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

# KANCHAN PAURASHAVA
# MASTER PLAN: 2011-2031

January 2015

**Technical Assistance: Local Government Engineering Department (LGED)**

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

# KANCHAN PAURASHAVA MASTER PLAN: 2011-2031

## STRUCTURE PLAN

## URBAN AREA PLAN:

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

## WARD ACTION PLAN

January 2015

**KANCHAN PAURASHAVA**
**RUPGANJ, NARAYANGANJ**

# KANCHAN PAURASHAVA MASTER PLAN: 2011-2031

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# KANCHAN PAURASHAVA MASTER PLAN: 2011-2031

# PREFACE

Bangladesh has been experiencing rapid urbanization in the last four decades where level of urbanization has reached from 7.6% 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, Kanchan 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 Kanchan Paurashava.

Master Plan of Kanchan Paurashva has been prepared following the pre-requisite of the Local Government (Paurashva) 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 & 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. Pourashava 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 Kanchan Pourashava together with land use control and effective management of service facilities.

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

(Md. Mojibur Rahman Bhuya)
Mayor,
Kanchan Paurahsava

# 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 Kanchan Paurashava, guided by the LGED under Package–01 of the Upazila Towns Infrastructure Development Project (UTIDP). It is

expected that the implementation of the plan will induce higher level of development, ensure planned life, good community and better future of the Paurashava inhabitants.

Kanchan Paurashava is located within the Rupganj upazila and Narayangonj zila at a distance about 35 km. from the zila shahar and on the northern part of Narayangonj zila. It lies between 23º44´ and 23º57´ north latitude and 90º28´ and 90º36´ east longitude. It is bounded by Paiska union on the north, Atlaspur and Parana union on the south, Kutubpur union on the east and river Shitalakshya on the west.

Kanchan Paurashava was established in 7 October 2002 as a C class Paurashava. Now it is B class Paurashava Total area of the Paurashava is 21.1sq. km. with 10 mouzas and 9 wards.

For the preparation of master plan, an area of 5202 acres (21.1 sq.km.) consider as Planning Area and at the same time Structure Plan Area also.

According to the Census Year 2011, 49468 populations are living in the planning area with gross density 10 persons per acre and it will be 102306 in 2031 with gross density 20 persons per acre.

In Kanchan Paurashava, major landuse is agriculture (64.2%). Residential landuse is 20.2% and only 1.46% 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 5 to 7 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.

The Upazila Towns Infrastructure Development Project (UTIDP) of LGED requires that one of its outputs is a comprehensive set of plans for Kanchan 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. In Structure Plan around 357 acre core area, 1688 acre fringe area, 1044 acre new urban area and 376.9 acre peripheral area have been proposed to ensure future policy guideline.

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 2031. 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 (urban residential area 2397 acre, circulation network 350 acre , education and research 117.4 acre, community facility 40 acre etc), Traffic and Transportation Plan (around 111 km proposed road , one bus and one truck terminal), Drainage and Environmental Management Plan ( around 99.7 km proposed drain) and Plan for urban 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 KANCHAN PAURASHAVA

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# LIST OF ABBREVIATIONS AND ACRONYMS

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

# CHAPTER 1
## INTRODUCTION

## 1.1 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). Kanchan Paurashava was established in 7 October 2002 as C class Paurashava and now it is B class Paurashava.

Kanchan Paurashava is located within the Narayangonj zila at a distance about 35 km. from the zila shahar and on the northern part of Narayangonj zila. It lies between 23º44´ and 23º57´ north latitude and 90º28´ and 90º36´ east longitude. It is bounded by Paiska union on the north, Atlaspur and Parana union on the south, Kutubpur union on the east and river Shitalakshya on the west.

With the active participation of the Paurashava authority, the Consultant has identified the Paurashava's existing jurisdiction area is 21.1 sq. km. (5202 acres). Among the nine Wards, Ward No. 8 has occupied largest area which is 1167 acres and Ward No. 6 is the smallest (248.9 acres). About 5202 acres of land is being identified as a Structure Plan area with the consultation of stakeholders. Physical development trend for next 20 years has been considered for such expansion.

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 |
| Kanchan Paurashava (Planning area) | 5202.3 | 21.1 | 49468 | 10 | 102306 | 20 |

*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 Kanchan 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 Kanchan 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 Kanchan 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

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 plot by plot 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), Kanchan.

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. The extended area was selected in consultation with the Paurashava for possible extension of the Paurashava. But no development proposals are suggested for the extended part as existing Paurashava area is enough to accommodate population and services during Structure Plan period, that is, up to the year 2031.

**Contents**

The Master Plan is prepared based on the survey data. Most of the information provided in the Survey Report is the outcome of the surveys namely Topographical Survey, Physical feature survey, Landuse survey, Socio-economic survey, Transport survey and Drainage and Environment survey.

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

**Physical feature survey**: Physical Features were surveyed using both Total Station (TS) and Differential Global Positioning System (DGPS) survey technique. All structures and installations were surveyed by TS and alignment and closed boundaries like Road, River, Khal, Marshland, Homestead, Large Water bodies etc. have surveyed by DGPS. Where DGPS survey was not possible for weak satellite signal due to obstruction, TS survey technique was applied for those particular areas.

Location and dimension of the physical feature has surveyed and stored using Real Time Kinematic Global Positioning System (RTK-GPS) supported TS and DGPS survey technique. Data was recorded in the TS and DGPS memory with separate ID or code number for each feature (as Line, Point and Polygon). Later on the TS and DGPS data was transferred directly to the Geographic Information System (GIS) database where the feature was kept in separate layer wise as per specified code or ID. Names of settlements, village, rivers, khals, lakes, roads, markets, etc. were recorded during physical feature survey. For supporting the TS Survey, huge numbers of Temporary Control Points (TCP) have established using RTK fast static survey technique and GEOID Model of the project. These

TCPs were used by the TS groups as reference points (Station and Back Points) for physical feature, topographic and landuse survey.

**Topographic survey:** Topographic survey has performed using TS and DGPS. The TS survey groups / teams were responsible for measurement of spot levels (Northing, Easting, Elevation or RL) for contour generation. In general the spot levels on the land have taken at an interval that represents the topography of the land surface. The utility poles and alignment of utility lines have surveyed using DGPS. The established TCPs with RTK-GPS were used by the TS groups as reference (Station and Back Point). Contour map has prepared at scale suggested by LGED incorporating all physical features and infrastructures.

The Total Station (TS) survey groups were responsible for conducting topographic survey where Total Station (TS) is used for measurement of Land levels/spot levels (Northing, Easting, and Elevation in respect to mPWD datum) for contour generation at 0.3in intervals. In general the spot levels on the land were taken at not exceeding 50m internals, closer spots were taken in case of rapid undulation. In addition to the Primary Bench Marks (BMs) established by RTK-GPS Static survey, 120 nos. of Secondary Bench Marks/Control, Point (BMs/SCP) were established using RTK fast static and 1st order BM carry survey for supporting the TS survey. These SCPs as well as the primary BMs were used for Total Station survey as reference points (Station and Back Points) both for topographic and physical feature surveys. The spot levels/land levels were transferred to GIS database and later by processing Digital Elevation Model (DEM) as well as contour map at 0.3m interval contours were generated using TIN (Triangular Irregular Network) Method of GIS.

**Transport survey:** To perform transport survey, the team was mobilized on 12$^{th}$ August, 2009. An introduction meeting on 13$^{th}$ August, 2009 was held in Kanchan Paurashava in presence of the Mayor, Councilors, Engineers and other professional to set the date and time of survey as well as to identify the survey stations.

The Paurashava authority recommended 14-8-2009 as local Hat day and 15-8-2009 as regular day to conduct transport survey. With reference to their observations, survey time was set from 7:30 AM to 8:30 PM for those two days when traffic movements were frequent.

In order to get an accurate scenario about the study roads / links, detailed frequency of traffic movement was analyzed. This work was considered overall traffic volumes and the proportion of different traffic. Frequency analysis of traffic was performed using the collected data from traffic volume survey. This survey was included mode-wise travel frequency on the specific road. So, that information helps to explain the variation in using of different vehicles for different time and day of that road.

**Map 1.1: Location of Kanchan Paurashava in context of Bangladesh**

**Map 1.2: Jurisdiction of Structure Plan Area**

**Drainage survey:** Drainage channels were surveyed by Optical Level machine from the head of the channels to the outfall. A zero datum was chosen at the head of each channel. This zero height was then used to level the channel from the head to the toe or outfall. In areas where blockage or refuse was observed to accumulate in the bottom of the channel, the reason of such blockage was identified.

**Environmental survey:** Environmental survey was 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, detailed report has been prepared. Data collection format and questionnaire was approved by the PD of UTIDP, LGED.

**Socio-economic survey**: The Socio-economic survey has been conducted with the proposed methodology beginning from 12 October '09 and ending in 13 October '09. The Survey Team was composed with 6 field investigators assisted by Field Supervisor. The Supervisor has been seconded from Consultant's office. The survey took approximately two weeks to complete with a pre-determined set of questionnaire.

The Paurashava is consisted with 9 Wards. The Socio-economic survey covers all the Wards. Those Wards are identified and distributed as the Core and Potential Core areas. In total, 5% sample households are considered from above each category of area and then again distributed into Pucca, Semi-Pucca, Katcha / Thatched (Jhupri) households according to the respective Wards.

**Format of the Structure Plan**

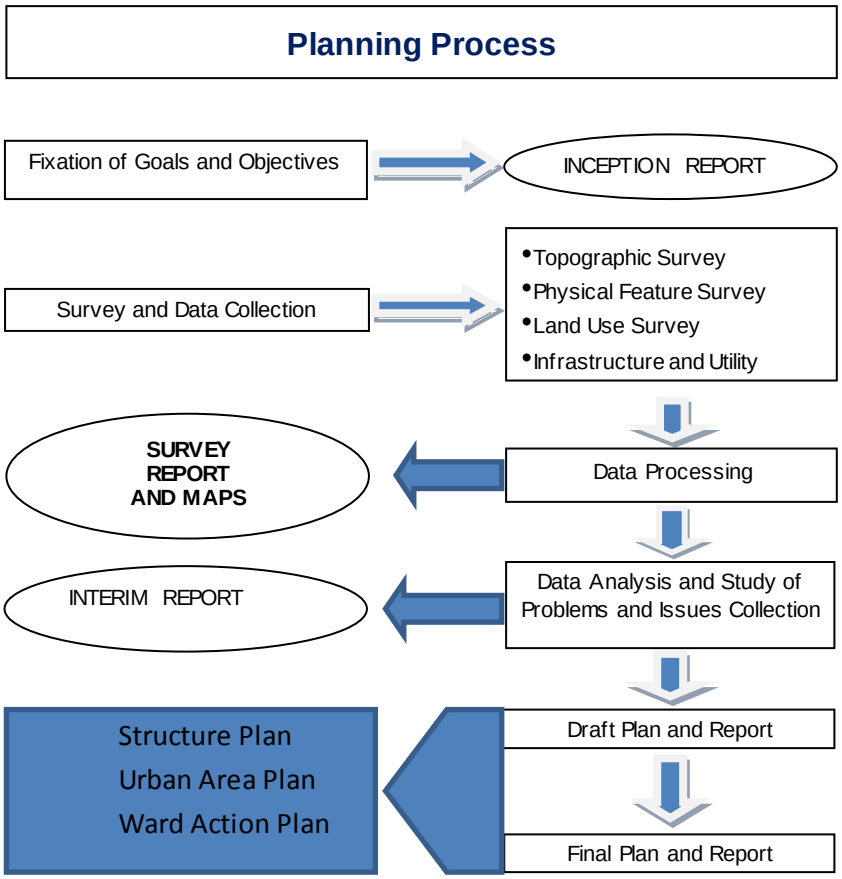
The Structure Plan is an indicative plan that gives a brief on the future development of an area with policy guidelines. It is a long-term plan with flexibility in the sense that it sets down a broad framework for future development, but not the details. The format of a Structure Plan comprises written 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 UTIDP Project is aimed for substantial development of infrastructure and services for the Paurashava with optimum provision of opportunities for Paurashava dwellers and making scope for extending services to surrounding areas.

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

**Figure 1.1: Flow Chart of Planning Process**




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

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

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

## 1.5 Scope of Work

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

- Visits have been made to the Paurashava at different stages of work of the preparation of Master Plan of Kanchan Paurashava.
- Feasibility for preparation of Master Plan has been submitted to the office of the PD, UTIDP.
- An Inception Seminar has been organized at the Paurashava level to inform the Paurashava about the scope and Terms of Reference for the preparation of Master Plan. A thorough investigation has been made based on potential scope and opportunities available in the Paurashava to develop a 20 year development vision for it linking the ideas and view of the Paurashava people.
- Determination of the study area and planning area has been done based on existing condition, demand of the Paurashava and potential scope for future development. A detailed survey has been conducted on the existing conditions of socio-economic, demographic, transportation and traffic, physical features, topographic, and land use of the Paurashava area following the approved format and data have been collected from primary and secondary sources. Analysis of such data and information has been carried out to find out the possible area of intervention to forecast future population of the Paurashava (15-20 years), vis-a-vis assess their requirement for different services, such as physical infrastructure facilities, employment generation, housing, right of way and land requirement for the existing and proposed roads, drains, play-grounds, recreation centers and other environmental and social infrastructure. The following major tasks have been accomplished:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

## 1.6 Organization of the Master Plan Report

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

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

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

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

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

# CHAPTER 2

## 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 and workable population is highest than any other aged group population.

In 2011, population was 49468 (Ref: community series, Narayanganj Zila). The age and gender distribution indicates that population mostly increases naturally. The age-sex distribution implies that somewhere female population is less than male population in the Paurashava. From the male-female ratio, it is seen that in all the wards, number of males are greater than the number of females. So, in all the Wards number of young and workable population is highest than any other age-group population.

Household size: Family size ranges from 1-3, 4-6, 7-9, 10-12 and 12+ members, but most prevalent size is 4-6 members in the Paurashava and also in Bangladesh. There are both single and joint family systems in the study area. Ward No. 5 has major percentage of 4-6 member family and Ward No. 5 is more joint-family system (30%) compared to other Wards. Most of the family in the Paurashava is single family (83.3%).

**Marital status:** In the Paurashava 44.78% of male and 32.56% of female population of age 10 years and over is never married. In the same age group percentage of currently married males and females are 54.62% and 60.77% respectively and percentage of widowed and divorced were 0.52% and 0.57%, and 0.08% and 6.10% respectively.

**Migration:** Most of the residents of Kanchan Paurashava are permanent resident. According to the socio-economic sample survey-2009, only 1.49% people are migrated into the Paurashava of ward no. 05. No migrated people were found in other wards from the survey. The only reason of migration in ward no. 05 (1.49%) is business and commerce. 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.

**Educational status:** About 37% households head in Kanchan are in class VI-X, 11.2% households head are in class I-V, 25.8% households head are in SSC/equivalent, 13.8% households head are in HSC/ equivalent, 4.2% households head are in BSS/equivalent,

1.2% households head are in MSS/ equivalent, 5.2% households head are above MSS and rest 1.6% household head are illiterate. The figure 7.1 represents the educational status of households head in Kanchan Paurashava.

By considering education status according to ward wise in Kanchan Paurashava, maximum illiterate household heads are existed in ward no 6 (about 5.7%), maximum households heads who are educated at the level of BSS/equivalent are in ward no 4 (8.6%).The following table illustrate ward wise educational status according to class VI-X, SSC, BSS, MSS.

**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 Kanchan Paurashava.

**Table 2.1: Mouza-wise land value in the Study Area, 2011**

| Sl. No. | Mouza Name | Nal | Aman | Khama | Boro | Sail | Viti | Bagan | Chala | Bari | Pond | Doba | Potit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | Kanchan | 43600 | 23100 | 29800 | 23500 | 22200 | 106600 | 67200 | 67400 | 166400 | 16000 | 10200 | 10200 |
| 2. | Kandua | 52800 | 24800 | 42300 | 35100 | 24800 | 76800 | 47600 | 47600 | 95100 | 16000 | 10000 | 10000 |
| 3. | Birab | 23600 | 11800 | 15300 | 12000 | 11800 | 28100 | 14000 | 48900 | 75700 | 10000 | 8000 | 8000 |
| 4. | Tarol | 20900 | 10000 | 10300 | 10000 | 10000 | 17800 | 14000 | 14000 | 61800 | 8000 | 6000 | 6000 |
| 5. | Bhalukba | 31300 | 46200 | 27000 | 22800 | 22800 | 12000 | 12000 | 12000 | 20000 | 10000 | 7000 | 7000 |
| 6. | Dighulia | 10900 | 7600 | 7600 | 7600 | 7600 | 2600 | 26000 | 26000 | 12000 | 8000 | 6000 | 6000 |
| 7. | Narab | 38300 | 22400 | 22400 | 26100 | 22400 | 75200 | 30600 | 30600 | 22100 | 11000 | 8000 | 8000 |
| 8. | Kishno nagar | 8400 | 8000 | 8000 | 8000 | 8000 | 10000 | 10000 | 10000 | 69400 | 9000 | 7000 | 7000 |
| 9. | Shialati | 42800 | 10000 | 10000 | 10000 | 10000 | 10000 | 10000 | 10000 | 12000 | 8000 | 6000 | 6000 |
| 10. | Nowpara | 12500 | 8400 | 8400 | 8400 | 8400 | 8000 | 8000 | 8000 | 40700 | 7000 | 5000 | 5000 |

*Source: Kanchan Sub-Registry Office 2011*

In this study, twelve types of land in twenty one mouzas are being considered. In the natural land market, land for homestead / housing construction is higher than other type of land and this scenario is prevailing in the Paurashava also. In another scenario, commercial land value is higher than homestead / residential land value. Nama, Kanda, Bari, Vita, Pagar, Palan, Vacantland, Doba, Pond and Chandina these types of land are under the jurisdiction of agriculture land.

**Existing Practice / Unofficial Value:** Average value of different types of land for the Paurashava is shown in Figure 4.1. It is clearly observed that land value increases with the height of the land. It increases from low to medium high land but the maximum mean value is found for the habitable land (Tk.53523.58 per decimal) and lowest for the low land (Tk.4725.35 per decimal). Average land value in the Paurashava is Tk.657659 per decimal.

In Ward-wise scenario land value is highest in Ward No. 8 (Tk.2415200 per decimal) and Ward No. 4 (Tk.1099505 per decimal) which implies the significance of core area. On the other hand land value is lowest in Ward No. 3 (Tk.87727 per decimal) which implies that this Ward has abundant agricultural low land. Abitable land in Ward No. 2 bears highest land vale (Tk.67000 per decimal) and low land in the same Ward bears the lowest land value (Tk.20000 per decimal). No medium high land is found in the Paurashava.

**Land Ownership Types and Patterns:** Most of the land in Kanchan Paurashava is medium high land. It is seen that about 81.7% land are medium high, 15.4% land are high and only 1.5% land are low land, rest of the land are habitable land. About 33.5% of households in Kanchan Paurashava possess 0-10 decimals land, 35.9% households possess 11-20 decimal land, 20% households possess 21-30 decimal and only 10.6% households possess more than 30 decimal land. So it can be said that small amount of landowner are available instead of large amount of landowner in Kanchan Paurashava. On average every household occupies 19.34 decimal land with a standard deviation of 23.86 decimal.

## 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 National Highway (Dhaka by pass Road) passes in the central part of 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. Recently private Housing Developers ae trying to buy private land for housing. 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:** Major portion of income comes from agriculture in Kanchan Paurashava. About 48% income comes from agricultural activities. Besides, about 30% income comes

from service, 17% comes from business, 1% come from house rent and 4% from others source. The figure 7.3 represents the source of income of households' members.

From the field observation of Kanchan Paurashava it is found that major portion of income comes from agricultural activities in all the wards. Besides, service also shares a large portion of income source. Household's income from services is most in ward no 3 (about 42.9 %). In ward 5, maximum incomes of the households come from agriculture (61.2%).

Highest income levels of households are from Tk 8001-12000. Second highest range is Tk 12001-16000 and third one is Tk 4001-8000 and 16001-2000 both. 15.6% households earn Tk 10000, 9.8% earn Tk 12000 and 7.8% earn Tk 15000. The figure 7.4 shows the income (Tk per month) categories of various numbers of households.

**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 are depending on fiscal condition of the urban dwellers and provisional system of urban authority. In Kanchan Paurashava, minimum value of monthly food expenditure is Tk. 2800; median value is Tk. 6000 and maximum value is Tk. 16400.

**Industry:** Industries are one kind of dominating landuse but not applicable for Kanchan. Little amount of land (244.58 acres or 4.70%) of the Planning Area is covered by this category of landuse. About 65.59 acres of land under industrial use are occupied by the Ward No. 9.

**Commerce:** One hat / bazar within the Paurashava premises are found in unorganized nature. The bazar is developed naturally through generations. The bazar is prominent due to its availability of agro-product and fish. People from different Upazilas and Zilas accumulate in that bazar as a buyer. A layout plan will be necessary for improvement of the bazar and it will incorporate in the Master Plan.

Land uses under this category are retail and wholesale shopping areas and all categories of ribbon commercial developments formed along the major roads. In the Paurashava, there are large numbers of retail shops, kitchen market and weekly hat. The extent of commercial landuse depends on the size of consumers. Most of the commercial activities are agglomerated in Ward No. 6, 5 and 2 were 6.24, 1.07 and 3.61 acres of land are using for commercial purposes. All of those Wards are the core areas of Kanchan Paurashava. In total 12.98 acres or 0.25% of land is using for commercial purposes.

**Services:** This category includes all types of financial institutions like bank, insurance company, mercantile and cooperative society, health, fire station, police station, electric

sub-station, telephone office, etc. In total, 6.17acres (0.12%) of land is found under this category. Highest concentration of those services is found in the Ward No. 9 (3.83 acres) and lowest in the Ward No. 7 (0.06 acres). No service activity performs in the Ward No. 8

**Agriculture:** Agricultural landuse includes paddy field, cropland, grazing land, horticulture, orchard, etc. A total of 3343.46 acre of land is under this category in Kanchan Paurashava. It constitutes 64.27% of total land of the Paurashava. The rural agricultural landuses are spread over the entire Planning Area.

Every Ward is more or less occupied by the agricultural land. The Figure 4.7 represent that in Ward No. 8 agricultural landuse occupied 1003.06 acres out of the total land under this category. At the same time, Ward No. 4 and 7 are occupied 594.51 acres and 389.41 acres respectively. Lowest amount of agriculture land is found in the Ward No. 4 (41.30 acres).

**Employment Pattern:** In the Paurashava, population age 10 years and above, recorded idle are 39453, looking for work 518, doing household work 12597 and employed the remaining. The employed people identified working in agriculture are 7060, industry 484, construction 442, transportation 1116, business 2396, service 43 and others 2600. Economically active age-group (15-59 years age-group) stands 65% of the total population.

**Table 2.2: employment pattern: Ward-wise and Paurashava as a whole (in %)**

| Ward | Total | NW | LW | HW | Agr. | Ind. | WEG | Con. | Tran. | H&R | Bus. | Ser. | Others |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4770 | 1558 | 58 | 1426 | 1076 | 25 | 1 | 58 | 55 | 0 | 228 | 4 | 281 |
| 2 | 4798 | 1310 | 91 | 1650 | 967 | 11 | 0 | 103 | 146 | 3 | 217 | 9 | 291 |
| 3 | 4943 | 1755 | 65 | 1425 | 442 | 22 | 0 | 36 | 130 | 10 | 608 | 7 | 443 |
| 4 | 4251 | 1089 | 96 | 1532 | 1106 | 20 | 1 | 19 | 71 | 2 | 109 | 2 | 204 |
| 5 | 4484 | 1762 | 52 | 1156 | 401 | 36 | 5 | 29 | 157 | 3 | 475 | 1 | 407 |
| 6 | 3457 | 952 | 27 | 1176 | 802 | 29 | 0 | 23 | 170 | 0 | 124 | 2 | 152 |
| 7 | 4355 | 1390 | 31 | 1441 | 1026 | 31 | 0 | 30 | 114 | 3 | 157 | 0 | 132 |
| 8 | 4425 | 1258 | 43 | 1435 | 585 | 143 | 3 | 84 | 158 | 6 | 266 | 16 | 428 |
| 9 | 3970 | 1084 | 55 | 1356 | 655 | 167 | 2 | 60 | 115 | 12 | 212 | 2 | 262 |
| Total | 39453 | 12158 | 518 | 12597 | 7060 | 484 | 12 | 442 | 1116 | 39 | 2396 | 43 | 2600 |

*Source: Population Census 2011*

*Note: NW = Not Working, LW= Looking for Work, HW= Household Work, Agr.= Agriculture, Ind.= Industry, WEG= Water, electricity and gas; Con.= Construction, Tran.= Transport, H&R= Hotel and Restaurant, Bus= Business, Ser.= Service.*

**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 / bazars 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. It is revealed that, major occupation is agriculture adopted by 49% (rest 3% is formal occupation), service is composed 11% and business is 13% (rest 8% is formal business) of total informal entrepreneurs. Sources of the capital of the informal entrepreneurs are inheritance (5%), self-earned (92%), borrowing from friends / family members (2%) and loan from NGOs (1%).

It has been found that, 3% (including loan from NGO) of total entrepreneurs had to borrow money to form capital for their business. Rest of the respondents did not receive any loan to start their business. Recipients of loan of the informal sector have received varied amount of loans. Of the total loan recipients, 60% took loan ranging between Tk. 5000.00 to Tk. 8000.00, followed by 27% received between Tk. 8001.00 to Tk. 12000.00 and 13% between Tk. 12001.00 to Tk. 15000.00.

About 38% respondents monthly earning is in the range of Tk. 6000 to Tk. 9000 and 32% is Tk. 4000 to Tk. 6000. Only 8% respondents are in the very low income range of less than Tk. 4000 monthly. A considerable (22%) entrepreneurs has monthly income is above Tk. 12000.

Informal entrepreneurs encounter many problems like dull business, unfavourable weather, fear of eviction, extortion, lack of permanent business location, exorbitant rate of interest, lack of credit facilities and unhygienic residential areas.

## 2.3 Physical Infrastructure Development

Kanchan Paurashava is comparatively a large sized Paurashava (21.1 sq. km.) than the other Paurashava of the Narayanganj Zila. A trend of urban growth is found around the Kanchan Bazar and the road laying mainly the Highway. A development trend is generating towards the Kanchan just for Purbachal New Town. A development wave from Dhaka to Kanchan also found after construction of Kanchan Bridge.

The jurisdiction of Kanchan Paurashava is in regular shape. An unplanned development already occurred around the bazaar area. After construction of Kanchan Bridge and developed the Dhaka Bypass, a tremendous pressure will occur along the Bypass by land developer. 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:** A National Highway (named Dhaka by pass Highway) passed through the north-south direction of Kanchan Paurashava. Its length is 5.2 km and average width is 21 feet.

All other roads are local roads and their total length is 109.1 km and average width is 8 feet.

Total length of pucca (bituminous carpeted) road is about 39.25 km encompassing an area of 20.86 acre. The semi pucca road is generally constructed with brick soling called Herring Bone Bond (HBB) road. Total length of semi pucca road is 41.73 km. In total, 37.35acre of land is being used under semi pucca road in the Paurashava. Third category is katcha road called earthen road. Total length of katcha road is 33.20 km coursing 18.95acre of land. In total, there in Kanchan Paurashava roads under three categories coursing 114.17 km in length and 77.16 acre of land.

**Waterway:** Sitalakhya River is the only one waterway network in Kanchan Paurashava. Several numbers of cargos are using to transport the goods from one place to another.Different types of bridges and culverts have been identified from the physical feature survey. There are altogether 11 bridges (RCC) and 40 culverts (Box and Pipe culverts) in the Paurashava. Bridges are found in Ward No. 2, 4, 5, 7 and 8. Highest number of culverts is found in Ward No. 09. Those bridges and culverts are located on the river, 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 Kanchan 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 Kanchan Paurashava was 49468 according to Population Census, 2011. Density of population per square kilometer was 2350 persons. Total household number was 10912. Highest number (1795 households) of households and population concentration is found in the Ward No. 6. Ward No. 4 and 5. Highest number of population is found in Ward No. 6.

**Table 2.3: Demographic Features of Kanchan Paurashava-2011**

| Ward No. | Household (2011) | Area (sq.km) | Population (2011) | Density/ sq.km |
|---|---|---|---|---|
| 1 | 1012 | 1.8 | 4604 | 2554 |
| 2 | 1367 | 2.6 | 6113 | 2331 |
| 3 | 796 | 1.4 | 3415 | 2474 |
| 4 | 1441 | 3.2 | 6797 | 2113 |
| 5 | 1400 | 1.8 | 6916 | 3891 |
| 6 | 1795 | 1.0 | 7636 | 7590 |
| 7 | 1231 | 2.5 | 5816 | 2369 |

| Ward No. | Household (2011) | Area (sq.km) | Population (2011) | Density/ sq.km |
|---|---|---|---|---|
| 8 | 832 | 4.7 | 4249 | 900 |
| 9 | 1038 | 2.1 | 3922 | 1895 |
| Total | 10912 | 21.1 | 49468 | 2350 |

*Source: BBS 2011*

**Population density:** In the Paurashava, average population density is 10 persons per acre according to the statistics of Population Census, 2011. Ward No. 6 and 5 seems highly population concentrated areas and density of population in those Wards are 7590 and 3891persons 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 Act, 2009 existing capacity of the Kanchan 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:** The manpower allocated by the Government for every Paurashava in the country except the Mayor and nine Counselors and the organogram according to the Local Government Paurashava Act, 2009. But according to the Paurashava at a glance 2006-07 the allocated manpower for Kanchan Paurashava shown in Table-2.4.

**Table 2.4: Allocated manpower for Kanchan Paurashava**

| Positions under Divisions | Number of employee |
|---|---|
| Administration | *36* |
| Accounts | |
| Tax Division | |
| License Division | |
| Health Division | *22* |
| Engineering Division | *32* |
| Total | *90* |

*Source: Kanchan Paurashava at a glance, 2006-07*

**Existing Manpower:** Existing manpower except the Mayor and Councilors in the Kanchan Paurashava is presented in the Table-2.5. In total 18 employees as a permanent staffs and 24 stuffs are temporary staffs in the Kanchan Paurashava.

**Table 2.5: Existing manpower of the Kanchan Paurashava (permanent)**

| Name of the post | No. of employee | Name of the post | No. of employee |
|---|---|---|---|
| Secretary | 1 | Office Assistant | 1 |
| Asst. Engineer | 1 | Surveyor | 1 |
| Sub Asst. Engineer | 1 | Health Assistant | 1 |
| Classier | 1 | Jeep Driver | 1 |
| Tax Collector | 1 | Rollar Driver | 1 |
| Asst. Tax Collector | 1 | Peon | 2 |
| Licence Inspector | 1 | Night Guard | 1 |
| Work Assistant | 1 | | |

*Source: Annual Budget, Kanchan Paurashava, 2011-12.*

**Logistic Support:** Logistic support and necessary equipment is limited for Kanchan Paurashava which should be a really big concern. Three garbage vans and a road roller are available. But there is no Garbage Truck.

**Paurashava Office:** The Paurashava office is one story building using as administrative building of the Paurashava. About 0.147 acre land has been acquired for this purpose. The building is known as Paurashava Office. Surrounding lands are using for mixed use purposes. Further provision for extension of the Paurashava office boundary will be easier and other administrative buildings may be constructed along with the Paurashava office.

## 2.7 Urban Growth Area

A trend of urban growth is found around the Kanchan Bazar and the road laying mainly the National Highway. A tremendous development trend is generating towards the Kanchan after construction of Kanchan Bridge. A development wave from Dhaka to Kanchan also found for development of Purbachal New Town of RAJUK.

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 Kanchan Paurashava is calculated according to the agriculture commodities and movement of dwellers for rendering services. From Kanchan Paurashava, agriculture commodities marketed to the Norsindi and Dhaka. 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**

Major built up part of the Paurashava area is using for residential purpose. According to the land use survey table (Table 2.6) of the study area, it has been ascertained that 1050.36 acres (20.19%) of land is presently under residential use. Commercial and Industrial use occupied 12.98 acres (0.25%) and acres 244.58 (4.70%) respectively. From the survey results, it is found that the Paurashava area is dominated by non-urban character at present. The mixed use occupied 6.41 acres (0.12%). A large part 3343.46 acres (64.27%) is occupied by the Agricultural land and Water bodies 391.43 acres (7.52%). There 6.96 acres (0.13%) of land for community services and only 25.96 acres (0.50%) of land for educational facilities have been found in the land use survey.

**Table 2.6: Landuse pattern of the Kanchan Paurashava**

| SL No. | Category Category | Ward No | | | | | | | | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Area(acre) | (%) |
| 1. | Residential | 127.9 | 135.7 | 71.11 | 124.8 | 145.5 | 110.4 | 134.4 | 86.67 | 113.9 | 1050.36 | 20.2 |
| 2. | Commercial | 0.32 | 3.61 | 0.22 | 0.87 | 1.07 | 6.24 | 0.13 | 0.09 | 0.45 | 12.98 | 0.25 |
| 3. | Industrial/ Processing and Manufacturing | 16.73 | 61.78 | 52.85 | . | 0.8 | 45.45 | 1.37 | . | 65.59 | 244.58 | 4.7 |
| 4. | Educational Facility | 3.77 | 0.58 | 1.54 | 3.25 | 7.12 | 6.04 | 1.3 | 0.53 | 1.85 | 25.96 | 0.5 |
| 5. | Governmental Services | . | . | . | . | 0.39 | 0.71 | . | . | . | 1.1 | 0.02 |
| 6. | Non Governmental Services | . | . | . | . | . | . | 0.11 | . | . | 0.11 | 0 |
| 7. | Mixed Use | 0.48 | 0.16 | 0.05 | 0.6 | 0.31 | 4.6 | 0.12 | . | 0.1 | 6.41 | 0.12 |
| 8. | Community Services | 0.63 | 0.82 | 0.29 | 1.11 | 0.77 | 1.07 | 0.74 | 0.53 | 1 | 6.96 | 0.13 |
| 9. | Circulation Network | 6.27 | 11.36 | 6.73 | 7.06 | 11.67 | 8.76 | 10.17 | 3.7 | 10.09 | 75.8 | 1.46 |
| 10. | Recreational Facility | . | . | 2.21 | . | . | 0.35 | . | . | . | 2.56 | 0.05 |
| 11. | Vacant land | 0.12 | 1.13 | 0.04 | 1.68 | 0.49 | . | 4.99 | . | 0.28 | 8.74 | 0.17 |
| 12. | Transport & Communication | . | 0.17 | . | 0.32 | 0.05 | 0.05 | . | . | 0.97 | 1.56 | 0.03 |
| 13. | Service Activity | 0.13 | 0.8 | 0.07 | 0.11 | 0.32 | 0.84 | 0.06 | . | 3.83 | 6.17 | 0.12 |
| 14. | Agricultural | 262 | 378.8 | 181.4 | 594.5 | 231.1 | 41.3 | 389.4 | 1003.1 | 261.9 | 3343.46 | 64.3 |
| 15. | Forest | | | | | | | | | | 0 | 0 |
| 16. | Miscellaneous | . | . | 0.02 | 0.03 | 0.04 | 0.08 | . | . | . | 0.17 | 0 |
| 17. | Urban Green Space | 0.26 | 3.83 | 3.23 | 2.82 | 1.22 | 1.03 | 3.9 | 0.74 | 6.47 | 23.5 | 0.45 |
| 18. | Restricted | | | | | | | | | | 0 | 0 |
| 19. | Water body | 26.77 | 49.23 | 21.37 | 57.8 | 38.45 | 21.71 | 59.23 | 72.04 | 44.84 | 391.43 | 7.52 |
| Total | | 445.4 | 648 | 341.1 | 794.9 | 439.2 | 248.6 | 606 | 1167.4 | 511.3 | 5201.84 | 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. In the Paurashava, most of the residential areas are informal type means that they are not developed in a planned manner.

Residential land occupied 1050.36 acres or about 20.19% of the Planning Area. The survey reveals that residential category is the second major dominated landuse. As per Ward-wise statistics, Ward No. 5 occupied highest amount of land (145.47 acres) and Ward No. 3 is minimum (71.33 acres).

**Commercial:** One hat / and 2 bazar within the Paurashava premises are found in unorganized nature. The 2 bazaar is developed naturally through generations. The 2 bazaar is prominent due to its availability of agro-product and fish. People from different Upazilas and Zilas accumulate in that 2 bazar as a buyer. A layout plan will be necessary for improvement of the 2 bazar and it will incorporate in the Master Plan.

Land uses under this category are retail and wholesale shopping areas and all categories of ribbon commercial developments formed along the major roads. In the Paurashava, there are large numbers of retail shops, kitchen market and weekly hat. The extent of commercial landuse depends on the size of consumers. Most of the commercial activities are agglomerated in Ward No. 6, 5 and 2 were 6.24, 1.07 and 3.61 acres of land are using for commercial purposes. All of those Wards are the core areas of Kanchan Paurashava. In total 12.98 acres or 0.25% of land is using for commercial purposes.

**Industrial:** Industries are one kind of dominating landuse but not applicable for Kanchan. Little amount of land (244.58 acres or 4.70%) of the Planning Area is covered by this category of landuse. About 65.59 acres of land under industrial use are occupied by the Ward No. 9

**Agricultural:** Agricultural landuse includes paddy field, cropland, grazing land, horticulture, orchard, etc. A total of 3343.46 acre of land is under this category in Kanchan Paurashava. It constitutes 64.27% of total land of the Paurashava. The rural agricultural landuses are spread over the entire Planning Area.

Every Ward is more or less occupied by the agricultural land. The Figure 4.7 represent that in Ward No. 8 agricultural landuse occupied 1003.06 acres out of the total land under this category. At the same time, Ward No. 4 and 7 are occupied 594.51 acres and 389.41 acres respectively. Lowest amount of agriculture land is found in the Ward No. 4 (41.30 acres).

**Education:** Land that used for Colleges, High School, Primary School, NGO School and Madrasa are considered in this section. Total area under this use is 25.96 acres or 0.50% of the Planning Area where in Ward No. 5 and 6 accounts for 7.12 acres and 6.04 acres

respectively. Ward No. 8 conceived minimum landuse under educational facilities (0.53 acres).

**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:** BTCL Office, Bangladesh Agricultural Development Corporation, Kanchan Post Office, Kanchan Paurashava Building, Kanchan Thana, Kanchan Union Land Office, Health Educational Training Institute, PDB Sub Station Office, Rural Doctor Training Center, Upazila Accounting Department, Upazila Agricultural Office, Upazila Chairman Office, Upazila Education Engineering Office, Upazila Election Commission Office, Upazila Public Health Engineering Office, Upazila Land Office, Upazila Rural Electrification Office, Upazila Resource Center, Upazila Settlement Office, Upazila Social welfare Department, Upazila Co-operation Society, Upazila Sub-Registry Office and other Upazila level government offices come under this land use category. Kanchan 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 5 and 6.

**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 Kanchan Paurashava.

**Other (Abandoned, etc.):** Most of NGOs 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. Kanchan Paurashava has a number of Non-Government services. Ward No 7 has 0.11 acres land of total non-government services land use.

**Water Bodies:** Water body of Kanchan Paurashava is mainly consists of pond, ditches, khals, dinghies, irrigation canal etc. It covers 391.43 acres of land. Ward No 8 (72.04acres), Ward No 7 (59.23acres), Ward No 4 (57.80acres) and Ward No 02 (49.23acres) share that major percentage of water bodies in this Paurashava. Table 4.4 shows detail share of water bodies in Kanchan Paurashava.

**Mixed-Use:** Mixed-use areas are those where, either commerce is mixed up with residence or residence with commerce or residence with office or admixture of all the three. Sometimes small industrial enterprises are also found to co-exist with any one or all the above 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.

Mixed use land includes the lands with more than one use. Ward wise distribution of mixed use lands are shown in Table 4.4. Survey revealed that, high percentage of mixed use lands are seen in Ward No 6 (4.60acres). Ward No 8 has no land in this category.

## 2.10 Paurashava Functional Linkage with Regional and National network

**National:** Physical growth of Kanchan Paurashava town depends on the road pattern. Concentrated development is the common feature of the Paurashava. A National Highway named Dhaka by Pass Road passed through the central part of the Paurashava in north-south direction. So the agro product can easily transport in different districts.

Kanchan Paurashava falls in the region of Shitalakshya River floodplain some areas of the Kanchan Paurashava are usually flooded to a depth of more than one meter, whereas the ridges are subject to shallow flooding only in the monsoon season.

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.

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

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

Regional: A regionally popular market place namely Kanchan Hat is the main focal point of Kanchan Paurashava. This market place attracted the people who are related to trade and commerce. Again some important jute mills, cotton yarn mills, paper mills are located in the area that increase the regional importance of this Paurashava. Kanchan Paurashava also linked with Sitalakshya River and gets the facility of water transport with other area.

## 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 2.7: 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: National/ Regional Road Network**

# 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 Kanchan 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 Kanchan (population data of Rupganj Upazila is missing in BBS cesus 2011).

**Table 3.1: Growth trend analysis**

| Area | Population 2001 | Population 2011 | Growth Rate 2011 (%) |
|---|---|---|---|
| Narayanganj Zila | 2,173,948 | 2948217 | 3.09 |
| Kanchan Paurashava | 44410 | 49468 | 1.08 |

On the other hand, the difference of data from different secondary sources also makes the job more problematic. The population figures collected from secondary sources especially for Paurashava were very much ambiguous. So for the final projection, several discussions were made with experts and BBS officials. Following the annual growth rate for the study area available from the 2011 Population Census, the projection up to the year 2031 with five years interval has been made.

Annual growth rate of Kanchan Paurashava 1.08% (2011) and annual growth rate of urban area in Narayanganj district 3.09% (2011). Though the Paurashava is almost adjacent to Dhaka City and development trend is very high. Also it is maintionable that several numbers of land developers are developing. As a result a huge number of population will migrate in this Paurashava very soon. By considering this scenario, zila growth rate 3.09% growth rate can be considered for population projection and assume that the population will increase upto 2031 in same rate. According to the formula, the

current growth (3.09) is used for projection and the rate will continue upto 2031 (assumption) where census 2011 was base.

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

**Basis of population projection:** The growth rate as presented and calculated in the Table-3.1 is considered for the preparation of population projection. According to the BBS (2011) in this Paurashava is about 49468.The population is projected by considering the base population of 2001 and 2011 annual growth rate 1.08. But the growth rate is not realistic for this Paurashava. Because the Paurashava is adjacent the RAJUK Purbachal New Model Town and the area is already developed by Real Estate companies. In this situation growth rate 3.09 can be considered for future population. The projection shows that the population of the study area will be 59322 in 2016, 71140 in 2021, 85311 in 2026 and 102306 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 Kanchan 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 (annual growth rate 3.09)**

| Ward No. | Area in acre | Population 2001 | Population 2011 | Projected population | | | |
|---|---|---|---|---|---|---|---|
| | | | | 2016 | 2021 | 2026 | 2031 |
| 1 | 445.5 | 4171 | 4604 | 5521 | 6621 | 7940 | 9522 |
| 2 | 647.9 | 6531 | 6113 | 7331 | 8791 | 10542 | 12642 |
| 3 | 341.1 | 3409 | 3415 | 4095 | 4911 | 5889 | 7063 |
| 4 | 794.9 | 6342 | 6797 | 8151 | 9775 | 11722 | 14057 |
| 5 | 439.2 | 4496 | 6916 | 8294 | 9946 | 11927 | 14303 |
| 6 | 248.6 | 3019 | 7636 | 9157 | 10981 | 13169 | 15792 |
| 7 | 606.7 | 6167 | 5816 | 6975 | 8364 | 10030 | 12028 |
| 8 | 1167.1 | 4964 | 4249 | 5095 | 6110 | 7328 | 8787 |
| 9 | 511.3 | 5311 | 3922 | 4703 | 5640 | 6764 | 8111 |
| Total | 5202.3 | 44410 | 49468 | 59322 | 71140 | 85311 | 102306 |

*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 Kanchan Paurashava area. About 250 households are involved with such pisciculture. The production mostly uses in the Dhaka and Narayanganj City. Investment in this field will bring huge prospects of the Paurashava. Other economic prospect summarizes in the following discussions:

- A development wave from Dhaka to Kanchan found after construction of Kanchan bridge and development of Purbachal new town.
- Availability of unskilled and cheap manpower.
- Availability of agriculture land. The land may be used for different agricultural production and those productions may be used for the input of agro-based industries.
- Due to the nearness of Dhaka City and Purbachal New Town, the Paurashava may be developed as the fringe area of Dhaka City. This fringe area with its agriculture production will support to the Dhaka City and Purbachal New Town where marketing for those productions are available and also the private land developer for housing purpose will be encouraged.
- 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 due to the construction of Kanchan Bridge and Purbachal Town.

## 3.4 Projection of Landuse

Landuse requirement**:** In Kanchan Paurashava, major landuse is agriculture (64.27%). Residential landuse occupies second position (20.19%) of the category. Only 1.46% 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 of physical and social development of Kanchan Paurashava.

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 2002 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. But, after the construction of the Kanchan Bridge radical change in physical development has been done.

The Paurashava is not an ideal township due to the agriculture domination. 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. 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 re striction 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 102306 (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 development.

**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. The vertical expansion will be emphasized rather than horizontal. In case of road network planning, missing links and new roads 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 | | 1050.3 | | | | |
| General residential | 100 – 150 persons/1 acre | | 522 | 551 | 582 | 614 |
| Real Estate– Public/Private | 200 population/ 1 acre | | | | | |
| Considered | 45 person/acre | | 1318 | 1581 | 1896 | 2273 |
| Roads | | 75.80 | | | | |
| Paurashava primary roads | 150 -100 feet | | | | | |
| Paurashava secondary roads | 100 -60 feet | | | | | |
| Paurashava local roads | 40-20 feet | | | | | |
| Education | | 25.96 | 74.15 | 88.93 | 106.64 | 127.88 |
| Nursery | 0.5 acre/10,000 population | | 5.93 | 7.11 | 8.53 | 10.23 |
| Primary School/ kindergarten | 2.00 acres/5000 population | | 23.73 | 28.46 | 34.12 | 40.92 |
| Secondary/High School | 5.00 acres /20,000 population | | 14.83 | 17.79 | 21.33 | 25.58 |
| College | 10.00 acres/20,000 population | | 29.66 | 35.57 | 42.66 | 51.15 |
| Vocational Training Centre | 5 - 10 acres / Upazila | | 5.00 | 5.00 | 5.00 | 5.00 |
| Open Space | | 8.74 | 140.51 | 166.51 | 197.68 | 235.07 |
| Play field/ground | 3.00 acres/20,000 population | | 8.90 | 10.67 | 12.80 | 15.35 |
| Park | 1.00 acre /1000 population | | 59.32 | 71.14 | 85.31 | 102.31 |
| Neighborhood park | 1.00 acre /1000 population | | 59.32 | 71.14 | 85.31 | 102.31 |
| Stadium/sports complex | 5 – 10 acres/Upazila HQ | | 10.00 | 10.00 | 10.00 | 10.00 |
| Cinema/ Theatre | 1.0 acre /20,000 population | | 2.97 | 3.56 | 4.27 | 5.12 |
| Health | | 0.896 | 21.86 | 24.23 | 27.06 | 30.46 |
| Upazila health complex / hospital | 10 -20 acres/Upazila HQ | | 10 | 10 | 10 | 10 |
| Health centre/ Maternity clinic | 1.00 acre/ 5,000 population | | 11.86 | 14.23 | 17.06 | 20.46 |
| Community Facilities | | 12.21 | 15.33 | 18.29 | 21.83 | 26.08 |
| Mosque/Church/Temple | 0.5 acre /20,000 population | | 1.48 | 1.78 | 2.13 | 2.56 |
| Eidgah/ | 1.0 acre/20,000 population | | 2.97 | 3.56 | 4.27 | 5.12 |
| Graveyard | 1.00 acre /20,000 population | | 2.97 | 3.56 | 4.27 | 5.12 |
| Community centre | 1.00 acre /20,000 population | | 2.97 | 3.56 | 4.27 | 5.12 |
| Police Box/outpost | 0.5 acre/ per box | | 0.50 | 0.50 | 0.50 | 0.50 |
| Fire Station | 1.00 acre/ 20,000 population | | 2.97 | 3.56 | 4.27 | 5.12 |
| Post office | 0.5 acre /20,000 population | | 1.48 | 1.78 | 2.13 | 2.56 |
| Commerce and Mixed use | | 12.98 | 65.25 | 78.25 | 93.84 | 112.54 |
| Wholesale market | acres/10000 population | | 5.93 | 7.11 | 8.53 | 10.23 |
| Retail sale market | acres/ 1000 population | | 59.32 | 71.14 | 85.31 | 102.31 |

| Types of Land Uses | Recommended Standard Provision unit) | Existing (acre) | Land requirement (acre) | | | |
|---|---|---|---|---|---|---|
| | | | 2016 | 2021 | 2026 | 2031 |
| Residential | | 1050.3 | | | | |
| Corner shops | 0.25 acre/per corner shop | | 0.00 | 0.00 | 0.00 | 0.00 |
| Neighborhood market | 1.00 acre/per neighborhood market | | 0.00 | 0.00 | 0.00 | 0.00 |
| Super Market | 1.50 – 2.50 acres/per super market | | 0.00 | 0.00 | 0.00 | 0.00 |
| Utilities | | | 17 | 18.2 | 19.56 | 21 |
| Drainage | As per local requirement | | | | | |
| Water supply | 1.00 acre /20,000 population | | 3.00 | 3.30 | 3.64 | 4.00 |
| Gas | 1.00 acre /20,000 population | | 3.00 | 3.30 | 3.64 | 4.00 |
| Solid waste disposal site | 5– 10 acres/Upazila HQ | | 5.00 | 5.00 | 5.00 | 5.00 |
| Waste transfer station | 0.25 acres/per waste transfer station | | | | | |
| Electric sub-station | 1.00 acre/20,000 population | | 3.00 | 3.30 | 3.64 | 4.00 |
| Telephone exchange | 0.5 acre/20,000 population | | 1.50 | 1.65 | 1.82 | 2.00 |
| Fuel Station | 0.5 acre/20,000 population | | 1.50 | 1.65 | 1.82 | 2.00 |
| Industry | | 244.58 | 148.31 | 177.85 | 213.28 | 255.77 |
| Small scale | 1.50 acres /1000 population | | 88.98 | 106.71 | 127.97 | 153.46 |
| Cottage/agro-based | 1.00 acres /1000 population | | 59.32 | 71.14 | 85.31 | 102.31 |
| Transportation | | 1.56 | 8.26 | 9.01 | 9.84 | 10.75 |
| Bus terminal | 1 acre /20,000 population | | 3.00 | 3.30 | 3.64 | 4.00 |
| Truck terminal | 0.50 acre /20,000 population | | 1.50 | 1.65 | 1.82 | 2.00 |
| Launch/steamer terminal | 1.00 acre /20,000 population | | 3.00 | 3.30 | 3.64 | 4.00 |
| Baby taxi/tempo stand | 0.25 acre /one baby taxi/tempo stand | | 0.25 | 0.25 | 0.25 | 0.25 |
| Rickshaw/van stand | 0.25 acre / stand | | 0.25 | 0.25 | 0.25 | 0.25 |
| Passenger Shed | 0.25 acre / stand | | 0.25 | 0.25 | 0.25 | 0.25 |
| Administration | | 0.709 | 20 | 20 | 20 | 20 |
| Upazila complex | 15.00 acres | | 15 | 15 | 15 | 15 |
| Paurashava office | 3 – 5 acres | | 5 | 5 | 5 | 5 |
| Agri-extension Farm | 10 acres/Upazila HQ | | 10.00 | 10.00 | 10.00 | 10.00 |
| Urban Deferred | 10 percent of the total build up area | | 174 | 184 | 134 | 205 |

## 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. 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 Narayanganj and Kanchan Paurashava.

Problems relating to the housing are mostly concerned with the poor community. 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 cannot solve the problems due to scarcity of fund. In the Paurashava, above 90 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 45 persons per acre and there is no standard for industrial use, commercial use, etc.

**Demand analysis**: It is estimated that housing demand stands at 2273 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 Kanchan Paurashava it is not possible to follow the standard properly. The Paurashava undeveloped horizontal development is taking part rather than the vertical expansion. On the other hand, six land developers are developing the side rapidly which are approved by the Pourashava. As a result a big figure of population will be migrated in new urban residential area and that figure is unknown. By considering all these facts, the density in this Paurashava is considered 45 persons per acre.

**Table 3.4: Ward-wise demand of housing areas**

| Ward No | Existing (acre) | Estimated housing demand (acre) | | | |
|---|---|---|---|---|---|
| | | 2016 | 2021 | 2026 | 2031 |
| 1 | 127.91 | 123 | 147 | 176 | 212 |
| 2 | 135.73 | 163 | 195 | 234 | 281 |
| 3 | 71.11 | 91 | 109 | 131 | 157 |
| 4 | 124.78 | 181 | 217 | 260 | 312 |
| 5 | 145.47 | 184 | 221 | 265 | 318 |
| 6 | 110.36 | 203 | 244 | 293 | 351 |
| 7 | 134.43 | 155 | 186 | 223 | 267 |
| 8 | 86.67 | 113 | 136 | 163 | 195 |
| 9 | 113.9 | 105 | 125 | 150 | 180 |
| Total | 1050.36 | 1318 | 1581 | 1896 | 2273 |

*Source: Landuse Survey, 2011 and calculated by the Consultant.*

# 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 3 to 6 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.

Northern part of the Paurashava is under the char lands. In every year the Sitalakhya River submerges and eroded those lands. Urban facilities are not possible to provide on those lands except agriculture.

Most of the areas in the Paurashava are low land needs sufficient earth filling activities (at least 3 to 6 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 National Highway (Dhaka by pass Road) appropriate for those services.

## 4.2 Socio-economic

About 37% households head in Kanchan are in class VI-X, 11.2% households head are in class I-V, 25.8% households head are in SSC/equivalent, 13.8% households head are in HSC/ equivalent, 4.2% households head are in BSS/equivalent, 1.2% households head are in MSS/ equivalent, 5.2% households head are above MSS and rest 1.6% household head are illiterate. Maximum people in Kanchan 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 very little or few access to National supplied gas. As there is no piped water supply provision of Kanchan Paurashava authority, the households themselves establish electric motor instead of hand tube well for piped water supply to meet individuals' water demand. People of Kanchan 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:** During the drainage survey, the team has identified man made drainage covering different parts of different Wards. Total length of this network is 11.11 km. All the drains are pucca with one meter average width. Uncovered drains are mostly in existence with poor condition.

The drainage condition, the serviceability, structural conditions, obstruction, situation, blockage are all found in the manmade drain network. The bad or poor drains usually had damaged side walls, surfaces with obstruction, debris, solid waste, irregular water way etc.

**Sewerage Facility:** The Sewerage system so far has not introduced in the Paurashava area. Maximum households build individual septic tanks for disposal of human excreta built on own initiatives. There is only one public toilet in the Paurashava that is very unhygienic due to lack of proper maintenance and management. However, the drainage system in the study area has to be improved in future by proper integration of drainage network and sewerage line.

**Toilet Facility:** In the Paurashava 50.93% of dwelling households have sanitary latrines. A total of 45.57% of the households have non-sanitary latrines. 3.49% of the households have no toilet facility.

**Water supply:** Water supply network is not available in the Paurashava area. 100% of the households are using hand tube wel as main source of water supply for drinking and cooking purpose. 100 hand tube wells are available in the entire Paurashava area. Establishment of water supply network is ongoing.

## 4.3 Environmental

There is an up-coming issue of land filling in the Paurashava area that will cause a serious problem in the future. The low lands and water bodies in different places are being developed by private housing and commercial settlements without planning intervention. Like the Dhaka city, Kanchan Paurashava also has the problem of filling the wetland. Wet land should be carefully identified and marked as per the requirement of 'Wet land Protection Act 2002' in the Paurashava plan. So that they can be save from the land grabbers in future. Well solid waste management system is urgently necessary in this Paurashava. Private public partnership (PPP) can be a good initiative for this purpose.

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

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

# 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 Kanchan 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 49% land of the Kanchan 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 Kanchan 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 | Desig n 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 Kanchan 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:

- Food for Works Program (Lj-Sl ¢h¢ej-u MjcÉ LjÑp§Q£)
- G.R Program (Gratuitous Relief Program)
- T.R Program (Test Relief Program)
- V.G.D Program (Vulnerable Group Development Program)
- V.G.F Program (Vulnerable Group Feeding Program)
- Single-House Single-Farm Program (HL¢V hjs£ HL¢V Mjjl LjÑp§Q£)

- Back to home Program (O-l ®gl¡ LjÑp§Q£)
- Food for Education Program (M¡-cÉl ¢h¢ej-u ¢nr¡ LjÑp§Q£)
- Rural Occupational Project (fõ£ S£¢hL¡ue fËLÒf)
- Poverty Reduction Project (c¡¢lâ ¢h-j¡Qe fËLÒf)
- Self-employment Program for Women (j¢qm¡-cl BaÈ-LjÑpwØq¡e fËLÒf)
- Women Empowerment Program (j¢qm¡-cl p¡j¡¢SL rja¡ue fËLÒf)
- Coordinated Women Development Program (pj¢eÄa j¢qm¡ Eæue fËLÒf)
- Peace Home Program (n¡¢¿¹ ¢eh¡p LjÑp§Q£)
- Shelter Support Program (BnËue LjÑp§Q£)
- Educational Allowance Program (¢nr¡ Efh$^{a}$¢š L¡kÑH²j)
- Aged-allowance Program (huØLi¡a¡ L¡kÑH²j)
- Micro-credit Program (r¥âGZ LjÑp§Q£)
- Allowances for Widowed, Poor and Husband-renouncement Women Program (¢hdh¡, c¤xØq J ü¡j£ f¢laÉJ²¡ j¢qm¡-cl SeÉ i¡a¡ fËc¡e LjÑp§Q£)

**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) Act, 2009 but the name remains same.

The Local Government (Paurashava) Act, 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. A¡¢bÑL fË¢aù¡e A¡Ce, 1993 (1993 p-el 27 ew A¡Ce)
2. AbÑ GZ A¡c¡ma A¡Ce, 2003 (2003 p-el 8ew A¡Ce)
3. ÙÛ¡e£u plL¡l L¢jne AdÉ¡-cn, 2008
4. h¡wm¡-cn nËj A¡Ce, 2006 (2006 p-el 42 ew A¡Ce)
5. Cantonments Act, 1924 (Act No. II of 1924)
6. District Act, 1836 (Act No. I of 1836)
7. The Penal Code, 1890 (Act No. XLV of 1890);
8. Prevention of Corruption Act, 1947 (Act No. II of 1947)
9. hÉ¡wL ®L¡Çf¡e£ A¡Ce, 1991 (1991 p-el 14 ew A¡Ce)
10. The Bangladesh Shilpa Rin Sangstha Order, 1972 (P.O. No. 128 of 1972)
11. The Bangladesh Shilpa Bank Order, 1972 (P.O. No. 129 of 1972)
12. The Bangladesh House Building Finance Corporation Order, 1973 (P.O. No. 17 of 1973)
13. The Bangladesh Krishi Bank Order, 1973 (P.O. No. 27 of 1973)
14. The Investment Corporation of Bangladesh Ordinance, 1976 (Ordinance No. XL of 1976)
15. The Rajshahi Krishi Unnayan Bank Ordinance, 1986 (Ordinance No. LV III of 1986)

16. ®L¡Çf¡e£ A¡Ce, 1994 (1994 p-el 18 ew A¡Ce)
17. Local Government (Paurashava) Act, 2009 (Ordinance No. XLXVIII of 2009)
18. SeÈ J j$a¤É ¢ehåe A¡Ce, 2004 (2004 p-el 29 ew A¡Ce) (see section 53(2)(Q)
19. Evidence Act, 1872 (Act No. I of 1872) (see section 131)
20. fö ®l¡N A¡Ce, 2005

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

**Building Construction Rules, 1996**

**Building Construction:** The Paurashava Authority is the custodian and enforcement authority of the Building Construction 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 distribution systems in the rural areas of Bangladesh.
b) To take measures for effective use of electricity to foster rural development with special emphasis on increase of use of electric power for economic pursuits such as development of agriculture and establishment of rural industries and assisting the advantaged sections of the community for augmenting their income and standard of living.

**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 Act, 2009 under which the Master Plan (Structure Plan, Urban Area Plan and Ward Action Plan) is being prepared.

### 5.2.2 Paurashava Development Management

After the independence (1971), all local government systems were abolished by the Presidential Order No. 7 in the year 1972 and appointed an administrator in each of the Municipality. After this Order, name of the Local Governments were changed as Town Panchayat instead of Union Committee, Shahar Committee instead of Town Committee and Paurashava instead of Municipal Committee. Shahar Committee was renamed as Paurashava in the year 1973 with a Presidential Order No. 22 and introduced election procedure for the Chairman and Vice-chairman. Thana Parishad Ordinance, 1976 (Ordinance No. XXXII of 1976) was enacted in 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 Act, 2009.

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

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

| Major activity | Specific functions | Functions in brief |
|---|---|---|
| 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 |

| Major activity | Specific functions | Functions in brief |
|---|---|---|
| | | errect a building or any plot of land covered by the provisions of a site development scheme sactioned to area in the prescribed manner.<br>Among other matters, a site development scheme may provide for-<br>(a) the division of the site into plots;<br>(b) the street, drains and open spaces to be provided;<br>(c) the land to be reserved for public purposes and to be transferred to the Paurashava;<br>(d) the land to be aquired by the Paurashava;<br>(e) the price of plots;<br>(f) the works that shall be excuted at the costof the owner or owners of the site or sites; and<br>(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 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.<br>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-<br>(a) the promotion, improvement and development of such function or functions of the Paurashava as may be specified;<br>(b) the manner in which the plans shall be financed, executed, |

| Major activity | Specific functions | Functions in brief |
|---|---|---|
| | | implemented and supervised;<br>(c) the agency through which the plans shall be executed and implemented; and<br>(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 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. |

| Major activity | Specific functions | Functions in brief |
|---|---|---|
| | 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 four lane Dhaka by pass National Hghway, 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 rickshaw 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 Kanchan 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 Kanchan Upazila has affected by the several major natural disasters ranging from Cyclone, Flood to Water-logging and Draughts, etc. The periods of those disasters are 1998, 2000, 2004, 2007 and 2008. Very scanty attempt has been made by the government to rehabilitate people after the natural disaster.

Urbanization is converting lands for residential use. Agricultural lands and water bodies are being chosen most frequently and the lands are being converted into urban settlement. In the Kanchan 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 (Pourashava) 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 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 Act, 2009 considered as a package and the plan included in this package named Structure Plan, Urban Area Plan and Ward Action Plan, though there is no regulation in the country on the preparation and implementation of those plans.

In the Paurashava, 55.2% (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
## LANDUSE 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 Kanchan Paurashava is 5202.2 acres; population is 49468 (2011) with gross density 9 persons per acre. In the year 2031, the population will be 102306 with gross density 20 persons per acre if growth rate remain 3.7%.

At present, agriculture and water body includes 64.27% and 7.5% 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 Kanchan Bridge. Rapid change of landuse will be viewed after constraction of Dhaka Bypass. 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**

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.

**Policies:** Existing town centre will be defined as core area. Mostly mixed-use areas are the important characteristics of the core area. Ward no. 05 and ward no. 06 are proposed as urban core area. Size of the core area is 376.8 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: Proposed Landuse for Structure Plan**

| Landuse Type | Area (acre) | % |
|---|---|---|
| Agriculture | 1126.7 | 21.66 |
| Core Area | 376.8 | 7.24 |
| Fringe Area | 1687.0 | 32.43 |
| Major Circulation | 345.0 | 6.63 |
| New Urban Area | 1005.7 | 19.33 |
| Peripheral Area | 390.5 | 7.51 |
| Waterbody | 270.7 | 5.20 |
| Total | 5202.396 | 100.00 |

**Fringe area**

This zone is identifird as 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.

**Policies:** The area, adjacent with the core area, ideal for rapid urbanization is considered as fringe area. Total area is 1687 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**

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.

**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 390.5 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**

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 being proposed to be developed within the year 2031.

**Policies:** Planned development will be the prime characteristic of the new urban area. Several numbers of realestate companies are developing in ward no. 04, ward no. 08 and ward no. 09. So this area is proposed for 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 1005.7 acre of land is necessary for 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**

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, sugercane, jute, 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.

**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 1126.7 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).

**Water body**

Water body contains 270.7 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 345 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 0.3 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.

**Map 7.1: Structure Plan of Kanchan Paurashava**

**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 two 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.

# 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 buildup 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 Kanchan Paurashava area. About 140 households are involved with such pisciculture. The production mostly uses in the Dhaka City and Mymensingh 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 Dhaka City, the Paurashava may be developed as the fringe area of Dhaka City. This fringe area with its agriculture production will support to the Dhaka City where marketing for those productions are available.

- 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 (60%) and others intend to increase their production (40%). 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 Kanchan Upazila / Narayanganj 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. The 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 Kanchan Paurashava have been developed sparsely following some degree of uniformity. According to the number of residential buildings Ward No. 8 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 60% of the dwellings in the Paurashava are in good

condition. About 10% needed to be demolished due to their dilapidated conditions, while about 30% is new construction.

**Building materials used**

The Paurashava is dominated by rural environment; as a result about 80.17% structures are found katcha, constructed with temporary materials like bamboo thatch, C.I.Sheet and wood. The semi-pucca structures that are wall made with brick and the roof with C.I.Sheet is 14.12%. On the other hand, 5.71% houses are pucca that is constructed with bricks and concretes. The building materials used for the construction of houses reflects poor economic condition of the owners.

**Floor area**

Physical feature Survey findings reveal that, 98.66% of buildings are 1 storied and 1.06 % of building are 2 storied at Kanchan Paurashava area. Among others, 3 storied buildings (0.27%) were found in Ward No 02, 03,05,06,07 and 09. Floor area of those pucca structures are varied from 1000 sq. ft. to 2500 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 1200 sq. ft. Comparatively, floor area of the katcha structures are larger than the floor area of the pucca and semi-pucca structures. In an average, floor area of the katcha structures is between 1800 sq. ft. to 2500 sq. ft. Most of those structures are living room and located in the rural environment of the Paurashava.

**Housing finance**

Housing finance is one of the most important problems of housing promotion. Besides, the Paurashava also suffers from the problems of utility services like, waste management, sanitation and drainage. Road development can not keep pace with population and urban physical growth. Most man-made drains are clogged, causing waste water overflow at many points. There is no program for slum rehabilitation.

Overwhelming majority of the land owners are depended on self-financing for housing construction. Low house rent is a major cause for small number of constructions.

Over 95 percent of the housing supply comes from informal private sources. The formal organized private commercial housing is yet to emerge in the Paurashava. The NGOs usually operate in low income areas where they provide services and cash finance instead of complete housing units.

**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 gross population density in the Paurashava is only 31 persons per acre. Buildings in the Paurashava are dominated by katcha structure 82%). 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 Dhaka and Kanchan 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 98 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 Dhaka and Faridpur. In spontaneous housing areas of the core area, habitable land sells between Tk. 1, 12,000 to Tk. 1, 20,000 per decimal. About 40% household in the Ward No. 8 and 10% in Ward No. 9 live in rental houses and pay Tk. 600 and less each month as house rent.

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 to come 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 (Narayanganj-Mymansingh) passes through the Paurashava is the destination of all north-south 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 Kanchan 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 Kanchan. 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 Sitalakhya River is flowing on the western part from east to west 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 Kanchan Paurashava, average height of the Wards is 5.8 meter and differences among the Wards are 1.2 meter to 9.6 meter, but outside the Paurashava boundary lowest land level value is lower than 0.56 meter. It means a steep slope from 1.2 meter to 9.6meter 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 65%), 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. About 80% Pucca toilet is found in the Paurashava and owner of those toilets are poor people.

**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 Kanchan Upazila has affected by the several major natural disasters ranging from Cyclone, Flood to Water-logging and Draughts, etc. The

periods of those disasters are 1998, 2000, 2004, 2007 and 2008. Very scanty attempt has been made by 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 Kanchan 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-section 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

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

## 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 Paurashava Act needs to be revised and more power should be given to the Executive Officer for appointment of employees.

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

The present plan package imposes a large number of development projects on Kanchan 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 Kanchan 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.

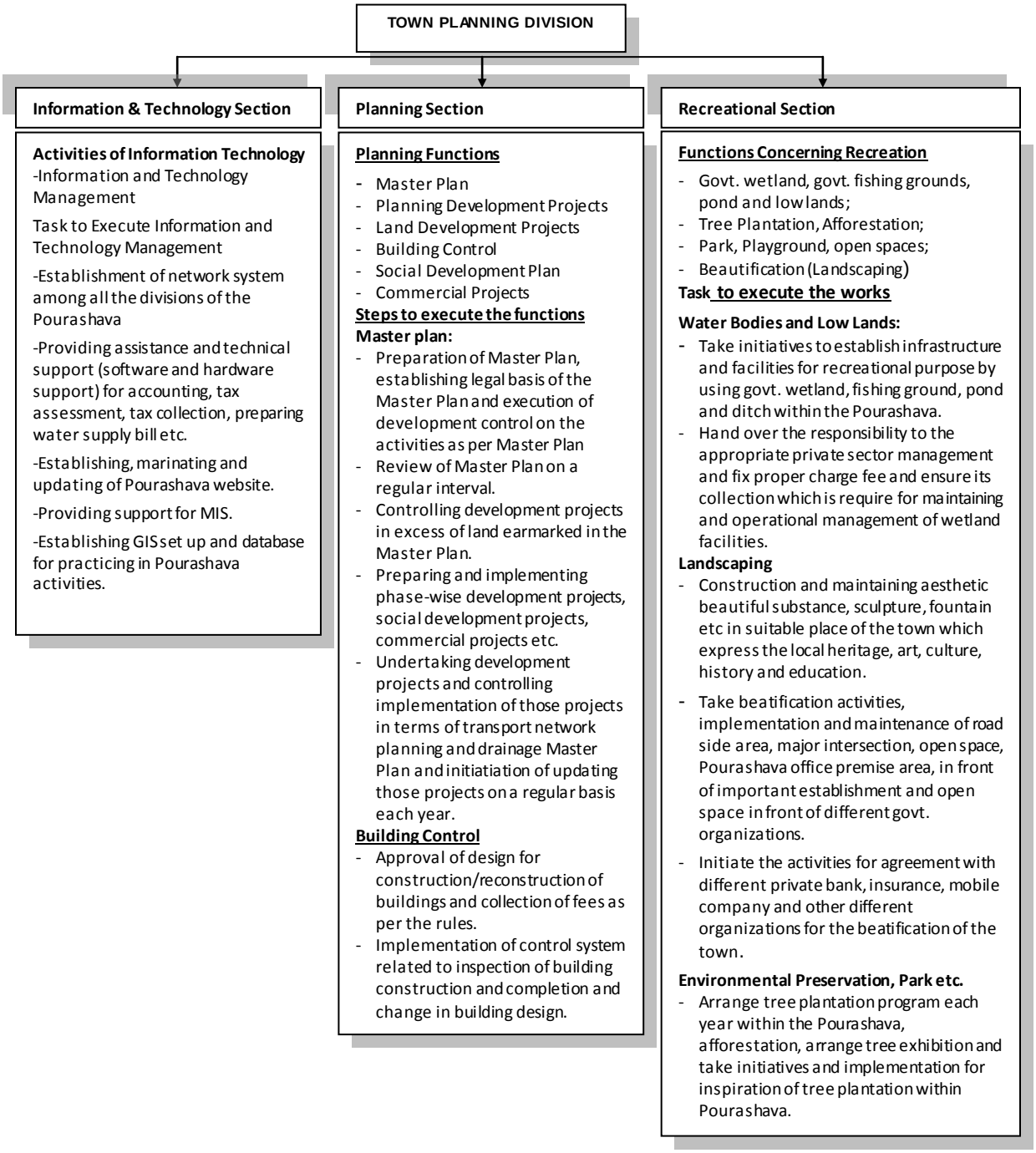
#### 9.1.3.1 Institutional Framework

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

**Figure 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.

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

**Support for Planned Urbanization**

For creating planned urbanization, Paurashava may:

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

**Community Mobilization Program**

Following are the community mobilization support activities:

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

**Urban Governance Improvement Action Programme (UGIAP)**

- It is stipulated in the 6th 5 year plan 'the Key constrains to the effective functioning of the Paurashavas and City Corporations are unclear mandate and service responsibilities; lack of accountability; weak finances and financial autonomy; poor coordination and control among service agencies and weak management'.
- To overcome the challenges, the 6th Five year plan as well as Perspective Plan of Bangladesh, 2011-31 recommends the same issues mentioned below:
- the instructional reform and decentralization of responsibilities and resources to local authorities; participation of civil society including woman in the design, implementation and monitoring of local priorities; building capacity of all actors (Institutions, groups and individuals) to contribute fully to decision making an urban development process; and facilitate networking at all levels.
- It is already tested, proven and accordingly recognized in the 6th Five year plan that urban infrastructure improvements have been proved very successful introducing governance and performance-based approach adapted by UGIIP in selected ULBs in the country. Among other suggestions the 6th Five year plan also includes nature for Urban Governance Improvement Action Progamme (UGIAP) and Capacity Building of Institutes at Municipality-level in particular.

**Citizen Awareness and Participation**

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

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

**Urban Planning and Environmental Improvement**

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

- Introduction of environment and public health activities.

**Urban Poverty Reduction**

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

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

**Income Generating Activities**

The income generating activities include:

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

**Transparency and Accountability**

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

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

### 9.1.4 Legal Aspects

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

### 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 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 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 Kanchan 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.

Under different Government Projects computer and accessories are supplied for automation of the accounts system of Paurashavas within Bangladesh. Besides, trainings are also offered to the Paurashava account staffs for enabling introduction of automation in accounts system. But Kanchan Paurashava has not yet been enlisted under any kind of these projects.

**Revenue Management**

The Paurashava still follows a traditional management system in tax collection and revenue management. 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. Tax automation system is not established here yet. The public is mainly informed about tax collection during the presentation of annual budget. They may, however, get information from the councilors 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 will have been supplied and installed in the Paurashavas covered by different projects. The projects also provided training to the relevant staff for functioning of the systems. With the implementation of these projects people can now instantly know about the status of their tax payment, bill payment, 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, Kanchan 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 cannot 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

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

Must ensure 20 ft. access road for any type of land use clearance.

No permanent land use should be allowed in the area demarcated as urban reserve and the authority will follow the guideline provided to Annexure - B when the will provide land use clearance.

Must ensure that no land use clearance is issued on the lands indicated as road, drainage channel, water reservoir, educational institution, health services, open space, fruit garden / orchard in the Urban Area Plan.

Monitoring and evaluation is a very important part of plan implementation. Monitoring helps check if the plan is being implemented properly. It also measures the level of implementation of the plan. If the plan implementation is not on track, corrective measures can be taken to put execution on the track. After expiry of any plan, evaluation is made about the errors and omissions. Such evaluation helps take corrective measures in the next plan. Such monitoring and evaluation must be carried out from within the Paurashava. But Kanchan 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 Kanchan 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 current plan package. Though the development proposals are said to be executed by a large number of development agencies, but it is beyond doubt that the heaviest burdens will have to be shouldered by the Paurashava. As a local government agency, it suffers from resource constraint due to low level of urbanization and investment by both public and private sectors. The land value will maintain perpetually low growth rate in the town. Therefore, prospect of mobilization of substantial resource from sale of serviced land is extremely meager. For the same reason, revenue earning from betterment fee, planning permission and other sources may also remain low. Paurashava is heavily dependent on the government for executing its development projects as it is unable to collect sufficient revenue from its tax and non-tax sources. Therefore, it is clear that execution of development projects under the current plan will depend heavily on the government response to supply adequate fund. This situation calls for increasing revenue earning by generating new revenue sources.

## 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.

# PART B

## URBAN AREA PLAN

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

The Terms of Reference (TOR) specify (Pg. 6. Article 4) that the Urban Area Plan (UAP) / Multi-sector Investment Plan (MSIP) will consist of the following plans:

- Landuse Plan
- Transportation and Traffic Management Plan
- Drainage and Environmental Management Plan
- Plan for Urban Services

The Urban Area Plan is presented in both, map and textual format. The plan map is presented in 1:1980 scale, super imposed on latest cadastral/revenue map having plot boundaries within mouzas. The plan is accompanied by an explanatory report supported by necessary figures, maps and data.

Urban area plan is broadly divided into two parts, plan map and explanatory report. The plan map depicts future landuse zoning, infrastructure development and other development proposals. Report elaborates all proposals proposed in the plan, including rules, regulations and recommendations for implementation of the plan.

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

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

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

The Transportation and Traffic Management Plan includes existing conditions of transportation facilities, intensity of traffic volume, degree of traffic congestion and

delay, analysis of existing deficiencies, travel demand forecasting for next 20 years, future traffic volume and level of services and transportation development plan. Moreover, transportation system management strategy and plan implementation strategies are also presented in this plan.

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

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

The Urban Area Plan of the Kanchan Paurashava covers an area of 5202.3 acres (21.1 sq km.). The reason behind choosing such area lies in fact that this is the most urbanized part of the Paurashava, where there is still scope and possibility of urban development in near future. Paurashava operates all parts where it provides basic urban services and facilities. Considering future urbanization trend and potential development projected population is assumed 71140 for the year 2021 and 102306 for 2031.

The Urban Area Plan covers nine Ward Action Plans also.

# 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 Kanchan 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.

Major built up part of the Paurashava area is using for residential purpose. According to the land use survey table of the study area, it has been ascertained that 1050.36 acres (20.19%) of land is presently under residential use. Commercial and Industrial use occupied 12.98 acres (0.25%) and acres 244.58 (4.70%) respectively. From the survey results, it is found that the Paurashava area is dominated by non-urban character at present. The mixed use occupied 6.41 acres (0.12%). A large part 3343.46 acres (64.27%) is occupied by the Agricultural land and Water bodies 391.43 acres (7.52%). There 6.96 acres (0.13%) of land for community services and only 25.96 acres (0.50%) of land for educational facilities 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 2001 it is notified as Paurashava. Radical change of landuse has been occurred after construction of Kanchan Bridge. Before it known as Paurashava, agricultural domination was the key landuse. During last

twenty years, the landuse scenarios remain same. A stagnant character of landuse change still stand due to the existence of river named Sitalakhya.

**Table 10.1: Existing Land use in Kanchan Paurashava**

| S/L No. | Land Use Category | Ward No | | | | | | | | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Area(acre) | (%) |
| 1. | Residential | 127.9 | 135.7 | 71.11 | 124.8 | 145.5 | 110.4 | 134.4 | 86.67 | 113.9 | 1050.36 | 20.2 |
| 2. | Commercial | 0.32 | 3.61 | 0.22 | 0.87 | 1.07 | 6.24 | 0.13 | 0.09 | 0.45 | 12.98 | 0.25 |
| 3. | Industrial/ Processing and Manufacturing | 16.73 | 61.78 | 52.85 | . | 0.8 | 45.45 | 1.37 | . | 65.59 | 244.58 | 4.7 |
| 4. | Educational Facility | 3.77 | 0.58 | 1.54 | 3.25 | 7.12 | 6.04 | 1.3 | 0.53 | 1.85 | 25.96 | 0.5 |
| 5. | Governmental Services | . | . | . | . | 0.39 | 0.71 | . | . | . | 1.1 | 0.02 |
| 6. | Non Governmental Services | . | . | . | . | . | . | 0.11 | . | . | 0.11 | 0 |
| 7. | Mixed Use | 0.48 | 0.16 | 0.05 | 0.6 | 0.31 | 4.6 | 0.12 | . | 0.1 | 6.41 | 0.12 |
| 8. | Community Services | 0.63 | 0.82 | 0.29 | 1.11 | 0.77 | 1.07 | 0.74 | 0.53 | 1 | 6.96 | 0.13 |
| 9. | Circulation Network | 6.27 | 11.36 | 6.73 | 7.06 | 11.67 | 8.76 | 10.17 | 3.7 | 10.09 | 75.8 | 1.46 |
| 10. | Recreational Facility | . | . | 2.21 | . | . | 0.35 | . | . | . | 2.56 | 0.05 |
| 11. | Vacant land | 0.12 | 1.13 | 0.04 | 1.68 | 0.49 | . | 4.99 | . | 0.28 | 8.74 | 0.17 |
| 12. | Transport & Communication | . | 0.17 | . | 0.32 | 0.05 | 0.05 | . | . | 0.97 | 1.56 | 0.03 |
| 13. | Service Activity | 0.13 | 0.8 | 0.07 | 0.11 | 0.32 | 0.84 | 0.06 | . | 3.83 | 6.17 | 0.12 |
| 14. | Agricultural | 262 | 378.8 | 181.4 | 594.5 | 231.1 | 41.3 | 389.4 | 1003.1 | 261.9 | 3343.46 | 64.3 |
| 15. | Forest | | | | | | | | | | 0 | 0 |
| 16. | Miscellaneous | . | . | 0.02 | 0.03 | 0.04 | 0.08 | . | . | . | 0.17 | 0 |
| 17. | Urban Green Space | 0.26 | 3.83 | 3.23 | 2.82 | 1.22 | 1.03 | 3.9 | 0.74 | 6.47 | 23.5 | 0.45 |
| 18. | Restricted | | | | | | | | | | 0 | 0 |
| 19. | Water body | 26.77 | 49.23 | 21.37 | 57.8 | 38.45 | 21.71 | 59.23 | 72.04 | 44.84 | 391.43 | 7.52 |
| Total | | 445.4 | 648 | 341.1 | 794.9 | 439.2 | 248.6 | 606 | 1167.4 | 511.3 | 5201.84 | 100 |

*Source: Land Use Survey- 2010*

### 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 71140 in the year 2021 and 102306 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 (including extended areas). Adjustments have to be made in the core areas and a time line may be set to gradually achieve these standards over a five, ten and fifteen years period.

**Commerce**
In total, 12.98 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 102306 populations for the planning area up to the year 2031. For this population total number of required wholesale market/ bazar stands at (102306 / 10,000), means 10.2 acres land is being needed up to the year 2031. The planning area already has 1 retail sale market including wholesale market/bazar.

**Recommendation / Forecast:** The study team recommends expansion of present wholesale market/bazar on earmarking land. Necessary planning permission and design criteria will be provided by the Paurashava. The lands may be allowed to use for other commercial purposes like bank, hotel and godown.

**Industry**
In the Paurashava, 244.58 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 102306 populations for the planning area up to the year 2031. For this population total required land for industry stands 153.46 acres land for small-scale industry and 102.3 acres for cottage / agro-based industry up to the year 2031.

**Recommendation / Forecast:** The study team recommends earmarking land for small-scale/agro-based industry within the Paurashava. Necessary planning permission will be followed by the Paurashava. The lands, however, should not be allowed to use other than industry. The industries which are located dispersely should be accommodated within the prescribed industrial areas. Heavy industry may develop along the river with proper waste treatment plant.

**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 102306 populations for the study area up to the year 2031.

For this population total number of required primary school stands at (102306 / 5,000), means 11 schools with 40.92 acres of land is being needed up to the year 2031.

**Recommendation / Forecast:** According to the standard there is no need for new primary school. But considering the extended areas, the study team suggests to reshape primary school on an area of about 2.00 acre.

**Secondary School**

The secondary schools in the planning area covering together 8.82 acres (6 no.) land. Average area of a secondary school is 0.5 acre.

**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 102306 up to the year 2031. Therefore, as per standard the planning area needs (102306 / 20,000), means 5 secondary school is being needed up to the year 2031. At present, there are 6 secondary schools with 8.82 acres land in the planning area. Number of schools already exceeds the requirement.

**Forecast / Recommendation:** As per above standard, one more secondary school is needed but the existing areas of the school may be expanded vertically.

**College / Higher Secondary School**

There are three colleges in the planning area. Those colleges are located on 4.56 acres (2 No.) of land.

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

**Recommendation / Forecast:** The planning area already has three degree level college apart from higher secondary level education is in the high schools. Therefore, no recommendation for new college is prescribed but, expansion of the existing college is required.

**Map 10.1: Existing Land Use**

**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 5.0 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 .

**Health Facilities**

At present, three health establishments are in the Paurashava. One hospital and two clinics are those establishments. The health facilities are on 0.896 acres land.

**Determination of Standard:** The prescribed standard for health facilities are 10 to 20 acres for Upazila Hospital and 1 acre per 5000 population for Health centre/Maternity clinic. According to the standard, up to the year 2031, (102306 / 5000) means 20.02 acres land will be needed for Health centre/Maternity clinic.

**Recommendation / Forecast:** The study team is not recommended any land for health services.

**Open Space**

At present, there are 8.74 acre of land is available for open space/vacant land 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 is not recommended play field. At least one park is being recommended with minimum area 40.0 acres depending on availability of open land. 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.

**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 12.21 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 a new community centre on one acre of land. Areas for Mosque/Church/Temple, Post office, Fire service station and T&T remain with existing areas.

**Administration**

In the Paurashava, 0.709 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 5.25 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**

There is no land under recreational facility in the Paurashava.

**Determination of Standard:** According to the standard for recreational facilities, 1 acre of land is to be provided for every 20,000 population for cinema / theatre, 5 to 10 acres land for stadium / sports complex and 1.75 acres land per 10,000 populations for a shishu park. The study team has estimated 102306 populations for the planning area up to the year 2031. For this population total land required for cinema/theatre stands at (102306 / 20,000), 10 acres for stadium and 60 acres for shishu park is being needed up to the year 2031.

Recommendation / Forecast: The study team recommends a stadium / sports complex on 10.00 acres of land.

**Residential**

Existing residential areas of the Paurashava is 1050 acres. All type of residential lands is included with such amount of land. About 25% 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 Paurahsava. Rather 45 persons /acre are more realistic .No standard is being recommended for low-income group.

**Recommendation / Forecast:** According to the standard (45 persons per acre), about 2273 acres land will be needed up to the year 2031. The Consultant recommends one row housing area for flood victims. 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.

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.

**Table 10.2: Existing and proposed landuses including standard (Kanchan)**

| Types of Land Uses | Recommended Standard Provision unit) | Existing (acre) | Land requirement (acre) | | | |
|---|---|---|---|---|---|---|
| | | | 2016 | 2021 | 2026 | 2031 |
| Residential | | 1050.3 | | | | |
| General residential | 100-150 persons/1 acre | | 522 | 551 | 582 | 614 |
| Real Estate–Public/ Private | 200 population/1 acre | | | | | |
| Considered | 45 person/acre | | 1318 | 1581 | 1896 | 2273 |
| Roads | | 75.80 | | | | |
| Paurashava primary roads | 150 -100 feet | | | | | |
| Paurashava secondary roads | 100-60 feet | | | | | |
| Paurashava local roads | 40 -20 feet | | | | | |
| Education | | 25.96 | 74.15 | 88.93 | 106.64 | 127.88 |
| Nursery | 0.5 acre/10,000 population | | 5.93 | 7.11 | 8.53 | 10.23 |

| Types of Land Uses | Recommended Standard Provision unit) | Existing (acre) | Land requirement (acre) | | | |
|---|---|---|---|---|---|---|
| | | | 2016 | 2021 | 2026 | 2031 |
| Residential | | 1050.3 | | | | |
| Primary School/ kindergarten | 2.00 acres/5000 population | | 23.73 | 28.46 | 34.12 | 40.92 |
| Secondary/High School | 5.00 acres /20,000 population | | 14.83 | 17.79 | 21.33 | 25.58 |
| College | 10.00 acres/20,000 population | | 29.66 | 35.57 | 42.66 | 51.15 |
| Vocational Training Centre | 5 -10 acres / Upazila | | 5.00 | 5.00 | 5.00 | 5.00 |
| Open Space | | 8.74 | 140.51 | 166.51 | 197.68 | 235.07 |
| Play field/ground | 3.00 acres/20,000 population | | 8.90 | 10.67 | 12.80 | 15.35 |
| Park | 1.00 acre /1000 population | | 59.32 | 71.14 | 85.31 | 102.31 |
| Neighborhood park | 1.00 acre /1000 population | | 59.32 | 71.14 | 85.31 | 102.31 |
| Stadium/sports complex | 5-10 acres/Upazila HQ | | 10.00 | 10.00 | 10.00 | 10.00 |
| Cinema/ Theatre | 1.0 acre /20,000 population | | 2.97 | 3.56 | 4.27 | 5.12 |
| Health | | 0.896 | 21.86 | 24.23 | 27.06 | 30.46 |
| Upazila health complex/ hospital | 10 -20 acres/Upazila HQ | | 10 | 10 | 10 | 10 |
| Health centre/Maternity clinic | 1.00 acre/ 5,000 population | | 11.86 | 14.23 | 17.06 | 20.46 |
| Community Facilities | | 12.21 | 15.33 | 18.29 | 21.83 | 26.08 |
| Mosque/Church/Temple | 0.5 acre /20,000 population | | 1.48 | 1.78 | 2.13 | 2.56 |
| Eidgah/ | 1.0 acre/20,000 population | | 2.97 | 3.56 | 4.27 | 5.12 |
| Graveyard | 1.00 acre /20,000 population | | 2.97 | 3.56 | 4.27 | 5.12 |
| Community centre | 1.00 acre /20,000 population | | 2.97 | 3.56 | 4.27 | 5.12 |
| Police Box/outpost | 0.5 acre/ per box | | 0.50 | 0.50 | 0.50 | 0.50 |
| Fire Station | 1.00 acre/ 20,000 population | | 2.97 | 3.56 | 4.27 | 5.12 |
| Post office | 0.5 acre /20,000 population | | 1.48 | 1.78 | 2.13 | 2.56 |
| Commerce and Mixed use | | 12.98 | 65.25 | 78.25 | 93.84 | 112.54 |
| Wholesale market | acres/10000 population | | 5.93 | 7.11 | 8.53 | 10.23 |
| Retail sale market | acres/ 1000 population | | 59.32 | 71.14 | 85.31 | 102.31 |
| Corner shops | 0.25 acre/per corner shop | | 0.00 | 0.00 | 0.00 | 0.00 |
| Neighborhood market | 1.00 acre/per neighborhood market | | 0.00 | 0.00 | 0.00 | 0.00 |
| Super Market | 1.50 -2.50 acres/per super market | | 0.00 | 0.00 | 0.00 | 0.00 |
| Utilities | | | 17 | 18.2 | 19.56 | 21 |
| Drainage | As per local requirement | | | | | |
| Water supply | 1.00 acre /20,000 population | | 3.00 | 3.30 | 3.64 | 4.00 |
| Gas | 1.00 acre /20,000 population | | 3.00 | 3.30 | 3.64 | 4.00 |

| Types of Land Uses | Recommended Standard Provision unit) | Existing (acre) | Land requirement (acre) | | | |
|---|---|---|---|---|---|---|
| | | | 2016 | 2021 | 2026 | 2031 |
| Residential | | 1050.3 | | | | |
| Solid waste disposal site | 5-10 acres/Upazila HQ | | 5.00 | 5.00 | 5.00 | 5.00 |
| Waste transfer station | 0.25 acres/per waste transfer station | | | | | |
| Electric sub-station | 1.00 acre/20,000 population | | 3.00 | 3.30 | 3.64 | 4.00 |
| Telephone exchange | 0.5 acre/20,000 population | | 1.50 | 1.65 | 1.82 | 2.00 |
| Fuel Station | 0.5 acre/20,000 population | | 1.50 | 1.65 | 1.82 | 2.00 |
| Industry | | 244.58 | 148.31 | 177.85 | 213.28 | 255.77 |
| Small scale | 1.50 acres /1000 population | | 88.98 | 106.71 | 127.97 | 153.46 |
| Cottage/agro-based | 1.00 acres /1000 population | | 59.32 | 71.14 | 85.31 | 102.31 |
| Transportation | | 1.56 | 8.26 | 9.01 | 9.84 | 10.75 |
| Bus terminal | 1 acre /20,000 population | | 3.00 | 3.30 | 3.64 | 4.00 |
| Truck terminal | 0.50 acre /20,000 population | | 1.50 | 1.65 | 1.82 | 2.00 |
| Launch/steamer terminal | 1.00 acre /20,000 population | | 3.00 | 3.30 | 3.64 | 4.00 |
| Baby taxi/tempo stand | 0.25 acre /one baby taxi/tempo stand | | 0.25 | 0.25 | 0.25 | 0.25 |
| Rickshaw/van stand | 0.25 acre/ stand | | 0.25 | 0.25 | 0.25 | 0.25 |
| Passenger Shed | 0.25 acre/ stand | | 0.25 | 0.25 | 0.25 | 0.25 |
| Administration | | 0.709 | 20 | 20 | 20 | 20 |
| Upazila complex | 15.00 acres | | 15 | 15 | 15 | 15 |
| Paurashava office | 3 – 5 acres | | 5 | 5 | 5 | 5 |
| Agri-extension Farm | 10 acres/Upazila HQ | | 10.00 | 10.00 | 10.00 | 10.00 |
| Urban Deferred | 10 percent of the total build up area | | 174 | 184 | 134 | 205 |

## 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

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

### 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. and Map 10.2 shows the Land Use Plan of the Kanchan Paurashava.

**Table 10.3: Land Use Plan of Kanchan 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. | 2432.1 | 46.75 |
| 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. | 172.1 | 3.31 |
| 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. | 12.8 | 0.25 |
| 4 | Mixed Use Zone | Mixed land use refers to the area without a dominant land use (Residential, commercial, industrial etc.). | 204.0 | 3.92 |
| 5 | General Industrial Zone | Green and Orange A categories as per The Environment Conservation Rules, 1997 | 58.4 | 1.12 |
| 6 | Heavy Industrial Zone | Other toxic and pollutions Industries (Orange B and Red categories as per The Environment Conservation Rules, 1997) | 181.2 | 3.48 |
| 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. | 17.9 | 0.34 |
| 8 | Education & Research one | All kinds of educational institutes like Primary/secondary/other Schools/ Colleges etc are mentioned to calculate the land use for education and research purpose. | 115.1 | 2.21 |
| 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, | 1109.1 | 21.32 |

| 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 | 260.2 | 5.00 |
| 11 | Open Space | Playground, Botanical Garden, Stadium, Zoo etc. (Facilities without or with minimum building structure) | 200.6 | 3.86 |
| 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. | 2.5 | 0.05 |
| 13 | Circulation Network | Road and Rail communication | 350.5 | 6.74 |
| 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. | 11.8 | 0.23 |
| 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. | 6.9 | 0.13 |
| 16 | Health Services | This land will be used to provide health facility. | 23.7 | 0.46 |
| 17 | Community Facilities | All community facilities including funeral places and other religious uses | 42.6 | 0.82 |
| 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. | | |
| 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 | 0.7 | 0.01 |
| 22 | Forest | Designated Forest Area | | |
| 23 | Beach | Sea Beach | | |
| 24 | Miscellaneous | Any other categories which are not related to above 23 categories. | 0.06 | 0.00 |
| | Total | | 5202.40 | 100.00 |

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. A major part of ward no. 04, ward no. 08 and ward no. 09 is proposed for urban residential zone. Several numbers of realestate companies are developing the sites rapidly by taking permission of Paurashava. In total, this zone covers 2432.1 (46.08%) acres of land delineated up to the year 2031, 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**

Kanchan 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. Kanchan Paurashava is mostly rural in character. About 73% 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 172.1 acres of land (3.31% of the total land). The areas of rural settlement have some restrictions for non-agricultural development. Annexure-B 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. Total proposed commercial land 12.8 acre. Beside these the mixed use land (203.6 acre) can be used for commercial Purposes like neighbor market, shopping mall etc. 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 Kanchan, 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 204 acres (3.91% 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

**Table 10.4: Development Proposal**

| Proposed Facility | Landuse | Mouza Name | Ward Name | Plot No | Area (acre) | Phase |
|---|---|---|---|---|---|---|
| Proposed Auto Stand 01 | Transport | Kanchan (164_03) | Ward_No. 05 | 5582-84 | 0.32 | 1st Phase |
| Proposed Auto Stand 02 | Transport | Kanchan (164_02) | Ward_No. 07 | 2953-54,2926 | 0.35 | 3rd Phase |
| Proposed Bus Terminal | Transport | Kanchan (164_01) | Ward_No. 06 | 720-25, 1401-02, 5064-68, 5068-87 | 2.36 | 2nd Phase |
| Proposed Truck Terminal | Transport | Kanchan (164_01) | Ward_No. 06 | 724-29, 734-36,1422-24 | 2.42 | 3rd Phase |
| Proposed River Port 01 | Transport | Kanchan (164_03) | Ward_No. 09 | 5785-86,5789-90 | 1.68 | 3rd Phase |
| Proposed River Port 02 | Transport | Biraba (138_01) | Ward_No. 02 | 474-84 | 1.5 | 3rd Phase |
| Total | | | | | 8.63 | |
| Proposed Hospital 01 | Health | Biraba (138_02) | Ward_No. 02 | 41-51 | 3.45 | 1st Phase |
| Proposed Hospital 02 | Health | Kendua (137_01) | Ward_No. 05 | 647-48, 663-79,1129-32 | 6.42 | 3rd Phase |
| | | Kendua (137_02) | Ward_No. 05 | 2150-80 | 6.60 | 3rd Phase |
| Proposed Hospital 03 | Health | Kanchan (164_04) | Ward_No. 09 | 6422-23,6439-41 | 2.63 | 2nd Phase |
| Proposed Hospital 04 | Health | Dighalia (162_01) | Ward_No. 08 | 361-69 | 3.19 | 3rd Phase |
| Proposed Hospital 05 | Health | Tarail (139_02) | Ward_No. 01 | 1001-10 | 1.75 | 2nd Phase |
| Total | | | | | 24.04 | |
| Proposed Park 01 | Open Space | Kanchan (164_04) | Ward_No. 09 | 6638-63 | 5.62 | 2nd Phase |
| Proposed Park 02 | Open Space | Kendua (137_01) | Ward_No. 02 | 1-42 | 6.52 | 3rd Phase |
| | Open Space | Biraba (138_02) | Ward_No. 02 | 1125-35 | 1.62 | 2nd Phase |
| Proposed Park 03 | Open Space | Choto Nowpara (165_00) | Ward_No. 08 | 835-883,957-1004 | 34.01 | 3rd Phase |
| Proposed Stadium | Open Space | Kendua (137_01) | Ward_No. 05 | 690-704,746-82 | 11.05 | 3rd Phase |
| Proposed indoor Stadium | Open Space | Kendua (137_01) | Ward_No. 02 | 6-10 | 3.08 | 2nd Phase |
| | Open Space | Biraba (138_02) | Ward_No. 02 | 1134-43 | | 3rd Phase |
| Proposed Playground 01 | Open Space | Kanchan (164_04) | Ward_No. 09 | 6481,6724-29 | 0.96 | 1st Phase |
| Proposed Playground 03 | Open Space | Kanchan (164_04) | Ward_No. 09 | 3380-82 | 1.13 | 3rd Phase |

| Proposed Facility | Landuse | Mouza Name | Ward Name | Plot No | Area (acre) | Phase |
|---|---|---|---|---|---|---|
| Proposed Playground 05 | Open Space | Kanchan (164_04) | Ward_No. 09 | 6759,6787-93 | 1.00 | 3rd Phase |
| Proposed Playground 06 | Open Space | Choto Nowpara (165_00) | Ward_No. 08 | 91-99, | 1.81 | 1st Phase |
| | | Dighalia (162_02) | Ward_No. 08 | 989-90,1061-65 | 0.59 | 3rd Phase |
| Total | | | | | 67.39 | |
| Proposed Nursery School 02 | Education | Biraba (138_01) | Ward_No. 02 | 860-62,1441-59 | 3.60 | 3rd Phase |
| Proposed Primary School 01 | Education | Kanchan (164_04) | Ward_No. 09 | 6332-37 | 1.59 | 3rd Phase |
| Proposed Primary School 02 | Education | Kanchan (164_04) | Ward_No. 09 | 6476-81,6806-08 | 1.59 | 2nd Phase |
| Proposed Primary School 03 | Education | Biraba (138_02) | Ward_No. 02 | 1143-48 | 1.85 | 3rd Phase |
| Proposed Primary School 04 | Education | Kanchan (164_02) | Ward_No. 07 | 3002-3015,3030-45 | 1.47 | 3rd Phase |
| Proposed Primary School 05 | Education | Kanchan (164_05) | Ward_No. 08 | 7802-03,7850-62, 7868-70 | 2.64 | 2nd Phase |
| Proposed High School 01 | Education | Norabo (173_00) | Ward_No. 09 | 61-71,89-106 | 4.18 | 1st Phase |
| Proposed High School 02 | Education | Biraba (138_02) | Ward_No. 02 | 1351-84,1477-90 | 10.18 | 3rd Phase |
| Proposed High School 03 | Education | Kanchan (164_03) | Ward_No. 06 | 5560-61, 5594-5630 | 9.18 | 1st Phase |
| Proposed College 01 | Education | Kanchan (164_04) | Ward_No. 07 | 6135-41,6204-15 | 6.71 | 1st Phase |
| Proposed College 02 | Education | Kendua (137_02) | Ward_No. 05 | 2419-30 | 6.55 | 3rd Phase |
| | Education | Kendua (137_02) | Ward_No. 05 | 2431-39 | | 3rd Phase |
| | Education | Kanchan (164_01) | Ward_No. 05 | 149-54 | | 2nd Phase |
| Proposed College 03 | Education | Kanchan (164_02) | Ward_No. 04 | 2211-35 | 2.21 | 3rd Phase |
| Proposed College 04 | Education | Kanchan (164_03) | Ward_No. 06 | 5239-43,5556-603 | 9.98 | 2nd Phase |
| Proposed University 01 | Education | Kanchan (164_04) | Ward_No. 07 | 6211-25,6241-53,6264-66 | 9.99 | 1st Phase |
| Proposed University 02 | Education | Kanchan (164_01) | Ward_No. 04 | 140-43,1127-35, 1150-59 | 5.73 | 3rd Phase |
| Proposed Vocational Training Institute | Education | Kanchan (164_04) | Ward_No. 07 | 6234-42,7268-71 | 4.83 | 2nd Phase |
| | | | | | 80.81 | |
| Proposed Graveyard 01 | Community Facility | Kanchan (164_01) | Ward_No. 04 | 768 | 1.30 | 1st Phase |
| Proposed Graveyard 02 | Community Facility | Kanchan (164_05) | Ward_No. 07 | 7532-33,7598-604 | 0.94 | 3rd Phase |
| Proposed Graveyard 03 | Community Facility | Choto Nowpara (165_00) | Ward_No. 08 | 488-503,513-523,796-835 | 12.27 | 3rd Phase |
| Proposed Graveyard 04 | Community Facility | Kendua (137_01) | Ward_No. 05 | 559-67,651-52,661-62,704-21,734-58 | 8.25 | 2nd Phase |
| Proposed Community Center | Community Facility | Biraba (138_02) | Ward_No. 02 | 1146 | 0.16 | 1st Phase |
| Proposed Slaugher House | Community Facility | Kanchan (164_03) | Ward_No. 06 | 5344 | 0.14 | 1st Phase |
| Proposed Ward Center 01 | Community Facility | Tarail (139_01) | Ward_No. 01 | 285-87 | 0.36 | 1st Phase |
| Proposed Ward Center | Community | Biraba (138_02) | Ward_No. | 1146 | 0.21 | 2nd Phase |

| Proposed Facility | Landuse | Mouza Name | Ward Name | Plot No | Area (acre) | Phase |
|---|---|---|---|---|---|---|
| 02 | Facility | | 02 | | | |
| Proposed Ward Center 03 | Community Facility | Kendua (137_01) | Ward_No. 03 | 115-19 | 0.38 | 3rd Phase |
| Proposed Ward Center 04 | Community Facility | Kanchan (164_01) | Ward_No. 04 | 554-57,976-78 | 0.44 | 3rd Phase |
| Proposed Ward Center 05 | Community Facility | Kendua (137_02) | Ward_No. 05 | 2235-36 | 0.66 | 1st Phase |
| Proposed Ward Center 06 | Community Facility | Kanchan (164_03) | Ward_No. 06 | 5626-27,5630,5634 | 0.32 | 2nd Phase |
| Proposed Ward Center 07 | Community Facility | Kanchan (164_02) | Ward_No. 07 | 2965-66,2968 | 0.57 | 2nd Phase |
| Proposed Ward Center 08 | Community Facility | Kanchan (164_02) | Ward_No. 08 | 3578-80, 3737-38 | 0.26 | 3rd Phase |
| Proposed Ward Center 09 | Community Facility | Kanchan (164_04) | Ward_No. 09 | 6088 | 0.51 | 3rd Phase |
| Proposed Waste Dumping Ground 01 | Utility | Biraba (138_01) | Ward_No. 02 | 942-54, 962-69 | 3.53 | 1st Phase |
| Proposed Waste Dumping Ground 02 | Utility | Kanchan (164_05) | Ward_No. 08 | 7929-40 | 3.45 | 3rd Phase |
| Proposed Waste Transfer Center 02 | Utility | Kendua (137_01) | Ward_No. 03 | 625,651,115 | 0.69 | 2nd Phase |
| | | | | | | |
| Proposed Low Income Housing | Residential | Biraba (138_02) | Ward_No. 02 | 1459-65, 1889-95 | 8.7 | 3rd Phase |
| Proposed Resettlement Area | Residential | Biraba (138_02) | Ward_No. 02 | 1375-1403 | 8.5 | 3rd Phase |
| Total | | | | | 51.64 | |

**Heavy 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.

Map 10.1 of Kanchan 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 is presented in Annexure-B. Total area under this use has been estimated as 17.9 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, other educational service facilities as listed in Annexure-B. Total area under this use has been proposed (115.1 acres) uses where existing 25.96, proposed 69.40 acre and rest 22.13 acre is proposed to develop the existing educational facilities. Two universities have been proposed in this Paurashava by considering present development trend mainly of different housing companies. For detailed see Table 10.4.

**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. A detail land use is presented in the Annexure-B. Total area under this use has been estimated as 1109.1 acres that include existing and proposed uses.

**Water Body and Retention Area**

Total 391.4 acres water body is in the Paurashava. The plan suggests 260.2 acre of waterbody whose area more than 0.25 acre 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 0.25 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 229.08 acres (4.40%). 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, auditorium, 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 350.5 acres of land covers (6.74% 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, 11.8 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. Around 6.9 acre of land is proposed for utility services. In survey stage this type of landuse was defined as service activity.

**Map 10. 2: Landuse Plan of Kanchan Paurashava**

**Map 10. 3: Development Proposal**

**Health Services**

This land will be used to provide health facilities. In total, 23.7 acres land (0.46% of the planning area) is being proposed for this purpose. A community based health centre will be provided at Ward Councellor's Office. 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, 42.6 acres land (0.82% 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 re moved. 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) Act, 2009 for controlling physical development. This poses a serious constraint to the implementation of the Landuse Plan and in fact any other form of development plans.

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

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

1. 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) Act, 2009. Coordination may be framed among the government (Upazila Parishad), Paurashava and private owner for the establishment, development and management of the hat and bazar located in the Paurashava premises.
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

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

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

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

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

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

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

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

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

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

**Evaluation**

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

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

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

**Co-ordination**

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

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

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

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

In order to identify the major causes of the congestion and the nature of the problem on transportation networks, a number of tasks were undertaken. Those tasks included traffic volume counting at both directions, speed and delay studies, Origin - Destination (O-D) survey at major traffic generating intersections and consultation with the stakeholders regarding the generated problems. The volume and movement pattern of people and goods within the study area were collected through a series of volume and O-D surveys.

In addition to collect information on volume and pattern of traffic movement by traffic survey, the Consultant accommodates certain important questions regarding people's attitude and preferences.

A reconnaissance survey was carried out on the whole Paurashava area and considering the requirement of ToR a plan was prepared for traffic survey.

## 11.2 Existing Conditions of Transportation Facilities

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

### 11.2.1 Roadway Characteristics and Functional Classification

Total length of pucca (bituminous carpeted) road is about 39.25 km encompassing an area of 20.86 acre. The semi pucca road is generally constructed with brick soling called Herring Bone Bond (HBB) road. Total length of semi pucca road is 41.73 km. In total, 37.35acre of land is being used under semi pucca road in the Paurashava. Third category

is katcha road called earthen road. Total length of katcha road is 33.20 km coursing 18.95acre of land. In total, there in Kanchan Paurashava roads under three categories coursing 114.17 km in length and 77.16 acre of land.

**Table 11.1: Roads in the Paurashava**

| Types of Road | Length (KM) | Area (acre) |
|---|---|---|
| Pucca | 39.25 | 20.86 |
| Semi Pucca | 41.73 | 37.35 |
| Katcha | 33.20 | 18.95 |
| Total | 114.17 | 77.16 |

*Source: Physical Feature Survey, 2010.*

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

### 11.2.2 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.

### 11.2.3 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.

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

#### 11.2.4.1 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 three main points, where the traffic congestion is the highest. This area located at Paurashava Mour and Kanchan Bus Stand Intersection. 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.

#### 11.2.4.2 Delay

The traffic delays in Kanchan 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 Kanchan bazaar intersection.

### 11.2.5 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.

### 11.2.6 Analysis of Existing Deficiencies

#### 11.2.6.1 Roadway Capacity Deficiencies

As in any other small towns in Bangladesh, Kanchan 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 Paurashava road, the road running in front of the Paurashava office, College Road, Upazila road 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.

#### 11.2.6.2 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.

### 11.2.7 Condition of Other Mode of Transport (Rail/Water/Air)

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

## 11.3 Future Projections

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

### 11.3.1 Travel Demand Forecasting for Next 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 49468 (2011) and after 20 years it will be 61378 (2031). The scenario proves that traffic congestion is not alarming. At the sametime, highest road width at present is 7 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 | 150-100 ft. |
| Secondary roads | 100-60 ft. |
| Local roads | 40-20 ft. |

*Source: UTIDP, LGED, 2010.*

### 11.3.2 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.

## 11.4 Transportation Development Plan

### 11.4.1 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 Kanchan Paurashava.

**Table 11.3: Proposal for Road Standard in the Project area**

| Class of Roads | Standards recommended |
|---|---|
| Paurashava Primary roads | Row 60 or 60+ ft. |
| Paurashava Secondary roads | Row 40 ft. |
| Tertiary Road | Row 30 ft. |
| Local roads/ Access Road | Row 20 ft. |

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

**Neighborhood and Local Road**

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

**Standard Road Design**

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

**Functions of Roads**

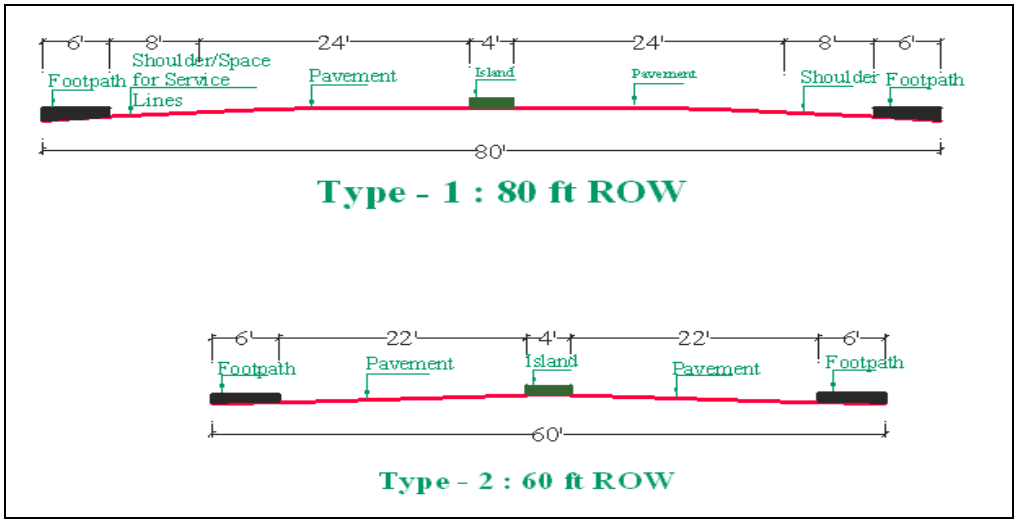
Each category of road has its particular functions to perform. Access road carries traffic from buildings to the collector road and collector road carries traffic to the major road and vice versa. In reality, however, it is almost impossible to maintain this hierarchical use of roads except in an entirely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

#### 11.4.1.1 Road Network Plan

Kanchan Paurashava has grown based on Kanchan Bazar. The center point of Kanchan is Kanchan Bazar area. The intersection near to the College and the Paurashava is known as Paurashava Mour. A major road passes through this intersection naming Paurashava Road connecting from Dhaka Bypass.

**Map 11.1: Important Roads of Kanchan Paurashava**

**Figure 11.1: Cross-section of Primary Road**



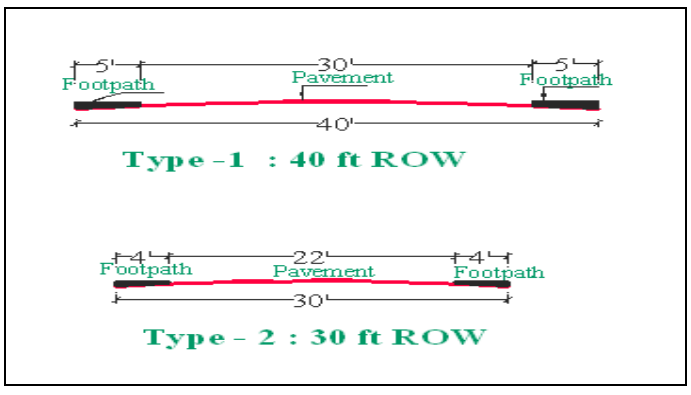

**Paurashava Primary Road**

Dhaka Bypass will treat as primary road for Kanchan Paurashava. Total length of primary road will be 13.1 km with 60-120 ft RoW. Here to ensure uninterrupted traffic flow through Dhaka Bypass its RoW will upgraded up to 80 ft and two service roads will provide along the both side of the highway. RoW of each service road will be 20 ft. As result RoW of main primary road will be 120 ft Figure 11.1 shows the layout design of primary road with 80 ft RoW.

**Paurashava Secondary Road**

Total secondary road is 40 ft RoW. Within 22.2 km secondary road will be widening and rest 4 km new secondary road will be constructed. Figure 11.2 shows the layout design of primary road with 40 ft RoW.

**Figure 11. 2: Cross Section of Secondary and Tertiary Road**



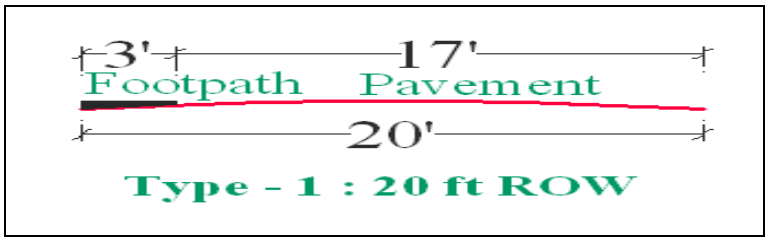
**Tertiary Road**

Total 34 km Tertiary Road is proposed with 30ft RoW within in the Paurashava of which 29.8 km road will widening and rest 5 km road will be newly constructed in on different phases to fulfill the future needs of the Paurashava. Figure 11.2 shows the layout design of Tertiary road with 30 ft RoW.

**Access Road/ Local Road**

Total Local road/Access road is 23.2 km with 20 ft RoW. Of which total 19.1 km road will widening existing road and 4.1 km road will newly construct to fulfill the future need of the Paurashava. Figure 11.3shows the layout design of Local road with 20 ft RoW.

**Figure 11. 3: Cross Section of Access Road**




## 11.4.2 Proposal for Improvement of the Existing Road Networks

Use of road reserve is the initial stage for improvement of existing **primary road**. The maximum recommended reserve width for a primary road that will be adopted and maintained is 120 ft.; with an initial basis the extremities of the reserve being 60 ft. on either side of the road centre line. This may vary, especially on existing roads, due to localized circumstances.

For new road, the 120 ft. meter reserve will be adopted in the short-term to prevent development encroaching in to it before construction of the road.

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

**Map 11.2: Proposed Circulation Network for Kanchan Paurashava**

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

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

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

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

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

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

- Links between the Paurashava and primary roads;
- Links between various important nodes of activity within the Paurashava.

The secondary roads are also intended to be high capacity routes, although their design speed will be significantly less than primary roads due to their being a far higher percentage local, inter-Paurashava traffic movements rather than intra-Paurashava.

On many occasions within the Paurashava, existing routes will require the provision of tertiary roads to provide access to shop frontages and on-street parking for those shops. The tertiary roads also serve to collect traffic which currently enters at random from side streets.

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

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

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

In general, no direct access will be permitted onto the main carriageways (of secondary roads) with access gained only at controlled junctions. Occasionally, due to existing situations, access from a side road may be entertained. The number of junctions should be minimized with desired spacing being at 200 meter intervals.

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

Functions of the **tertiary road** are:

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

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

No development will be permitted within the 18 meter reserve.

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

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

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

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

Direct access from residential properties will be permitted.

### 11.4.3 List of Proposed Roads (both widening and new)

A number of new roads including improvement of existing roads are presented in the following table. In the Paurashava, one primary road called Dhaka Bypass Highway is being proposed for double carriageway with service road around the existing bus stand. See Table 11.3.

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 98926 meter roads have been proposed for efficient accessibility of the Paurashava.

**Table 11. 4: Proposed New Road Network**

| Road Id | Width (ft) | Road Type | Length (m) | Phase |
|---|---|---|---|---|
| RP33 | 60 | Primary | 2609.40 | 2nd Phasing |
| RP42 | 60 | Primary | 2193.07 | 2nd Phasing |
| RP43 | 80 | Primary | 3940.68 | 2nd Phasing |
| RP44 | 60 | Primary | 2420.68 | 2nd Phasing |
| RP45 | 60 | Primary | 1790.14 | 2nd Phasing |
| RP52 | 60 | Primary | 1657.66 | 2nd Phasing |
| RP82 | 60 | Primary | 1941.42 | 3rd Phasing |
| RP99 | 100 | Primary | 7214.94 | 2nd Phasing |
| RP100 | 80 | Primary | 2398.75 | 2nd Phasing |
| Total | | | 28448.77 | |
| RS41 | 40 | Secondary | 1637.61 | 2nd Phasing |
| RS46 | 40 | Secondary | 1960.03 | 2nd Phasing |
| RS47 | 40 | Secondary | 1995.23 | 2nd Phasing |
| RS49 | 40 | Secondary | 1198.73 | 2nd Phasing |
| RS51 | 40 | Secondary | 1673.12 | 3rd Phasing |
| RS86 | 40 | Secondary | 923.33 | 2nd Phasing |
| RS102 | 40 | Secondary | 1470.37 | 3rd Phasing |
| RS103 | 40 | Secondary | 834.03 | 3rd Phasing |
| Total | | | 11692.45 | |
| RT1 | 30 | Tertiary | 1547.80 | 2nd Phasing |
| RT3 | 30 | Tertiary | 711.72 | 3rd Phasing |
| RT4 | 30 | Tertiary | 753.43 | 3rd Phasing |
| RT15 | 30 | Tertiary | 1558.40 | 1st Phasing |
| RT24 | 30 | Tertiary | 898.95 | 3rd Phasing |
| RT58 | 30 | Tertiary | 510.23 | 3rd Phasing |
| RT77 | 30 | Tertiary | 758.96 | 3rd Phasing |
| Total | | | 18431.93 | |
| RA5 | 20 | Access | 2567.05 | 3rd Phasing |
| RA8 | 20 | Access | 500.72 | 3rd Phasing |
| RA40 | 20 | Access | 237.34 | 3rd Phasing |
| RA64 | 20 | Access | 498.94 | 3rd Phasing |
| Total | | | 3804.05 | |
| Gross Total | | | 50684.00 | |

**Table 11.5: Proposed Widening Road Network**

| Road Id | Width (ft) | Road Type | Length (m) | Phase |
|---|---|---|---|---|
| RP69 | 60 | Primary | 2415.78 | 2nd Phasing |
| RP72 | 60 | Primary | 2082.88 | 2nd Phasing |
| RP74 | 80 | Primary | 594.79 | 3rd Phasing |
| RP101 | 120 | Primary | 7153.42 | 1st Phasing |
| RP107 | 60 | Primary | 1138.85 | 1st Phasing |
| RS108 | 60 | Primary | 1127.31 | 2nd Phasing |
| Total | | | 14513.03 | |
| RS7 | 40 | Secondary | 1182.50 | 1st Phasing |
| RS48 | 40 | Secondary | 2064.05 | 2nd Phasing |
| RS53 | 40 | Secondary | 1004.60 | 3rd Phasing |
| RS70 | 40 | Secondary | 63.84 | 2nd Phasing |
| RS71 | 40 | Secondary | 707.01 | 2nd Phasing |
| RS88 | 40 | Secondary | 2274.13 | 1st Phasing |
| RS104 | 40 | Secondary | 2300.59 | 1st Phasing |
| RS106 | 40 | Secondary | 1979.85 | 3rd Phasing |
| RS110 | 40 | Secondary | 3440.45 | 1st Phasing |

| Road Id | Width (ft) | Road Type | Length (m) | Phase |
|---|---|---|---|---|
| Total | | | 15017.02 | |
| RT12 | 30 | Tertiary | 839.81 | 2nd Phasing |
| RT18 | 30 | Tertiary | 440.10 | 3rd Phasing |
| RT20 | 30 | Tertiary | 630.38 | 2nd Phasing |
| RT28 | 30 | Tertiary | 782.39 | 3rd Phasing |
| RT31 | 30 | Tertiary | 1507.33 | 3rd Phasing |
| RT38 | 30 | Tertiary | 780.30 | 3rd Phasing |
| RT54 | 30 | Tertiary | 165.32 | 2nd Phasing |
| RT55 | 30 | Tertiary | 243.88 | 2nd Phasing |
| RT56 | 30 | Tertiary | 363.18 | 2nd Phasing |
| RT57 | 30 | Tertiary | 206.44 | 3rd Phasing |
| RT59 | 30 | Tertiary | 143.07 | 3rd Phasing |
| RT60 | 30 | Tertiary | 170.70 | 3rd Phasing |
| RT66 | 30 | Tertiary | 219.46 | 3rd Phasing |
| RT67 | 30 | Tertiary | 73.41 | 3rd Phasing |
| RT68 | 30 | Tertiary | 295.66 | 3rd Phasing |
| RT76 | 30 | Tertiary | 327.07 | 3rd Phasing |
| RT80 | 30 | Tertiary | 1162.60 | 1st Phasing |
| RP81 | 80 | Tertiary | 1294.03 | 3rd Phasing |
| RT85 | 30 | Tertiary | 636.20 | 3rd Phasing |
| RT89 | 30 | Tertiary | 888.09 | 2nd Phasing |
| RT91 | 30 | Tertiary | 399.78 | 3rd Phasing |
| RT94 | 30 | Tertiary | 469.70 | 2nd Phasing |
| RT105 | 30 | Tertiary | 735.66 | 3rd Phasing |
| RT109 | 30 | Tertiary | 1929.47 | 3rd Phasing |
| Total | | | 14704.02 | |
| RA2 | 20 | Access | 282.75 | 3rd Phasing |
| RA6 | 20 | Access | 167.99 | 3rd Phasing |
| RA9 | 20 | Access | 537.64 | 3rd Phasing |
| RA10 | 20 | Access | 285.43 | 3rd Phasing |
| RA13 | 20 | Access | 240.77 | 3rd Phasing |
| RA14 | 20 | Access | 196.53 | 3rd Phasing |
| RA16 | 20 | Access | 374.64 | 3rd Phasing |
| RA17 | 20 | Access | 369.74 | 2nd Phasing |
| RA19 | 20 | Access | 292.77 | 3rd Phasing |
| RA21 | 20 | Access | 162.19 | 3rd Phasing |
| RA22 | 20 | Access | 201.15 | 3rd Phasing |
| RA23 | 20 | Access | 133.60 | 3rd Phasing |
| RA25 | 20 | Access | 789.70 | 3rd Phasing |
| RA26 | 20 | Access | 192.07 | 3rd Phasing |
| RA27 | 20 | Access | 366.35 | 3rd Phasing |
| RA29 | 20 | Access | 328.62 | 3rd Phasing |
| RA30 | 20 | Access | 825.94 | 2nd Phasing |
| RA32 | 20 | Access | 215.11 | 3rd Phasing |
| RA34 | 20 | Access | 426.97 | 3rd Phasing |
| RA35 | 20 | Access | 246.59 | 3rd Phasing |
| RA36 | 20 | Access | 877.78 | 3rd Phasing |
| RA37 | 20 | Access | 201.00 | 3rd Phasing |
| RA39 | 20 | Access | 508.82 | 3rd Phasing |
| RA50 | 20 | Access | 1108.21 | 3rd Phasing |
| RA61 | 20 | Access | 270.24 | 3rd Phasing |
| RA62 | 20 | Access | 60.82 | 3rd Phasing |
| RA63 | 20 | Access | 237.11 | 3rd Phasing |
| RA65 | 20 | Access | 153.12 | 3rd Phasing |
| RA78 | 20 | Access | 362.58 | 3rd Phasing |
| RA79 | 20 | Access | 594.19 | 3rd Phasing |
| RA83 | 20 | Access | 374.47 | 3rd Phasing |
| RA84 | 20 | Access | 481.72 | 3rd Phasing |
| RA87 | 20 | Access | 1545.02 | 3rd Phasing |

| Road Id | Width (ft) | Road Type | Length (m) | Phase |
|---|---|---|---|---|
| RA90 | 20 | Access | 456.98 | 3rd Phasing |
| RA92 | 20 | Access | 684.40 | 3rd Phasing |
| RA93 | 20 | Access | 340.17 | 3rd Phasing |
| RA95 | 20 | Access | 327.13 | 3rd Phasing |
| RA96 | 20 | Access | 357.52 | 3rd Phasing |
| RA98 | 20 | Access | 938.54 | 3rd Phasing |
| Total | | | 16516.38 | |
| Gross Total | | | 60750.45 | |

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

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

Having identified two connection points (either known or vague), next step will be to conduct a search of a wide area to identify a number of alternative routes. Width of the area subjected to this search will vary according to individual circumstances, with the area being relatively narrow in dense Paurashava locations (say 80 to 100 meters), but wider in more rural settings (say 200 to 300 meters).

The number of alternative alignments to be identified will also vary, but as a general rule, a maximum of five alignments will be chosen. When identifying each of the different alignments, care will be taken to ensure that they are realistic and capable of accommodating the width of reserve required for the standard of road envisaged.

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

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

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

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

**The impact that each alignment will have on the general and natural environment:** routes which have a high visual impact in an area of natural beauty will, for example, score badly on this criteria.

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

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

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

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

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

## 11.4.2 Plan for Transportation Facilities

#### 11.4.2.1 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.

#### 11.4.2.2 Development of Facilities for Pedestrian, Bicycle and Rickshaw

**Bus Terminal / Truck Terminal**

There is no terminal in this area. A bus terminal has been proposed in ward no 06 and a truck terminal has been proposed in ward no 06.

**Bus Stand**

The only informal bus stand of Kanchan is located near Bus Stand. It is known as Kanchan bus stand, presently land beside Dhaka Bypass is using as bus stand. Most of the bus parked on the road and that is not fare. So on the high way bus bay should be ensured in a certain interval which can be used as bus stand.

**Table 11.6: Proposed Transport Facility**

| Proposed Facility | Mouza Name | Ward Name | Plot No | Area (acre) | Phase |
|---|---|---|---|---|---|
| Proposed Auto Stand 01 | Kanchan (164_03) | Ward_No. 05 | 5582-84 | 0.322 | 1st Phase |
| Proposed Auto Stand 02 | Kanchan (164_02) | Ward_No. 07 | 2953-54,2926 | 0.346 | 3rd Phase |
| Proposed Bus Terminal | Kanchan (164_01) | Ward_No. 06 | 720-25,1401-02, 5064-68,5068-87 | 2.357 | 2nd Phase |
| Proposed River Port | Kanchan (164_03) | Ward_No. 09 | 5785-86,5789-90 | 1.684 | 3rd Phase |
| Proposed Truck Terminal | Kanchan (164_01) | Ward_No. 06 | 724-29, 734-36, 1422-24 | 2.421 | 3rd Phase |

**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 in Kanchan Bus Stand which accommodates approximately 7 to 8 tempos at a time. Two auto stands has been proposed in ward 05 and ward 07. For detailed see Table 11.4. The area of the tempo stand is around 5 decimal. 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.

## 11.4.3 Waterway Development/Improvement Options

The Sitalakhya 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.

### 11.4.3.1 Proposal for Improvement of the Existing Waterway

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

#### 11.4.3.2 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 Sitalakhya River.

### 11.4.4 Railway Development Options

No railway development option is possible in the Kanchan Paurashava.

## 11.5 Transportation System Management Strategy (TSMS)

### 11.5.1 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.

### 11.5.2 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.

### 11.5.3 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.

## 11.6 Plan Implementation Strategies

### 11.6.1 Regulations to Implement the Transportation Plan

Following regulations will be needed for implementation of the plan.

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

a) establish ownership and responsibilities for roads;
b) establish the framework for managing the road network;
c) establish general principles for road management;
d) provide for general design and planning principles for roads;
e) confer powers and responsibilities on road authorities;
f) commit road authorities to provide and maintain safe roads, and to do so using resources efficiently;
g) provide for the establishment and classification of public roads;
h) provide for data bases of public roads, and public access to them;
i) set out rights and duties of road users;
j) control activities on roads;
k) make special provision for restriction on access to roads;
l) identify characteristics of new road types;
m) provide a legal framework for private sector participation in road construction, operation and maintenance, including tolling of roads;
n) establish defenses for civil liabilities; and
o) create offences and provide for penalties.

Section 5 has defined public roads as-

1) The Government may declare a public road.
2) The declaration may be made in relation to land, whether or not it is currently used for passage by members of the public.
3) In the declaration, the Government shall classify the public road as:
   (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.

**Map 11. 3: Proposed Transport Infrastructure of Kanchan Paurashava**

(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.

### 11.6.2 Implementation, Monitoring, Evaluation and Coordination of the Plan

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

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

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

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

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

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

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

- increased 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 Kanchan 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 Kanchan 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:

The study area contains several water bodies. There are 951 ponds, 842 ditches and 5 canals. Again within the study area there are lots of box and pipe culverts over existing channels and drains and two bridges over the river Sitalakkhya.

The river named Sitalakhya flowing through the western part as north-south direction of the Paurashava. Generally, over the year this river came about to dry. But, during monsoon season all drainage water release to this river.

**Table 12.1: Natural drainage in the Kanchan Paurashava**

| Type | Nos. | Length (Km) | Area | |
|---|---|---|---|---|
| | | | Acres | % |
| Ditch | 842 | | 101.6 | 12.13 |
| Pond | 951 | | 238.56 | 28.47 |
| Khal/canal | 5 | 24.44 | 50.4 | 6.02 |
| River | 1 | 8.95 | 447.29 | 53.39 |
| Total | **1800** | **35.34** | **837.85** | **100** |

*Source: Topographic Survey, 2010.*

**Table 12.2: Existing river and khal**

| Id | Type | Name | Orientation | Width (m) | Length (km) |
|---|---|---|---|---|---|
| W1 | River | Sitalakhya | North to south | 175 | 8.9 |
| W2 | Khal | Honakali | North to south | 22 | 3.53 |
| W3 | Khal | Kolatoli | East to West | 2.7 | 5.51 |
| W4 | Khal | Kandua | East to West | 14 | 6.7 |
| W5 | Khal | | North to south | 2 | 2.1 |
| W6 | Khal | Waterboard Khal | North to south | 2.1 | 6.6 |
| | | | | Total | 33.34 |

### 12.2.2 Man-made Drains:

During the drainage survey, the team has identified man made drainage covering different parts of different Wards. Total length of this network is 11.11 km. All the drains are pucca with one meter average width. Uncovered drains are mostly in existence with poor condition.

The drainage condition, the serviceability, structural conditions, obstruction, situation, blockage are all found in the manmade drain network. The bad or poor drains usually had damaged side walls, surfaces with obstruction, debris, solid waste, irregular water way etc.

**Map 12.1: Existing Drainage Network of Kanchan Paurashava**

**Table 12. 2: Existing man-made drains in the Kanchan Paurashava**

| Sl. No. | Types of Drain | Length (km) |
|---|---|---|
| 1 | Pucca Drain | 7.69 |
| 2 | Katcha Drain | 3.33 |
| Total | | 11.11 |

*Source: Topographic Survey, 2010.*

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 area of Kanchan Paurashava has been surveyed with RTK-GPS/DGPS and Total Station as per specification for spot interval given in the ToR. For this 1593 spot values were collected for the study area. A contour line/contour joins points of equal elevation (height) above mean sea level. A contour map is a map illustrated with contour lines which shows valleys and hills, and the steepness of slopes. The contour interval of a contour map is the difference in elevation between successive contour lines. The lowest spot height is -1.59 m PWD and the highest spot height is 10.2 m PWD. Around 75% of the spot heights are between 4m to 9 m and average height of land of the surveyed area is 4.55 m PWD.

**Table 12.3: Spot Interval and Frequency**

| Sl. No. | Spot Unit | Value |
|---|---|---|
| 1 | Total Spot Number | 45061 |
| 2 | Mean (Meter) | 4.55 |
| 3 | Maximum Height (Meter) | 10.2 |
| 4 | Minimum (Meter) | -1.59 |
| 5 | Standard Deviation | 1.93 |

*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 |
|---|---|---|---|
| 3 | -1.59 – 1.50 | 572 | 1.3 |
| 4 | 1.51 – 3.90 | 21665 | 48.1 |
| 5 | 3.91 – 5.70 | 9731 | 21.6 |
| 6 | 5.71 – 7.80 | 9983 | 22.2 |
| 7 | 7.81 – 10.80 | 3110 | 6.9 |
| | Total | 45061 | 100 |

*Source: Topographic Survey, 2010.*

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

Kanchan Paurashava lies in the tropical monsoon climatic region and more specially, represents the climate of Dhaka district. It has a normal rainfall of 325.4 mm in the month of June which is highest among all other months. In September, it falls to 232.5 mm; again falling to 145.8 mm in October. 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 14 rainy days at an average in July, followed by 15 rainy days in August, 14 in June, 11 in May and September 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 Sitalakhya 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 –

Q = CsC r IA

Where:

| | | |
|---|---|---|
| Q | = | Design runoff flow rate (cfs) |
| I | = | Rainfall intensity (in/hr) |
| Cs | = | Storage coefficient |
| Cr | = | Runoff coefficient |
| A | = | Drainage area (acres) |

**Map 12.2: Land Level of Kanchan Paurashava**

**Rainfall Intensity (I):** The rainfall intensity is the average rainfall rate for a particular drainage basin or sub-basin. The intensity is selected on the basis of the design rainfall duration and return period. The return period is established by design standards as a design parameter. Rainfall intensity with 5 years return period is generally employed for design of primary drains and canal improvement. Rainfall intensity with 3 years return period is employed for design of secondary drains. The design duration is equal to the time of concentration for the drainage area under consideration. Time of concentration is a critical parameter both for the Modified Rational Equation and SCS method. Time of concentration is generally defined as the longest runoff travel time for contributing flow to reach the outlet or design point, or other point of interest. It is frequently calculated along the longest flow path physically.

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

The second part of the Time of Concentration is the Travel Time that takes the flow to travel along the drain. Channel flow occurs in channels carrying integrated flows, pipes (flowing partially), and streams. Where storage is not significant, Travel Times can be estimated by applying Manning's Equation, and using estimates of channel characteristics and appropriate roughness values for pipe, channel, or stream features as tabulated in Table-3.1.

$V=[1.49/n] [R\ 2/3] [S\ 1/2]$
Where
V = Velocity of flow, feet/second
N = Manning's roughness coefficient for channel flow
S = Slope, feet/foot
R = Hydraulic radius, feet
And
$T\ t = V / (60L)$
Where
T 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 Cr |
|---|---|
| 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.

## 3.3 Plan for Drainage Management and Flood Control

### 3.3.1 Plan for Drain Network Development

**Drain Network Plan**

The activity for the relevant authority will be assisted by the preparation of the drainage master plan for the Paurashava which details the necessary corridors, plot sizes and generalized locations for:

- Primary canal/khal (new and improved).
- Secondary and tertiary canal / khal (new and improved).
- Storage ponds.
- Silt traps.
- River embankment.

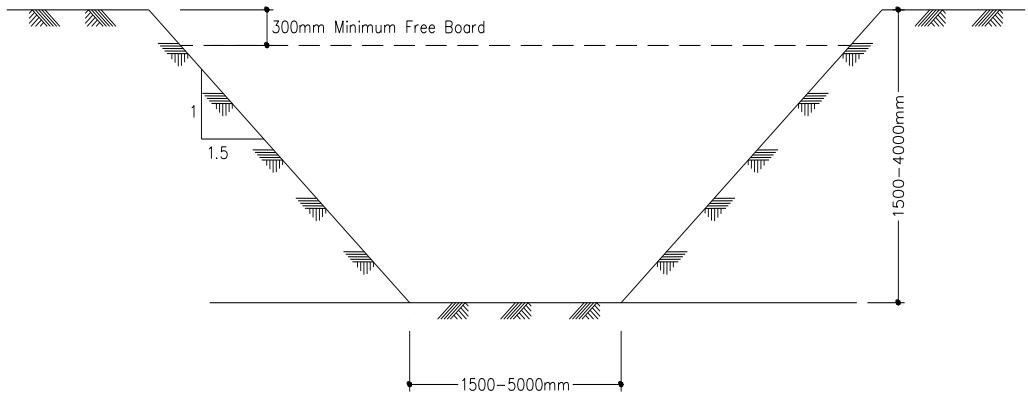
Initially, the Paurashava will encourage implementation of the first phase recommendation of the drainage master plan. A brief summary of the proposals to be undertaken in Phase-1 is given below. Reference should be made to the Map for identification of the drainage areas referred in the text.

**Phase-1 (Rain water and household drainage)**

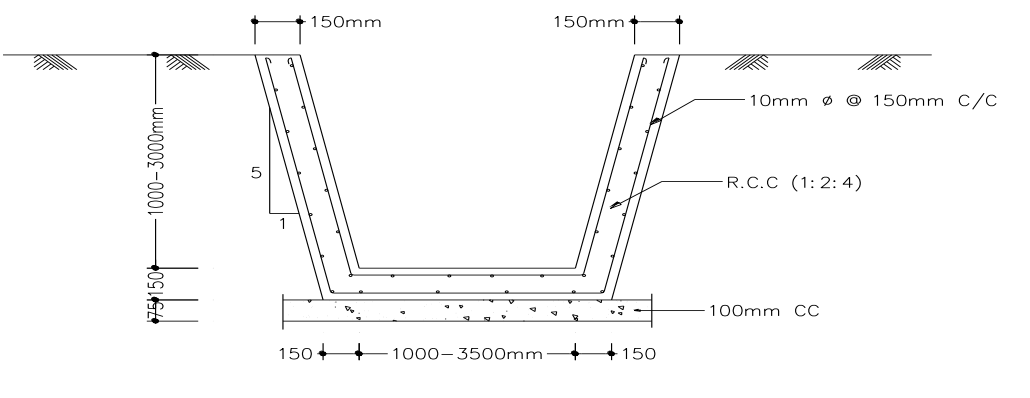
- Construction of surface drain linked with the residences, may be covered or uncovered.
- Provide linkages with secondary and tertiary drains.
- Out-fall of such drains may be nearby canals and low-lands.

For discharging of rainwater from commercial areas, covered surface drain may be constructed and they will be linked with the secondary and tertiary canals.

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

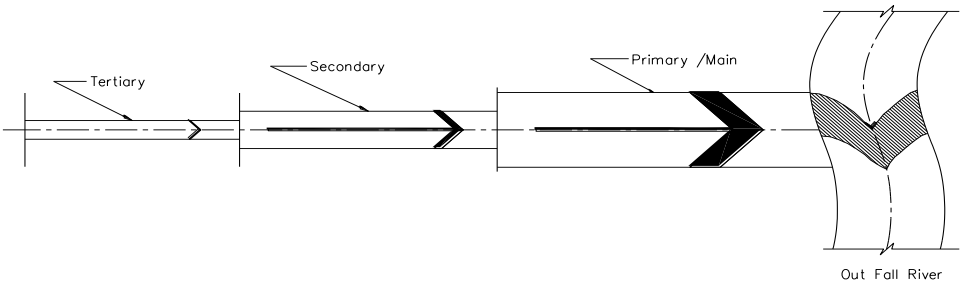



Typical Earthen Primary Drain



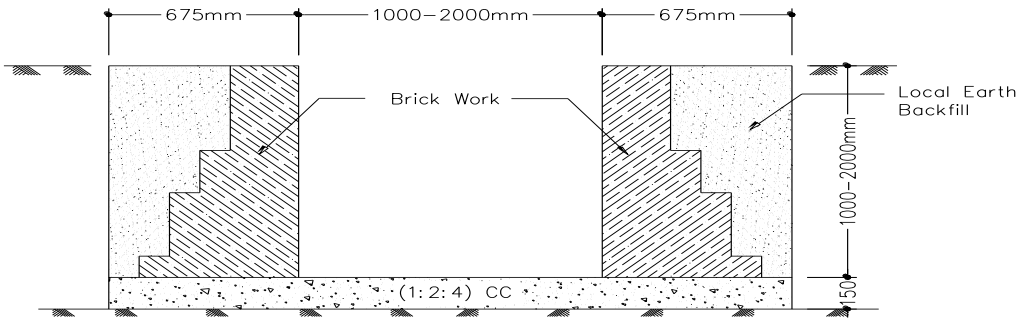

Typical R.C.C Primary Drain

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

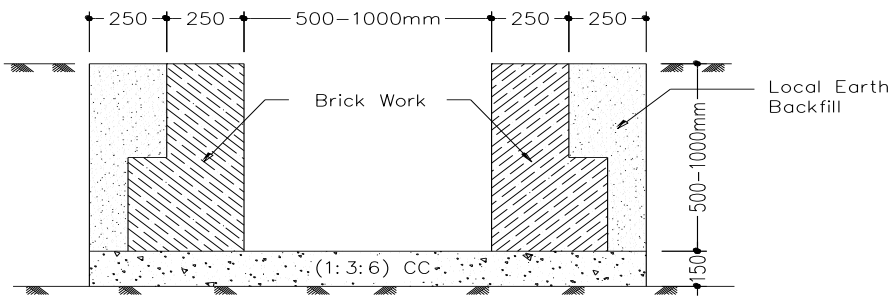
**Secondary Drain:** Secondary drains collect discharge from tertiary drains. One secondary drain may receive drainage discharges from several tertiary drains in its course. Size and capacity of secondary drain is much bigger than tertiary drains; its catchment area is much bigger than tertiary drain. 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)

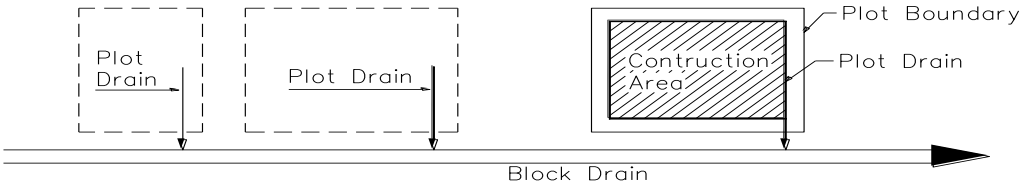
**Tertiary Drain:** Tertiary drain carry run-off or storm water received from the above mentioned plot drains and block or Mohallah drains. Their catchment area or storm water contributing area is bigger than Mohallah drains. In most Paurashava areas it is difficult to find such naming or classifications. 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.

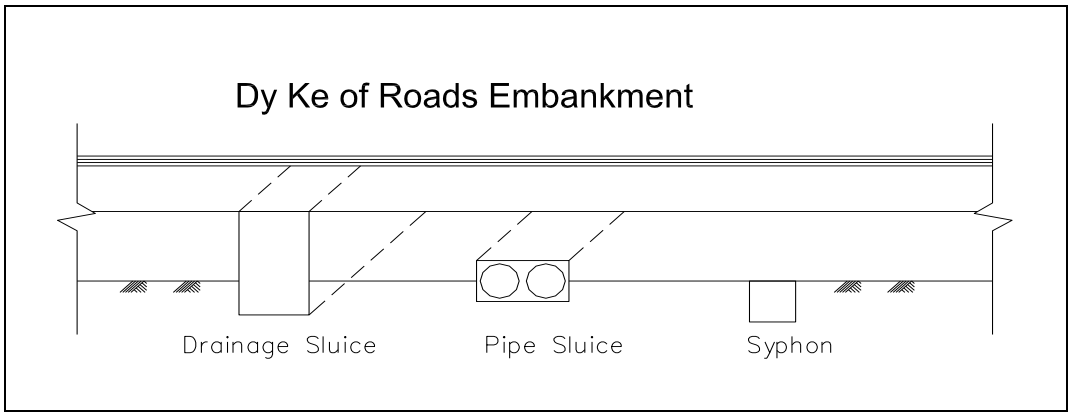



A Sketch Showing Plot Drain and Block Drain

**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 Kanchan is about 2000mm. After infiltration, deep percolation and evaporation is about 50% of this rainfall water takes the form of drainage water for semi-urban and urban areas.

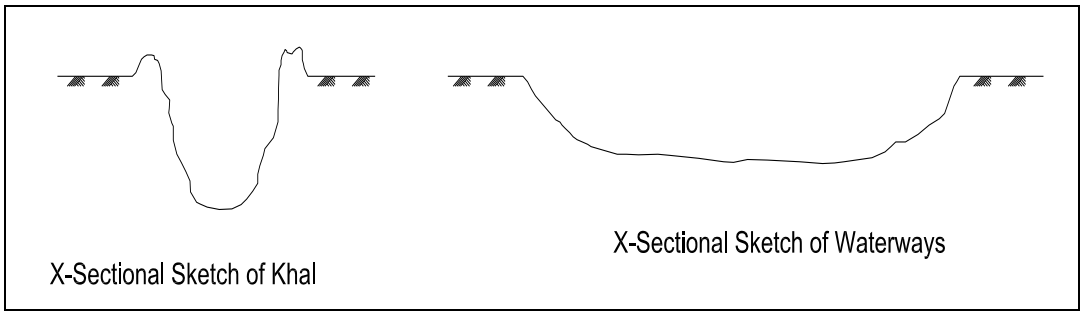
**Sluice gates, Regulators and Navigation locks:** These types of structures are provided on the flood control embankments. Sluice gates are functioning to vent out water from the countryside to the river. Flap gates are generally installed in the riverside so that river water cannot enter into the main land. On the other hand whenever the river water level becomes low and countryside water level is high, countryside water drains out through sluice.

Regulators also serve the similar purpose as sluice gates; however the size of regulators is much bigger than sluice gates. Regulators may have control gates in the countryside and in the riverside. Drainage of water to the river or flashing of water into countryside are possible by operating simultaneously countryside and riverside mechanical gates. Navigation lock sometimes is provided on the flood embankment to allow boat and ferry passages from the river and from the countryside. It is a simple structure with bigger chamber and large lift gates both at riverside and countryside. By operating these gates, boats and river crafts can be transferred from the river to countryside and vice versa.

**Reservoirs:** Large tanks, ponds, Dighis, lakes, etc. serve as immediate detention areas for storm water. Those structures are man-made and also natural; may be privately owned or government-owned or khas land. These structures function as drainage relief and source of water for emergency use, fisheries, duckeries, environment and nature preservation. For every mouza such reservoir is available. Physical feature survey maps and field survey maps (tank, pond and reservoir) show the existence of reservoirs and database shows their dimensions. Those structures should not be disturbed or removed

by physical interventions by fillings or other means rather should be properly maintained and preserved.

**Drainage Khals and Waterways:** Khals and waterways are natural channels and act as drainage elements. In every mouza more or less such natural channel, khals and waterways carry the excess storm water to the connecting river lying further in the down stream. Sometimes old and silted-up khals are re-excavated to improve drainage efficiency. Most of the natural khals carry the local storm water particularly runoff from the Mouza / Mouzas those it passes through. Khals are narrow and deep in cross-sections; on the other hand waterways are shallow and wider. Physical fe ature 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 List of 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 11.1 km. and more 88.5 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.

**Table 12. 8: List of proposed drains**

| Drain_Id | Drain_Type | Width (m) | Length (m) | Phase |
|---|---|---|---|---|
| DP2 | Primary | More 3m | 6104.58 | 1st Phase |
| DP15 | Primary | More 3m | 2622.35 | 3rd Phase |
| DP108 | Primary | More 3m | 2763.67 | 2nd Phase |
| DP109 | Primary | More 3m | 2246.01 | 2nd Phase |
| DP111 | Primary | More 3m | 2462.15 | 2nd Phase |
| DP112 | Primary | More 3m | 1685.62 | 3rd Phase |
| DP113 | Primary | More 3m | 1224.98 | 3rd Phase |
| DP114 | Primary | More 3m | 2909.11 | 3rd Phase |
| DP120 | Primary | More 3m | 1691.53 | 3rd Phase |
| | | Total | 23709.99 | |
| DS1 | Secondary | Within 1.5 to 3m | 6221.11 | 3rd Phase |
| DS3 | Secondary | Within 1.5 to 3m | 1463.85 | 3rd Phase |
| DS6 | Secondary | Within 1.5 to 3m | 1847.82 | 3rd Phase |
| DS8 | Secondary | Within 1.5 to 3m | 1643.06 | 3rd Phase |
| DS10 | Secondary | Within 1.5 to 3m | 2211.44 | 3rd Phase |
| DS11 | Secondary | Within 1.5 to 3m | 1867.04 | 2nd Phase |
| DS12 | Secondary | Within 1.5 to 3m | 2976.26 | 3rd Phase |
| DS110 | Secondary | Within 1.5 to 3m | 3415.40 | 1st Phase |
| DS115 | Secondary | Within 1.5 to 3m | 1169.07 | 3rd Phase |
| | | Total | 22815.04 | |
| DT4 | Tertiary | Less 1.5m | 985.44 | 3rd Phase |
| DT5 | Tertiary | Less 1.5m | 97.73 | 3rd Phase |
| DT7 | Tertiary | Less 1.5m | 1988.73 | 2nd Phase |
| DT9 | Tertiary | Less 1.5m | 1639.19 | 3rd Phase |
| DT13 | Tertiary | Less 1.5m | 1194.95 | 3rd Phase |
| DT14 | Tertiary | Less 1.5m | 1630.64 | 3rd Phase |
| DT16 | Tertiary | Less 1.5m | 1114.90 | 1st Phase |
| DT17 | Tertiary | Less 1.5m | 829.15 | 2nd Phase |
| DT18 | Tertiary | Less 1.5m | 497.15 | 3rd Phase |
| DT19 | Tertiary | Less 1.5m | 333.07 | 3rd Phase |
| DT20 | Tertiary | Less 1.5m | 813.31 | 3rd Phase |
| DT21 | Tertiary | Less 1.5m | 1153.26 | 3rd Phase |
| DT22 | Tertiary | Less 1.5m | 773.23 | 3rd Phase |
| DT23 | Tertiary | Less 1.5m | 884.03 | 3rd Phase |
| DT24 | Tertiary | Less 1.5m | 293.16 | 3rd Phase |
| DT25 | Tertiary | Less 1.5m | 176.63 | 3rd Phase |
| DT26 | Tertiary | Less 1.5m | 255.61 | 3rd Phase |
| DT27 | Tertiary | Less 1.5m | 377.32 | 3rd Phase |
| DT28 | Tertiary | Less 1.5m | 469.97 | 3rd Phase |
| DT29 | Tertiary | Less 1.5m | 440.90 | 3rd Phase |
| DT30 | Tertiary | Less 1.5m | 501.85 | 3rd Phase |
| DT31 | Tertiary | Less 1.5m | 884.24 | 3rd Phase |

| Drain_Id | Drain_Type | Width (m) | Length (m) | Phase |
|---|---|---|---|---|
| DT32 | Tertiary | Less 1.5m | 894.17 | 3rd Phase |
| DT33 | Tertiary | Less 1.5m | 227.09 | 3rd Phase |
| DT34 | Tertiary | Less 1.5m | 235.97 | 3rd Phase |
| DT35 | Tertiary | Less 1.5m | 143.20 | 3rd Phase |
| DT36 | Tertiary | Less 1.5m | 909.13 | 1st Phase |
| DT37 | Tertiary | Less 1.5m | 542.89 | 1st Phase |
| DT38 | Tertiary | Less 1.5m | 239.74 | 1st Phase |
| DT39 | Tertiary | Less 1.5m | 379.55 | 1st Phase |
| DT40 | Tertiary | Less 1.5m | 765.13 | 1st Phase |
| DT41 | Tertiary | Less 1.5m | 1538.09 | 3rd Phase |
| DT42 | Tertiary | Less 1.5m | 1119.75 | 1st Phase |
| DT43 | Tertiary | Less 1.5m | 440.49 | 3rd Phase |
| DT44 | Tertiary | Less 1.5m | 248.90 | 3rd Phase |
| DT45 | Tertiary | Less 1.5m | 798.26 | 2nd Phase |
| DT46 | Tertiary | Less 1.5m | 1552.57 | 3rd Phase |
| DT47 | Tertiary | Less 1.5m | 238.01 | 2nd Phase |
| DT48 | Tertiary | Less 1.5m | 220.96 | 3rd Phase |
| DT49 | Tertiary | Less 1.5m | 555.48 | 2nd Phase |
| DT50 | Tertiary | Less 1.5m | 479.12 | 2nd Phase |
| DT51 | Tertiary | Less 1.5m | 716.75 | 2nd Phase |
| DT52 | Tertiary | Less 1.5m | 925.24 | 3rd Phase |
| DT53 | Tertiary | Less 1.5m | 256.67 | 3rd Phase |
| DT54 | Tertiary | Less 1.5m | 333.46 | 3rd Phase |
| DT55 | Tertiary | Less 1.5m | 744.80 | 1st Phase |
| DT56 | Tertiary | Less 1.5m | 167.49 | 1st Phase |
| DT57 | Tertiary | Less 1.5m | 212.08 | 1st Phase |
| DT58 | Tertiary | Less 1.5m | 361.66 | 1st Phase |
| DT59 | Tertiary | Less 1.5m | 495.98 | 3rd Phase |
| DT60 | Tertiary | Less 1.5m | 421.42 | 3rd Phase |
| DT61 | Tertiary | Less 1.5m | 373.46 | 3rd Phase |
| DT62 | Tertiary | Less 1.5m | 546.93 | 3rd Phase |
| DT63 | Tertiary | Less 1.5m | 83.04 | 3rd Phase |
| DT64 | Tertiary | Less 1.5m | 298.31 | 3rd Phase |
| DT65 | Tertiary | Less 1.5m | 218.20 | 3rd Phase |
| DT66 | Tertiary | Less 1.5m | 651.83 | 2nd Phase |
| DT67 | Tertiary | Less 1.5m | 414.92 | 3rd Phase |
| DT68 | Tertiary | Less 1.5m | 276.18 | 2nd Phase |
| DT69 | Tertiary | Less 1.5m | 1916.49 | 3rd Phase |
| DT70 | Tertiary | Less 1.5m | 273.38 | 1st Phase |
| DT71 | Tertiary | Less 1.5m | 94.16 | 3rd Phase |
| DT72 | Tertiary | Less 1.5m | 831.74 | 2nd Phase |
| DT73 | Tertiary | Less 1.5m | 160.23 | 2nd Phase |
| DT74 | Tertiary | Less 1.5m | 401.50 | 2nd Phase |
| DT75 | Tertiary | Less 1.5m | 239.07 | 3rd Phase |
| DT76 | Tertiary | Less 1.5m | 211.78 | 2nd Phase |
| DT77 | Tertiary | Less 1.5m | 195.66 | 2nd Phase |
| DT78 | Tertiary | Less 1.5m | 235.78 | 1st Phase |
| DT79 | Tertiary | Less 1.5m | 848.59 | 1st Phase |
| DT80 | Tertiary | Less 1.5m | 199.83 | 1st Phase |
| DT81 | Tertiary | Less 1.5m | 17.71 | 3rd Phase |
| DT82 | Tertiary | Less 1.5m | 56.27 | 3rd Phase |
| DT83 | Tertiary | Less 1.5m | 9.48 | 1st Phase |
| DT84 | Tertiary | Less 1.5m | 51.19 | 1st Phase |

| Drain_Id | Drain_Type | Width (m) | Length (m) | Phase |
|---|---|---|---|---|
| DT85 | Tertiary | Less 1.5m | 269.94 | 1st Phase |
| DT86 | Tertiary | Less 1.5m | 423.61 | 1st Phase |
| DT87 | Tertiary | Less 1.5m | 143.75 | 1st Phase |
| DT88 | Tertiary | Less 1.5m | 175.88 | 3rd Phase |
| DT89 | Tertiary | Less 1.5m | 144.29 | 1st Phase |
| DT90 | Tertiary | Less 1.5m | 209.43 | 1st Phase |
| DT91 | Tertiary | Less 1.5m | 297.61 | 1st Phase |
| DT92 | Tertiary | Less 1.5m | 361.72 | 1st Phase |
| DT93 | Tertiary | Less 1.5m | 224.90 | 1st Phase |
| DT94 | Tertiary | Less 1.5m | 211.21 | 1st Phase |
| DT95 | Tertiary | Less 1.5m | 162.16 | 1st Phase |
| DT96 | Tertiary | Less 1.5m | 431.39 | 1st Phase |
| DT97 | Tertiary | Less 1.5m | 138.12 | 1st Phase |
| DT98 | Tertiary | Less 1.5m | 201.70 | 1st Phase |
| DT99 | Tertiary | Less 1.5m | 2276.76 | 1st Phase |
| DT100 | Tertiary | Less 1.5m | 165.69 | 3rd Phase |
| DT101 | Tertiary | Less 1.5m | 181.39 | 3rd Phase |
| DT102 | Tertiary | Less 1.5m | 199.54 | 3rd Phase |
| DT103 | Tertiary | Less 1.5m | 187.48 | 3rd Phase |
| DT104 | Tertiary | Less 1.5m | 948.96 | 1st Phase |
| DT105 | Tertiary | Less 1.5m | 12.76 | 3rd Phase |
| DT106 | Tertiary | Less 1.5m | 65.26 | 3rd Phase |
| DT107 | Tertiary | Less 1.5m | 74.72 | 1st Phase |
| DT116 | Tertiary | Less 1.5m | 1456.98 | 3rd Phase |
| DT117 | Tertiary | Less 1.5m | 715.24 | 1st Phase |
| DT118 | Tertiary | Less 1.5m | 460.96 | 1st Phase |
| DT119 | Tertiary | Less 1.5m | 929.91 | 3rd Phase |
| | | Total | 53175.56 | |
| | | Gross Total | 99700.60 | |

#### 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. Ward-wise Bridges and Culverts are given in the following table 12.9. There are altogether 11 bridges (RCC) and 40 culverts (Box and Pipe culverts) in the Paurashava. Bridges are found in Ward No. 2, 4, 5, 7 and 8. Highest number of culverts is found in Ward No. 09. Those bridges and culverts are located on the river, major canals and drainage channels. Beside these, 14 bridges and an embankment have been proposed in this Paurashava.

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

| Name of infrastructure | Existing | Proposed (No.) |
|---|---|---|
| Bridge | 12 | 14 |
| Culvert | 40 | 0 |
| Sluice Gate | 0 | |
| Flood Wall | 0 | |
| Road cum Embankment | 0 | 1 |
| Flood Embankment | 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.

**Map 12.3: Proposed Drainage and Flood Control Components**

**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 Kanchan 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 Faridpur district. Some information has collected from secondary materials and they are on geology, soil and sub-soil condition, climate, temperature, humidity, rainfall, wind direction and hydrology. Other relevant information is being collected from field survey and they are mostly on the environment pollution. Those information presents sequentially in the following paragraphs.

### 12.6.2 Geo-morphology

Geology, Soil and Sub-soil Conditions: Soil of the Zila is mainly formed by the very young Ganges meander flood plain and the mixed young and the older Ganges meander flood plain. The northern and eastern parts of the Zila are covered by grey silty clay of the active and very young Ganges meander flood plain. Central and southern parts of the Zila are mainly formed of brown silty clay of the mixed young and the older Ganges flood plan. Northern part of the Zila is less productive and is mainly used for Aus paddy.

In the Paurashava, sub-soils are being eroded naturally and the soil varies from place to place and composed of clay to fine sand from 0-40 ft depth, fine sand to very fine sand 40-160 ft, fine sand to medium sand 160-260 ft. Medium sand to coarse sand is available from 260 ft to 380 ft depth and in rest of the depth are hard clay, fine sand and coarse sand formed entirely by the deltaic action of the Ganges, which brought mud and limestone from Himalayas.

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 December – February is followed by hot and showery pre-monsoon period of March – May and then a relatively cooler but very wet monsoon season prevails during June – September. 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 24.5° C and 36.3° C and minimum temperature varies between 12.1° C (January) and 25.9° C (August). The hottest months are March, April, May, June, July and August. From December to

February, Paurashava experiences cool periods when minimum temperature varies from 12.1° C (January) to 14.6° 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). Almost 80 percent of the total rainfall is recorded during June – October. Average annual rainfall of the area is about 1547 mm. 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 Kanchan Paurashava has on an average, normal rainfall 325.4 mm in the month of June which is highest among all other months. In September, it falls to 232.5 mm; again falling to 142.8 mm in October. From November to March, this rainfall varies between 6.0 mm to 45.2 mm. The rainy season begins in April / May and usually ends in the end of October. The highest number of normal rainy day is in July, called highest rainfall month. About 14 rainy days at an average in July, followed by 15 rainy days in August, 14 in June, 12 in May and September has been the characteristics of rainy day as the data reveals.

Wind Directions: In Narayanganj district, general direction of the wind is same as Gangetic delta, south-west, changing to east towards the head of the valley for the greater part of the year, with a north and north-west direction during the month of April and May. It is observed that winds are stronger in summer in the months of April and May (3 to 6.5 knots) than in winter in the month of November and December (1.5 to 3.0 knots).

Hydrology: River, Canal/Khal and pond are the hydrological components of the Paurashava. Those components are occupying 7.2% (391.4 acres) land of the Paurashava. The canals are linked with the adjacent river. In dry season, most of those canals are using as agriculture land and in the rainy season they submerges lowlands of the Paurashava. The ponds are spottedly located around the Paurashava. Small numbers of them are larger than one acre. In dry season, ponds water are using for bathing and washing purposes. Canal water generally uses for irrigation purposes.

## 12.6.3 Solid Waste and Garbage disposal

#### 12.6.3.1 Household Waste

Dustbin is the only system for solid waste disposal from residence of the Paurashava. But no dustbin is in the Paurashava. People throw their household wastes on the adjacent low lands.

#### 12.6.3.2 Industrial waste

Industrial wastes are available in the Paurashava. Most of the time, the waste is disposing in Sitalakhya River without refine.

#### 12.6.3.3 Kitchen market waste

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

#### 12.6.3.4 Clinical/Hospital waste

Existing health facilities are not bad in this Paurashava. There are 3 numbers of health centers in the Paurashava, among them 1 hospital and 2 clinics. There is no arrangement for clinical waste management in the Paurashava. The clinics and hospital used to dump solid wastes here and there or nearby ditches. This activity may bring serious health hazard to the inhabitants specially the nearby dwellers.

#### 12.6.3.5 Waste Management System

Solid waste collection and disposal in Kanchan Paurashava is the responsibility of Paurashava authority. The logistics for collection and disposal of solid wastes include 9 sweepers for collection and 1 garbage truck for transportation. There are 5 dustbins and NGO based collection system of solid wastes available in the Paurashava.

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 2.5 tons of domestic solid wastes per day according to Kanchan 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 neare st ditches.

#### 12.6.3.6Latrine

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. 100% sanitary toilet facilities are observed in every ward of Kanchan Paurashava.

#### 12.6.3.7Industry

Both heavy and light industries are available in this Paurashava. In total, 124 industries) are prevalent in the Paurashava. Among those establishments, agro-based industries (saw mill) account for about 80%, heavy industries 20% light industries share of the total running industries. Among the heavy industry textile industries, plastic factory, food processing industry and soft drink industry etc mentionable.

### 12.6.4 Brick Field

About five brick fields are available in this Paurashava.

#### 12.6.5 Fertilizer and Other Chemical Use

The fertilizer and chemical uses in the agriculture field for increasing agriculture production are Urea, Potash, Gypsum and Nitrogen Sulphate, Bashudin, Diazinon, Sumithion and Padan. Those chemicals are being contaminated with the surface water and create water pollution. Those chemicals and insecticides are creating water pollution of the Sitalakhya River. For more details Chapter-8 of the Structure Plan (Environmental Issues in Agriculture Practice).

### 12.6.6 Pollutions

#### 12.6.6.1Water

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.

#### 12.6.6.2Air

Sources of air pollution in Kanchan Paurashava are not much. Survey result reveals that there are several number of noxious industries that polluting the air contentious. 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 Kanchan Paurashava.

**12.6.6.3Sound**

Sound pollution occurs during day time and mainly due to the movement of highway bus and truck on the Dhaka by Pass road. The intensity of sound pollution is higher at the bazaar area and bus stand intersection. 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 250 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 Kanchan Paurashava.

**12.6.6.4Land 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.

**12.6.6.5Arsenic**

Ground water quality in the study area is not influenced by arsenic and iron. Deep tubewell and hand tubewell are using for drinking. At the same time huge numbers of people are using supply water. Water collects from river and ponds for irrigation purposes. The lower deep aquifer is found at a depth of 200 m to 300 m. Deep aquifers with fresh water in the Paurashava are exploited to meet the demand of water for inhabitants but that is small.

**12.6.6.6Other Pollution**

In the study area, sub-soils are being eroded naturally and the soil varies from place to place and composed of clay to fine sand from 0-40 ft depth, fine sand to very fine sand 40-160 ft, fine sand to medium sand 160-260 ft. Medium sand to coarse sand is available from 260 ft to 380 ft depth and in rest of the depth are hard clay, fine sand and coarse sand formed entirely by the deltaic action of the Ganges, which brought mud and limestone from Himalayas.

## 12.6.7 Natural Calamities and Localized Hazards

#### 12.6.7.1 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.

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

#### 12.6.7.2 River Erosion

The Sitalakhya River is erosion prone caused by seepage of water from countryside towards the river along the banks during post-monsoon period and during high flood period. Water waves created during the storm surge, cyclone and heavy rainfall are causes of erosion. The seepage of water may create unbalanced pore pressure producing severe bank scouring in loose clay riverbank resulting river erosion.

#### 12.6.7.3 Flood

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

#### 12.6.7.4 Earth Quake

The Paurashava is not in earth quake zone.

#### 12.6.7.5 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, Kanchan Paurashava suffers from water logging in the rainy season especially in the ward no. 1 and 2. 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.

#### 12.6.7.6 Fire Hazard

No fire hazard record is found in the Kanchan 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.

#### 12.6.7.7 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 Kanchan 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.

## 12.7 Plan for Environmental Management and Pollution Control

### 12.7.1 Proposals for Environmental Issues

In Kanchan 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 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 Kanchan 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.

**Table 12. 12: Proposed Environmental Facility**

| Proposed Facility | Landuse | Mouza Name | Ward Name | Plot No | Area (acre) | Phase |
|---|---|---|---|---|---|---|
| Proposed Slaugher House | Community Facility | Kanchan (164_03) | Ward_No. 06 | 5344 | 0.14 | 1st Phase |
| Proposed Waste Dumping Ground 01 | Utility | Biraba (138_01) | Ward_No. 02 | 942-54, 962-69 | 3.53 | 1st Phase |
| Proposed Waste Dumping Ground 02 | Utility | Kanchan (164_05) | Ward_No. 08 | 7929-40 | 3.37 | 3rd Phase |
| Proposed Waste Transfer Center 02 | Utility | Kendua (137_01) | Ward_No. 03 | 625,651,115 | 0.69 | 2nd Phase |
| | | | | Total | 7.73 | |

#### 12.7.1.1Solid Waste Management Plan

Solid waste management is a crucial problem for the Paurashava. The Kanchan Paurashava does not have the sufficient capability to handle the huge waste generated by the residents due to narrowness of roads, lack of local collection sites stand as impediments to waste management. Particularly in informal/spontaneous areas due to existence of narrow roads the garbage trucks can not enter for removal and transshipment of the garbage. In most places there is no road side open space for locating garbage bins. Garbage is often found to be disposed off on low lands. As a result rotten garbage spoils the local environment of the area posing health hazard of the local residents. No dustbin is in the Paurashava whereas the daily waste produced is about 2.0 tons and throws it to the nearby low lands.

For an efficient solid waste management system, it is recommended to engage, CBOs, NGOs and micro enterprises on contract basis for collection and disposal of solid waste and street sweeping.

#### 12.7.1.2Open 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 Sitalakhya 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.

#### 12.7.1.3 Pollution Protection Proposals

##### 12.7.1.3.1 Industrial/ Brickfield

In total 124 industries are found in the Paurashava. The industrial activities cover 245 acres and 4.7% 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. 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.
- Four brick fields are available in the Paurashava jurisdiction.

##### 12.7.1.3.2 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 awaren ess 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.

##### 12.7.1.3.3 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.

## 12.8 Natural Calamities and Regular Hazard Mitigation Proposals

### 12.8.1 Protection Plans Addressing Natural Calamities

Change in Topography and Mitigation: The main ground slope of the study area is 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 Sitalakhya 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.

### 12.8.2 Protection Plan Addressing Regular Hazards

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

### 12.8.3 Protection Plan Addressing Encroachment and Other Relevant Issues

As a measure of protection from encroachment restrictive buffer zone will be created on both sides of natural canals, rivers and other watercourses (if necessary). Walkways and plantation will be needed for the protection of those buffer zones.

Formation of appropriate legislation on solid waste management will be necessary. People encroaches canal and river through dumping of solid wastes. Encroachment on road, canal and river should be removed as early as possible with the formation of joined collaboration committee. This committee may be formed with the members from Paurashava, LGED, RHD and WDB.

Using of waste as an unutilized resource and assisting in recycling of waste for conservation of resources and protection of environment.

Introduces environmental education especially sanitary habits in school curriculum.

## 12.9 Plan Implementation Strategies

### 12.9.1 Regulations to Implement the Drainage and Flood Plan

The regulations which will be needed for the implement of drainage and flood plan are:

1. Section 3 of the Acquisition and Requisition of Immovable Property Ordinance, 1982 is needed for acquisition of land in view to construct environmental components. The authority, according to the demand, will apply to the Deputy Commissioner for such acquisition.
2. Section 4 of the Conservation of Environment Act, 1995 have prescribed duties and responsibilities of the Director. Most of those responsibilities are on the control of pollution.

3. Section 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.

### 12.9.2 Implementation, Monitoring, Evaluation and Coordination of the Plan

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

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

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

**Implementation through Development Control:** Landuse zoning is one of several methods of plan implementation to be considered. In all cases where some form of

development, landuse control may be applied; careful consideration requires the following ideologies:

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

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

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

- increased 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 Kanchan 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: 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. 100 hand tube wells are available in the entire Paurashava area. Establishment of water supply network is ongoing.

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 1534. High voltage towers are distributed evenly and transformers are used to transform the high voltage to low voltage for distributing to the clients. High voltage electric poles (11 KV) containing transformers are 4 in number. Telecommunication: There is a telephone exchange having a capacity of 500 lines

maintained by Bangladesh Telecommunication Company Limited (BTCL) in the Paurashava area. There are also mobile phone networks of grameenphone, Robi, Citycell, Banglalink and Teletalk which cover the entire study area.

Gas supply: Gas supply is not available in the Paurashava 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 79975 (according to the linear method) that belong to the trend line method in the year 2031.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) | Existing & Proposed Facility (acre) (2030) |
|---|---|---|---|
| Drainage | 1.00 acre /20,000 population | 1.99 | 4.00 |
| Water supply | 1.00 acre /20,000 population | 0 | 4.00 |
| Gas | 1.00 acre /20,000 population | 0 | 4.00 |
| Solid waste disposal site | 4 –10 acres/Upazila HQ | 0 | 10.00 |
| Waste transfer station | 0.25 acres/per waste transfer station | 0 | 0.00 |
| Electric sub-station | 1.00 acre/20,000 population | 0.1 | 4.00 |
| Telephone exchange | 0.5 acre/20,000 population | 0 | 2.00 |
| Fuel Station | 0.5 acre/20,000 population | 0 | 2.00 |

*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 4 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 4 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 4 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 2 acres of land), unless it also has to accommodate a transmission/reception tower, in which case it will require a fairly large plot. Medium sized plot will be needed for **local exchange**, central to its catchment area. **Street exchange** may be located on small plot in road corridor.

Gas supply: In the Paurashava, gas supply is not provisioned. If, in future (within 10 years), gas is being supplied by the government to the Paurashava, some necessary steps should be considered by the authority. They are, in case of **gas manifold station**, may be located on small to medium sized plot (on 4 acres of land) on the main ring, at the fringe of the Paurashava. **Upazila regulator station** may be located on small plots throughout the Paurashava. These will be located at the break-off point on the main line, where smaller diameter spurs extend into the area that the gas will serve.

**Table 13.2: Proposed Utility Facility**

| Proposed Facility | Landuse | Mouza Name | Ward Name | Plot No | Area (acre) | Phase |
|---|---|---|---|---|---|---|
| Proposed Waste Dumping Ground 01 | Utility | Biraba (138_01) | Ward_No. 02 | 942-54, 962-69 | 3.53 | 1st Phase |
| Proposed Waste Dumping Ground 02 | Utility | Kanchan (164_05) | Ward_No. 08 | 7929-40 | 3.37 | 3rd Phase |
| Proposed Waste Transfer Center 02 | Utility | Kendua (137_01) | Ward_No. 03 | 625,651,115 | 0.69 | 2nd Phase |
| | | | | Total | 7.60 | |

## 13.4 Regulations to Address the Proposals

Local Government (Paurashava) Act, 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 regulations, as discussed above, will be needed for provisioning of drinking water supply both Paurashava and private sources in the Paurashava.

The sewerage facilities may be provided by the Paurashava and Directorate of Public Health Engineering (DPHE). According to the 2nd Schedule, Sl. No. 12, of the Local Government (Paurashava) Act, 2009, Paurashava may provide an adequate system of public drains and all such drains shall be constructed, maintained, kept, cleared and emptied with due regard to the 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.

## 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.

**Map 13. 1: Proposed Utility Services**

# 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, specially agro-based industries.
- Safe yet faster connectivity.
- Develop to serve the surrounding hinterlands.

### 14.1.4 Approach and Methodology

For the preparation of Ward Action Plan the planning area has been sub-divided into Nine Planning Zones according to the individual Ward. Immediate necessary action will be required for Ward Action Plan and this is the key outcome of Ward Action Plan. Where, what type of action will be required and how the action will be performed prescribed in the plan.

**Pro-people Urban Planning**

The Ward Action Planning approach utilizes in the Paurashava Master Plan concentrating mainly on the building of infrastructure and roads to facilitate the movements of vehicles. In this scenario, Paurashava society would become steadily more privatized with private homes, offices and commercial activities, while all-important public component of urban life is likely to slowly disappear.

The landuse and transport interaction for a modern city should be directed toward "Planning for people, not for vehicles, roads or buildings". Given the problems of alienation, crime, fear of strangers and the breakdown of civic life, it is increasingly important to make cities inviting so that people can meet their fellow citizens face-to-face and experience human contact with those unknown to and different from them directly through their senses. Public life in high quality public spaces is an important part of a democratic society and full life.

**Evidence-based vs. Arbitrary Planning Approach**

In the era of globalization, where information on any number of issues and about any number of places is readily accessible, there is no need for localities to continue making the same mistakes as they did when operating in an information and experience vacuum. While urban planning is of course a complicated process, it is also true that some universals exist in terms of what works and what does not. The experiences of urban areas adopting commercial-based and people-based approaches make clear the effects of either method, and many guides are now available on implementing planning approaches that are good for the natural environment and for urban dwellers.

Given the widespread availability of such information, it is highly regrettable that important landuse and transport policy-decisions should adopt either any knowledge-based or scientific analysis. Instead, arbitrary or so-called "common sense" approaches should not be utilized which may favour the rich, including bureaucrats and developers with little concern for the betterment of society overall.

Although, it is a demanding task to represent the complex dynamics of urban landuse changes that are consistent with observable data, significant progress has been made in recent years in the country in forecasting and evaluating landuse change on the basis of dynamic and causal relationships between such factors as transport and landuse, and built environment and socio-economic processes.

With the advance of the knowledge-base and technology-base, detailed and extensive urban form and function data is becoming increasingly available, with great potential to provide new insights for sustainable urban planning which preserves the eco-system and maintains or even increases social equity.

Yet no attempt was made in the preparation of Upazila Master Plan / Landuse Plan (in 1980s) to conduct any analytical or empirical analysis using data related to interactions between the built environment, transport, landuse and other socio-economic processes.

Again, in Paurashava Master Plan, the Geographic Information System (GIS)-based technology is mainly used for mapping and visual displays, which are limited to static displays of past and current data sets. That is, the displays only portray the current state of the system, with neither the reasons given for its condition nor possible alternate futures provided. As a result, policymakers and planners are now facing tremendous difficulties, lacking as they do any insight into future urban growth and the potential impacts of various models.

Hypothetical Planning Approach under Upazila Master Plan/Landuse Plan, no comprehensive data collection exercise was undertaken to estimate landuse requirements for the Paurashava. As a result, all the landuse proposals of that plan were hypothetical in nature, providing no insight into how the actual landuse demand for various purposes will meet in future.

Yet it is not logical to develop a Ward Action Plan, which represents the lowest tier of the planning hierarchy, without providing precise landuse allocations for different functional purposes.

Furthermore, in the Paurashava Plan, a significant portion of existing open space and agriculture land have been allocated for private developers required as per the 2031 population projection. This excess land for property developers is likely not only to create landuse speculation but also indiscipline in future landuse development. More importantly, the preservation of land for open space and agriculture is vital for the health and viability of the Paurashava and its inhabitants.

## 14.2 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 Sitalakhya 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

**Demography**

Ward No. 01 located on the northern part of the Paurashava and total area 445.4 acres. Ward No. 2 is on the west of this Ward. The Ward is medium dense and developed area. Development pressure is high along the local roads.

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

| Type | Population | Projected population | | | |
|---|---|---|---|---|---|
| | 2011 | 2016 | 2021 | 2026 | 2031 |
| Population | 4604 | 4859 | 5128 | 5413 | 5712 |
| Area | **445.5** | **445.5** | **445.5** | **445.5** | **445.5** |
| Density | 10 | 11 | 12 | 12 | 13 |

*Source: BBS 2011*

**Proposals and Plans for Ward No. 01**

**Landuse Proposal**

Ward No. 1 is the northern part of the Paurashava and a western part is developed area. Total planning area of the Ward is 445 acres. Among the total planning area, 213 acres land is under agriculture use, 153.6 acres residential, 8.9 acre rural settlement, 23.99 acres circulation network and 11.15 acres for waterbody.

**Table 14.2: Proposed Landuse**

| Landuse Type | Area (acre) | % |
|---|---|---|
| Agricultural Zone | 213.54 | 47.89 |
| Circulation Network | 23.99 | 5.38 |
| Commercial Zone | 0.26 | 0.06 |
| Community Facilities | 1.00 | 0.22 |
| Education & Research Zone | 3.48 | 0.78 |
| General Industrial Zone | 2.60 | 0.58 |
| Government Office | 0.00 | 0.00 |
| Health Services | 1.77 | 0.40 |
| Heavy Industrial Zone | 0.00 | 0.00 |
| Miscellaneous | 0.00 | 0.00 |
| Mixed Use Zone | 0.39 | 0.09 |
| Open Space | 25.17 | 5.64 |
| Recreational Facilities | 0.00 | 0.00 |
| Rural Settlement | 8.95 | 2.01 |
| Transportation Facilities | 0.00 | 0.00 |
| Urban Deferred | 0.00 | 0.00 |
| Urban Residential Zone | 153.65 | 34.46 |
| Utility Services | 0.00 | 0.00 |
| Water Body | 11.15 | 2.50 |
| Total | **445.5** | **100.00** |

**Proposed Circulation Network**

Two 60feet, two 40 feet road, four 30 feet and nine 20 feet road have been proposed in the plan. Total length of the proposed road is 8754 meter (8.7 km.).

**Table 14.3: Proposed road in the Ward No. 01**

| Road Id | Width (ft) | Road Type 01 | Road Type 02 | LENGTH | PHASING |
|---|---|---|---|---|---|
| RA5 | 20 | Access | New Road | 854 | 3rd Phasing |
| RT12 | 30 | Tertiary | Widening Road | 840 | 2nd Phasing |
| RA19 | 20 | Access | Widening Road | 293 | 3rd Phasing |
| RT20 | 30 | Tertiary | Widening Road | 444 | 2nd Phasing |
| RA21 | 20 | Access | Widening Road | 162 | 3rd Phasing |
| RA22 | 20 | Access | Widening Road | 201 | 3rd Phasing |
| RA23 | 20 | Access | Widening Road | 134 | 3rd Phasing |
| RA25 | 20 | Access | Widening Road | 436 | 3rd Phasing |
| RA26 | 20 | Access | Widening Road | 192 | 3rd Phasing |
| RS33 | 60 | Primary | New Road | 105 | 2nd Phasing |
| RA37 | 20 | Access | Widening Road | 201 | 3rd Phasing |
| RT59 | 30 | Tertiary | Widening Road | 143 | 3rd Phasing |
| RT60 | 30 | Tertiary | Widening Road | 171 | 3rd Phasing |
| RA61 | 20 | Access | Widening Road | 270 | 3rd Phasing |
| RA62 | 20 | Access | Widening Road | 61 | 3rd Phasing |
| RA63 | 20 | Access | Widening Road | 237 | 3rd Phasing |
| RT71 | 40 | Secondary | Widening Road | 373 | 2nd Phasing |
| RS72 | 60 | Primary | Widening Road | 1304 | 2nd Phasing |
| RA95 | 20 | Access | Widening Road | 327 | 3rd Phasing |
| RA96 | 20 | Access | Widening Road | 358 | 3rd Phasing |
| RS108 | 60 | Primary | Widening Road | 687 | 2nd Phasing |
| RT110 | 40 | Secondary | Widening Road | 961 | 1st Phasing |
| | | | Total | 8754 | |

**Map 14.1: Landuse Plan for Ward No 01**

**Map 14. 2: Proposed Road, Drainage and Utility Services for Ward No 01**

**Proposed Drain and Water Supply Line**

Two primary and two secondary drains have been proposed along the 60, 40 feet, 30 feet and 20 feet width roads. Total length of those drains is 8 km. About 8 km. water supply line is being proposed for this Ward.

**Development Proposal**

One hospital and a ward office has been proposed in this ward.

**Table 14.4: Development Proposal**

| Proposed Facility | Mouza Name | Ward Name | Plot No | Area (acre) | Phase |
|---|---|---|---|---|---|
| Proposed Hospital 05 | Tarail (139_02) | Ward_No. 01 | 1001-10 | 1.745 | 2nd Phase |
| Proposed Ward Center 01 | Tarail (139_01) | Ward_No. 01 | 285-87 | 0.364 | 1st Phase |

## 14.3.2 Action Plan for Ward No. 02

**Demography**

Ward No. 02 located on the norther part of the Paurashava and total area 647 acres. The Ward is very low dense and undeveloped area. Development pressure is high along the local roads.

**Table 14.5: Population Statistic of Ward No. 02**

| Type | Population | Projected population | | | |
|---|---|---|---|---|---|
| | 2011 | 2016 | 2021 | 2026 | 2031 |
| Population | 6113 | 6452 | 6809 | 7187 | 7585 |
| Area | **647.9** | **647.9** | **647.9** | **647.9** | **647.9** |
| Density | 9 | 10 | 11 | 11 | 12 |

*Source: BBS 2011*

**Proposals and Plans for Ward No. 02**

**Landuse Proposal**

A major part of this ward is already developing by a realestate company by taking permission of the Paurashava. All the facility should ensure according to the Bhumi Unnion Badhimala 2012 within their project. Total planning area of the Ward is 647 acres. Among the total planning area, 201.2 acres land is under agriculture use and 26.7 acres for water body. Other use is negligible.

**Table 14.6: Proposed Landuse**

| Landuse Type | Area (acre) | % |
|---|---|---|
| Agricultural Zone | 201.26 | 31.02 |
| Circulation Network | 42.73 | 6.59 |
| Commercial Zone | 3.18 | 0.49 |
| Community Facilities | 1.19 | 0.18 |
| Education & Research Zone | 12.73 | 1.96 |
| General Industrial Zone | 54.33 | 8.37 |
| Government Office | 0.00 | 0.00 |
| Health Services | 3.62 | 0.56 |
| Heavy Industrial Zone | 7.12 | 1.10 |
| Miscellaneous | 0.00 | 0.00 |
| Mixed Use Zone | 0.07 | 0.01 |

| Landuse Type | Area (acre) | % |
|---|---|---|
| Open Space | 40.48 | 6.24 |
| Recreational Facilities | 3.08 | 0.47 |
| Rural Settlement | 13.06 | 2.01 |
| Transportation Facilities | 0.17 | 0.03 |
| Urban Deferred | 0.00 | 0.00 |
| Urban Residential Zone | 235.58 | 36.31 |
| Utility Services | 3.53 | 0.54 |
| Water Body | 26.71 | 4.12 |
| **Total** | 647.9 | **100.00** |

**Proposed Circulation Network**

One 60 feet, four 40 feet roads, eight 30 feet and ten 20 feet roads have been proposed in the plan. Total length of the proposed road is 15617 meter (1.5 km.).

**Table 14.7: Proposed road in the Ward No. 02**

| Road Id | Width (ft) | Road Type 01 | Road Type 02 | LENGTH | PHASING |
|---|---|---|---|---|---|
| RA2 | 20 | Access | Widening Road | 16 | 3rd Phasing |
| RT4 | 30 | Tertiary | New Road | 753 | 3rd Phasing |
| RA5 | 20 | Access | New Road | 1625 | 3rd Phasing |
| RA6 | 20 | Access | Widening Road | 19 | 3rd Phasing |
| RA13 | 20 | Access | Widening Road | 238 | 3rd Phasing |
| RA14 | 20 | Access | Widening Road | 197 | 3rd Phasing |
| RT15 | 30 | Tertiary | New Road | 520 | 1st Phasing |
| RA17 | 20 | Access | Widening Road | 370 | 2nd Phasing |
| RT18 | 30 | Tertiary | Widening Road | 440 | 3rd Phasing |
| RA32 | 20 | Access | Widening Road | 215 | 3rd Phasing |
| RS33 | 60 | Primary | New Road | 1470 | 2nd Phasing |
| RT54 | 30 | Tertiary | Widening Road | 165 | 2nd Phasing |
| RT55 | 30 | Tertiary | Widening Road | 244 | 2nd Phasing |
| RT56 | 30 | Tertiary | Widening Road | 363 | 2nd Phasing |
| RT57 | 30 | Tertiary | Widening Road | 206 | 3rd Phasing |
| RT58 | 30 | Tertiary | New Road | 510 | 3rd Phasing |
| RA64 | 20 | Access | New Road | 499 | 3rd Phasing |
| RA65 | 20 | Access | Widening Road | 153 | 3rd Phasing |
| RT66 | 30 | Tertiary | Widening Road | 219 | 3rd Phasing |
| RT67 | 30 | Tertiary | Widening Road | 73 | 3rd Phasing |
| RT68 | 30 | Tertiary | Widening Road | 296 | 3rd Phasing |
| RT70 | 40 | Secondary | Widening Road | 64 | 2nd Phasing |
| RT71 | 40 | Secondary | Widening Road | 334 | 2nd Phasing |
| RA78 | 20 | Access | Widening Road | 296 | 3rd Phasing |
| RA79 | 20 | Access | Widening Road | 527 | 3rd Phasing |
| RA93 | 20 | Access | Widening Road | 340 | 3rd Phasing |
| RT94 | 30 | Tertiary | Widening Road | 470 | 2nd Phasing |
| RT103 | 40 | Secondary | New Road | 834 | 3rd Phasing |
| RT109 | 30 | Tertiary | Widening Road | 1911 | 3rd Phasing |
| RT110 | 40 | Secondary | Widening Road | 2182 | 1st Phasing |
| RA79 | 20 | Access | Widening Road | 67 | 3rd Phasing |
| | | | Total | 15617 | |

**Map 14.3: Landuse Plan for Ward No 02**

**Map 14.4: Proposed Road, Drainage and Utility Services for Ward No 02**

**Proposed Drain and Water Supply Line**

One primary, four secondary and others tertiary drains have been proposed along the 40 feet, 30 feet and 20 feet width roads. Total length of those drains is 14.2 km. About 12 km. water supply line is being proposed for this Ward.

**Development Proposal**

A stadium, a community centre, a park, a primary school,a high school, a nursery school ,a hospital , a ward center and a dumping site has been proposed in this ward. See Table 14.8.

**Table 14.8: Development Proposal**

| Proposed Facility | Mouza Name | Ward Name | Plot No | Area (acre) | Phase |
|---|---|---|---|---|---|
| Proposed Community Center | Biraba (138_02) | Ward-02 | 1146 | 0.038 | 1st Phase |
| Proposed Ward Center 02 | Biraba (138_02) | Ward-02 | 1146 | 0.122 | 2nd Phase |
| Proposed High School 02 | Biraba (138_02) | Ward-02 | 1351-84,1477-90 | 7.326 | 3rd Phase |
| Proposed Hospital 01 | Biraba (138_02) | Ward-02 | 41-51 | 3.624 | 1st Phase |
| Proposed Nursery School 02 | Biraba (138_01) | Ward-02 | 860-62,1441-59 | 3.602 | 3rd Phase |
| Proposed Park 02 | Kendua (137_01) | Ward-02 | 1-42 | 6.517 | 3rd Phase |
| | Biraba (138_02) | Ward-02 | 1125-35 | 1.624 | 2nd Phase |
| Proposed Primary School 03 | Biraba (138_02) | Ward-02 | 1143-48 | 1.849 | 3rd Phase |
| Proposed Indoor Stadium | Kendua (137_01) | Ward-02 | 6-10 | 0.855 | 2nd Phase |
| | Biraba (138_02) | Ward-02 | 1134-43 | 1.636 | 3rd Phase |
| Proposed Waste Dumping Ground 01 | Biraba (138_01) | Ward-02 | 942-54, 962-69 | 3.530 | 1st Phase |
| Proposed Low Income Housing | Biraba (138_02) | Ward_No. 02 | 1459-65,1889-95 | 8.7 | 3rd Phase |
| Proposed Resettlement Area | Biraba (138_02) | Ward_No. 02 | 1375-1403 | 8.5 | 3rd Phase |
| Proposed River Port 02 | Biraba (138_01) | Ward_No. 02 | 474-84 | 1.5 | 3rd Phase |

### 14.3.3 Action Plan for Ward No. 03

**Demography**

The Ward is situated on the north part of the Paurashava. Ward No. 4 is on the east, Ward No. 2 on the north of this Ward.

**Table 14.9: Population Statistic of Ward No. 03**

| Type | Population 2011 | Projected population | | | |
|---|---|---|---|---|---|
| | | 2016 | 2021 | 2026 | 2031 |
| Population | 3415 | 3604 | 3804 | 4015 | 4237 |
| Area | **341.1** | **341.1** | **341.1** | **341.1** | **341.1** |
| Density | 10 | 11 | 11 | 12 | 12 |

## Proposals and Plans for Ward No. 03

### Landuse Proposal

Ward No. 3 is important for agricultural practices. Total area of the Ward is 341 acres. Among the total area, agriculture use is 93.68 acres and residential 91.75 acres.

**Table 14.10: Proposed Landuse**

| Landuse Type | Area (acre) | % |
|---|---|---|
| Agricultural Zone | 93.68 | 27.44 |
| Circulation Network | 25.01 | 7.33 |
| Commercial Zone | 0.07 | 0.02 |
| Community Facilities | 6.22 | 1.82 |
| Education & Research Zone | 1.36 | 0.40 |
| General Industrial Zone | 0.00 | 0.00 |
| Government Office | 0.00 | 0.00 |
| Health Services | 2.00 | 0.58 |
| Heavy Industrial Zone | 82.30 | 24.11 |
| Miscellaneous | 0.01 | 0.00 |
| Mixed Use Zone | 0.05 | 0.01 |
| Open Space | 16.21 | 4.75 |
| Recreational Facilities | 2.21 | 0.65 |
| Rural Settlement | 3.34 | 0.98 |
| Transportation Facilities | 0.00 | 0.00 |
| Urban Deferred | 0.00 | 0.00 |
| Urban Residential Zone | 91.75 | 26.87 |
| Utility Services | 0.69 | 0.20 |
| Water Body | 16.52 | 4.84 |
| Total | 341. 1 | **100.00** |

### Proposed Circulation Network

Four 40 feet, six 30 feet and eight 20 feet roads have been proposed in the ward. Total length of the proposed road is 8911 meter (8.9 km.).

**Table 14.11: Proposed road in the Ward No. 03**

| Road Id | Width (ft) | Road Type 01 | Road Type 02 | LENGTH | PHASING |
|---|---|---|---|---|---|
| RT1 | 30 | Secondary | New Road | 1160 | 2nd Phasing |
| RA2 | 20 | Access | Widening Road | 266 | 3rd Phasing |
| RT3 | 30 | Tertiary | New Road | 325 | 3rd Phasing |
| RA6 | 20 | Access | Widening Road | 149 | 3rd Phasing |
| RT7 | 40 | Secondary | Widening Road | 630 | 1st Phasing |
| RA8 | 20 | Access | New Road | 61 | 3rd Phasing |
| RT15 | 30 | Tertiary | New Road | 496 | 1st Phasing |
| RT31 | 30 | Tertiary | Widening Road | 1171 | 3rd Phasing |
| RS33 | 60 | Primary | New Road | 416 | 2nd Phasing |
| RA34 | 20 | Access | Widening Road | 427 | 3rd Phasing |
| RT76 | 30 | Access | Widening Road | 327 | 3rd Phasing |
| RT77 | 30 | Access | New Road | 394 | 3rd Phasing |
| RA92 | 20 | Access | Widening Road | 684 | 3rd Phasing |
| RT102 | 40 | Secondary | New Road | 864 | 3rd Phasing |
| RT104 | 40 | Secondary | Widening Road | 1526 | 1st Phasing |
| RT110 | 40 | Secondary | Widening Road | 15 | 1st Phasing |
| | | | Total | 8911 | |

**Map 14.5: Landuse Plan for Ward No 03**

**Map 14.6: Proposed Road, Drainage and Utility Services for Ward No 03**

**Proposed Drain and Water Supply Line**

One secondary and six tertiary drains have been proposed along the 40 feet, 30 feet and 20 feet width roads. Total length of those drains is 8.2 km. About 8.5 km. water supply line is being proposed for this Ward.

**Development Proposal**

A waste transfer center and a ward center have been proposed in this ward. See Table 14.12.

**Table 14.12: Development Proposal**

| Proposed Facility | Mouza Name | Ward Name | Plot No | Area (acre) | Phase |
|---|---|---|---|---|---|
| Proposed Ward Center 03 | Kendua (137_01) | Ward_No. 03 | 115-19 | 0.378 | 3rd Phase |
| Proposed Waste Transfer Center 02 | Kendua (137_01) | Ward_No. 03 | 625,651,115 | 0.686 | 2nd Phase |

### 14.3.4 Action Plan for Ward No. 04

**Demography**

Ward No. 04 is situated on the east part of the Paurashava. Ward No. 1 is on the north, and Ward No. 08 is on the south of this Ward.

**Table 14.13: Population Statistic of Ward No. 04**

| Type | Population 2011 | Projected population | | | |
|---|---|---|---|---|---|
| | | 2016 | 2021 | 2026 | 2031 |
| Population | 6797 | 7174 | 7571 | 7991 | 8433 |
| Area | **794.9** | **794.9** | **794.9** | **794.9** | **794.9** |
| Density | 9 | 9 | 10 | 10 | 11 |

**Proposals and Plans for Ward No. 04**

**Land use Proposal**

The eastern part of this ward is rapidly developing by a realestate company by taking permission of the Paurashava. All the facilities should ensure by the developer according to the Bhumi Unnion Badhimala 2012 within their project. But still the Ward No. 4 is undeveloped area. Total planning area of the Ward is 794.9 acres. Among the total planning area, 115.3 acres land is under agriculture use, 494 acre of land urban residential and 33.79 acres for water body.

**Table 14.14: Proposed Land use**

| Landuse Type | Area (acre) | % |
|---|---|---|
| Agricultural Zone | 115.33 | 14.48 |
| Circulation Network | 57.15 | 7.18 |
| Commercial Zone | 0.20 | 0.03 |
| Community Facilities | 2.85 | 0.36 |
| Education & Research Zone | 10.05 | 1.26 |
| General Industrial Zone | 0.00 | 0.00 |
| Government Office | 0.00 | 0.00 |
| Health Services | 0.04 | 0.00 |
| Heavy Industrial Zone | 0.00 | 0.00 |
| Miscellaneous | 0.00 | 0.00 |

| Landuse Type | Area (acre) | % |
|---|---|---|
| Mixed Use Zone | 71.54 | 8.98 |
| Open Space | 4.50 | 0.56 |
| Recreational Facilities | 0.00 | 0.00 |
| Rural Settlement | 1.95 | 0.24 |
| Transportation Facilities | 0.15 | 0.02 |
| Urban Deferred | 0.00 | 0.00 |
| Urban Residential Zone | 498.73 | 62.63 |
| Utility Services | 0.00 | 0.00 |
| Water Body | 33.79 | 4.24 |
| Total | 794.9 | **100.00** |

**Proposed Circulation Network**

One 100 feet road, two 80 feet road, two 60 feet road, six 40 feet road, one 30 feet roads and one 20 feet road have been proposed for Ward No. 4. Total length of the proposed road is 13029 meter (13.0).

**Table 14.15: Proposed road in the Ward No. 04**

| Road Id | Width (ft) | Road Type 01 | Road Type 02 | LENGTH | PHASING |
|---|---|---|---|---|---|
| RS42 | 60 | Primary | New Road | 1611 | 2nd Phasing |
| RS44 | 60 | Secondary | New Road | 1469 | 2nd Phasing |
| RT46 | 40 | Secondary | New Road | 986 | 2nd Phasing |
| RT47 | 40 | Secondary | New Road | 1224 | 2nd Phasing |
| RT49 | 40 | Tertiary | New Road | 390 | 2nd Phasing |
| RS52 | 60 | Secondary | New Road | 669 | 2nd Phasing |
| RT53 | 40 | Secondary | Widening Road | 1005 | 2nd Phasing |
| RP74 | 80 | Secondary | Widening Road | 595 | 3rd Phasing |
| RP81 | 80 | Tertiary | Widening Road | 705 | 3rd Phasing |
| RS82 | 60 | Secondary | New Road | 262 | 3rd Phasing |
| RA97 | 20 | Access | New Road | 1759 | 2nd Phasing |
| RP99 | 100 | Primary | New Road | 1431 | 2nd Phasing |
| RT102 | 40 | Secondary | New Road | 131 | 3rd Phasing |
| RT104 | 40 | Secondary | Widening Road | 774 | 1st Phasing |
| RT109 | 30 | Tertiary | Widening Road | 18 | 3rd Phasing |
| | | | Total | 13029 | |

**Proposed Drain and Water Supply Line**

Three primary, one secondary and six tertiary drains have been proposed along the 100-20 feet width roads. Total length of those drains is 12.3 km. About 12.8 km. water supply line is being proposed for this Ward.

**Development Proposal**

A graveyard, a college, a nursery school, a playground, a university and a ward center have been proposed in this ward. Rather the existing facility should be upgrate.

**Map 14. 7: Landuse Plan for Ward No 04**

**Map 14.8: Proposed Road, Drainage and Utility Services for Ward No 04**

**Table 14.16: Development Proposal**

| Proposed Facility | Mouza Name | Ward Name | Plot No | Area (acre) | Phase |
|---|---|---|---|---|---|
| Proposed College 03 | Kanchan (164_02) | Ward_No. 04 | 2211-35 | 2.213 | 3rd Phase |
| Proposed Graveyard 01 | Kanchan (164_01) | Ward_No. 04 | 768 | 1.296 | 1st Phase |
| Proposed Nursery School 01 | Shialti (163_00) | Ward_No. 04 | 47-50,89-90 | 1.122 | 1st Phase |
| Proposed Playground 02 | Kanchan (164_01) | Ward_No. 04 | 1131-37, 1147-1150 | 2.213 | 3rd Phase |
| Proposed University 02 | Kanchan (164_01) | Ward_No. 04 | 140-43,1127-35, 1150-59 | 3.518 | 3rd Phase |
| Proposed Ward Center 04 | Kanchan (164_01) | Ward_No. 04 | 554-57,976-78 | 0.442 | 3rd Phase |

## 14.3.5 Action Plan for Ward No. 05

### Demography

Ward No. 5 is situated on the central part of the Paurashava. Development pressure is high along the road.

**Table 14.17: Population Statistic of Ward No. 05**

| Type | Population 2011 | Projected population | | | |
|---|---|---|---|---|---|
| | | 2016 | 2021 | 2026 | 2031 |
| Population | 6916 | 7299 | 7704 | 8131 | 8581 |
| Area | **439.2** | **439.2** | **439.2** | **439.2** | **439.2** |
| Density | 16 | 17 | 18 | 19 | 20 |

### Proposals and Plans for Ward No. 05

### Land use Proposal

Ward No. 5 is important for residential development. Total planning area of the Ward is 439.2 acres. Among the total planning area, 90.43 acres land is under agriculture use, 149.7 acres residential and 20.6 acres for water body. Other use is negligible.

**Table 14.18: Proposed Landuse**

| Landuse Type | Area (acre) | % |
|---|---|---|
| Agricultural Zone | 90.43 | 20.55 |
| Circulation Network | 44.46 | 10.10 |
| Commercial Zone | 0.49 | 0.11 |
| Community Facilities | 3.74 | 0.85 |
| Education & Research Zone | 12.57 | 2.86 |
| General Industrial Zone | 0.39 | 0.09 |
| Government Office | 3.05 | 0.69 |
| Health Services | 11.07 | 2.52 |
| Heavy Industrial Zone | 0.05 | 0.01 |
| Miscellaneous | 0.00 | 0.00 |
| Mixed Use Zone | 90.44 | 20.55 |
| Open Space | 3.23 | 0.73 |
| Recreational Facilities | 0.00 | 0.00 |
| Rural Settlement | 0.59 | 0.13 |
| Transportation Facilities | 0.96 | 0.22 |

| Landuse Type | Area (acre) | % |
|---|---|---|
| Urban Deferred | 8.39 | 1.91 |
| Urban Residential Zone | 149.69 | 34.01 |
| Utility Services | 0.00 | 0.00 |
| Water Body | 20.61 | 4.68 |
| Total | 439.2 | **100.00** |

**Proposed Circulation Network**

One 120 feet road, one 100 feet road, two 40 feet road, ten 30 feet and three 20 feet roads have been proposed for Ward No. 5. Total length of the proposed road is 9708 meter (9.7 km.).

**Table 14.19: Proposed road in the Ward No.05**

| Road Id | Width (ft) | Road Type 01 | Road Type 02 | LENGTH | PHASING |
|---|---|---|---|---|---|
| RT1 | 30 | Secondary | New Road | 388 | 2nd Phasing |
| RT3 | 30 | Tertiary | New Road | 386 | 3rd Phasing |
| RT7 | 40 | Secondary | Widening Road | 553 | 1st Phasing |
| RA8 | 20 | Access | New Road | 440 | 3rd Phasing |
| RA9 | 20 | Access | Widening Road | 538 | 3rd Phasing |
| RA10 | 20 | Access | Widening Road | 276 | 3rd Phasing |
| RT15 | 30 | Tertiary | New Road | 543 | 1st Phasing |
| RT31 | 30 | Tertiary | Widening Road | 337 | 3rd Phasing |
| RS33 | 60 | Primary | New Road | 618 | 2nd Phasing |
| RT38 | 30 | Tertiary | Widening Road | 191 | 3rd Phasing |
| RT49 | 40 | Tertiary | New Road | 808 | 2nd Phasing |
| RT77 | 30 | Access | New Road | 365 | 3rd Phasing |
| RP81 | 80 | Tertiary | Widening Road | 589 | 3rd Phasing |
| RT88 | 30 | Tertiary | Widening Road | 428 | 1st Phasing |
| RT89 | 30 | Tertiary | Widening Road | 308 | 2nd Phasing |
| RT91 | 30 | Tertiary | Widening Road | 112 | 3rd Phasing |
| RP99 | 100 | Primary | New Road | 429 | 2nd Phasing |
| RP101 | 120 | Primary | Widening Road | 1880 | 1st Phasing |
| RT102 | 40 | Secondary | New Road | 476 | 3rd Phasing |
| RT105 | 30 | Tertiary | Widening Road | 44 | 3rd Phasing |
| | | | Total | 9708 | |

**Proposed Drain and Water Supply Line**

Three primary, one secondary and six tertiary drains have been proposed along the 120 to 20 feet width roads. Total length of those drains is 9.5 km. About 9.2 km. water supply line is being proposed for this Ward.

**Development Proposal**

A college, a graveyard, a hospital, a stadium and a ward center has been proposed in this ward. See Table 14-20.

**Map 14. 9: Landuse Plan for Ward No 05**

**Map 14.10: Proposed Road, Drainage and Utility Services for Ward No 05**

**Table 14.20: Development Proposal**

| Proposed Facility | Mouza Name | Ward Name | Plot No | Area (acre) | Phase |
|---|---|---|---|---|---|
| Proposed Auto Stand 01 | Kanchan (164_03) | Ward_No. 05 | 5582-84 | 0.322 | 1st Phase |
| Proposed College 02 | Kendua (137_02) | Ward_No. 05 | 2419-30 | 2.514 | 3rd Phase |
| | Kendua (137_02) | Ward_No. 05 | 2431-39 | 2.758 | 3rd Phase |
| | Kanchan (164_01) | Ward_No. 05 | 149-54 | 0.060 | 2nd Phase |
| Proposed Graveyard 04 | Kendua (137_01) | Ward_No. 05 | 559-67,651-52 ,661-62,704-21, 734-58 | 8.250 | 2nd Phase |
| Proposed Hospital 02 | Kendua (137_01) | Ward_No. 05 | 647-48, 663-79, 1129-32 | 6.416 | 3rd Phase |
| | Kendua (137_02) | Ward_No. 05 | 2150-80 | 6.602 | 3rd Phase |
| Proposed Ward Center 05 | Kendua (137_02) | Ward_No. 05 | 2235-36 | 0.177 | 1st Phase |
| Proposed Stadium | Kendua (137_01) | Ward_No. 05 | 690-704,746-82 | 11.04 | 3rd Phase |

### 14.3.6 Action Plan for Ward No. 06

**Demography**

Ward No. 6 is situated on the almost middle part of the Paurashava. Ward No. 5 on the north. The Ward is developed area and almost congested in this Paurashava.

**Table 14.21: Population Statistic of Ward No. 06**

| Type | Population 2011 | Projected population | | | |
|---|---|---|---|---|---|
| | | 2016 | 2021 | 2026 | 2031 |
| Population | 7636 | 8059 | 8506 | 8977 | 9474 |
| Area | **248.6** | **248.6** | **248.6** | **248.6** | **248.6** |
| Density | 31 | 32 | 34 | 36 | 38 |

**Proposals and Plans for Ward No. 06**

**Land use Proposal**

Ward No. 6 is important for highly developed area. Total area of the Ward is 248.6 acres. Among the total area, circulation network 20.6 acres, water body 16.16 and residential 118.8 acres. Areas under education and research are 20.61 acres and community facilities 1.4 acres. No other important use is in the Ward.

**Table 14.22: Proposed Landuse**

| Landuse Type | Area (acre) | % |
|---|---|---|
| Agricultural Zone | 0.00 | 0.00 |
| Circulation Network | 18.42 | 7.40 |
| Commercial Zone | 7.22 | 2.90 |
| Community Facilities | 1.40 | 0.56 |
| Education & Research Zone | 20.61 | 8.28 |
| General Industrial Zone | 6.65 | 2.67 |
| Government Office | 5.00 | 2.01 |
| Health Services | 0.62 | 0.25 |
| Heavy Industrial Zone | 31.80 | 12.78 |
| Miscellaneous | 0.05 | 0.02 |
| Mixed Use Zone | 5.76 | 2.31 |
| Open Space | 11.68 | 4.70 |
| Recreational Facilities | 0.34 | 0.14 |
| Rural Settlement | 0.00 | 0.00 |
| Transportation Facilities | 4.21 | 1.69 |

| Landuse Type | Area (acre) | % |
|---|---|---|
| Urban Deferred | 0.00 | 0.00 |
| Urban Residential Zone | 118.87 | 47.78 |
| Utility Services | 0.00 | 0.00 |
| Water Body | 16.16 | 6.50 |
| Total | 248.6 | **100.00** |

**Proposed Circulation Network**

One120 feet roads, one 100 feet road, five 30 feet and four 20 feet roads have been proposed in the plan. Total length of the proposed road is 5370 meter (5.3 km.).

**Table 14.23: Proposed road in the Ward No. 06**

| Road Id | Width (ft) | Road Type 01 | Road Type 02 | LENGTH | PHASING |
|---|---|---|---|---|---|
| RA10 | 20 | Access | Widening Road | 10 | 3rd Phasing |
| RA16 | 20 | Access | Widening Road | 375 | 3rd Phasing |
| RT38 | 30 | Tertiary | Widening Road | 589 | 3rd Phasing |
| RT88 | 30 | Tertiary | Widening Road | 1160 | 1st Phasing |
| RT89 | 30 | Tertiary | Widening Road | 580 | 2nd Phasing |
| RA90 | 20 | Access | Widening Road | 457 | 3rd Phasing |
| RT91 | 30 | Tertiary | Widening Road | 287 | 3rd Phasing |
| RA98 | 20 | Access | Widening Road | 723 | 3rd Phasing |
| RP99 | 100 | Primary | New Road | 187 | 2nd Phasing |
| RP101 | 120 | Primary | Widening Road | 310 | 1st Phasing |
| RT105 | 30 | Tertiary | Widening Road | 692 | 3rd Phasing |
| | | | Total | 5370 | |

**Proposed Drain and Water Supply Line**

Two primary and six tertiary drains have been proposed along the 120 to 20 feet width roads. Total length of those drains is 5.2 km. About 4.8 km. water supply line is being proposed for this Ward.

**Development Proposal**

A bus terminal, a truck terminal, a high school, a college and a ward center has been proposed in this ward. The existing services should be developed to make it useable.

**Table 14. 24: Development Proposal**

| Proposed Facility | Mouza Name | Ward Name | Plot No | Area (acre) | Phase |
|---|---|---|---|---|---|
| Proposed Bus Terminal | Kanchan (164_01) | Ward_No. 06 | 720-25,1401-02, 5064-68,5068-87 | 2.357 | 2nd Phase |
| Proposed College 04 | Kanchan (164_03) | Ward_No. 06 | 5239-43,5556-603 | 5.656 | 2nd Phase |
| Proposed High School 03 | Kanchan (164_03) | Ward_No. 06 | 5560-61, 5594-5630 | 9.184 | 1st Phase |
| Proposed Truck Terminal | Kanchan (164_01) | Ward_No. 06 | 724-29, 734-36, 1422-24 | 2.421 | 3rd Phase |
| Proposed Ward Center 06 | Kanchan (164_03) | Ward_No. 06 | 5626-27, 5630,5634 | 0.319 | 2nd Phase |
| Proposed Slaugher House | Kanchan (164_03) | Ward_No. 06 | 4360 | 0.14 | 1st Phase |

**Map 14.11: Landuse Plan for Ward No 06**

**Map 14.12: Proposed Road, Drainage and Utility Services for Ward No 06**

## 14.3.7 Action Plan for Ward No. 07

### Demography

Ward No.7 is situated on the northern part of the Paurashava. Ward No. 6 on the north and Ward No. 8 on the east. The Ward is undeveloped in this Paurashava.

**Table 14.25: Population Statistic of Ward No. 07**

| Type | Population 2011 | Projected population | | | |
|---|---|---|---|---|---|
| | | 2016 | 2021 | 2026 | 2031 |
| Population | 5816 | 6138 | 6478 | 6837 | 7216 |
| Area | **606.7** | **606.7** | **606.7** | **606.7** | **606.7** |
| Density | 10 | 10 | 11 | 11 | 12 |

### Proposals and Plans for Ward No. 07

### Land use Proposal

Ward No. 7 is important for agriculture practice. Total area of the Ward is 606 acres. Among the total area, agriculture use is 179.9 acres, residential 108.37 acres, community facilities 1.67 acres and rural settlement 18.9 acres. Other use is negligible.

**Table 14.26: Proposed Land use**

| Landuse Type | Area (acre) | % |
|---|---|---|
| Agricultural Zone | 179.96 | 29.62 |
| Circulation Network | 51.46 | 8.47 |
| Commercial Zone | 0.09 | 0.01 |
| Community Facilities | 1.67 | 0.28 |
| Education & Research Zone | 15.46 | 2.54 |
| General Industrial Zone | 0.71 | 0.12 |
| Government Office | 15.07 | 2.48 |
| Health Services | 0.04 | 0.01 |
| Heavy Industrial Zone | 0.00 | 0.00 |
| Miscellaneous | 0.00 | 0.00 |
| Mixed Use Zone | 175.54 | 28.89 |
| Open Space | 1.24 | 0.20 |
| Recreational Facilities | 0.00 | 0.00 |
| Rural Settlement | 18.91 | 3.11 |
| Transportation Facilities | 0.34 | 0.06 |
| Urban Deferred | 0.00 | 0.00 |
| Urban Residential Zone | 108.37 | 17.83 |
| Utility Services | 0.00 | 0.00 |
| Water Body | 38.80 | 6.38 |
| Total | 607.65 | **100.00** |

### Proposed Circulation Network

One 120 feet road, one 80 feet road, one 60 feet road, three 40 feet roads and nine 30 feet road have been proposed in the plan. Total length of the proposed road is 12643 meter (12.6 km.).

**Table 14.27: Proposed road in the Ward No. 07**

| Road Id | Width (ft) | Road Type 01 | Road Type 02 | LENGTH | PHASING |
|---|---|---|---|---|---|
| RT24 | 30 | Tertiary | New Road | 421 | 3rd Phasing |
| RA27 | 20 | Access | Widening Road | 366 | 3rd Phasing |
| RT28 | 30 | Tertiary | Widening Road | 782 | 3rd Phasing |
| RA29 | 20 | Access | Widening Road | 328 | 3rd Phasing |
| RA30 | 20 | Access | Widening Road | 713 | 2nd Phasing |
| RA35 | 20 | Access | Widening Road | 247 | 3rd Phasing |
| RA36 | 20 | Access | Widening Road | 404 | 3rd Phasing |
| RA39 | 20 | Access | Widening Road | 453 | 3rd Phasing |
| RA40 | 20 | Access | New Road | 237 | 3rd Phasing |
| RT41 | 40 | Secondary | New Road | 570 | 2nd Phasing |
| RA50 | 20 | Secondary | Widening Road | 677 | 3rd Phasing |
| RT69 | 40 | Tertiary | Widening Road | 35 | 2nd Phasing |
| RT80 | 30 | Tertiary | Widening Road | 676 | 1st Phasing |
| RA83 | 20 | Access | Widening Road | 374 | 3rd Phasing |
| RA84 | 20 | Access | Widening Road | 482 | 3rd Phasing |
| RT85 | 30 | Tertiary | Widening Road | 636 | 3rd Phasing |
| RT86 | 40 | Tertiary | New Road | 461 | 2nd Phasing |
| RT88 | 30 | Tertiary | Widening Road | 372 | 1st Phasing |
| RA98 | 20 | Access | Widening Road | 215 | 3rd Phasing |
| RP100 | 80 | Secondary | New Road | 379 | 2nd Phasing |
| RP101 | 120 | Primary | Widening Road | 2936 | 1st Phasing |
| RT106 | 30 | Tertiary | Widening Road | 159 | 3rd Phasing |
| RS107 | 60 | Tertiary | Widening Road | 720 | 1st Phasing |
| | | | Total | 12643 | |

**Proposed Drain and Water Supply Line**

Three primary drain and three secondary and six tertiary drains have been proposed along the 120 to 20 feet width roads. Total length of those drains is 12.2 km. About 12.1 km. water supply line is being proposed for this Ward.

**Development Proposal**

A college, a university, a vocational training center and a ward center have been proposed in this ward. Ple see Table: 14.28.

**Table 14.28: Development Proposal**

| Proposed Facility | Mouza Name | Ward Name | Plot No | Area (acre) | Phase |
|---|---|---|---|---|---|
| Proposed Auto Stand 02 | Kanchan (164_02) | Ward_No. 07 | 2953-54,2926 | 0.346 | 3rd Phase |
| Proposed College 01 | Kanchan (164_04) | Ward_No. 07 | 6135-41,6204-15 | 6.707 | 1st Phase |
| Proposed Graveyard 02 | Kanchan (164_05) | Ward_No. 07 | 7532-33,7598-604 | 0.939 | 3rd Phase |
| Proposed University 01 | Kanchan (164_04) | Ward_No. 07 | 6211-25,6241-53, 6264-66 | 9.987 | 1st Phase |
| Proposed Vocational Training Institute | Kanchan (164_04) | Ward_No. 07 | 6234-42,7268-71 | 2.915 | 2nd Phase |
| Proposed Ward Center 07 | Kanchan (164_02) | Ward_No. 07 | 2965-66,2968 | 0.094 | 2nd Phase |

**Map 14.13: Landuse Plan for Ward No 07**

**Map 14.14: Proposed Road, Drainage and Utility Services for Ward No 07**

## 14.3.8 Action Plan for Ward No. 08

### Demography

The area of Ward No. 8 is about 1167 acre. Ward No. 7 is on the west, Ward No. 4 on the north part of this Ward. Several numbers of local roads serve the area. This area is characterized by agriculture development and rural homesteads. Development pressure is high along the local roads.

**Table 14.29: Population Statistic of Ward No. 08**

| Type | Population | Projected population | | | |
|---|---|---|---|---|---|
| | 2011 | 2016 | 2021 | 2026 | 2031 |
| Population | 4249 | 4484 | 4733 | 4995 | 5272 |
| Area | 1167.1 | 1167.1 | 1167.1 | 1167.1 | 1167.1 |
| Density | 4 | 4 | 4 | 4 | 5 |

### Proposals and Plans for Ward No. 08

### Land use Proposal

The southern part of this ward is rapidly developing by a realestate company by taking permission of the Paurashava. All the facilities should ensure by the developer according to the Bhumi Unnion Badhimala 2012 within their project. Total area of the Ward is 1167 acres. Among the total area, agriculture use is 247.8 acres and residential 606.34 acres. Other use is negligible.

**Table 14.30: Proposed Land use**

| Landuse Type | Area (acre) | % |
|---|---|---|
| Agricultural Zone | 247.81 | 21.21 |
| Circulation Network | 65.60 | 5.62 |
| Commercial Zone | 0.08 | 0.01 |
| Community Facilities | 12.83 | 1.10 |
| Education & Research Zone | 2.97 | 0.25 |
| General Industrial Zone | 0.00 | 0.00 |
| Government Office | 0.00 | 0.00 |
| Health Services | 1.74 | 0.15 |
| Heavy Industrial Zone | 0.00 | 0.00 |
| Miscellaneous | 0.00 | 0.00 |
| Mixed Use Zone | 80.19 | 6.86 |
| Open Space | 43.40 | 3.71 |
| Recreational Facilities | 0.00 | 0.00 |
| Rural Settlement | 37.05 | 3.17 |
| Transportation Facilities | 0.00 | 0.00 |
| Urban Deferred | 0.00 | 0.00 |
| Urban Residential Zone | 606.34 | 51.90 |
| Utility Services | 2.06 | 0.18 |
| Water Body | 68.12 | 5.83 |
| Total | 1168.18 | 100.00 |

**Proposed Circulation Network**

Two 80 feet road, six 60 feet road, two 40 feet road, one 30 feet road and two 20 feet roads have been proposed in the plan. Total length of the proposed road is 14744 meter (14.7 km.).

**Table 14.31: Proposed road in the Ward No. 08**

| Road Id | Width (ft) | Road Type 01 | Road Type 02 | LENGTH | PHASING |
|---|---|---|---|---|---|
| RA36 | 20 | Access | Widening Road | 473 | 3rd Phasing |
| RS42 | 60 | Primary | New Road | 582 | 2nd Phasing |
| RP43 | 80 | Secondary | New Road | 2798 | 2nd Phasing |
| RS44 | 60 | Secondary | New Road | 634 | 2nd Phasing |
| RS45 | 60 | Secondary | New Road | 1790 | 2nd Phasing |
| RT46 | 40 | Secondary | New Road | 974 | 2nd Phasing |
| RT47 | 40 | Secondary | New Road | 771 | 2nd Phasing |
| RA50 | 20 | Secondary | Widening Road | 431 | 3rd Phasing |
| RT51 | 40 | Secondary | New Road | 1673 | 3rd Phasing |
| RS52 | 60 | Secondary | New Road | 989 | 2nd Phasing |
| RT80 | 30 | Tertiary | Widening Road | 323 | 1st Phasing |
| RS82 | 60 | Secondary | New Road | 1680 | 3rd Phasing |
| RA97 | 20 | Access | New Road | 371 | 2nd Phasing |
| RP100 | 80 | Secondary | New Road | 835 | 2nd Phasing |
| RS107 | 60 | Tertiary | Widening Road | 419 | 1st Phasing |
| | | | Total | 14744 | |

**Proposed Drain and Water Supply Line**

Two primary, four secondary and six tertiary drains have been proposed along the 80 to 20 feet width roads. Total length of those drains is 14.2 km. About 13.9 km. water supply line is being proposed for this Ward.

**Development Proposal**

A graveyard, a hospital, a park, a playground , a primary school, a dumping ground and a ward center has been proposed in this ward.

**Table 14.32: Development Proposal**

| Proposed Facility | Mouza Name | Ward Name | Plot No | Area (acre) | Phase |
|---|---|---|---|---|---|
| Proposed Graveyard 03 | Choto Nowpara (165_00) | Ward_No. 08 | 488-503,513-523, 796-835 | 12.266 | 3rd Phase |
| Proposed Hospital 04 | Dighalia (162_01) | Ward_No. 08 | 361-69 | 1.743 | 3rd Phase |
| Proposed Park 03 | Choto Nowpara (165_00) | Ward_No. 08 | 835-883,957-1004 | 34.009 | 3rd Phase |
| Proposed Playground 06 | Choto Nowpara (165_00) | Ward_No. 08 | 91-99, | 1.809 | 1st Phase |
| | Dighalia (162_02) | Ward_No. 08 | 989-90,1061-65 | 0.586 | 3rd Phase |
| Proposed Primary School 05 | Kanchan (164_05) | Ward_No. 08 | 7802-03,7850-62, 7868-70 | 2.643 | 2nd Phase |
| Proposed Ward Center 08 | Kanchan (164_02) | Ward_No. 08 | 3578-80, 3737-38 | 0.117 | 3rd Phase |
| Proposed Waste Dumping Ground 02 | Kanchan (164_05) | Ward_No. 08 | 7929-40 | 3.368 | 3rd Phase |

**Map 14.15: Landuse Plan for Ward No 08**

**Map 14.16: Proposed Road, Drainage and Utility Services for Ward No 08**

### 14.3.9 Action Plan for Ward No. 09

**Demography**

Ward No. 9 is situated on the southern part of the Paurashava. Ward No. 7 on the east of this Ward. Seven local roads serve the area. This area is developing in scatter manner. Development pressure is high along the local roads.

**Table 14.33: Population Statistic of Ward No. 09**

| Type | Population | Projected population | | | |
|---|---|---|---|---|---|
| | 2011 | 2016 | 2021 | 2026 | 2031 |
| Population | 3922 | 4139 | 4369 | 4611 | 4866 |
| Area | **511.3** | **511.3** | **511.3** | **511.3** | **511.3** |
| Density | 8 | 8 | 9 | 9 | 10 |

**Proposals and Plans for Ward No. 09**

The southern part of this ward is rapidly developing by a realestate company by taking permission of the Paurashava. All the facilities should ensure by the developer according to the Bhumi Unnion Badhimala 2012 within their project. Though the ward is beside the Highway , so there is a great opportunity to develop the area in near future. Total area of the Ward is 511 acres. Among the total area, agriculture use is 16.65 acres, residential 270.88 acres, education and research 16.78 acres, community facilities 5.24 acres and water body 36.03 acres.

**Table 14.34: Proposed Landuse**

| Landuse Type | Area (acre) | % |
|---|---|---|
| Agricultural Zone | 16.65 | 3.26 |
| Circulation Network | 22.34 | 4.37 |
| Commercial Zone | 0.30 | 0.06 |
| Community Facilities | 5.24 | 1.02 |
| Education & Research Zone | 16.78 | 3.28 |
| General Industrial Zone | 1.58 | 0.31 |
| Government Office | 0.00 | 0.00 |
| Health Services | 1.78 | 0.35 |
| Heavy Industrial Zone | 61.96 | 12.12 |
| Miscellaneous | 0.00 | 0.00 |
| Mixed Use Zone | 8.53 | 1.67 |
| Open Space | 20.57 | 4.02 |
| Recreational Facilities | 0.00 | 0.00 |
| Rural Settlement | 45.43 | 8.88 |
| Transportation Facilities | 2.65 | 0.52 |
| Urban Deferred | 0.69 | 0.13 |
| Urban Residential Zone | 270.88 | 52.97 |
| Utility Services | 0.00 | 0.00 |
| Water Body | 36.03 | 7.04 |
| Total | 511.39 | **100.00** |

**Proposed Circulation Network**

Three 40 feet road, four 30 feet roads and one 20 feet road have been proposed in the plan. Total length of the proposed road is 6840 meter (6.8 km.).

**Table 14.35: Proposed road in the Ward No. 09**

| Road Id | Width (ft) | Road Type 01 | Road Type 02 | LENGTH | PHASING |
|---|---|---|---|---|---|
| RT11 | 30 | Tertiary | Widening Road | 179 | 3rd Phasing |
| RT24 | 30 | Tertiary | New Road | 478 | 3rd Phasing |
| RT41 | 40 | Secondary | New Road | 567 | 2nd Phasing |
| RT48 | 30 | Tertiary | Widening Road | 711 | 2nd Phasing |
| RT69 | 40 | Tertiary | Widening Road | 911 | 2nd Phasing |
| RT86 | 40 | Tertiary | New Road | 463 | 2nd Phasing |
| RA87 | 20 | Access | Widening Road | 1463 | 3rd Phasing |
| RT88 | 30 | Tertiary | Widening Road | 314 | 1st Phasing |
| RT106 | 30 | Tertiary | Widening Road | 1754 | 3rd Phasing |
| | | | Total | 6840 | |

**Proposed Drain and Water Supply Line**

One secondary and six tertiary drains have been proposed along the 40 to 20 feet width roads. Total length of those drains is 6.5km. About 6.6 km. water supply line is being proposed for this Ward.

**Development Proposal**

A high school, hospitals, a park, three playgrounds, two primary schools, a river port and a ward center has been proposed in this ward.

**Table 14.36: Development Proposal**

| Proposed Facility | Mouza Name | Ward Name | Plot No | Area (acre) | Phase |
|---|---|---|---|---|---|
| Proposed Ward Center 09 | Kanchan (164_04) | Ward- 09 | 6088 | 0.514 | 3rd Phase |
| Proposed High School 01 | Norabo (173_00) | Ward-09 | 61-71,89-106 | 4.180 | 1st Phase |
| Proposed Hospital 03 | Kanchan (164_04) | Ward-09 | 6422-23,6439-41 | 1.699 | 2nd Phase |
| Proposed Park 01 | Kanchan (164_04) | Ward- 09 | 6638-63 | 5.615 | 2nd Phase |
| Proposed Playground 01 | Kanchan (164_04) | Ward-09 | 6481,6724-29 | 0.963 | 1st Phase |
| Proposed Playground 03 | Kanchan (164_04) | Ward-09 | 3380-82 | 1.127 | 3rd Phase |
| Proposed Playground 05 | Kanchan (164_04) | Ward-09 | 6759,6787-93 | 0.998 | 3rd Phase |
| Proposed Primary School 01 | Kanchan (164_04) | Ward-09 | 6332-37 | 1.589 | 3rd Phase |
| Proposed Primary School 02 | Kanchan (164_04) | Ward-09 | 6476-81,6806-08 | 1.590 | 2nd Phase |
| Proposed River Port | Kanchan (164_03) | Ward- 09 | 5785-86,5789-90 | 1.684 | 3rd Phase |

**Map 14.17: Landuse Plan for Ward No 09**

**Map 14.18: Proposed Road, Drainage and Utility Services for 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:

1. Residential development up to four-storied.
2. Small-scale shops.
3. Primary schools / kindergartens.
4. Mosques (or other religious facilities) servicing a local area plus small graveyard if required.
5. Recreational development.
6. Local health facilities (clinics rather than hospital).
7. Small-scale office (may be public or private) development.
8. Workshops (small-scale workshops with operations only) in daylight hours and low traffic generators.
9. Open space (playgrounds, parks, etc.)
10. Access roads.
11. Utilities; and
12. 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 10 meter access roads which run through the entire area providing access to all Wards. These access roads should be linked to local roads. If this is not the case and access roads of sufficient width, are not available, the Paurashava shall consider whether or not further development is appropriate. New development may result in increased vehicular congestion and increased demand for utility services, where this could be difficult to supply.
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.

# ANNEXURE A:
# Paurashava Gazette

# ANNEXURE B:
# Proposed Land Use Categories and permitted use

### a. Urban Residential Land Use

**Land Use Permitted**

The following uses in the tables are proposed to be applicable for this zone only.

Table A.1: Land Use Permitted

| **Permitted Urban Residential Uses** |
|---|
| Artisan's Shop |
| Assisted Living or Elderly Home |
| Confectionery Shop |
| Barber Shop |
| Child Daycare \ Preschool |
| Cleaning \ Laundry Shop |
| Communication Service Facilities |
| Communication Tower Within Permitted Height |
| Condominium or Apartment |
| Cottage |
| Cyber Café |
| Daycare Center (Commercial or Nonprofit) |
| Drug Store or Pharmacy |
| Employee Housing (Guards \ Drivers) \ Ancillary Use |
| General Store |
| Grocery Store |
| High School |
| Household Appliance and Furniture Repair Service (No Outside Storage) |
| Housing For Seasonal Firm Labor |
| Landscape and Horticultural Services |
| Mosque, Place Of Worship |
| Newspaper Stand |
| Nursery School |
| Orphanage |
| Eidgah |
| Photocopying and Duplicating Services (No Outside Storage) |
| Pipelines and Utility Lines |
| Playing Field |
| Primary School |
| Private Garages (Ancillary Use) |
| Project Identification Signs |
| Property Management Signs |
| Public Transport Facility |
| Satellite Dish Antenna |
| Shelter (Passers By) |
| Shoe Repair or Shoeshine Shop (Small) |
| CBO Office |
| Special Dwelling |
| Temporary Tent |

| **Permitted Urban Residential Uses** |
|---|
| Temporary tent for Permitted Function |
| Newspaper Stand |
| Specialized School: Dance, Art, Music, Physically Challenged & Others |
| Transmission Lines |
| Urban-Nature Reserve |
| Utility Lines |
| Woodlot |
| Children's Park (Must Have Parking) |
| ATM Booth |
| Water Pump \ Reservoir |
| Monument (Neighborhood Scale) |
| Bill Payment Booth |
| Boarding and Rooming House |
| Dormitory |
| Memorial Structure (Ancillary) |
| ***Neighborhood Center**** (Where Neighborhood Center exists) |
| **Permitted** |
| Community Center |
| Doctor \ Dentist Chamber |
| Cultural Exhibits and Libraries |
| Fast Food Establishment \ Food Kiosk |
| Flowers, Nursery Stock and Florist Supplies |
| Fitness Centre |
| Gaming Clubs |
| Departmental Stores |
| Retail Shops \ Facilities |

*Source: Compiled by the Consultants*

*Permission of Neighborhood Center Facilities in absence of formal neighborhood should be subject to Landuse Permit Committee

**Land Use Conditionally Permitted**

The following uses may be permitted or disallowed in this zone after review and approval by the authority/committee following appropriate procedure while the application meets the criteria mentioned in the requirement.

Table A.2: Land Use Conditionally Permitted

| **Conditionally Permitted Urban Residential Uses** |
|---|
| Addiction Treatment Center |
| Amusement and Recreation (Indoors) |
| Funeral Services |
| Art Gallery, Art Studio \ Workshop |
| Automobile Driving Academy |
| Beauty and Body Service |
| Billiard Parlor \ Pool Hall |

| **Conditionally Permitted Urban Residential Uses** |
|---|
| Book or Stationery Store or Newsstand |
| Building Maintenance \ Cleaning Services, No Outside Storage |
| Bus Passenger Shelter |
| Graveyard \ Cemetery |
| Coffee Shop \ Tea Stall |
| Correctional Institution |
| Courier Service |
| Crematorium |
| Plantation (Except Narcotic Plant) |
| Furniture & Variety Stores |
| Emergency Shelter |
| Energy Installation |
| Garages |
| Garden Center or Retail Nursery |
| Fire Brigade Station |
| Police Station |
| Temporary Rescue Shed |
| Guest House |
| Slaughter House |
| Static Transformer Stations |
| Tourist Home or Resort |
| Market (Bazar) |
| Optical Goods Sales |
| Outdoor Café |
| Outdoor Fruit and Vegetable Markets |
| Community Hall |
| Neighborhood Co-Operative Office |
| Overhead Water Storage Tanks |
| Row House |
| Paints and Varnishes Store |
| Parking Lot |
| Patio Homes |
| Photofinishing Laboratory |
| Post Office |
| Postal Facilities |
| Sports and Recreation Club |
| Tennis Club |
| Flood Management Structure |
| Telephone Sub Station |
| Electrical Sub Station |

*Source: Compiled by the Consultants*

**Restricted Uses**

All uses except permitted and conditionally permitted uses are restricted in this zone.

**b. General Industry**

**Land use Permitted**

General Industry land use category approve only Green and Orange -A category industry mentioned in *The Environmental Conservation Rule, 1997*.The following uses in the tables are proposed to be applicable for this zone only.

Table A.3: Land Use Permitted

| **Permitted General Industrial Activities** |
|---|
| Confectionery Shop |
| Bank & Financial Institution |
| Bicycle Assembly, Parts and Accessories |
| Blacksmith |
| Bus Passenger Shelter |
| Communication Tower Within Permitted Height |
| Freight Transport Facility |
| Police Box \ Barrack |
| Fire \ Rescue Station |
| Grocery Store |
| Household Appliance and Furniture Repair Service |
| Machine Sheds |
| Meat and Poultry (Packing & Processing) |
| Mosque, Place Of Worship |
| Newspaper Stand |
| Photocopying and Duplicating Services |
| Pipelines and Utility Lines |
| Printing, Publishing and Distributing |
| Public Transport Facility |
| Restaurant |
| Retail Shops \ Facilities |
| Salvage Processing |
| Salvage Yards |
| Satellite Dish Antenna |
| Sawmill, Chipping and Pallet Mill |
| Shelter (Passers By) |
| Television, Radio or Electronics Repair (No Outside Storage) |
| Transmission Lines |
| Truck Stop & Washing or Freight Terminal |
| Utility Lines |

| **Permitted General Industrial Activities** |
|---|
| Wood Products |
| Woodlot |
| ATM Booth |
| Water Pump \ Reservoir |
| Effluent Treatment Plant |
| Social Forestry |

Source: Compiled by the Consultants

**Land Use Conditionally Permitted**

The following uses may be permitted or denied in this zone after review and approval by the authority/committee following appropriate procedure.

Table A.4: Land Use Conditionally Permitted

| **Conditionally Permitted General Industrial Land Uses** |
|---|
| Amusement and Recreation (Indoors) |
| Appliance Store |
| Plantation (Except Narcotic Plant) |
| Cyber Café |
| Daycare Center (Commercial or Nonprofit) |
| Doctor \ Dentist Chamber |
| Electrical and Electronic Equipment and Instruments Sales |
| Employee Housing |
| Energy Installation |
| Fast Food Establishment \ Food Kiosk |
| Garages |
| Grain & Feed Mills |
| Incineration Facility |
| Super Store |
| Lithographic or Print Shop |
| Motor Vehicle Fuelling Station \ Gas Station |
| Motorcycle Sales Outlet |
| Outdoor Fruit and Vegetable Markets |
| Outside Bulk Storage |
| Overhead Water Storage Tanks |
| Painting and Wallpaper Sales |
| Paints and Varnishes |
| Parking Lot |
| Parking Lot (Commercial) |
| Private Garages |
| Retail Shops Ancillary To Studio \ Workshop |
| Jute Mill |

*Source: Compiled by the Consultants*

**Restricted Uses**

All other uses; except the permitted and conditionally permitted uses.

**c. Commercial Zone**

**Land Use Permitted**

Commercial zone is mainly intended for supporting the office and business works. There are several functions that are permitted in this zone.

Table A.5: Land Use Permitted

| **Permitted Commercial Activity** |
|---|
| Accounting, Auditing or Bookkeeping Services |
| Billboards, Advertisements & Advertising Structure |
| Agri-Business |
| Agricultural Sales and Services |
| Ambulance Service |
| Antique Shop |
| Appliance Store |
| Auction Market |
| Auditorium, Coliseum, Meeting Halls, and Conference Facilities, Convention |
| Auto Leasing or Rental Office |
| Auto Paint Shop |
| Auto Parts and Accessory Sales (Indoors) |
| Auto Repair Shop (With Garage) |
| Automobile Wash |
| Automobile Sales |
| Confectionery Shop |
| Bakery or Confectionery Retail |
| Bank & Financial Institution |
| Bar (Licensed) |
| Barber Shop |
| Beauty and Body Service |
| Bicycle Shop |
| Billiard Parlor \ Pool Hall |
| Book or Stationery Store or Newsstand |
| Building Material Sales or Storage (Indoors) |
| Bulk Mail and Packaging |
| Bus Passenger Shelter |
| Cinema Hall |
| Communication Service Facilities |
| Communication Tower Within Permitted Height |
| Computer Maintenance and Repair |

| **Permitted Commercial Activity** |
|---|
| Computer Sales & Services |
| Conference Center |
| Construction Company |
| Courier Service |
| Cyber Café |
| Daycare Center (Commercial or Nonprofit) |
| Department Stores, Furniture & Variety Stores |
| Doctor \ Dentist Chamber |
| Drug Store or Pharmacy |
| Electrical and Electronic Equipment and Instruments Sales |
| Fast Food Establishment \ Food Kiosk |
| Freight Handling, Storage & Distribution |
| Freight Transport Facility |
| Freight Yard |
| General Store |
| Grocery Store |
| Guest House |
| Hotel or Motel |
| Inter-City Bus Terminal |
| Jewelry and Silverware Sales |
| Junk \ Salvage Yard |
| Super Store |
| Market (Bazar) |
| Mosque, Place Of Worship |
| Motorcycle Sales Outlet |
| Multi-Storey Car Park |
| Newspaper Stand |
| Outdoor Fruit and Vegetable Markets |
| Outdoor Recreation, Commercial |
| Parking Lot (Commercial) |
| Pet Store |
| Photocopying and Duplicating Services |
| Photofinishing Laboratory & Studio |
| Pipelines and Utility Lines |
| Post Office |
| Preserved Fruits and Vegetables Facility \ Cold Storage |
| Printing, Publishing and Distributing |
| Project Identification Signs |
| Property Management Signs |
| Public Transport Facility |

| **Permitted Commercial Activity** |
|---|
| Refrigerator or Large Appliance Repair |
| Resort |
| Restaurant |
| Retail Shops \ Facilities |
| Salvage Processing |
| Salvage Yards |
| Satellite Dish Antenna |
| Sawmill, Chipping and Pallet Mill |
| Shelter (Passers By) |
| Shopping Mall \ Plaza |
| Slaughter House |
| Software Development |
| Sporting Goods and Toys Sales |
| Taxi Stand |
| Telephone Exchanges |
| Television, Radio or Electronics Repair (No Outside Storage) |
| Theater (Indoor) |
| Transmission Lines |
| Utility Lines |
| Vehicle Sales & Service, Leasing or Rental |
| Veterinarian Clinics, Animal Hospitals, Kennels and Boarding Facilities |
| Warehousing |
| Wood Products |
| Woodlot |
| ATM Booth |
| Water Pump \ Reservoir |
| Agro-Based Industry (Rice Mill, Saw Mill, Cold Storage) |
| Social Forestry |

*Source: Compiled by the Consultants*

**Land Use Conditionally Permitted**

Some functions are permitted with some condition in this zone.

Table A.6: Land Use Conditionally Permitted

| **Conditionally permitted commercial activities** |
|---|
| Amusement and Recreation (Indoors) |
| Bicycle Assembly, Parts and Accessories |
| Broadcast Studio \ Recording Studio (No Audience) |
| Coffee Shop \ Tea Stall |
| Concert Hall, Stage Shows |
| Construction, Survey, Soil Testing Firms |

| **Conditionally permitted commercial activities** |
|---|
| Trade Shows |
| Craft Workshop |
| Plantation (Except Narcotic Plant) |
| Energy Installation |
| Firm Equipment Sales & Service |
| Agricultural Chemicals, Pesticides or Fertilizers Shop |
| Fitness Centre |
| Flowers, Nursery Stock and Florist Supplies |
| Forest Products Sales |
| Fuel and Ice Dealers |
| Garages |
| Garden Center or Retail Nursery |
| Police Box \ Barrack |
| Fire \ Rescue Station |
| Grain & Feed Mills |
| Household Appliance and Furniture Repair Service |
| Incineration Facility |
| Indoor Amusement Centers, Game Arcades |
| Indoor Theatre |
| Lithographic or Print Shop |
| Motor Vehicle Fuelling Station \ Gas Station |
| Musical Instrument Sales or Repair |
| Optical Goods Sales |
| Painting and Wallpaper Sales |
| Paints and Varnishes |
| Parking Lot |
| Patio Homes |
| Postal Facilities |
| Poultry |
| Private Garages |
| Professional Office |
| Retail Shops Ancillary To Studio \ Workshop |
| Stone \ Cut Stone Products Sales |

*Source: Compiled by the Consultants*

**Restricted Uses**

All other uses except;, the permitted and conditionally permitted uses.

**d. Rural Settlement**

**Land Use Permitted**

The following uses in the tables are proposed to be applicable for this zone only.

Table A.7: Land Use Permitted

| **Permitted Rural Settlement** |
|---|
| Agricultural Dwellings |
| Animal Husbandry |
| Animal Shelter |
| Graveyard \ Cemetery |
| Child Daycare \ Preschool |
| Primary School |
| Communication Tower Within Permitted Height |
| Cottage |
| Crematorium |
| Dairy Firming |
| General Store |
| Grocery Store |
| Handloom (Cottage Industry) |
| Housing For Seasonal Firm Labor |
| Mosque, Place Of Worship |
| Newspaper Stand |
| Nursery School |
| orphanage |
| Outdoor Religious Events (Eidgah) |
| Playing Field |
| Satellite Dish Antenna |
| NGO \ CBO Facilities |
| Special Dwelling (E.G. Dorm For Physically Challenged Etc.) |
| Temporary Shed \ Tent |
| Specialized School: Dance, Art, Music, Physically Challenged & Others |
| Static Electrical Sub Stations |
| Transmission Lines |
| Utility Lines |
| Woodlot |
| Plantation (Except Narcotic Plant) |
| Social Forestry |
| Memorial Structure |

*Source: Compiled by the Consultants*

**Land Use Conditionally Permitted**

The following uses may be permitted or disallowed in this zone after review and approval by the authority/committee following appropriate procedure while the application meets the criteria mentioned in the requirement.

Table No. A.8: Land Use Conditionally Permitted

| **Conditionally permitted uses under Rural Settlement** |
|---|
| Artisan's Shop (Potter, Blacksmith, and Goldsmith Etc.) |
| Research organization (Agriculture \ Fisheries) |
| Energy Installation |
| Fish Hatchery |
| Garden Center or Retail Nursery |
| Emergency Shelter |
| Sports and Recreation Club, Firing Range: Indoor |

*Source: Compiled by the Consultants*

**Restricted Uses**

All uses except permitted and conditionally permitted uses are restricted in this zone.

**e. Mixed use zone**

**Land Use Permitted**

The following uses in the tables are proposed to be applicable for this zone only.

Table A.11: Land Use Permitted

| **Permitted uses in Mixed Use Zone** |
|---|
| Accounting, Auditing or Bookkeeping Services |
| Addiction Treatment Center |
| Billboards, Advertisements & Advertising Structure |
| Agricultural Sales and Services |
| Antique Store |
| Appliance Store |
| Art Gallery, Art Studio \ Workshop |
| Artisan's Shop |
| Assisted Living or Elderly Home |
| Auditorium, Coliseum, Meeting Halls, and Conference Facilities, Convention |
| Auto Leasing or Rental Office |
| Automobile Wash |
| Automobile Driving Academy |
| Confectionery Shop |
| Bakery or Confectionery Retail |
| Bank & Financial Institution |
| Barber Shop |
| Bicycle Shop |
| Billiard Parlor \ Pool Hall |
| Blacksmith |
| Boarding and Rooming House |
| Book or Stationery Store or Newsstand |
| Bus Passenger Shelter |

| **Permitted uses in Mixed Use Zone** |
|---|
| Child Daycare \ Preschool |
| Cleaning \ Laundry Shop |
| Commercial Recreational Buildings |
| Communication Service Facilities |
| Communication Tower Within Permitted Height |
| Community Center |
| Condominium or Apartment |
| Correctional Institution |
| Courier Service |
| Cyber Café |
| Daycare Center (Commercial or Nonprofit) |
| Doctor \ Dentist Chamber |
| Employee Housing |
| Fabric Store |
| Fast Food Establishment \ Food Kiosk |
| Funeral Services |
| General Store |
| Grocery Store |
| Guest House |
| Hospital |
| Jewelry and Silverware Sales |
| Landscape and Horticultural Services |
| Mosque, Place Of Worship |
| Newspaper Stand |
| Nursery School |
| Photocopying and Duplicating Services |
| Pipelines and Utility Lines |
| Primary School |
| Project Identification Signs |
| Property Management Signs |
| Public Transport Facility |
| Resort |
| Satellite Dish Antenna |
| Shelter (Passers By) |
| Shoe Repair or Shoeshine Shop (Small) |
| Slaughter House |
| Social organization |
| Software Development |
| Special Dwelling |
| Toys and Hobby Goods Processing and Supplies |

| **Permitted uses in Mixed Use Zone** |
|---|
| Training Centre |
| Transmission Lines |
| Utility Lines |
| Vehicle Sales & Service, Leasing or Rental |
| Warehousing |
| Woodlot |
| Children's Park |
| ATM Booth |
| Water Pump \ Reservoir |
| Social Forestry |
| Dormitory |
| Rickshaw \ Auto Rickshaw Stand |

*Source: Compiled by the Consultants*

**Land Use Conditionally Permitted**

The following uses may be permitted or disallowed in this zone after review and approval by the authority/committee.

Table A.12: Land Use Conditionally Permitted

| **Conditionally permitted uses in Mixed Use Zone** |
|---|
| Agricultural Chemicals, Pesticides or Fertilizers Shop |
| Amusement and Recreation (Indoors) |
| Beauty and Body Service |
| Broadcast Studio \ Recording Studio (No Audience) |
| Building Maintenance \ Cleaning Services, No Outside Storage |
| Building Material Sales or Storage (Indoors) |
| Graveyard \ Cemetery |
| Coffee Shop \ Tea Stall |
| Computer Maintenance and Repair |
| Computer Sales & Services |
| Concert Hall, Stage Shows |
| Conference Center |
| Construction Company |
| Construction, Survey, Soil Testing Firms |
| Cottage |
| Counseling Services |
| Craft Workshop |
| Crematorium |
| Plantation (Except Narcotic Plant) |
| Cultural Exhibits and Libraries |
| Department Stores, Furniture & Variety Stores |
| Drug Store or Pharmacy |
| Energy Installation |
| Fitness Centre |
| Flowers, Nursery Stock and Florist Supplies |

| Conditionally permitted uses in Mixed Use Zone |
|---|
| Freight Handling, Storage & Distribution |
| Freight Transport Facility |
| Gaming Clubs |
| Garages |
| Garden Center or Retail Nursery |
| Commercial Office |
| Project Office |
| Government Office |
| Hotel or Motel |
| Household Appliance and Furniture Repair Service |
| Indoor Amusement Centers, Game Arcades |
| Indoor Theatre |
| Lithographic or Print Shop |
| Market (Bazar) |
| Health Office, Dental Laboratory, Clinic or Lab |
| Musical Instrument Sales or Repair |
| Optical Goods Sales |
| Outdoor Café |
| Outdoor Fruit and Vegetable Markets |
| Painting and Wallpaper Sales |
| Paints and Varnishes |
| Patio Homes |
| Photofinishing Laboratory & Studio |
| Poultry |
| Printing, Publishing and Distributing |
| Psychiatric Hospital |
| Retail Shops Ancillary To Studio \ Workshop |
| Radio \ Television or T&T Station With Transmitter Tower |
| Refrigerator or Large Appliance Repair |
| Restaurant |
| Retail Shops \ Facilities |
| Sporting Goods and Toys Sales |
| Sports and Recreation Club, Firing Range: Indoor |
| Telephone Exchanges |
| Television, Radio or Electronics Repair (No Outside Storage) |

*Source: Compiled by the Consultants*

**Restricted Uses**

All uses except permitted and conditionally permitted uses are restricted in this zone.

**f. Education and Research Area**

**Land Use Permitted**

The following uses in the tables are proposed to be applicable for this zone only.

Table A.13: Land Use Permitted

| Permitted uses under Education & Research Zone |
|---|
| Addiction Treatment Center |
| Billboards, Advertisements & Advertising Structure |
| Art Gallery, Art Studio \ Workshop |

| Permitted uses under Education & Research Zone |
|---|
| Automobile Driving Academy |
| Confectionery Shop |
| Bus Passenger Shelter |
| Child Daycare \ Preschool |
| College, University, Technical Institute |
| Communication Service Facilities |
| Communication Tower Within Permitted Height |
| Conference Center |
| Correctional Institution |
| Cultural Exhibits and Libraries |
| Cyber Café |
| Freight Transport Facility |
| General Store |
| Grocery Store |
| High School |
| Hospital |
| Lithographic or Print Shop |
| Mosque, Place Of Worship |
| Multi-Storey Car Park |
| Newspaper Stand |
| Nursery School |
| Outdoor Religious Events |
| Photocopying and Duplicating Services |
| Post Office |
| Primary School |
| Professional Office |
| Project Identification Signs |
| Property Management Signs |
| Public Transport Facility |
| Satellite Dish Antenna |
| School (Retarded) |
| Scientific Research Establishment |
| Shelter (Passers By) |
| Specialized School: Dance, Art, Music & Others |
| Training Centre |
| Transmission Lines |
| Utility Lines |
| Vocational, Business, Secretarial School |
| Woodlot |
| ATM Booth |
| Water Pump \ Reservoir |
| Social Forestry |
| Dormitory |
| Veterinary School \ College and Hospital |

*Source: Compiled by the Consultants*

**Land Use Conditionally Permitted**

The following uses may be permitted or denied in this zone after review and approval by the authority/committee.

Table A.14: Land Use Conditionally Permitted

| **Conditionally permitted uses under Education and Research Zone** |
|---|
| Auditorium, Coliseum, Meeting Halls, and Conference Facilities, Convention |
| Bank & Financial Institution |
| Barber Shop |
| Boarding and Rooming House |
| Book or Stationery Store or Newsstand |
| Coffee Shop \ Tea Stall |
| Counseling Services |
| Courier Service |
| Plantation (Except Narcotic Plant) |
| Daycare Center (Commercial or Nonprofit) |
| Doctor \ Dentist Chamber |
| Drug Store or Pharmacy |
| Fast Food Establishment \ Food Kiosk |
| Flowers, Nursery Stock and Florist Supplies |
| Gallery \ Museum |
| Garages |
| Indoor Theatre |
| orphanage |
| Outdoor Café |
| Parking Lot |
| Pipelines and Utility Lines |
| Postal Facilities |
| Psychiatric Hospital |

*Source: Compiled by the Consultants*

**Restricted Uses**

All uses except permitted and conditionally permitted uses are restricted in this zone.

**g. Government Office**

**Land Use Permitted**

The following uses in the tables are proposed to be applicable for this zone only.

Table A.15: Land Use Permitted

| **Permitted uses under Government Office Zone** |
|---|
| Accounting, Auditing or Bookkeeping Services |
| Billboards, Advertisements & Advertising Structure |
| Confectionery Shop |
| Bus Passenger Shelter |
| Civic Administration |
| Communication Service Facilities |

| **Permitted uses under Government Office Zone** |
|---|
| Communication Tower Within Permitted Height |
| Construction, Survey, Soil Testing Firms |
| Cultural Exhibits and Libraries |
| Cyber Café |
| Emergency Shelter |
| Freight Transport Facility |
| General Store |
| Project Office |
| Government Office |
| Grocery Store |
| Guest House |
| Multi-Storey Car Park |
| Newspaper Stand |
| Outdoor Religious Events |
| Photocopying and Duplicating Services |
| Post Office |
| Professional Office |
| Public Transport Facility |
| Satellite Dish Antenna |
| Scientific Research Establishment |
| Shelter (Passers By) |
| Training Centre |
| Transmission Lines |
| Utility Lines |
| Woodlot |
| ATM Booth |
| Water Pump \ Reservoir |
| Social Forestry |

*Source: Compiled by the Consultants*

**Land Use Conditionally Permitted**

The following uses may be permitted or denied in this zone after review and approval by the authority/committee.

Table A.16: Land Use Conditionally Permitted

| **Conditionally permitted uses under Government office** |
|---|
| Amusement and Recreation (Indoors) |
| Auditorium, Coliseum, Meeting Halls, and Conference Facilities, Convention |
| Bank & Financial Institution |
| Boarding and Rooming House |
| Book or Stationery Store or Newsstand |
| Coffee Shop \ Tea Stall |

| **Conditionally permitted uses under Government office** |
|---|
| Conference Center |
| Courier Service |
| Plantation (Except Narcotic Plant) |
| Daycare Center (Commercial or Nonprofit) |
| Detention Facilities |
| Doctor \ Dentist Chamber |
| Energy Installation |
| Fast Food Establishment \ Food Kiosk |
| Flowers, Nursery Stock and Florist Supplies |
| Freight Handling, Storage & Distribution |
| Freight Yard |
| Gallery \ Museum |
| Garages |
| Police Box \ Barrack |
| Fire \ Rescue Station |
| Lithographic or Print Shop |
| Mosque, Place Of Worship |
| Outdoor Café |
| Parking Lot |
| Parking Lot (Commercial) |
| Pipelines and Utility Lines |
| Postal Facilities |

*Source: Compiled by the Consultants*

**Restricted Uses**

All uses except permitted and conditionally permitted uses are restricted in this zone.

**h. Agricultural Zone**

**Land Use Permitted**

The following uses in the tables are proposed to be applicable for this zone only.

Table A17: Land Use Permitted

| **Permitted uses under Agricultural Zone** |
|---|
| Food Grain Cultivation |
| Vegetable Cultivation |
| Cash Crop Cultivation |
| Horticulture |
| Arboriculture |
| Dairy Firming |
| Deep Tube Well |
| Shallow Tube Well |
| Irrigation Facilities (Irrigation Canal, Culvert, Flood Wall etc) |
| Temporary Structure (Agricultural) |

| **Permitted uses under Agricultural Zone** |
|---|
| Animal Shelter |
| Duckery |
| Aquatic Recreation Facility (Without Structure) |
| Tree Plantation (Except Narcotic Plant) |
| Aquaculture |
| Static Transformer Stations |
| Transmission Lines |
| Utility Lines |
| Woodlot |
| Social Forestry |

*Source: Compiled by the Consultants*

**Land Use Conditionally Permitted**

Table A18: Land Use Conditionally Permitted

| **Conditionally permitted uses under Agricultural Zone** |
|---|
| Graveyard \ Cemetery |
| Communication Tower Within Permitted Height |
| Crematorium |
| Fish Hatchery |
| Garden Center or Retail Nursery |
| Poultry |

*Source: Compiled by the Consultants*

**Restricted Uses**

All uses except permitted and conditionally permitted uses are restricted in this zone.

**j. Open Space**

**Land Use Permitted**

The following uses in the tables are proposed to be applicable for this zone only.

Table A.19: Land Use Permitted

| **Permitted uses under Open Space** |
|---|
| Botanical Garden & Arboretum |
| Bus Passenger Shelter |
| Caravan Park \ Camping Ground |
| Carnivals and Fairs |
| Circus |
| Plantation (Except Narcotic Plant) |
| Landscape and Horticultural Services |
| Open Theater |
| Park and Recreation Facilities (General) |
| Pipelines and Utility Lines |

| **Permitted uses under Open Space** |
|---|
| Playing Field |
| Special Function Tent |
| Tennis Club |
| Transmission Lines |
| Urban-Nature Reserve |
| Utility Lines |
| Woodlot |
| Zoo |
| Roadside Parking |
| Social Forestry |
| Memorial Structure |

*Source: Compiled by the Consultants*

**Landuse Conditionally Permitted**

Table A 20: Land Use Conditionally Permitted

| **Conditionally permitted uses under open space** |
|---|
| Communication Tower Within Permitted Height |
| Trade Shows |
| Fitness Centre |
| Flowers, Nursery Stock and Florist Supplies |
| Golf Course |
| Motorized Recreation |
| Outdoor Recreation Facilities |
| Outdoor Recreation, Commercial |
| Outdoor Sports and Recreation |
| Park Maintenance Facility |
| Retreat Center |
| Sports and Recreation Club, Firing Range: Indoor |

*Source: Compiled by the Consultants*

**Restricted Uses**

All uses except permitted and conditionally permitted uses are restricted.

**k. Water Body**

Retaining water is the main purpose of this type of Landuse.

**Land Use Permitted**

The following uses in the tables are proposed to be applicable for this zone only.

Table A.21: Land Use Permitted

| **Permitted uses under Water Body** |
|---|

| |
|---|
| Aquatic Recreation Facility (Without Structure) |
| Fishing Club |
| Utility Lines |
| Water Parks |
| Memorial Structure |

*Source: Compiled by the Consultants*

**Land Use Conditionally Permitted**

The following uses may be permitted or denied in this zone after review and approval by the authority/committee.

Table A.22: Land Use Conditionally Permitted

| **Conditionally permitted uses under water body** |
|---|
| Plantation (Except Narcotic Plant) |
| Marina \ Boating Facility |
| Motorized Recreation |

*Source: Compiled by the Consultants*

**Restricted Uses**

All uses except permitted and conditionally permitted uses are restricted.

# ANNEXURE C:
# Resolution of Final Consultation Meeting and Attendance List.

# ANNEXURE D:
# Detailed of Road Network Proposal

**Proposed New Road Network**

| Road Id | Width (ft) | Road Type | Length (m) | Phase |
|---|---|---|---|---|
| RA97 | 20 | Access | 2282.06 | 3rd Phasing |
| RP33 | 60 | Primary | 2609.40 | 2nd Phasing |
| RP42 | 60 | Primary | 2193.07 | 2nd Phasing |
| RP43 | 80 | Primary | 3940.68 | 2nd Phasing |
| RP44 | 60 | Primary | 2420.68 | 2nd Phasing |
| RP45 | 60 | Primary | 1790.14 | 2nd Phasing |
| RP52 | 60 | Primary | 1657.66 | 2nd Phasing |
| RP82 | 60 | Primary | 1941.42 | 3rd Phasing |
| RP99 | 100 | Primary | 7214.94 | 2nd Phasing |
| RP100 | 80 | Primary | 2398.75 | 2nd Phasing |
| Total | | | 28448.77 | |
| RS41 | 40 | Secondary | 1637.61 | 2nd Phasing |
| RS46 | 40 | Secondary | 1960.03 | 2nd Phasing |
| RS47 | 40 | Secondary | 1995.23 | 2nd Phasing |
| RS49 | 40 | Secondary | 1198.73 | 2nd Phasing |
| RS51 | 40 | Secondary | 1673.12 | 3rd Phasing |
| RS86 | 40 | Secondary | 923.33 | 2nd Phasing |
| RS102 | 40 | Secondary | 1470.37 | 3rd Phasing |
| RS103 | 40 | Secondary | 834.03 | 3rd Phasing |
| RT1 | 30 | Tertiary | 1547.80 | 2nd Phasing |
| RT3 | 30 | Tertiary | 711.72 | 3rd Phasing |
| RT4 | 30 | Tertiary | 753.43 | 3rd Phasing |
| RT15 | 30 | Tertiary | 1558.40 | 1st Phasing |
| RT24 | 30 | Tertiary | 898.95 | 3rd Phasing |
| RT58 | 30 | Tertiary | 510.23 | 3rd Phasing |
| RT77 | 30 | Tertiary | 758.96 | 3rd Phasing |
| Total | | | 18431.93 | |
| RA5 | 20 | Access | 2567.05 | 3rd Phasing |
| RA8 | 20 | Access | 500.72 | 3rd Phasing |
| RA40 | 20 | Access | 237.34 | 3rd Phasing |
| RA64 | 20 | Access | 498.94 | 3rd Phasing |
| Total | | | 3804.05 | |
| Gross Total | | | 50684.00 | |

**Proposed Widening Road Network**

| Road Id | Width (ft) | Road Type | Length (m) | Phase |
|---|---|---|---|---|
| RP69 | 60 | Primary | 2415.78 | 2nd Phasing |
| RP72 | 60 | Primary | 2082.88 | 2nd Phasing |
| RP74 | 80 | Primary | 594.79 | 3rd Phasing |
| RP101 | 120 | Primary | 7153.42 | 1st Phasing |
| RP107 | 60 | Primary | 1138.85 | 1st Phasing |
| RS108 | 60 | Primary | 1127.31 | 2nd Phasing |
| Total | | | 14513.03 | |
| RS7 | 40 | Secondary | 1182.50 | 1st Phasing |
| RS48 | 40 | Secondary | 2064.05 | 2nd Phasing |
| RS53 | 40 | Secondary | 1004.60 | 3rd Phasing |

| Road Id | Width (ft) | Road Type | Length (m) | Phase |
|---|---|---|---|---|
| RS70 | 40 | Secondary | 63.84 | 2nd Phasing |
| RS71 | 40 | Secondary | 707.01 | 2nd Phasing |
| RS88 | 40 | Secondary | 2274.13 | 1st Phasing |
| RS104 | 40 | Secondary | 2300.59 | 1st Phasing |
| RS106 | 40 | Secondary | 1979.85 | 3rd Phasing |
| RS110 | 40 | Secondary | 3440.45 | 1st Phasing |
| Total | | | 15017.02 | |
| RT12 | 30 | Tertiary | 839.81 | 2nd Phasing |
| RT18 | 30 | Tertiary | 440.10 | 3rd Phasing |
| RT20 | 30 | Tertiary | 630.38 | 2nd Phasing |
| RT28 | 30 | Tertiary | 782.39 | 3rd Phasing |
| RT31 | 30 | Tertiary | 1507.33 | 3rd Phasing |
| RT38 | 30 | Tertiary | 780.30 | 3rd Phasing |
| RT54 | 30 | Tertiary | 165.32 | 2nd Phasing |
| RT55 | 30 | Tertiary | 243.88 | 2nd Phasing |
| RT56 | 30 | Tertiary | 363.18 | 2nd Phasing |
| RT57 | 30 | Tertiary | 206.44 | 3rd Phasing |
| RT59 | 30 | Tertiary | 143.07 | 3rd Phasing |
| RT60 | 30 | Tertiary | 170.70 | 3rd Phasing |
| RT66 | 30 | Tertiary | 219.46 | 3rd Phasing |
| RT67 | 30 | Tertiary | 73.41 | 3rd Phasing |
| RT68 | 30 | Tertiary | 295.66 | 3rd Phasing |
| RT76 | 30 | Tertiary | 327.07 | 3rd Phasing |
| RT80 | 30 | Tertiary | 1162.60 | 1st Phasing |
| RP81 | 80 | Tertiary | 1294.03 | 3rd Phasing |
| RT85 | 30 | Tertiary | 636.20 | 3rd Phasing |
| RT89 | 30 | Tertiary | 888.09 | 2nd Phasing |
| RT91 | 30 | Tertiary | 399.78 | 3rd Phasing |
| RT94 | 30 | Tertiary | 469.70 | 2nd Phasing |
| RT105 | 30 | Tertiary | 735.66 | 3rd Phasing |
| RT109 | 30 | Tertiary | 1929.47 | 3rd Phasing |
| Total | | | 14704.02 | |
| RA2 | 20 | Access | 282.75 | 3rd Phasing |
| RA6 | 20 | Access | 167.99 | 3rd Phasing |
| RA9 | 20 | Access | 537.64 | 3rd Phasing |
| RA10 | 20 | Access | 285.43 | 3rd Phasing |
| RA13 | 20 | Access | 240.77 | 3rd Phasing |
| RA14 | 20 | Access | 196.53 | 3rd Phasing |
| RA16 | 20 | Access | 374.64 | 3rd Phasing |
| RA17 | 20 | Access | 369.74 | 2nd Phasing |
| RA19 | 20 | Access | 292.77 | 3rd Phasing |
| RA21 | 20 | Access | 162.19 | 3rd Phasing |
| RA22 | 20 | Access | 201.15 | 3rd Phasing |
| RA23 | 20 | Access | 133.60 | 3rd Phasing |
| RA25 | 20 | Access | 789.70 | 3rd Phasing |
| RA26 | 20 | Access | 192.07 | 3rd Phasing |
| RA27 | 20 | Access | 366.35 | 3rd Phasing |
| RA29 | 20 | Access | 328.62 | 3rd Phasing |
| RA30 | 20 | Access | 825.94 | 2nd Phasing |
| RA32 | 20 | Access | 215.11 | 3rd Phasing |

| Road Id | Width (ft) | Road Type | Length (m) | Phase |
|---|---|---|---|---|
| RA34 | 20 | Access | 426.97 | 3rd Phasing |
| RA35 | 20 | Access | 246.59 | 3rd Phasing |
| RA36 | 20 | Access | 877.78 | 3rd Phasing |
| RA37 | 20 | Access | 201.00 | 3rd Phasing |
| RA39 | 20 | Access | 508.82 | 3rd Phasing |
| RA50 | 20 | Access | 1108.21 | 3rd Phasing |
| RA61 | 20 | Access | 270.24 | 3rd Phasing |
| RA62 | 20 | Access | 60.82 | 3rd Phasing |
| RA63 | 20 | Access | 237.11 | 3rd Phasing |
| RA65 | 20 | Access | 153.12 | 3rd Phasing |
| RA78 | 20 | Access | 362.58 | 3rd Phasing |
| RA79 | 20 | Access | 594.19 | 3rd Phasing |
| RA83 | 20 | Access | 374.47 | 3rd Phasing |
| RA84 | 20 | Access | 481.72 | 3rd Phasing |
| RA87 | 20 | Access | 1545.02 | 3rd Phasing |
| RA90 | 20 | Access | 456.98 | 3rd Phasing |
| RA92 | 20 | Access | 684.40 | 3rd Phasing |
| RA93 | 20 | Access | 340.17 | 3rd Phasing |
| RA95 | 20 | Access | 327.13 | 3rd Phasing |
| RA96 | 20 | Access | 357.52 | 3rd Phasing |
| RA98 | 20 | Access | 938.54 | 3rd Phasing |
| Total | | | 16516.38 | |
| Gross Total | | | 60750.45 | |

# ANNEXURE E:
# Details of Drainage Network Proposal

| Drain_Id | Drain_Type | Width (m) | Length (m) | Phase |
|---|---|---|---|---|
| DP2 | Primary | More 3m | 6104.58 | 1st Phase |
| DP15 | Primary | More 3m | 2622.35 | 3rd Phase |
| DP108 | Primary | More 3m | 2763.67 | 2nd Phase |
| DP109 | Primary | More 3m | 2246.01 | 2nd Phase |
| DP111 | Primary | More 3m | 2462.15 | 2nd Phase |
| DP112 | Primary | More 3m | 1685.62 | 3rd Phase |
| DP113 | Primary | More 3m | 1224.98 | 3rd Phase |
| DP114 | Primary | More 3m | 2909.11 | 3rd Phase |
| DP120 | Primary | More 3m | 1691.53 | 3rd Phase |
| | | Total | 23709.99 | |
| DS1 | Secondary | Within 1.5 to 3m | 6221.11 | 3rd Phase |
| DS3 | Secondary | Within 1.5 to 3m | 1463.85 | 3rd Phase |
| DS6 | Secondary | Within 1.5 to 3m | 1847.82 | 3rd Phase |
| DS8 | Secondary | Within 1.5 to 3m | 1643.06 | 3rd Phase |
| DS10 | Secondary | Within 1.5 to 3m | 2211.44 | 3rd Phase |
| DS11 | Secondary | Within 1.5 to 3m | 1867.04 | 2nd Phase |
| DS12 | Secondary | Within 1.5 to 3m | 2976.26 | 3rd Phase |
| DS110 | Secondary | Within 1.5 to 3m | 3415.40 | 1st Phase |
| DS115 | Secondary | Within 1.5 to 3m | 1169.07 | 3rd Phase |
| | | Total | 22815.04 | |
| DT4 | Tertiary | Less 1.5m | 985.44 | 3rd Phase |
| DT5 | Tertiary | Less 1.5m | 97.73 | 3rd Phase |
| DT7 | Tertiary | Less 1.5m | 1988.73 | 2nd Phase |
| DT9 | Tertiary | Less 1.5m | 1639.19 | 3rd Phase |
| DT13 | Tertiary | Less 1.5m | 1194.95 | 3rd Phase |
| DT14 | Tertiary | Less 1.5m | 1630.64 | 3rd Phase |
| DT16 | Tertiary | Less 1.5m | 1114.90 | 1st Phase |
| DT17 | Tertiary | Less 1.5m | 829.15 | 2nd Phase |
| DT18 | Tertiary | Less 1.5m | 497.15 | 3rd Phase |
| DT19 | Tertiary | Less 1.5m | 333.07 | 3rd Phase |
| DT20 | Tertiary | Less 1.5m | 813.31 | 3rd Phase |
| DT21 | Tertiary | Less 1.5m | 1153.26 | 3rd Phase |
| DT22 | Tertiary | Less 1.5m | 773.23 | 3rd Phase |
| DT23 | Tertiary | Less 1.5m | 884.03 | 3rd Phase |
| DT24 | Tertiary | Less 1.5m | 293.16 | 3rd Phase |
| DT25 | Tertiary | Less 1.5m | 176.63 | 3rd Phase |
| DT26 | Tertiary | Less 1.5m | 255.61 | 3rd Phase |
| DT27 | Tertiary | Less 1.5m | 377.32 | 3rd Phase |
| DT28 | Tertiary | Less 1.5m | 469.97 | 3rd Phase |
| DT29 | Tertiary | Less 1.5m | 440.90 | 3rd Phase |
| DT30 | Tertiary | Less 1.5m | 501.85 | 3rd Phase |
| DT31 | Tertiary | Less 1.5m | 884.24 | 3rd Phase |
| DT32 | Tertiary | Less 1.5m | 894.17 | 3rd Phase |
| DT33 | Tertiary | Less 1.5m | 227.09 | 3rd Phase |
| DT34 | Tertiary | Less 1.5m | 235.97 | 3rd Phase |
| DT35 | Tertiary | Less 1.5m | 143.20 | 3rd Phase |
| DT36 | Tertiary | Less 1.5m | 909.13 | 1st Phase |

| Drain_Id | Drain_Type | Width (m) | Length (m) | Phase |
|---|---|---|---|---|
| DT37 | Tertiary | Less 1.5m | 542.89 | 1st Phase |
| DT38 | Tertiary | Less 1.5m | 239.74 | 1st Phase |
| DT39 | Tertiary | Less 1.5m | 379.55 | 1st Phase |
| DT40 | Tertiary | Less 1.5m | 765.13 | 1st Phase |
| DT41 | Tertiary | Less 1.5m | 1538.09 | 3rd Phase |
| DT42 | Tertiary | Less 1.5m | 1119.75 | 1st Phase |
| DT43 | Tertiary | Less 1.5m | 440.49 | 3rd Phase |
| DT44 | Tertiary | Less 1.5m | 248.90 | 3rd Phase |
| DT45 | Tertiary | Less 1.5m | 798.26 | 2nd Phase |
| DT46 | Tertiary | Less 1.5m | 1552.57 | 3rd Phase |
| DT47 | Tertiary | Less 1.5m | 238.01 | 2nd Phase |
| DT48 | Tertiary | Less 1.5m | 220.96 | 3rd Phase |
| DT49 | Tertiary | Less 1.5m | 555.48 | 2nd Phase |
| DT50 | Tertiary | Less 1.5m | 479.12 | 2nd Phase |
| DT51 | Tertiary | Less 1.5m | 716.75 | 2nd Phase |
| DT52 | Tertiary | Less 1.5m | 925.24 | 3rd Phase |
| DT53 | Tertiary | Less 1.5m | 256.67 | 3rd Phase |
| DT54 | Tertiary | Less 1.5m | 333.46 | 3rd Phase |
| DT55 | Tertiary | Less 1.5m | 744.80 | 1st Phase |
| DT56 | Tertiary | Less 1.5m | 167.49 | 1st Phase |
| DT57 | Tertiary | Less 1.5m | 212.08 | 1st Phase |
| DT58 | Tertiary | Less 1.5m | 361.66 | 1st Phase |
| DT59 | Tertiary | Less 1.5m | 495.98 | 3rd Phase |
| DT60 | Tertiary | Less 1.5m | 421.42 | 3rd Phase |
| DT61 | Tertiary | Less 1.5m | 373.46 | 3rd Phase |
| DT62 | Tertiary | Less 1.5m | 546.93 | 3rd Phase |
| DT63 | Tertiary | Less 1.5m | 83.04 | 3rd Phase |
| DT64 | Tertiary | Less 1.5m | 298.31 | 3rd Phase |
| DT65 | Tertiary | Less 1.5m | 218.20 | 3rd Phase |
| DT66 | Tertiary | Less 1.5m | 651.83 | 2nd Phase |
| DT67 | Tertiary | Less 1.5m | 414.92 | 3rd Phase |
| DT68 | Tertiary | Less 1.5m | 276.18 | 2nd Phase |
| DT69 | Tertiary | Less 1.5m | 1916.49 | 3rd Phase |
| DT70 | Tertiary | Less 1.5m | 273.38 | 1st Phase |
| DT71 | Tertiary | Less 1.5m | 94.16 | 3rd Phase |
| DT72 | Tertiary | Less 1.5m | 831.74 | 2nd Phase |
| DT73 | Tertiary | Less 1.5m | 160.23 | 2nd Phase |
| DT74 | Tertiary | Less 1.5m | 401.50 | 2nd Phase |
| DT75 | Tertiary | Less 1.5m | 239.07 | 3rd Phase |
| DT76 | Tertiary | Less 1.5m | 211.78 | 2nd Phase |
| DT77 | Tertiary | Less 1.5m | 195.66 | 2nd Phase |
| DT78 | Tertiary | Less 1.5m | 235.78 | 1st Phase |
| DT79 | Tertiary | Less 1.5m | 848.59 | 1st Phase |
| DT80 | Tertiary | Less 1.5m | 199.83 | 1st Phase |
| DT81 | Tertiary | Less 1.5m | 17.71 | 3rd Phase |
| DT82 | Tertiary | Less 1.5m | 56.27 | 3rd Phase |
| DT83 | Tertiary | Less 1.5m | 9.48 | 1st Phase |
| DT84 | Tertiary | Less 1.5m | 51.19 | 1st Phase |
| DT85 | Tertiary | Less 1.5m | 269.94 | 1st Phase |
| DT86 | Tertiary | Less 1.5m | 423.61 | 1st Phase |

| Drain_Id | Drain_Type | Width (m) | Length (m) | Phase |
|---|---|---|---|---|
| DT87 | Tertiary | Less 1.5m | 143.75 | 1st Phase |
| DT88 | Tertiary | Less 1.5m | 175.88 | 3rd Phase |
| DT89 | Tertiary | Less 1.5m | 144.29 | 1st Phase |
| DT90 | Tertiary | Less 1.5m | 209.43 | 1st Phase |
| DT91 | Tertiary | Less 1.5m | 297.61 | 1st Phase |
| DT92 | Tertiary | Less 1.5m | 361.72 | 1st Phase |
| DT93 | Tertiary | Less 1.5m | 224.90 | 1st Phase |
| DT94 | Tertiary | Less 1.5m | 211.21 | 1st Phase |
| DT95 | Tertiary | Less 1.5m | 162.16 | 1st Phase |
| DT96 | Tertiary | Less 1.5m | 431.39 | 1st Phase |
| DT97 | Tertiary | Less 1.5m | 138.12 | 1st Phase |
| DT98 | Tertiary | Less 1.5m | 201.70 | 1st Phase |
| DT99 | Tertiary | Less 1.5m | 2276.76 | 1st Phase |
| DT100 | Tertiary | Less 1.5m | 165.69 | 3rd Phase |
| DT101 | Tertiary | Less 1.5m | 181.39 | 3rd Phase |
| DT102 | Tertiary | Less 1.5m | 199.54 | 3rd Phase |
| DT103 | Tertiary | Less 1.5m | 187.48 | 3rd Phase |
| DT104 | Tertiary | Less 1.5m | 948.96 | 1st Phase |
| DT105 | Tertiary | Less 1.5m | 12.76 | 3rd Phase |
| DT106 | Tertiary | Less 1.5m | 65.26 | 3rd Phase |
| DT107 | Tertiary | Less 1.5m | 74.72 | 1st Phase |
| DT116 | Tertiary | Less 1.5m | 1456.98 | 3rd Phase |
| DT117 | Tertiary | Less 1.5m | 715.24 | 1st Phase |
| DT118 | Tertiary | Less 1.5m | 460.96 | 1st Phase |
| DT119 | Tertiary | Less 1.5m | 929.91 | 3rd Phase |
| | | Total | 53175.56 | |
| | | Gross Total | 99700.60 | |

# ANNEXURE F:
# Mouza Schedule of Development Proposal

| Proposed Facility | Landuse | Mouza Name | Ward Name | Plot No | Area (acre) | Phase |
|---|---|---|---|---|---|---|
| Proposed Auto Stand 01 | Transport | Kanchan (164_03) | Ward_No. 05 | 5582-84 | 0.32 | 1st Phase |
| Proposed Auto Stand 02 | Transport | Kanchan (164_02) | Ward_No. 07 | 2953-54,2926 | 0.35 | 3rd Phase |
| Proposed Bus Terminal | Transport | Kanchan (164_01) | Ward_No. 06 | 720-25,1401-02, 5064-68,5068-87 | 2.36 | 2nd Phase |
| Proposed Truck Terminal | Transport | Kanchan (164_01) | Ward_No. 06 | 724-29, 734-36,1422-24 | 2.42 | 3rd Phase |
| Proposed River Port 01 | Transport | Kanchan (164_03) | Ward_No. 09 | 5785-86,5789-90 | 1.68 | 3rd Phase |
| Proposed River Port 02 | Transport | Biraba (138_01) | Ward_No. 02 | 474-84 | 1.5 | 3rd Phase |
| Total | | | | | 8.63 | |
| Proposed Hospital 01 | Health | Biraba (138_02) | Ward_No. 02 | 41-51 | 3.45 | 1st Phase |
| Proposed Hospital 02 | Health | Kendua (137_01) | Ward_No. 05 | 647-48, 663-79,1129-32 | 6.42 | 3rd Phase |
| | | Kendua (137_02) | Ward_No. 05 | 2150-80 | 6.60 | 3rd Phase |
| Proposed Hospital 03 | Health | Kanchan (164_04) | Ward_No. 09 | 6422-23,6439-41 | 2.63 | 2nd Phase |
| Proposed Hospital 04 | Health | Dighalia (162_01) | Ward_No. 08 | 361-69 | 3.19 | 3rd Phase |
| Proposed Hospital 05 | Health | Tarail (139_02) | Ward_No. 01 | 1001-10 | 1.75 | 2nd Phase |
| Total | | | | | 24.04 | |
| Proposed Park 01 | Open Space | Kanchan (164_04) | Ward_No. 09 | 6638-63 | 5.62 | 2nd Phase |
| Proposed Park 02 | Open Space | Kendua (137_01) | Ward_No. 02 | 1-42 | 6.52 | 3rd Phase |
| | Open Space | Biraba (138_02) | Ward_No. 02 | 1125-35 | 1.62 | 2nd Phase |
| Proposed Park 03 | Open Space | Choto Nowpara (165_00) | Ward_No. 08 | 835-883,957-1004 | 34.01 | 3rd Phase |
| Proposed Stadium | Open Space | Kendua (137_01) | Ward_No. 05 | 690-704,746-82 | 11.05 | 3rd Phase |
| Proposed indoor Stadium | Open Space | Kendua (137_01) | Ward_No. 02 | 6-10 | 3.08 | 2nd Phase |
| | Open Space | Biraba (138_02) | Ward_No. 02 | 1134-43 | | 3rd Phase |
| Proposed Playground 01 | Open Space | Kanchan (164_04) | Ward_No. 09 | 6481,6724-29 | 0.96 | 1st Phase |
| Proposed Playground 03 | Open Space | Kanchan (164_04) | Ward_No. 09 | 3380-82 | 1.13 | 3rd Phase |
| Proposed Playground 05 | Open Space | Kanchan (164_04) | Ward_No. 09 | 6759,6787-93 | 1.00 | 3rd Phase |
| Proposed Playground 06 | Open Space | Choto Nowpara (165_00) | Ward_No. 08 | 91-99, | 1.81 | 1st Phase |
| | | Dighalia (162_02) | Ward_No. 08 | 989-90,1061-65 | 0.59 | 3rd Phase |

| Proposed Facility | Landuse | Mouza Name | Ward Name | Plot No | Area (acre) | Phase |
|---|---|---|---|---|---|---|
| Total | | | | | 67.39 | |
| Proposed Nursery School 02 | Education | Biraba (138_01) | Ward_No. 02 | 860-62,1441-59 | 3.60 | 3rd Phase |
| Proposed Primary School 01 | Education | Kanchan (164_04) | Ward_No. 09 | 6332-37 | 1.59 | 3rd Phase |
| Proposed Primary School 02 | Education | Kanchan (164_04) | Ward_No. 09 | 6476-81,6806-08 | 1.59 | 2nd Phase |
| Proposed Primary School 03 | Education | Biraba (138_02) | Ward_No. 02 | 1143-48 | 1.85 | 3rd Phase |
| Proposed Primary School 04 | Education | Kanchan (164_02) | Ward_No. 07 | 3002-3015,3030-45 | 1.47 | 3rd Phase |
| Proposed Primary School 05 | Education | Kanchan (164_05) | Ward_No. 08 | 7802-03,7850-62, 7868-70 | 2.64 | 2nd Phase |
| Proposed High School 01 | Education | Norabo (173_00) | Ward_No. 09 | 61-71,89-106 | 4.18 | 1st Phase |
| Proposed High School 02 | Education | Biraba (138_02) | Ward_No. 02 | 1351-84,1477-90 | 10.18 | 3rd Phase |
| Proposed High School 03 | Education | Kanchan (164_03) | Ward_No. 06 | 5560-61,5594-5630 | 9.18 | 1st Phase |
| Proposed College 01 | Education | Kanchan (164_04) | Ward_No. 07 | 6135-41,6204-15 | 6.71 | 1st Phase |
| Proposed College 02 | Education | Kendua (137_02) | Ward_No. 05 | 2419-30 | 6.55 | 3rd Phase |
| | Education | Kendua (137_02) | Ward_No. 05 | 2431-39 | | 3rd Phase |
| | Education | Kanchan (164_01) | Ward_No. 05 | 149-54 | | 2nd Phase |
| Proposed College 03 | Education | Kanchan (164_02) | Ward_No. 04 | 2211-35 | 2.21 | 3rd Phase |
| Proposed College 04 | Education | Kanchan (164_03) | Ward_No. 06 | 5239-43,5556-603 | 9.98 | 2nd Phase |
| Proposed University 01 | Education | Kanchan (164_04) | Ward_No. 07 | 6211-25,6241-53,6264-66 | 9.99 | 1st Phase |
| Proposed University 02 | Education | Kanchan (164_01) | Ward_No. 04 | 140-43,1127-35, 1150-59 | 5.73 | 3rd Phase |
| Proposed Vocational Training Institute | Education | Kanchan (164_04) | Ward_No. 07 | 6234-42,7268-71 | 4.83 | 2nd Phase |
| | | | | | 80.81 | |
| Proposed Graveyard 01 | Communit y Facility | Kanchan (164_01) | Ward_No. 04 | 768 | 1.30 | 1st Phase |
| Proposed Graveyard 02 | Community Facility | Kanchan (164_05) | Ward_No. 07 | 7532-33,7598-604 | 0.94 | 3rd Phase |
| Proposed Graveyard 03 | Community Facility | Choto Nowpara (165_00) | Ward_No. 08 | 488-503,513-523,796-835 | 12.27 | 3rd Phase |
| Proposed Graveyard 04 | Community Facility | Kendua (137_01) | Ward_No. 05 | 559-67,651-52,661-62,704-21,734-58 | 8.25 | 2nd Phase |
| Proposed Community Center | Community Facility | Biraba (138_02) | Ward_No. 02 | 1146 | 0.16 | 1st Phase |
| Proposed Slaugher House | Community Facility | Kanchan (164_03) | Ward_No. 06 | 5344 | 0.14 | 1st Phase |
| Proposed Ward Center 01 | Community Facility | Tarail (139_01) | Ward_No. 01 | 285-87 | 0.36 | 1st Phase |
| Proposed Ward Center | Community Facility | Biraba | Ward_No. 02 | 1146 | 0.21 | 2nd Phase |

| Proposed Facility | Landuse | Mouza Name | Ward Name | Plot No | Area (acre) | Phase |
|---|---|---|---|---|---|---|
| 02 | | (138_02) | | | | |
| Proposed Ward Center 03 | Community Facility | Kendua (137_01) | Ward_No. 03 | 115-19 | 0.38 | 3rd Phase |
| Proposed Ward Center 04 | Community Facility | Kanchan (164_01) | Ward_No. 04 | 554-57,976-78 | 0.44 | 3rd Phase |
| Proposed Ward Center 05 | Community Facility | Kendua (137_02) | Ward_No. 05 | 2235-36 | 0.66 | 1st Phase |
| Proposed Ward Center 06 | Community Facility | Kanchan (164_03) | Ward_No. 06 | 5626-27,5630,5634 | 0.32 | 2nd Phase |
| Proposed Ward Center 07 | Community Facility | Kanchan (164_02) | Ward_No. 07 | 2965-66,2968 | 0.57 | 2nd Phase |
| Proposed Ward Center 08 | Community Facility | Kanchan (164_02) | Ward_No. 08 | 3578-80, 3737-38 | 0.26 | 3rd Phase |
| Proposed Ward Center 09 | Community Facility | Kanchan (164_04) | Ward_No. 09 | 6088 | 0.51 | 3rd Phase |
| Proposed Waste Dumping Ground 01 | Utility | Biraba (138_01) | Ward_No. 02 | 942-54, 962-69 | 3.53 | 1st Phase |
| Proposed Waste Dumping Ground 02 | Utility | Kanchan (164_05) | Ward_No. 08 | 7929-40 | 3.45 | 3rd Phase |
| Proposed Waste Transfer Center 02 | Utility | Kendua (137_01) | Ward_No. 03 | 625,651,115 | 0.69 | 2nd Phase |
| | | | | | | |
| Proposed Low Income Housing | Residential | Biraba (138_02) | Ward_No. 02 | 1459-65,1889-95 | 8.7 | 3rd Phase |
| Proposed Resettlement Area | Residential | Biraba (138_02) | Ward_No. 02 | 1375-1403 | 8.5 | 3rd Phase |
| Total | | | | | 51.64 | |

# ANNEXURE G:
# Mouza Schedule of Water Retention Pond

| Id No | Mouza Name | Plot No |
|---|---|---|
| PR1 | Kanchan (164_04) | 6001 |
| | Kanchan (164_04) | 6015 |
| | Kanchan (164_04) | 6016 |
| | Kanchan (164_04) | 6017 |
| | Kanchan (164_04) | 6067 |
| | Kanchan (164_04) | 6068 |
| | Kanchan (164_03) | 5787 |
| | Kanchan (164_03) | 5786 |
| | Kanchan (164_03) | 5785 |
| | Kanchan (164_03) | 5784 |
| | Kanchan (164_03) | 5810 |
| | Kanchan (164_03) | 5781 |
| | Kanchan (164_03) | 5780 |
| | Kanchan (164_03) | 5779 |
| | Krishnanagar (136_00) | 89 |
| | Krishnanagar (136_00) | 88 |
| | Krishnanagar (136_00) | 5 |
| | Krishnanagar (136_00) | 4 |
| | Krishnanagar (136_00) | 1 |
| | Krishnanagar (136_00) | 2 |
| | Kendua (137_01) | 964 |
| | Kendua (137_01) | 998 |
| | Kendua (137_01) | 963 |
| | Kendua (137_01) | 965 |
| | Kendua (137_01) | 986 |
| | Kendua (137_01) | 368 |
| | Kendua (137_01) | 367 |
| | Kendua (137_01) | 361 |
| | Kendua (137_01) | 358 |
| | Kendua (137_01) | 357 |
| | Kendua (137_01) | 356 |
| | Kendua (137_01) | 290 |
| | Kendua (137_01) | 289 |
| | Kendua (137_01) | 288 |
| | Kendua (137_01) | 281 |
| | Kendua (137_01) | 262 |
| | Kendua (137_01) | 250 |
| | Kendua (137_01) | 248 |
| | Kendua (137_01) | 247 |
| | Kendua (137_01) | 244 |
| | Kendua (137_01) | 246 |
| | Kendua (137_01) | 245 |
| | Kendua (137_01) | 230 |
| | Kendua (137_01) | 229 |
| | Kendua (137_01) | 228 |
| | Kendua (137_01) | 227 |
| | Kendua (137_01) | 226 |
| | Kendua (137_01) | 225 |
| | Kendua (137_01) | 208 |
| | Kendua (137_01) | 207 |
| | Kendua (137_01) | 205 |
| | Kendua (137_01) | 179 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Kendua (137_01) | 53 |
| | Kendua (137_01) | 25 |
| | Kendua (137_01) | 24 |
| | Kendua (137_01) | 26 |
| | Kendua (137_01) | 22 |
| | Kendua (137_01) | 23 |
| | Kendua (137_01) | 21 |
| | Kendua (137_01) | 20 |
| | Kendua (137_01) | 18 |
| | Kendua (137_01) | 19 |
| | Kendua (137_01) | 2 |
| | Kendua (137_01) | 1 |
| | Biraba (138_02) | 1131 |
| | Biraba (138_02) | 1129 |
| | Biraba (138_02) | 1127 |
| | Biraba (138_02) | 1128 |
| | Biraba (138_02) | 1125 |
| | Biraba (138_02) | 1118 |
| | Biraba (138_02) | 1117 |
| | Biraba (138_02) | 1116 |
| | Biraba (138_02) | 1115 |
| | Biraba (138_02) | 1105 |
| | Biraba (138_02) | 1095 |
| | Biraba (138_02) | 1094 |
| | Biraba (138_02) | 1093 |
| | Biraba (138_01) | 216 |
| | Biraba (138_01) | 215 |
| | Biraba (138_01) | 211 |
| | Biraba (138_01) | 1 |
| | Biraba (138_01) | 14 |
| | Biraba (138_01) | 15 |
| | Biraba (138_01) | 24 |
| | Biraba (138_01) | 25 |
| | Biraba (138_01) | 27 |
| | Biraba (138_01) | 30 |
| | Biraba (138_01) | 31 |
| | Biraba (138_01) | 34 |
| | Biraba (138_01) | 35 |
| | Biraba (138_01) | 36 |
| | Biraba (138_01) | 37 |
| | Biraba (138_01) | 56 |
| | Biraba (138_01) | 57 |
| | Biraba (138_01) | 58 |
| | Biraba (138_01) | 59 |
| | Biraba (138_01) | 60 |
| | Biraba (138_01) | 61 |
| | Biraba (138_01) | 62 |
| | Biraba (138_01) | 63 |
| | Biraba (138_01) | 72 |
| | Biraba (138_01) | 73 |
| | Biraba (138_01) | 74 |
| | Biraba (138_01) | 75 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Biraba (138_01) | 76 |
| | Biraba (138_01) | 77 |
| | Biraba (138_01) | 80 |
| | Biraba (138_01) | 81 |
| | Tarail (139_01) | 1 |
| | Tarail (139_01) | 431 |
| | Tarail (139_01) | 3 |
| | Tarail (139_01) | 4 |
| | Tarail (139_01) | 5 |
| | Tarail (139_01) | 6 |
| | Tarail (139_01) | 7 |
| | Tarail (139_01) | 69 |
| | Tarail (139_01) | 68 |
| | Tarail (139_01) | 67 |
| PR2 | Kendua (137_01) | 325 |
| | Kendua (137_01) | 323 |
| | Kendua (137_01) | 315 |
| | Kendua (137_01) | 320 |
| PR3 | Kendua (137_01) | 858 |
| | Kendua (137_01) | 886 |
| | Kendua (137_01) | 887 |
| | Kendua (137_01) | 889 |
| | Kendua (137_01) | 888 |
| | Kendua (137_01) | 890 |
| PR4 | Kanchan (164_01) | 538 |
| | Kanchan (164_01) | 1016 |
| | Kanchan (164_01) | 1017 |
| | Kanchan (164_01) | 522 |
| | Kanchan (164_01) | 521 |
| | Kanchan (164_01) | 535 |
| | Kanchan (164_01) | 520 |
| | Kanchan (164_01) | 852 |
| | Kanchan (164_01) | 537 |
| | Kanchan (164_01) | 430 |
| | Kanchan (164_01) | 588 |
| | Kanchan (164_01) | 536 |
| | Shialti (163_00) | 220 |
| | Shialti (163_00) | 221 |
| | Kanchan (164_01) | 1018 |
| | Kanchan (164_01) | 589 |
| | Kanchan (164_01) | 1002 |
| | Shialti (163_00) | 225 |
| | Kanchan (164_01) | 431 |
| | Kanchan (164_01) | 590 |
| | Kanchan (164_01) | 1008 |
| | Kanchan (164_01) | 1066 |
| | Shialti (163_00) | 72 |
| | Kanchan (164_01) | 594 |
| | Kanchan (164_01) | 311 |
| | Kanchan (164_01) | 310 |
| | Shialti (163_00) | 226 |
| | Kanchan (164_01) | 595 |
| | Kanchan (164_01) | 1068 |
| | Kanchan (164_01) | 1007 |
| | Kanchan (164_01) | 1003 |
| | Kanchan (164_01) | 432 |
| | Shialti (163_00) | 70 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Shialti (163_00) | 106 |
| | Kanchan (164_01) | 1065 |
| | Shialti (163_00) | 73 |
| | Kanchan (164_01) | 1063 |
| | Kanchan (164_01) | 300 |
| | Kanchan (164_01) | 437 |
| | Kanchan (164_01) | 1062 |
| | Kanchan (164_01) | 597 |
| | Kanchan (164_01) | 1061 |
| | Kanchan (164_01) | 434 |
| | Kanchan (164_01) | 435 |
| | Kanchan (164_01) | 433 |
| | Dighalia (162_01) | 3 |
| | Kanchan (164_01) | 436 |
| | Kanchan (164_01) | 598 |
| | Kanchan (164_01) | 1060 |
| | Kanchan (164_01) | 1060 |
| | Shialti (163_00) | 109 |
| | Kanchan (164_01) | 299 |
| | Kanchan (164_01) | 1075 |
| | Kanchan (164_01) | 1059 |
| | Shialti (163_00) | 103 |
| | Kanchan (164_01) | 440 |
| | Kanchan (164_01) | 443 |
| | Kanchan (164_01) | 230 |
| | Kanchan (164_01) | 444 |
| | Kanchan (164_01) | 1077 |
| | Kendua (137_02) | 2398 |
| | Kanchan (164_01) | 1140 |
| | Kanchan (164_01) | 442 |
| | Kanchan (164_01) | 231 |
| | Kanchan (164_01) | 441 |
| | Kendua (137_01) | 651 |
| | Kanchan (164_01) | 445 |
| | Shialti (163_00) | 110 |
| | Kendua (137_01) | 573 |
| | Dighalia (162_01) | 2 |
| | Dighalia (162_01) | 2 |
| | Kanchan (164_01) | 1139 |
| | Kanchan (164_01) | 232 |
| | Kendua (137_02) | 2418 |
| | Kanchan (164_01) | 1137 |
| | Kanchan (164_01) | 233 |
| | Kendua (137_01) | 572 |
| | Kanchan (164_01) | 451 |
| | Kanchan (164_01) | 1136 |
| | Dighalia (162_01) | 1 |
| | Kendua (137_02) | 2417 |
| | Dighalia (162_01) | 31 |
| | Kanchan (164_01) | 1078 |
| | Kanchan (164_01) | 1135 |
| | Dighalia (162_01) | 99 |
| | Shialti (163_00) | 61 |
| | Shialti (163_00) | 111 |
| | Shialti (163_00) | 114 |
| | Kanchan (164_01) | 1127 |
| | Kendua (137_02) | 2416 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Shialti (163_00) | 140 |
| | Kanchan (164_01) | 1124 |
| | Kanchan (164_01) | 243 |
| | Kendua (137_02) | 1949 |
| | Kanchan (164_01) | 264 |
| | Kanchan (164_01) | 1123 |
| | Kanchan (164_01) | 1339 |
| | Kendua (137_02) | 1951 |
| | Kanchan (164_01) | 1122 |
| | Dighalia (162_01) | 98 |
| | Kendua (137_02) | 2410 |
| | Shialti (163_00) | 60 |
| | Kendua (137_02) | 1952 |
| | Kanchan (164_01) | 441 |
| | Shialti (163_00) | 114 |
| | Kendua (137_01) | 571 |
| | Dighalia (162_01) | 48 |
| | Kanchan (164_01) | 252 |
| | Dighalia (162_01) | 46 |
| | Dighalia (162_01) | 45 |
| | Kendua (137_01) | 602 |
| | Dighalia (162_01) | 35 |
| | Dighalia (162_01) | 37 |
| | Dighalia (162_01) | 37 |
| | Kanchan (164_01) | 263 |
| | Kendua (137_02) | 2409 |
| | Kendua (137_02) | 1950 |
| | Kendua (137_02) | 1953 |
| | Shialti (163_00) | 112 |
| | Shialti (163_00) | 113 |
| | Kanchan (164_01) | 254 |
| | Shialti (163_00) | 138 |
| | Shialti (163_00) | 136 |
| | Shialti (163_00) | 136 |
| | Shialti (163_00) | 118 |
| | Shialti (163_00) | 119 |
| | Shialti (163_00) | 129 |
| | Kendua (137_02) | 1955 |
| | Kendua (137_02) | 1954 |
| | Kanchan (164_01) | 109 |
| | Kanchan (164_01) | 256 |
| | Kendua (137_02) | 2405 |
| | Kanchan (164_01) | 257 |
| | Shialti (163_00) | 35 |
| | Shialti (163_00) | 17 |
| | Kanchan (164_01) | 108 |
| | Shialti (163_00) | 34 |
| | Shialti (163_00) | 16 |
| | Shialti (163_00) | 15 |
| | Kendua (137_02) | 2404 |
| | Shialti (163_00) | 131 |
| | Kanchan (164_01) | 259 |
| | Kanchan (164_01) | 107 |
| | Kanchan (164_01) | 74 |
| | Kanchan (164_01) | 75 |
| | Kanchan (164_01) | 589 |
| | Kendua (137_02) | 1967 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Kendua (137_02) | 1972 |
| | Kanchan (164_01) | 100 |
| | Kanchan (164_01) | 76 |
| | Kanchan (164_01) | 81 |
| | Kendua (137_02) | 1973 |
| | Kanchan (164_01) | 82 |
| | Kanchan (164_01) | 80 |
| | Kanchan (164_01) | 83 |
| | Kendua (137_02) | 1924 |
| | Kanchan (164_01) | 84 |
| | Kanchan (164_01) | 79 |
| | Kendua (137_02) | 1886 |
| | Kendua (137_02) | 1877 |
| | Kendua (137_02) | 1887 |
| | Kendua (137_02) | 1879 |
| | Kendua (137_02) | 1878 |
| | Kendua (137_02) | 1884 |
| | Kendua (137_02) | 1921 |
| | Kendua (137_02) | 1888 |
| | Kendua (137_02) | 1883 |
| | Kendua (137_02) | 1880 |
| | Kendua (137_02) | 1889 |
| | Kendua (137_02) | 1876 |
| | Kendua (137_02) | 1992 |
| | Kendua (137_02) | 1917 |
| | Kendua (137_02) | 2018 |
| | Kendua (137_02) | 1919 |
| | Kendua (137_02) | 1918 |
| | Kendua (137_02) | 1996 |
| | Kendua (137_02) | 1997 |
| | Kendua (137_02) | 1994 |
| | Kendua (137_02) | 1882 |
| | Kendua (137_02) | 1993 |
| | Kendua (137_02) | 1913 |
| | Kendua (137_02) | 2014 |
| | Kendua (137_02) | 1998 |
| | Kendua (137_02) | 2011 |
| | Kendua (137_02) | 1999 |
| | Kendua (137_02) | 1914 |
| | Kendua (137_02) | 1915 |
| | Kendua (137_02) | 1874 |
| | Kendua (137_02) | 1916 |
| | Kendua (137_02) | 1843 |
| | Biraba (138_02) | 1614 |
| | Kendua (137_02) | 1885 |
| | Kendua (137_02) | 1842 |
| | Kendua (137_02) | 1742 |
| | Kendua (137_02) | 1873 |
| | Kendua (137_02) | 1750 |
| | Kendua (137_02) | 1749 |
| | Kendua (137_02) | 1759 |
| | Biraba (138_02) | 1615 |
| | Biraba (138_02) | 1613 |
| | Kendua (137_02) | 1515 |
| | Kendua (137_02) | 1755 |
| | Kendua (137_02) | 1756 |
| | Kendua (137_02) | 1808 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Biraba (138_02) | 1612 |
| | Kendua (137_02) | 1809 |
| | Kendua (137_02) | 1811 |
| | Kendua (137_02) | 1807 |
| | Kendua (137_02) | 1810 |
| | Kendua (137_02) | 1747 |
| | Kendua (137_02) | 1762 |
| | Kendua (137_02) | 1761 |
| | Kendua (137_02) | 1746 |
| | Kendua (137_02) | 1745 |
| | Kendua (137_02) | 1812 |
| | Kendua (137_02) | 1869 |
| | Kendua (137_02) | 1504 |
| | Kendua (137_02) | 1868 |
| | Kendua (137_01) | 96 |
| | Kendua (137_02) | 1502 |
| | Biraba (138_02) | 1609 |
| | Kendua (137_01) | 63 |
| | Kendua (137_02) | 1501 |
| | Kendua (137_01) | 55 |
| | Kendua (137_01) | 61 |
| | Kendua (137_01) | 54 |
| | Kendua (137_01) | 92 |
| | Kendua (137_01) | 93 |
| | Biraba (138_02) | 1604 |
| | Kendua (137_01) | 91 |
| | Kendua (137_01) | 1210 |
| | Kendua (137_01) | 164 |
| | Kendua (137_01) | 169 |
| | Biraba (138_02) | 1602 |
| | Kendua (137_01) | 170 |
| | Biraba (138_02) | 1603 |
| | Kendua (137_01) | 171 |
| | Biraba (138_02) | 1605 |
| | Kendua (137_01) | 172 |
| | Biraba (138_02) | 1601 |
| | Kendua (137_01) | 174 |
| | Kendua (137_01) | 175 |
| | Kendua (137_01) | 179 |
| | Kendua (137_01) | 178 |
| | Kendua (137_02) | 1859 |
| | Kendua (137_02) | 1858 |
| | Kendua (137_01) | 53 |
| | Kendua (137_01) | 28 |
| | Kendua (137_01) | 42 |
| | Biraba (138_02) | 1150 |
| | Kendua (137_01) | 29 |
| | Biraba (138_02) | 1149 |
| | Kendua (137_01) | 26 |
| | Biraba (138_02) | 2077 |
| | Biraba (138_02) | 2074 |
| | Kendua (137_01) | 43 |
| | Biraba (138_02) | 2073 |
| | Biraba (138_02) | 2072 |
| | Biraba (138_02) | 2071 |
| | Biraba (138_02) | 2068 |
| | Biraba (138_02) | 2067 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Biraba (138_02) | 2025 |
| | Biraba (138_02) | 2024 |
| | Biraba (138_02) | 2023 |
| | Biraba (138_02) | 2022 |
| | Biraba (138_02) | 2032 |
| | Biraba (138_02) | 2020 |
| | Biraba (138_02) | 2019 |
| | Biraba (138_02) | 2021 |
| | Biraba (138_02) | 1196 |
| | Biraba (138_02) | 1588 |
| | Biraba (138_02) | 1587 |
| | Biraba (138_02) | 1581 |
| | Biraba (138_02) | 1580 |
| | Biraba (138_02) | 1105 |
| PR5 | Kendua (137_01) | 440 |
| | Kendua (137_01) | 441 |
| | Kendua (137_01) | 442 |
| | Kendua (137_01) | 489 |
| | Kendua (137_01) | 443 |
| | Kendua (137_01) | 444 |
| | Kendua (137_01) | 445 |
| | Kendua (137_01) | 473 |
| PR6 | Kendua (137_01) | 565 |
| | Kendua (137_01) | 562 |
| | Kendua (137_01) | 563 |
| | Kendua (137_01) | 566 |
| | Kendua (137_01) | 564 |
| | Kendua (137_01) | 567 |
| PR7 | Kendua (137_01) | 730 |
| | Kendua (137_01) | 731 |
| | Kendua (137_01) | 732 |
| | Kendua (137_01) | 733 |
| | Kendua (137_01) | 618 |
| | Kendua (137_01) | 605 |
| | Kendua (137_01) | 607 |
| PR8 | Kendua (137_01) | 607 |
| | Kendua (137_01) | 617 |
| | Kendua (137_01) | 606 |
| | Kendua (137_01) | 608 |
| PR9 | Kendua (137_01) | 585 |
| | Kendua (137_01) | 586 |
| | Kendua (137_01) | 599 |
| | Kendua (137_01) | 587 |
| | Kendua (137_01) | 590 |
| | Kendua (137_01) | 597 |
| | Kendua (137_01) | 593 |
| | Kendua (137_01) | 592 |
| | Kendua (137_01) | 595 |
| | Kendua (137_01) | 595 |
| | Kendua (137_01) | 596 |
| PR10 | Kendua (137_01) | 492 |
| | Kendua (137_01) | 493 |
| | Kendua (137_01) | 491 |
| | Kendua (137_01) | 484 |
| | Kendua (137_01) | 483 |
| | Kendua (137_01) | 482 |
| | Kendua (137_01) | 481 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Kendua (137_01) | 480 |
| PR11 | Kendua (137_01) | 753 |
| | Kendua (137_01) | 752 |
| | Kendua (137_01) | 739 |
| | Kendua (137_01) | 740 |
| PR12 | Kendua (137_01) | 864 |
| | Kendua (137_01) | 863 |
| | Kendua (137_01) | 855 |
| | Kendua (137_01) | 853 |
| | Kendua (137_01) | 852 |
| PR13 | Kendua (137_01) | 849 |
| PR14 | Kendua (137_01) | 1004 |
| | Kendua (137_01) | 1005 |
| | Kendua (137_01) | 1006 |
| | Kendua (137_01) | 1031 |
| PR15 | Kendua (137_01) | 788 |
| | Kendua (137_01) | 789 |
| | Kendua (137_01) | 790 |
| | Kendua (137_01) | 791 |
| | Kendua (137_01) | 792 |
| | Kendua (137_01) | 778 |
| | Kendua (137_01) | 777 |
| | Kendua (137_01) | 776 |
| | Kendua (137_01) | 775 |
| PR16 | Kendua (137_01) | 793 |
| | Kendua (137_01) | 808 |
| | Kendua (137_01) | 809 |
| | Kendua (137_01) | 792 |
| | Kendua (137_01) | 814 |
| | Kendua (137_01) | 813 |
| | Kendua (137_01) | 812 |
| | Kendua (137_01) | 775 |
| | Kendua (137_01) | 815 |
| | Kendua (137_01) | 816 |
| | Kendua (137_01) | 817 |
| | Kendua (137_01) | 818 |
| PR17 | Krishnanagar (136_00) | 27 |
| | Krishnanagar (136_00) | 25 |
| | Krishnanagar (136_00) | 26 |
| PR18 | Kendua (137_01) | 993 |
| | Kendua (137_01) | 998 |
| | Kendua (137_01) | 991 |
| | Kendua (137_01) | 994 |
| | Kendua (137_01) | 990 |
| | Kendua (137_01) | 1010 |
| | Kendua (137_01) | 1009 |
| | Kendua (137_01) | 1008 |
| | Kendua (137_01) | 1005 |
| | Kendua (137_01) | 986 |
| | Kendua (137_01) | 988 |
| PR19 | Krishnanagar (136_00) | 38 |
| | Krishnanagar (136_00) | 16 |
| | Krishnanagar (136_00) | 14 |
| | Krishnanagar (136_00) | 17 |
| | Krishnanagar (136_00) | 36 |
| | Krishnanagar (136_00) | 18 |
| | Krishnanagar (136_00) | 19 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Kendua (137_01) | 1002 |
| | Krishnanagar (136_00) | 20 |
| | Kendua (137_01) | 1003 |
| | Kendua (137_01) | 998 |
| PR20 | Krishnanagar (136_00) | 10 |
| | Krishnanagar (136_00) | 43 |
| PR21 | Krishnanagar (136_00) | 68 |
| | Krishnanagar (136_00) | 10 |
| | Krishnanagar (136_00) | 44 |
| | Krishnanagar (136_00) | 43 |
| | Krishnanagar (136_00) | 42 |
| PR22 | Kanchan (164_04) | 6030 |
| | Kanchan (164_04) | 6031 |
| | Kanchan (164_04) | 6028 |
| | Kanchan (164_04) | 6028 |
| | Kanchan (164_04) | 6026 |
| | Kanchan (164_04) | 6022 |
| | Kanchan (164_04) | 6020 |
| | Kanchan (164_04) | 6029 |
| | Kanchan (164_04) | 6067 |
| | Kanchan (164_04) | 6068 |
| PR23 | Kanchan (164_04) | 6025 |
| | Kanchan (164_04) | 6024 |
| | Kanchan (164_04) | 6026 |
| | Kanchan (164_04) | 6023 |
| PR24 | Kanchan (164_04) | 6023 |
| PR25 | Biraba (138_01) | 195 |
| | Biraba (138_01) | 194 |
| | Biraba (138_01) | 193 |
| | Biraba (138_01) | 9 |
| | Biraba (138_01) | 10 |
| | Biraba (138_01) | 192 |
| | Biraba (138_01) | 11 |
| | Biraba (138_01) | 2 |
| | Biraba (138_01) | 8 |
| | Biraba (138_01) | 12 |
| | Biraba (138_01) | 7 |
| | Biraba (138_01) | 6 |
| | Biraba (138_01) | 17 |
| | Biraba (138_01) | 13 |
| | Biraba (138_01) | 16 |
| PR26 | Biraba (138_01) | 192 |
| | Biraba (138_01) | 176 |
| | Biraba (138_01) | 174 |
| | Biraba (138_01) | 17 |
| | Biraba (138_01) | 18 |
| | Biraba (138_01) | 16 |
| | Biraba (138_01) | 22 |
| PR27 | Biraba (138_01) | 173 |
| | Biraba (138_01) | 163 |
| | Biraba (138_01) | 18 |
| | Biraba (138_01) | 19 |
| | Biraba (138_01) | 28 |
| PR28 | Biraba (138_01) | 162 |
| | Biraba (138_01) | 161 |
| | Biraba (138_01) | 156 |
| | Biraba (138_01) | 28 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Biraba (138_01) | 29 |
| | Biraba (138_01) | 32 |
| PR29 | Biraba (138_01) | 140 |
| | Biraba (138_01) | 139 |
| | Biraba (138_01) | 138 |
| | Biraba (138_01) | 137 |
| | Biraba (138_01) | 136 |
| | Biraba (138_01) | 135 |
| | Biraba (138_01) | 134 |
| | Biraba (138_01) | 133 |
| | Biraba (138_01) | 41 |
| | Biraba (138_01) | 42 |
| | Biraba (138_01) | 43 |
| | Biraba (138_01) | 44 |
| | Biraba (138_01) | 45 |
| | Biraba (138_01) | 46 |
| | Biraba (138_01) | 47 |
| | Biraba (138_01) | 48 |
| | Biraba (138_01) | 64 |
| PR30 | Biraba (138_01) | 621 |
| | Biraba (138_01) | 620 |
| | Biraba (138_01) | 622 |
| | Biraba (138_01) | 623 |
| | Biraba (138_01) | 625 |
| | Biraba (138_01) | 624 |
| | Biraba (138_01) | 626 |
| PR31 | Biraba (138_01) | 595 |
| | Biraba (138_01) | 386 |
| | Biraba (138_01) | 395 |
| | Biraba (138_01) | 396 |
| | Biraba (138_01) | 387 |
| | Biraba (138_01) | 397 |
| PR32 | Biraba (138_02) | 1270 |
| | Biraba (138_01) | 651 |
| | Biraba (138_01) | 650 |
| | Biraba (138_01) | 649 |
| | Biraba (138_01) | 648 |
| | Biraba (138_01) | 647 |
| PR33 | Biraba (138_02) | 1239 |
| | Biraba (138_02) | 1240 |
| | Biraba (138_02) | 1239 |
| | Biraba (138_02) | 1238 |
| PR34 | Biraba (138_02) | 1002 |
| PR35 | Biraba (138_02) | 1207 |
| | Biraba (138_02) | 1204 |
| | Biraba (138_02) | 1208 |
| | Biraba (138_02) | 1205 |
| PR36 | Biraba (138_02) | 1150 |
| | Biraba (138_02) | 1149 |
| | Biraba (138_02) | 1595 |
| | Biraba (138_02) | 1152 |
| | Biraba (138_02) | 1151 |
| | Biraba (138_02) | 1596 |
| | Biraba (138_02) | 1153 |
| | Biraba (138_02) | 1594 |
| | Biraba (138_02) | 1157 |
| | Biraba (138_02) | 1154 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Biraba (138_02) | 1158 |
| | Biraba (138_02) | 1156 |
| | Biraba (138_02) | 1155 |
| | Biraba (138_02) | 1592 |
| | Biraba (138_02) | 1148 |
| PR37 | Biraba (138_02) | 1190 |
| | Biraba (138_02) | 1189 |
| | Biraba (138_02) | 1188 |
| | Biraba (138_02) | 1161 |
| PR38 | Biraba (138_02) | 1602 |
| | Biraba (138_02) | 1601 |
| | Biraba (138_02) | 1598 |
| | Biraba (138_02) | 1600 |
| | Biraba (138_02) | 1599 |
| PR39 | Kendua (137_01) | 131 |
| | Kendua (137_01) | 132 |
| | Kendua (137_01) | 133 |
| | Kendua (137_01) | 134 |
| | Kendua (137_01) | 139 |
| | Kendua (137_01) | 140 |
| | Kendua (137_01) | 138 |
| | Kendua (137_01) | 137 |
| | Kendua (137_01) | 144 |
| | Kendua (137_01) | 141 |
| | Kendua (137_01) | 145 |
| | Kendua (137_01) | 106 |
| PR40 | Kendua (137_01) | 134 |
| | Kendua (137_01) | 136 |
| PR41 | Kendua (137_01) | 726 |
| | Kendua (137_01) | 727 |
| | Kendua (137_01) | 660 |
| | Kendua (137_01) | 651 |
| PR42 | Kendua (137_01) | 727 |
| | Kendua (137_01) | 660 |
| | Kendua (137_01) | 659 |
| | Kendua (137_01) | 620 |
| | Kendua (137_01) | 621 |
| PR43 | Kendua (137_01) | 1150 |
| | Kendua (137_02) | 2202 |
| | Kendua (137_01) | 1147 |
| | Kendua (137_01) | 1149 |
| | Kendua (137_01) | 1148 |
| | Kendua (137_01) | 1213 |
| | Kendua (137_01) | 1146 |
| | Kendua (137_01) | 1212 |
| | Kendua (137_01) | 1145 |
| | Kendua (137_01) | 1139 |
| PR44 | Kendua (137_02) | 2213 |
| | Kendua (137_02) | 2211 |
| | Kendua (137_02) | 2209 |
| | Kendua (137_02) | 2210 |
| | Kendua (137_02) | 2232 |
| PR45 | Kendua (137_02) | 2220 |
| | Kendua (137_02) | 2221 |
| | Kendua (137_02) | 2218 |
| | Kendua (137_01) | 1184 |
| | Kendua (137_02) | 2216 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Kendua (137_02) | 2217 |
| | Kendua (137_02) | 2215 |
| | Kendua (137_01) | 1179 |
| | Kendua (137_02) | 2214 |
| PR46 | Kendua (137_01) | 1158 |
| | Kendua (137_01) | 1156 |
| | Kendua (137_01) | 1164 |
| | Kendua (137_01) | 1155 |
| | Kendua (137_01) | 1153 |
| | Kendua (137_01) | 1152 |
| | Kendua (137_01) | 680 |
| PR47 | Kendua (137_01) | 1044 |
| | Kendua (137_01) | 1045 |
| | Kendua (137_01) | 1048 |
| | Kendua (137_01) | 680 |
| PR48 | Kendua (137_01) | 1197 |
| | Kendua (137_01) | 1196 |
| | Kendua (137_01) | 1200 |
| | Kendua (137_01) | 1193 |
| PR49 | Kanchan (164_03) | 5159 |
| | Kanchan (164_03) | 5158 |
| | Kanchan (164_03) | 5158 |
| PR50 | Kanchan (164_03) | 5120 |
| | Kendua (137_02) | 2223 |
| | Kanchan (164_03) | 5004 |
| PR51 | Kanchan (164_03) | 5120 |
| PR52 | Kanchan (164_03) | 5157 |
| PR53 | Kanchan (164_03) | 5149 |
| | Kanchan (164_03) | 5150 |
| | Kanchan (164_03) | 5150 |
| PR54 | Krishnanagar (136_00) | 65 |
| | Krishnanagar (136_00) | 47 |
| | Krishnanagar (136_00) | 42 |
| PR55 | Kanchan (164_03) | 5322 |
| | Kanchan (164_03) | 5310 |
| | Kanchan (164_03) | 5308 |
| | Krishnanagar (136_00) | 67 |
| | Kanchan (164_03) | 5309 |
| | Krishnanagar (136_00) | 66 |
| PR56 | Kanchan (164_03) | 5322 |
| | Kanchan (164_03) | 5307 |
| | Kanchan (164_03) | 5308 |
| | Kanchan (164_03) | 5306 |
| PR57 | Kanchan (164_03) | 5161 |
| | Kanchan (164_03) | 5163 |
| PR58 | Kanchan (164_03) | 5161 |
| | Kanchan (164_03) | 5162 |
| | Kanchan (164_03) | 5280 |
| | Kanchan (164_03) | 5163 |
| PR59 | Kanchan (164_03) | 5304 |
| | Kanchan (164_03) | 5305 |
| PR60 | Kanchan (164_04) | 6029 |
| PR61 | Kanchan (164_04) | 6029 |
| PR62 | Kanchan (164_04) | 6031 |
| | Kanchan (164_04) | 6032 |
| PR64 | Kanchan (164_04) | 6036 |
| | Kanchan (164_04) | 6035 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| PR65 | Kanchan (164_04) | 6039 |
| | Kanchan (164_04) | 6036 |
| | Kanchan (164_04) | 6040 |
| | Kanchan (164_04) | 6037 |
| | Kanchan (164_04) | 6038 |
| PR66 | Kanchan (164_04) | 6039 |
| | Kanchan (164_04) | 6053 |
| | Kanchan (164_04) | 6041 |
| | Kanchan (164_04) | 6055 |
| | Kanchan (164_04) | 6040 |
| PR67 | Kanchan (164_04) | 6605 |
| | Kanchan (164_04) | 6603 |
| | Kanchan (164_04) | 6602 |
| | Kanchan (164_04) | 6599 |
| | Kanchan (164_04) | 6598 |
| | Kanchan (164_04) | 6601 |
| | Kanchan (164_04) | 6578 |
| PR68 | Kanchan (164_04) | 6586 |
| | Kanchan (164_04) | 6585 |
| | Kanchan (164_04) | 6584 |
| | Kanchan (164_04) | 6583 |
| PR69 | Kanchan (164_04) | 6513 |
| | Kanchan (164_04) | 6511 |
| | Kanchan (164_04) | 6512 |
| | Kanchan (164_04) | 6507 |
| | Kanchan (164_04) | 6506 |
| | Kanchan (164_04) | 6504 |
| | Kanchan (164_04) | 6503 |
| PR70 | Kanchan (164_04) | 6527 |
| | Kanchan (164_04) | 6526 |
| | Kanchan (164_04) | 6844 |
| | Kanchan (164_04) | 6528 |
| | Kanchan (164_04) | 6525 |
| | Kanchan (164_04) | 6518 |
| | Kanchan (164_04) | 6519 |
| | Kanchan (164_04) | 6520 |
| PR71 | Kanchan (164_04) | 6644 |
| | Kanchan (164_04) | 6640 |
| | Kanchan (164_04) | 6639 |
| | Kanchan (164_04) | 6638 |
| | Kanchan (164_04) | 6637 |
| | Kanchan (164_04) | 6635 |
| | Kanchan (164_04) | 6636 |
| | Kanchan (164_04) | 6632 |
| | Kanchan (164_04) | 6616 |
| | Kanchan (164_04) | 6631 |
| | Kanchan (164_04) | 6630 |
| | Kanchan (164_04) | 6617 |
| | Kanchan (164_04) | 6578 |
| PR72 | Kanchan (164_04) | 6634 |
| | Kanchan (164_04) | 6633 |
| | Kanchan (164_04) | 6635 |
| PR73 | Kanchan (164_04) | 6694 |
| PR74 | Kanchan (164_04) | 6843 |
| | Kanchan (164_04) | 6841 |
| | Kanchan (164_04) | 6842 |
| | Kanchan (164_04) | 6646 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| PR75 | Kanchan (164_04) | 6774 |
| | Kanchan (164_04) | 6773 |
| PR76 | Kanchan (164_04) | 6779 |
| | Kanchan (164_04) | 6778 |
| | Kanchan (164_04) | 6678 |
| | Kanchan (164_04) | 6679 |
| | Kanchan (164_04) | 6775 |
| | Kanchan (164_04) | 6819 |
| | Kanchan (164_04) | 6818 |
| | Kanchan (164_04) | 6800 |
| | Kanchan (164_04) | 6801 |
| | Kanchan (164_04) | 6805 |
| | Kanchan (164_04) | 6728 |
| | Kanchan (164_04) | 6806 |
| | Kanchan (164_04) | 6727 |
| | Kanchan (164_04) | 6481 |
| | Norabo (173_00) | 188 |
| | Norabo (173_00) | 200 |
| | Norabo (173_00) | 189 |
| | Kanchan (164_04) | 6640 |
| | Kanchan (164_04) | 6483 |
| | Norabo (173_00) | 180 |
| | Kanchan (164_04) | 6641 |
| | Kanchan (164_04) | 6616 |
| | Norabo (173_00) | 176 |
| | Norabo (173_00) | 175 |
| | Norabo (173_00) | 177 |
| | Kanchan (164_04) | 6615 |
| | Norabo (173_00) | 172 |
| | Kanchan (164_04) | 6630 |
| | Norabo (173_00) | 178 |
| | Norabo (173_00) | 179 |
| | Kanchan (164_04) | 6487 |
| | Kanchan (164_04) | 6564 |
| | Norabo (173_00) | 169 |
| | Norabo (173_00) | 170 |
| | Kanchan (164_04) | 6629 |
| | Norabo (173_00) | 171 |
| | Kanchan (164_04) | 6617 |
| | Norabo (173_00) | 152 |
| | Kanchan (164_04) | 6563 |
| | Norabo (173_00) | 155 |
| | Kanchan (164_04) | 6608 |
| | Kanchan (164_04) | 6562 |
| | Kanchan (164_04) | 6488 |
| | Kanchan (164_04) | 6527 |
| | Norabo (173_00) | 156 |
| | Kanchan (164_04) | 6526 |
| | Kanchan (164_04) | 6525 |
| | Kanchan (164_04) | 6422 |
| | Kanchan (164_04) | 6524 |
| | Kanchan (164_04) | 6566 |
| | Kanchan (164_04) | 6565 |
| | Kanchan (164_04) | 6523 |
| | Kanchan (164_04) | 6423 |
| | Kanchan (164_04) | 6399 |
| | Kanchan (164_04) | 6520 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Kanchan (164_04) | 6421 |
| | Kanchan (164_04) | 6426 |
| | Kanchan (164_04) | 6513 |
| | Kanchan (164_04) | 6522 |
| | Kanchan (164_04) | 6400 |
| | Kanchan (164_04) | 6514 |
| | Kanchan (164_04) | 6511 |
| | Kanchan (164_04) | 6512 |
| | Kanchan (164_04) | 6420 |
| | Kanchan (164_04) | 6430 |
| | Kanchan (164_04) | 6401 |
| | Kanchan (164_04) | 6425 |
| | Kanchan (164_04) | 6424 |
| | Kanchan (164_04) | 6506 |
| | Kanchan (164_04) | 6404 |
| | Kanchan (164_04) | 6402 |
| | Kanchan (164_04) | 6502 |
| | Kanchan (164_04) | 6403 |
| | Kanchan (164_04) | 6392 |
| | Kanchan (164_05) | 7464 |
| | Kanchan (164_04) | 6393 |
| | Kanchan (164_04) | 6504 |
| | Kanchan (164_04) | 6503 |
| | Kanchan (164_05) | 7466 |
| | Kanchan (164_05) | 7465 |
| | Kanchan (164_04) | 6578 |
| | Kanchan (164_04) | 6369 |
| | Kanchan (164_05) | 7439 |
| | Kanchan (164_05) | 7441 |
| | Kanchan (164_05) | 7472 |
| | Kanchan (164_05) | 7476 |
| | Kanchan (164_05) | 7477 |
| | Kanchan (164_05) | 7478 |
| | Kanchan (164_04) | 6386 |
| | Kanchan (164_04) | 6387 |
| | Kanchan (164_04) | 6370 |
| | Kanchan (164_04) | 6367 |
| | Kanchan (164_04) | 6384 |
| | Kanchan (164_04) | 6381 |
| | Kanchan (164_04) | 6376 |
| | Kanchan (164_04) | 6382 |
| | Kanchan (164_05) | 7440 |
| | Kanchan (164_04) | 6375 |
| | Kanchan (164_05) | 7429 |
| | Kanchan (164_04) | 6366 |
| | Kanchan (164_04) | 6365 |
| | Kanchan (164_05) | 7431 |
| | Kanchan (164_05) | 7421 |
| | Kanchan (164_04) | 6374 |
| | Kanchan (164_05) | 7407 |
| | Kanchan (164_05) | 7414 |
| | Kanchan (164_05) | 7419 |
| | Kanchan (164_05) | 7413 |
| | Kanchan (164_04) | 6340 |
| | Kanchan (164_05) | 7381 |
| | Kanchan (164_04) | 6373 |
| | Kanchan (164_05) | 7418 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Kanchan (164_04) | 6343 |
| | Kanchan (164_05) | 7382 |
| | Kanchan (164_05) | 7415 |
| | Kanchan (164_05) | 7400 |
| | Kanchan (164_05) | 7416 |
| | Kanchan (164_04) | 6306 |
| | Kanchan (164_04) | 6311 |
| | Kanchan (164_04) | 6322 |
| | Kanchan (164_04) | 6344 |
| | Kanchan (164_04) | 6304 |
| | Kanchan (164_04) | 6305 |
| | Kanchan (164_04) | 6336 |
| | Kanchan (164_05) | 7383 |
| | Kanchan (164_04) | 6323 |
| | Kanchan (164_05) | 7394 |
| | Kanchan (164_04) | 6277 |
| | Kanchan (164_04) | 6276 |
| | Kanchan (164_04) | 6335 |
| | Kanchan (164_04) | 6345 |
| | Kanchan (164_04) | 6270 |
| | Kanchan (164_04) | 6275 |
| | Kanchan (164_04) | 6269 |
| | Kanchan (164_04) | 6260 |
| | Kanchan (164_04) | 6261 |
| | Kanchan (164_04) | 6257 |
| | Kanchan (164_04) | 6120 |
| | Kanchan (164_04) | 6118 |
| | Kanchan (164_04) | 6119 |
| | Kanchan (164_04) | 6050 |
| | Kanchan (164_04) | 6256 |
| | Kanchan (164_04) | 6255 |
| | Kanchan (164_04) | 6046 |
| | Kanchan (164_04) | 6051 |
| | Kanchan (164_04) | 6044 |
| | Kanchan (164_04) | 6043 |
| | Kanchan (164_04) | 6042 |
| | Kanchan (164_04) | 6264 |
| | Kanchan (164_04) | 6123 |
| | Kanchan (164_04) | 6124 |
| | Kanchan (164_04) | 6112 |
| | Kanchan (164_04) | 6111 |
| | Kanchan (164_04) | 6110 |
| | Kanchan (164_04) | 6109 |
| | Kanchan (164_04) | 6049 |
| | Kanchan (164_04) | 6254 |
| | Kanchan (164_04) | 6131 |
| | Kanchan (164_04) | 6253 |
| | Kanchan (164_04) | 6213 |
| | Kanchan (164_04) | 6226 |
| | Kanchan (164_04) | 6219 |
| | Kanchan (164_04) | 6218 |
| | Kanchan (164_04) | 6133 |
| | Kanchan (164_04) | 6211 |
| | Kanchan (164_04) | 6231 |
| | Kanchan (164_04) | 6217 |
| | Kanchan (164_04) | 6229 |
| | Kanchan (164_04) | 6228 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Kanchan (164_04) | 6227 |
| | Kanchan (164_04) | 6212 |
| | Kanchan (164_04) | 6230 |
| | Kanchan (164_04) | 6088 |
| | Kanchan (164_04) | 6232 |
| | Kanchan (164_04) | 6210 |
| | Kanchan (164_04) | 6233 |
| | Kanchan (164_04) | 6206 |
| | Kanchan (164_04) | 6215 |
| | Kanchan (164_04) | 6046 |
| PR78 | Tarail (139_01) | 214 |
| | Tarail (139_01) | 200 |
| | Tarail (139_01) | 33 |
| | Tarail (139_01) | 34 |
| | Tarail (139_01) | 35 |
| | Tarail (139_01) | 36 |
| PR79 | Tarail (139_01) | 232 |
| | Tarail (139_01) | 230 |
| | Tarail (139_01) | 229 |
| | Tarail (139_01) | 224 |
| | Tarail (139_01) | 223 |
| | Tarail (139_01) | 222 |
| | Tarail (139_01) | 216 |
| | Tarail (139_01) | 217 |
| | Tarail (139_01) | 215 |
| | Tarail (139_01) | 15 |
| | Tarail (139_01) | 16 |
| | Tarail (139_01) | 17 |
| | Tarail (139_01) | 18 |
| | Tarail (139_01) | 19 |
| | Tarail (139_01) | 20 |
| | Tarail (139_01) | 21 |
| | Tarail (139_01) | 22 |
| | Tarail (139_01) | 23 |
| | Tarail (139_01) | 24 |
| | Tarail (139_01) | 25 |
| | Tarail (139_01) | 26 |
| | Tarail (139_01) | 27 |
| | Tarail (139_01) | 28 |
| | Tarail (139_01) | 29 |
| | Tarail (139_01) | 30 |
| | Tarail (139_01) | 31 |
| | Tarail (139_01) | 32 |
| | Tarail (139_01) | 33 |
| PR80 | Tarail (139_01) | 486 |
| | Tarail (139_01) | 487 |
| | Tarail (139_01) | 491 |
| PR81 | Biraba (138_01) | 818 |
| PR82 | Biraba (138_01) | 813 |
| | Biraba (138_01) | 814 |
| | Biraba (138_01) | 815 |
| PR83 | Biraba (138_01) | 110 |
| | Biraba (138_01) | 96 |
| | Biraba (138_01) | 97 |
| | Biraba (138_01) | 99 |
| | Biraba (138_01) | 98 |
| PR84 | Biraba (138_02) | 1089 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Biraba (138_02) | 1088 |
| | Biraba (138_02) | 1090 |
| | Biraba (138_02) | 1227 |
| | Biraba (138_02) | 1087 |
| | Biraba (138_02) | 1080 |
| | Biraba (138_02) | 1080 |
| | Biraba (138_02) | 1082 |
| | Biraba (138_02) | 1078 |
| | Biraba (138_02) | 1079 |
| | Biraba (138_02) | 1075 |
| | Biraba (138_02) | 1070 |
| | Biraba (138_02) | 1077 |
| | Biraba (138_02) | 1074 |
| | Biraba (138_02) | 1073 |
| | Biraba (138_02) | 1072 |
| | Biraba (138_02) | 1056 |
| | Biraba (138_02) | 1057 |
| | Biraba (138_02) | 1054 |
| | Biraba (138_02) | 1026 |
| | Biraba (138_02) | 1027 |
| | Biraba (138_02) | 1033 |
| | Biraba (138_02) | 1019 |
| | Biraba (138_02) | 1015 |
| | Biraba (138_02) | 1020 |
| | Biraba (138_02) | 1014 |
| | Biraba (138_02) | 1014 |
| | Biraba (138_02) | 992 |
| | Biraba (138_01) | 2079 |
| | Biraba (138_01) | 574 |
| | Biraba (138_01) | 582 |
| | Biraba (138_01) | 581 |
| | Biraba (138_01) | 580 |
| | Biraba (138_01) | 585 |
| | Biraba (138_01) | 535 |
| | Biraba (138_01) | 586 |
| | Biraba (138_01) | 588 |
| | Biraba (138_01) | 398 |
| | Biraba (138_01) | 404 |
| | Biraba (138_01) | 409 |
| | Biraba (138_01) | 410 |
| | Biraba (138_01) | 371 |
| | Biraba (138_01) | 411 |
| | Biraba (138_01) | 370 |
| | Biraba (138_01) | 362 |
| | Biraba (138_01) | 363 |
| | Biraba (138_01) | 369 |
| | Biraba (138_01) | 364 |
| | Biraba (138_01) | 321 |
| | Biraba (138_01) | 300 |
| | Biraba (138_01) | 299 |
| | Biraba (138_01) | 302 |
| | Biraba (138_01) | 305 |
| | Biraba (138_01) | 715 |
| | Biraba (138_01) | 368 |
| | Biraba (138_01) | 2081 |
| | Biraba (138_01) | 366 |
| | Biraba (138_01) | 284 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Biraba (138_01) | 716 |
| | Biraba (138_01) | 325 |
| | Biraba (138_01) | 298 |
| | Biraba (138_01) | 326 |
| | Biraba (138_01) | 322 |
| | Biraba (138_01) | 283 |
| | Biraba (138_01) | 367 |
| | Biraba (138_01) | 282 |
| | Biraba (138_01) | 289 |
| | Biraba (138_01) | 744 |
| | Biraba (138_01) | 729 |
| | Biraba (138_01) | 728 |
| | Biraba (138_01) | 727 |
| | Biraba (138_01) | 721 |
| | Biraba (138_01) | 744 |
| | Biraba (138_01) | 281 |
| | Biraba (138_01) | 753 |
| | Biraba (138_01) | 101 |
| | Biraba (138_01) | 102 |
| | Biraba (138_01) | 105 |
| | Biraba (138_01) | 106 |
| | Biraba (138_01) | 103 |
| | Biraba (138_01) | 754 |
| | Tarail (139_01) | 489 |
| | Biraba (138_01) | 752 |
| | Biraba (138_01) | 768 |
| | Tarail (139_01) | 488 |
| | Biraba (138_01) | 767 |
| | Biraba (138_01) | 756 |
| | Tarail (139_01) | 487 |
| | Biraba (138_01) | 766 |
| | Biraba (138_01) | 764 |
| PR85 | Biraba (138_01) | 721 |
| | Biraba (138_01) | 721 |
| PR86 | Biraba (138_01) | 849 |
| | Biraba (138_01) | 850 |
| | Biraba (138_01) | 844 |
| | Biraba (138_01) | 854 |
| PR87 | Biraba (138_02) | 1307 |
| | Biraba (138_02) | 1306 |
| PR88 | Biraba (138_02) | 1316 |
| | Biraba (138_02) | 1318 |
| | Biraba (138_02) | 1317 |
| PR89 | Biraba (138_02) | 1313 |
| | Biraba (138_02) | 1310 |
| PR90 | Biraba (138_02) | 1349 |
| | Biraba (138_02) | 1350 |
| | Biraba (138_02) | 1509 |
| | Biraba (138_02) | 1489 |
| | Biraba (138_02) | 1351 |
| PR91 | Biraba (138_02) | 1490 |
| | Biraba (138_02) | 1489 |
| | Biraba (138_02) | 1488 |
| | Biraba (138_02) | 1487 |
| PR92 | Biraba (138_02) | 1486 |
| | Biraba (138_02) | 1485 |
| | Biraba (138_02) | 1369 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Biraba (138_02) | 1483 |
| | Biraba (138_02) | 1482 |
| | Biraba (138_02) | 1480 |
| | Biraba (138_02) | 1372 |
| | Biraba (138_02) | 1484 |
| PR93 | Biraba (138_02) | 1677 |
| | Biraba (138_02) | 1675 |
| | Biraba (138_02) | 1676 |
| | Biraba (138_02) | 1584 |
| | Biraba (138_02) | 1582 |
| | Biraba (138_02) | 1583 |
| | Biraba (138_02) | 1576 |
| PR94 | Biraba (138_02) | 1541 |
| | Biraba (138_02) | 1543 |
| | Biraba (138_02) | 1544 |
| | Biraba (138_02) | 1545 |
| PR95 | Biraba (138_02) | 1527 |
| | Biraba (138_02) | 1526 |
| | Biraba (138_02) | 1523 |
| PR96 | Kendua (137_02) | 1755 |
| | Kendua (137_02) | 1754 |
| | Kendua (137_02) | 1753 |
| | Biraba (138_02) | 1713 |
| PR97 | Kendua (137_02) | 2112 |
| | Kendua (137_02) | 2114 |
| | Kendua (137_02) | 2093 |
| | Kendua (137_02) | 2092 |
| PR98 | Kendua (137_02) | 2279 |
| | Kendua (137_02) | 2281 |
| PR99 | Kendua (137_02) | 2298 |
| | Kendua (137_02) | 2297 |
| PR100 | Kanchan (164_03) | 5058 |
| | Kanchan (164_03) | 5061 |
| | Kanchan (164_03) | 5060 |
| | Kanchan (164_03) | 5059 |
| | Kanchan (164_03) | 5036 |
| | Kanchan (164_03) | 5034 |
| | Kanchan (164_03) | 5035 |
| | Kanchan (164_03) | 5038 |
| | Kanchan (164_03) | 5037 |
| PR101 | Kanchan (164_03) | 5112 |
| | Kanchan (164_01) | 720 |
| | Kanchan (164_01) | 717 |
| | Kanchan (164_01) | 719 |
| | Kanchan (164_01) | 710 |
| | Kanchan (164_03) | 5058 |
| | Kanchan (164_01) | 710 |
| | Kanchan (164_03) | 5056 |
| | Kanchan (164_01) | 718 |
| PR102 | Kanchan (164_03) | 5117 |
| | Kanchan (164_03) | 5004 |
| | Kanchan (164_03) | 5116 |
| | Kanchan (164_03) | 5005 |
| | Kanchan (164_03) | 5002 |
| | Kanchan (164_03) | 5006 |
| PR103 | Kanchan (164_03) | 5098 |
| | Kanchan (164_03) | 5088 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Kanchan (164_03) | 5093 |
| | Kanchan (164_03) | 5092 |
| | Kanchan (164_03) | 5091 |
| | Kanchan (164_03) | 5090 |
| PR104 | Kanchan (164_03) | 5098 |
| PR105 | Kanchan (164_03) | 5077 |
| | Kanchan (164_03) | 5076 |
| PR106 | Kanchan (164_03) | 5187 |
| | Kanchan (164_03) | 5189 |
| PR107 | Kanchan (164_03) | 5557 |
| | Kanchan (164_03) | 5556 |
| | Kanchan (164_03) | 5240 |
| | Kanchan (164_03) | 5243 |
| PR108 | Kanchan (164_03) | 5239 |
| | Kanchan (164_03) | 5241 |
| PR109 | Kanchan (164_03) | 5566 |
| | Kanchan (164_03) | 5238 |
| | Kanchan (164_03) | 5233 |
| PR110 | Kanchan (164_03) | 5733 |
| | Kanchan (164_03) | 5734 |
| | Kanchan (164_03) | 5728 |
| | Kanchan (164_03) | 5730 |
| | Kanchan (164_03) | 5729 |
| | Kanchan (164_03) | 99999 |
| PR111 | Kanchan (164_03) | 5767 |
| | Kanchan (164_03) | 5764 |
| | Kanchan (164_03) | 5708 |
| | Kanchan (164_03) | 5712 |
| | Kanchan (164_03) | 5694 |
| | Kanchan (164_03) | 99999 |
| PR112 | Kanchan (164_03) | 5814 |
| | Kanchan (164_03) | 5815 |
| | Choto Nowpara (165_00) | 141 |
| | Choto Nowpara (165_00) | 142 |
| | Choto Nowpara (165_00) | 143 |
| | Choto Nowpara (165_00) | 206 |
| | Choto Nowpara (165_00) | 207 |
| | Choto Nowpara (165_00) | 685 |
| | Choto Nowpara (165_00) | 702 |
| | Kanchan (164_03) | 5777 |
| | Kanchan (164_03) | 5760 |
| | Kanchan (164_02) | 2866 |
| | Kanchan (164_03) | 5715 |
| | Kanchan (164_03) | 5764 |
| | Kanchan (164_03) | 5743 |
| | Kanchan (164_03) | 5739 |
| | Kanchan (164_02) | 2716 |
| | Kanchan (164_02) | 2715 |
| | Kanchan (164_02) | 2864 |
| | Kanchan (164_02) | 2863 |
| | Kanchan (164_02) | 2729 |
| | Kanchan (164_02) | 3140 |
| | Kanchan (164_02) | 2713 |
| | Kanchan (164_02) | 2846 |
| | Kanchan (164_02) | 2730 |
| | Kanchan (164_02) | 2722 |
| | Kanchan (164_02) | 3141 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Kanchan (164_02) | 2717 |
| | Kanchan (164_02) | 2714 |
| | Kanchan (164_02) | 3142 |
| | Kanchan (164_02) | 2731 |
| | Kanchan (164_02) | 2374 |
| | Kanchan (164_02) | 2859 |
| | Kanchan (164_02) | 2860 |
| | Kanchan (164_03) | 5694 |
| | Choto Nowpara (165_00) | 104 |
| | Choto Nowpara (165_00) | 107 |
| | Choto Nowpara (165_00) | 118 |
| | Choto Nowpara (165_00) | 120 |
| | Choto Nowpara (165_00) | 124 |
| | Choto Nowpara (165_00) | 125 |
| | Choto Nowpara (165_00) | 126 |
| | Choto Nowpara (165_00) | 135 |
| | Choto Nowpara (165_00) | 136 |
| | Choto Nowpara (165_00) | 137 |
| | Choto Nowpara (165_00) | 138 |
| | Choto Nowpara (165_00) | 139 |
| | Choto Nowpara (165_00) | 140 |
| | Choto Nowpara (165_00) | 146 |
| | Choto Nowpara (165_00) | 154 |
| | Choto Nowpara (165_00) | 155 |
| | Choto Nowpara (165_00) | 156 |
| | Choto Nowpara (165_00) | 157 |
| | Choto Nowpara (165_00) | 164 |
| | Choto Nowpara (165_00) | 211 |
| | Choto Nowpara (165_00) | 233 |
| | Choto Nowpara (165_00) | 234 |
| | Choto Nowpara (165_00) | 604 |
| | Choto Nowpara (165_00) | 606 |
| | Choto Nowpara (165_00) | 607 |
| | Choto Nowpara (165_00) | 617 |
| | Choto Nowpara (165_00) | 631 |
| | Choto Nowpara (165_00) | 634 |
| | Choto Nowpara (165_00) | 635 |
| | Choto Nowpara (165_00) | 636 |
| | Choto Nowpara (165_00) | 650 |
| | Choto Nowpara (165_00) | 651 |
| | Choto Nowpara (165_00) | 667 |
| | Choto Nowpara (165_00) | 668 |
| | Choto Nowpara (165_00) | 670 |
| | Choto Nowpara (165_00) | 671 |
| | Choto Nowpara (165_00) | 672 |
| | Choto Nowpara (165_00) | 673 |
| | Choto Nowpara (165_00) | 683 |
| | Kanchan (164_02) | 2845 |
| | Kanchan (164_02) | 3153 |
| | Kanchan (164_02) | 3150 |
| | Kanchan (164_02) | 3151 |
| | Kanchan (164_02) | 3144 |
| | Kanchan (164_02) | 2858 |
| | Kanchan (164_02) | 3154 |
| | Kanchan (164_02) | 2373 |
| | Kanchan (164_02) | 2637 |
| | Kanchan (164_02) | 2636 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Kanchan (164_02) | 2556 |
| | Kanchan (164_02) | 2555 |
| | Kanchan (164_02) | 2554 |
| | Kanchan (164_02) | 2371 |
| | Kanchan (164_02) | 2368 |
| | Kanchan (164_02) | 2563 |
| | Kanchan (164_02) | 2562 |
| | Kanchan (164_02) | 2370 |
| | Kanchan (164_02) | 2561 |
| | Kanchan (164_02) | 2560 |
| | Kanchan (164_02) | 2369 |
| | Kanchan (164_02) | 2559 |
| | Kanchan (164_02) | 2547 |
| | Kanchan (164_02) | 2383 |
| | Kanchan (164_02) | 2564 |
| | Kanchan (164_02) | 2632 |
| | Kanchan (164_02) | 2633 |
| | Kanchan (164_02) | 2478 |
| | Kanchan (164_02) | 2479 |
| | Kanchan (164_02) | 2386 |
| | Kanchan (164_02) | 2365 |
| | Choto Nowpara (165_00) | 40 |
| | Choto Nowpara (165_00) | 105 |
| | Choto Nowpara (165_00) | 109 |
| | Choto Nowpara (165_00) | 110 |
| | Choto Nowpara (165_00) | 117 |
| | Choto Nowpara (165_00) | 119 |
| | Choto Nowpara (165_00) | 159 |
| | Kanchan (164_03) | 99999 |
| | Kanchan (164_02) | 2558 |
| | Kanchan (164_02) | 2557 |
| | Kanchan (164_02) | 2480 |
| | Kanchan (164_02) | 2493 |
| | Kanchan (164_02) | 2494 |
| | Kanchan (164_02) | 2406 |
| | Kanchan (164_02) | 2495 |
| | Kanchan (164_02) | 2496 |
| | Kanchan (164_02) | 2497 |
| | Kanchan (164_02) | 2545 |
| | Kanchan (164_02) | 2123 |
| | Kanchan (164_02) | 2507 |
| | Kanchan (164_02) | 2122 |
| | Kanchan (164_02) | 2124 |
| | Kanchan (164_02) | 2459 |
| | Kanchan (164_02) | 2421 |
| | Kanchan (164_02) | 2422 |
| | Kanchan (164_02) | 2463 |
| | Kanchan (164_02) | 2464 |
| | Kanchan (164_02) | 2467 |
| | Kanchan (164_02) | 2465 |
| | Kanchan (164_02) | 2119 |
| | Kanchan (164_02) | 2108 |
| | Kanchan (164_02) | 2504 |
| | Kanchan (164_02) | 2516 |
| | Kanchan (164_02) | 2505 |
| | Kanchan (164_02) | 2506 |
| | Kanchan (164_02) | 2372 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Kanchan (164_02) | 2543 |
| | Kanchan (164_02) | 2508 |
| | Kanchan (164_02) | 2512 |
| | Kanchan (164_02) | 2534 |
| | Kanchan (164_02) | 1730 |
| | Kanchan (164_02) | 1614 |
| | Kanchan (164_03) | 5245 |
| | Kanchan (164_03) | 5237 |
| | Kanchan (164_03) | 5244 |
| | Kanchan (164_03) | 5234 |
| | Kanchan (164_03) | 5250 |
| | Kanchan (164_02) | 1623 |
| | Kanchan (164_03) | 5248 |
| | Kanchan (164_03) | 5233 |
| | Kanchan (164_02) | 1624 |
| | Kanchan (164_02) | 1625 |
| | Kanchan (164_03) | 5231 |
| | Kanchan (164_03) | 5228 |
| | Kanchan (164_02) | 1627 |
| | Kanchan (164_02) | 1603 |
| | Kanchan (164_03) | 5246 |
| | Kanchan (164_03) | 5226 |
| | Kanchan (164_03) | 5236 |
| | Kanchan (164_03) | 5227 |
| | Kanchan (164_03) | 5229 |
| | Kanchan (164_03) | 5230 |
| | Kanchan (164_03) | 5235 |
| | Kanchan (164_03) | 5166 |
| | Kanchan (164_03) | 5150 |
| | Kanchan (164_03) | 5153 |
| | Kanchan (164_03) | 5152 |
| | Kanchan (164_03) | 5120 |
| | Kendua (137_02) | 2223 |
| | Kanchan (164_02) | 1655 |
| | Kanchan (164_01) | 781 |
| | Kanchan (164_01) | 790 |
| | Kanchan (164_01) | 780 |
| | Kanchan (164_01) | 766 |
| | Kanchan (164_01) | 791 |
| | Kanchan (164_01) | 624 |
| | Kanchan (164_01) | 777 |
| | Kanchan (164_01) | 625 |
| | Kanchan (164_01) | 792 |
| | Kanchan (164_01) | 793 |
| | Kanchan (164_01) | 633 |
| PR113 | Kanchan (164_03) | 5740 |
| | Kanchan (164_03) | 5735 |
| | Kanchan (164_03) | 5733 |
| | Kanchan (164_03) | 5734 |
| PR114 | Kanchan (164_03) | 5717 |
| | Kanchan (164_03) | 5735 |
| | Kanchan (164_03) | 5718 |
| PR115 | Kanchan (164_03) | 5808 |
| | Kanchan (164_03) | 5813 |
| PR116 | Kanchan (164_03) | 5829 |
| | Kanchan (164_03) | 5809 |
| | Kanchan (164_03) | 5808 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Kanchan (164_03) | 5810 |
| | Kanchan (164_03) | 5814 |
| | Kanchan (164_03) | 5813 |
| PR117 | Kanchan (164_03) | 5794 |
| | Kanchan (164_03) | 5796 |
| PR118 | Kanchan (164_03) | 5832 |
| | Kanchan (164_03) | 5833 |
| | Kanchan (164_03) | 5831 |
| | Kanchan (164_03) | 5830 |
| | Kanchan (164_03) | 5829 |
| | Kanchan (164_03) | 5828 |
| | Kanchan (164_03) | 5834 |
| | Kanchan (164_03) | 5808 |
| PR119 | Kanchan (164_04) | 6146 |
| | Kanchan (164_03) | 5797 |
| | Kanchan (164_03) | 5798 |
| | Kanchan (164_03) | 5799 |
| | Kanchan (164_03) | 5796 |
| | Kanchan (164_03) | 5803 |
| PR120 | Kanchan (164_04) | 6046 |
| | Kanchan (164_04) | 6029 |
| | Kanchan (164_04) | 6084 |
| PR121 | Kanchan (164_04) | 6084 |
| PR122 | Kanchan (164_04) | 6142 |
| | Kanchan (164_04) | 6143 |
| PR123 | Kanchan (164_04) | 6059 |
| | Kanchan (164_04) | 6060 |
| | Kanchan (164_04) | 6062 |
| | Kanchan (164_04) | 6061 |
| | Kanchan (164_04) | 6065 |
| | Kanchan (164_04) | 6029 |
| PR124 | Kanchan (164_04) | 6054 |
| | Kanchan (164_04) | 6056 |
| | Kanchan (164_04) | 6100 |
| | Kanchan (164_04) | 6057 |
| | Kanchan (164_04) | 6099 |
| | Kanchan (164_04) | 6058 |
| | Kanchan (164_04) | 6097 |
| | Kanchan (164_04) | 6063 |
| | Kanchan (164_04) | 6096 |
| | Kanchan (164_04) | 6095 |
| | Kanchan (164_04) | 6847 |
| PR125 | Kanchan (164_04) | 6104 |
| | Kanchan (164_04) | 6098 |
| | Kanchan (164_04) | 6088 |
| PR126 | Kanchan (164_04) | 6352 |
| | Kanchan (164_04) | 6347 |
| | Kanchan (164_04) | 6350 |
| | Kanchan (164_04) | 6351 |
| PR127 | Kanchan (164_04) | 6369 |
| | Kanchan (164_04) | 6367 |
| | Kanchan (164_04) | 6366 |
| PR128 | Kanchan (164_04) | 6402 |
| | Kanchan (164_04) | 6394 |
| | Kanchan (164_04) | 6392 |
| | Kanchan (164_04) | 6393 |
| PR129 | Tarail (139_01) | 95 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Tarail (139_01) | 96 |
| | Tarail (139_01) | 93 |
| | Tarail (139_01) | 88 |
| | Tarail (139_01) | 86 |
| | Tarail (139_01) | 100 |
| | Tarail (139_01) | 92 |
| | Tarail (139_01) | 85 |
| | Tarail (139_01) | 94 |
| | Tarail (139_01) | 55 |
| | Tarail (139_01) | 56 |
| PR130 | Tarail (139_01) | 173 |
| | Tarail (139_01) | 122 |
| | Tarail (139_01) | 121 |
| PR131 | Tarail (139_02) | 1002 |
| | Tarail (139_02) | 1003 |
| | Tarail (139_02) | 1004 |
| | Tarail (139_02) | 1001 |
| PR132 | Tarail (139_01) | 165 |
| PR133 | Tarail (139_01) | 138 |
| | Tarail (139_01) | 362 |
| | Tarail (139_01) | 132 |
| | Tarail (139_01) | 139 |
| PR134 | Tarail (139_01) | 392 |
| | Tarail (139_01) | 391 |
| | Tarail (139_01) | 393 |
| PR135 | Tarail (139_01) | 394 |
| | Tarail (139_01) | 401 |
| | Tarail (139_01) | 397 |
| PR136 | Tarail (139_01) | 401 |
| | Tarail (139_01) | 397 |
| | Tarail (139_01) | 400 |
| | Tarail (139_01) | 399 |
| | Tarail (139_01) | 398 |
| PR137 | Tarail (139_01) | 518 |
| | Tarail (139_01) | 517 |
| | Tarail (139_01) | 516 |
| PR138 | Tarail (139_01) | 519 |
| PR139 | Tarail (139_01) | 543 |
| | Tarail (139_01) | 519 |
| | Tarail (139_01) | 504 |
| | Tarail (139_01) | 517 |
| PR140 | Biraba (138_01) | 886 |
| | Biraba (138_01) | 943 |
| | Biraba (138_01) | 887 |
| PR141 | Biraba (138_02) | 1464 |
| | Biraba (138_02) | 1462 |
| PR142 | Biraba (138_02) | 1882 |
| | Biraba (138_02) | 1913 |
| | Biraba (138_02) | 1885 |
| | Biraba (138_02) | 1886 |
| | Biraba (138_02) | 1912 |
| | Biraba (138_02) | 1916 |
| PR143 | Biraba (138_02) | 1861 |
| | Biraba (138_02) | 1860 |
| | Biraba (138_02) | 1859 |
| PR144 | Biraba (138_02) | 1843 |
| | Biraba (138_02) | 1854 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| PR145 | Biraba (138_02) | 1839 |
| | Biraba (138_02) | 1838 |
| | Biraba (138_02) | 1837 |
| | Biraba (138_02) | 1852 |
| PR146 | Biraba (138_02) | 1862 |
| PR147 | Biraba (138_02) | 1849 |
| | Biraba (138_02) | 1845 |
| | Biraba (138_02) | 1847 |
| | Biraba (138_02) | 1848 |
| | Biraba (138_02) | 1855 |
| | Biraba (138_02) | 1856 |
| | Biraba (138_02) | 1877 |
| PR148 | Biraba (138_02) | 1817 |
| | Biraba (138_02) | 1816 |
| | Biraba (138_02) | 1815 |
| | Biraba (138_02) | 1809 |
| PR149 | Kendua (137_02) | 1947 |
| | Kendua (137_02) | 1946 |
| PR150 | Kanchan (164_01) | 180 |
| | Kanchan (164_01) | 178 |
| | Kanchan (164_01) | 177 |
| | Kanchan (164_01) | 171 |
| | Kanchan (164_01) | 179 |
| | Kanchan (164_01) | 172 |
| | Kanchan (164_01) | 176 |
| | Kanchan (164_01) | 175 |
| | Kanchan (164_01) | 174 |
| PR151 | Kendua (137_02) | 2501 |
| | Kendua (137_02) | 2499 |
| | Kendua (137_02) | 2498 |
| | Kendua (137_02) | 2437 |
| | Kendua (137_02) | 2438 |
| PR152 | Kanchan (164_01) | 187 |
| | Kanchan (164_01) | 186 |
| | Kanchan (164_01) | 187 |
| PR153 | Kendua (137_02) | 2526 |
| | Kendua (137_02) | 2525 |
| | Kendua (137_02) | 2516 |
| | Kendua (137_02) | 2517 |
| PR154 | Kendua (137_02) | 2466 |
| | Kendua (137_02) | 2467 |
| | Kendua (137_02) | 2461 |
| | Kendua (137_02) | 2460 |
| PR155 | Kendua (137_02) | 2456 |
| | Kendua (137_02) | 2454 |
| | Kendua (137_02) | 2453 |
| | Kendua (137_02) | 2458 |
| PR156 | Kanchan (164_01) | 710 |
| | Kanchan (164_01) | 706 |
| | Kanchan (164_01) | 705 |
| PR157 | Kendua (137_02) | 2528 |
| | Kendua (137_02) | 2529 |
| | Kanchan (164_01) | 689 |
| | Kanchan (164_01) | 692 |
| | Kanchan (164_01) | 698 |
| | Kanchan (164_01) | 691 |
| | Kendua (137_02) | 2527 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Kanchan (164_01) | 690 |
| | Kanchan (164_01) | 701 |
| PR158 | Kanchan (164_01) | 742 |
| | Kanchan (164_01) | 741 |
| | Kanchan (164_01) | 743 |
| | Kanchan (164_01) | 743 |
| | Kanchan (164_01) | 686 |
| | Kanchan (164_01) | 684 |
| | Kanchan (164_01) | 685 |
| | Kendua (137_02) | 2536 |
| | Kendua (137_02) | 2537 |
| PR159 | Kanchan (164_01) | 746 |
| | Kanchan (164_01) | 745 |
| | Kanchan (164_01) | 747 |
| | Kanchan (164_01) | 748 |
| | Kanchan (164_01) | 682 |
| PR160 | Kanchan (164_02) | 1557 |
| | Kanchan (164_02) | 1558 |
| | Kanchan (164_02) | 1566 |
| | Kanchan (164_02) | 1567 |
| | Kanchan (164_02) | 1565 |
| PR161 | Kanchan (164_02) | 1535 |
| | Kanchan (164_02) | 1536 |
| | Kanchan (164_02) | 1530 |
| | Kanchan (164_02) | 1537 |
| | Kanchan (164_02) | 1534 |
| PR162 | Kanchan (164_02) | 1414 |
| | Kanchan (164_02) | 1413 |
| | Kanchan (164_02) | 1412 |
| | Kanchan (164_02) | 1411 |
| | Kanchan (164_02) | 1415 |
| | Kanchan (164_02) | 1416 |
| PR163 | Kanchan (164_02) | 1457 |
| | Kanchan (164_02) | 1414 |
| | Kanchan (164_02) | 1420 |
| | Kanchan (164_02) | 1419 |
| PR164 | Kanchan (164_02) | 1609 |
| | Kanchan (164_02) | 1608 |
| | Kanchan (164_02) | 1616 |
| | Kanchan (164_02) | 1607 |
| | Kanchan (164_02) | 1606 |
| PR165 | Kanchan (164_02) | 2849 |
| | Kanchan (164_02) | 2850 |
| | Kanchan (164_02) | 2851 |
| | Kanchan (164_02) | 2827 |
| | Kanchan (164_02) | 2841 |
| PR166 | Norabo (173_00) | 224 |
| | Norabo (173_00) | 223 |
| PR167 | Norabo (173_00) | 125 |
| | Norabo (173_00) | 124 |
| | Norabo (173_00) | 123 |
| | Norabo (173_00) | 121 |
| | Norabo (173_00) | 120 |
| | Norabo (173_00) | 49 |
| | Norabo (173_00) | 50 |
| | Norabo (173_00) | 48 |
| | Norabo (173_00) | 51 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| PR168 | Norabo (173_00) | 119 |
| | Norabo (173_00) | 50 |
| | Norabo (173_00) | 56 |
| | Norabo (173_00) | 53 |
| PR169 | Norabo (173_00) | 39 |
| | Kanchan (164_05) | 7405 |
| PR170 | Norabo (173_00) | 66 |
| | Norabo (173_00) | 18 |
| | Norabo (173_00) | 17 |
| | Norabo (173_00) | 15 |
| | Norabo (173_00) | 28 |
| | Norabo (173_00) | 19 |
| | Norabo (173_00) | 20 |
| | Norabo (173_00) | 22 |
| | Norabo (173_00) | 21 |
| PR171 | Kanchan (164_04) | 6327 |
| | Kanchan (164_04) | 6330 |
| | Kanchan (164_04) | 6333 |
| | Kanchan (164_04) | 6332 |
| | Kanchan (164_04) | 6325 |
| PR172 | Kanchan (164_04) | 6333 |
| | Kanchan (164_04) | 6332 |
| | Kanchan (164_04) | 6321 |
| | Kanchan (164_04) | 6325 |
| | Kanchan (164_04) | 6322 |
| | Kanchan (164_04) | 6324 |
| | Kanchan (164_04) | 6334 |
| | Kanchan (164_04) | 6335 |
| PR173 | Kanchan (164_05) | 7383 |
| | Kanchan (164_05) | 7394 |
| | Kanchan (164_05) | 7396 |
| | Kanchan (164_05) | 7395 |
| PR174 | Kanchan (164_05) | 7313 |
| | Kanchan (164_05) | 7256 |
| PR175 | Kanchan (164_02) | 2870 |
| | Kanchan (164_02) | 2871 |
| | Kanchan (164_02) | 2910 |
| | Kanchan (164_02) | 2877 |
| | Kanchan (164_02) | 2878 |
| | Kanchan (164_02) | 2883 |
| | Kanchan (164_02) | 2879 |
| PR176 | Kanchan (164_02) | 2882 |
| | Kanchan (164_02) | 2884 |
| | Kanchan (164_02) | 2861 |
| | Kanchan (164_02) | 2885 |
| PR177 | Kanchan (164_02) | 2889 |
| | Kanchan (164_02) | 2893 |
| | Kanchan (164_02) | 2888 |
| PR178 | Kanchan (164_02) | 2894 |
| | Kanchan (164_02) | 2889 |
| | Kanchan (164_02) | 2892 |
| | Kanchan (164_02) | 2893 |
| | Kanchan (164_02) | 2890 |
| PR179 | Kanchan (164_02) | 3006 |
| | Kanchan (164_02) | 3008 |
| | Kanchan (164_02) | 3001 |
| | Kanchan (164_02) | 3005 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Kanchan (164_02) | 3004 |
| PR180 | Kanchan (164_02) | 3007 |
| | Kanchan (164_02) | 3006 |
| | Kanchan (164_02) | 2902 |
| | Kanchan (164_02) | 3008 |
| | Kanchan (164_02) | 3001 |
| PR181 | Kanchan (164_02) | 2993 |
| PR182 | Kanchan (164_02) | 2958 |
| | Kanchan (164_02) | 2957 |
| | Kanchan (164_02) | 2961 |
| | Kanchan (164_02) | 2962 |
| | Kanchan (164_02) | 2950 |
| | Kanchan (164_02) | 2955 |
| | Kanchan (164_02) | 2954 |
| | Kanchan (164_02) | 2956 |
| PR183 | Kanchan (164_02) | 2868 |
| | Kanchan (164_03) | 5747 |
| | Kanchan (164_02) | 2868 |
| | Kanchan (164_02) | 2869 |
| | Kanchan (164_02) | 2867 |
| | Kanchan (164_03) | 5746 |
| PR184 | Kanchan (164_05) | 7010 |
| | Kanchan (164_05) | 7009 |
| | Kanchan (164_05) | 7006 |
| | Kanchan (164_05) | 7008 |
| | Kanchan (164_05) | 7002 |
| | Kanchan (164_05) | 7007 |
| | Kanchan (164_05) | 7001 |
| PR185 | Kanchan (164_02) | 2962 |
| | Kanchan (164_02) | 2992 |
| | Kanchan (164_02) | 2993 |
| PR186 | Kanchan (164_02) | 2965 |
| | Kanchan (164_02) | 2964 |
| | Kanchan (164_02) | 2961 |
| | Kanchan (164_02) | 2962 |
| | Kanchan (164_02) | 2963 |
| | Kanchan (164_02) | 2990 |
| | Kanchan (164_02) | 2992 |
| PR187 | Kanchan (164_05) | 7032 |
| | Kanchan (164_05) | 7033 |
| | Kanchan (164_05) | 7034 |
| | Kanchan (164_05) | 7035 |
| | Kanchan (164_05) | 7005 |
| PR188 | Kanchan (164_05) | 7251 |
| | Kanchan (164_05) | 7229 |
| | Kanchan (164_05) | 7230 |
| | Kanchan (164_05) | 7233 |
| | Kanchan (164_05) | 7234 |
| | Kanchan (164_05) | 7236 |
| | Kanchan (164_05) | 7237 |
| | Kanchan (164_05) | 7235 |
| | Kanchan (164_05) | 7232 |
| | Kanchan (164_05) | 7027 |
| | Kanchan (164_05) | 7026 |
| | Kanchan (164_05) | 7030 |
| PR189 | Kanchan (164_05) | 7207 |
| | Kanchan (164_05) | 7252 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Kanchan (164_05) | 7228 |
| | Kanchan (164_05) | 7251 |
| | Kanchan (164_05) | 7229 |
| | Kanchan (164_05) | 7230 |
| PR190 | Kanchan (164_05) | 7253 |
| | Kanchan (164_05) | 7249 |
| | Kanchan (164_05) | 7252 |
| | Kanchan (164_05) | 7251 |
| PR191 | Kanchan (164_05) | 7250 |
| | Kanchan (164_05) | 7240 |
| | Kanchan (164_05) | 7251 |
| | Kanchan (164_05) | 7239 |
| | Kanchan (164_05) | 7238 |
| | Kanchan (164_05) | 7237 |
| | Kanchan (164_05) | 7022 |
| | Kanchan (164_05) | 7023 |
| | Kanchan (164_05) | 7024 |
| | Kanchan (164_05) | 7012 |
| | Kanchan (164_05) | 7025 |
| | Kanchan (164_05) | 7011 |
| | Kanchan (164_05) | 7010 |
| PR192 | Kanchan (164_05) | 7007 |
| | Kanchan (164_05) | 7003 |
| | Kanchan (164_05) | 7001 |
| | Kanchan (164_02) | 2960 |
| | Kanchan (164_02) | 2961 |
| PR193 | Tarail (139_02) | 1058 |
| | Tarail (139_02) | 1059 |
| | Tarail (139_02) | 1062 |
| | Tarail (139_02) | 1063 |
| | Tarail (139_02) | 1064 |
| | Tarail (139_02) | 1060 |
| PR194 | Tarail (139_02) | 1826 |
| | Tarail (139_02) | 1459 |
| | Tarail (139_02) | 1452 |
| | Tarail (139_02) | 1458 |
| | Tarail (139_02) | 1454 |
| PR195 | Tarail (139_02) | 1792 |
| | Tarail (139_02) | 1793 |
| PR197 | Tarail (139_02) | 1263 |
| | Tarail (139_02) | 1262 |
| | Tarail (139_02) | 1265 |
| | Tarail (139_02) | 1264 |
| PR198 | Kanchan (164_01) | 56 |
| | Kanchan (164_01) | 50 |
| | Kanchan (164_01) | 1308 |
| | Kanchan (164_01) | 49 |
| | Kanchan (164_01) | 1309 |
| PR199 | Kanchan (164_01) | 40 |
| | Kanchan (164_01) | 41 |
| | Kanchan (164_01) | 36 |
| | Kanchan (164_01) | 45 |
| | Kanchan (164_01) | 44 |
| | Kanchan (164_01) | 43 |
| | Kanchan (164_01) | 42 |
| PR200 | Kanchan (164_01) | 62 |
| | Kanchan (164_01) | 61 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Kanchan (164_01) | 60 |
| | Kanchan (164_01) | 59 |
| | Kanchan (164_01) | 45 |
| | Kanchan (164_01) | 44 |
| | Kanchan (164_01) | 56 |
| | Kanchan (164_01) | 219 |
| | Kanchan (164_01) | 220 |
| | Kanchan (164_01) | 609 |
| PR201 | Kanchan (164_01) | 608 |
| | Kanchan (164_01) | 605 |
| | Kanchan (164_01) | 607 |
| | Kanchan (164_01) | 606 |
| | Kanchan (164_01) | 330 |
| | Kanchan (164_01) | 329 |
| PR202 | Kanchan (164_01) | 344 |
| | Kanchan (164_01) | 345 |
| | Kanchan (164_01) | 343 |
| | Kanchan (164_01) | 641 |
| PR203 | Kanchan (164_01) | 640 |
| | Kanchan (164_01) | 658 |
| | Kanchan (164_01) | 639 |
| | Kanchan (164_01) | 782 |
| PR204 | Kanchan (164_01) | 788 |
| | Kanchan (164_01) | 789 |
| | Kanchan (164_01) | 768 |
| | Kanchan (164_01) | 646 |
| PR205 | Kanchan (164_01) | 647 |
| | Kanchan (164_01) | 648 |
| | Kanchan (164_01) | 644 |
| | Kanchan (164_02) | 1651 |
| | Kanchan (164_02) | 1652 |
| PR206 | Kanchan (164_02) | 1583 |
| | Kanchan (164_01) | 757 |
| | Kanchan (164_01) | 759 |
| | Kanchan (164_02) | 1711 |
| PR207 | Kanchan (164_02) | 1686 |
| | Kanchan (164_02) | 1796 |
| | Kanchan (164_02) | 1777 |
| PR208 | Kanchan (164_02) | 1780 |
| | Kanchan (164_02) | 1778 |
| | Kanchan (164_02) | 1779 |
| | Kanchan (164_02) | 1800 |
| PR209 | Kanchan (164_02) | 1801 |
| | Kanchan (164_01) | 784 |
| PR210 | Kanchan (164_02) | 1783 |
| | Kanchan (164_02) | 1784 |
| | Kanchan (164_02) | 1768 |
| | Kanchan (164_02) | 1770 |
| PR211 | Kanchan (164_02) | 1773 |
| | Kanchan (164_02) | 1771 |
| | Kanchan (164_02) | 1830 |
| | Kanchan (164_02) | 1761 |
| | Kanchan (164_02) | 1769 |
| PR212 | Kanchan (164_02) | 1764 |
| | Kanchan (164_02) | 1768 |
| | Kanchan (164_02) | 1767 |
| | Kanchan (164_02) | 1770 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Kanchan (164_02) | 2592 |
| PR213 | Kanchan (164_02) | 2534 |
| | Kanchan (164_02) | 2591 |
| | Kanchan (164_02) | 1743 |
| | Kanchan (164_02) | 1744 |
| PR214 | Kanchan (164_02) | 1742 |
| | Kanchan (164_02) | 1746 |
| | Kanchan (164_02) | 1740 |
| | Kanchan (164_02) | 1721 |
| | Kanchan (164_02) | 1722 |
| PR215 | Kanchan (164_02) | 1723 |
| | Kanchan (164_02) | 1718 |
| | Kanchan (164_02) | 1720 |
| | Kanchan (164_02) | 1701 |
| | Kanchan (164_02) | 1668 |
| | Kanchan (164_02) | 1669 |
| | Kanchan (164_02) | 1662 |
| | Kanchan (164_02) | 1677 |
| | Kanchan (164_02) | 1660 |
| PR216 | Kanchan (164_02) | 1661 |
| | Kanchan (164_02) | 1678 |
| | Kanchan (164_02) | 1684 |
| | Kanchan (164_02) | 1658 |
| | Kanchan (164_02) | 1657 |
| | Kanchan (164_02) | 1656 |
| | Kanchan (164_02) | 1679 |
| | Kanchan (164_02) | 2649 |
| PR217 | Kanchan (164_02) | 2650 |
| | Kanchan (164_02) | 2650 |
| | Kanchan (164_02) | 3111 |
| PR218 | Kanchan (164_02) | 3112 |
| | Kanchan (164_02) | 3113 |
| | Kanchan (164_02) | 3127 |
| PR219 | Kanchan (164_02) | 3123 |
| | Kanchan (164_02) | 3128 |
| PR220 | Kanchan (164_02) | 3048 |
| | Kanchan (164_02) | 3046 |
| PR221 | Kanchan (164_02) | 3076 |
| | Kanchan (164_02) | 3082 |
| | Kanchan (164_02) | 3053 |
| | Kanchan (164_02) | 3076 |
| PR222 | Kanchan (164_02) | 3077 |
| | Kanchan (164_02) | 3076 |
| | Kanchan (164_02) | 3067 |
| | Kanchan (164_02) | 3063 |
| PR223 | Kanchan (164_02) | 3075 |
| | Kanchan (164_02) | 3076 |
| | Kanchan (164_02) | 3083 |
| | Kanchan (164_05) | 7063 |
| PR224 | Kanchan (164_05) | 7065 |
| | Kanchan (164_05) | 7066 |
| | Kanchan (164_05) | 7219 |
| | Kanchan (164_05) | 7222 |
| PR225 | Kanchan (164_05) | 7223 |
| | Kanchan (164_05) | 7226 |
| | Kanchan (164_05) | 7231 |
| | Kanchan (164_05) | 7060 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| PR226 | Kanchan (164_05) | 7207 |
| | Kanchan (164_05) | 7208 |
| | Kanchan (164_05) | 7209 |
| | Kanchan (164_05) | 7228 |
| | Kanchan (164_05) | 7227 |
| | Kanchan (164_05) | 7226 |
| | Kanchan (164_05) | 7230 |
| | Kanchan (164_05) | 7231 |
| PR227 | Kanchan (164_05) | 7205 |
| | Kanchan (164_05) | 7201 |
| | Kanchan (164_05) | 7206 |
| | Kanchan (164_05) | 7210 |
| | Kanchan (164_05) | 7211 |
| | Kanchan (164_05) | 7207 |
| | Kanchan (164_05) | 7208 |
| | Kanchan (164_05) | 7218 |
| | Kanchan (164_05) | 7209 |
| | Kanchan (164_05) | 7219 |
| PR228 | Kanchan (164_05) | 7215 |
| | Kanchan (164_05) | 7211 |
| | Kanchan (164_05) | 7212 |
| | Kanchan (164_05) | 7214 |
| | Kanchan (164_05) | 7213 |
| | Kanchan (164_05) | 7218 |
| | Kanchan (164_05) | 7216 |
| PR229 | Kanchan (164_05) | 7303 |
| | Kanchan (164_05) | 7305 |
| | Kanchan (164_05) | 7306 |
| | Kanchan (164_05) | 7299 |
| | Kanchan (164_05) | 7307 |
| | Kanchan (164_05) | 7308 |
| | Kanchan (164_05) | 7322 |
| | Kanchan (164_05) | 7321 |
| | Kanchan (164_05) | 7320 |
| | Kanchan (164_05) | 7315 |
| PR230 | Kanchan (164_05) | 7421 |
| | Kanchan (164_05) | 7422 |
| | Kanchan (164_05) | 7381 |
| PR231 | Kanchan (164_05) | 7426 |
| | Kanchan (164_05) | 7425 |
| | Kanchan (164_05) | 7423 |
| | Kanchan (164_05) | 7424 |
| | Kanchan (164_05) | 7380 |
| PR232 | Kanchan (164_05) | 7438 |
| | Kanchan (164_05) | 7440 |
| PR233 | Kanchan (164_05) | 7488 |
| | Kanchan (164_05) | 7491 |
| | Kanchan (164_05) | 7487 |
| | Kanchan (164_05) | 7478 |
| | Kanchan (164_05) | 7486 |
| | Kanchan (164_05) | 7485 |
| PR234 | Kanchan (164_05) | 7488 |
| | Kanchan (164_05) | 7488 |
| | Kanchan (164_05) | 7488 |
| | Kanchan (164_05) | 7492 |
| | Kanchan (164_05) | 7491 |
| PR235 | Bhollukar (172_00) | 149 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Kanchan (164_05) | 7462 |
| | Kanchan (164_05) | 7463 |
| | Kanchan (164_05) | 7464 |
| PR236 | Bhollukar (172_00) | 144 |
| | Bhollukar (172_00) | 142 |
| | Bhollukar (172_00) | 141 |
| | Kanchan (164_05) | 7488 |
| | Kanchan (164_05) | 7488 |
| | Kanchan (164_05) | 7492 |
| PR237 | Kanchan (164_05) | 7456 |
| | Kanchan (164_05) | 7457 |
| PR238 | Bhollukar (172_00) | 120 |
| | Bhollukar (172_00) | 122 |
| | Bhollukar (172_00) | 121 |
| | Bhollukar (172_00) | 121 |
| | Bhollukar (172_00) | 124 |
| PR239 | Bhollukar (172_00) | 162 |
| | Bhollukar (172_00) | 154 |
| | Bhollukar (172_00) | 161 |
| | Bhollukar (172_00) | 158 |
| | Bhollukar (172_00) | 155 |
| PR241 | Kanchan (164_05) | 8160 |
| | Kanchan (164_05) | 8156 |
| | Kanchan (164_05) | 8158 |
| | Kanchan (164_05) | 8157 |
| PR242 | Kanchan (164_05) | 8189 |
| | Kanchan (164_05) | 8188 |
| | Kanchan (164_05) | 8159 |
| | Kanchan (164_05) | 8158 |
| PR243 | Kanchan (164_05) | 8196 |
| | Kanchan (164_05) | 8194 |
| | Kanchan (164_05) | 8190 |
| | Kanchan (164_05) | 8189 |
| PR244 | Kanchan (164_05) | 8207 |
| | Kanchan (164_05) | 8193 |
| | Kanchan (164_05) | 8175 |
| | Kanchan (164_05) | 8192 |
| | Kanchan (164_05) | 8176 |
| | Kanchan (164_05) | 8191 |
| | Kanchan (164_05) | 8180 |
| | Kanchan (164_05) | 8181 |
| | Kanchan (164_05) | 8182 |
| | Kanchan (164_05) | 8183 |
| | Kanchan (164_05) | 8184 |
| | Kanchan (164_05) | 8187 |
| | Kanchan (164_05) | 8186 |
| | Kanchan (164_05) | 8162 |
| PR245 | Kanchan (164_05) | 8204 |
| | Kanchan (164_05) | 8199 |
| | Kanchan (164_05) | 8198 |
| PR246 | Kanchan (164_05) | 8211 |
| | Kanchan (164_05) | 8209 |
| | Kanchan (164_05) | 8210 |
| | Kanchan (164_05) | 8205 |
| | Kanchan (164_05) | 8212 |
| | Kanchan (164_05) | 8208 |
| | Kanchan (164_05) | 8213 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Kanchan (164_05) | 8174 |
| | Kanchan (164_05) | 8207 |
| | Kanchan (164_05) | 8175 |
| | Kanchan (164_05) | 8214 |
| | Kanchan (164_05) | 8173 |
| PR247 | Tarail (139_02) | 1824 |
| PR248 | Tarail (139_02) | 1776 |
| | Tarail (139_02) | 1775 |
| PR249 | Tarail (139_02) | 1620 |
| | Tarail (139_02) | 1624 |
| PR250 | Tarail (139_02) | 1620 |
| | Tarail (139_02) | 1624 |
| | Tarail (139_02) | 1619 |
| | Tarail (139_02) | 1618 |
| PR251 | Tarail (139_02) | 1651 |
| | Tarail (139_02) | 1648 |
| | Tarail (139_02) | 1650 |
| | Tarail (139_02) | 1649 |
| PR253 | Tarail (139_02) | 1720 |
| | Tarail (139_02) | 1713 |
| | Tarail (139_02) | 1714 |
| | Tarail (139_02) | 1708 |
| | Tarail (139_02) | 1698 |
| PR255 | Kanchan (164_01) | 352 |
| | Kanchan (164_01) | 353 |
| | Kanchan (164_01) | 363 |
| | Kanchan (164_01) | 364 |
| PR256 | Kanchan (164_01) | 486 |
| | Kanchan (164_01) | 345 |
| | Kanchan (164_01) | 351 |
| | Kanchan (164_01) | 349 |
| | Kanchan (164_01) | 350 |
| | Kanchan (164_01) | 355 |
| | Kanchan (164_01) | 352 |
| PR257 | Kanchan (164_01) | 998 |
| | Kanchan (164_01) | 1000 |
| | Kanchan (164_01) | 1010 |
| | Kanchan (164_01) | 1011 |
| | Kanchan (164_01) | 999 |
| | Kanchan (164_01) | 1001 |
| PR258 | Kanchan (164_01) | 441 |
| | Kanchan (164_01) | 456 |
| | Kanchan (164_01) | 457 |
| | Kanchan (164_01) | 458 |
| | Kanchan (164_01) | 473 |
| | Kanchan (164_01) | 472 |
| | Kanchan (164_01) | 471 |
| | Kanchan (164_01) | 474 |
| | Kanchan (164_01) | 479 |
| PR259 | Kanchan (164_01) | 568 |
| | Kanchan (164_01) | 576 |
| | Kanchan (164_01) | 569 |
| | Kanchan (164_01) | 565 |
| | Kanchan (164_01) | 570 |
| | Kanchan (164_01) | 573 |
| PR260 | Kanchan (164_01) | 862 |
| | Kanchan (164_01) | 859 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Kanchan (164_01) | 861 |
| PR261 | Kanchan (164_01) | 554 |
| | Kanchan (164_01) | 553 |
| | Kanchan (164_01) | 552 |
| | Kanchan (164_01) | 551 |
| | Kanchan (164_01) | 542 |
| | Kanchan (164_01) | 543 |
| | Kanchan (164_01) | 544 |
| | Kanchan (164_01) | 545 |
| | Kanchan (164_01) | 546 |
| | Kanchan (164_01) | 547 |
| PR262 | Kanchan (164_01) | 549 |
| | Kanchan (164_01) | 550 |
| | Kanchan (164_01) | 551 |
| | Kanchan (164_01) | 548 |
| PR263 | Kanchan (164_01) | 973 |
| | Kanchan (164_01) | 980 |
| PR264 | Kanchan (164_01) | 966 |
| | Kanchan (164_01) | 964 |
| PR265 | Kanchan (164_01) | 875 |
| | Kanchan (164_01) | 869 |
| | Kanchan (164_01) | 873 |
| | Kanchan (164_01) | 873 |
| | Kanchan (164_01) | 872 |
| | Kanchan (164_01) | 766 |
| | Kanchan (164_01) | 859 |
| | Kanchan (164_01) | 857 |
| PR266 | Kanchan (164_01) | 876 |
| PR267 | Kanchan (164_01) | 878 |
| | Kanchan (164_01) | 884 |
| PR268 | Kanchan (164_01) | 895 |
| | Kanchan (164_01) | 901 |
| PR269 | Kanchan (164_01) | 766 |
| | Kanchan (164_01) | 895 |
| | Kanchan (164_01) | 927 |
| | Kanchan (164_01) | 903 |
| | Kanchan (164_01) | 926 |
| PR270 | Kanchan (164_01) | 890 |
| | Kanchan (164_01) | 885 |
| | Kanchan (164_01) | 889 |
| | Kanchan (164_01) | 928 |
| | Kanchan (164_01) | 895 |
| PR271 | Choto Nowpara (165_00) | 946 |
| | Choto Nowpara (165_00) | 947 |
| | Choto Nowpara (165_00) | 961 |
| | Choto Nowpara (165_00) | 962 |
| | Choto Nowpara (165_00) | 963 |
| | Choto Nowpara (165_00) | 944 |
| | Choto Nowpara (165_00) | 948 |
| | Dighalia (162_02) | 1381 |
| | Dighalia (162_02) | 1378 |
| | Dighalia (162_02) | 1377 |
| | Dighalia (162_02) | 1375 |
| | Dighalia (162_02) | 1376 |
| | Dighalia (162_02) | 1373 |
| | Dighalia (162_02) | 1382 |
| | Choto Nowpara (165_00) | 685 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Choto Nowpara (165_00) | 687 |
| | Choto Nowpara (165_00) | 687 |
| | Choto Nowpara (165_00) | 690 |
| | Choto Nowpara (165_00) | 702 |
| | Choto Nowpara (165_00) | 936 |
| | Dighalia (162_02) | 1372 |
| | Dighalia (162_02) | 1358 |
| | Dighalia (162_02) | 1356 |
| | Dighalia (162_02) | 1357 |
| | Dighalia (162_02) | 1354 |
| | Choto Nowpara (165_00) | 634 |
| | Choto Nowpara (165_00) | 683 |
| | Choto Nowpara (165_00) | 686 |
| | Dighalia (162_02) | 1169 |
| | Dighalia (162_02) | 1353 |
| | Dighalia (162_02) | 1171 |
| | Dighalia (162_02) | 1170 |
| | Dighalia (162_02) | 1352 |
| | Dighalia (162_02) | 1157 |
| | Dighalia (162_02) | 1156 |
| | Dighalia (162_02) | 1142 |
| | Dighalia (162_02) | 1141 |
| | Dighalia (162_02) | 1140 |
| | Dighalia (162_02) | 1139 |
| | Dighalia (162_02) | 1138 |
| | Dighalia (162_02) | 1134 |
| | Dighalia (162_02) | 1133 |
| | Dighalia (162_02) | 1132 |
| | Dighalia (162_02) | 1129 |
| | Dighalia (162_02) | 1262 |
| | Dighalia (162_02) | 1176 |
| | Dighalia (162_02) | 1126 |
| | Dighalia (162_02) | 1175 |
| | Dighalia (162_02) | 1132 |
| | Dighalia (162_02) | 1174 |
| | Dighalia (162_02) | 1125 |
| | Dighalia (162_02) | 1124 |
| | Dighalia (162_02) | 1173 |
| | Dighalia (162_01) | 717 |
| | Dighalia (162_01) | 721 |
| | Dighalia (162_01) | 719 |
| | Dighalia (162_01) | 363 |
| | Dighalia (162_01) | 362 |
| | Dighalia (162_01) | 361 |
| | Dighalia (162_01) | 720 |
| | Dighalia (162_01) | 360 |
| | Dighalia (162_01) | 358 |
| | Dighalia (162_01) | 355 |
| | Dighalia (162_01) | 354 |
| | Dighalia (162_01) | 357 |
| | Dighalia (162_01) | 343 |
| | Dighalia (162_01) | 342 |
| | Dighalia (162_01) | 330 |
| | Dighalia (162_01) | 328 |
| | Dighalia (162_01) | 329 |
| | Dighalia (162_01) | 304 |
| | Dighalia (162_01) | 327 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Dighalia (162_01) | 305 |
| | Dighalia (162_01) | 323 |
| | Dighalia (162_01) | 148 |
| | Dighalia (162_01) | 321 |
| | Dighalia (162_01) | 147 |
| | Dighalia (162_01) | 343 |
| | Dighalia (162_01) | 318 |
| | Dighalia (162_01) | 143 |
| | Dighalia (162_01) | 317 |
| | Dighalia (162_01) | 311 |
| | Dighalia (162_01) | 141 |
| | Dighalia (162_01) | 123 |
| | Dighalia (162_01) | 122 |
| | Dighalia (162_01) | 310 |
| | Dighalia (162_01) | 308 |
| | Dighalia (162_01) | 121 |
| | Dighalia (162_01) | 107 |
| | Dighalia (162_01) | 309 |
| PR272 | Dighalia (162_01) | 111 |
| PR273 | Dighalia (162_01) | 121 |
| PR274 | Dighalia (162_01) | 144 |
| | Dighalia (162_01) | 143 |
| | Dighalia (162_01) | 145 |
| PR275 | Dighalia (162_01) | 148 |
| | Dighalia (162_01) | 307 |
| | Dighalia (162_01) | 149 |
| PR276 | Dighalia (162_01) | 304 |
| | Dighalia (162_01) | 305 |
| | Dighalia (162_01) | 306 |
| | Dighalia (162_01) | 307 |
| PR277 | Dighalia (162_01) | 329 |
| | Dighalia (162_01) | 326 |
| | Dighalia (162_01) | 308 |
| PR278 | Dighalia (162_01) | 323 |
| PR279 | Dighalia (162_01) | 301 |
| | Dighalia (162_01) | 300 |
| PR280 | Dighalia (162_01) | 341 |
| | Dighalia (162_01) | 340 |
| PR281 | Dighalia (162_02) | 1173 |
| | Dighalia (162_02) | 1182 |
| | Dighalia (162_02) | 1181 |
| PR282 | Dighalia (162_02) | 1133 |
| | Dighalia (162_02) | 1132 |
| | Dighalia (162_02) | 1131 |
| PR283 | Dighalia (162_01) | 156 |
| | Dighalia (162_01) | 136 |
| | Dighalia (162_01) | 155 |
| | Dighalia (162_01) | 137 |
| PR284 | Dighalia (162_02) | 1014 |
| PR285 | Dighalia (162_01) | 678 |
| | Dighalia (162_01) | 680 |
| PR286 | Dighalia (162_01) | 690 |
| | Dighalia (162_01) | 689 |
| | Dighalia (162_01) | 688 |
| PR287 | Shialti (163_00) | 219 |
| | Shialti (163_00) | 105 |
| | Shialti (163_00) | 106 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Shialti (163_00) | 103 |
| PR288 | Shialti (163_00) | 217 |
| PR289 | Kanchan (164_02) | 1807 |
| | Kanchan (164_02) | 1860 |
| | Kanchan (164_02) | 1859 |
| PR290 | Kanchan (164_02) | 1862 |
| | Kanchan (164_02) | 1860 |
| | Kanchan (164_02) | 1861 |
| PR291 | Kanchan (164_02) | 1905 |
| | Kanchan (164_02) | 1844 |
| | Kanchan (164_02) | 1897 |
| | Kanchan (164_02) | 1896 |
| | Kanchan (164_02) | 1845 |
| | Kanchan (164_02) | 1895 |
| PR292 | Kanchan (164_02) | 2589 |
| | Kanchan (164_02) | 2538 |
| | Kanchan (164_02) | 2537 |
| | Kanchan (164_02) | 2536 |
| PR293 | Kanchan (164_02) | 1934 |
| | Kanchan (164_02) | 1933 |
| | Kanchan (164_02) | 1931 |
| PR294 | Kanchan (164_02) | 1956 |
| | Kanchan (164_02) | 1959 |
| | Kanchan (164_02) | 1958 |
| | Kanchan (164_02) | 1960 |
| PR295 | Kanchan (164_02) | 1960 |
| PR296 | Kanchan (164_02) | 1881 |
| | Kanchan (164_02) | 1878 |
| | Kanchan (164_02) | 1877 |
| | Kanchan (164_02) | 1875 |
| | Kanchan (164_02) | 1876 |
| | Kanchan (164_02) | 1874 |
| PR297 | Kanchan (164_02) | 1974 |
| | Kanchan (164_02) | 1989 |
| | Kanchan (164_02) | 1975 |
| PR298 | Kanchan (164_02) | 2542 |
| | Kanchan (164_02) | 2526 |
| | Kanchan (164_02) | 2541 |
| | Kanchan (164_02) | 2541 |
| | Kanchan (164_02) | 2527 |
| | Kanchan (164_02) | 2539 |
| | Kanchan (164_02) | 2540 |
| PR299 | Kanchan (164_02) | 2546 |
| PR300 | Kanchan (164_02) | 3422 |
| | Kanchan (164_02) | 3424 |
| | Kanchan (164_02) | 3399 |
| | Kanchan (164_02) | 3399 |
| | Kanchan (164_02) | 3427 |
| | Kanchan (164_02) | 3428 |
| | Kanchan (164_02) | 3423 |
| | Kanchan (164_02) | 3395 |
| PR301 | Kanchan (164_02) | 3739 |
| | Kanchan (164_02) | 3577 |
| | Kanchan (164_02) | 3740 |
| | Kanchan (164_02) | 3742 |
| | Kanchan (164_02) | 3741 |
| PR302 | Kanchan (164_02) | 3749 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Kanchan (164_02) | 3750 |
| | Kanchan (164_02) | 3748 |
| | Kanchan (164_02) | 3751 |
| | Kanchan (164_02) | 3747 |
| | Kanchan (164_02) | 3738 |
| | Kanchan (164_02) | 3746 |
| | Kanchan (164_02) | 3578 |
| | Kanchan (164_02) | 3739 |
| | Kanchan (164_02) | 3745 |
| | Kanchan (164_02) | 3740 |
| PR303 | Kanchan (164_05) | 7739 |
| | Kanchan (164_02) | 3221 |
| | Kanchan (164_02) | 3222 |
| | Kanchan (164_02) | 3223 |
| | Kanchan (164_02) | 3233 |
| PR304 | Kanchan (164_05) | 7645 |
| | Kanchan (164_05) | 7644 |
| | Kanchan (164_05) | 7643 |
| PR305 | Kanchan (164_05) | 7787 |
| | Kanchan (164_05) | 7788 |
| | Kanchan (164_05) | 7763 |
| PR306 | Kanchan (164_05) | 7719 |
| | Kanchan (164_05) | 7719 |
| | Kanchan (164_05) | 8263 |
| | Kanchan (164_05) | 7722 |
| PR307 | Kanchan (164_05) | 7653 |
| | Kanchan (164_05) | 7651 |
| | Kanchan (164_05) | 7652 |
| PR308 | Kanchan (164_05) | 7647 |
| | Kanchan (164_05) | 7646 |
| | Kanchan (164_05) | 7638 |
| PR309 | Bhollukar (172_00) | 171 |
| | Bhollukar (172_00) | 170 |
| | Bhollukar (172_00) | 165 |
| | Bhollukar (172_00) | 169 |
| PR310 | Kanchan (164_05) | 8018 |
| | Kanchan (164_05) | 8016 |
| | Kanchan (164_05) | 8017 |
| | Kanchan (164_05) | 8019 |
| PR311 | Kanchan (164_05) | 8172 |
| | Kanchan (164_05) | 8168 |
| | Kanchan (164_05) | 8169 |
| PR312 | Kanchan (164_05) | 8257 |
| | Kanchan (164_05) | 8251 |
| PR313 | Kanchan (164_05) | 8062 |
| | Kanchan (164_05) | 8056 |
| | Kanchan (164_05) | 8059 |
| | Kanchan (164_05) | 8057 |
| | Kanchan (164_05) | 8058 |
| | Kanchan (164_05) | 8060 |
| | Kanchan (164_05) | 8018 |
| | Kanchan (164_05) | 8019 |
| PR314 | Kanchan (164_05) | 8060 |
| | Kanchan (164_05) | 8061 |
| | Kanchan (164_05) | 8011 |
| | Kanchan (164_05) | 8012 |
| | Kanchan (164_05) | 8018 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Kanchan (164_05) | 8013 |
| PR315 | Kanchan (164_05) | 8064 |
| | Kanchan (164_05) | 8063 |
| | Kanchan (164_05) | 8062 |
| | Kanchan (164_05) | 8010 |
| | Kanchan (164_05) | 8009 |
| | Kanchan (164_05) | 8011 |
| | Kanchan (164_05) | 8008 |
| | Kanchan (164_05) | 8012 |
| PR316 | Kanchan (164_05) | 8063 |
| | Kanchan (164_05) | 8062 |
| | Kanchan (164_05) | 8059 |
| | Kanchan (164_05) | 8060 |
| | Kanchan (164_05) | 8061 |
| | Kanchan (164_05) | 8011 |
| PR317 | Kanchan (164_05) | 8012 |
| | Kanchan (164_05) | 8018 |
| | Kanchan (164_05) | 8013 |
| | Kanchan (164_05) | 8006 |
| | Kanchan (164_05) | 8014 |
| | Kanchan (164_05) | 8015 |
| | Kanchan (164_05) | 8016 |
| | Kanchan (164_05) | 8017 |
| | Kanchan (164_05) | 8005 |
| | Kanchan (164_05) | 8004 |
| | Kanchan (164_05) | 8003 |
| PR318 | Kanchan (164_05) | 8005 |
| | Kanchan (164_05) | 8004 |
| | Kanchan (164_05) | 8003 |
| | Kanchan (164_05) | 8001 |
| | Kanchan (164_05) | 8002 |
| | Kanchan (164_05) | 8000 |
| | Kanchan (164_05) | 7999 |
| | Kanchan (164_05) | 7996 |
| | Kanchan (164_05) | 7997 |
| PR319 | Kanchan (164_05) | 8008 |
| | Kanchan (164_05) | 8012 |
| | Kanchan (164_05) | 8007 |
| | Kanchan (164_05) | 8006 |
| | Kanchan (164_05) | 8005 |
| PR320 | Kanchan (164_05) | 8005 |
| | Kanchan (164_05) | 8000 |
| PR321 | Kanchan (164_05) | 7963 |
| | Kanchan (164_05) | 7962 |
| PR322 | Kanchan (164_05) | 7948 |
| | Kanchan (164_05) | 7938 |
| | Kanchan (164_05) | 7940 |
| | Kanchan (164_05) | 7944 |
| | Kanchan (164_05) | 7946 |
| | Kanchan (164_05) | 7945 |
| | Kanchan (164_05) | 7943 |
| PR323 | Kanchan (164_05) | 7919 |
| | Kanchan (164_05) | 7920 |
| | Kanchan (164_05) | 7921 |
| | Kanchan (164_05) | 7918 |
| | Kanchan (164_05) | 7922 |
| | Kanchan (164_05) | 7917 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| PR324 | Kanchan (164_05) | 7888 |
| | Kanchan (164_05) | 7879 |
| | Kanchan (164_05) | 7891 |
| | Kanchan (164_05) | 7890 |
| | Kanchan (164_05) | 7711 |
| | Kanchan (164_05) | 7906 |
| | Kanchan (164_05) | 7905 |
| | Kanchan (164_05) | 7905 |
| | Kanchan (164_05) | 7912 |
| | Kanchan (164_05) | 7911 |
| | Kanchan (164_05) | 7775 |
| | Kanchan (164_05) | 7871 |
| | Kanchan (164_05) | 7712 |
| | Kanchan (164_05) | 7776 |
| | Kanchan (164_05) | 7773 |
| | Kanchan (164_05) | 7830 |
| | Kanchan (164_05) | 7715 |
| | Kanchan (164_05) | 7643 |
| | Kanchan (164_05) | 7724 |
| | Kanchan (164_05) | 7772 |
| | Kanchan (164_05) | 7722 |
| | Kanchan (164_05) | 7771 |
| | Kanchan (164_05) | 7865 |
| | Kanchan (164_05) | 7716 |
| | Kanchan (164_05) | 7770 |
| | Kanchan (164_05) | 7831 |
| | Kanchan (164_05) | 7725 |
| | Kanchan (164_05) | 7769 |
| | Kanchan (164_05) | 7768 |
| | Kanchan (164_05) | 7836 |
| | Kanchan (164_05) | 7835 |
| | Kanchan (164_05) | 7837 |
| | Kanchan (164_05) | 7838 |
| | Kanchan (164_05) | 7822 |
| | Kanchan (164_05) | 7818 |
| | Kanchan (164_05) | 7821 |
| | Kanchan (164_05) | 7819 |
| | Kanchan (164_05) | 7820 |
| | Choto Nowpara (165_00) | 314 |
| | Choto Nowpara (165_00) | 315 |
| | Choto Nowpara (165_00) | 342 |
| | Choto Nowpara (165_00) | 346 |
| | Choto Nowpara (165_00) | 348 |
| | Choto Nowpara (165_00) | 357 |
| | Choto Nowpara (165_00) | 358 |
| | Choto Nowpara (165_00) | 360 |
| | Choto Nowpara (165_00) | 361 |
| | Choto Nowpara (165_00) | 364 |
| | Choto Nowpara (165_00) | 365 |
| | Choto Nowpara (165_00) | 366 |
| | Choto Nowpara (165_00) | 367 |
| | Choto Nowpara (165_00) | 462 |
| | Choto Nowpara (165_00) | 463 |
| | Choto Nowpara (165_00) | 528 |
| | Kanchan (164_02) | 3815 |
| | Kanchan (164_02) | 3813 |
| | Choto Nowpara (165_00) | 259 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Choto Nowpara (165_00) | 585 |
| | Choto Nowpara (165_00) | 587 |
| | Choto Nowpara (165_00) | 587 |
| | Choto Nowpara (165_00) | 588 |
| | Choto Nowpara (165_00) | 598 |
| | Choto Nowpara (165_00) | 590 |
| | Choto Nowpara (165_00) | 591 |
| | Choto Nowpara (165_00) | 592 |
| | Choto Nowpara (165_00) | 593 |
| | Choto Nowpara (165_00) | 594 |
| | Choto Nowpara (165_00) | 611 |
| | Choto Nowpara (165_00) | 612 |
| | Choto Nowpara (165_00) | 613 |
| | Choto Nowpara (165_00) | 614 |
| | Choto Nowpara (165_00) | 620 |
| PR325 | Kanchan (164_05) | 7868 |
| | Kanchan (164_05) | 7867 |
| | Kanchan (164_05) | 7864 |
| | Kanchan (164_05) | 7870 |
| PR326 | Kanchan (164_05) | 7850 |
| | Kanchan (164_05) | 7849 |
| | Kanchan (164_05) | 7847 |
| | Kanchan (164_05) | 7851 |
| | Kanchan (164_05) | 7846 |
| PR327 | Kanchan (164_02) | 3718 |
| | Kanchan (164_02) | 3717 |
| | Kanchan (164_02) | 3716 |
| | Kanchan (164_02) | 3715 |
| | Kanchan (164_02) | 3703 |
| | Kanchan (164_02) | 3703 |
| | Kanchan (164_02) | 3702 |
| | Kanchan (164_02) | 3701 |
| | Kanchan (164_02) | 3719 |
| | Kanchan (164_02) | 3700 |
| | Kanchan (164_02) | 3605 |
| | Kanchan (164_02) | 3699 |
| PR328 | Kanchan (164_05) | 7853 |
| | Kanchan (164_05) | 7852 |
| | Kanchan (164_05) | 7780 |
| | Kanchan (164_05) | 7802 |
| | Kanchan (164_05) | 7798 |
| | Kanchan (164_05) | 7799 |
| | Kanchan (164_05) | 7801 |
| PR329 | Kanchan (164_05) | 7781 |
| | Kanchan (164_05) | 7780 |
| | Kanchan (164_05) | 7782 |
| | Kanchan (164_05) | 7783 |
| PR330 | Kanchan (164_02) | 3605 |
| | Kanchan (164_02) | 3604 |
| PR331 | Kanchan (164_02) | 3661 |
| | Kanchan (164_02) | 3662 |
| | Kanchan (164_02) | 3673 |
| | Kanchan (164_02) | 3663 |
| | Choto Nowpara (165_00) | 175 |
| | Choto Nowpara (165_00) | 324 |
| | Choto Nowpara (165_00) | 174 |
| PR332 | Kanchan (164_02) | 2249 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Kanchan (164_02) | 2235 |
| | Kanchan (164_02) | 2250 |
| | Kanchan (164_02) | 2251 |
| | Kanchan (164_02) | 2238 |
| PR333 | Kanchan (164_01) | 1203 |
| | Kanchan (164_01) | 1180 |
| | Shialti (163_00) | 175 |
| | Kanchan (164_01) | 1179 |
| | Kanchan (164_01) | 1165 |
| | Kanchan (164_01) | 1166 |
| PR334 | Shialti (163_00) | 185 |
| | Shialti (163_00) | 186 |
| | Shialti (163_00) | 187 |
| | Shialti (163_00) | 184 |
| PR335 | Kanchan (164_01) | 1053 |
| | Kanchan (164_01) | 1055 |
| | Kanchan (164_01) | 1064 |
| PR336 | Shialti (163_00) | 132 |
| | Shialti (163_00) | 131 |
| PR337 | Kanchan (164_04) | 6055 |
| PR338 | Choto Nowpara (165_00) | 165 |
| | Choto Nowpara (165_00) | 201 |
| | Choto Nowpara (165_00) | 202 |
| | Choto Nowpara (165_00) | 203 |
| PR339 | Choto Nowpara (165_00) | 256 |
| | Choto Nowpara (165_00) | 262 |
| | Choto Nowpara (165_00) | 262 |
| PR340 | Choto Nowpara (165_00) | 584 |
| | Choto Nowpara (165_00) | 599 |
| | Choto Nowpara (165_00) | 600 |
| PR341 | Choto Nowpara (165_00) | 582 |
| | Choto Nowpara (165_00) | 587 |
| PR342 | Choto Nowpara (165_00) | 468 |
| | Choto Nowpara (165_00) | 469 |
| | Choto Nowpara (165_00) | 473 |
| PR343 | Choto Nowpara (165_00) | 468 |
| | Choto Nowpara (165_00) | 469 |
| | Choto Nowpara (165_00) | 473 |
| PR344 | Choto Nowpara (165_00) | 532 |
| | Choto Nowpara (165_00) | 533 |
| | Choto Nowpara (165_00) | 534 |
| | Choto Nowpara (165_00) | 536 |
| | Choto Nowpara (165_00) | 538 |
| | Choto Nowpara (165_00) | 539 |
| PR345 | Choto Nowpara (165_00) | 747 |
| | Choto Nowpara (165_00) | 748 |
| | Choto Nowpara (165_00) | 748 |
| | Choto Nowpara (165_00) | 259 |
| | Choto Nowpara (165_00) | 576 |
| PR346 | Choto Nowpara (165_00) | 291 |
| | Choto Nowpara (165_00) | 538 |
| | Choto Nowpara (165_00) | 539 |
| | Choto Nowpara (165_00) | 540 |
| | Choto Nowpara (165_00) | 541 |
| | Choto Nowpara (165_00) | 544 |
| | Choto Nowpara (165_00) | 545 |
| | Choto Nowpara (165_00) | 548 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| | Choto Nowpara (165_00) | 549 |
| | Choto Nowpara (165_00) | 554 |
| | Choto Nowpara (165_00) | 555 |

| Id No | Mouza Name | Plot No |
|---|---|---|
| PR50 | Kendua (137_02) | 2223 |
| PR112 | Kendua (137_02) | 2223 |

# ANNEXURE-H
# List of Photographs