in long run, if question rises for the use and preservation of natural resources, policies prescribed here on the environmental issues will be followed. In special case, the Paurashava may frame new policies with the help of the government and particular department / authority relevant with the issue.

8.3.2 Sanitation

Almost all the areas in the Paurashava are devoid of sanitation 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 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 study areas. 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.

Policies

Policies regarding sanitation facilities are -

- The organization responsible for the provision of sanitation facilities in the Paurashava should co-operate with the Paurashava authority in supplying the information needs to pursue this policy.
- According to the priorities and needs of the population, the authority (including Paurashava) can extend this policy to include contributions to meeting the needs – such as identifying areas where demand is greatest, identifying appropriate targets for provision, identifying sites and assisting in ensuring that any obstacles to the development of a site can be overcome.
- Where needed, the Paurashava will work with the government agency responsible for the provision of sanitation facilities to ensure that a suitable plan have been prepared and implemented.
- Where a private sector sponsor is encountering difficulties in providing sanitation facilities, the Paurashava will work with the sponsor to ensure that a suitable plan have been prepared based on the population demand and implemented.

Strategies

Following strategies have been followed for designing sanitation plan:

- To protect drainage system most of the natural canals and water courses will be preserved.
- As a measure of protection from encroachment restrictive buffer zone will be created on both sides of natural canals, rivers and other watercourses. Road and plantation will be created on those buffer zones.
- Cost of primary drainage system development in housing estates by public sector agencies will be realized from the developers.

8.3.3 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.

The Paurashava area including the Jibannagar Upazila has affected by the several major natural disasters ranging from 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 government to rehabilitate people after the natural disaster.

Urbanization is taking the lands of other uses to residential use. For this purpose agricultural lands and water bodies are being chosen most frequently and the lands are being converted into urban settlement. In Jibannagar Paurashava, wet lands are filled up and agricultural lands are 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.

8.3.4 Environment Aspects

Three aspects named provision of dustbin, public toilet and solid waste produces by the hat / bazar are presented here. 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. One garbage trucks spread whole over the municipality but there is none to collect them from the bins and dispose in the disposal ground. This condition is not satisfactory. Number of dustbins and garbage truck for whole the municipality is not enough for proper solid waste management. Paurashava has not a planned dumping site. So there is risk of land and water pollution. The hospital wastes are thrown in a hole besides hospital building whish very alarming and harmful to the environment.

Policies on Solid waste Management: In order to improve the solid waste problem and to improve the environmental condition of the Paurashava, following Macro and Micro level policy measures will be needed:

- Formation of legislation regarding solid waste management.
- Formation of standards for collection and disposal of waste.

- Incentives for introduction of environmentally clean and efficient technology for waste disposal which would help to reduce the volume of waste and facilities more recycling.
- Construction of waste as an unutilized resource and assisting in recycling of waste for conservation of resources and protection of environment.
- Introduction of environmental education especially sanitary habits in school curriculum.

Environmental Issues in Agriculture Practice

The so-called Green Revolution package was introduced into Bangladesh agriculture system in mid 1960s. It promised to increase production of cereal crops, particularly rice by the introduction of HYV seeds, application of chemical fertilizer and pesticide and irrigation. HYVs rice has contributed significantly to the progress towards the food self sufficiency in Bangladesh on the contrary increased to the environmental degradation due to the intensive use of agrochemical and other modern technology. The use of pesticide has been increased 400% per acre and its cost increased 600% during the last couple of decades. Between 1985 and 1990 the sales of pesticide became double. At present, 84 pesticides active ingredients belonging to 242 trade names have been registered in Bangladesh. Out of the total pesticide use, over 80% are used in rice fields. The rapid increase of pesticide use is causing detrimental effect on environment and health of farm workers and consumers. Pesticides are contaminating ground and surface water, which is causing depletion of inland fishing resources and ecosystem.

Pesticide use in crop production has been suspected of being a major contribution to environmental pollution. There are widespread and growing concerns of pesticide over-use, relating to a number of dimensions such as contamination of ground water, surface water, soils and food and the consequent impacts on wildlife and human health. Farmers often spray hazardous insecticides like organophosphates and organochlorine insecticides (such as DDT, lindane and toxaphene) up to five to six times in one cropping season while only two applications may be sufficient. The usual practice of draining paddy water into irrigation canals may cause river and lake contamination. Residues carried by the water can be taken up by non-target flora and fauna, leach in to soil and possibly contaminate groundwater or potable water. A greater problem lies in the bioaccumulation of pesticides in beneficial organisms like fish.

Pesticide as agricultural input was introduced in Bangladesh in 1957 and mainly DDT and BHC was distributed by the Government to the farmers free of cost until 1973. The pesticides become very popular to the farmers for two reasons; firstly quick and visible effect on pest and secondly, no cost involvement. In 1974, the subsidy was reduced to 50% and in 1979 it was withdrawn completely. Currently, 14,340.40 metric tons of commercial pesticides are used annually, primarily in the cultivation of rice, tea, jute, sugarcane and vegetables. About 70% of pesticides are used on rice. Pesticides used on rice consist almost exclusively of insecticides, but fungicides are used occasionally. In 1989-90 almost 90% of pesticides were used on rice.

Increased use of pesticides leads to two primary concerns:

1) Adverse effects on the health of farm workers as well as others exposed to the pesticides
2) Polluted ground water and surface water, causing harm to the water users as well as inland fisheries and other aquatic animals.

Biodiversity is declining due to the effect of pesticide and fertilizer use. Population of native fish species is now endangered and the traditional rice-fish systems have disappeared. The bird and other small wild animals are in threat of wide spread because of the use of pesticides in rice and vegetables. Most of the rice farmers are dependent on insecticides for pest control.

Most of the farmers of Bangladesh are not capable of taking decisions on pest management and pesticide application. Often they apply pesticides when there is no real need or they use wrong chemicals at wrong doses, methods and times. As a result they kill the beneficial organisms easily and create pest resistance causing the greater problems and crop losses.

There is a suspicion that pesticide residues are common in surface water system, especially in irrigation drains, which ultimately pollute the pond and river water. There are many undocumented cases of chronic health effect of pesticides on farmers and other people. Several factors are supposed to be responsible for chronic health effect such as; improper handling, lack of protective measure, improper storage, use of obsolete pesticides, etc.

Chemical pesticides use in crop production

A total of 15 active ingredients with 21 trade names, farmers of Bangladesh uses in their winter rice crop. Among 15 ingredients, 3 are fungicides and 12 insecticides. Most of the insecticides use to kill the stem borer, green leafhopper and some of grasshopper and gall midge. The fungicide uses to control the sheath blight and blast diseases. The frequency of pesticide use is varied from 1 to 4 sprays per crop season. Rate of application is not so high. The rate varies from about 1 kg/liter to 10 kg or liter per hectare of land. They had the knowledge about rate and frequency of pesticide application from the dealer and also they had considered the cost of the pesticides.

The farmers use an equal number of Organophosphates and Carbonates pesticides and parathyroid. Fortunately no organochlorines have been found to be used by the farmers. Bangladeshi rice farmers used mostly category Ia, Ib and II pesticides that the WHO classifies, respectively extremely, highly and moderately hazardous. Almost all of the carbamate insecticides they used are of extremely or highly hazardous category having wide spectrum toxicity to the environment. The farmers used WHO category Insecticides named Stem borer, Agrifuran, Carbofuran, Leaf hopper, Biesterin, Defoliator, Sunfuran, Grass hopper, Furadan, Rice bug, Gall midge, Bashudin, Dioxathion, Plant hopper, Green leaf hopper, Karate, Cyhalothrin, Defoliators, Cymbush, Cypermethrin, Rice hispa, Ripcord, Diazinon, Diazinon Thrips, Nogoz, Leaf roller, Sumithion, Fenitrothion, Monotaf, Monocrotophos, Thrips, Malathion, Brown grass, Faifanon, Dimecron, Phosphamidon, Cartap, Fungicide, Blast, Hinosan, Edifenfos, Sheath blight, Carbendazim and Propiconazole.

Frequency of application in a crop season by the farmers is in 1^{st} time = 11%, in 2^{nd} time = 11%, in 3^{rd} time = 59% and in 4^{th} time = 19%.

The insecticide Bashudin 10G and Organophosphates was used by the largest proportion of the farmers (44%) followed by the Dimecron (34%) and Baycarb 500 EC (26%). Fungicide Knowin was used by 44% of farmers. Bashudin is an obsolete insecticide which had been used by the largest number of farmers of Bangladesh and the average application rate was also high among the pesticides used. Monocrotophos and DDVP are also known as their wide spectrum toxicity. The mostly used fungicide Knowin 50 WP is a carbonate type and it is categorized as unlikely to present acute hazard in normal use.

Crop stage of pesticide use

Largest number of farmers used pesticides in the early tillering stage (30%) followed by the late tillering and booting stages. Vegetative growth stage is the most susceptible to the pest attack, that's why farmers applied mostly in early and late tillering stages than the booting, flowering and milky stages. Major insect pests such as stem borer, leaf hopper and plant hopper attacks are prevalent in these stages. Rice hispa is one of the major insect pests of rice attacks in the mature stage like soft dough. In Bangladesh, rice hispa infestation is common and more than 12% of farmers applied insecticides in the soft dough stage. Ten percent farmers applied insecticides at the nursery stage which is susceptible to thrip, defoliator, stem borer, green leaf hopper and plant hopper.

Application methods

About 57% farmers of Bangladesh use hand sprayer and 8% Knapsack sprayer to apply the pesticides on the crop field. Remaining 18% farmers use broadcast methods and 16% use other traditional methods. The sprayers they use are not in a good condition. The hand sprayer they use includes a container with broom and sprinkled the pesticide with broom. Most of the farmers don't have any sprayer of their own; they borrowed it from relatively richer farmers. They didn't have any training about the sprayer use and precaution. Therefore, the spray is always associated with high risk of exposure. The farmers broadcast the granular insecticide keeping in an open bowl or basket and broadcast by bare hands and feet. The traditional methods they used are very unscientific. For example they brush the crop field. In this method, usually the insecticide is mixed with water in an open bowl or a big can then date palm leaf is soaked in it and the standing crop plant is brushed. During the mixing and brushing the farmers as well as the environment are exposed to pollution. No farmers use any protective measure such as musk or gloves. According to the pesticide agent and leaflet provided by the Department of Agricultural Extension, the measuring unit is being used as spoonful, handful or lidful.

Alternative methods used for pest control

Because of late introduction of pesticide in Bangladesh agriculture the farmers are used to control pest using other traditional methods besides insecticide. In these cases they use indigenous knowledge to control pest not to avoid the hazard of pesticide, mainly to minimize the production cost. Among the other methods, 40% of the farmers use crop rotation as an alternative to chemical pesticides use, 19% use timely planting and 15% use resistant varieties. Only 2% of the farmers use Integrated Pest Management (IPM) technique to control pest of rice. Bio-controls means that they use bird to feed the insect. Remaining 12% farmers use other methods such as, soap, kerosene oil, light and net trap to control insect. In certain extent they pull the insect larvae by hand also.

Ecological impact

- Many types of birds, fish and plant become extinct by the effect of highly toxic pesticide.
- Unbalance use of pesticide make the ecosystem worst.
- Many species of harbecious plant of medicinal value extinct by the continuous use of highly toxic pesticides.
- Many fishes are caused by diseases by the pesticidal effect.

Impact on soil

- Application of toxic chemicals in the crop field harms the earthworms, soil microbes which deteriorated soil fertility.
- Use of excessive pesticide accumulates in the soil which is responsible for soil toxicity.
- Many pesticides (such as, DDT, aldrin, heptachlor, dieldrin and chlordane) remain unchanged in the soil.

Impact on water

- Long-term and heavy use of pesticides may pollute the aquatic environment through the contamination of unused portions of pesticides.
- Through irrigation water pesticides runoff to the rivers, canals, etc. and many fishes have been extinct by the effect of pesticides used in the crop field.
- Ground water is being polluted by pesticide leaching from crop field.

Impact on air and health hazard

- It is very dangerous for the applicator to be affected by the poisonous pesticides if not properly handled.
- Several diseases may be observed to be caused by pesticide used.
- During the pesticide spray the air is being polluted by spray drift which causes health hazard to the applicator neighbours.
- The granular insecticide used in the paddy field exposed to the air and pollute the surroundings.

Policies and Strategies

According to 'The Pesticide Rules, 1985', all pesticide either manufactured or imported should be registered to the Authority. After submission for registration to the authority for approval, it is required to know by the authority about physical and chemical properties, efficacy data, toxicological data, residues and their fate in the environment. But in practice the assessment of environmental impacts or residue analysis is hardly undertaken due to the lack of expertise in the field as well as laboratory facilities.

In chapter II, section 8 of the Pesticide Rules, it is said that the certificate of registration may be cancelled but not mentioned when the certificate will be cancelled. Regarding

import in chapter IV it is mentioned that 'No pesticide shall be imported through a rout other than the recognized custom frontier stations of Bangladesh'. But huge amount of banned and highly toxic pesticides are being smuggled from India through the boarder. It has been reported by the Institute of Development Policy Analysis that the pesticide like Eldrin and Endrin are sold with different labels in Bangladesh. The suppliers continue to sell many chemical pesticides pro-scribed by the government, and 12 particularly controversial pesticides dubbed the `dirty dozen` by activists campaigning worldwide to stop its manufacture.

There is a provision of licensing of the pesticide dealers for sale but it is not clearly stated what will be required for the qualification of the license holder, so anyone may get license. Therefore, it is found that the registered dealer also does not have any knowledge about the pesticide handling. The regulation said it could be duplicated and transferred to anybody. It is not said in the regulation that the sales dealer might have training on pesticide. The main drawback of this regulation is in chapter VII section 33 sub-sections I (a) which gives the provision to state the name of the manufacturer, formulate or repacked in the label even he/she is not the person in whose name the pesticide is registered. For this reason it is very difficult to identify the respective person for punishment. Therefore, taking the advantage of the weak point of regulation the illegal business of pesticide is going on and it is not uncommon that the violation of rules is taking place.

The environmental degradation linked to agriculture is the impact of toxicity from improper pesticide use. Pesticides are responsible for health hazard or food poisoning. Unjudicial use of pesticide makes the ecosystem vulnerable. It is not possible to produce crop without using pesticide in modern agriculture of competitive market. Therefore, crop pests can be controlled with the timely and balanced application of pesticides.

Considering the cropping intensity and toxicity of the pesticide, the environment and farmers health are at high risk under the pesticides contamination. Among the insecticides used by the farmers, Bashudin 10 G, Diazinon 60 EC, Sumithion 60 EC and Padan 50 SP have already been banned for use on rice in other developing countries. The use and availability of Bashudin, an obsolete pesticide indicates that existing pesticide laws and regulations are not strictly enforced in relation to import, formulation, repackaging, distribution, advertising and use of pesticides. Therefore, in Bangladesh the laws and regulations of pesticide should be enforced more strictly.

CHAPTER-9

IMPLEMENTATION ISSUES

9.1 Institutional Capacity Building of the Paurashava

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

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

9.1.1 Staffing and Training

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

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

9.1.2 Lack of Automation

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

9.1.3 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

9.1.3.1 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:

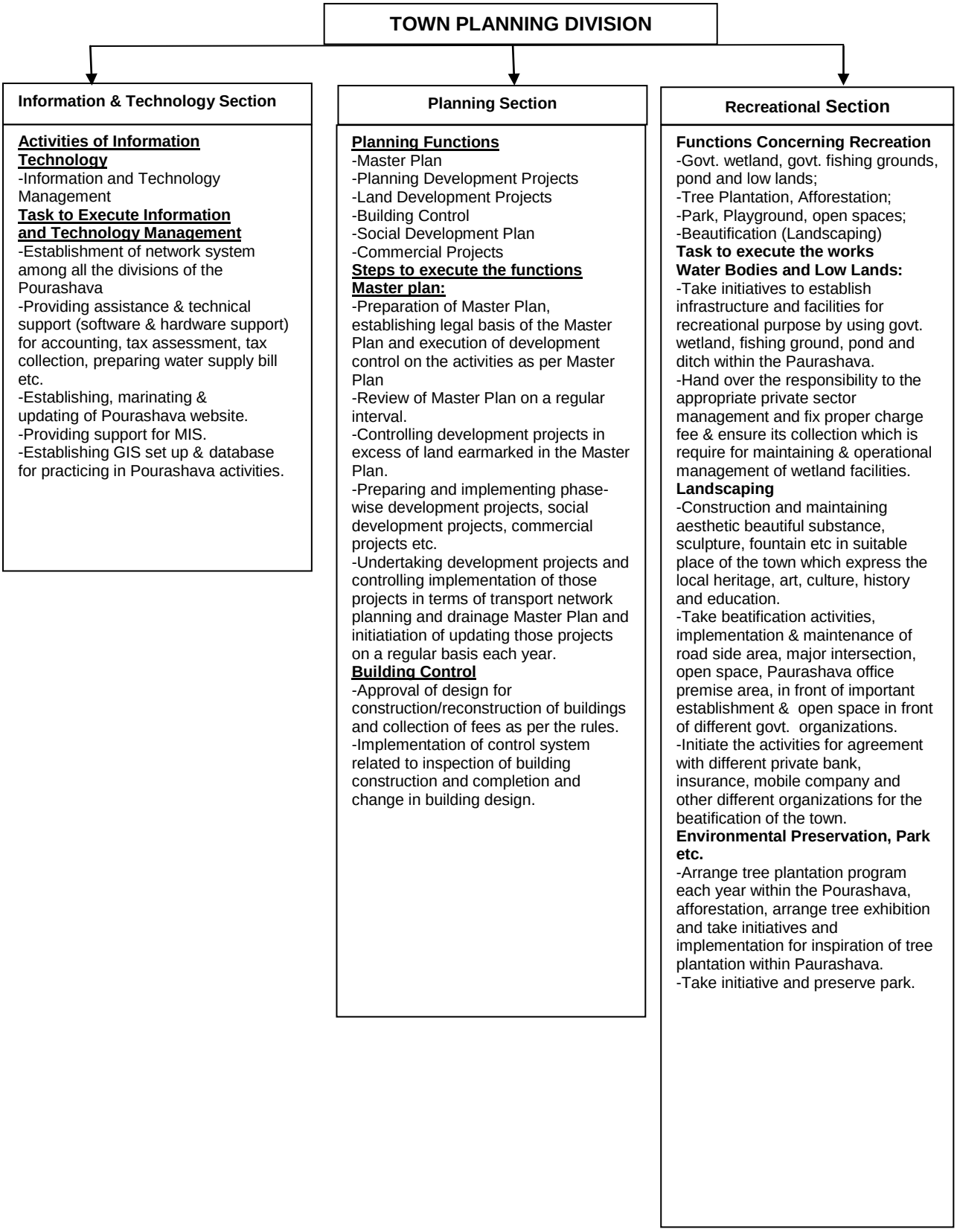
Planning unit/Division: a) IT Section

b) Planning Section

c) Beautification and recreation Section

According to the division and its relevant sections, what so ever appropriate with the necessity and capacity over time, it is recommended to set up necessary manpower for each category of Paurashava. Possible scope of proposed planning unit/division is given below. The scope of proposed Planning Division is given in Fig 9-1.

Figure 9.1: Scope of Work for Planning Division



9.1.3.2 Lack of Paurashava Town Planning Capacity

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

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

Support for Planned Urbanization

For creating planned urbanization, Paurashava may:

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

Community Mobilization Program

Following are the community mobilization support activities:

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

Urban Governance Improvement Action Programme (UGIAP)

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

- To overcome the challenges, the 6th Five year plan as well as Perspective Plan of Bangladesh, 2011-31 recommends the same issues mentioned below:
- the instructional reform and decentralization of responsibilities and resources to local authorities; participation of civil society including woman in the design, implementation and monitoring of local priorities; building capacity of all actors (*Institutions, groups and individuals*) to contribute fully to decision making an urban development process; and facilitate networking at all levels.

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

Citizen Awareness and Participation

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

- Establishment of Civil Society Coordination Committee (CSCC) and make it functional
- Establishment of Ward Level Coordination Committee (WLCC) and make it functional
- Citizen Charter display at 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 Centre at Paurashava premises.
- Meet the Mass people of Paura-Parishad.

9.1.4 Legal Aspects

The drive to establish strong urban local governance in the Paurashava is yet to be legalized. The governance programs 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.

9.1.5 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.

9.1.6 Financial Issues

Governance in Jibannagar 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 Jibannagar Paurashava.

Revenue Management

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

Paurashava's Financial Capacity and Plan Execution

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

The size of annual budgets of the Paurashavas indicates the poor financial status of the Paurashavas. With low income, Jibannagar 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.

9.1.7 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 Jibannagar Paurashava is not equipped with qualified manpower to make such evaluation. Monitoring and evaluation of a plan is essentially, the responsibility of qualified and experienced planners. As there is no planner in the Paurashava, monitoring of plan implementation will be seriously affected. However, plan evaluation can be accomplished by means of out sourcing as and when it is required.

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

A new set of plans will have to be prepared replacing the old ones. This problem, however, can be overcome by undertaking another planning project by LGED. So, for regular

updating and changes, and plan implementation monitoring, the Paurashava should immediately set up a planning section with a number of planners and other staff. The section will not only look after planning, but will also be responsible for development control, estate management, and project preparation. Since the planners would be qualified and skilled in computer operation, they can also help achieving automation of the Paurashava functions.

9.2 Resource Mobilization

Resource mobilization will be one of the most challenging tasks in implementing the plan. The planning proposals are said to be implemented by a large number of public agencies, but it is beyond doubt that the heaviest burdens will have to be shouldered by Paurashava. However, those agencies will suffer from resource constraint.

Due to the low level urbanization and investment, both, by public and private sectors, the land value maintains perpetually low growth rate in the Paurashava for decades. Therefore, prospect of mobilization of substantial resource from sale of serviced land by Paurashava is extremely merger. For the same reason revenue earning from betterment fee, planning approval and other sources is also very low. The Paurashava is heavily dependent on government for implementing its development projects as it is unable to collect sufficient revenue from tax and non-tax sources. Therefore, it is clear that implementation of development project under the plan will depend heavily on the government response to supply adequate fund.

9.3 Concluding Remarks

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

INTRODUCTION

The second tier of UTIDP master Plan package of Jibannagar Paurashava is the Urban Area Plan followed by the Structure Plan. The Urban Area Plan (UAP) consists of the following plans: Land Use Plan, Transportation and Traffic Management Plan and Drainage & Environmental Management Plan and Plan for Urban Services. Part-B of the Report entails the objectives, purpose and the role of Urban Area Plan and its relation with Structure Plan and the planning standard. The development plan proposals and land use zoning provisions are envisaged in The Urban Area Plan in the light of policy prescriptions of Structure Plan for a medium term (2011-2021).

Goals and Objectives of Urban Area Plan

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

Content and Form of Urban Area Plan

The Urban Area Plan covers existing urban area of Jibannagar Paurashava and has a ten years time-frame from 2011 to 2021. It comprises Part-B of the explanatory report supported by necessary maps.

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.

Part-B of the report starts with the Land use Plan. The Land use Plan identifies approaches of planning, existing and projected land use and proposed land use.

Requirement of land for different purposes, land use zoning and plan implementation strategies are also included here.

The Transportation and Traffic Management Plan 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 Plan and Environment Management Plan. Existing drainage network, land level and topography, plan for drainage management and flood control and plan implementation strategies are the components of the drainage plan. 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 management plan.

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.

Area of Urban Area Plan

The Paurashava area of Jibannagar as per gazette notification is considered as the area of Urban Area Plan. This area is the same as the Structure Plan area or Planning Area. The Urban Area Plan of Jibannagar Paurashava covers an area of 4178.49 acres that is 16.92 sq.km. The total Paurashava area has been regarded as the area of Urban Area Plan since the Paurashava Authority has the responsibility of providing basic urban services and facilities in the entire jurisdiction area.

Duration and Amendment of Urban Area Plan

The duration of Urban Area Plan (Land Use Plan, Transportation and Traffic Management Plan, Drainage and Environmental Management Plan and Urban Services Plan) of Jibannagar Paurashava will be 10 years and that will remain valid till 2021 AD. A new Urban Area Plan will replace the current plan after its validity to be expired in 2021. The next plan will remain valid for rest of Structure Plan period. Mid term revision of the plan should be carried out during the 4th year (2016) of the plan period. However, any amendment of the plan can be carried out any time on public interest.

CHAPTER-10

LAND USE PLAN

10.1 Introduction

The Landuse Plan is one of the four components of Urban Area Plan. The Landuse Plan is the first element of the Jibannagar 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 planning area. It contains more details about specific programs and policies that require to be implemented over the medium-term.

10.2 Existing and Projected Landuse

10.2.1 Existing Landuse

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.

In this Paurashava, major built up part of the Paurashava area is using for Agriculture purpose. According to the land use survey table (Table 4.1) of the study area, it has been ascertained that 3344.57 acres (80.04%) of land is presently under Agricultural use. Residential and water body occupied 442.58 acres (10.59%) and 116.32 acres (2.78%) respectively. Circulation network occupied 62.48 acres (1.50%). There 34.65 acres (0.83%) of land for commercial and only 29.36 acres (0.70%) of land for industrial activities have been found in the land use survey.

Determining factors of landuse change is the income of the people, government policy, new establishment like industry, higher level educational institute, construction of road and embankment and availability of services. The Paurashava was developed as a growth centre long before, than a police station. In the year 1997 it is notified as Paurashava. Radical change of landuse has been occurred after construction of Jamuna Bridge. Before it known as Paurashava, agricultural domination was the key landuse. During last ten years, the landuse scenarios remain same. A stagnant character of landuse change still stand due to the existence of river named Bhairab.

Table 10.1: Existing Land use in Jibannagar Paurashava

Land Use Category	Ward No									Total	
	1	2	3	4	5	6	7	8	9	Area (acre)	(%)
Agricultural	441.4	528.4	401	150.7	122.1	199	43.84	711.4	746.8	3344.57	80
Circulation Network	3.24	7.91	6.79	4.29	4.63	11.7	5.19	6.7	12.04	62.48	1.5
Commercial	0.48	2.06	3.62	4	1.85	13.59	5.59	1.49	1.98	34.65	0.83
Community Services	0.49	1.33	0.68	0.37	0.57	0.71	0.3	0.54	0.84	5.83	0.14
Education & Research	2.09	0.95	2.77	0	0.88	3.35	4.87	2.24	0.54	17.7	0.42
Government Services	0	0	0.73	0.6	0	16.82	1.65	0.08	0	19.87	0.48
Industrial Processing & Manufacturing	0	4.88	1.21	0.08	13.51	1.4	1.31	6.62	0.35	29.36	0.7
Mixed Use	0.32	0.13	0.05	0.33	0.16	5.04	5.41	0	0	11.44	0.27
Non Government Services	0	0	0.05	0.17	0.56	0	0.04	0.08	0	0.9	0.02
Recreational Facilities	0	0	0	0.07	0	0.09	0	0	0	0.16	0
Residential	28.26	59.9	55.84	38.12	43.58	33.71	45.32	65.6	72.27	442.58	10.6
Restricted Area	0	0	0	0	0	0	0	1.56	0	1.56	0.04
Service Activity	0	0	0	0.09	0	5.78	0.44	0	0	6.31	0.15
Transport and Communication	0	0	0	0	0	0.29	0	0.46	0.4	1.15	0.03
Urban Green Space	0.03	0.04	0.1	8.05	0	0.11	0.01	1.98	0.05	10.38	0.25
Vacant Land	5.53	9.48	9.51	3.35	3.48	9.02	2.96	14.89	15.1	73.33	1.75
Water body	8.99	8.57	13.16	36.05	2.07	13.43	3.94	15.59	14.59	116.32	2.78
Forest Area	0	0	0	0	0	0	0	0	0	0	0
Miscellaneous / Others	0	0	0	0	0	0	0	0	0	0	0
Total	490.8	623.6	495.5	246.3	193.4	314.1	120.9	829.2	864.9	4178.49	100

Source: Land Use Survey- 2010

Map 10.1: Existing Landuse of Jibannagar Paurashava

10.2.2 An Estimate on the Requirement of Land

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.

The projection of landuse depends on the growth of population. After population projection it is found that, population of this Paurashava will be 27882 in the year 2021 and 30466 in the year 2031.

In case of landuse change, the 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. 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.

Table 10.2: Existing and proposed landuses including standard (Jibannagar)

	Recommended Standard Provision unit)	Existing (acre)	Land Requirement Upto 2031	Additional Requirement Upto 2031
Residential		442.58	456.99	14.41
- General residential	100 – 150 persons/1 acre		304.66	
- Real Estate – Public/Private	200 population/ 1 acre		152.33	
Roads		62.48		
- Paurashava primary roads	150 – 100 feet			
- Paurashava secondary roads	00 – 60 feet			
- Paurashava local roads	40 - 20 feet			
Education		17.70	44.18	26.48
- Nursery	0.5 acre/10,000 population	1.162	1.52	0.358
- Primary School/ kindergarten	2.00 acres/5000 population	5.381	12.19	6.809
- Secondary/High School	5.00 acres /20,000 population	4.143	7.62	3.477
- College	10.00 acres/20,000 population	3.38	15.23	11.85
- Vocational Training Centre	5 - 10 acres / Upazila		-	-
- Other	5.00 acres / 20,000 population	3.362	7.62	4.258
Open Space		2.112	67.03	64.918
- Play field/ground	3.00 acres/20,000 population		4.57	4.57
- Park	1.00 acre /1000 population		30.47	30.47

	Recommended Standard Provision unit)	Existing (acre)	Land Requirement Upto 2031	Additional Requirement Upto 2031
- Neighborhood park	1.00 acre /1000 population		30.47	30.47
- Stadium/sports complex	5 – 10 acres/Upazila HQ		-	-
- Cinema/ Theatre	1.0 acre /20,000 population	0.16	1.52	1.36
Health		5.12	6.09	0.97
- Upazila health complex/ hospital	10 -20 acres/Upazila HQ	4.498	-	-
- Health centre/Maternity clinic	1.00 acre/ 5,000 population	0.624	6.09	5.466
Community Facilities		6.906	13.12	6.214
- Mosque/Church/Temple	0.5 acre /20,000 population	4.201	0.76	-
- Eidgah/	1.0 acre/20,000 population	1.188	1.52	0.332
- Graveyard	1.00 acre /20,000 population	0.361	1.52	1.159
- Community centre	1.00 acre /20,000 population		1.52	1.52
- Police Station	3 – 5 acres/Upazila HQ	0.73	5.00	4.27
- Police Box/outpost	0.5 acre/ per box		0.50	0.50
- Fire Station	1.00 acre/ 20,000 population	0.273	1.52	1.247
- Post office	0.5 acre /20,000 population	0.153	0.76	0.607
Commerce and Shopping		34.65	42.01	7.36
- Wholesale market	2.0 acres/ 10000 population		3.05	3.05
- Retail sale market	2.0 acres/ 1000 population		30.47	30.47
- Corner shops	0.25 acre/per corner shop		-	-
- Neighborhood market	1.00 acre/per neighborhood market		7.00	7.00
- Super Market	1.50 – 2.50 acres/per super market		1.50	1.50
Industry		29.36	76.17	46.81
- Small scale	1.50 acres /1000 population		45.70	45.7
- Cottage/agro-based	1.00 acres /1000 population		30.47	30.47
Transportation		1.15	3.80	2.65
- Bus terminal	1 acre /20,000 population		1.52	1.52
- Truck terminal	0.50 acre /20,000 population		0.76	0.76
- Launch/steamer terminal	1.00 acre /20,000 population		1.52	1.52
- Railway station	4.00 acre / per Station		-	-
- Baby taxi/tempo stand	0.25 acre /one baby taxi/tempo stand		0.48	0.48
- Rickshaw/van stand	0.25 acre / stand		0.48	0.48
- Passenger Shed	0.25 acre / stand		0.48	0.48
Administration		16.387	0.00	
- Upazila complex	15.00 acres	15.85	0.00	
- Paurashava office	3 – 5 acres	0.517	0.00	
- Jail/Sub-Jail	10 acres/Upazila HQ		0.00	

Map 10. 2: Landuse Plan of Jibannagar Paurashava

10.3 Landuse Proposals

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 National 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.

10.3.1 Designation of Future Landuse

Future Land Use is proposed for the next 10 years up to 2021 i.e. within the time frame of Urban Area Plan. It was done based on public consultation meeting with the stakeholders and land suitability analysis. The future land uses of the planning area were designated as a combination of two approaches, e.g. i) allocating development proposals of various services and facilities necessary to ensure habitable urban living ii) redefining uses of the remaining land as per structure plan policies, strategies and guidelines.

Commerce

In total, 34.65 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 26984 populations for the planning area up to the year 2021. For this population total number of required wholesale market/ bazar stands at (26984 / 10,000), means 2.69 acres land is being needed up to the year 2021. The planning area already has 1 retail sale market including wholesale market/bazar.

Recommendation / Forecast: The study team recommends organizing present commercial area. Necessary planning permission and design criteria will be provided by

the Paurashava. The study team proposes 6.39 acres of land for commercial use which includes 4 neighborhood markets, 1 supermarket and 1 wholesale katcha bazaar.

Table 10.3: New proposal for Commercial land use

Proposal	Ward No.	Mouza	Plot No.	Area (acre)
Neighborhood Market	Ward No. 09	Pratappur_026_02	969, 958, 965	1.07
Neighborhood Market	Ward No. 08	Jibannagar_025_05	4009-4011	0.59
Neighborhood Market	Ward No. 04	Jibannagar_025_02	1102-1103, 1151, 1295	0.73
Neighborhood Market	Ward No. 02	Narayanpur_024_02	996, 250, 995 1005	0.93
Supermarket	Ward No. 06	Jibannagar_025_06	3256-3257	0.35
Wholesale Katcha Bazar	Ward No. 09	Banka_038_03	4164, 4138, 4150-4152, 4159-4163	2.72

Industry

In the Paurashava, 29.36 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 26984 populations for the planning area up to the year 2021. For this population total required land for industry stands 40.48 acres land for small-scale industry and 26.98 acres for cottage / agro-based industry up to the year 2021.

Recommendation / Forecast: In addition to the existing industrial land he study team recommends additional 15.02 acres of land for general industrial area. 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.

Table 10.4: New proposal for Industrial land use

Proposal	Ward No.	Mouza	Plot No.	Area (acre)
General Industrial Area	Ward No. 05	Laxhmipur_009_00	224, 225, 234, 235, 238, 239, 241, 242, 243, 245, 247, 248, 249, 250, 252, 256, 262, 268, 269, 270, 271, 272, 27-278, 279-283, 296-299, 302- 305, 308, 316-322, 325, 326, 334, 335-344, 360-362	15.02

Primary School

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 26984 populations for the study area up to the year 2021. For this population total number of required primary school stands at (26984 / 5,000), means 5 schools with 10.79 acres of land is being needed up to the year 2021.

Recommendation / Forecast: The study team suggests to reshape primary school on an area of about 2.194 acre and to propose 7.03 acres of additional land for this purpose which includes 8 primary scholls.

Secondary School

Determination of Standard: According to the 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 26984 up to the year 2021. Therefore, as per standard the planning area needs (26984/ 20,000), means no secondary school is being needed up to the year 2021. At present, there are 3 secondary schools. Number of schools already exceeds the requirement.

Forecast / Recommendation: The study team proposes 5.22 acres of additional land for this purpose which includes 2 high scholls.

College / Higher Secondary School

There are two colleges in the planning area. Those colleges are located on 3.38 acres of land.

Determination of Standard: The standard for college is 10 acres per 20000 populations.

Recommendation / Forecast: The planning area already has one degree level college apart from higher secondary level education is in the high schools. But considering the demand of the people the study team recommends 8.44 acres of land for this purpose which includes 2 colleges.

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, no vocational training centre in the Paurashava. According to the standard, 6.0 acres land may be provisioned for a vocational training centre.

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 centre on 4.20 acres land. Necessary planning permission will be offered by the Paurashava. The lands, however, should not be allowed to use other than vocational training centre.

Table 10.5: New Proposal for Education and Resreach

Proposal	Ward No.	Mouza	Plot No.	Area (acre)
Primary School	Ward No. 05	Laxhmipur_009_00	173, 128, 156-158, 171-172	1.11
Primary School	Ward No. 04	Jibannagar_025_03	1795, 1814, 1815, 1834, 1835	1.02
		Jibannagar_025_07	5506-5507	
Primary School	Ward No. 06	Jibannagar_025_07	5806-5808	1.11
Primary School	Ward No. 08	Baka_038_02	1547, 1548, 1557, 1559	0.94
Primary School	Ward No. 08	Jibannagar_025_05	4025, 4029	0.60
Proposal	Ward No.	Mouza	Plot No.	Area (acre)
Primary School	Ward No. 04	Jibannagar_025_02	1114, 1115, 1116, 1119	0.54
Primary School	Ward No. 09	Tentulia_039_01	289, 288, 290-293, 291	0.82
		Banka_038_04	293-294, 5225, 5232	
Primary School	Ward No. 02	Narayanpur_024_02	1200-1202	0.89

High School	Ward No. 03	Narayanpur_024_02	1072-1098	2.44
High School	Ward No. 02	Jibannagar_025_01	623, 624, 631-634	2.78
Proposal	Ward No.	Mouza	Plot No.	Area (acre)
College	Ward No. 04	Narayanpur_024_02	1017-1019	3.78
		Jibannagar_025_02	5569-5572	
College	Ward No. 03	Narayanpur_024_01	45, 48, 49, 55	4.66
		Jibannagar_025_01	647-649	
Vocational Training Institute	Ward No. 07	Jibannagar_025_05	4374-4376, 4193, 4365, 4367-4369, 4371	4.20

Health Facilities

Existing health facilities are poor. There are one Upazila Health Complex and only two private clinics in this Paurashava

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 2021, (27882 / 5000) means 5.57 acres land will be needed for Health centre/Maternity clinic.

Recommendation / Forecast: The study team has recommends 8.93 acres of land for health facilities which includes 1 hospital and 1 clinic.

Table 10.6: New proposal for Health Facilities

Proposal	Ward No.	Mouza	Plot No.	Area (acre)
Hospital	Ward No. 06	Jibannagar_025_07	5739, 5763, 5767-5775, 5785-5786, 5739,	6.37
Clinic	Ward No. 02	Narayanpur_024_01	198-201, 205	2.56

Open Space

At present, there are 73.33 acre of land is available for open space 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.

Recommendation / Forecast: The study team has recommendes 35.2 acres of land for open space which includes 1 central park, 9 neighborhood park, 1 playground, 1 stadium and 1 botanical garden. Park with restaurant may be created on the land situated on the riverbank. 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.

Table 10.7: New proposal for Open Space

Proposal	Ward No.	Mouza	Plot No.	Area (acre)
Central Park	Ward No. 06	Jibannagar_025_04	2553-2560	3.85
Neighborhood Park	Ward No. 01	Subalpur_023-02	720, 721-723, 746-748	1.04
Neighborhood Park	Ward No. 02	Narayanpur_024_01	247, 215, 216	1.34
Neighborhood Park	Ward No. 04	Jibannagar_025_02	1139-1142	1.57
Neighborhood Park	Ward No. 06	Jibannagar_025_07	5800-5804, 5808	1.28
Neighborhood Park	Ward No. 09	Pratappur_026_02	904, 905, 922, 923, 929, 930	1.25
Neighborhood Park	Ward No. 09	Tentulia_039_01	285, 288, 290, 292, 293	1.42
		Banka_038_04	5228, 5229	

Proposal	Ward No.	Mouza	Plot No.	Area (acre)
Neighborhood Park	Ward No. 08	Jibannagar_025_05	4023, 4056, 4024, 4030	1.31
Neighborhood Park	Ward No. 07	Jibannagar_025_07	5966-5957, 6020-6021, 6025-6026, 6034, 6022	1.60
Neighborhood Park	Ward No. 05	Laxhmipur_009_00	151, 152, 155	1.28
Playground	Ward No. 03	Jibannagar_025_01	651-653, 1309, 6308, 642-646, 1204-1205, 1220	3.36
Stadium	Ward No. 07	Pratappur_026_02	723, 725, 726-729, 749-767, 770, 772-775	7.77
		Jibannagar_025_05	4376-4377, 4394	
Botanical Garden	Ward No. 09	Pratappur_026_02	968, 971-973	8.03
		Jibannagar_025_07	6000-6012, 6094-6095	

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 5.83 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 9.56 acres of land for community facilities which includes 1 community center, 1 central eidgah and 1 auditorium. Areas for Mosque/Church/Temple, Post office, Fire service station and T&T remain with existing areas.

Table 10.8: New proposal for Community Facilities

Proposal	Ward No.	Mouza	Plot No.	Area (acre)
Community Center	Ward No. 03	Jibannagar_025_02	1205-1209, 1211, 1220	1.31
Central Eidgah	Ward No. 06	Jibannagar_025_07	5550-5554, 5777-5779,5550-5554	7.82
Auditorium	Ward No. 04	Jibannagar_025_03	1852, 1878	0.43

Utility Services

Existing utility services are poor in the Paurashava.

Determination of Standard: The prescribed standard for waste transfer stations are 0.25 acres/per waste transfer station and 4-10 acres for an Upazila Headquarter.

Recommendation / Forecast: The study team has recommends 7.37 acres of land for utility services which includes 2 overhead tanks, 4 public toilets, 1 dumping ground, 1 water treatment plant, 2 slaughter houses and 5 waste transfer stations.

Table 10. 9: New proposal for Utility Services

Proposal	Ward No.	Mouza	Plot No.	Area (acre)
Overhead Tank	Ward No. 06	Jibannagar_025_07	5806	0.15
Overhead Tank	Ward No. 06	Jibannagar_025_04	2559	0.18
Public Toilet	Ward No. 03	Jibannagar_025_01	241, 447	0.076
Public Toilet	Ward No. 09	Banka_038_03	4147	0.11
Public Toilet	Ward No. 06	Jibannagar_025_06	3263, 3267	0.11
Public Toilet	Ward No. 04	Jibannagar_025_03	1879	0.13
Waste Dumping Ground	Ward No. 09	Banka_038_03	4350-4358- 4365	3.14
Water Treatment Plant	Ward No. 09	Jibannagar_025_07	6136-6142, 6167, 6168, 6276	2.08
Slaughter House	Ward No. 07	Jibannagar_025_05	4397-4398	0.09
Slaughter House	Ward No. 09	Tentulia_039_01	238	0.11
Waste transfer station	Ward No. 02	Narayanpur_024_01	284, 285, 289, 235, 236	0.24
Waste transfer station	Ward No. 03	Jibannagar_025_01	588, 669	0.24
Waste transfer station	Ward No. 04	Jibannagar_025_02	1053	0.24
Waste transfer station	Ward No. 07	Jibannagar_025_05	4341, 4350	0.24
Waste transfer station	Ward No. 06	Jibannagar_025_06	3022	0.24

Administration

In the Paurashava, 16.39 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 about 30 acres. The planning area already has 1.838 acres administrative land.

Recommendation / Forecast: The planning area already has one Upazila office, one Paurashava office and other govt. offices. Therefore, no recommendation for new administrative area is prescribed but, expansion of the existing Paurashava office is required.

Recreation

In the Paurashava, 0.16 acres land is under recreational use.

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 and 1.75 acres land per 10,000 populations for a shishu park. The study team has estimated 43223 populations for the planning area up to the year 2021. For this population total land required for cinema/theatre stands at (43223 / 20,000), means 4 acres land is being needed up to the year 2021, 10 acres for stadium and 40 acres for shishu park.

Recommendation / Forecast: The study team recommends 2.31 acres of land for community facilities which includes 1 gymnesium and 1 indoor stadium.

Table 10.10: New proposal for Recreational Facilities

Proposal	Ward No.	Mouza	Plot No.	Area (acre)
Gymnesium	Ward No. 06	Jibannagar_025_06	3275,3281,3076	0.21
Indoor Stadium	Ward No. 04	Narayanpur_024_01	339-340	2.10
		Jibannagar_025_07	5501, 5503-5506, 6239	

Residential

Existing residential areas of the Paurashava is 442.58 acres. All type of residential lands is included with such amount of land. About 45% residential land belongs with the rural homestead. Therefore, rural environment will be considered for creating better living areas.

Determination of Standard: The standard recommends in Table-10.2 is 100-150 persons per acre (gross). Again, it is recommended 200 persons per acre for e real estate or housing areas both for public and private. But it is not possible for this Pourahsava. Rather 30 persons /acre are more realistic .No standard is being recommended for low-income group.

Recommendation / Forecast: According to the standard (30 persons per acre), about 627.28 acres land will be needed up to the year 2021. Allocation of residential land for future is not prescribed by the Consultant. The Consultant recommends one resettlement area for affected people on an area of 20.38 acres of land. The row houses may be constructed on the eastern part of the Paurashava. Mostly khas land will be preferred for such development and it should not be above 10 acres. Rural environment should be confirmed in the row housing areas.

Table 10.11: New proposal for Recreational Facilities

Proposal	Ward No.	Mouza	Plot No.	Area (acre)
Resettlement Area	Ward No. 04, 06	Narayanpur_024_02	1014	20.38
		Jibannagar_025_07	5563, 5568-5577, 5579-5583, 5584-5592, 5762-5764, 5774-5775, 5776-5778, 5780-5781, 5561, 5564, 6257	

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

The paved surface around the building shall have percolation pits of 4’x4’ covering at least 30% of such areas. Such pits shall be filled with small pebbles or such absorbing materials or river sand and covered with perforated concrete slabs.

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.

10.3.2 Landuse Zoning

After a detailed consultation with the LGED counter-part, the land use classification for the Paurashava Master Plan is being finalized as shown in the Table-10.3. Map 10.2 and Appendix -2 shows the Land Use Plan of the Jibannagar Paurashava.

Table 10. 12: Land Use Plan of Jibannagar Paurashava

SL.	Land use Category	Remarks	Area (Acre)	%
1.	Urban Residential Zone	Urban Residential area is a land use in which housing predominates. These include single family housing, multi-family residential, or mobile homes. Zoning for residential use may permit some services or work opportunities or may totally exclude business and industry. It may permit high density land use.	626.13	14.98
2.	Rural Settlement	Rural settlement includes the low dense residential area which is scattered and rural in nature. It may permit only low density uses. Aiming to control the growth in this zone, less service and facilities will be provided.	48.77	1.17
3.	Commercial Zone	The land used for commercial activities is considered as commercial land use. These activities include the buying and selling of goods and services in retail businesses, wholesale buying and selling, financial establishments, and wide variety of services that are broadly classified as "business". Even though these commercial activities use only a small amount of land, they are extremely important to a community's economy. Commercial land includes established markets and areas earmarked for markets.	36.25	0.87
4.	Mixed Use Zone	Mixed land use refers to the area without a dominant land use (Residential, commercial, industrial etc.).	28.66	0.69
5.	General Industrial Zone	Green and Orange A categories as per The Environment Conservation Rules, 1997	44.37	1.06
6.	Heavy Industrial Zone	Other toxic and pollutions Industries (Orange B and Red categories as per The Environment Conservation Rules, 1997)	0	0
7.	Government Services	All Government Offices except large scale service based offices as Civil Surgeon Office, DC Office, Police Box, Police Fari, Police Station, LGED Office, Paurashava Office, Settlement Office, Union Parishad Office, Upazila Headquarter, BADC Office, Fisheries Office, Ansar/VDP Office, Agriculture Office, Zila Parishad Office, Post Office ,Telephone Exchange Office and Other Government Offices.	19.00	0.45
8.	Education & Research Zone	All kinds of educational institutes like Primary/secondary/other Schools/ Colleges etc are mentioned to calculate the land use for education and research purpose.	44.08	1.05
9.	Agricultural Zone	Agricultural land denotes the land suitable for agricultural production, both crops and livestock. It is one of the main resources in agriculture. It includes productive land (single, double and triple cropped), seed bed, fisheries, poultry farm, dairy farm, nursery,	2720.01	65.09

SL.	Land use Category	Remarks	Area (Acre)	%
		horticulture etc.		
10.	Water body	Equal or More than 0.25 acre and justification by the consultant and wet land will merge with water body	99.89	2.39
11.	Open Space	Playground, Botanical Garden, Stadium, Zoo etc. (Facilities without or with minimum building structure)	59.67	1.43
12.	Recreational Facilities*	Facilities other than those mentioned to Open Space and indoor based facilities with designated building structure i.e. Cinema Hall, Theater Hall etc.	2.45	0.06
13.	Circulation Network	Road and Rail communication	314.36	7.52
14.	Transportation Facilities	Under transport and communication land use both transport and communication services are considered. This category includes airport, bus terminal/ stand, ferry ghat, filling station, garage, launch terminal, post office, passenger shed, telephone exchange, ticket counter, transport office etc.	8.31	0.20
15.	Utility Services	Utility services include Overhead Tank ,Power Office/Control Room, Public Toilet, Sewerage Office, Waste Disposal ,Fire Service, Water Pump House ,Water Reservoir, Water Treatment Plant etc.	8.03	0.19
16.	Health Services	This land will be used to provide health facility.	14.28	0.34
17.	Community Facilities	All community facilities including funeral places and other religious uses	24.24	0.58
18.	Historical and Heritage Site	The entire mentionable historical and heritage site.		
19.	Restricted Area	A Restricted Area is an area where no one but certain people can enter. Here the areas which are not accessible for the general public except some high ranked personnel are considered as restricted area.	1.56	0.04
20.	Overlay Zone	If the consultant justify any area that should not be defined as other given definitions but the facility(s) may not be avoidable, they may use this category		
21.	Urban Deferred	Optional depending on the Paurashava and the Consultant's judgment	77.64	1.86
22.	Forest	Designated Forest Area		
23.	Beach	Sea Beach		
24.	Miscellaneous/Non Government Services	Any other categories which are not related to above 23 categories.	0.76	0.02
	Total		4178.49	100.0

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

Urban Residential Zone

Urban residential zone refers to all categories of urban residential areas, including exiting and proposed residential land. In total, this zone covers 626.13 (14.98%) acres of land delineated up to the year 2021, considering standard provided by LGED. Urban residential zone refers to all categories of urban residential areas, including exiting ones and the residential land use proposed under the present Master Plan. Potential area for high dense residential area near to urban core area (influences of close proximity to commercial hub, administrative, educational facilities, road way network, service facilities and flood free suitable land for development).

Rural Settlement

Jibannagar Paurashava includes some rural characteristics. The Land use category supplied by LGED for identification of residential settlements in the agricultural belt is categorized as rural settlements. These settlements usually constructed with temporary building materials. Jibannagar Paurashava is mostly rural in character. About 80.04% existing land is under agriculture practice and most of the settlement situated surrounding or within the agricultural land. In planning consideration, to save agriculture land according to the Agriculture Policy of Bangladesh, a portion of land declares as rural settlement. This settlement occupies 44.77 acres of land (1.17% of the total land). The areas of rural settlement have some restrictions for non-agricultural development. Annexure-A shows the permitted land use of rural settlement.

Commercial Zone

The commercial zone is intended to provide locations, where commercial activities including retail and wholesale can be set up and function without creating hazards to surrounding land uses. Zone will allow commercial uses as listed in Annexure- B.

Mixed-Use Zone

Mixed-use zone is recommended to allow some flexibility in development. In a small urban area like Jibannagar, 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. Total proposed area for mixed-use is 28.66 acres (0.69% of total area) including existing and proposed use. This zone will allow residential structures together with commercial uses as listed in Annexure-B.

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

- Counselor office
- Community Center
- Community Clinic
- Post Box
- Small shops
- Club

- Office of Utility Services

General Industrial Zone

Industrial/Manufacturing/Processing Zone intends to provide locations, where Orange B and Red categories (as per Environmental Conservation Rule, 1997) industrial, manufacturing and processing.

In Jibannagar Paurashava, establishments can be setup and function without creating hazards to surrounding landuses. Since there is no industrial agglomeration in the Paurashava, the industrial zone will mean for new industries. In this zone, a complex line of industrial and supporting non-industrial land uses will be permitted as per Annexure- B.

Government Services

Administrative zone covers all kinds of government and non-government offices. Permitted uses in this zone are presented in Annexure-B. Total area under this use has been estimated as 19.00 acres that include existing and proposed land uses. This land will be used for established Paurashava office and other administrative uses as prescribed in the plan.

Education and Research Zone

Education and Research zone refers to mainly education, health and other social service facilities as listed in Annexure-B. Total area under this use has been proposed (44.08 acres) uses.

Agricultural Zone

The Paurashava has a vast area of agricultural land that demands formation of a separate zone like agriculture. Agriculture zone primarily mean for agriculture and agriculture-related functions. Detail land uses is presented in the Annexure-A. Total area under this use has been estimated as 2720.01 acres that include existing and proposed uses.

Water Body and Retention Area

Total 99.89 acres water body (2.39% of total land) is beign proposed in the Paurashava. The plan suggests preserving most of those water bodies for two purposes, first, to serve as source of water, second, to serve as water retention area during monsoon. The ponds with an area equal to or more than 0.15 acres will be preserved as the water retention ponds. There will be permitted uses in this zone as stated in Annexure-B.

Open Space

This zone has been provided to meet the active and passive recreational facility needs of the people and at the same time, conserve the natural resources. Total area estimated for this zone is 59.67 acres (1.43%). Details of permitted and conditional permits have been presented in Annexure-B.

Recreational Facilities

This zone has been provided to meet the active and passive recreational needs of the people. Details of permitted and conditional permits have been presented in Annexure-B.

Cinema hall, Indoor Stadium, gymnasium, etc. is being considered as recreational facilities.

Circulation Network

The road network is considered as circulation network. National highway, regional highway, local road whether pucca/semi-pucca/katcha, footpath, flyover, over-bridge, underpass, bridge, culvert, etc. are being included in circulation network. In total 314.36 acres of land covers (7.52% of total planning area) as circulation network. Details are given in Chapter 11, Part B of this report.

Transportation Facilities

Ttransportation facilities incorporate transport and communication services. For an example airport, bus terminal/stand, ferry ghat, filling station, garage, launch terminal, passenger shed, ticket counter, transport office, etc. In total, 8.31 acres land is being proposed for this purpose.

Utility Services

It incorporated all utilities and service facilities except health services. Utility services include water treatment plant, water reservoir, water pump house, public toilet, fire service, waste disposal centre, sewerage facilities including office, electricity supply including office or control room and over head water tank. In survey stage this type of landuse was defined as service activity.

Health Services

This land will be used to provide health facilities. In total, 14.28 acres land (0.34% of the planning area) is being proposed for this purpose. A community based health centre will be provided at Ward Councellor's Office if needed. Ward Councellor's Office is under in mixed-use category in land use plan proposal.

Community Facilities

Community services include community centre, club house, fire service, civic centre, family planning facilities, religious centres, etc. In additionally all funeral places and other religious uses incorporated in this category. In total, 24.24 acres land (0.58% of the planning area) will be used for this purpose.

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. Those uses are only identified as sites, not zones. They have local, regional or national importance, though they do not conform to surrounding land uses. No other use except the use of overlay site will be permitted in this zone. There is no scope for permitting or conditionally permitting the functions or uses as the zone itself is an overlay. Present and proposed use of the zone will continue until the next zoning regulation is imposed on those specific parcels of land.

A variety of overlay zones are in the Paurashava. Some of the important types of overlay sites are listed below including the purpose of retaining them.

Urban Deferred

The Urban Deferred refers to lands lying outside the urban growth area and identified as Urban Reserve. Following are permitted uses within the Urban Reserve 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.

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, administrative 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.

10.4 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) Ordinance, 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. 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.
2. To control the air, water, noise and soil pollution, Conservation of Environment and Pollution Control Act, 1995 (Act No. I of 1995) was enacted. In the Paurashava, there

is no authority for enforcing the provisions prescribed in the said Act. The pollution related with the implementation of landuse component may be controlled with this Act.

3. Haphazard development of commercial activities is the general scenario of the Paurashava. It is necessary to impose control on commercial activities provisioned in the Shops and Establishments Act, 1965 (Act No. VII of 1965).

4. In case of man-made canal, regulations prescribed in the Canal and Drainage Act, 1873 (Act No. VIII of 1873) is the best weapon. For the linking of canal with others and river considering drainage facilities the Act may be enforced.

5. For the conservation of archeological monuments or structures or historical development the Ancient Monuments Preservation Act, 1904 (Act No. VII of 1904) may be enforced. Archeological Department of Bangladesh and Paurashava authority through a partnership process may preserve such type of development.

6. To control air pollution due 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.

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

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

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

10. In the Paurashava premises, industrial development is controlled by the Bangladesh Cottage Industries Corporation through Bangladesh Cottage Industries Corporation Act, 1973 (Act No. XXVIII of 1973), Industrial Development Corporation through East Pakistan Industrial Development Corporation Rules, 1965 (No. EPIDC / 2A-2/63/354) and Factory Inspector through Factories Act, 1965 (Act No. IV of 1965). Locational aspects and issuing of trade license is controlled by the Paurashava authority. A joint

coordination cell among those four authorities may control the establishment of factories and industries in the Paurashava.

11. In the Paurashava, for rain water harvesting, some specific ponds / tanks will needed to be preserved. A number of derelict tanks may be improved through tank improvement project and in this case Tanks Improvement Act, 1939 (Act No. XV of 1939) will support the Paurashava is regulatory aspects.
12. Except Khas land, a considerable amount of public land in the Paurashava may be identified as fallow land or unproductive land. In regulatory term those lands are considered as culturable waste land and those lands are being fallow during five consecutive years. Those lands may be utilized under the guidance of Culturable Waste Land (Utilization) Ordinance, 1959 (Ordinance No. E.P. XIII of 1959).
13. The Paurashava should raise its efforts on the imposition and realization of betterment fees to raise its income. In this case, East Bengal Betterment Fees Act, 1953 may be enforced.

10.4.2 Implementation, Monitoring and Evaluation of the Landuse Plan

The implementation, monitoring and evaluation strategies of Structure Plan have been illustrated in **Chapter-9** of **Part-A**. The Land Use Plan should also be implemented, monitored and evaluated under the same strategy by strengthening capacity of the Paurashava and forming a Monitoring and Evaluation Committee (*MEC*).

As the Land Use Plan is a mid-term plan with a period of 10 years (2011-2021), it will be implemented on phase wise according to priority. The proposals have been prioritized based on the most urgent community needs, since the Government of Bangladesh (*GoB*) is a least developed country and it has a very limited budget on infrastructure development. Besides, the Paurashava Authority itself is not capable of financing this huge cost.

The **Land Use Plan** will be implemented gradually following prioritized landuse proposals. Phasing of land use proposals was done based on the priority needs for development of the town. The **Phase-I** of the land use proposals, to be also incorporated in the Ward Action Plan, will be implemented within first 5 year (2011-2016) of the land use plan period. The consultants have proposed **Phase-II** and **Phase-III** of the proposals to be implemented within next consecutive 5 years for Ward Action Plan. The details of phasing are shown in **Table-10.13, Table-10.14** and **Table-10.15**. After each 5 years the **Land Use Plan** will be evaluated, updated and new Ward Action Plan will be formulated under the changing circumstances.

Table 10.13: Phasing of Development Proposals (Phase-I)

Phase-I (2011-2016)				
ID	Name of Proposal	Location	Ward No.	Area (Acre)
NM-02	Neighborhood Market	At the intersection of astalapara road and graveyard road	W-8	0.59
WKB	Wholesale Katcha Bazar	Adjacent to proposed bus terminal	W-9	2.72
PS-03	Primary School	Near food godown & sub-registry office	W6	1.11
C-01	College	Adjacent to Narayanpur Reg. Non Govt. Primary School	W-4	3.78

Phase-I (2011-2016)				
ID	Name of Proposal	Location	Ward No.	Area (Acre)
VTI	Vocational Training Institute	At the very north-east corne of Ward No. 07	W-7	4.20
BT	Bus Terminal	Adjacent to Kaliganj road	W-9	3.18
TS-01	Tempu Stand 1	Adjacent to Dattanagar road	W-6	0.15
TS-02	Tempu Stand 2	Adjacent to Bazar road	W-3	0.36
PG	Playground	Beside jibannagar paura KG scholl	W-3	3.36
Cl	Clinic	Adjacent to south end of Ward No. 03	W-2	2.56
OT-01	Overhead Tank	Adjacent to upazila complex	W-6	0.15
OT-02	Overhead Tank	Adjacent to upazila health complex	W-6	0.18
PT-02	Public Toilet	Adjacent to proposed bus terminal	W-9	0.11
PT-03	Public Toilet	In the bazaar area	W-6	0.11
DS	Dumping Site	At the intersection of road to baka & proposed bypass	W-9	3.14
WTP	Water Treatment Plant	Beside Dattanagar Road	W-9	2.08
SH-02	Slaughter House	Adjacent to cattle market	W-9	0.11
WTS-01	Waste transfer station	Adjacent to TR-22	W-2	0.24
WTS-02	Waste transfer station	At the intersection of TR-47 & TR-48	W-3	0.24
WTS-03	Waste transfer station	Adjacent to SR-08	W-4	0.24
WTS-04	Waste transfer station	At the intersection of TR-128 & TR-135	W-7	0.24
WTS-05	Waste transfer station	At the intersection of TR-113 & TR-83	W-6	0.24

Table 10.14: Phasing of Development Proposals (Phase-II)

Phase-I (2011-2016)				
ID	Name of Proposal	Location	Ward No.	Area (Acre)
GIA	General Industrial Area	In the middle of Ward No. 05	W-5	15.02
NM-01	Neighborhood Market	Adjacent to noydatak road	W-9	1.07
NM-03	Neighborhood Market	Adjacent to thana road	W-4	0.73
NM-04	Neighborhood Market	120m east from narayanpur jame mosue	W-2	0.93
SM	Supermarket	Adjacent to Paurashava boundary	W-6	0.35
PS-01	Primary School	Adjacent to SR-12	W-5	1.11
PS-06	Primary School	Adjacent to SR-08	W-4	0.54
HS-01	High School	At west of Narayanpur Reg. Non Govt. Primary School	W-3	2.44
CP	Central Park	Beside river	W-6	3.85
NP-03	Neighborhood Park	Baside the river	W-4	1.57
NP-04	Neighborhood Park	Beside proposed central eidgah	W-6	1.28
HOS	Hospital	Near Upazilla Alim Madrasa	W-6	6.37
GYM	Gymnesium	Adjacent to T&T road	W-6	0.21
PT-01	Public Toilet	Adjacent to proposed truck terminal	W-3	0.076
PT-04	Public Toilet	Adjacent to upazila complex	W-4	0.13
SH-01	Slaughter House	Adjacent to forest office	W-7	0.09
WC-01	Ward Center	Adjacent to SR-02	W-1	1.097
WC-02	Ward Center	145m north from narayanpur jame mosque	W-2	0.592
WC-03	Ward Center	Adjacent to jibannagar paura KG scholl	W-3	1.553
WC-04	Ward Center	130m north from somobay somity at the west edge of ward boundary	W-4	0.754
WC-05	Ward Center	At the north-westv part of Ward No. 05	W-5	0.585
WC-06	Ward Center	Adjacent to T&T road	W-6	0.694

Phase-I (2011-2016)				
ID	Name of Proposal	Location	Ward No.	Area (Acre)
WC-07	Ward Center	Adjacent to Dattanagar road	W-7	0.687
WC-08	Ward Center	200m south from Jibannagar Non Govt. Reg. Primary School	W-8	0.589
WC-09	Ward Center	Adjacent to noydatak road	W-9	0.575

Table 10.15: Phasing of Development Proposals (Phase-III)

Phase-I (2011-2016)				
ID	Name of Proposal	Location	Ward No.	Area (Acre)
RA	Resettlement Area	Beside Narayanpur Reg. Non Govt. Primary School	W-4, 6	20.38
PS-02	Primary School	Adjacent to TR-52	W-4	1.02
PS-04	Primary School	Adjacent to TR-138	W-8	0.94
PS-05	Primary School	Adjacent to the road to Jibannagar Non Govt. Reg. Primary School	W-8	0.60
PS-07	Primary School	Beside tentulia bhanga road	W-9	0.82
PS-08	Primary School	Near narayanpur jame mosque	W-2	0.89
HS-02	High School	Near Jibannagar Thana Reg. Non Govt. Primary School	W-2	2.78
C-02	College	Adjacent to Ashraful Model Academy	W-3	4.66
NP-01	Neighborhood Park	Near Ayub Ali Hafijia Madrasa	W-1	1.04
NP-02	Neighborhood Park	50m west from proposed ward center	W-2	1.34
NP-05	Neighborhood Park	Adjacent to pilot high school road	W-9	1.25
NP-06	Neighborhood Park	Adjacent to tentulia bhanga road	W-9	1.42
NP-07	Neighborhood Park	50m south from Jibannagar Non Govt. Reg. Primary School	W-8	1.31
NP-08	Neighborhood Park	140m south from Jibannagar Degree College	W-7	1.60
NP-09	Neighborhood Park	Adjacent to proposed ward center	W-5	1.28
BG	Botanical Garden	Adjacent to college road	W-9	8.03
CC	Community Center	Adjacent to south boundary of upazila complex	W-3	1.31
ST	Stadium	Adjacent to fire service office	W-7	7.77
IN-ST	Indoor Stadium	At the middle west edge of ward No. 04	W-4	2.10
CE	Central Eidgah	At the rear side of upazila complex	W-6	7.82
AU	Auditorium	Near upazila complex	W-4	0.43

CHAPTER-11

TRANSPORTATION AND TRAFFIC MANAGEMENT PLAN

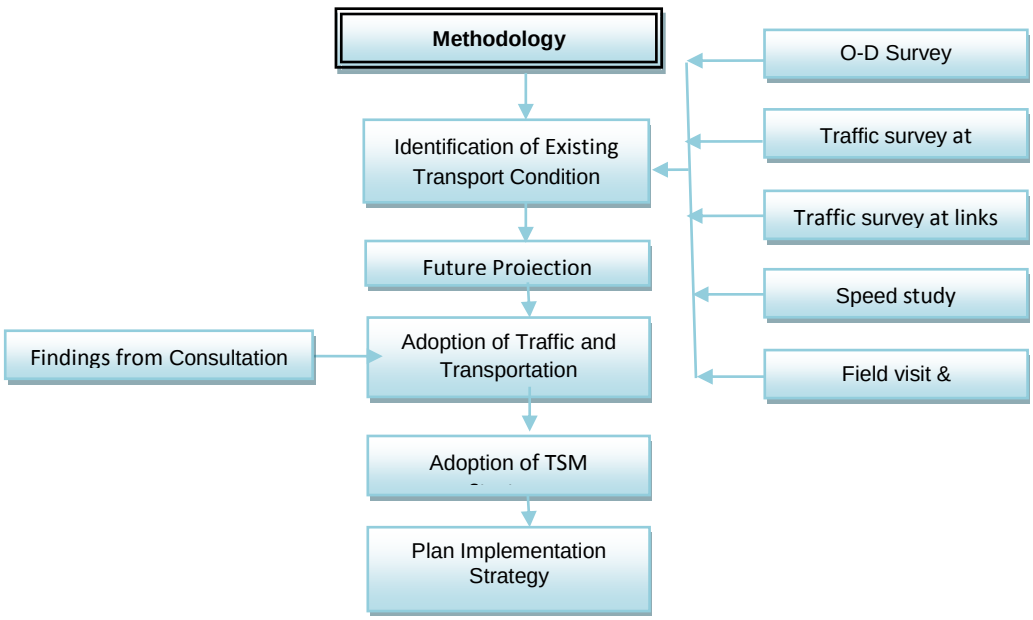
11.1 Introduction

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

11.2 Approach and Methodology

The methodology of the study could be illustrated through five-step process for the assessment of Transportation and Traffic Management Plan. These five steps are:

Figure 11.1: Flow Chart of the Methodology



The first step of the methodology of transportation and traffic management plan is to identify the existing transport condition, which is the result of O-D survey, traffic survey at intersection, traffic survey at links and speed study; have already described in the survey report. In the next step, the future projection of transportation network and traffic demand

is identified, which is described in the interim report. The third phase of the study is to adopt new traffic and transportation management plan, which is prepared based on future projection. After that, some strategies on transportation system management (TSM) are undertaken. Finally, plan implementation strategies are espoused based on both transportation management plan and transportation system management.

11.3 Existing Conditions of Transportation Facilities

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

11.3.1 Roadway Characteristics and Functional Classification

Total length of pucca (bituminous carpeted) road is about 46.93 km encompassing an area of 43.25 acre. The semi pucca road is generally constructed with brick soling called Herring Bone Bond (HBB) road. Total length of semi pucca road is 25.05 km. Third category is katcha road called earthen road. Total length of katcha road is 11.25 km. In total, there in Jibannagar Paurashava roads under three categories coursing 83.23 km in length and 62.56 acre of land.

Table 11.1: Roads in the Paurashava

Type	Length		Area	
	KM	%	Acres	%
Pucca	46.93	56.39	43.25	69.13
Semi-pucca	25.05	30.10	13.04	20.84
Katcha	11.25	13.52	6.27	10.02
Total	83.23	100	62.56	100

Source: Physical Feature Survey, 2010.

Roads of Roads and Highways Department

The Paurashava has about 4.54 km of roads within the town owned and maintained by the Roads and Highways Department (RHD). This road passes through the heart of the town to connect other urban centres and Dhaka via Jessore. The width of this road is 25 ft, while the right of way is 30 ft.

Roads of Local Government Engineering Department (LGED)

LGED maintains about 1.39 km of roads within the Jibannagar Paurashava.

Paurashava Local Roads

The Paurashava has so far developed 77.07 km of roads within its area with different widths. The Paurashava is also responsible for maintaining these roads. The authority has named many of these roads after renowned local personalities.

11.3.2 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.

11.3.4 Level of Service: Degree of Traffic Congestion and Delay

11.3.4.1 Traffic Congestion

Traffic conflict is common and frequent in towns, where there is combination of transport vehicles-slow and fast-on the streets. Major conflict and congestions occur in the places, where intensity of traffic movement is high, on street parking is made and on street loading or unloading of goods are taken place. The consultant studied the traffic movement all over the town and has identified two main points, where the traffic congestion is the highest. This area located at Puratan Bazar Mor and Bus Stand Mor. At these points, the slow moving vehicles like, rickshaws and vans come in conflict with motor vehicles, creating traffic congestion, as the number of slow moving vehicles is higher, and the conflicts are usually frequent.

11.3.4.2 Delay

The traffic delays in Jibannagar town is caused by the interaction of various factors, such as congestion, inadequacy of carriageway widths, mixed traffic conditions, parked vehicles and heavy pedestrian flow and such delays are called congestion delays or operational delays are difficult to measure precisely. It is observed that peak period takes on an average 12-15% excess time than off-peak period due to congestion, narrow road and improper design of Jibannagar bazaar intersection.

11.3.5 Facilities for Pedestrians

During field survey, it was observed that people move in both directions, going in and out of the both sides of the roads. It is noted that the study area is without any footpath for pedestrian movement. Pedestrian movements take place mostly on carriageway and right of way of the roads.

11.3.6 Analysis of Existing Deficiencies

11.3.6.1 Roadway Capacity Deficiencies

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

Narrow Road Width

These studies are used to determine speed and delay variations along a route at different times and locations. Narrow road is the main cause of delay of vehicle as it is an obstruction for smooth flow of traffic. This problem is severe in the core area of the Paurashava, especially the College Road, Hospital and the narrow roads in between the dwellings and commercial structures are mentionable in this respect. Due to insufficient

capacity of the roads and absence of sidewalk, even two non-motorized vehicles like rickshaw or van have to pass very carefully to avoid accidents and this result into delay of journey. In the presence of a car or microbus, although they are few in number, the situation goes worse.

Tortuous Road and Missing Link

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

11.3.6.2 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.

Map 11.1: Existing Road Network of Jibannagar Paurashava

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

No railway, water way and air way faculties in the Paurashava.

11.4 Future Projections

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

11.4.1 Travel Demand Forecasting for Next 10 Years

Existing road network is quite enough for accommodating present volume of traffic. The study area is rural in nature. Most of the roads are katcha and 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 planning area is largely dependent on road transportation. This dependency is being 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. Accordingly different standards have been suggested for different types of Paurashava roads.

Present population of the Paurashava is 25518 (2011) and after 20 years it will be 30466 (2031). The scenario proves that traffic congestion is not alarming. At the sametime, highest road width at present is 8 meter (ROW) and it will be saturated with the traffic if the PCU/hr. increases above 1000.

Table 11.2: Geometric Design Standards of Roads Proposed by LGED

Class of Roads	Standards recommended
Primary roads	100-150 ft.
Secondary roads	60-100 ft.
Local roads	20-40 ft.

Source: UTIDP, LGED, 2010.

11.4.2 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.

11.5 Transportation Development Plan

11.5.1 Plan for Road Network Development

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

Table 11.3: Proposal for Road Standard in the Project area

Class of Roads	Standards recommended
Paurashava Primary roads	Row 80-120 ft.
Paurashava Secondary roads	Row 50-60 ft.
Tertiary Road	Row 20-40 ft.

Source: Upazila Towns Infrastructure Development Project and Proposed by Consulting Firm

11.5.1.1 Standard Road Design

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

Functions of Roads

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

11.5.1.2 Road Network Plan

Several number of primary, secondary, tertiary and access roads has been proposed in this Paurashava by considering the hirearky of the road. In total, 92.91km of roads have been proposed for efficient accessibility of the Paurashava. Detailed road proposal is listed in **Annexure D**.

Paurashava Primary Road

Jessore-Chuadanga Regional Highway will treat as primary road for Jibannagar Paurashava. Two bypass roads have been proposed in case of the provision of new land port. Total length of primary road will be 20.81 km with 80-120 ft RoW. Within these total 9.61 km primary road will be widening up to with 80-120ft. Here to ensure uninterrupted traffic flow through Jessore-Chuadanga Highway its RoW will upgrade up to 120 ft.

Paurashava Secondary Road

Total secondary road is 20.04 with 50-60 ft RoW. Within it 15.54 km secondary road will be widening and rest 4.5 km new secondary road will be constructed.

Tertiary Road

Total 52.06 km Tertiary Road is proposed with 20-40 ft RoW within in the Paurashava of which 25.12 km road will widening and rest 26.94 km road will be newly constructed in on different phases to fulfill the future needs of the Paurashava.

Table 11.4: Summary of Primary, Secondary and Local Roads

Type	No. of Roads	Length (km)	%
Primary Road	4	20.81	22.40
Secondary Road	13	20.04	21.57
Local Road	174	52.06	56.03
Total	191	92.91	100.00

11.5.2 Proposal for Improvement of the Existing Road Networks

Traffic management measures may be adopted to increase traffic capacity and safety. The improvement could be done by removing the deficiencies in the existing core road network by widening and/or strengthening of selected stretches/ corridors in a phased manner and improvement of road geometrics and safety provisions. Summery of the proposals for existing road widening is listed in tabular form (Table-11.5) below:

Table 11.5: Summary of Road Improvement Proposal

Type	No.of Roads	Length (km)	%
Primary Road	2	11.2	26.27
Secondary Road	3	4.5	10.55
Local Road	61	26.94	63.18
Total	66	42.64	100.00

Map 11.2: Transportation and Traffic Management Plan of Jibannagar Paurashava

11.5.3 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 called Jessore-Chuadanga Regional Highway is being proposed for double carriageway with service road around the existing bus stand. Two bypass roads have been proposed in case of the provision of new land port.

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 50.27 meter roads have been proposed for efficient accessibility of the Paurashava.

Table 11.6: Summary of Road Improvement Proposal

Type	No. of Roads	Length (km)	%
Primary Road	2	9.61	19.12
Secondary Road	10	15.54	30.91
Local Road	113	25.12	49.97
Total	125	50.27	100.00

11.5.4 Plan for Transportation Facilities

11.5.4.1 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.

Truck Terminal
There is no terminal in this area. The study team recommends a truck terminal (3.77 acre) in Ward 03.

Bus Terminal
There is no terminal in this area. The study team recommends a bus terminal (3.18 acre) in Ward 09.

Tempo Stand/ Taxi Stand

Tempo is now a major and a cheaper mode of transport in small towns that play important role in commuter transportation. There is a formal tempo stand near the Bus Stand which accommodates approximately 7 to 8 tempos at a time. Two tempo stands have been proposed having an area of 0.51 acre. The stand is presently under utilized and the consultant proposed to develop the stand to ensure the maximum utilization. As per the growth trend additional tempo/taxi stands will be propose in the transport development plan.

Table 11.7: List of Proposed Transport Facilities

Proposal	Ward No.	Mouza	Plot No.	Area (acre)	Phasing
Bus Terminal	Ward No. 09	Banka_038_03	4149-4150, 4152, 4159, 4147, 4148, 4154, 4156-4158	3.18	1st Phase
Truck Terminal	Ward No. 03	Jibannagar_025_01	230-232, 241-245, 247	3.77	2nd Phase

Tempu Stand	Ward No. 06	Jibannagar_025_07	5873,5874	0.15	1st Phase
Tempu Stand	Ward No. 03	Narayanpur_024_01	54,55	0.36	1st Phase

11.5.4.2 Development of Facilities for Pedestrian, Bicycle and Rickshaw

During field survey, it was observed that people move in both directions, going in and out using both sides of the roads. It is noted that no footpath is available in this Paurashava for pedestrian movement. Pedestrians mostly use carriageway and right of way of the roads. In most cases, pedestrians use road shoulders for walking but they are being obstructed by the informal business men. Separate provision for bicycle and rickshaw is not needed.

From Traffic volume survey it is gathered that following roads carry extreme pedestrian due to eminent commercial activities in the heart of Paurashava. Following table shows roads carrying most of the pedestrians and recommendation thereof.

Table 11.8: Proposed footpaths on the major roads

Sl. No.	Name of Road	Type	Avg. Width (m)	Length(km)
1.	Darsana/Kaliganj Highway	Pucca	6.15	4.49
2.	Paurashava Road	Pucca	6.0	1.93
3.	Thana Road	Pucca	5.0	1.05
4.	Hospital Road	Pucca	3.0	0.68
5.	Dattanagar Road	Pucca	6.0	2.96
6.	T&T Road	Pucca	3.0	0.3
7.	Madrasa Road	Pucca	4.0	0.76
8.	College Road	Pucca	4.0	0.24

Source: Topographic Survey, 2009-2010.

11.5.5 Waterway Development/Improvement Options

The Bhairab River is flowing on the northern part of the Paurashava. Bangladesh Inland Water Transport Authority (BIWTA) is responsible for maintaining its navigable character. Unauthorized encroachment in different locations of this river is performing by the dwellers. At present, the BIWTA is not performing any responsibilities regarding this river. Apparently no major problem is found in the area on water transport services.

11.5.5.1 Proposal for Improvement of the Existing Waterway

The existing Bhairab River should be re-excavated to improve the waterway through out the year.

11.5.5.2 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 Bhairab River.

11.5.6 Railway Development Options

No railway development option is possible in the Jibannagar Paurashava.

11.6 Transportation System Management Strategy (TSMS)

11.6.1 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.

11.6.2 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.

11.6.3 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.

11.7 Plan Implementation Strategies

11.7.1 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 22nd September, 1983: The Ordinance will be needed mostly for the registration of motor vehicles and issuing of driving license.

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

The Paurashava may, in communication with the RHD and LGED and with the prime approval from the Government may enforce the regulations as mentioned above. Again, some of the relevant regulations of developed countries may be enforced by the appropriate authority for the betterment of accessibility, road safety and road

management. In connection with this concept, **Highways Act of England and Wales** may be followed.

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

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

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

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

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

- Erects, places or retains a sign on a public road, or
- 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-
- 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,
- 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.

11.7.2 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:

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

Plan Monitoring

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

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

Evaluation

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

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

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

Co-ordination

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

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

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

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

CHAPTER-12

DRAINAGE AND ENVIRONMENTAL MANAGEMENT PLAN

12.1 Drainage Management Plan

The consultant has made an extensive drainage network study in Jibannagar 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).

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 Jibannagar 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.

12.2 Existing Drainage Network

12.2.1 Natural Drainage System:

There are two canals covering 9.08 acres area of Jibannagar Paurashava. Existing canals are trying to serve the drainage requirements of the Paurashava. There is a river named Bhairab which passes through Ward No.04, Ward No.07 and Ward No.08 and along Ward No. 05 (Table 12.1). The River is equally distributed among Ward No.04, Ward No.07 and Ward No.08. The river has taken the shape of English letter "V" along the boundary of the Wards. This river runs from North to north-south direction.

Table 12.1: List of River & Canal in the Study Area

ID	River/ Canal Name	Flow Direction	Length (km)	Area (acres)	Alignment
Ri	Bhairab River	Towards North-South	2.85	22.93	Touches Ward Nos.4, 5, 7 and 8
Kh-01	Kh-01	-	1.47	5.89	Ward No. 7
Kh-02	Kh-02	-	0.6	1.59	Ward Nos.3 and 4

Source: Field Survey, 2008-2010 by DDC

12.2.2 Man-made Drains:

There are 74 pieces of Pucca drains of which total length is 11.82 km. On the other hand, there is no Katcha drain found in the Paurashava. In the table 12.1, the length and average width of the drains have been shown for the different wards of the Paurashava. It is seen that drains are almost in every Ward. Among them maximum amount of drains are found in Ward No. 07. There is 5.62 km of drains in this ward. However, the drains are not well connected and not planned because they have been constructed for solving water logging problem based on the assessment of current and immediate need. This scenario is clear from the map 6.1 showing the total drainage network of Jibannagar Paurashava. The drainage condition, the serviceability, structural conditions, obstruction, situation, blockage are all studied in the man made drain network. The Quality of these drains are very poor and without cover. It is mostly open drains. The bad or poor drains usually had damaged side walls, surfaces with obstruction, debris, solid waste, irregular water way etc.

Table 12.2: Existing man-made drains in the Jibannagar Paurashava

Ward No.	Length (km)	Width (ft)	Percentage
1	0.91	1.5	7.70
2	0.29		2.45
3	1.63	1.34	13.79
4	0.71		6.01
5	0.13		1.10
6	0.00	1.4	0.00
7	5.62		47.55
8	2.2		18.61
9	0.33		2.79
Total	11.82		100

Source: Topographic Survey, 2009.

Map 12-1: Existing Drainage Network of Jibannagar Paurashava

The drains are poorly managed. Uncovered drains are common feature and the result of uncovering is ultimately filling and losing the drain. Necessity of covering the drains are not only from environmental and safety perspective but also it is a local need. The adjacent river is using as a part of natural drainage system. The drainage condition, serviceability, structural condition, obstruction, situation, blockage are found in those drainage networks (though a few in the Paurashava). Water drained irregularly through those networks and they are also using as solid waste dumping ground.

12.2.3 Analysis on Land Level Topographic Contour

The study has been surveyed with RTK-GPS/DGPS and Total Station as per specification for spot interval given in the ToR. For this 1071 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. For the preparation of contour map of Jibannagar Paurashava, contour interval was 0.5 m. The lowest spot height is 4.876 m PWD and the highest spot height is 14.008 m PWD. Around 76.1% of the spot heights are between 8 to 10.99 m and average height of land of the surveyed area is 10.157 m PWD.

Table 12.3: Spot Interval and Frequency

Sl. No.	Spot Unit	Value
1.	Total Spot Number	1071
2.	Mean (Meter)	10.157
3.	Maximum Height (Meter)	14.008
4.	Minimum (Meter)	4.876
5.	Standard Deviation	1.24

Source: Topographic Survey – 2010

Table 12.4: Spot Value and their Unit (Number of Spot (Z) Value and their Statistics)

Sl. No.	Spot Interval	Spot Number (Frequency)	Percentage (%)
1	< 5	4	.4
2	5 – 7.99	42	3.9
3	8 – 10.99	815	76.1
4	11 – 12.99	208	19.4
5	>13	2	.2
Total		1071	1071

Source: Topographic Survey, 2010.

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

Jibannagar Paurashava lies in the tropical monsoon climatic region and more specially, represents the climate of Chuadanga district. It has a normal rainfall of 470.3 mm in the month of July which is highest among all other months. In August, it falls to 228.8 mm; rising to 345.9 mm in September. The rainy season begins with April/May and usually ends in the end of October. The highest number of normal rainy day is in July, which is the highest rainfall month. About 19 rainy days at an average in July, followed by 15 rainy days in September, 12 in May has been the characteristics of rainy day as the data reveals.

No peak hour run off storm water discharge is found. During rainy season, rain water is being drained through the man-made drains. 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. The Bhairab River is the outfall of all natural and man-made drained water.

12.2.4.1 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 –

$$\mathbf{Q = C_s C_r I A}$$

Where:

Q	=	Design runoff flow rate (cfs)
I	=	Rainfall intensity (in/hr)
C_s	=	Storage coefficient
C_r	=	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

Map 12-2: Topographic Map of Jibannagar Paurashava

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), 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.

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

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_t	=	Travel time, minutes
V	=	Velocity, feet/second
L	=	Length, feet

Manning's roughness coefficient for channel flow is listed in Table-12.5.

Table 12.5: Manning's "N" Values for Channel Flow

Conduit Material	Manning's "n"	Conduit Material	Manning's "n"
Closed conduits		Pipes	0.011-0.015
Asbestos-cement pipe	0.011-0.015	Liner plates	0.013-0.017
Brick	0.013-0.017	Open Channels	
Cement-lined & seal coated	0.011-0.015	Lined channels	
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 (C_s): 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-12.6.

Table 12.6: 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 (C_r): 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-12.7.

Table 12.7: 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:

- The peak rate of runoff at any point is a direct function of the average rainfall for the time of concentration to that point.
- The recurrence interval of the peak discharge is same as the recurrence interval of the average rainfall intensity.
- 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.

12.3 Plan for Drainage Management and Flood Control

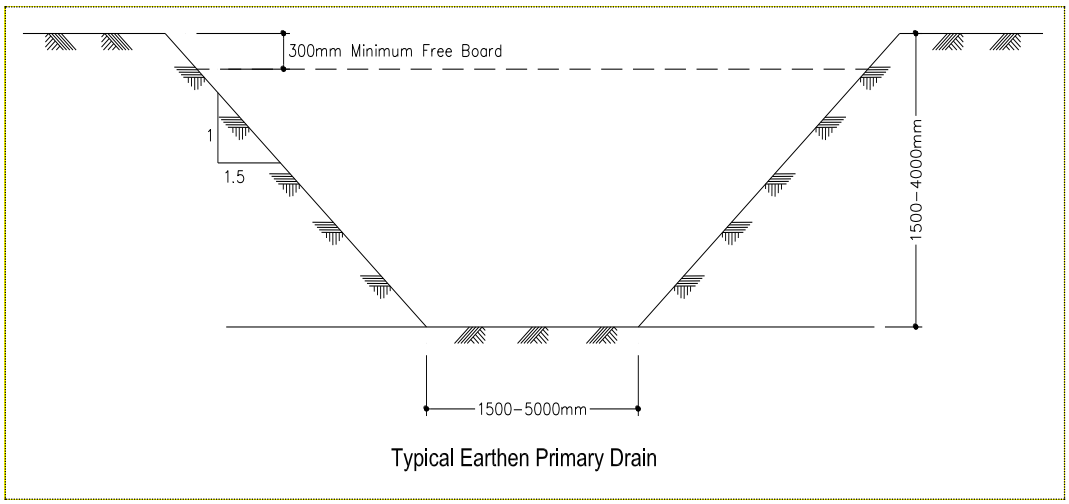
12.3.1 Plan for Drain Network Development

Drain Network Plan

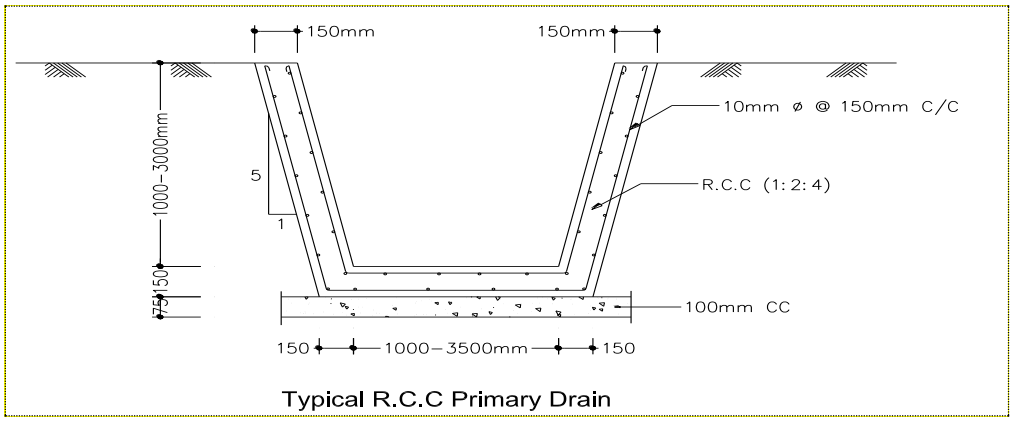
Drainage network plan is intended primarily for flood mitigation, water logging and erosion control. It comprises of the proposed new drains along with improvement of existing drainage structures, embankment and sidewall. Outfall locations of each existing and proposed drain were designated after assessing the flow direction of existing canal network and land slope. The Existing drainage system will provide a basis for a comprehensive drainage scheme in with the khal network , pucca/ katcha drains may need to be upgraded. The khals or river may need re-excavation, deepening and widening.

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. Here, the existing khals and rivers (*Bhairab River)* are playing as primary drain. The outfall points should be provided with sluice gate or pump station (if the outfall/river/khal water level is higher than the drain water level) in order to control backflow and water logging in the upstream area to protect river water pollution the outfall has to be equipped with treatment plant.

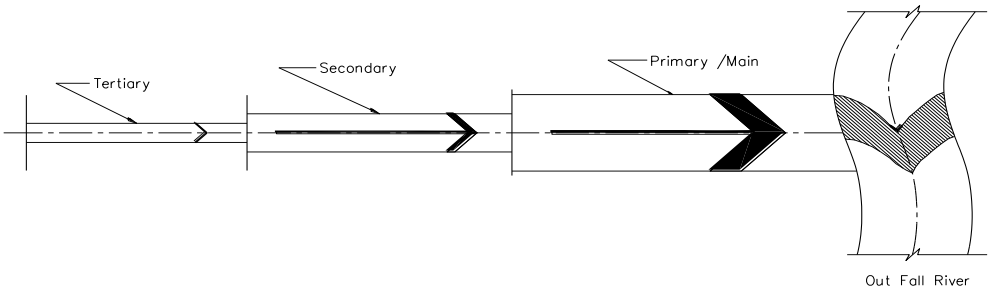


Typical Earthen Primary Drain



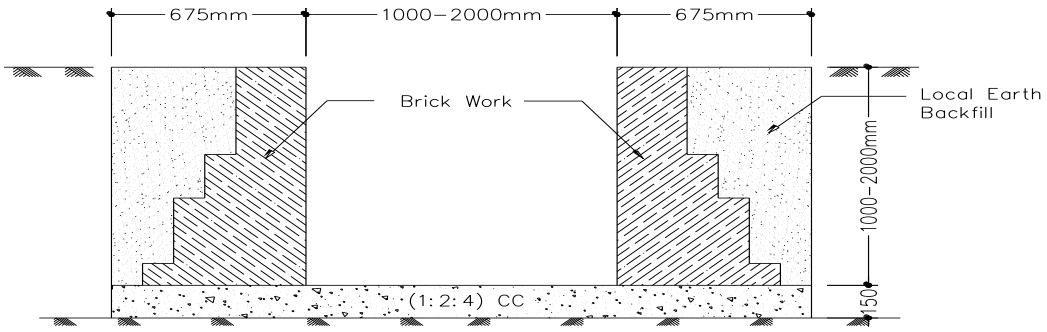
Typical R.C.C Primary Drain

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.



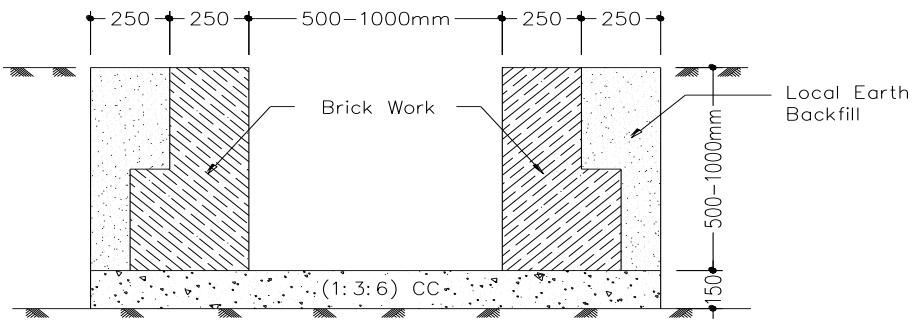
Schematic diagram of Tertiary, Secondary and Primary drains

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.



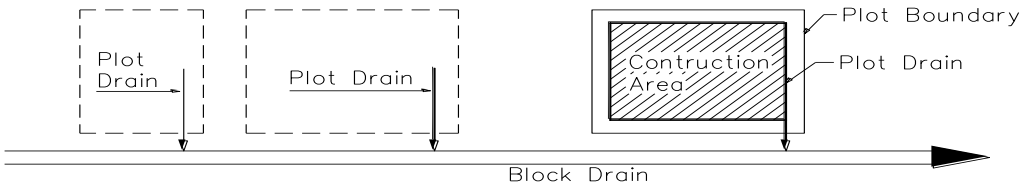
Typical Secondary Drain (Dimensions in mm)

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.



Typical Tertiary Drain (Dimensions in mm)

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.

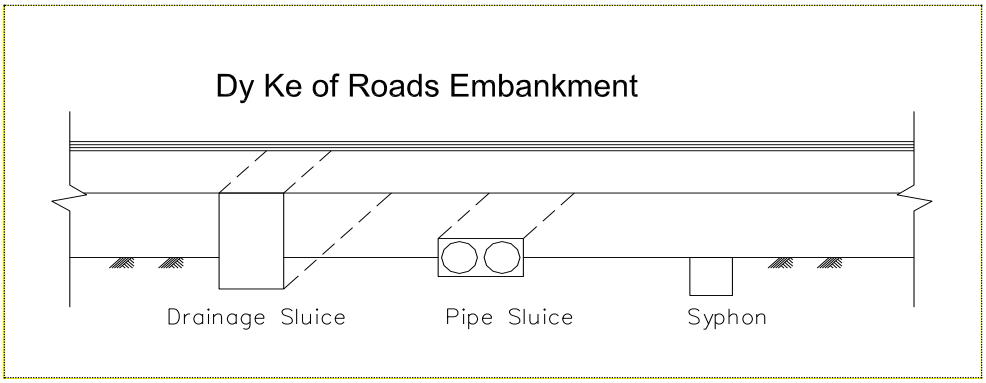


A Sketch Showing Plot Drain and Block Drain

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.

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 Jibannagar 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.

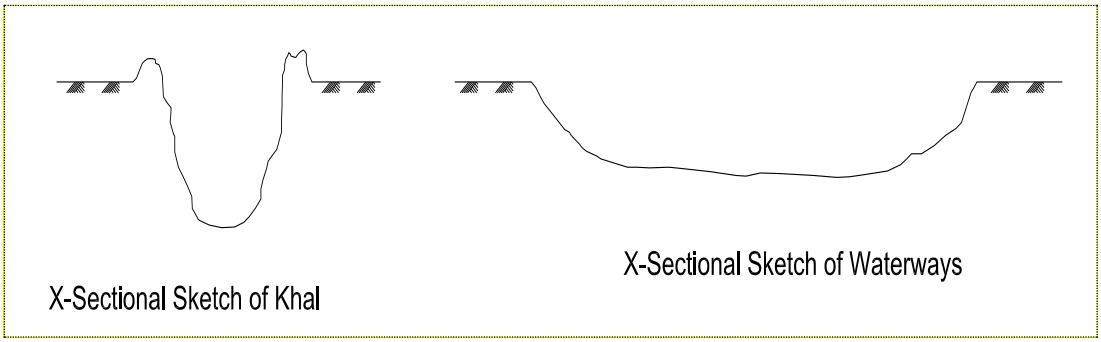
Sluice gates, Regulators and Navigation locks: These types of structures are provided on the flood control embankments. Sluice gates are functioning to vent out water from the countryside to the river. Flap gates are generally installed in the riverside so that river water cannot enter into the main 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 retention areas for storm water. Those water bodies are man-made and also natural; may be privately owned or government-owned or khas land. These water bodies function as drainage relief and source of water for emergency use, fisheries, duckeries, environment and nature preservation. For every mouza such reservoir is available. Those water bodies should not be disturbed or removed by physical interventions by fillings or other means rather should be properly maintained and preserved. And these water bodies should be preserved under “Water Body Act 2000”

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.



12.3.2 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. The Paurashava is a barren field 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 east and southeast. Slope of all drains should maintain this direction.

12.3.3.1 Proposed New Drains

For the removal of existing drainage congestion and provisioning of effective drainage system, a number of new drains have been prescribed. Those drains are a part of drainage system and another part is the natural canals and river. In the Paurashava, existing length of the drain is 11.82 km. and more 53.74 km. drain is being added as a proposal. To develop a network, all Wards have been considered and in some places emphasize has given providing on missing links rather than new. Detals of proposed drains is listed in **Annexure E**.

Table 12.8: Summery of Proposed Drain

Type of Drain	No. of Drains	Length (km)	%
Primary Drain	2	3.78	7.03
Secondary Drain	17	15.25	28.38
Tertiary Drain	150	34.71	64.59
Total	169	53.74	100.00

12.3.3.2 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 90 culverts (Box and Pipe culverts) in the Paurashava. Those culverts are located on the river, major canals and drainage channels.

Map 12-3: Drainage & Environmental Plan of Jibannagar Paurashava

Except the above infrastructure, more 4 bridges will be needed on different proposed roads as presented in the map. Three covert have been proposed to control intrusion of river water through the canals. Road cum embankment will be needed on the westernpart of the Bangshi River for prohibiting flood water intrusion from northern part.

Table 12.9: List of existing and proposed infrastructures for drainage and flood control

Name of infrastructure	Existing	Proposed (No.)
Bridge	2	4
Culvert	90	0
Sluice Gate	0	0
Flood Wall	0	0
Drainage Outfall	-	9
Flood Embankment	0	0

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

Plan Monitoring

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

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

Evaluation

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

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

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

Co-ordination

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

- Provide pre-application advice to residents, consultants and developers about landuse management issues and application procedures for the submission of development applications.

- Enforce planning and landuse management related legislation and zoning scheme regulations.
- Issue of property zoning certificates.
- Investigate and resolve landuse management complaints, illegal landuse and prosecuting contraventions.

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

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

12.5 Environmental Management Part

The plan has documented Jibannagar 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).

12.5.1 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.

12.5.2 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.

12.5.3 Existing Environmental Condition

The Paurashava is a part of greater Jessore 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.

12.5.3.1 Geo-morphology

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

To a great extent, soil of the Paurashava is uniform in character. Only variation observed is in greater or smaller admixture of sand, silt and clay in grayish and dark gray colours. Along the riversides, it is found that the percentage of sand is higher and in the areas where deltaic action has ceased is lower. The load bearing capacity of this soil is very poor.

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.

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. 10: SPT N-Values

	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

Table 12.11: 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 climate regime of the study area is that of Faridpur which is similar to that of the remainder of the country. The cool and dry winter of January – March is followed by hot and showery pre-monsoon period of April – June and then a relatively cooler but very wet monsoon season prevails during July – October. Again, a transitional humid and showery period follows up to the beginning of winter. From mid November the weather begins to be dry and relatively cool.

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

Humidity: The study area is situated in the tropical zone. Heavy rains are experienced during June – September with the movement of moist monsoon wind (April to October). From November to March, this rainfall varies between 40.1 mm to 2.5 mm. July has been the highest precipitation in comparison to September, August and June.It shoud be noted that maximum monthly rainfall depth over ten years period is recorded as 917 mm which occurred in the month of September in 2004. Rainfall in the area is very much influenced by the southwestern monsoon. Due to northwestern effect substantial rainfalls are also recorded during March to May period. Winter is generally dry with little rainfall in the months of December and January.

The weather is hot and wet from March to May with occasional storms locally known as *Kalbaishaki* (Tropical Cyclone). During October and November the weather is generally fine with some wet and stormy days. The characteristic feature of the climate of the study area is the salt laden air throughout the year, especially when it blows from the sea at regular intervals as a result of diurnal change.

Rainfall: The Jibannagar Paurashava has an average normal rainfall of 470.3 mm in the month of July which is highest among all other months. In August, it falls to 228.8 mm;

again rising to 345.9 mm in September. From November to March, this rainfall varies between 40.1 mm to 2.5 mm. July has been the highest precipitation in comparison to September, August and June.It shoud be noted that maximum monthly rainfall depth over ten years period is recorded as 917 mm which occurred in the month of September in 2004. The rainy season begins with April/May and usually ends in the end of October. The highest number of normal rainy day is in July, which is the highest rainfall month. About 19 rainy days at an average in July, followed by 15 rainy days in September, 12 in May, 14 in June and August has been the characteristics of rainy day as the data reveals.

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

Hydrology: River, Canal/ Khal and pond are the hydrological components of the Paurashava. Those components are occupying 2.78% (116.32 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.

12.5.4 Solid Waste and Garbage disposal

12.5.4.1 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 allover the municipality. People are duping 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.

12.5.4.2 Industrial waste

No harmful industrial waste available in the Paurashava.

12.5.4.3 Kitchen market waste

Kitchen market waste is being dumped on the low lands available around the market.

12.5.4.4 Clinical / Hospital Waste

There are one Upazila Health Complex, five clinics are located in Ward No. 7. 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.

12.5.5 Waste Management System

Solid waste collection and disposal in Jibannagar Paurashava is the responsibility of Paurashava authority. The logistics for collection and disposal of solid wastes include 4 sweepers and 1 garbage truck is available at the Paurashava. There is no CBO or NGO based collection system and dumping site within the Paurashava area but there is no dustbin within the Paurashava area.

Solid waste from the point of generation to the final disposal can be grouped into three functioned elements

- Waste generation & storage
- Collection
- Final disposal

- Waste Generation & Storage

Households within the area are producing 7.13 tons of domestic solid wastes per day according to Jibannagar Paurashava.

- Collection

The waste collection process is not practiced here.

- Final Disposal

The authority used to dump in low lands on the basis of land owner's interest or nearest ditches.

12.5.6 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. 95% sanitary toilet facilities are observed in every ward of Jibannagar Paurashava.

12.5.7 Industry

Major industrial/manufacturing concentration is seen in Ward No. 05 and maximum of them is rice mill. There is only one brickfield found in the Paurashava

The small industrial output produces in the local market. It is also 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 raw materials.

12.5.8 Brick Field

One brick field is available in this Paurashava.

12.5.9 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.

12.5.10 Pollutions

12.5.10.1 Water

Water is considered polluted when it is altered from the natural state in its physical condition, and 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 rainwater 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.

12.5.10.2 Air

Sources of air pollution in Jibannagar Paurashava are not much. Survey result reveals that there is only one brickfield in the Paurashava but no other noxious air polluting industries. Only source of air pollution is heavy movement of vehicles on the Road (Jessore-Chuadanga Highway) Road and the roads in and around the Market area. 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 Jibannagar Paurashava.

12.5.10.3 Sound

Sound pollution occurs during day time and mainly due to the movement of highway bus and truck on the Road (Jessore-Chuadanga Highway). The intensity of sound pollution is higher at the bazaar area and bus stand intersection which is also beside the Chuadanga-Mymensingh Highway. It is to be mentioned that many commercial establishments are developing along the highway and along the adjacent roads. So crowd and noise have also increased. Otherwise, there is no industrial noise pollution in this Paurashava.

In the Paurashava, shallow engine driven vehicles like Nochimon/Kariman are playing on roads as a mean of local transport. They are making above 400 trips throughout the Paurashava in a day. Engine generated sounds in their operational time on roads is a matter of nuisance as well as a source of noise pollution. The Paurashava authority has already noticed them to restrict their movements. Generated sounds from industry at their operational time are also a source of sound pollution existing in Jibannagar Paurashava.

12.5.10.4 Land Pollution

Any change or any action such as dumping of hazardous wastes or harmful material into any productive or potentially productive land that destroy or reduce the productivity/efficiency of the land can be considered as land pollution. In this sense, land pollution is not much except the existence of three brickfields which use huge amount of agricultural land to make brick. In the deeper layer of soil, agricultural production becomes impossible or it is reduced considerably due to decreased fertility of land. On the other hand, some hospitals and clinics dump hazardous wastes wherever that can make the soil incompatible for growing plants.

12.5.10.5 Arsenic

Arsenic contaminated Tube wells are found in almost all the Wards in the Paurashava. Also agricultural land has pollution from Chemical fertilizers dumping. No measure yet been taken for Arsenic clearance in the Paurashava. From Paurashava, no measure has yet taken except some awareness campaign.

12.5.10.6 Other Pollution

Environmental pollution is being caused by Chemical fertilizer dumping over land and its use in agriculture field. Subsequently, rain water draining away the chemicals are contaminating the water bodies in the Paurashava

12.5.11 Natural Calamities and Localized Hazards

12.5.11.1 Cyclone

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 occurred in Jibannagar Paurashava yet.

Urbanization is taking the lands of other uses to residential use. For this purpose agricultural lands and water bodies are being chosen most frequently and the lands are being converted into urban settlement. In Jibannagar Paurashava, wet lands are filled up and agricultural lands are 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.

12.5.11.2 River Erosion

River erosion is not in an alarming stage in the Paurashava.

12.5.11.3 Flood

Remarkable flood is not occurring during over the years at Jibannagar Paurashava.

12.5.11.4 Earth Quake

The Paurashava is not in earth quake zone.

12.5.11.5 Water-Logging

This Paurashava is advantageous for having a 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 2011, Jibannagar Paurashava suffers from water logging in the rainy season especially in the core area. 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.

12.5.11.6 Fire Hazard

No fire hazard record is found in the Jibannagar 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.

12.5.11.7 Other Hazards

Urbanization is taking the lands of other uses to residential use. For this purpose agricultural lands and water bodies are being chosen most frequently and the lands are being converted into urban settlement. In Jibannagar Paurashava wet lands are filled up and agricultural land is converted. This has been identified as the major man made disaster which is 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.

12.6 Plan for Environmental Management and Pollution Control

12.6.1 Proposals for Environmental Issues

In Jibannagar Paurashava, noise pollution is occurring by three wheelers and sound generated 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 hushing mills and furniture shops. Also flood water and water-logging are creating health hazards. Dysentery, diarrhea, etc. diseases occurs due to flood and Water-logging. Habitual inundations, especially in monsoon, due to external floods from canals are another threat to environment. 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 Jibannagar 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.

12.6.1.1 Solid Waste Management Plan

To solve the solid waste management problem door to door collection program should be introduced. The Paurashava authority along with NGO’s and CBO’s will collect wastes from the households and storage points daily. The van will move into the wards and

whistle to announce its arrival. The same vehicle will cover other institutions, societies, complexes. Thus the system will cover the whole town and will transfer the waste to the proposed waste transfer stations. After that, the Truck/Van of the Paurashava will dump the wastes to the proposed waste disposal ground. A minimum charge will be fixed by the Paurashava authority for waste collection to the inhabitants. At a glance the total process is shown in **Figure-12.1**.

Figure 12. 1: Overview of the Solid Waste Management Plan

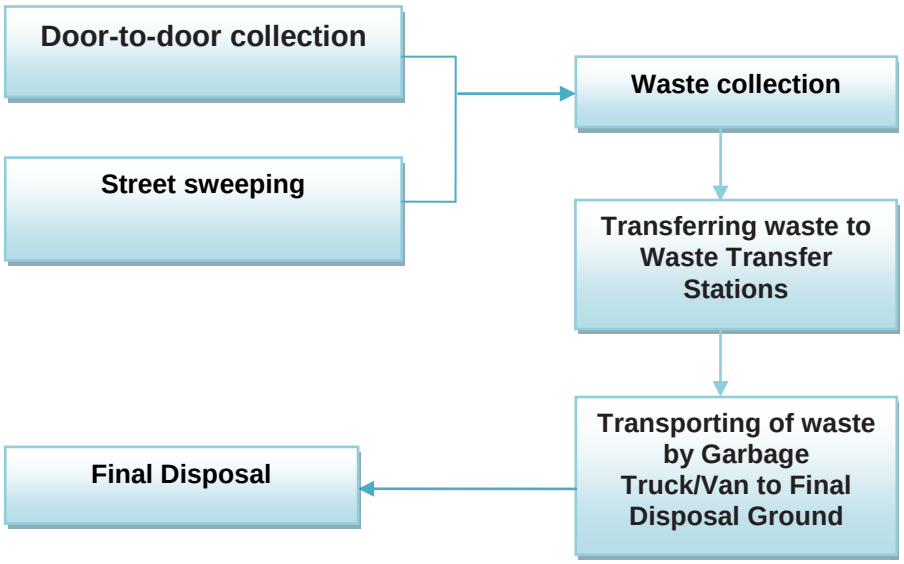


Table 12.12: New proposal for Commercial land use

Proposal	Ward No.	Mouza	Plot No.	Area (acre)
Dumping Site	Ward No. 09	Banka_038_03	4350-4358- 4365	3.14
Waste transfer station	Ward No. 02	Narayanpur_024_01	284, 285, 289, 235, 236	0.24
Waste transfer station	Ward No. 03	Jibannagar_025_01	588, 669	0.24
Waste transfer station	Ward No. 04	Jibannagar_025_02	1053	0.24
Waste transfer station	Ward No. 07	Jibannagar_025_05	4341, 4350	0.24
Waste transfer station	Ward No. 06	Jibannagar_025_06	3022	0.24

12.6.1.2 Open space, Wet-land and Relevant Features Protection Plan

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 the northern part of the Bangshi River and a number of sluice gates 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.

12.6.1.3 Pollution Protection Proposals

12.6.1.3.1 Industrial/Brickfield

Several industries are found in the Paurashava and all are agro-based industries. The industrial activities cover 29.36 acres and 0.70% land 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. Location of those industries will be rearranged and grouped in some selected areas. The steps will be taken to protect pollution through industries are:

- 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.

12.6.1.3.2 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, canal and pond water are still below the danger level of pollution. Let it should not be increased. Still people awareness is possible for reducing contamination of ground water. People may aware about the use of pesticides in agriculture field, solid waste disposal in a systematic manner and improved sanitation facilities.

12.6.1.3.3 Other Pollution

At present, control of urbanization and dumping of clinical wastes are the major concern of environment pollution of the Paurashava. Controlled urbanization according to this plan may remove the pollution through urbanization. Control on area / use density, height density and bulk density are the means of pollution protection through urbanization. A specific site within the compound of health services should be provisioned, thus pollution through clinical wastes will be controlled.

12.7 Natural Calamities and Regular Hazard Mitigation Proposals

12.7.1 Protection Plans Addressing Natural Calamities

Change in Topography and Mitigation: The main ground slope of the study area is southeast and 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, khals as lakes 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. Careful planning is necessary to reduce change of agricultural landuse and rural setup.
2. Keep water bodies and productive agricultural land free from urban development as long as possible. Vertical development may be encouraged rather than horizontal.
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 the natural channels or khals. These khals will be silted due to siltation; 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.
6. Demarcation of Right of Way to preserve the natural channels.

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 Bhairab River 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.

12.7.2 Protection Plan Addressing Regular Hazards

Most of the natural canals and water courses will be preserved and maintained. The ponds larger than 0.15 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.

12.7.3 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.

12.8 Plan Implementation Strategies

12.8.1 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 28 (1, 2 and 3) of the **Forest Act, 1927** has prescribed regulations on village forest, which is necessary for the formation of village / Paurashava forest.
4. Section 5 of the **Playfield, Open space, Garden and Natural Tank in Urban Areas Preservation Act, 2000** will be needed for the preservation of playfield, garden, open space and natural tank of the Paurashava.
5. **Water Hyacinth Act, 1936** was enacted for preventing the spread of water hyacinth in Bangladesh and for its destruction. It is said in the section 5 that, no person shall grow or cultivate water hyacinth in any garden or in any ornamental water or receptacle.

Again, according to the section 8(1) said, with a view to facilitating the discovery or destruction of water hyacinth, an Authorized Officer may, subject to any rules made under this Act, by a notice served in the prescribed manner, direct an occupier of any land, premises or water within a notified area to cause-

a) Any branches of trees or shrubs on any such land or premises which overhang the edge of any river, stream, waterway, ditch, marsh, bil, lake, tank, pond, pool or pit to be cut back and any undergrowth or jungle thereon to be removed from such edge, within a distance specified in the notice, or

b) Any vegetation appearing above the surface of any such water to be removed from the water, within such period as may be specified in the notice.

6. Section 7 of the **Water Resources Planning Ordinance, 1992** will be needed for the development of water resources available in the Paurashava.

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

Plan Monitoring

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

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

Evaluation

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

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

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

Co-ordination

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

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

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

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

CHAPTER-13

PLAN FOR URBAN SERVICES

13.1 Introduction

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.

During the year 1984 to 2003, Urban Development Directorate (UDD) was prepared a series of Landuse/Master Plans for Upazila and Zila Shahars of Bangladesh as a part of decentralization effort of the government. Under that project, the Jibannagar Upazila Shahar was planned but the project area considered in the plan was far away from the planning area considered in the Paurashava Town Infrastructure Development Project.

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. All the 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: Piped water supply is not available in the Paurashava. 100% of the households are using hand tube wells as main source of water supply for drinking and cooking purpose. From a study of DPHE (30 September, 2002) it is known 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. In the wet season ground water table found within 15-20 ft and in the dry season it goes down to 35-50ft

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 722. High voltage towers are distributed evenly and transformers are used to transform the high voltage to low voltage for distributing to the clients.

Telecommunication: Telephone connection is available in Ward No. 02, 04 and 07. These connections are given by telephone pole but electric poles are also used for this purpose. There are altogether 11 telephone poles that are found in only Ward No. 02, 04 and 07. There are also mobile phone networks of Grameenphone, Robi, Citycell, Banglalink & Teletalk which cover the entire study area.

Projection

The projection of utility service depends on the growth of population and the need assessment of the Paurashava inhabitants. After population projection it is found that, population of this area will be 27882 (according to the linear method) that belong to the trend line method in the year 2021 (see table 13.1). Projection on utility services also depends on present condition urban services and facilities 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 Services and future need

Facility	Standard	Existing Facility(acre)	Standard of Proposed Facility (acre) (2031)
Drainage	1.00 acre /20,000 population	1.48	1.35
Water supply	1.00 acre /20,000 population	-	1.35
Gas	1.00 acre /20,000 population	-	1.35
Solid waste disposal site	4 –10 acres/Upazila HQ	-	5.00
Waste transfer station	0.25 acres/per waste transfer station	-	0.00
Electric sub-station	1.00 acre/20,000 population	-	2.16
Telephone exchange	0.5 acre/20,000 population	-	0.67
Fuel Station	0.5 acre/20,000 population	-	0.67
Total		-	12.55

Source: Project Management Office 2010.

13.3 Proposals for Addressing Urban Services and Implementation Strategies

Water supply: Location of **water treatment plant** may be on a large plot (on 1.35 acres of land) with good access, close to source of water. It should be located upstream of any polluting development. **Desalination plant** may be located on large plot close to the river, upstream from any polluting activities. **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 1.35 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: Electricity power station may be located on a large plot out of Paurashava with good accessibility. About **132/33KV switching station** may be established on a large plot (on 1.35 acres of land) on the edge of the Paurashava with good accessibility. About **33/11KV switching stations** may be established on medium sized plots in a small number of key locations throughout the Paurashava. **Electricity sub-station** may be

constructed on small plots throughout the Paurashava. These can be accommodated on the plots they serve (industries) or in road corridors.

Telephone: An additional **telephone exchange** is unnecessary for the Paurashava. If required, it will need a medium size plot (on 0.67 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.

Table 13.2: Proposed Utility Services

Proposal	Ward No.	Mouza	Plot No.	Area (acre)
Overhead Tank	Ward No. 06	Jibannagar_025_07	5806	0.15
Overhead Tank	Ward No. 06	Jibannagar_025_04	2559	0.18
Public Toilet	Ward No. 03	Jibannagar_025_01	241, 447	0.076
Public Toilet	Ward No. 09	Banka_038_03	4147	0.11
Public Toilet	Ward No. 06	Jibannagar_025_06	3263, 3267	0.11
Public Toilet	Ward No. 04	Jibannagar_025_03	1879	0.13
Slaughter House	Ward No. 07	Jibannagar_025_05	4397-4398	0.09
Slaughter House	Ward No. 09	Tentulia_039_01	238	0.11
Dumping Site	Ward No. 09	Banka_038_03	4350-4358- 4365	3.14
Waste transfer station	Ward No. 02	Narayanpur_024_01	284, 285, 289, 235, 236	0.24
Waste transfer station	Ward No. 03	Jibannagar_025_01	588, 669	0.24
Waste transfer station	Ward No. 04	Jibannagar_025_02	1053	0.24
Waste transfer station	Ward No. 07	Jibannagar_025_05	4341, 4350	0.24
Waste transfer station	Ward No. 06	Jibannagar_025_06	3022	0.24

13.4 Regulations to Address the Proposals

Local Government (Paurashava) Ordinance, 2009 (Ordinance No. XLXVIII of 2009) was enacted in 6th October 2009. According to the 2nd 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. 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 sewerage facilities may be provided by the Paurashava and Directorate of Public Health Engineering (DPHE). According to the 2nd Schedule, Sl. No. 12, of the Local Government (Paurashava) Ordinance, 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 heal 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 20th May 1944. According to the **s**ection 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 12th 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 30th 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.

Map 13.1: Proposed Urban Services of Jibannagar Paurashava

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

Plan Monitoring

The Urban 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 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, 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

14.1 Introduction

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

14.1.1 Background

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.

14.1.2 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.

14.1.3 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, especially agro-based industries.

- Safe yet faster connectivity.
- Develop to serve the surrounding hinterlands.

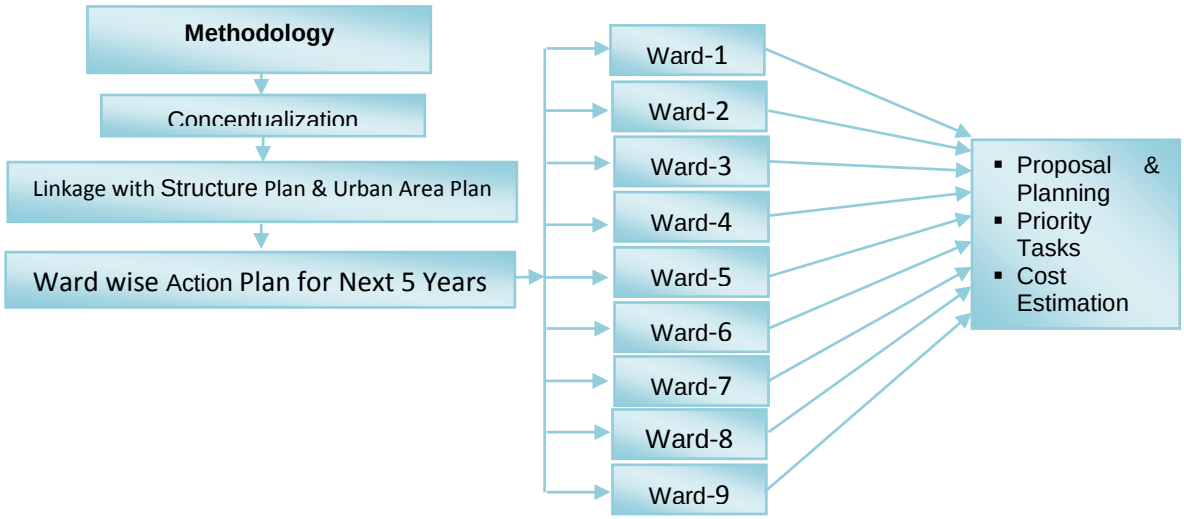
14.1.4 Approach and Methodology

The Ward Action Plan will be guided by the policies and proposals of upper level plans that are structure plan and urban area plan. Ward Action Plan provides guidance for development where action is expected in the term and covers individual parts of a city within a variable time frame. It comprises high priority projects and programs that can be implemented in a relatively short time period, in an intensive manner.

Ward Action Plan has been directed to the situations of local area and linked to the specific problems and issues of the area have been identified after discussion with and participatory process of all the stakeholders and beneficiaries of envisaged development in the area. A program of prospective facilities and uses has been detailed out indicating target populations, service levels, financing mechanism and implementations schedules.

The methodology could be illustrated through tri-step process for the assessment of Ward Action Plan **(Figure-14.1)**. These three steps are:

Figure 14.1: Methodology of Ward Action Plan Preparation



The first step of the methodology of Ward Action Plan is to conceptualize the content and background of the plan. In the next step, the linkage with Structure Plan & Urban Area Plan is identified. The final phase of the study is to adopt ward action plan in details. The proposal and planning, priority tasks and cost estimation are incorporated here to get a pictorial view of the Ward Action Plan.

14.2 Derivation of Ward Action Plan

14.2.1 Revisit Structure Plan

All the studies carried out at varying point of time converged to the same conclusion that the vital contribution of the Paurashava areas are bounded by Bangshi River as main flood flow zone allowing excess flood water to pass over it during rainy season, must not be obstructed by any development. Despite this unanimous expert cautions, the area will experience a tremendous development pressure. The Consultant has tried to work out an effective strategy to address the later with acceptably low obstruction to the flood water to pass through. The strategies are as follows under some basic heads:

Drainage

- Non-continuous smaller rural settlements above flood level surrounded by ample low lying areas (agriculture, sub-flood flow, main flood flow, etc.) allowing uninterrupted flow of water to pass through.
- Minimize obstruction of flood water as is practicable.
- Appropriate connectivity by roads having sufficient openings to ensure needful flow of water across them as well as uninterrupted traditional water-based connectivity by keeping appropriate navigation clearance at the bridges. This would help to maintain the biodiversity of the area and contribute to sustainable environment in turn.

Residential Development

- Residential Landuse Zone is based on the potentiality, trend and opportunity.
- Adaptation of neighbourhood concept for new residential developments and for need assessment of community facilities.
- Prohibition of through traffic and heavy vehicles within the neighbourhoods.
- Provide adequate safe and easy to move footpaths.
- Ensure community facilities and services of appropriate scale at neighbourhood level.

Industrial Development

- Ensure provision of central effluent treatment plant in case of industrial clusters.
- Ensure own treatment plant in case of individual facilities.
- Prohibit high hazard industries within the residential area.
- Relocate industries from predominantly residential zones in phases.
- Provide essential support facilities for effective functioning of the industries.

Mixed-Use Development

- Relocate noxious and heavy industries [red category as per DoE] to Heavy Industrial Area within as soon as practicable.
- Ensure adequate utility services to ensure uninterrupted production.

- Allow the red industries to maintain their status under strict abiding conditions until shifting.
- Ensure adequate safety and security of the people especially of the families residing in such mixed-areas.
- Provide sufficient quantity of wide, easy to use and safe footpaths.
- Provide Zebra Crossing at road crossings to ease the lives of major portion of low-income workers likely to traverse on foot to reach their likely abode in the busy area.

Transport and Communication

- Provide safe, adequate and comfortable pedestrian ways.
- Provide appropriate and effective public transport routes with sufficient number of quality public transport to carry passenger.
- Grade separation of National and Regional Highways from the local roads, latter being at grade and other two above grades.

Flood Flow Zones

- Strictly preserve the riverfront area as per the area demarcated by the Water Development Board.
- Promote agricultural and passive recreational use of the area during dry season.

Non-urban Areas

- Promote traditional waterways (if any) in the low-lying areas by constructing sub-merged road for dry season connectivity.
- Strictly preserve agriculture land from conversion into non-agricultural use.
- Promote rural characteristics in the isolated homesteads keeping mandatory buffer to make way for the flood water intrusion.

Water body and Open Spaces

- Strictly protect canal networks providing the missing links.
- Make provision for open spaces and water body at the neighbourhood level.
- Strictly protect the river fronts and open it for the dwellers as a passive recreation.
- Make town-scale open space with easy accessibility especially for people of densely populated areas with meager scope for open space.

Amenities and Community Facilities

- Consider neighbourhood concept of residential development for estimating community facilities and amenities requirement.
- Prohibit construction of religious structure unless built on its own land.
- Relocate unauthorized religious structures from road Right of Way to safeguard greater interest of the people specially the Paurashava dwellers.

- Close/relocate existing schools with highly inadequate class rooms, play field and essential facilities and gradually replace with standard considered in the Urban Area Plan.
- Evacuate unauthorized structures and uses from road's Right of Way to safeguard greater interest of the people specially the Paurashava dwellers.

Solid Waste Management

- No more conventional disposal through dumping.
- Solid Waste Processing to ensure recycling.
- Conversion of traditional solid waste in to fertilizer.
- Door to door collection instead of road side bin disposal.
- Disposal of hospital and other hazardous waste in the proposed disposal site.

Water Supply

- Harness surface water source instead of ground water.
- Explore possibility of processing Padma River water.
- Continuous monitoring of tubewell water to check arsenic contamination.
- Create scope of rain water harvesting.

Electricity

- Priority for supplying electricity will be given to industry and irrigation pumps.
- Gradually coverage of the whole Paurashava with the increase of power generation.
- Gradually electricity network will be concealed through underground system.
- Explore the possibility of using renewable energy source in order to minimize cost of distribution network.
- Introduce solar energy in every establishment.

Environmental Management

- Grouping of hazardous industries.
- Establishment of Common Effluent Treatment Plant.
- Adoption of neighbourhood concepts for new residential development.
- Generate waste water treatment plant.

Supporting the Surrounding Hinterland

- Easy accessibility from the surrounding hinterlands especially growth centers.
- Ensure facilities such as cold storage, wholesale/retail market facilities for needful commodities (fertilizer, insecticide, agro-machineries, etc.) and shopping centers of regional standards to support population living in the surrounding hinterlands.

Conservation of Monument and Heritage

- Identify and record all historical sites and monuments.
- Conserve and restore with standard procedure all historical sites and monuments.
- Evict illegal occupants of the historical sites.

Gas Supply

- Explore possibility of use of gas in cylinder for domestic purposes.

14.2.2 Prioritization

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

14.3 Ward-wise Action Plan for Next Five Years

The Ward Action Plan is prepared for each of the nine Wards and is presented in order of their serial number. The Ward Action Plans are a series of detailed spatial development plans of different use and facilities. The plans comprise maps of appropriate scale supported by explanatory report. The Ward Action Plans have been formulated for execution within a period of 5 years. They do not initially cover the entire Structure Plan Area. While all sub-areas will eventually require Ward Action Plan, only priority areas are to be dealt with initially. The aim of a Ward Action Plan is to prevent haphazard urban development and livable environment.

14.3.1 Action Plan for Ward No. 01

Proposals and Plans for Ward No. 01

Ward No. 01 is located at the South-west part of Jibannagar Paurashava. The area of the Ward is 490.80 acres. After reviewing and commensuration the policies and proposals of Structure Plan and Urban Area Plan the following proposals are made in the Action Plan of Ward No. 01 for implementation within next 5(five) years up to 2016. Landuse Plan & Utility Services Plan for Ward No. 01 is shows in **Map-14.1** & **Map-14.2** respectively.

Map 14.1: Landuse Plan for Ward Action Plan of Ward No 01

Map 14.2: Drainage and Utility Services Plan of Ward No 01

Table 14.1: Proposal of Roads for Ward No. 01

Road Type	ID	Length (km)	Proposed RoW
Secondary Road	SR-01	4.44	60ft
Tertiary Road	TR-01	0.19	20ft
	TR-02	0.13	20ft
	TR-03	0.21	20ft
	TR-04	0.29	20ft
	TR-05	0.14	20ft
	TR-06	0.22	30ft
	TR-07	0.16	20ft
	TR-08	0.17	20ft
	TR-09	0.02	20ft
	TR-174	1.28	40ft

Table 14.2: Proposal of Drains for Ward No. 01

Drain Type	ID	Length (km)	Av. Width (m)	Outfall
Secondary Drain	SD-01	2.41	0.76 m	Bhairab River
Tertiary Drain	TD-01	0.31	0.46 m	Bhairab River
	TD-02	0.21	0.46 m	Bhairab River

Table 14.3: Proposal of Development Proposals for Ward No. 01

Name of Proposal	ID	Location	Area (acre)
Neighborhood Park	NP-01	Near Ayub Ali Hafijia Madrasa	1.04
Ward Center	WC-01	Adjacent to SR-02	1.097

Priority Task

The following priorities has identified after the Public consultation meeting at Jibannagar Paurashava.

Table 14.4: Priority Tasks for Ward No. 01

Priority-1		Priority-2		Priority-3	
Type	ID	Type	ID	Type	ID
Road	-	Road	SR-01	Road	TR-01 to TR-09, TR-174
Drain	SD-01	Drain	-	Drain	TD-01, TD-02
Dev. Proposal		Dev. Proposal	WC-01	Dev. Proposal	NP-01

14.3.2 Action Plan for Ward No. 02

Proposals and Plans for Ward No. 02

Ward No. 02 is located at the South-west part (adjacent to ward No.01) of Jibannagar Paurashava. The area of the Ward is 623.63 acres. After reviewing and commensuration the policies and proposals of Structure Plan and Urban Area Plan the following proposals are made in the Action Plan of Ward No. 02 for implementation within next 5(five) years up to 2016. Landuse Plan & Utility Services Plan for Ward No. 02 is shows in **Map-14.3** & **Map-14.4** respectively.

Table 14.5: Proposal of Roads for Ward No. 02

Road Type	ID	Length (km)	Proposed RoW
Primary Road	PR-01	5.23	80ft
Secondary Road	SR-01	4.44	60ft
	SR-02	1.98	50ft
	TR-10	0.37	30ft
	TR-11	0.27	20ft
	TR-12	1.23	30ft

Tertiary Road	TR-13	0.34	20ft
	TR-14	0.28	20ft
	TR-15	0.25	20ft
	TR-16	0.15	20ft
	TR-17	0.09	20ft
	TR-18	0.08	20ft
	TR-19	0.58	30ft
	TR-20	0.24	20ft
	TR-21	0.25	20ft
	TR-22	0.28	30ft
	TR-23	0.29	20ft
	TR-24	0.19	20ft
	TR-25	0.10	20ft
	TR-26	0.19	20ft
	TR-27	0.13	20ft
	TR-28	0.11	20ft
	TR-29	0.33	30ft
	TR-30	0.28	20ft
	TR-171	0.46	40ft
	TR-172	0.80	40ft
	TR-173	1.88	40ft
	TR-174	1.28	40ft

Table 14.6: Proposal of Drains for Ward No. 02

Drain Type	ID	Length (km)	Av. Width (m)	Outfall
Secondary Drain	SD-01	2.41	0.76 m	Bhairab River
	SD-02	1.08	0.76 m	Bhairab River
	SD-03	1.85	0.76 m	Bhairab River
Tertiary Drain	TD-03	0.58	0.46 m	Bhairab River
	TD-04	0.61	0.46 m	Bhairab River
	TD-05	0.24	0.46 m	Bhairab River
	TD-06	0.27	0.46 m	Bhairab River
	TD-07	0.15	0.46 m	Bhairab River
	TD-08	0.32	0.46 m	Bhairab River
	TD-09	0.08	0.46 m	Bhairab River
	TD-10	0.08	0.46 m	Bhairab River
	TD-12	0.50	0.46 m	Bhairab River
	TD-13	0.36	0.46 m	Bhairab River
	TD-14	0.26	0.46 m	Bhairab River
	TD-15	0.27	0.46 m	Bhairab River
	TD-16	0.28	0.46 m	Bhairab River
	TD-17	0.17	0.46 m	Bhairab River
	TD-18	0.10	0.46 m	Bhairab River
	TD-19	0.16	0.46 m	Bhairab River
	TD-20	0.12	0.46 m	Bhairab River
	TD-21	0.09	0.46 m	Bhairab River

Map 14.3: Landuse Plan for Ward Action Plan of Ward No 02

Map 14.4: Drainage and Utility Services Plan of Ward No 02

Table 14.7: Proposal of Development Proposals for Ward No. 02

Name of Proposal	ID	Location	Area (acre)
Neighborhood Market	NM-04	120m east from narayanpur jame mosue	0.93
Primary School	PS-08	Near narayanpur jame mosque	0.89
High School	HS-02	Near Jibannagar Thana Reg. Non Govt. Primary School	2.78
Neighborhood Park	NP-02	50m west from proposed ward center	1.34
Clinic	CL	Adjacent to south end of Ward No. 03	2.56
Waste transfer station	WTS-01	Adjacent to TR-22	0.24
Ward Center	WC-02	145m north from narayanpur jame mosque	0.592

Priority Task

The following priorities has identified after the Public consultation meeting at Jibannagar Paurashava.

Table 14.8: Priority Tasks for Ward No. 02

Priority-1		Priority-2		Priority-3	
Type	ID	Type	ID	Type	ID
Road	TR-10, TR-15, TR-24, TR-30	Road	SR-01, SR-02, TR-13, TR-14, Tr-19, TR-20, TR-22, TR-23, TR-171, TR-173	Road	PR-01, TR-11, Tr-12, TR-16 to TR-18, TR-21, TR-25 to TR-29, TR-172, TR-174
Drain	SD-01, SD-03, TD-16, TD-17, TD-19, TD-20	Drain	SD-02, TD-12 to TD-15, TD-18, TD-21	Drain	TD-03 to TD-10
Dev. Proposal	CL, WTS-01,	Dev. Proposal	NM-04 , WC-02	Dev. Proposal	PS-08, HS-02, NP-02

14.3.3 Action Plan for Ward No. 03

Proposals and Plans for Ward No. 03

Ward No. 03 is located at the North-west part of Jibannagar Paurashava. The area of the Ward is 495.41 acres. After reviewing and commensuration the policies and proposals of Structure Plan and Urban Area Plan the following proposals are made in the Action Plan of Ward No. 03 for implementation within next 5(five) years up to 2016. Landuse Plan & Utility Services Plan for Ward No. 03 is shows in **Map-14.5** & **Map-14.6** respectively.

Table 14.9: Proposal of Roads for Ward No. 03

Road Type	ID	Length (km)	Proposed RoW
Primary Road	PR-02	4.82	120ft
	PR-03	5.97	80ft
Secondary Road	SR-03	1.37	50ft
	SR-11	1.73	60ft
Tertiary Road	TR-31	0.20	30ft
	TR-32	0.30	30ft
	TR-33	0.34	30ft
	TR-34	0.51	30ft
	TR-35	1.16	30ft
	TR-36	0.56	30ft
	TR-37	0.20	20ft
	TR-38	0.30	30ft
	TR-39	0.79	30ft
	TR-40	0.08	20ft
	TR-41	0.04	20ft

Road Type	ID	Length (km)	Proposed RoW
	TR-42	0.08	20ft
	TR-43	0.34	20ft
	TR-44	0.45	30ft
	TR-45	0.17	20ft
	TR-46	0.34	30ft
	TR-47	0.67	30ft
	TR-48	0.19	20ft
	TR-49	0.09	20ft
	TR-50	0.10	20ft
	TR-51	0.19	20ft

Table 14.10: Proposal of Drains for Ward No. 03

Drain Type	ID	Length (km)	Av. Width (m)	Outfall
Secondary Drain	SD-03	1.85	0.76 m	Bhairab River
	SD-04	2.00	0.76 m	Bhairab River
Tertiary Drain	TD-22	0.44	0.46 m	Bhairab River
	TD-23	0.26	0.46 m	Bhairab River
	TD-24	0.52	0.46 m	Bhairab River
	TD-25	0.70	0.46 m	Bhairab River
	TD-27	0.14	0.46 m	Bhairab River
	TD-28	0.15	0.46 m	Bhairab River
	TD-29	0.11	0.46 m	Bhairab River
	TD-30	0.20	0.46 m	Bhairab River
	TD-31	0.36	0.46 m	Bhairab River
	TD-32	0.33	0.46 m	Bhairab River
	TD-33	0.19	0.46 m	Bhairab River
	TD-34	0.18	0.46 m	Bhairab River
	TD-35	0.09	0.46 m	Bhairab River
	TD-36	0.31	0.46 m	Bhairab River
	TD-37	0.22	0.46 m	Bhairab River
	TD-38	0.23	0.46 m	Bhairab River
	TD-39	0.20	0.46 m	Bhairab River
	TD-40	0.08	0.46 m	Bhairab River
	TD-41	0.18	0.46 m	Bhairab River
	TD-42	0.16	0.46 m	Bhairab River
	TD-43	0.23	0.46 m	Bhairab River

Table 14.11: Proposal of Development Proposals for Ward No. 03

Name of Proposal	ID	Location	Area (acre)
High School	HS-01	At west of Narayanpur Reg. Non Govt. Primary School	2.44
College	C-02	Adjacent to Ashraful Model Academy	4.66
Truck Terminal	TT	Adjacent to proposed bypass	3.77
Tempu Stand 2	TS-02	Adjacent to Bazar road	0.36
Playground	PG	Beside jibannagar paura KG scholl	3.36
Public Toilet	PT-01	Adjacent to proposed truck terminal	0.076
Waste transfer station	WTS-02	At the intersection of TR-47 & TR-48	0.24
Community Center	CC	Adjacent to south boundary of upazila complex	1.31
Ward Center	WC-03	Adjacent to jibannagar paura KG scholl	1.553

Map 14. 5: Landuse Plan for Ward Action Plan of Ward No 03

Map 14. 6: Drainage and Utility Services Plan of Ward No 03

Priority Task

The following priorities has identified after the Public consultation meeting at Jibannagar Paurashava.

Table 14.12: Priority Tasks for Ward No. 03

Priority-1		Priority-2		Priority-3	
Type	ID	Type	ID	Type	ID
Road	PR-02, SR-11	Road	SR-03, TR-51	Road	PR-03, TR-31 toTR-50
Drain	SD-03, SD-04	Drain	TD-22, TD-23, TD-31, TD-33, TD-35, TD-42, TD-43	Drain	TD-24 to TD-30, TD-32, TD-34, TD-36, TD-41
Dev. Proposal	TS-02, PG, WTS-02	Dev. Proposal	HS-01, TT, PT-01, WC-03	Dev. Proposal	C-02, CC

14.3.4 Action Plan for Ward No. 04

Proposals and Plans for Ward No. 04

Ward No. 04 is located in the middle of Jibannagar Paurashava. The area of the Ward is 246.26 acres. After reviewing and commensuration the policies and proposals of Structure Plan and Urban Area Plan the following proposals are made in the Action Plan of Ward No. 04 for implementation within next 5(five) years up to 2016. Landuse Plan & Utility Services Plan for Ward No. 04 is shows in **Map-14.7** & **Map-14.8** respectively.

Table 14.13: Proposal of Roads for Ward No. 04

Road Type	ID	Length (km)	Proposed RoW
Primary Road	PR-01	5.23	80ft
	PR-02	4.82	120ft
Secondary Road	SR-03	1.37	50ft
	SR-11	1.73	60ft
Tertiary Road	TR-52	0.30	20ft
	TR-53	0.44	30ft
	TR-54	0.30	20ft
	TR-55	0.14	20ft
	TR-56	0.05	20ft
	TR-57	0.20	20ft
	TR-58	0.13	30ft
	TR-59	0.18	20ft
	TR-60	0.13	20ft
	TR-61	0.20	30ft
	TR-62	0.06	20ft
	TR-63	0.02	20ft
	TR-64	0.02	20ft
	TR-65	0.60	30ft
	TR-66	0.14	30ft
	TR-67	0.20	30ft
	TR-167	0.69	40ft
	TR-168	0.40	40ft
	TR-171	0.46	40ft
	TR-172	0.80	40ft

Table 14.14: Proposal of Drains for Ward No. 04

Drain Type	ID	Length (km)	Av. Width (m)	Outfall
Secondary Drain	SD-02	1.08	0.76 m	Bhairab River
	SD-03	1.85	0.76 m	Bhairab River
	SD-04	2.00	0.76 m	Bhairab River
	SD-05	0.79	0.76 m	Bhairab River
Tertiary Drain	TD-44	0.41	0.46 m	Bhairab River
	TD-45	0.45	0.46 m	Bhairab River
	TD-46	0.27	0.46 m	Bhairab River
	TD-47	0.66	0.46 m	Bhairab River
	TD-48	0.13	0.46 m	Bhairab River
	TD-49	0.40	0.46 m	Bhairab River
	TD-50	0.12	0.46 m	Bhairab River
	TD-51	0.17	0.46 m	Bhairab River
	TD-52	0.04	0.46 m	Bhairab River
	TD-53	0.29	0.46 m	Bhairab River
	TD-54	0.11	0.46 m	Bhairab River
	TD-55	0.17	0.46 m	Bhairab River
	TD-56	0.22	0.46 m	Bhairab River
	TD-57	0.19	0.46 m	Bhairab River
	TD-58	0.18	0.46 m	Bhairab River
	TD-59	0.11	0.46 m	Bhairab River
	TD-60	0.18	0.46 m	Bhairab River
	TD-61	0.17	0.46 m	Bhairab River

Table 14. 15: Proposal of Development Proposals for Ward No. 04

Name of Proposal	ID	Location	Area (acre)
Resettlement Area	RZ	Beside Narayanpur Reg. Non Govt. Primary School	20.38
Neighborhood Market	NM-03	Adjacent to thana road	0.73
Primary School	PS-02	Adjacent to TR-52	1.02
Primary School	PS-06	Adjacent to SR-08	0.54
College	C-01	Adjacent to Narayanpur Reg. Non Govt. Primary School	3.78
Neighborhood Park	NP-03	Baside the river	1.57
Indoor Stadium	IS	At the middle west edge of ward No. 04	2.10
Public Toilet	PT-04	Adjacent to upazila complex	0.13
Waste transfer station	WTS-03	Adjacent to SR-08	0.24
Auditorium	AU	Near upazila complex	0.43
Ward Center	WC-04	130m north from somobay somity at the west edge of ward boundary	0.754

Priority Task

The following priorities has identified after the Public consultation meeting at Jibannagar Paurashava.

Table 14.16: Priority Tasks for Ward No. 04

Priority-1		Priority-2		Priority-3	
Type	ID	Type	ID	Type	ID
Road	PR-02, SR-11, TR-58, TR-168	Road	SR-03, TR-53, TR-60, TR-171	Road	PR-01, TR-52, TR-54 to TR-57, TR-59, TR-61 TR 67, TR-167, TR172
Drain	SD-03, SD-04, TD-46	Drain	SD-02, TD-47, TD-50, TD-51, TD-53 to TD-61	Drain	TD-01, TD-02
Dev. Proposal	C-01, WTS-03	Dev. Proposal	NM-03, PS-06, NP-03, PT-04, WTS-04	Dev. Proposal	RZ, PS-02, IS, AU

Map 14.7: Landuse Plan for Ward Action Plan of Ward No 04

Map 14.8: Drainage and Utility Services Plan of Ward No 04

14.3.5 Action Plan for Ward No. 05

Proposals and Plans for Ward No. 05

Ward No. 05 is located at the North edge of Jibannagar Paurashava. The area of the Ward is 193.39 acres. After reviewing and commensuration the policies and proposals of Structure Plan and Urban Area Plan the following proposals are made in the Action Plan of Ward No. 05 for implementation within next 5(five) years up to 2016. Landuse Plan & Utility Services Plan for Ward No. 05 is shows in **Map-14.9** & **Map-14.10** respectively.

Table 14.17: Proposal of Roads for Ward No. 05

Road Type	ID	Length (km)	Proposed RoW
Primary Road	PR-03	5.97	80ft
	PR-04	4.80	120ft
Secondary Road	SR-04	1.41	50ft
Tertiary Road	TR-68	1.15	30ft
	TR-69	0.56	30ft
	TR-70	0.24	30ft
	TR-71	0.18	20ft
	TR-72	0.64	30ft
	TR-73	1.00	30ft
	TR-74	0.08	30ft

Table 14.18: Proposal of Drains for Ward No. 05

Drain Type	ID	Length (km)	Av. Width (m)	Outfall
Secondary Drain	SD-06	0.79	0.76 m	Bhairab River
	SD-07	0.81	0.76 m	Bhairab River
	SD-08	0.50	0.76 m	Bhairab River
	SD-09	0.44	0.76 m	Bhairab River
Tertiary Drain	TD-43	0.23	0.46 m	Bhairab River
	TD-62	0.22	0.46 m	Bhairab River
	TD-63	0.11	0.46 m	Bhairab River
	TD-64	0.11	0.46 m	Bhairab River
	TD-65	0.30	0.46 m	Bhairab River
	TD-66	0.19	0.46 m	Bhairab River
	TD-67	0.17	0.46 m	Bhairab River

Table 14.19: Proposal of Development Proposals for Ward No. 05

Name of Proposal	ID	Location	Area (acre)
General Industrial Area	GIA	In the middle of Ward No. 05	15.02
Primary School	PS-01	Adjacent to SR-12	1.11
Neighborhood Market	NP-09	Adjacent to proposed ward center	1.28
Ward Center	WC-05	At the north-westv part of Ward No. 05	0.585

Priority Task

The following priorities has identified after the Public consultation meeting at Jibannagar Paurashava.

Table 14.20: Priority Tasks for Ward No. 05

Priority-1		Priority-2		Priority-3	
Type	ID	Type	ID	Type	ID
Road	-	Road	PR-04, SR-04, TR-68 to TR-70, TR-74	Road	PR-03, TR-71 to TR-73
Drain	-	Drain	-	Drain	SD-06 to SD-09, TD-43, TD-62 to TD-67
Dev. Proposal		Dev. Proposal	GIA, PS-01, WC-05	Dev. Proposal	NP-09

Map 14. 9: Landuse Plan for Ward Action Plan of Ward No 05

Map 14. 10: Drainage and Utility Services Plan of Ward No 05

14.3.6 Action Plan for Ward No. 06

Proposals and Plans for Ward No. 06

Ward No. 06 is located in the middle of Jibannagar Paurashava. The area of the Ward is 314.11 acres. After reviewing and commensuration the policies and proposals of Structure Plan and Urban Area Plan the following proposals are made in the Action Plan of Ward No. 06 for implementation within next 5(five) years up to 2016. Landuse Plan & Utility Services Plan for Ward No. 06 is shows in **Map-14.11** & **Map-14.12** respectively.

Table 14. 21: Proposal of Roads for Ward No. 06

Road Type	ID	Length (km)	Proposed RoW
Primary Road	PR-02	4.82	120ft
Tertiary Road	TR-11	0.27	20ft
	TR-75	0.65	30ft
	TR-76	0.23	20ft
	TR-77	0.33	20ft
	TR-78	0.06	20ft
	TR-79	0.12	20ft
	TR-80	0.13	20ft
	TR-81	2.08	30ft
	TR-82	0.51	30ft
	TR-83	0.66	30ft
	TR-84	0.29	30ft
	TR-85	0.07	20ft
	TR-86	0.08	20ft
	TR-87	0.12	20ft
	TR-88	0.07	20ft
	TR-89	0.04	20ft
	TR-90	0.06	20ft
	TR-91	0.04	20ft
	TR-92	0.04	20ft
	TR-93	0.05	20ft
	TR-94	0.10	20ft
	TR-95	0.17	30ft
	TR-96	0.19	20ft
	TR-97	0.22	30ft
	TR-98	0.07	20ft
	TR-99	0.19	20ft
	TR-100	0.19	20ft
	TR-101	0.15	20ft
	TR-102	0.26	20ft
	TR-103	0.08	20ft
	TR-104	0.13	20ft
	TR-105	0.06	20ft
	TR-106	0.11	20ft
	TR-107	0.12	20ft
	TR-108	0.18	20ft
	TR-109	0.09	20ft
	TR-110	0.20	30ft
	TR-111	0.08	20ft
	TR-112	0.08	20ft
	TR-113	0.06	20ft
	TR-114	0.05	20ft
	TR-166	0.68	40ft
	TR-172	0.80	40ft

Table 14.22: Proposal of Drains for Ward No. 06

Drain Type	ID	Length (km)	Av. Width (m)	Outfall
Primary Drain	PD-01	1.87	1.52 m	Bhairab River
Secondary Drain	SD-02	0.00	0.76 m	Bhairab River
	SD-02	1.08	0.76 m	Bhairab River
	SD-03	1.85	0.76 m	Bhairab River
	SD-04	2.00	0.76 m	Bhairab River
	SD-10	0.71	0.76 m	Bhairab River
	SD-11	0.20	0.76 m	Bhairab River
Tertiary Drain	TD-68	0.16	0.46 m	Bhairab River
	TD-69	0.11	0.46 m	Bhairab River
	TD-70	0.18	0.46 m	Bhairab River
	TD-71	0.32	0.46 m	Bhairab River
	TD-72	0.10	0.46 m	Bhairab River
	TD-73	0.10	0.46 m	Bhairab River
	TD-74	0.19	0.46 m	Bhairab River
	TD-75	0.26	0.46 m	Bhairab River
	TD-76	0.21	0.46 m	Bhairab River
	TD-77	0.20	0.46 m	Bhairab River
	TD-78	0.06	0.46 m	Bhairab River
	TD-79	0.18	0.46 m	Bhairab River
	TD-80	0.08	0.46 m	Bhairab River
	TD-81	0.26	0.46 m	Bhairab River
	TD-82	0.16	0.46 m	Bhairab River
	TD-83	0.06	0.46 m	Bhairab River
	TD-84	0.09	0.46 m	Bhairab River
	TD-85	0.09	0.46 m	Bhairab River
	TD-86	0.05	0.46 m	Bhairab River
	TD-87	0.14	0.46 m	Bhairab River
	TD-88	0.26	0.46 m	Bhairab River
	TD-89	0.14	0.46 m	Bhairab River
	TD-90	0.12	0.46 m	Bhairab River
	TD-91	0.07	0.46 m	Bhairab River
	TD-92	0.12	0.46 m	Bhairab River
	TD-93	0.63	0.46 m	Bhairab River
	TD-94	0.09	0.46 m	Bhairab River
	TD-95	0.10	0.46 m	Bhairab River
	TD-146	0.17	0.46 m	Bhairab River
	TD-152	0.35	0.46 m	Bhairab River

Map 14.11: Landuse Plan for Ward Action Plan of Ward No 06

Map 14. 12: Drainage and Utility Services Plan of Ward No 06

Table 14.23: Proposal of Development Proposals for Ward No. 06

Name of Proposal	ID	Location	Area (acre)
Resettlement Area	RZ	Beside Narayanpur Reg. Non Govt. Primary School	20.38
Supermarket	SM	Adjacent to Paurashava boundary	0.35
Primary School	PS-03	Near food godown & sub-registry office	1.11
Tempu Stand 1	TS-01	Adjacent to Dattanagar road	0.15
Central Park	CP	Beside river	3.85
Neighborhood Park	NP-04	Beside proposed central eidgah	1.28
Gymnesium	GYM	Adjacent to T&T road	0.21
Hospital	HOS	Near Upazilla Alim Madrasa	6.37
Overhead Tank	OT-01	Adjacent to upazila complex	0.15
Overhead Tank	OT-02	Adjacent to upazila health complex	0.18
Public Toilet	PT-03	In the bazaar area	0.11
Waste transfer station	WTS-05	At the intersection of TR-113 & TR-83	0.24
Central Eidgah	ED	At the rear side of upazila complex	7.82
Ward Center	WC-06	Adjacent to T&T road	0.694

Priority Task

The following priorities has identified after the Public consultation meeting at Jibannagar Paurashava.

Table 14.24: Priority Tasks for Ward No. 06

Priority-1		Priority-2		Priority-3	
Type	ID	Type	ID	Type	ID
Road	PR-02, TR-82 to TR-84, TR-86, TR-87, TR-114, TR-166	Road	TR-85, TR-88, TR-95, TR-97	Road	TR-11, TR-75 to TR-81, TR-89 to TR-96, TR-98 to TR-106, TR-108 to TR-113, TR-172
Drain	SD-03, SD-04, SD-10, TD-74 to TD-76, TD-81, TD-83 to TD-85, TD-93, TD-94, TD-146	Drain	PD-01, SD-02, TD-68 to TD-73, TD-77 to TD-80, TD-82, TD-86	Drain	SD-11, TD-87 to TD-92, TD-152
Dev. Proposal	PS-03, TS-01, OT-01, OT-02, PT-03, WTS-05	Dev. Proposal	SM, CP, NP-04, GYM, HOS, WC-06	Dev. Proposal	RZ, ED

14.3.7 Action Plan for Ward No. 07

Proposals and Plans for Ward No. 07

Ward No. 07 is located in the middle of Ward No. 06, Ward No. 08 and Ward No. 09 of Jibannagar Paurashava. The area of the Ward is 120.88 acres. After reviewing and commensuration the policies and proposals of Structure Plan and Urban Area Plan the following proposals are made in the Action Plan of Ward No. 07 for implementation within next 5(five) years up to 2016. Landuse Plan & Utility Services Plan for Ward No. 07 is shows in **Map-14.13** & **Map-14.14** respectively.

Table 14.25: Proposal of Roads for Ward No. 07

Road Type	ID	Length (km)	Proposed RoW
Secondary Road	SR-05	1.29	50ft
	SR-08	0.73	50ft
Tertiary Road	TR-13	0.34	20ft
	TR-115	0.39	30ft
	TR-116	0.17	20ft
	TR-117	0.07	20ft
	TR-118	0.33	20ft
	TR-119	0.17	20ft
	TR-120	0.11	20ft
	TR-121	0.19	20ft
	TR-122	0.37	20ft
	TR-123	0.26	20ft
	TR-124	0.16	20ft
	TR-125	0.09	20ft
	TR-126	0.34	30ft
	TR-127	0.44	30ft
	TR-128	0.21	20ft
	TR-129	0.24	20ft
	TR-130	0.25	20ft
	TR-131	0.21	20ft
	TR-132	0.21	20ft
	TR-133	0.42	30ft
	TR-134	0.17	20ft
	TR-135	0.37	20ft
	TR-136	0.10	20ft
	TR-164	0.36	40ft
	TR-165	0.42	40ft

Table 14. 26: Proposal of Drains for Ward No. 07

Drain Type	ID	Length (km)	Av. Width (m)	Outfall
Primary Drain	PD-02	1.88	1.52 m	Bhairab River
Secondary Drain	SD-12	0.71	0.76 m	Bhairab River
	SD-13	0.36	0.76 m	Bhairab River
	SD-14	1.79	0.76 m	Bhairab River
	SD-15	0.34	0.76 m	Bhairab River
Tertiary Drain	TD-11	0.85	0.46 m	Bhairab River
	TD-96	0.06	0.46 m	Bhairab River
	TD-97	0.07	0.46 m	Bhairab River
	TD-98	0.46	0.46 m	Bhairab River
	TD-99	0.33	0.46 m	Bhairab River
	TD-100	0.22	0.46 m	Bhairab River
	TD-101	0.14	0.46 m	Bhairab River
	TD-102	0.20	0.46 m	Bhairab River
	TD-103	0.19	0.46 m	Bhairab River
	TD-104	0.20	0.46 m	Bhairab River
	TD-105	0.23	0.46 m	Bhairab River
	TD-106	0.16	0.46 m	Bhairab River
	TD-107	0.16	0.46 m	Bhairab River
	TD-108	0.44	0.46 m	Bhairab River
	TD-109	0.17	0.46 m	Bhairab River
	TD-110	0.32	0.46 m	Bhairab River
	TD-111	0.16	0.46 m	Bhairab River
	TD-112	0.19	0.46 m	Bhairab River
	TD-113	0.42	0.46 m	Bhairab River

Drain Type	ID	Length (km)	Av. Width (m)	Outfall
	TD-114	0.17	0.46 m	Bhairab River
	TD-115	0.15	0.46 m	Bhairab River
	TD-116	0.19	0.46 m	Bhairab River
	TD-142	0.39	0.46 m	Bhairab River
	TD-143	0.21	0.46 m	Bhairab River

Table 14.27: Proposal of Development Proposals for Ward No. 07

Name of Proposal	ID	Location	Area (acre)
Vocational Training Institute	VTI	At the very north-east corner of Ward No. 07	4.20
Neighborhood Park	NP-08	140m south from Jibannagar Degree College	1.60
Stadium	ST	Adjacent to fire service office	7.77
Slaughter House	SH-01	Adjacent to forest office	0.09
Waste transfer station	WTS-04	At the intersection of TR-128 & TR-135	0.24
Ward Center	WC-07	Adjacent to Dattanagar road	0.687

Priority Task

The following priorities has identified after the Public consultation meeting at Jibannagar Paurashava.

Table 14.28: Priority Tasks for Ward No. 07

Priority-1		Priority-2		Priority-3	
Type	ID	Type	ID	Type	ID
Road	SR-05, TR-115, TR-119, TR-122, TR-123, TR-127, TR-164, TR-165	Road	TR-13, TR-118, TR-126, TR-128, TR-130, TR-132, TR-133, TR-135	Road	SR-08, TR-116, TR-117, TR-120, TR-121, TR-124, TR-125, TR-129, TR-131, TR-134, TR-136
Drain	PD-02, SD-13, SD-14, TD-109, TD-111, TD-114	Drain	SD-12, SD-15, TD-11, TD-96 to TD-98, TD-101 to TD-106, TD-110, TD-113, TD-116, TD-142	Drain	TD-99, TD-100, TD-107, TD-108, TD-112, TD-115, TD-143
Dev. Proposal	VTI, WTS-04	Dev. Proposal	SH-01, WC-07	Dev. Proposal	NP-08, ST

Map 14.13: Landuse Plan for Ward Action Plan of Ward No 07

Map 14.14: Drainage and Utility Services Plan of Ward No 07

14.3.8 Action Plan for Ward No. 08

Proposals and Plans for Ward No. 08

Ward No. 08 is located at the North-East part (adjacent to ward No.01) of Jibannagar Paurashava. The area of the Ward is 829.11 acres. After reviewing and commensuration the policies and proposals of Structure Plan and Urban Area Plan the following proposals are made in the Action Plan of Ward No. 08 for implementation within next 5(five) years up to 2016. Landuse Plan & Utility Services Plan for Ward No. 08 is shows in **Map-14.15** & **Map-14.16** respectively.

Table 14.29: Proposal of Roads for Ward No. 08

Road Type	ID	Length (km)	Proposed RoW
Primary Road	PR-03	5.97	80ft
Secondary Road	SR-05	1.29	50ft
	SR-10	1.59	60ft
Tertiary Road	TR-14	0.28	20ft
	TR-15	0.25	20ft
	TR-137	1.55	30ft
	TR-138	0.23	30ft
	TR-139	0.07	30ft
	TR-140	0.23	20ft
	TR-141	0.14	20ft
	TR-142	0.75	30ft
	TR-143	1.14	30ft
	TR-144	0.50	30ft
	TR-145	0.30	30ft
	TR-146	0.35	30ft
	TR-147	0.18	20ft
	TR-148	0.17	20ft
	TR-149	0.22	20ft
	TR-150	0.13	20ft
	TR-151	0.20	20ft
	TR-152	0.18	20ft
	TR-153	0.15	20ft
	TR-154	0.16	20ft
	TR-155	0.21	20ft
	TR-156	0.10	20ft
	TR-157	0.20	20ft
	TR-158	0.10	20ft
	TR-159	0.15	20ft
	TR-161	0.09	40ft
	TR-164	0.36	40ft

Table 14.30: Proposal of Drains for Ward No. 08

Drain Type	ID	Length (km)	Av. Width (m)	Outfall
Primary Drain	PD-02	1.88	1.52 m	Bhairab River
Secondary Drain	SD-14	1.79	0.76 m	Bhairab River
	SD-16	0.47	0.76 m	Bhairab River
Tertiary Drain	TD-117	0.34	0.46 m	Bhairab River
	TD-118	0.29	0.46 m	Bhairab River
	TD-119	0.22	0.46 m	Bhairab River
	TD-120	0.15	0.46 m	Bhairab River
	TD-121	0.12	0.46 m	Bhairab River
	TD-122	0.42	0.46 m	Bhairab River
	TD-123	0.28	0.46 m	Bhairab River

Drain Type	ID	Length (km)	Av. Width (m)	Outfall
	TD-124	0.14	0.46 m	Bhairab River
	TD-125	0.42	0.46 m	Bhairab River
	TD-126	0.34	0.46 m	Bhairab River
	TD-127	0.17	0.46 m	Bhairab River
	TD-128	0.16	0.46 m	Bhairab River
	TD-129	0.12	0.46 m	Bhairab River
	TD-130	0.19	0.46 m	Bhairab River
	TD-131	0.08	0.46 m	Bhairab River
	TD-132	0.20	0.46 m	Bhairab River
	TD-133	0.33	0.46 m	Bhairab River
	TD-134	0.30	0.46 m	Bhairab River
	TD-135	0.37	0.46 m	Bhairab River
	TD-136	0.14	0.46 m	Bhairab River
	TD-137	0.15	0.46 m	Bhairab River
	TD-138	0.16	0.46 m	Bhairab River
	TD-139	0.16	0.46 m	Bhairab River
	TD-140	0.21	0.46 m	Bhairab River
	TD-144	0.14	0.46 m	Bhairab River
	TD-145	0.05	0.46 m	Bhairab River

Table 14.31: Proposal of Development Proposals for Ward No. 08

Name of Proposal	ID	Location	Area (acre)
Neighborhood Market	NM-02	At the intersection of astalapara road and graveyard road	0.59
Primary School	PS-04	Adjacent to TR-138	0.94
Primary School	PS-05	Adjacent to the road to Jibannagar Non Govt. Reg. Primary School	0.60
Neighborhood Park	NP-07	50m south from Jibannagar Non Govt. Reg. Primary School	1.31
Ward Center	WC-08	200m south from Jibannagar Non Govt. Reg. Primary School	0.589

Priority Task

The following priorities has identified after the Public consultation meeting at Jibannagar Paurashava.

Table 14.32: Priority Tasks for Ward No. 08

Priority-1		Priority-2		Priority-3	
Type	ID	Type	ID	Type	ID
Road	SR-05, TR-15, TR-164	Road	TR-14, TR-142, TR-144, TR-151, TR-152	Road	PR-03, SR-10, TR-137 to TR-141, TR-143, TR-145 to TR-150, TR-153 to TR-161
Drain	PD-02, SD-14	Drain	SD-16, TD-126 to TD-132, TD-145	Drain	TD-117 to TD-125, TD-133 to TD-140, TD-144
Dev. Proposal	NM-02	Dev. Proposal	WC-08	Dev. Proposal	PS-04, PS-05, NP-07

Map 14.15: Landuse Plan for Ward Action Plan of Ward No 08

Map 14.16: Drainage and Utility Services Plan of Ward No 08

14.3.9 Action Plan for Ward No. 09

Proposals and Plans for Ward No. 09

Ward No. 09 is located at the South-East part (adjacent to ward No.01) of Jibannagar Paurashava. The area of the Ward is 864.92 acres. After reviewing and commensuration the policies and proposals of Structure Plan and Urban Area Plan the following proposals are made in the Action Plan of Ward No. 09 for implementation within next 5(five) years up to 2016. Landuse Plan & Utility Services Plan for Ward No. 09 is shows in **Map-14.17** & **Map-14.18** respectively.

Table 14.33: Proposal of Roads for Ward No. 09

Road Type	ID	Length (km)	Proposed RoW
Primary Road	PR-01	5.23	80ft
	PR-04	4.80	120ft
Secondary Road	SR-06	0.44	50ft
	SR-07	2.39	60ft
	SR-08	0.73	50ft
	SR-09	0.17	60ft
	SR-12	2.19	60ft
	SR-13	0.30	60ft
Tertiary Road	TR-160	0.16	20ft
	TR-162	0.79	40ft
	TR-163	0.57	40ft

Table 14.34: Proposal of Drains for Ward No. 09

Drain Type	ID	Length (km)	Av. Width (m)	Outfall
Secondary Drain	SD-12	0.71	0.76 m	Bhairab River
Tertiary Drain	TD-147	0.62	0.46 m	Bhairab River
	TD-148	0.14	0.46 m	Bhairab River
	TD-149	0.56	0.46 m	Bhairab River
	TD-150	0.41	0.46 m	Bhairab River
	TD-151	0.37	0.46 m	Bhairab River

Table 14.35: Proposal of Development Proposals for Ward No. 09

Name of Proposal	ID	Location	Area (acre)
Neighborhood Market	NM-01	Adjacent to noydatak road	1.07
Wholesale Katcha Bazar	WKB	Adjacent to proposed bus terminal	2.72
Primary School	PS-07	Beside tentulia bhanga road	0.82
Bus Terminal	BT	Adjacent to Kaliganj road	3.18
Neighborhood Park	NP-05	Adjacent to pilot high school road	1.25
Neighborhood Park	NP-06	Adjacent to tentulia bhanga road	1.42
Botanical Garden	BG	Adjacent to college road	8.03
Public Toilet	PT-02	Adjacent to proposed bus terminal	0.11
Waste Dumping Ground	WDG	At the intersection of road to baka & proposed bypass	3.14
Water Treatment Plant	WTP	Beside Dattanagar Road	2.08
Slaughter House	SH-02	Adjacent to cattle market	0.11
Ward Center	WC-09	Adjacent to noydatak road	0.575

Priority Task

The following priorities has identified after the Public consultation meeting at Jibannagar Paurashava.

Table 14.36: Priority Tasks for Ward No. 09

Priority-1		Priority-2		Priority-3	
Type	ID	Type	ID	Type	ID
Road	-	Road	PR-04, SR-07, SR-12, TR-163	Road	PR_01, SR-06, SR-08, SR-09, SR-13, SR-160, SR-162
Drain	-	Drain	SD-12	Drain	TD-147 to TD-151
Dev. Proposal	WKB, BT, PT-02, WDG, WTP, SH-02	Dev. Proposal	NM-01, WC-09	Dev. Proposal	PS-07, NP-05, NP-06, BG

Map 14.17: Landuse Plan for Ward Action Plan of Ward No 09

Map 14. 18: Drainage and Utility Services Plan of Ward No 09

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:

1. The proposed development confirms all respects mentioned in the policies of the Structure Plan and Urban Area Plan.
2. 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.)

3. Access roads.
4. Utilities; and
5. 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:

1. 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.

2. Identify and assess the existing access and circulation arrangements of the area. Preferably, the area should be served by 6 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.

3. 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.

   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.

4. 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.

5. 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:

1. Can be 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.

2. Is the use in conformity with the surrounding uses or with those that are compatible with a site in a predominantly residential area?

3. 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.
4. 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.
5. 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.
6. Is the scale of development proposed in keeping with its neighbours? If too large, it should be reduced. Does it impinge up on 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.
7. 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

14.5.1 Introduction

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.

14.5.2 Comparative Advantage of Master Plan

Comparative advantages of Master Plan rather than Ward Action Plan are:

- The term Master Plan deserves wider sense than the term Ward Action Plan. Policies and strategies are being prescribed in the Master Plan based on the existing trend of development and growth potentiality. The Ward Action Plan only emphasizes on those components immediate action is being necessary.
- The Master Plan is for the Paurashava as a whole but the Ward Action Plan is only for individual Ward. All studies relevant and guided by the ToR is being followed for the preparation of Master Plan at first and based on those studies and findings the Ward Action Plan is being designed.
- The Ward Action Plan is mostly relevant with the implementation criteria; it is called the implementation of Master Plan. The micro-component which is going to be implemented according to the Ward Action Plan is guided by the Master Plan. Therefore, any problem arises during the implementation phase of Ward Action Plan will be resolved through the guideline prescribed in the Master Plan.

14.5.3 Addressing Proposals for Mitigation of Identified Issues

- For improvement, construction and re-construction of local roads, bridge and culvert and box culvert, a close coordination among the authorities named Paurashava, LGED, PDB, REB and WDB will be maintained. This coordination is necessary from the preparation of budget to implementation of the component.
- In plan implementation phase, people's participation will be encouraged. The process as prescribed in the Structure Plan will be initiated for this purpose.
- A buffer will be needed for every important development especially for housing area, stadium and Bus terminal.

In preparing the proposed construction program priorities have been assigned to the works mostly in the various drainage areas taking the following factors into account:

- The severity of flooding in terms of depth, duration and frequency;
- The views of Paurashava officials on the relative needs of different areas;
- The engineering relationship of the proposed phase of construction to the preceding and subsequent phases;
- The estimated time required to execute the proposed works having regard to the capacity and capability of contractors and the availability of materials;
- The estimated amount of the capital investment required.

In general, aim should be to implement the Master Plan at a continuous steady rate throughout the 20 years period and based upon the above considerations, the works have been grouped broadly into four main stages:

- The first stage accords priority to improve the Traffic Management and alleviation of flooding in the central area of the Paurashava.
- The second stage in general covers less densely developed areas with the improvement of transport services.
- The third stage covers drainage congestion areas for improvement.
- The fourth stage will be the rain water harvesting for supplying drinking water to the Paurashava dwellers when scarcity will be generated.

14.5.4 Conclusion

To ensure that the procedures are being followed, the Paurashava will need to monitor the situation. This monitoring is required to ensure that:

- No illegal development is taking place i.e. no-one is attempting to develop without submitting an application; and
- Approved developments are built in accordance with the approved plans.

Development will take places according to the Master Plan.