CHAPTER - I

Introduction

The Master Plan is the fourth of the series of the reports submitted as per the ToR of the project “Upazila Town Infrastructure Development Project - Preparation of Bauphal Pourashava Master Plan (Structure Plan, Urban Area Plan and Ward Action Plan)”, Part A of this report describes the Structure Plan of Bauphal Pourashava and conceptual issues related to the preparation of Structure Plan for Bauphal Pourashava.

1.1 Background of the Pourashava

As per the Local Government (Pourashava) Act 2009, the Pourashavas of Bangladesh categorize as A, B and C classes based on annual income of the Pourashava. 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). Bauphal is a ‘C’ category Pourashava with an area 1338.16 acres (5.41 sq.km.) includes 6 mouzas and 9 Wards.

The Bauphal Pourashava was established in 10th July 2001 under the jurisdiction of Bauphal Upazila of Barisal zila, between 22°19’ and 22°36’ north latitudes and between 90°25’ and 90°40’ east longitudes. The Pourashava is bounded on the north by Manpura Union and Nazirpur Union, on the west by Bauphal Union, on the south by Bauphal Union and Daspara Union and on the east by Daspara Union.

The Pourashava is categorized as ‘Ga’ (the term ‘Ga’ is the Bengali word means second category or ‘C’ category. The concern Ministry uses this word for fund allocation and administrative arrangement) and consists with 9 Wards and 6 mouzas. The Pourashava is located at southern part of Bangladesh and about 190 km. (through Maowa) away from the Dhaka City.

With the active participation of the Pourashava authority, the Consultant has identified the Pourashava existing jurisdiction 1338.16 acres (5.41 sq. km.) as a Planning area and Structure Plan area also. Among the nine Wards, Ward No. 3 has occupied largest area (322.87 acres) and Ward No. 2 is the smallest (80.72 acres).

Bauphal Pourashava, the second largest upazila of Patuakhali zila in respect of area, became a police station in 1974. It was upgraded to an Upazila in 1983 and then into Pourashava in 2001. The name of the Pourashava was originated from a jungle fruit available in plenty, locally known as Bauphal.

Physiographically, Bauphal Pourashava is same as other Pourashavas (who are on low-floodplain land) in Bangladesh. Except some areas of northeast and northwestern part, other areas are covered by vast track of agriculture land. In the Pourashava, Ward No. 2, 7 and 8 are developed than other Wards.

During demarcation of planning area for Structure Plan, the urban development along both the sides of major roads and around the market places was given importance.
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 Area and Planning Area

<table>
<thead>
<tr>
<th>Location</th>
<th>Area (acre)</th>
<th>Area (sq.km.)</th>
<th>2011 Population</th>
<th>2031 Population</th>
<th>Gross density / acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bauphal Pourashava</td>
<td>1338.16</td>
<td>5.41</td>
<td>9945</td>
<td>16924</td>
<td>7</td>
</tr>
</tbody>
</table>

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

Table-1.2: Planning area according to the Ward

<table>
<thead>
<tr>
<th>Ward No.</th>
<th>Area in acre</th>
<th>Area in sq. km.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>123.96</td>
<td>0.50</td>
</tr>
<tr>
<td>2</td>
<td>80.72</td>
<td>0.33</td>
</tr>
<tr>
<td>3</td>
<td>322.87</td>
<td>1.31</td>
</tr>
<tr>
<td>4</td>
<td>166.79</td>
<td>0.67</td>
</tr>
<tr>
<td>5</td>
<td>143.79</td>
<td>0.58</td>
</tr>
<tr>
<td>6</td>
<td>103.82</td>
<td>0.42</td>
</tr>
<tr>
<td>7</td>
<td>149.29</td>
<td>0.60</td>
</tr>
<tr>
<td>8</td>
<td>85.66</td>
<td>0.35</td>
</tr>
<tr>
<td>9</td>
<td>161.26</td>
<td>0.65</td>
</tr>
<tr>
<td>Total</td>
<td>1338.16</td>
<td>5.41</td>
</tr>
</tbody>
</table>

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 Bauphal Pourashava Structure Plan are:

- Description of the Pourashava’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 Bauphal Pourashava.
- 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 Bauphal Pourashava.
- 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 Pourashava, 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. This Structure Plan is an overall long-term strategic plan for the Pourashava Shahar (Town), Bakerganj.

Structure Plan is the 1st component of the Master Plan package. 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 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, 100 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 24th Septembert, 2010. An introduction meeting on 25th September, 2010 was held in Bauphal Pourashava 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 Pourashava authority recommends 26.9.2010 as local hat day and 28.9.2010 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.
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 Pourashava Mayor, Councilors, Engineers and other concerned officials as well as the general inhabitants to determine pollution in air, water, land and noise. Based on the information and data collected from the field, detailed report has been prepared.

Socio-economic survey: The Socio-economic survey has been conducted with the proposed methodology beginning from 19th January 2009 to 25th January 2009. 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 Pourashava 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 analyzes 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 Pourashava with optimum provision of opportunities for Pourashava dwellers and making scope for extending services to surrounding areas.

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

Figure 1-1: Flow Chart of Planning Process

After doing all these jobs thoroughly the Master Plan had been done based on a prepared planning standard for Pourashava 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 Pourashava. In order to prepare these plans, the activities contain but not limited to the following:

1. Visits have been made to the Pourashava at different stages of work of the preparation of Master Plan of Bauphal Pourashava.

2. Feasibility for preparation of Master Plan has been submitted to the office of the PD, UTIDP.

3. An Inception Seminar has been organized at the Pourashava level to inform the Pourashava 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 Pourashava to develop a 20 year development vision for it linking the ideas and views of the Pourashava people.

4. Determination of the structure plan area and planning area has been done based on existing condition, demand of the Pourashava 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 Pourashava 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 Pourashava (20 years), vis-a-vis assess their requirement for different services, such as physical infrastructure facilities, employment generation, housing, right of way and land requirement for the existing and proposed roads, drains, playgrounds, recreation centers and other environmental and social infrastructure. The following major tasks have been accomplished:

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

   b. A comprehensive (storm water) Drainage Master Plan for a plan period of 20 years has been prepared considering all relevant issues including discharge calculation, catchments areas, design of main and secondary drains along with their sizes, types and gradients and retention areas with preliminary cost estimates for the proposed drainage system.
c. Recommendations have been made on planning, institutional and legal mechanisms to ensure provision of adequate land for the establishment of proper rights of way for (storm water) drainage system in the Pourashava.

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

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

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

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

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

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

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

k. Preparation of a plan has been set out proposed Master Plan at 3-levels namely Structural Plan, Urban Area Plan and Ward Action Plan.
l. At the first level, policies and strategies have been worked out for the preparation of a Structure Plan for each Pourashava under the package. The Master Plan has been prepared consisting of Structural Plan, Land Use Plan, Transportation and Traffic Management Plan, Drainage and Environmental Management Plan and Ward Action Plan.

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

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

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

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

1.6 Organization of the Master Plan

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 Bauphal Pourashava 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 Pourashava 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.