DHAKA METROPOLITAN
DEVELOPMENT PLAN (DMDP)
1995-2015

DETAILED AREA PLAN (DAP)

PART - XVIII

JUNE 2010

RAJDHANI UNNAYAN KARTRIPAKKHA (RAJUK)
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এস, আর, ও নং ২৩২-আইন/২০১০। - যেহেতু Town Improvement Act, 1953 (E.B.Act XIII of 1953), অতঃপর উক্ত Act বলিয়া উল্লেখিত, এর section 73 এ প্রদত্ত ক্ষমতাবলে সরকার, রাজধানী উন্নয়ন কর্তৃপক্ষ এর এখতিয়ারাধীন ১৫২৮ বর্গকিলোমিটার (৫৯০ বর্গমাইল) এলাকায় Master Plan এর আওতাভুক্ত Detailed Area Plan (DAP) for Dhaka Metropolitan Development Plan অত্র মন্ত্রণালয়ের প্রজ্ঞাপন নং গৃওপূম/পরি-৩/১(২৩)/২০০৬/১৭০, তারিখ ২৪ সেপ্টেম্বর, ২০০৮ এর মাধ্যমে প্রকাশ করিয়া উহার উপর সর্বসাধারণ কর্তৃক আপত্তি বা সুপারিশ উক্ত section এ নির্ধারিত সময়সীমার মধ্যে

যেহেতু উক্ত সময়সীমার মধ্যে প্রাপ্ত আপত্তি বা সুপারিশ বিবেচনা করিয়া সরকার উক্ত Section এ নির্ধারিত সময়সীমার মধ্যে কতিপয় সংশোধনীসহ উক্ত Plan টি অনুমোদন করিয়াছে;

Act Nfi Section 74 4fi sub-section (1) Nfi Master Plan (Detailed Area Plan for Dhaka Metropolitan Development Plan) Nfi

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Dhaka Metropolitan Development Plan (DMDP) 1995-2015: Detailed Area Plan (DAP)

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Dhaka Metropolitan Development Plan (DMDP) 1995-2015 : Detailed Area Plan (DAP) prepared by the Rajdhani Unnayan Katripakkha (RAJUK) under the Ministry of Housing and Public Works, Government of the People's Republic of Bangladesh.

DHAKA METROPOLITAN DEVELOPMENT PLAN (DMDP) 1995-2015: DETAILED AREA PLAN (DAP)

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ABBREVIATION AND ACRONYMS

ACTP	Assistant Chief Town Planner
ATP	Assistant Town Planner
BAPA	Bangladesh Poribesh Andolon
BBS	Bangladesh Bureau of Statistics
BDC	Bangladesh Development Company
BELA	Bangladesh Environmental Lawyers Association
BIP	Bangladesh Institute of Planners
BIWTA	Bangladesh Inland Water Transport Authority
BIWTC	Bangladesh Inland Water Transport Corporation
BMD	Bangladesh Meteorological Department
BOT	Build Operate Transfer
BPDB	Bangladesh Power Development Board
BRAC	Bangladesh Rural Advancement Committee
BSCIC	Bangladesh Small and Cottage Industries Corporation
BTCL	Bangladesh Telecommunication Company Limited
BUET	Bangladesh University of Engineering and Technology
CBO	Community Based Organization
CTP	Chief Town Planner
DCC	Dhaka City Corporation
DIT	Dacca Improvement Trust
DND	Dhaka-Narayanganj-Demra
DoE	Department of Environment
DPDCL	Dhaka Power Distribution Company Limited
DPHE	Department of Public Health and Engineering
DPZ	Detailed Planning Zone
FAR	Floor Area Ratio
FFZ	Flood Flow Zone
GIS	Geographic Information System
IAB	Institute of Architects, Bangladesh
JICA	Japan International Cooperation Agency
LGED	Local Government and Engineering Department
LPC	Landuse Permit Committee
LPP	Landuse Permit Planner
MoHPW	Ministry of Housing and Public Works
NGO	Non Government Organization
NUC	Nagar Unnayan Committee
REB	Rural Electrification Board
REHAB	Real Estate & Housing Association of Bangladesh
RHD	Roads and Highways Department
RMG	Ready Made Garments
SoB	Survey of Bangladesh
SP	Structure Plan
SPZ	Strategic Planning Zone
STP	Strategic Transport Plan
TGTDC	TITAS Gas Transmission & Distribution Company
TWG	Technical Working Group
UNCHS	United Nations Centre for Human Settlement (Habitat)
UNDP	United Nations Development Programme
WASA	Water and Sewerage Authority
WDB	Water Development Board

PREFACE

Detailed Area Plan (DAP) is the third and final tier of DMDP (Dhaka Metropolitan Development Plan) 1995-2015. DMDP is a three tier plan package, viz. the Structure Plan, the Urban Area Plan and the Detailed Area Plan. The first two tiers of DMDP i.e. the Structure Plan (1995-2015) and the Urban Area Plan (1995-2009) were prepared in 1995 under the Project 'Preparation of Structure Plan (SP), Master Plan and Detailed Area Plan (DAP) - Metropolitan Development Plan Preparation and Management in Dhaka' under UNDP project No. BGD/88/052 and TAPP No. TA/ BGD/ 88 /052 with the technical assistance of UNCHS. The third tier of DMDP i.e. the Detailed Area Plan has been prepared by RAJUK under a separate project named "Preparation of Detailed Area Plan (DAP) for Dhaka Metropolitan Development Plan" following the strategies and guidelines mentioned in the Structure Plan and the Urban Area Plan. This is almost a six and a half year project launched in August, 2004 and completed in December, 2010. The total project cost is BDT 2494.66 Lac. The project was financed by RAJUK's own source.

The project was managed by a Inter-Ministerial Steering committee, a Technical Management Committee and a Technical Management Sub-Committee. One project director, four project managers, five assistant town planners, one GIS expert, one survey expert and other supporting staffs were the project personnel.

The DAP is prepared for RAJUK jurisdiction or DMDP area of 590 sq.mile (1528 sq. km.). In order to complete the task efficiently, RAJUK divided its control area into five groups and eleven locations and awarded five local consulting firms with the work. The contract was awarded to DDC Ltd. for Group A, Group A Ext. (Part D), Location 3,4 and 15; EPC Ltd. for Group B and Group B Ext. (Part-D); Gani Bangla Ltd. for Group C, Group C Ext. (Part-D), Location 9,11,16; Sheltech (Pvt.) Ltd. for Group E, Group E Ext. (Part-D), Location 1,2,10; BETS Ltd. for Location 5,6. For ease of work, the task of Group D was awarded to DDC Ltd., EPC Ltd., Gani Bangla Ltd. and Sheltech (pvt.) Ltd.

Group A covers three Paurashavas including Tongi, Gazipur and Kaliganj together with surrounding rural settlement and flood Plain areas of Balu, Sitalakkhya and Brahmaputra river. Group B covers Narayanganj, Kadam Rasul Paurashava and its surrounding areas including Dhaka- Narayanganj- Demra (DND) flood protected areas. Group C (Central Part) is surrounded by the river Buriganga, Sitalakkhya, Balu, Turag and Tongi Khal. Dhaka City Corporation (DCC) jurisdiction area is within Group C. Group C covers important establishments of capital Dhaka like Bangladesh Secretariat, Motijheel, Kawran Bazar commercial areas, International Airport, Old Dhaka etc. Group D covers Keranigonj and Zinjira. Rest of the area of this Group is mainly Dhaleswari flood plain. Group E covers Savar Pourashava, Export Processing Zone (EPZ), Turag flood plain. Location 9,11,16 covers the eastern fringe areas of Dhaka. Other locations are in different parts of Dhaka.

DAP projects population for the year 2015 as 18.43 Million on the basis of data generated from the population census 2001, which was 10.24 Million. The overall Annual Growth Rate is considered as 4.29%. The stages of DAP preparation included geo-referencing of mouza maps, different types of surveys, consultation with stakeholders, draft plan preparation, public hearing and final plan preparation. Socio-economic survey, physical feature survey, topographic survey and land use surveyes were done during the period of 2005-2006. The high tech digital GIS (Geographic Information System) data base was prepared for the very first time for Dhaka under the project. Quality checking of survey activities was done by Survey of Bangladesh (SOB). A series of consultation meeting was held with local government authorities (Wards & Pourashavas), Honorable Members of the Parliament of the RAJUK jurisdiction, concerned development agencies (RHD, LGED, WASA, WDB etc.), academics, professionals, socially concerned groups, study groups, business groups, etc.

Following this, draft final plan was prepared. As per section 74 of Town Improvement (TI) Act 1953, RAJUK carried out a two month long Public Hearing on the draft plan from October 3, 2008 to December 4, 2008. The Public Hearing was carried out through media coverage, press conference, web based publication and displaying of maps in RAJUK auditorium, PD (DAP) office and three other zonal offices of RAJUK. The comments given by general people and different organizations were documented in the prescribed format and these were addressed. A national seminar was held with academics, different professionals, BAPA, BELA, REHAB. Round Table Conferences were held in three daily newspaper offices.

A Review Committee to review the Draft Final Plan submitted by the Consultants was formed by the Ministry of Housing & Public Works (MoHPW) with Prof. Dr. Jamilur Reza Chowdhury, Vice Chancellor, BRAC University as convener. In order to assist the Review Committee in the task, a 16 member Technical Working Group (TWG) was formed with members from Urban and Regional Planning Department of BUET, Urban and Regional Planning Department of JU, Bangladesh Institute of Planners (BIP), Institute of Architects, Bangladesh (IAB), Urban Study Group and RAJUK.

A series of consultation meetings was held with the Honorable Members of the Parliament of RAJUK jurisdiction area to apprise them of the draft final DAP and obtain their valuable suggestions and recommendations. Almost whole of August and half of September, 2009 were spent on this consultation.

Ministry of Housing and Public Works constituted a DAP Review Committee with Prof. Dr. Jamilur Reza Chowdhury, former Vice Chancellor, BRAC University as convener to verify the compliance status of the recommendations made by the previous Review Committee. The committee reviewed the status of the Draft DAP in view of the recommendations of the previous Review Committee in four separate meetings held on 16-03-2010, 25-03-2010, 01-04-2010 and 11-04-2010 in RAJUK Board Room. The committee ultimately made 36 point recommendations to be followed by the consultants. Following the recommendations, consultants prepared final plans (maps and reports) and submitted to RAJUK. After approval in the Technical Management Sub-Committee, Technical Management Committee, Steering Committee of DAP and RAJUK'S board, the final plan was submitted to Ministry of Housing and Public Works for final approval. Ministry of Housing and Public Works sent the final plan to Ministry of Law for vetting and placed it in the Cabinet. The cabinet approved final DAP. Finally, Ministry of Housing and Public Works notified gazette of DAP under the SRO No. 232-law/2010 on 22 June 2010. The Reports and the Maps of DAP has been published on the website of RAJUK (www.rajukdhaka.gov.bd).

Eng. Md. Nurul Huda
Chairman, RAJUK.

Executive Summary

The Detailed Area Plan which is the outcome of the last several years of extensive activities related to the preparation of physical plan of Dhaka, marks the completion of the process undertaken in early nineties by the Rajdhani Unnayan Kartripakkha with the assistance of UNDP and UNCHS. Preparation of Dhaka Metropolitan Development Plan (DMDP) under the project 'Preparation of Structure Plan (SP), Urban Area Plan (UAP) and Detailed Area Plan (DAP)-Metropolitan Development Plan Preparation and Management in Dhaka' (UNDP No. BGD/88/052 and TAPP No. TA/BGD/88-052) was started in 1992. DMDP is a three tier plan package of which first two tiers, viz. Structure Plan and Urban Area Plan, were completed during 1992-1995 period by the joint team of Consultants from home and abroad and counterpart experts employed by RAJUK.

RAJUK's jurisdiction covers an area of approximately 590 sq. miles comprising of 26 Strategic Planning Zones (SPZ). For the purpose of preparation of Detailed Area Plan (DAP), the whole of RAJUK area has been divided into five separate Groups and eleven locations. The SPZs concerned in Location-15 created under the Dhaka Metropolitan Development Plan are SPZ 17.2 and SPZ-17.3. Total area under this project is about 5040 acres and population is about 50,000. Savar is the only partial Thana under this study area.

The spatial attribute of Location-15 is not geographically defined, rather it is an arbitrary delineation. The area is engulfed by planning area covered by Group-E and contained separately in Report Part-IV.

The area is composed with three unions named Ashulia, Dhamsona and Yearpur located in the northwestern side of the DMDP area. According to the Structure Plan, the area is mainly divided into three zones as Peripheral Urban Development, High Value Agriculture and Main Flood Flow Zone. Physical development is found all over the project area including flood flow zone. The Detailed Area Plan has not encouraged any development in the Main Flood Flow Zone prescribed in the Structure Plan. But existing Ashulia-EPZ Road has been proposed as a 80 ft. wide road by considering the future trend of development (mostly industry). Proposed western by pass road also passes through the project area.

The Report contains seven chapters describing sequentially the Background of the Project, Critical Planning Issues which influenced the Plan Preparation process, the Development Plan Proposals, Plan Implementation Procedures and Follow up Actions required for the implementation of the Plan and Conclusion. The Background section provides a description of the project objectives, brief background and purpose of the project. It stated that the Plan has been prepared on the basis of the Section 73 of Town Improvement Act which empowers RAJUK to prepare Land use Plan for its jurisdictions and it also designates RAJUK as the custodian of the Plan. Chapter-1 also describes the salient features of the higher level plans: Dacca Master Plan 1959, Dhaka Metropolitan Area Integrated Urban Development Project, Structure Plan and Urban Area Plan. It also provides a brief description of the study area. This chapter ends with an analysis of the outcome of the Public Hearing on the Draft Final Plan. From the analysis it has been observed that most of the respondents are against wider roads. It has been observed that the affected people do not want to be evicted even with the option of getting compensation.

Chapter-2 describes critical planning issues those have bearing on the plan preparation process. It provides an analysis of the existing urbanization process and its problems, utility provisions, description of infrastructure, geo-physical condition and the problems of the area. This chapter ends with a list of projects undertaken for the study area by different line agencies of the government as well as those wished by the stakeholders.

Development Plan Proposals have been explained in Chapter-3. It describes the policy framework as provided in the higher level plans. Then it deals with the planning principles, standards and general development strategies adopted in the plan. Strategies have been described in broad heads like drainage, residential development, industrial development, mixed use development, transport and connectivity, flood Flow Zone, water body and open spaces, amenities and community facilities, environmental management and support to hinterland.

In preparing the plan proposals, the fact that Location-15 is not a segregated area, rather it is an integrated part of Group-E area and covered in Report Part – IV. It has been of prior importance in the formulation of the Plan. As such, continuity has been maintained painstakingly.

Infrastructure proposals have been grouped into proposals for transport, utility services and drainage

. Transportation proposals provide a network of road system ensuring sustainable development for the plan period and beyond. About 25 new roads have been proposed and realize that they will be able to adequately handle the trips projected to be generated in the study area. The roads of various widths were proposed to maintain hierarchy and corresponding road sections are also provided. Road section includes adequate space for pedestrian use and utility provision. At the end of this chapter, an Integrated Plan has been presented.

Chapter-4 deals with priorities and phasing of the plan implementation. DMDP Structure Plan phasing was adopted for such design. The DMDP phases are: (i) Short-term, (ii) Medium-term and (iii) Long-term. In DAP, short-term considered as Phase-I, likewise Medium-term as Phase-II and Long-term as Phase-III. As such the Phase-I covers 2010-2012 period, Phase-II covers 2013-2015 and Phase-III extends beyond the plan period. In prioritizing various uses, stakeholders' desire has been taken into account. Road priority has been fixed on the basis of need. Then landuse classification, their special functions, principal use and accessory uses have been defined in this chapter. The proposed Landuse Zones are: Urban Residential Zone, Rural Settlement Zone, Commercial Zone, Industrial Zone, Mixed use Zone, Flood Flow Zone, etc. This chapter also describes the landuse control procedures. Three-tier permit procedure has been proposed in this chapter. In the first tier, it will be the function of Landuse Permit Planner (LPP), at the mid level Landuse Permit Committee (LPC) and at the top level Nagar Unnayan Committee. Landuse permit procedure has explained through a flow diagram. For each category of landuse zone, there are certain uses which are their permitted uses and clearance for those uses can be obtained at the first-tier. For uses under conditional use, it will be the function of second-tier. If anyone wants approval for new use or conditional use of that zone, it will be the function of third-tier. However, if anyone is not satisfied with the decision of any tier, he can approach to the next tier for mitigation and finally up to the Court.

Chapter-5 deals with the project plan. The specific projects needed as an Action Area plan and prescribed by the Consultants are incorporated here. Approximate project cost has been calculated according to the project.

Chapter-6 deals with Follow-up Actions to be undertaken by RAJUK in future. The foremost of the actions is strengthening of RAJUK's capacity to perform its development control functions properly all over its jurisdiction. Plan implementation needs people's participation, especially in land development projects. The Consultants strongly feel that successful implementation of the DAP depends on the Action Area Plans to be undertaken by RAJUK after the Detailed Area Plan comes in force. Chapter-7 contains the Concluding Remarks.

Chapter - 1
BACKGROUND

1.1 Introduction

The Dhaka Metropolitan Development Plan (DMDP) is a three-tier plan package, such as the Structure Plan, Urban Area Plan and Detailed Area Plan (DAP). The Dhaka Structure Plan (1995-2015) and the Urban Area Plan (1995-2005) were completed under DMDP package during 1992-1995, which was approved and published in the Bangladesh Gazette. Detailed Area Plan is prepared following the policies and guidelines made in the Structure Plan and Urban Area Plan. This Detailed Area Plan has provided more detailed planning proposals for specific sub-areas of Dhaka Metropolitan areas. The Detailed Area Plan prepared by the local consultants with experienced professionals from different fields like urban planning, architecture, engineering, social science, geophysical and environmental science is expected sufficiently to serve the purpose of the Structure Plan and Urban Area Plan (UAP). The Structure Plan identified 26 Strategic Planning Zones (SPZ) for Urban Area Plan with recommendation for preparation of Detailed Area Plan gradually covering all the SPZs in succession in conformity to the policies and guidelines contained in Structure Plan and Urban Area Plan.

1.2 Background

The major factor behind rapid urbanization in Bangladesh has been the rural-urban migration. This phenomenon was little known prior to the partition in 1947. The pace of urbanization slowly picked up speed and reached an unimaginable peak after the War of Independence. This unprecedented growth coupled with the unplanned growth of settlements made the preparation of new urban plan an imperative for fast growing towns. Plans were previously prepared for Dhaka and Chittagong by a British firm of Consultants in 1959. However, this plan though proved useful initially for the purpose of guided development of the cities was soon overtaken by events that could not be foreseen by anybody at the time of their preparation in the fifties of the last century. Dhaka became many times larger than the size visualized earlier and consequently the plans became useless as the instrument of development control. Necessity of preparation of an up-to-date urban plan became obvious even to the ordinary citizens. However, the bureaucratic red-tapism and a general lack of comprehension regarding plan preparation and implementation caused valuable time. Finally in early 1990s, a new plan was prepared by RAJUK with the assistance of UNDP/UNCHS. Dhaka Metropolitan Development Plan (DMDP) was finally prepared during 1992-95.

The DMDP is a plan, based on modern concepts which differ fundamentally from earlier practice of preparing end-state plans which becomes out-dated in a dynamic growth situation. The DMDP is a three tier plan package namely Structure Plan providing longer time guidance for growth of the cities followed by the Urban Area Plan with shorter time frame providing direction for implementation of the existing urban areas and their immediate surroundings exhibiting some development pressure. The Detailed Area Plan is based on actual survey and studies and covers individual parts of town where immediate intervention is needed.

The DMDP Consultants prepared the 1st two items in considerable details but did not prepare any DAP. However, though late, RAJUK took up the preparation of Detailed Area Plan at a time, although initially the idea was to precede selectively taking the high pressure zones first and then gradually taking up lesser priority zones. This strategy was adapted as Structure Plan accepts and recognizes the uncertainty of future and leaves more detailed problems for resolution nearer the time they occur. This is more applicable for areas where growth of population and economic development cannot be determined with any degree of precision. But events in metro-Dhaka overtook this assumption and it is observed that in reality development has been initiated by private and individual developers in areas designated as low priority, flood flow zones and retention pond reserves. Naturally, it has become an imperative to prepare Detailed Area Plan for whole of metro-Dhaka and this bold decision by RAJUK may prove to be beneficial for the city in the long run.

Dividing the total area of RAJUK jurisdiction into five groups and several locations on the basis of geographical location and settlement pattern, preparation of Detailed Area Plan has been done. This is the culmination of the "three tier plans" (1995-2015) of Dhaka Metropolitan Area as was originally envisaged.

1.3 Purpose of the Detailed Area Plan (DAP)

The present status of the planning process demands a detailed analysis of the Strategic Planning Zone (SPZ) areas identified in the Structure Plan and Urban Area Plan. The policies on which the Detailed Area Plan prepared, are the recommendations made in the Structure Plan as policies and Urban Area Plan as guidelines. These Detailed Area Plans provided more detailed planning proposals for specific sub-areas of Dhaka Metropolitan areas. Objectives of the DAP can be visualized through the following points:

(1) To provide a detailed analysis of the area.

(2) Provide a reference document for land management activities, data management and dissemination. This will provide landuse maps and information at Mouza level (parcel) in a professional way.

(3) Provide a program for public sector investment aiming at the implementation of the plan.

(4) Suggests control and guidance for private sector landuse and development in the area of the plan.

(5) Provide planned development to ensure sustainable environment for DAP areas with the cooperation of other development agencies.

1.4 Objective of the Project

1.4.1 General Objectives

The general objective of the Detailed Area Plan envisages:

- Implement Structure Plan and Urban Area Plan policies
- Guide and control urban development in an orderly manner in preferred areas of urban expansion
- Create an urban environment enabling citizens enjoy the services that suit urban living.

1.4.2 Specific Project Objectives

The objectives specified in the proposal to prepare the Detailed Area Plan are as follows:

- Implementation of Dhaka Metropolitan Development Plan 1995-2015
- Data Management and Dissemination
- Preparation of Multi-sector Investment Plan
- Ensuring Clarity and Security of Investment
- Providing Guideline for Development
- Ensuring Sustainable Environment

1.5 Custodian of the Detailed Area Plan

Rajdhani Unnayan Kartipakkha (RAJUK) is the custodian of the Detailed Area Plan. Duration prescribed in the Structure Plan for the implementation of this Detailed Area Plan is up to the year 2015. RAJUK will guide the other authorities to implement their projects according to the Detailed Area Plan and all the physical development activities will follow the proposals prescribed in the Detailed Area plan.

Section 73 (1) of the Town Improvement Act 1953 empowers RAJUK to 'Prepare a Master Plan for the Area within its jurisdiction indicating the manner in which it proposes that land should be used (whether by carrying out thereon of development or otherwise) and the stages by which any such development should be carried out. At present three tier development plan in the form of Structure Plan, Urban Area Plan and Detailed Area Plans are prepared. DMDP has een published in the Official Gazette on August 4, 1997 (SRO N.1834-law/97) and has become a legal document for the guidance of development of Dhaka. Rajdhani Unnayan Kartripakkha is the custodian of DMDP; as such RAJUK is the custodian of the Detailed Area Plan prepared under it as well. As the custodian of all the three-tier plans including the Detailed Area Plan prepared under the present project, RAJUK has the responsibility of development control within its jurisdiction area either by itself or with the co-operation of other agencies of the government responsible for carrying out development activities within RAJUK's jurisdiction.

1.6 Duration of the Detailed Area Plan and Amendment Options

Usually a plan is prepared for a period of 20 to 25 years. DMDP has been prepared for a 20-years period: 1995-2015. As such the Detailed Area Plan prepared under this project extends upto 2015. However, every plan requires periodic review and updating which is usually done every five years. The consultants propose that the plan should be reviewed at the end of 2015. At the same time initiative should be taken for review and updating of the plan accordingly by the end of 2015, so that it can be extended for a further period of 10 years, i.e. upto year 2025. Section 74 (2) of the Town Improvement Act empowers RAJUK to amend its plan from time to time. If development trend during this current plan period of 2015 to 2025 calls for the preparation of a fresh three tier development plan, RAJUK by dint of the authority conferred on it by Section 73 (1) of Town Improvement Act shall take initiative to prepare a new plan for its jurisdiction.

1.7 Format of Detailed Area Plan

a. Explanatory Report

The Explanatory Report provides an account of the design process, demographic and socio-economic data, sector wise and thematic maps, information on higher level planning context and a description of the Integrated Planning Map. The Report contains maps on a scale that is appropriate to the information they carry and convenient for inclusion in a Report (A4 and A3 size).

b. Integrated Planning Map

The Integrated Planning Map shows different layers of information like the cadastral base, administrative boundaries, geo-physical features (contour line, water bodies), infrastructures and existing/proposed landuse. Maps of following description form the component of Integrated Planning Map for the Detailed Area Plan are required:

Table- 1.1: Required Maps with corresponding Scale

Sl No.	Map title	Scale
1	Base map (Study Area Map)	1:1980
2	Physical Feature Survey (Road and floor Height)l)	1:1980
3	Physical Feature Survey (Road and structure type)	1:1980
4	Physical Feature Survey (Road and structure use)	1:1980
5	Landuse survey	1:1980
6	Topographic survey	1:1980
7	Field survey (original survey marking)	1:990
8	Utility Services (Thematic)	1:1980
	River/Khal/drainage	
9	Utility Services (Thematic)	1:1980
	Gas/Electricity/Water supply	
10	Comprehensive Detailed Area Plan	1:1980
11	Comprehensive Detailed Area Plan	1:3960
12	Identified projects in separate layers	1:990

Source: Terms of Reference (ToR).DAP

1.8 Description of the Planning Area

RAJUK's jurisdiction extends over approximately 1528 sq. km. (590 sq. miles) comprising 26 Strategic Planning Zones. For the purpose of preparation of Detailed Area Plan (DAP), the whole RAJUK area has been divided into five groups and eleven locations. Location-15 is one of the designated Locations. Broad demarcation of the study area is shown in **Map-1.1 in** the context of DMDP.. The terms of reference further defined the Location-15 area in terms of SPZ created under the Dhaka Metropolitan Development Plan and these SPZs are namely SPZ 17.2 and SPZ-17.3. Total area under these SPZs is about 6149 acres. Savar is the only partial Thana under this study area. **Map-1.2** shows the administrative boundary. Demarcation of the study area is an important aspect. Before the completion of detailed survey, demarcation of the study area was required to be finalized and approved by the competent authority of RAJUK.

1.8.1 Administrative and Cadastral Boundaries

The study area (Location-15) covers a gross area of 6614 acres and includes SPZ-17.2 (Dhamsona) and SPZ-17.3 (Ashulia and Yearpur). In total, 15 mouzas are under the Location-15 and two major roads crosses the study area one from northwest to southeast and another from northwest to southwest. See Map-1.2.

Table-1.2: Population, household and density of the study area

Union Name	Name of Mouza	Population		Household	Population
		1991	2001	2001	Density/Acre
Ashulia	Bara Ashulia (F)	3550	4370	748	4
	Bara Rangmatia (P)	1223	1506	257	3
	Dhananjoypur (P)	2482	3055	524	3
	Sadhupara (F)	274	337	57	3
	Sreekaundia(F)	599	737	126	4
	Chotta Kayer / Kakar (F)	2409	2965	512	3
Sub total		10537	12971	2224	
Dhamsona	Ganakbari (P)	5494	6763	1147	3
	Palashbari (P)	5800	7140	1230	8
	Baipail (P)	5257	6471	1121	5
Sub total		16551	20374	3498	
Yearpur	Diakhali (F)	5175	6370	1096	3
	Jiraba (F)	859	1057	182	5
	Mana Santosh (P)	3381	4162	707	4
	Purba Narsingpur (F)	807	993	170	2
	Taiyabpur (F)	3643	4485	776	4
	Chitrasail (F)	207	255	43	5
Sub total		14072	17323	2974	
Grand total		**41160**	**50668**	**8696**	

Source: Population Statistics 1991 and 2001.

1.8.2 Geo-physical Profile

Topography

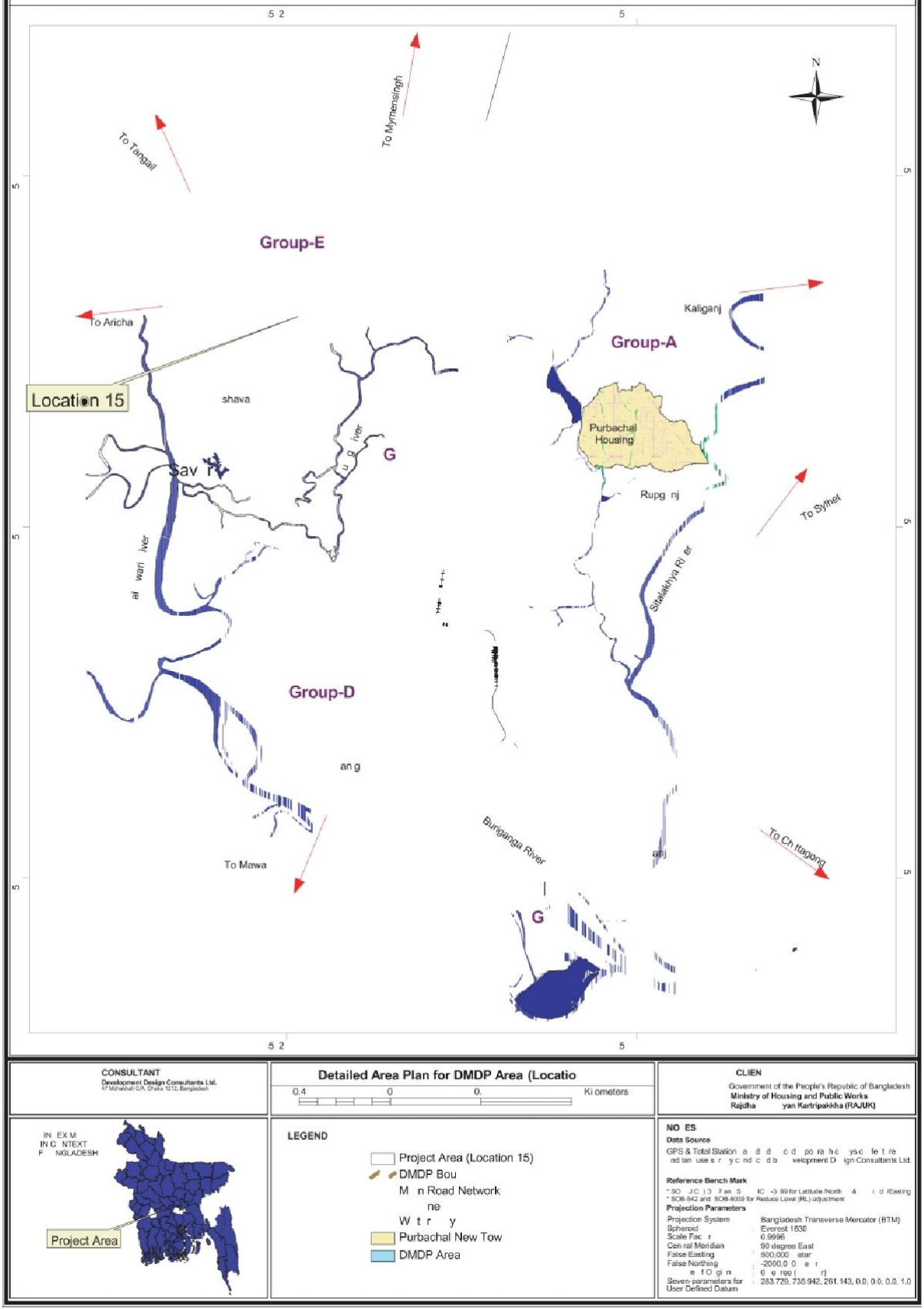
A contour map of the study area has been prepared with the help of spot level values (x, y and z). In preparing the map, 0.5m vertical intervals of contours are considered. In Baipail Mouza of Dhamsona Union the highest value is 17.21m PWD and the lowest is around 0.81m PWD. In general, the sparse values or less dense spot value areas are either medium value flat land or low value flat land. Dense contour areas are generally high lands as can be seen in Jirabo, some areas of Toyebpur, Baipail and Chitrasail. Medium dense contour areas are found in Srikhandia, Rajkur, Chotokakor, etc.

Table-1.3: Spot value and their unit

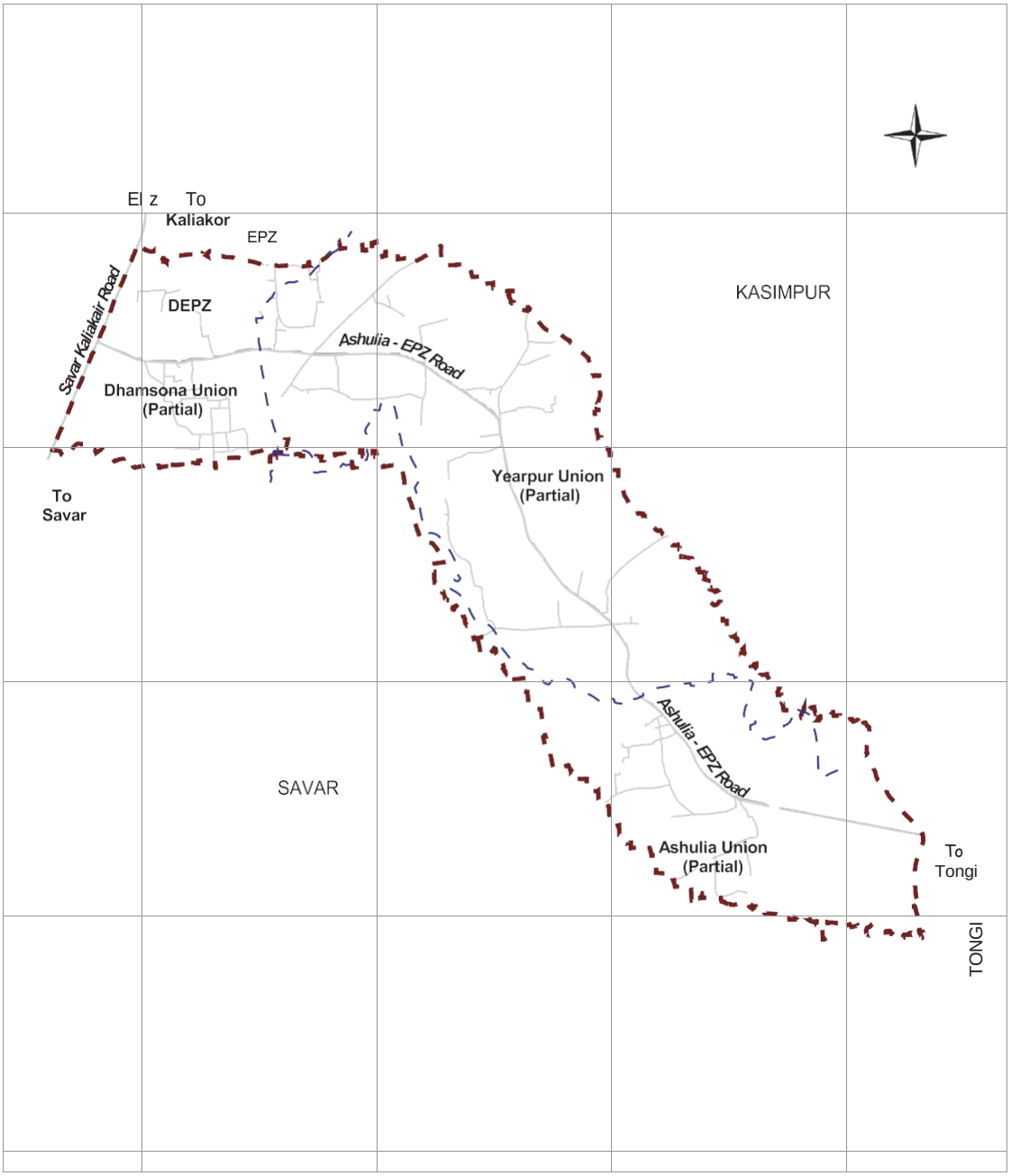
Sl. No.	Spot Unit	Value
1.	Total Spot Number	4109
2.	Mean (Meter)	8.71m PWD
3.	Maximum height (Meter)	17.21m PWD
4.	Minimum height (Meter)	0.67m PWD
5.	Range	16.54
6.	Variance	10.28
7.	Standard Deviation	3.2

Source: Topographic Survey, 2006.

MAP 1.1: LOCATION MAP OF PROJECT AREA IN CONTEXT OF DMDP



MAP-1.2 PROJECT AREA MAP SHOWING DIFFERENT ADMINISTRATIVE BOUNDARY



CONSULTANT

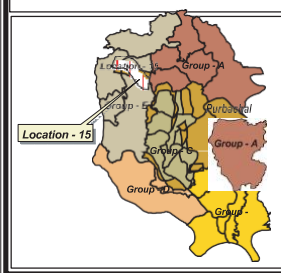
Development Design Consultants Ltd.
47 Mohakhali C/A, Dhaka 1212, Bangladesh

Detailed Area Plan for DMDP Area (Location - 15)

0.5 0 0.5 1 1.5 2 Kilometers

CLIENT

Government of the People's Republic of Bangladesh
Ministry of Housing and Public Works
Raidhani Unnayan Kartripakkha (RAJUK)



LEGEND

- Project Boundary
- z Union Boundary
- Major Road

wOTeS

GPS & Total Station based advanced topographic physical feature and landuse survey conducted by Development Design Consultants Ltd.

Table-1.4: Spot interval and frequency

Sl. No.	Spot Interval m PWD	Spot Number (Frequency)	%
1.	<1	2	0.05
2.	1.1-3.0	169	4.11
3.	3.1-5.0	720	17.52
4.	5.1-7.0	376	9.15
5.	7.1-9.0	395	9.61
6.	9.1-11.0	1247	30.35
7.	11.1-13.0	1128	27.45
8.	13.1-15.0	71	1.73
9.	15.1-17.0	1	0.02
	Total Spot	**4109**	**100**

Source: Topographic Survey, 2006.

In total, 4109 spot values were collected from the study area. Lowest spot height is 0.67m PWD and highest spot height is 17.21m PWD. Around 58% of the spot heights are 9m to 13m and average height of the study area is 3.2m PWD.

Climate

The climate of the project area is generally moderate. Maximum mean monthly temperature of 26.3^{0}c is found in the month of August while minimum mean temperature of 12.7^{0}c is found in the month of January. Summer begins from late March and continues till August. The monthly mean temperature and rainfall of Dhaka are presented in the Table-1.5.

Table-1.5: Mean Monthly Rainfall and Temperature of Dhaka

Month	Rainfall (mm)	Temperature (^{0}c)
January	07	12.7
February	24	15.6
March	64	20.5
April	146	23.6
May	330	24.5
June	336	26.1
July	367	26.2
August	303	26.3
September	302	25.8
October	176	23.0
November	33	19.3
December	12	14.2

Source: Bangladesh Meteorological Department

1.9 Review of Previous Plans and Proposals

Previous higher-level plans are Dhaka Master Plan 1959 and Dhaka Metropolitan Development Plan 1995-2015. The Dhaka Master Plan was prepared in 1959 under the supervision of Dhaka Improvement Trust (DIT). The catchment area of that Master Plan was 220 sq. km with its population of about 1,000,000. The Dhaka Metropolitan Area Integrated Urban Development Planning Study (DMAIUDP) was undertaken by the Government in 1981, which provides a useful summary of the nature of strategic planning and structure plans for Dhaka City. In 1995, RAJUK prepared DMDP Package and its area was 590 sq. km. It is a long-term strategy for 20 years (1995-2015).

1.9.1 Master Plan for Dacca, 1959

The Dhaka Master Plan was prepared in 1959 covering the then Dhaka Improvement Trust (DIT) area of roughly 220 sq miles, with a population slightly exceeding 1 million. Of this population, approximately 575,000 were in Dhaka City Corporation Area. The project area extended beyond the plan area of 1959 Master Plan.

1.9.2 Dhaka Metropolitan Area Integrated Urban Development Project

The DMAIUDP Study, prepared in 1981, evolved from a series of Report and Missions concerned with storm water drainage and flood protection. The Study was funded jointly by ADB and UNDP. ADB strongly recommended that further flood protection investment should await the outcome of a broad multi-sectoral strategic study to evaluate metropolitan planning options.

The DMAIUDP Study argues a coherent case for a strategy of long-term northern expansion, to accommodate an urbanized population of approximately 9 million by the year 2000. The strategy has partly been overtaken by a number of events, however a number of DMAIUDP Study assumptions have proved accurate and the Study still provide a comprehensive and widely used and useful database. It provides a lucid statement of the urban development issues facing Dhaka. The current project area (Location-15) is located outside the plan area of DMAIUDP.

1.9.3 DMDP Structure Plan and Urban Area Plan

Relevant Recommendations

The DMDP Structure Plan provides a long-term strategy for 20 years (1995 to 2015) for the development of the greater Dhaka sub-region. For the purposes of these plans and reports, the term “Metro Dhaka” refers to the 590 square mile.

The DMDP Structure Plan consists of a written report and policy document with various support maps and a 1:50,000 or as appropriate scale composite map. The report identifies the order-of-magnitude and direction of anticipated urban growth and defines a broad set of policies considered necessary to achieve the overall plan objectives.

The DMDP Structure Plan both in its preparatory and implementation stages aims to provide a coordinated and consistent framework for the development of the plans and programs of all public and private sector agencies within the metropolitan area and to:

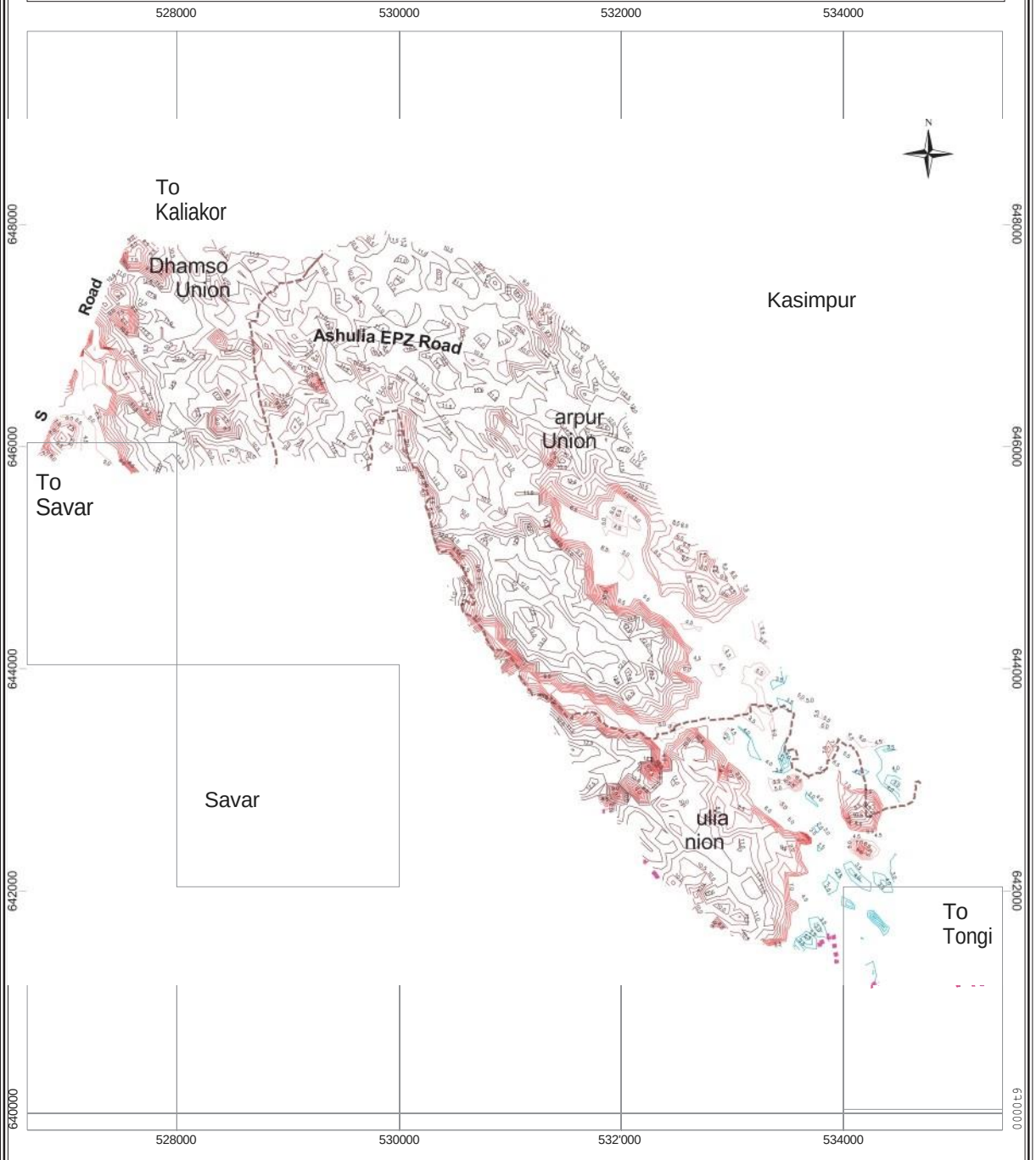
- *Bring the main planning issues of the Metropolitan area to the attention of the Government*, other public and private sector agencies, vested interest group and the general public at large. The broad message and strategic intent of the Structure Plan needs wide dissemination.
- *Provide the framework for local plans.* The Structure Plan set the context for the preparation of Detailed Area Plans and Local Plans as appropriate, including the identification of development themes and specific areas in need of immediate/short term action.
- *Provide guidance for development management.* The Structure Plan provides the basis for development management at the broad metropolitan level, via management policies for items of strategic and structural importance. The DMDP Structure Plan does not include detailed development management policies of standards.

The DMDP Urban Area Plan (UAP) provides an interim mid-term strategy for the 10 years (1995 to 2005) and covers for the development of urban areas within Metro Dhaka management area. The geographic boundaries comprising the Urban Area Plan are the areas within the proposed Flood Action Plan (FAP) components 8A and 8B as well as the Tongi-Gazipur and Savar-Dhamsona areas. The DMDP Urban Area Plan has several parts consisting of an Explanatory Report, Resource Maps, Interim Management Report, Interim Planning Rules, Urban Area Plan Map and a Multi-Sectoral Investment Program.

1.10 Public Consultation

Public consultation is an essential element of modern planning. Public consultation helps to get the pulse about the aspirations of the stakeholders regarding spatial development. In order to prepare the plan in line with the desire of the people several formal and informal meetings were arranged with the stakeholders. In the initial stage stakeholders were appraised about the techniques of the plan preparation process and in the later stage the discussions were made with draft plan. A brief description of the selected such meetings are as follows.

MAP 1.3: CONTOUR MAP OF THE PROJECT AREA

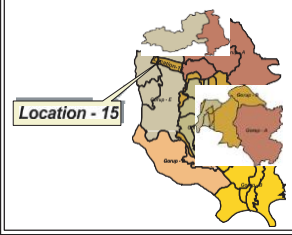


CONSULTANT
Development Design Consultants Ltd.
47 iyiohakhaii c/A, ohaka 1z1'z, eangiadesh

Detailed Area Plan for DMDP Area (Location-15)

0.4 0 0.4 0.8 1.2 1.6 2 Kilometers

Ministry of Housing and Public Works
Rajdhani Unnayan Kartripakkha (RAJUK)



LEGEND

+••,• Group Boundary

our 4ne (0.5 m interval)

4.1 - 6.5

666 1

NOTES

Data Source
GPS & Total Station based advanced topographic physical feature and landuse survey conducted by Development Design Consultants Ltd.

Reference Bench Mark (BM)
* SOB (JICA)-3407 and SOB (JICA)-3469 for Latitude /Northing & Longitude/Easting
* SOB-542 and SOB-6039 for Reduce Level (RL) adjustment

Projection Parameters

Projection System	:	Bangladesh Transverse Mercator (BTM)
Spheroid	:	Everest 1830
Scale Factor	:	0.9996
Central Meridian	:	90 degree East
False Easting	:	500,000 Meter
False Northing	:	-2000,000 Meter
Latitude of Origion	:	0 degree (Equator)
Seven-parameters for User Defined Datum	:	283.729, 735.942, 261.143, 0.0, 0.0, 0.0, 1.0

1.10.1 Consultation with Local Government Authorities

Local Government Authority named Dhaka City Corporation, Gazipur Pourashava, Tongi Pourashava, Kaliganj thana, Rupganj thana, concerned Union Parishad were involved in the consultation with the consultants.

1.10.2 Consultation with Different Communities

Besides Public Hearing, consultation with different communities was held with following organizations:

1. Academics: Department of Urban and Regional Planning of BUET, JU and Department of Urban and rural Planning of KU
2. Professional body: Bangladesh Institute of Planners, Institute of Architects Bangladesh
3. Study groups: Center for Urban Studies
4. Business group: FBCCI, DCCI, REHAB, BLDA, Dhaka Mohanagar Somitee
5. Media: The Daily Inqilab, The Daily Naya Diganta, The Daily Sambad

Outcome of such consultation was as follows:

1. DCC Mayor wants Plans should be prepared for 50-100 years
2. Academics want protection of Flood Flow Zones at any cost, protection of agriculture and separation of Rural Settlement from agriculture
3. DCCI appreciated the suggestion of treatment of industrial waste
4. Pourashavas: Retain their development control right in the form of issuance of Planning Permit
5. Affected People: Don't want wider roads and civic facilities which will evict them from their land without resettlement.

1.10.3 Public Hearing

As per section 74 of Town Improvement (TI) Act 1953, RAJUK carried out a two month long Public Hearing on the Detailed Area Plan from October 5, 2008 to December 4, 2008. The Public Hearing was carried out through:

- Media Coverage
  - Print
  - Electronic
- Press Conference
- Web based Publication
- Display of Maps (Hard Copy)
  - RAJUK Auditorium
  - DAP, PD Office, RAJUK
  - RAJUK Zonal Office at Dhanmandi
  - RAJUK Zonal Office at Mohakhali
  - RAJUK Zonal Office at Uttara
- Explain different aspects of the Plan to the stakeholders by experts
- Digital Display upto individual Mauza Plot level in GIS Platform
- Collection of Complaints in prescribed format and preparation of checklist
- Collection of Complaints in the form of letter to Chairman/P.D.

A total of 5,326 complaints / comments were made on the plans of Group-A area by individuals, groups, institutions / organizations, local co-operatives and Private Developers. Most of the complaints were related to proposed road network. For fear of eviction, the land owners of the plots over which new roads have been proposed have made complaints in a very large number. However, quite a good number of people also appreciated the plan and wanted its early implementation.

1.10.4 Consultation with Public Representatives

A large number of Public Representatives have provided their valuable suggestions during last six months. Those representatives are Members of Parliament and Ministers representing their individual constituencies. Most of those representatives suggested to complete the DAP within stipulated time period and advised RAJUK to save Dhaka from unplanned trend of development. Excepting this, the representatives made their candid opinion on environment pollution, indiscriminate land filling, expansion of central area of Dhaka City towards north and south in a planned manner, improvement of drainage system of central Dhaka at the same time fringe areas and industrial development in specific locations.

1.11 Draft DAP Review by Review Committee

A Review Committee (RC) to review the Draft Final Plan submitted by the consultants was formed by the Ministry of Housing & Public Works with Prof. Dr. Jamilur Reza Chowdhury, Vice Chancellor, BRAC University as Convener. In order to assist the Review Committee in its tasks, a 16-member Technical Working Group (TWG) was formed with members from Urban and Regional Planning Department of BUET, Urban and Regional Planning Department of JU, Bangladesh Institute of Planners, Institute of Architects Bangladesh, Urban Study Group and RAJUK. Following issues proposed by the Consultants were of concern of the RC and TWG.

- Population Projection for 2015
- Rural Settlement Zone
- Flood Flow Zones
- Agricultural Zone
- Retention Pond & Canal
- Road Network
- Urban Deferred Zone
- Standards
- Existing Non Complied Uses

On the recommendation of TWG, the Review Committee (RC) finalized their report on March 30, 2009. But the consultants were of different opinion about it and it was decided to resolve the issue through discussion among the RC, RAJUK and the Consultants. Accordingly a series of tripartite meetings were arranged and finally the matter was resolved through consensus reached by all the three parties. According to consensus following decision were made.

- **Population** : Population for 2015 shall be projected on the basis of:
  - Population of 2001 and shall be considered as 10.24 Million.
  - Population for 2015 and shall be accepted as 18.43 Million.
  - Overall Annual Growth Rate shall be considered as 4.29 %.
- **Rural Settlement Zone**: A new zone named Rural Settlement Zone shall be created to accommodate and confine traditional rural settlements*.

  (Later to include Growth Centers it was renamed as Rural Settlement Zone)*
- **Flood Flow Zones** : Since all the structures have been contained within newly created Rural Homestead Zone, the remaining parts of Main Flood Flow and Sub Flood Flow zone become one and therefore merged into one unified zone namely Flood Flow Zone.
- **Agricultural Zone**
  - High value Agricultural Zone and Agricultural Zone shall be merged into one zone namely Agricultural Zone due to their uniform and similar landuse control requirement.
  - Any further use that does not conform to the Agricultural Zones shall be strictly prohibited.
- **Retention Ponds & Canals**
  - Retention Pond as provided by the consultants in the form of canals at DND and the Eastern Fringe may be maintained as they comply with the Structure Plan & Urban Area Plan.

- Retention Pond as provided by the consultants at the outskirts of the Eastern Fringe alongside the embankment to ease pumping out of water may be maintained.
- Canal Network at the Eastern Fringe must be improved by creating links among them.
- Canals for drainage of Eastern Fringe as per Halcrow Study will work but FAP 8A proposed Retention Area must be kept as further caution.

- **Road Network**
  - Grid Iron pattern for main roads (Down to secondary roads) as proposed by the Consultants may be provided.
  - Crossing the canals by main roads (Down to secondary roads) as proposed by the Consultants may be provided.
  - Regional Road over Retention Pond on viaduct should be provided.
- **Urban Deferred**: As DAP projected population for 2015 is more than the estimated population of the Structure Plan, no part of the area designated as urban in the Structure Plan is required to be shown as urban deferred.
- **Standards**
  - Amenity Standards as set by the DAP Consultants are acceptable.
  - Standard of Regional Parks and Open Spaces within DMDP will be 0.28 acres /1,000 people.
  - Spaces for the Universities to be earmarked in suitable locations within DMDP jurisdiction.
- **Existing Non Complied Uses**
  - The use / function that do not comply with the designated landuse category shall be either of the following types:
    - **Overlay Zone:** Non-complied use/function that DAP allows to continue in its present use.
    - **Non-conforming Use/Site**: Non-complied use/function that DAP does not allow to continue in its present use and fixes time frame for its discontinuation based on the nature and extent of its potential adverse effect on the underlying land use.
  - Non conforming uses/functions may be described as follows:
    - RAJUK'S Own Project
    - Facilities Owned by Government/ Semi-government and/or Autonomous Body.
    - Private Projects

1.12 Draft DAP Review by DAP PORJALOCHANA Committee

Ministry of Housing and Public Works vide a notice no. Gri o pu ma/Pari-3/1(5)/2001(Part-3)43 dated 7-3-2010 constituted a DAP PORJALOCHANA Committee with the following members to verify the compliance status of the recommendations made by the previous Review Committee according to a ToR.

a. Prof. Dr. Jamilur Reza Chowdhury : Convener
   Former VC, BRAC University
b. Prof. Nazrul Islam, Chairman : Member
   University Grants Commission
c. Prof. Sarwar Jahan, President : Member
   Bangladesh Institute of Planners
d. Ms. Rezwana Hasan : Member
   Chief Executive Director, BELA
e. Architect Iqbal Habib : Member
   Jt.Secretary, BAPA
f. Project Director, Detailed Area Plan : Member Secretary
   RAJUK, Dhaka.

The committee reviewed the status of the Draft DAP in view of the recommendations of the previous Review Committee in four separate meetings held on 16-03-2010, 25-03-2010, 01-04-2010 and 11-04-2010 in the RAJUK Board Room. The committee ultimately made 36 point recommendations to be followed by the consultants. The committee also recommended that on compliance of these recommendations made by the PORJALOCHANA Committee, the Draft DAP may be accepted by the ministry.

Chapter - 2
CRITICAL PLANNING ISSUES

2.1 Existing Development Pattern

Existing urban centers of the project area are Ashulia, Dhamsona and Yearpur Unions. According to the 1991 census, about 10% of the total area was urban and rest in flood plains and in non-urban area. Comprehensive planning approach may be adopted for those urban areas where development has already taken place to a large extent. In comprehensive detailed area planning, as far as possible, the existing structures (where necessary) may be retained. Emphasis may be given mainly on development of new infrastructure.

2.1.1 General

Existing development pattern of the project area have been discussed according to the landuse survey and physical feature surveys. Landuse of the project area have been analyzed at union basis. For generalized landuse pattern, all landuses were sub-divided into 15 major classes. It is clearly evident that agricultural landuse features include primarily farmland and rural homesteads.

The project area is a track of land between Group-E (north, south and western side) and Group-A (eastern side).It does not have a distinct natural boundary, having only been demarcated by somewhat straight lines. Savar industrial area, Tongi industrial area and Uttara residential area influences the project area to be formed as mixed use. Most of the industrial establishments are located around Ashulia to Tongi EPZ road and Savar EPZ road. Ten daily markets having total area of 6614.00 acres (one market for 661 acres of land) of land including about 50,000 population (one market for 5000 population) shows that the area naturally developed as commercial area. A number of proposed housing areas in Location-15 influences Uttara Residential Area and located dispersly. Low-income people working in the adjacent industries and Tongi EPZ have occupied most of those residential areas (except high-rise building).

2.1.2 Socio-economic Profile

Socio-economic profile of the project area of Location-15 has been revealed from the Socio-economic survey of the households. Five percent households of the Project Area were surveyed and following broad information has been gathered through it.

a. Family Size

It is found that the family size varied widely, from 1 to 12 or more though families of 4-6 members were more common in the project area. Most of the families were unitary type, though a few joint families were also found.

The table below represents the comparative scenario of household size in the project area. It is found that most of the families are comprised of 4 to 6 members in all over the project area which covers about 61%. About 27% families are of 1-3 members. Actually most of the families are single families in the project area. There are significant number of joint families exist in the project area.

Table-2.1: Family size of project area

Family size	Ashulia		Dhamsona		Yearpur		Mirpur/ Harirampur		Total	
	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)
1-3	16	23	29	32	34	27		0	79	27
4-6	38	55	53	58	81	64	6	100	178	61
7-9	11	16	8	8.8	10	7.9		0	29	9.9
10-12	2	2.9	1	1.1	2	1.6		0	5	1.7
13-15	2	2.9		0	0	0	0	0	2	0.7
Total	69	100	91	100	127	100	6	100	293	100

Source: Socio-economic survey, 2005.

b. Age and Sex Structure

Age and gender distribution is a key variable that indicates the possibilities of natural growth of the project area population without migration (in or out). The age sex distribution in the project area is quite identical. Age sex distribution implies that somewhat female populations are more than the male populations in the project area. It is found that about 11.1% populations are between 25-29 age groups in which 45% are male and 43.8% are female.

Table-2.2: Age and Sex structure of project area

Age group	Ashulia		Dhamsona		Yearpur		Mirpur/ Harirampur		Total	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
0-4	6	6.3	12.6	9.6	9	13.2	0	30.8	27.6	59.9
5-9	12.5	11.9	8	14.2	11.6	10.7	14.3	7.7	46.4	44.5
10-14	6.5	13.8	8	7.6	11	10	7.1	7.7	32.6	39.1
15-19	9.2	8.8	8.5	13.7	6.6	10	14.3	0	38.6	32.5
20-24	11.4	10.1	9	8.6	8	10.7	7.1	15.4	35.5	44.8
25-29	10.3	10.7	10.1	14.7	10.3	10.7	14.3	7.7	45	43.8
30-34	8.7	6.9	9.5	5.1	9.6	12.9	7.1	7.7	34.9	32.6
35-39	8.2	10.7	10.1	8.6	10.3	3.9	7.1	7.7	35.7	30.9
40-44	8.2	6.9	7	7.1	7	5	7.1	0	29.3	19
45-49	7.1	2.5	5.5	4.1	4.3	2.1	0	15.4	16.9	24.1
50-54	1.6	5	2.5	2.5	2	2.5	0	0	6.1	10
55-59	0.5	1.9	5	1	2.7	1.4	14.3	0	22.5	4.3
60-64	6	1.3	2	0	2.3	4.6	7.1	0	17.4	5.9
65-69	0.5	1.3	0	1	1.7	1.1	0	0	2.2	3.4
70-74	1.1	1.3	1	1	1.7	1.1	0	0	3.8	3.4
75-79	0	0.6	0	0.5	1	0	0	0	1	1.1
80-84	2.2	0	0.5	0.5	0.7	0	0	0	3.4	0.5
90+	0	0	0.5	0	0.3	0	0	0	0.8	0
Total	100	100	100	100	100	100	100	100	49.28	50.72

Source: Socio-economic survey, 2005.

c. Religious Groups

It is found that Muslim religious populations are dominant community in all over the project area. Hindu's are also found in the project area and mostly clustered in Mirpur / Harirampur area which accounts for only 17%. The presences of Christian populations are very negligible in the project area. .

Muslim's overwhelmingly dominate and account from more than 95%. Hindus are around 4.4% and Christian's around 0.3%. From the below figure it represents a clear view of religious distribution.

Table-2.3: Religious group of project area

Religious	Ashulia		Dhamsona		Yearpur		Mirpur/ Harirampur		Total	
	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)
Muslim	64	93	90	99	120	94	5	83	279	95
Hindu	5	7.2	0	0	7	5.5	1	17	13	4.4
Christian	0	0	1	1.1	0	0	0	0	1	0.3
Total	69	100	91	100	127	100	6	100	293	100

Source: Socio-economic survey, 2005.

d. Educational Status

It is found that most of population is literate. From the socioeconomic survey it is envisaged that about 88.2 percent of the total populations are educated on the other hand the percentage of illiterate population is relatively low, which account for 11.8%. In Ashulia, Dhamsona, Yearpur and Mirpur/Harirampur there are 90.1%, 88.2%, 86.2% and 88.2% literate population respectively.

Table-2.4: Illiteracy Status of project area

Education	Ashulia	Dhamsona	Yearpur	Mirpur/ Harirampur	Total
	(%)	(%)	(%)	(%)	(%)
Illiterate	21.5	28.8	47.2	2.5	100.0

Source: Socio-economic survey, 2005.

The table below represents overall educational scenario of the Project area. From the socio economic survey it is found that about 46.6% have attained or completed the elementary level of education. About 31.6% have completed the junior level education. Junior level education is defined as the interim period between elementary to before SSC. About 12.4% have completed SSC level education while remaining percent has attained or completed the higher level of education.

Table-2.5: Literacy Status of the project area

Education	Ashulia	Dhamsona	Yearpur	Mirpur/ Harirampur	Total
	(%)	(%)	(%)	(%)	(%)
Elementary	48.9	39.1	49.7	57.9	46.6
Junior	30.9	34.4	30.7	15.8	31.6
S.S.C	11.7	16.1	10.4	10.5	12.4
H.S.C	5.3	6.0	4.6	5.3	5.2
Degree	2.1	2.7	2.5	0.0	2.4
Doctor/Engineer/Advocate	0.0	0.0	0.2	0.0	0.1
Master Degree and above	1.1	0.7	1.6	10.5	1.4
Technical (Diploma)	0.0	0.3	0.2	0.0	0.2
Religious education/ Madrasa Degree	0.0	0.7	0.0	0.0	0.2
Total	100	100	100	100	100

Source: Socio-economic survey, 2005.

In 1991 Census, Literary rate (7 years and over) is 33.5% on average for both sexes in the project area. In Dhamsona, the literacy rate was 37.1% for both sexes, 46.6% for male and 26% for female in 1991 and at that period it was 32.3% and 25.5% in Yearpur and Ashulia respectively for both sexes. Due to under coverage socio-economic survey of 2006 failed to record literacy rate properly.

Table-2.6: Literacy rate of the project area

Union	Literacy rate-1991(7+Years)			Literacy rate-2006 (5+ Years)		
	Total	M	F	Total	M	F
Ashulia	25.5	32.4	18	89.0	91.8	85.6
Dhamsona	37.1	46.9	26	86.4	92.0	80.8
Yearpur	32.3	39.4	25	84.9	91.2	77.7
Harirampur/Mirpur	37.1	44.5	28	82.6	85.7	77.8

Source: Socio-economic survey, 2005.

e. Occupation / Employment Pattern

In 2006 around 16.5% of the total employed parsons were engaged in agricultural activities compared to around 50% for the whole country. This included owner-farmer, tenant-farmer (share-cropper), and agricultural day labor. The percentage of day labor –both agriculture and non-agriculture- is small –around 4.9% compared to around 25% for the whole country. There is significant number of population engaged in shop keepers and traders which accounts for about 34.3 percent, while 23.7% are employed as privately office worker. Industrial workers account for around 8.8% of total employment and seem to be growing. Together with transport workers they account for around 4.1% of total employment.

Table-2.7: Occupation status of the project area

Occupation	Ashulia	Dhamsona	Yearpur	Mirpur/Harirampur	Total
	(%)	(%)	(%)	(%)	(%)
Self Employed	0.9	0.0	1.1	0.0	0.7
Owner Farmer	5.1	0.8	16.2	0.0	8.4
Tenant Farmer	4.3	0.0	4.3	11.1	3.2
Agricultural Day Labor	0.0	0.0	0.5	0.0	0.2
Non-Agricultural Day Laborer	3.4	4.5	5.9	0.0	4.7
General Purpose Day Labor	3.4	3.0	1.1	0.0	2.3
Industrial Worker	9.4	12.1	6.5	0.0	8.8
Skilled Mechanic/Technician	0.0	0.8	0.5	0.0	0.5
Rickshaw/Van Puller	0.9	2.3	1.6	0.0	1.6
Vehicle (Car/Bus) Driver	3.4	3.0	1.6	0.0	2.5
Shop Keepers and Traders	41.0	36.4	26.5	77.8	34.3
Office Worker-Govt, Auto. Corp.	3.4	6.1	2.2	0.0	3.6
Office Worker-Private office	16.2	29.5	25.4	0.0	23.7
Teacher	0.9	0.0	1.1	0.0	0.7
Expatriate	7.7	1.5	4.9	11.1	4.7
Others	0.0	0.0	0.5	0.0	0.2
Total	100	100	100	100	100

Source: Socio-economic survey, 2005.

f. Income and Expenditure Levels

Table below represents the household income distribution pattern of the project area. It is found that the household income widely varies from 3001 to 15000 taka per month in the project area (73.80% household), which accounts for bout 50.37% of the total household income in the project area. It also reveals that within the above mentioned household income group about 16.52% household earn 9001-12000 taka per month. There are 10.25% household earn above 27001 taka per month which is 24.26% of the total household income.

Table-2.8: Income Distribution of project area population

Income range in Tk.	Mid point of the range	Ashulia		Dhamsona		Yearpur		Mirpur/ Harirampur		Total	
		M	Income	M	Income	M	Income	M	Income	M	Income
0-3000	1500	6	9000	0	0	7	10500	5	7500	18	27000
3001-6000	4500	49	220525	64	288032	147	661574	8	36004	268	1206134
6001-9000	7500	78	585039	138	1035069	130	975065	0	0	346	2595173
9001-12000	10500	60	630030	66	693033	129	1354565	0	0	255	2677628
12001-15000	13500	45	607523	24	324012	56	756028	0	0	125	1687563
15001-18000	16500	19	313510	28	462014	20	330010	0	0	67	1105534
18001-21000	19500	4	78002	13	253507	14	273007	4	78002	35	682518
21001-24000	22500	0	0	16	360008	26	585013	0	0	42	945021
24001-27000	25500	23	586500	14	357000	16	408000	0	0	53	1351500
27001=>	28500	59	1681530	33	940517	36	1026018	10	285005	138	3933069
Total		343	4711657	396	4713191	581	6379779	27	406511	1347	16211138

Note: M=Member

Source: Socio-economic survey, 2005.

The project area is mostly rural or semi-urban area. Urban development is prevailing there. It is found that most of the peoples of the project area are engaged in various economic activities. Peoples involved in business activities, industrial works, agriculture, household works and government services are the primary income group in all over the project area. Teacher, Day labour (Agriculture), Skilled Mechanic/Technicians are mostly clustered in Yearpur and a significance percentage of household income is incurred from these above mentioned activities (Table-2.9)

There is good correlation between per capita income and level of education. The lowest per capita income in the project area is earned by the illiterate and highest by technical, Doctor/Engineer/Advocate, and Master Degree. Average per capita income in the project area is around Tk 2626 per month, while per capita expenditure is around 1602 Tk. In Ashulia average per capita income is 2799 Tk per month and average per capita expenditure is around 1631 Tk per month, where maximum per capita income is obtained from Master degree holder (6250 Tk per month).

Table-2.9: Income by Occupation (Cross table)

Occupation	Ashulia	Dhamsona	Yearpur	Mirpur/ Harirampur	Total
Self Employed	0	0.	10500	0	10500
Govt. /Auto. Body	10300	15938	7000	0	14480
Non Govt. Office	5364	7955	9012	0	7937
Business	14956	15828	13909	20200	15136
Rickshaw/Van Puller	0	6000	4000	0	5200
Car Driver	15000	7733	5333	0	7743
Skilled Mechanic/ Technician	0	0	7000	0	7000
Industrial Worker	5000	9550	6200	0	7827
Day Laborer (Non-agri.)	10133	6900	6333	0	7171
Farmer(Land owner)	9900	6500	10072	0	9929
Share Cropper	7000	0	9338	1000	7977
Day Labor (Agri)	0	0	7000	0	7000
Household Work	37750	14033	22333	0	26010
Pension	28167	10000	8000	0	21667
Day Labor (gen.)	6000	7625	6750	0	7000
Teacher	0	0	16500	0	16500
Expatriate	12550	22063	10500	0	16412
Total	14119	12201	10428	17000	11982

Source: Socio-economic survey, 2005.

Table-2.10: Per Capita Income and Expenditure with Education (Cross Table)

Education	Ashulia		Dhamsona		Yearpur		Mirpur/ Harirampur		Total	
	PCI (Av)	PCE (Av)	PCI (Av)	PCE (Av)	PCI (Av)	PCE (Av)	PCI (Av)	PCE (Av)	PCI (Av)	PCE (Av)
Illiterate	2280	1470	3183	1732	1718	1236	4375	1881	2426	1476
Elementary	2109	1256	2402	1603	1908	1303	725	1051	2045	1358
Junior	2858	1601	2584	1678	2680	1540	0	0	2695	1596
S.S.C	3055	1842	2657	1704	2830	1665	0	0	2793	1716
H.S.C	4698	2651	4352	2388	2427	1340	6667	1933	4154	2232
Degree	1250	1025	2953	1777	3219	1874	0	0	2882	1737
Doctor/Engineer/ Advocate	0	0	0	0	4800	2540	0	0	4800	2540
Master Degree & above	6250	2600	2833	1283	3031	2047	5250	4375	3780	2349
Technical (Diploma)	0	0	3500	3275	0	0	0	0	3500	3275
Total	**2799**	**1631**	**2852**	**1762**	**2320**	**1452**	**3686**	**2029**	**2626**	**1602**

Note PCI=Per Capita Income, PCE=Per Capita Expenditure

Source: Socio-economic survey, 2005.

Age-income profile of head of the households in the project area is shown in the table below and ignoring other key factors like education, skill etc. it is observed that there is a positive correlation between income and age in all the project area. For earned income, accumulation of experience is the main reason. After certain age, around 50-55, property income serves to take over and acts as the main explanatory variable for rising income and its variations over areas. The average age groups of 55-59 and 60-64 seems to be the modal earning.

Table-2.11: Average Income by age distribution (Cross Table)

Age Group	Ashulia	Dhamsona	Yearpur	Mirpur/Harirampur	Total
15-19	0	6000	0	0	6000
20-24	5500	7000	6838	0	6693
25-29	7875	10150	8406	0	8709
30-34	7313	9125	8139	1000	8090
35-39	9250	9389	10407	5000	9770
40-44	13591	11850	10242	21000	11802
45-49	23650	12818	12542	0	16437
50-54	11100	17150	8986	0	11823
55-59	12400	17400	16314	22500	17280
60-64	15330	29500	8480	30000	17185
65-69	10000	0	10000	0	10000
70-74	50000	10000	19000	0	23400
75-79	0	0	28000	0	28000
80-84	22667	6000	0	0	18500
Total	14119	12201	10428	17000	11982

Source: Socio-economic survey, 2005.

It is general propensity of population that peoples move from under developed area to developed or developing areas. Peoples migrate in urban areas in order to lead a better life, to improve the quality of life as there exist better job opportunity in all over the project area. There is significant correlation between the household income and expenditure with migration. It is found that monthly average income is 3001-1200 taka of migrant people which accounts for about 35.33%, while monthly average expenditure is only 3001-6000 taka which is around 67.2%.

Table-2.12: Income Level by In-migrated household (Cross Table)

Income range	Ashulia		Dhamsona		Yearpur		Mirpur/ Harirampur		Total	
in Tk.	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)
3001-6000	7	33.3	16	30.2	21	52.5	2	40.0	46	38.7
6001-9000	8	38.1	26	49.1	10	25.0	0	0	44	37.0
9001-12000	1	4.8	7	13.2	7	17.5	0	0	15	12.6
12001-15000	3	14.3	1	1.9	0	0	0	0	4	3.4
15001-18000	0	0	3	5.7	2	5.0	0	0	5	4.2
18001-21000	1	4.8	0	0	0	0	1	20.0	2	1.7
27001=>	1	4.8	0	0	0	0	2	40.0	3	2.5
Total	21	100	53	100	40	100	5	100	119	100

Source: Socio-economic survey, 2005.

The socio economic survey data on household income, expenditure and investment pattern of 5% of the project area population. Based on the sample data we get the following table regarding expenditure pattern of the area. The expenditure pattern of the project area as a whole conforms to the general pattern of household expenditure as obtained through nation-wide household income and expenditure surveys.

Table-2.13: Expenditure Pattern (in Tk.)

Range of expenditure	Mid point	Ashulia		Dhamsona		Yearpur		Mirpur/ Harirampur		Total	
		N	Exp.	N	Exp.	N	Exp.	N	Exp.	N	Exp.
0-3000	1500	16	24000	0	0	34	51000	0	0	50	75000
3001-6000	4500	95	427547	176	792088	255	1147628	13	58506	539	2425770
6001-9000	7500	114	855057	102	765051	179	1342590	0	0	395	2962698
9001-12000	10500	74	777037	53	556526	61	640530	10	105005	198	2079099
12001-15000	13500	10	135005	32	432016	30	405015	0	0	72	972036
15001-18000	16500	6	99003	14	231007	10	165005	4	66002	34	561017

18001-21000	19500	18	351009	6	117003	0	0	0	0	24	468012
21001-24000	22500	0	0	5	112502	12	270006	0	0	17	382508
24001-27000	0	0	0	0	0	0	0	0	0	0	0
27001=>	28500	10	285005	8	228004	0	0	0	0	18	513009
Total		343	2953663	396	3234198	581	4021774	27	229513	1347	10439149

Note: N= Number, Exp. =Expenditure
Source: Socio-economic survey, 2005.

The component area expenditures also follow the general pattern of expenditures- the more rural an area the higher is the food expenditure ratio and the more urban the area a relatively lower food ration would obtain. In the project area as a whole the food ratio is around 53.5% or in other words taking the project area as a whole, the overall food ratio is around 53.5% of the total monthly household expenditures. Of the component areas, the food ratio is highest in Yearpur (58.5%) and Ashulia (52.2%), the two most rural of the areas. In Dhamsona, the food ratio is around 50.2%.

Table-2.14: Expenditure in different sector (in percent of total income)

	Ashulia	Dhamsona	Yearpur	Mirpur/ Harirampur	Total
Food and Fuel					
Food	52.1	50.2	58.5	32.7	53.5
Electricity	9.7	12.9	7.4	10.1	9.9
Sub-total	**61.8**	**63.2**	**65.9**	**42.8**	**63.4**
Non-Food					
Cloths	5.2	4.2	4.6	5.0	4.6
House rent	2.6	6.5	3.4	0.0	4.1
Education	13.2	10.8	8.9	22.2	11.0
Medical	2.4	2.0	2.2	4.0	2.2
Conveyance	7.2	7.1	6.7	9.3	7.0
House maintenance	2.2	1.3	2.4	6.5	2.1
Social activities	2.0	1.9	2.2	3.0	2.1
Others	3.5	3.0	3.8	7.0	3.5
Sub-total	**38.2**	**36.8**	**34.1**	**57.2**	**36.6**
Total	**100**	**100**	**100**	**100**	**100**

Source: Socio-economic survey, 2005.

g. Source of Income

Wages and salary are the dominant sources of household monthly income in the project area-accounting for around 37% of the total household monthly income. Income from trade and commerce accounts for around 22% of household monthly income. Agriculture as a whole, including crops, livestock and poultry and fish cultivation, accounts for around 19 %, while remittances around 5% of the total monthly household income.

Table-2.15: Income source (in percent)

Sources	Ashulia	Dhamsona	Yearpur	Mirpur/ Harirampur	Total
Salary	26.5	38.1	23.7	0	28.5
House rent	10.8	19.4	13.2	37.5	15.0
Business	33.3	25.2	22.6	62.5	26.7
Wage (daily)	8.8	11.5	11.6	0	10.7
Agriculture	11.8	2.2	19.5	0	11.8
Poultry/Livestock	3.9	0	4.7	0	3.0
Cottage industry/Handicraft	0	0.7	0	0	0.2
Remittance	3.9	1.4	2.1	0	2.3
Others	1.0	1.4	2.6	0	1.8
Total	100	100	100	100	100

Source: Socio-economic survey, 2005.

There are about 94.7.0% employed persons and 5.3% unemployed persons of 15 to 65 years of age. 63.9% of the population is not in labor force and they include those engaged in housekeeping (41.5%) or home-making, students (36.1%), under aged (22.2%) and elderly persons above 65 years of age.

Table-2.16: Total Non-labour force (in percent)

Occupation	Ashulia	Dhamsona	Yearpur	Mirpur/ Harirampur	Total
Household Work	45.0	41.3	39.8	37.5	41.5
Student	39.6	34.3	35.1	37.5	36.1
Under age	14.9	24.0	25.1	25.0	22.2
Disabled	0.5	0.4	0.0	0.0	0.2
Total	100	100	100	100	100

Source: Socio-economic survey, 2005.

h. Migration

The level of in-migration of household members is important as the inflow of remittance shows. Remittance by out-migrating household members is an important source of household income. There are various reasons for migration like inadequacy of employment opportunity in the respective area, social or political unrest, due to marriage, business purposes, in order to lead a better life, river erosion etc. from the socioeconomic project it is found that most of the peoples migrate to other places for the sought of service or working purpose in all over the project area.

Table-2.17: Reasons for Out-migration in different years (in percent)

Reasons	Ashulia		Dhamsona	Yearpur		Mirpur/ Harirampur	Total
	1995 - 2000	2001-2005	2001-2005	1995 - 2000	2001-2005	2001-2005	
Service/Working place	100	100	100	100	80	100	93.75
Others					20		6.25
Total	100	100	100	100	100	100	100

Source: Socio-economic survey, 2005.

2.1.3 Landuse

For designing a land use classification the consultant surveyed a wide variety of references including Bangladesh National Building Code (BNBC), land use provisions prescribed by other city plans of the country and academic references. Later on, a series of discussion meetings were held between RAJUK and consultants about the land use classifications.

The land use of the project area have been analyzed at union basis. For assigning generalized land use pattern of the entire project area, all the land uses were sub-divided into 15 major classes as per revised and approved contents supplied by RAJUK. It is clearly evident from the table that rural-agricultural land use features that include primarily farmland and rural homesteads dominate the project area.

It has been ascertained that major landuse goes to vacant land and it is about 30% of the total land. Second major landuse is agriculture and occupying about 27% of the project area. Beside these about 23% residential, 8% water bodies and 3% are using for manufacturing and processing purposes. Landuse under roads and restricted areas are about 3% and 3% respectively. In following sections existing gross landuse pattern have been analyzed based on landuse sub-areas of the project area.

Table-2.18: Existing Landuse Pattern of the project area

Landuse Type	Area (acre)	%
Vacant Land	1518.758	30.1
Agriculture	1510.469	30.0
Residential	1152.903	22.9
Water Body	399.523	7.9
Manufacturing and Processing Activity	146.101	2.9
Circulation Network	122.518	2.4

Restricted Area	83.043	1.6
Commercial Activity	60.565	1.2
Recreational Facilities	27.653	0.5
Education & Research	12.115	0.2
Mixed Use	3.764	0.1
Service Activity	1.785	0.0
Community Service	1.536	0.0
Governmental Services	0.037	0.0
Non Governmental Services	0.005	0.0
Total	**5040.775**	**100.0**

Source: Landuse Survey, 2006.

a. Agricultural Areas

The agriculture is the most dominant land use found in this project area. The total area under this land use is 1510 acres which represents around 30 % of total area.

b. Residential areas

Residential land has occupied approx. 1153 acres (23%) of land. The survey result indicates that residential category is the third major predominated landuse in the project area. As per area-wise statistics, Yearpur, Ashulia and Dhamsona union have occupied 50%, 26%, and 24% respectively.

Different types of residential building (pucca, semi pucca and katcha) have been identified from the physical feature survey. Structure types vary from one story to multi story of different varied dimension, size and shape. Total number of 18426 residential buildings has been found in the project area composed with pucca (714), semi-pucca (11596) and katcha structures (6116). Most of the residential buildings are one-storied semi-pucca structure.

c. Industrial Areas

A number of industrial agglomerations are found in the project area. Different types of industries like heavy industry, medium industry and light industry are located in the different places. From the physical feature survey it is revealed that the total number of buildings for industrial use is 244. Out of these, heavy, medium and light industries are 55, 135 and 54 respectively.

Most of the heavy and vital industries are located in Yearpur Union and next to Ashulia Union and others are scattered in the different places of the project area. There are 28 heavy industries in Yearpur Union. In Ashulia Union, 24 heavy industries are located. But in Dhamsona Union heavy industry is rare and only 3 industries are located. Total number of heavy industries is 55 including textile, chemical, plastic and metal, leather industries, etc. A largest part of the heavy industries are one-storied building. Out of 55 heavy industries, 24 are one-storied, 8 two-storied, 9 three-storied and rest of the building are above three-storied.

Garment industry is the main medium scale industry in the project area. Besides this, food industry, steel mill, biscuit factory is available there. There are 135 medium scale industries found in the Yearpur union (85), Ashulia (30) and Dhamsona Union (20). Out of 135 medium scale industries, 91 buildings are one-storied and 44 buildings are two-storied.

Garments, Poultry farm, Cottage industry and brickfield are main light industry. There are 54 light industries sequentially distributed in different Unions. Ashulia Union (29) and Yearpur Union (21) have concentrated highest number of light industries. Rest of the light industry (4) is available in Dhamsona Union. All the light industries are one-storied building.

A little amount of land (146 acres or 3 %) of the project area is covered by the industrial establishments. This category includes different types of industries such as large, medium and small scale. Various categories of industries include, Metal Industries, Garments, Jute, Textile, Spinning, Pharmaceutical, Drugs and Medicine, Food manufacturing, Leather, etc.

The Yearpur union is occupied about 51% of total for industrial purposes. These industrial locations provide easy access to laborer. Yearpur and Ashulia corridor is the major industrial hub of the project area. Ashulia union covered 45% industrial land where medium and small-scale industries exist and Dhamsona union occupied only 4% industrial land.

d. Commercial areas

Different types of commercial structures like pucca, semi-pucca and katcha have been identified by the physical feature survey. Commercial structures vary in dimension, size and shape. Out of 1568 commercial buildings in the project area, pucca, semi-pucca and katcha commercial structures are 81, 1138 and 349 respectively.
A negligible number of pucca commercial structures are found in the project area. The Yearpur Union dominates 50 commercial pucca structures. Very small number of pucca commercial structures is also found in a scattered manner in Ashulia and Dhamsona Unions. Building height of an area directly refers the urbanization status and this is also directly related to the housing demand. Most of the pucca commercial buildings of the project area (46) are one-storied. Beside these, 14 two-storied and 11 three-storied buildings and rest of the buildings are above than three-storied buildings.

Most of the commercial buildings in the project area are semi-pucca. Highest concentration of semi-pucca buildings is in Yearpur Union. In total, 510 semi-pucca buildings are in Yearpur Union and 444 buildings are in Dhamsona Union. Lowest number of semi-pucca structure is found in Ashulia Union (184). All semi-pucca commercial buildings are one-storied building.

In total, 349 commercial katcha buildings are found in the project area. Yearpur Union dominates highest number of katcha structures (198). Rest of the katcha buildings is in Ashulia (79) and Dhamsona Union (72). All katcha commercial buildings are one-storied.

Major landuses under this category are retail and wholesale shopping areas and all categories of ribbon commercial developments found along the major roads. Extent of commercial landuse depends on the size of consumers. Most of the commercial activities are agglomerated in Yearpur union where 49% of lands have been found for commercial purposes. Dhamsona and Ashulia union covered 28% and 23% of total commercial land respectively.

e. Amenities and Urban facilities

Service facility is an important issue for an area. Among different types of service facilities, bank, post office, police station, powerhouse, petrol pump, fire service, insurance company, mercantile and cooperative society and health are of worth mentioning. In the project area there is no sufficient service facilities. Among the service facilities only 2 petrol pump are available in Dhamsona union and 1 power station in Yearpur union. About 1.89 acres or 0.03% of total land in this category is found in the project area. These services are concentrated mainly in Yearpur union (1.39 acre) and rest of them is in Dhamsona union (0.05 acre), but in Ashulia union there is no service facilities.

Education: Education and research institutions are limited in the project area. About 13.3 acres of land are using for this purposes which is 0.2% of total land use. Major education facilities in the area include primary school, high school and college shows in detail).Among total area under this use about 70% is available in Ashulia union and 16% in Yearpur union. Rest of 14% educational landuse is available in Dhamsona union. But Yearpur and Dhamsona union, the land use under educational use are not prominent.

There are 37 educational institutions of different level in different Unions. Among them 15 primary Schools, 9 secondary schools, 4 Colleges, 6 Madrasa, 1 University and 2 Research Centre in the project area. Major educational facilities in the area include primary school, high school and college. Among total area under this use, about 70% is available in Ashulia union and 16% in Yearpur union. Rest 14% educational landuse is available in Dhamsona union. Dhamsona Union is conducted 2 primary schools and 6 secondary schools. Rest of the schools is available in Ashulia Union. In Yearpur Union there are two private collages. Ashulia Union has one private college named Ashulia College. In Dhamsona Union there is also a private college.

One University named City University is situated in Ashulia Union. The survey results revealed that the Madrasha achieved reasonable position in the project area. Out of 6 Madrashas, there are 1, 3 and 2 respectively in Ashulia, Dhamsona and Yearpur Union. In Yearpur Union there are two training centers. Among them one is Women's Training centre and other is a Training Centre for male

Table-2.19: Education and research institution (in number)

Union	School		College	Madrasha	University	Training centr	Total
	Primary	Secondary					
Ashulia (Partial)	5	1	1	1	1	0	**9**
Dhamsona (Partial)	2	6	1	3	0	0	**12**
Yearpur (Partial)	8	2	2	2	0	2	**16**
Total	**15**	**9**	**4**	**6**	**1**	**2**	**37**

Source: Physical Feature Survey, 2006.

Health: Health facility in the project area is very poor. Government and non-government health complex is totally absent. In Yearpur Union there are two private clinics and an urban health and family planning centre.

Recreation: Recreational facilities like Cinema Hall, Theater, Amusement park, Picnic spot are included within this category and it covers about 27 acres of land of the project area. The Yearpur Union dominates all the recreational landuse. There is no recognized playground in the project area.

Parks and playground are the form of open space usually landscaped or left in its natural state intended for outdoor recreation and the general enjoyment of nature. Open spaces in the form of park and greenery act as a filter of urban noise, heat, fumes, and odors. Parks and open spaces are termed as the “lungs” of a town. Parks shape the extent and patterns of development in the community as well as city. The quality of a city can be judged by the number and quality of parks it possess.

In the project area there are three amusement parks and several numbers of playfields maintained by several authorities. The parks have variation in size, physical standard and function. According to the functions the parks and playgrounds of the project area have been divided in the following groups:

Park: Amusement parks (Fantasy Kingdom, Water Kingdom, Heritage Park).

Playgrounds: School playground, private playground.

Fantasy Kingdom

The Fantasy kingdom is located in Ashulia union. It is organized by Concord Entertainment Ltd. It has become a favorite destination for group outings, picnics or company family days. It contains different rides (Giant Splash, Roller Coaster, Flying Carpet, Bumper Cars) restaurants, shopping arcade and amazing landscaping, etc.

The digital cinema hall is also an interesting item. It shows the 3D and HD movies.

The roller coaster is a very interesting ride for a child. It is situated at Jamgora in Ashulia. It is an Amusement park and established about seven years ago.

Private authority named Concord Entertainment Ltd maintains the park. The internal environment and maintenance of the park is attractive and satisfactory. The Park is totally paved and there are many historical amusement items. It is well decorated with plantation, lighting, toilet, walkway and restaurant.

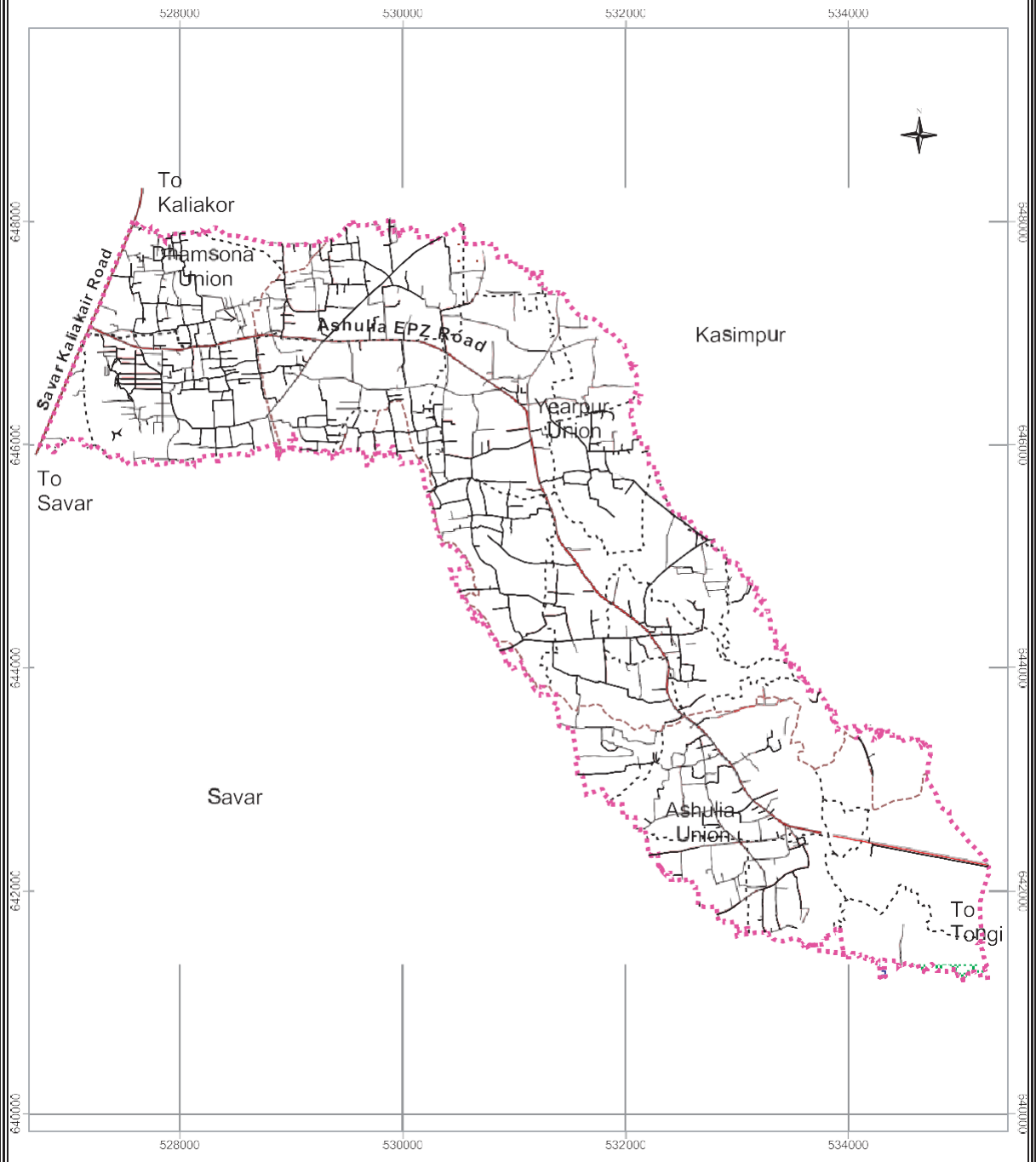
Water Kingdom

Located in Ashulia union and western part of the Fantasy kingdom. It is an amusement park and established in the year 2003. Private authority named Concord Entertainment Ltd maintains the park. The internal environment and maintenance of the park is attractive and satisfactory. The Park is totally paved and there are many historical amusement items.

Heritage Park

The heritage park is established to show and depict the historical sites of Bangladesh. It also contains various rides, which give much pleasure to the children, situated in Ashulia and on the northwest of Fantasy kingdom. It is an Amusement park and established in 2004. Concord Entertainment Ltd maintains the park. The internal environment and maintenance of the park is attractive and almost satisfied. The Park is totally paved and there are many historical amusement items. It is well decorated with plantation, lighting and walkway.

MAP 2.1: EXISTING LANDUSE PATTERN OF THE PROJECT AREA



CONSULTANT

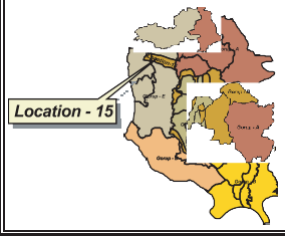
Development Design Consultants Ltd.
47 Mohakhali C/A, Dhaka 1212, Bangladesh

Detailed Area Plan for DMDP Area (Location-15)

0.5 0 0.5 1 1.5 Kilometers

CLIENT

Ministry of Housing and Public Works
Rajdhani Unnayan Kartripakkha (RAJUK)



LEGEND

- Project Boundary
- Existing Landuse Pattern
- Agriculture
- Circulation Network
- Commercial Activity
- Community Service
- Education & Research
- Governmental Services
- Manufacturing and Processing Activity
- Mixed Use
- Non Governmental Services
- Recreational Facilities
- Residential
- Restricted Area
- Service Activity
- Vacant Land
- Water Body

Reference Bench Mark (BM)

* SOB (JICA)-3407 and SOB (JICA)-3469 for Latitude /Northing & Longitude/Easting
* SOB-542 and SOB-6039 for Reduce Level (RL) adjustment

Projection Parameters

Projection System	:	Bangladesh Transverse Mercator (BTM)
Spheroid	:	Everest 1830
Scale Factor	:	0.9996
Central Meridian	:	90 degree East
False Easting	:	500,000 Meter
False Northing	:	-2000,000 Meter
Latitude of Origion	:	0 degree (Equator)
Seven-parameters for User Defined Datum	:	283.729, 735.942, 261.143, 0.0, 0.0, 0.0, 1.0

Source: Landuse Survey 2006

Playfields

Not a single formal playground is available in the project area, but about 33 small and big informal and educational institutional playgrounds are available. The institutional authorities maintain those playgrounds. The people living in the surroundings of the institution use the playground in the afternoon when the institutions remain closed.

Religious facilities: Community service covers landuse dedicated for activities of public gathering spaces. This category of use includes auditorium, town hall, all kinds of assembly hall, prayer halls including mosque, temple, church, community centre, graveyard, mazar, etc. The community service landuse covers 2.03 acres (0.03 %) of land. Out of total existing community service landuse, about 50% is available in Yearpur union and rest in Dhamsona and Ashulia union which are 28% and 22% respectively.

There are 18 graveyards of various sizes in the project area. But all the graveyards are private and uses as restricted open space. In Dhamsona, Yearpur and Ashulia unions there are 10, 5 and 3 graveyards respectively.

There are 54 numbers of religious facilities identified in the project area. Most of them are mosques and its number is 53. A large number of mosques are located in Yearpur Union (26**)** and rest of the mosque is available in other Unions. One Temple exist in the project area where people of Hindu religion go for prayer and celebrate their religious festivals.

f. Mixed Use

Mixed-use areas are those land use areas where, either commerce is mixed up with residence or residence with commerce or residence with office or admixture of all the three. Sometimes small processing plants are also found to co-exist with any one or all the above land uses. However, other admixture of diverse land uses is also found. Mixed land use is a common character of all unplanned urban centers of the country. The degree of such admixture depends on the specific location of the area.

In the Project Area, 3.8 acres land under mixed use have been identified. Out of total mixed land use, about 70% is available in Yearpur union, about 15% is available in Ashulia union and rest 15% is available in Dhamsona union.

g. Administration

This category includes all types of government offices like DC office, Zila Parishad, Upazila Parishad, LGED, DPHE, Fisheries, Social Welfare, and Statistical Bureau, Health etc. There are a number of government offices and establishments in the project area. The total land under this category has been found at 0.04 acres.

The above figure indicates that all the governmental services are available in Yearpur and Ashulia union though it is small in number. But in Dhamsona union there is no governmental services.

h. Water Bodies

Water body is an important feature for the project area. These land use spread all over the project area. Water bodies like river, pond, ditch etc. encompass almost 400 acres or 8% of the project area. Out of total water body about 55% landuse is available in Ashulia union. Beside these, the coverage of this type of land use for Yearpur and Dhamsona union are 37and 8% respectively.

i. Vacant Land

Unused or vacant land is an important characteristic feature of the project area. This category includes unused land, low laying areas, char land, etc. the vacant land is the major landuse of the project area and it is about 1519 acres or 30% of the total land .Most of the vacant lands are due to conversion of agricultural land sold by farmers to non-farmers. The new landowners keep their land vacant as long as it does not reach expected profit, either by means of their productive use or disposal through re-sale.Vacant land coverage contains for Yearpur union (50%), Dhamsona union (27%), and rest of the vacant land is available in Ashulia union which is 23% of the total vacant land.

2.1.4 Infrastructure

a. Circulation Network

In order to plan the transportation network as part of the Detailed Area Plan for Location-15, a brief assessment of the strategic network of existing road, rail and water transport was conducted. An extensive review was also undertaken of the higher level-planning framework provided by the 1959 Master Plan for Dhaka City, Dhaka Metropolitan Development Plan (DMDP) of 1995-2015 as well as the Strategic Transport Plan (STP) of 2006 for greater Dhaka

Road Network

There are two regional highways (Ashulia to EPZ and Savar to Kaliakair) available in the project area. Ashulia to EPZ regional highway is the major road passes through the heart of the project area. It is a two-lane road and length is about 10.51 km. Second regional highway is Savar to Kaliakair road passes through the northern part of the project area. Only 2 km of this road passes through the project area. The topographic survey revealed that highest flood level in the project areas was 5.0 to 7.0m above the PWD Datum (Mean sea level). The crest level of all major roads should therefore be more than 7 meters above mean sea level (PWD Datum). The survey revealed that the height of the crest level of regional roads passing through the project area is 9.39 to 12.01 meters from the PWD Datum. Beside these, all rural roads connect the regional road also above 9.01 meters from mean sea level.

There are different categories of roads like pucca, semi-pucca and katcha roads in the project area. Total length of pucca roads is 44.76 km. Condition of pucca roads is not same in all locations in the project area. Some of those roads are good and some are in poor condition. Next category of the roads is semi-pucca, also called HBB (Herring Bone Bond) or brick soling road identified as almost similar in character. Length of existing semi-pucca roads is about 21.97 km. A significant portion of the roads of the project area is katcha road, and its length is about 80.68 km.

Table-2.20: Road network

Union	Road Length in Km.			
	Pucca	**Semi-Pucca**	**Katcha**	**Total**
Ashulia (Partial)	7.55	8.77	20.10	**36.42**
Dhamsona (Partial)	14.87	6.48	24.89	**46.23**
Yearpur (Partial)	22.34	6.73	35.70	**64.76**
Total	**44.76**	**21.97**	**80.68**	**147.41**

Source: Physical Feature Survey, 2006.

The Ashulia to EPZ (9.7 km) road passes through the heart of the project area. The pavement of the road is 12m wide and is in good condition. This road meets at Savar to Kaliakair road, which is 2.5 km long in the project area and creates a short-cut link from Savar to Ashulia for destinations in Dhaka City.

All Upazila and Union roads have been considered as rural roads and further categorized as pucca, semi-pucca and Katcha roads. Pucca roads are usually paved bituminous roads, semi-pucca roads are mostly the Herring Bone Bond (HBB) type and the katcha roads are usually earthen roads. Total length of rural roads is 135.1 km.

Table-2.21: Road types

Union	Road Length in Km.			
	National Road	**Regional/District Road**	**Rural Road**	**Total**
Ashulia (Partial)	0.00	2.40	34.02	**36.42**
Dhamsona (Partial)	0.00	4.22	42.01	**46.23**
Yearpur (Partial)	0.00	5.70	59.07	**64.76**
Total	**0.00**	**12.32**	**135.10**	**147.41**

Source: Physical Feature Survey, 2006.

Bridge/ Culverts

Different types of bridges and culverts have been identified Union wise. These are Bridges, Box Culvert, Over Bridges, Railway Bridges, etc. There are 12 bridges and 3 box culverts in the project area over the rivers, khals and drainage channels. There are 8 bridges in Ashulia union, 2 bridges and 3 culverts in Yearpur union. In Dhamsona union there are only 2 bridges. There is no Over bridge and Railway Bridge in the project area.

Table-2.22: Bridges and culverts

Union	Number of Bridge/Culvert				
	Bridge	**Box culvert**	**Over bridge**	**Railway bridge**	**Total**
Ashulia (Partial)	8	0	0	0	**8**
Dhamsona (Partial)	2	0	0	0	**2**
Yearpur (Partial)	2	3	0	0	**5**
Total	**12**	**3**	**0**	**0**	**15**

Source: Physical Feature Survey, 2006.

b. Utility Services

Drainage and sanitation: Drain is a simple structure which carries water normally from surrounding areas. Major part of this water is produced by rainfall and carried by the drain. These are classified as primary, secondary and tertiary drain.

- Primary drains are large in size and may serve for extensive drainage of the area. A main drain may connect several secondary drains. A primary drain may be constructed with brick, RCC and concrete. Those may be rectangular, triangular and trapezoidal in section.
- Secondary drain, which is smaller than primary drain, serves smaller area. Such drains are made of either brick or reinforced concrete. A secondary drain connects several tertiary drains.
- Tertiary drain is smaller than secondary drain and normally covers smallest drainage system and is normally built of brickwork.

Table-2.23: Drainage Channel

Union	Drainage Network in Km				
	Pucca drain	**Katcha drain**	**Khal**	**River**	**Total**
Ashulia (Partial)	0.0	0.0	0.7	3.1	**3.8**
Dhamsona (Partial)	0.0	0.0	1.0	0.0	**1.0**
Yearpur (Partial)	0.0	0.9	0.3	1.9	**3.1**
Total	**0.0**	**0.9**	**2.0**	**5.0**	**7.9**

Source: Physical Feature Survey, 2006.

Two types of drainage channel are found in the project area, natural and man made. River and khals are the natural drains and pucca and katcha drain are man-made drains. Total length of drainage channel in the project area is about 7.9km. The river and khals are along with the drainage channel but pucca drain is totally absent and only 0.9km katcha drain is found beside the roads.

Water supply: The project area is not under the Dhaka WASA coverage. As a result, problems of drinking water supply are prominent in all the residential, commercial and industrial buildings. Most of the industrial building and high-rise residential buildings have sunk deep tubewells and pumps for creating their own sources of drinking water.

Electricity: Electricity mainly supplied in the project area by DESA/ DESCO/ PGCB/ REB / PBS through 132/33 kv grid sub-station and 33/11 kv sub-station located in two places in the project area. Existing 132/32 kv grid sub-station and 33/11 kv sub-station, grid-towers and distribution poles. The consumption of electricity in the project area increased rapidly due to rapid increase of residential buildings and rapid increase of commercial and industrial plants in Dhamsona and Ashulia area. The electricity supplies in those areas are significantly insufficient in respect to the load demand.

Survey from Ashulia PBS reveals that the total electrical load required for Dhamsona and Ashulia area is about 120 MW, whereas, at present, electricity supplies range from 40-45 MW. So, about 66% to 75% load is to covered by load shedding in different areas. For Dhamsona area, required electrical load is 100 MW but present electricity supplies range from 60-65 MW. So, load shedding is about 35% in the areas. Due to frequent load shedding that occurs in those areas, the household dweller and commercial and industrial sector is suffering badly. And in the urban areas deep tubewells with the pumps can not supply water up to the mark, which causes shortage of water supply and causes sufferings to the people.

Natural Gas: Gas supply is available in almost entire project area. Gas supply provided by TITAS Gas Transmission and Distribution Co. Ltd. In Dhamsona, Yearpur and Ashulia areas, gas source is Joydevpur CGS (City Gate Station). There are two DRS (District Regulation Station) in Joydevpur and Tongi. The gas system in transmission distribution and feeder mains / distribution to consumers is of different sizes of pipeline of different pressure. A number of buildings, industries and GNG re-fuelling stations are provided with Gas connection. Sometimes the re-fuelling stations and EPZ areas suffer with low supplies of gas.

- More pipelines should be provided to cover the whole project area within 2015.
- CNG Gas filling stations are to be established immediately at Dhamsona to Nabinagar intersection and Yearpur Union area.

Telecommunication: The telecommunication system of the project area is provided and maintained by BTTB, through telephone exchanges located at Ashulia. There is one telephone exchange with large capacities. Instead of telephone, now a day, mobile phone network developed through the area by some private mobile organization like Grameen phone, City cell, Aktel, Banglalink and Teletalk of BTTB. With the rapid increase of population in the project area demand of telephone services increases rapidly. Now-a-days demand of telephone connection decreased for the domestic/ commercial users due to increase in uses of mobile phone among the people.

Sewerage: Sewerage system is a drainage system that carries sewage, waste and polluted water from the household latrines, community latrines and other wastewater. It is very important component from the environmental point of view. But no sewerage system exists in the project area. Most of the households are using pucca and semi-pucca sanitary latrines mostly built on own initiatives and others are provided by NGOs.

Most of the toilets are hygienic and belong to septic tank category. Toilet system of the project area is mostly categorized as semi-pucca and a significant percent of pucca toilets are in the project area.

2.1.5 Land ownership and Value

Residential status varies in the project area. About 59 percentages of the total population of the project area are living in their own houses. There is significant number of tenant resident in the project area, which accounts to 28 percent, while unauthorized occupier accounts to 2%.

Household ownership pattern indicates the socio-economic status of the inhabitants. It is found that most of the houses are single ownership houses, which accounts 63.4%. Joint ownership is also prevalent (35.4%) in the project area. The existence of co-operative and illegal encroachment is negligible. In Ashulia, Dhamsona, Yearpur and Harirampur there are 61.2%, 87.9%, 52.6% and 83.3% single household ownership respectively. Joint or partial household ownership patters are clustered mostly in Yearpur and Ashulia, which account 47.7% and 34.7% respectively.

2.2 Expected Development

The project area is located in a promising development area with better communication facilities, better soil condition, non-floodable land and nearer to the Dhaka International Airport. Available and cheap labour force encourages establishment of garment industries in the area. Such type of development has been encouraged in the Structure Plan also. It is observed, as expected, that the original landowners of the project area are migrating out selling their immovable properties. At present, low-income people (mostly industrial workers) are living in those homesteads (constructed by the original landowners). Due to such practices, most recently, non-availability of industrial workers will be acute in the project area.

A large portion of the Ashulia Union and part of the Yearpur Union is subjected under floodable land. Agriculture practice is dominant in these areas and a branch of Turag River is flowing through these two unions. A number of housing companies are trying to use these lands for housing purposes. With bthis. Eventually during monsoon the project area will be submerged when flash water flows from north to the south.

The industries are located linearly along the Bypail Road (except Savar EPZ) and those industries are mostly labour intensive. Pharmaceuticals industries, fruit industries and agro-processing industries will be constructed very soon due to the nearness of the International Airport. Those industries will attract a large number of trucks or other types of goods vehicles in the project area.

2.2.1 Population

Present population growth rate is high in the project area rather than national average. According to the Census 2001, population of the project area was 96158 with the growth rate of 5.49, 12.88 and 4.84 in the Ashulia, Dhamsona and Yearpur respectively. If population increases in the same rate, it will be 384986 in the year 2015.

Table-2.24: Projected population of the project area

Union	Census Population		Projected Population			Growth Rate (2001)
	1991	2001	2005	2010	2015	
Ashulia	10537	17984	22272	29096	38012	5.49
Dhamsona	16551	55595	90265	165434	303202	12.88
Yearpur	14072	22579	27280	34556	43772	4.84
Grand Total	**41160**	**96158**	**139817**	**229086**	**384986**	

2.2.2 Economic activities

Manufacturing is the most important employment source in the project area and the largest employers are garment and knit wear factories. These categories of units draw huge amount of labour force that is available in plenty at a very low cost. Other types of business enterprises are growing rapidly. Savar and Tongi is an old trading centre that has both road and water transport facilities adjacent with the project area. Nine new unorganized (wholesale + retail) markets have already emerged in the project area. Due to availability of high flood free land with good access to work places of manufacturing units, it is very likely that new residential areas will emerge everywhere in the project area. Development of housing estates on commercial and cooperative basis will further augment growth of residential areas particularly for upper and upper middle-income groups, which would play important role in the growth of retail business. A number of posh shopping centers have already sprung up on major roads.

Savar EPZ is located within the project area. Most of the outputs from the industries of those EPZ are for export only. Such type of establishment encourages export oriented industrial development.

Existing recreational facilities like Fantasy Kingdom, Water Kingdom and Heritage Park encourages development of similar facilities in the area. Taibpur and Manasantosh Mouzas (northern side of the Dhaka-Ashulia Road) may be the appropriate location for such type of recreational facilities.

2.3 Development Problems

Substantial part of the project area is devoid of infrastructure required to serve this rapidly growing suburb of mega Dhaka. The area is particularly deficient in physical infrastructure like, standard road network, piped water supply, drainage and waste management. Following is a brief description of available social and physical facilities in the area.

- A poorly developed road network serves the spontaneous areas and utility services are in short supply.
- There is a housing need for the industrial workers who mostly squat on available unoccupied land. These squatter settlement, provide affordable shelter but lacking most of the basic services.
- The area is served by only two regional roads: the Dhaka-Aricha road and the Tangail-Savar road
- The general character of the area is urban suburb and it may take some time before providing urban utility services. If provided, the utilities may remain under-utilized for a very long period
- Utility services of all types are in short supply. The cantonment and other restricted areas make the zone less attractive for development
- There is an embargo on vertical expansion within half-kilometer radius of the national mausoleum. Same embargo should be imposed in the air-funnel areas of the International Airport.
- Northern and eastern areas are flood plain and all development should be discouraged to enable free flow of floodwater. There will be considerable negative impact on surrounding areas if natural flow of floodwater is prevented.
- There have been many housing development schemes by private sector, especially in the Ashulia area on the north of Dhaka-Ashulia road. Some of these have received development approval form RAJUK. This will create considerable negative impact on environment.

2.3.1 Hydrology (Drainage and Flooding)

Following are the critical issues regarding flooding and drainage of the Location – 15.

Flood prone and Flood Free Land

The project area is located about 15km from central Dhaka to the northwest; predominantly flood free and suitable for development (mostly Dhamsona, Yearpur west and Ashulia west). Development activities in those flood free areas are increasing and will be saturated within next few years. The parts of Ashulia and Yearpur Unions are low lying and is the major constraints for development. Out of these two flood plains Yearpur north and Ashulia south Flood Plains are the biggest and very close to Dhaka City.

Unplanned landuse on flood plain lands

Some major land filling projects have been undertaken within the south of Savar Flood Plain land including Turag River Flood Flow Zone. Such type of land filling will reduce the flood flow land and storage capacity of floodwater. Haphazard land filling increases the frictional surface and further reduces the velocity of flow. As a consequence the water level in flood flow zone is increasing and relatively high lands adjacent to the Flood Plains are going under water and eventually causing prolonged flooding. This indiscriminate land filling along transverse direction of flow is creating pockets of Flood Flow Zone and permanent problem of drainage congestion.

Encroachment to flood plain from Outside

After the major flood of 1988, to protect Dhaka City from inundation the **"**Greater Dhaka Flood Control Committee" was established. Most of their proposals have already been executed. The executed flood control measures are:

- Construction of 29.2 km Road cum Embankment from Tongi Railway Bridge to Sirnir Tek via Satmasjid Road along the left bank of the Turag River up to Kalier More.
- Road raising and floodwall along the Buriganga from the Friendship Bridge to Keller More.
- Within the embankment area, installation of Pumping Station at Kalliyanpur and Coranchak Bari.
- Other measures those are yet to be implemented are restoration and re-excavation of 12 No. Khals within the polder and installation of total 5 No. Pumping Stations.
- Construction of 29.2 km Road cum embankment from Tongi Railway Bridge is now protecting the land along the left bank of Turag River.

Storm Water Drainage: The Dhaka Structural Plan's "Rural and Spatial Area (RS) Policy" RS/5-Flood Retention Ponds is that Flood retention ponds need to be designed to reduce the intensity of local flooding within the protected areas and to reduce pumping requirements, and as such, are an integral part of the proposed flood protection schemes.

Alternative way of improvement of storm water and drainage is by gravity flow, which has not hazardous and requires no maintenance. Drainage by gravity flow can be applied only if the land is free from design flood level and additional 0.50m to 1.00m heights is available to drain storm water by gravity. If the above conditions are not met, then drainage by pump is mandatory.

The topographic survey of Yearpur, Dhamsona and Ashulia area shows that the level of land is + 15.00m to lower than 2.00m PWD. A good percentage of land is flood free. The Danger Water Level of Ashulia north is 7.40m PWD and at Ashulia south it is 6.50m PWD. It may be concluded that pump drainage and retention ponds are not required. Gravity flow storm water drainage system can be applied for the detailed area plan project area. Drainage area of Locatin-15 is 156.52 acres. Existing drainage system in general consists of local open khals connected to the regional rivers. Single connection and discharging points along the length of the regional rivers are rather than uniformly distributed. In fact existing system is inadequate for draining storm water. It is further limited by siltation, dumping of solid wastes and encroachment in the form of local roads.

Discharge of Storm Water from Outside: The embankment and the sluice gate of the Turag prevent spreading of floodwater of Turag River towards left. Moreover, the pumping stations are discharging storm water during flood season. In fact 60.84 sq. km area of Turag River left bank drainage area of Dhaka central area and 13.24 sq. km area

of Tongi west zone drainage area are discharging its excess water to the flood plain of Location-15. But internal flooding will increase with densification of population, industries, institutions, increase in road networks etc. In order to protect the land from flooding and eliminate drainage problems and to enhance the security of people in the project area, an optimum flood protection and drainage improvement plan, comprised of either non-structural or structural measures, is essential.

2.3.2 Geological fault

Geographically, Bangladesh finds itself in one of the most earthquake prone areas of the world. However, earth quake occurs in a lesser frequency with lesser intensity in Bangladesh. As a result the people of this country are not familiar with the havoc that an earthquake can cause. However, it is not free from the risk of earthquake. In the past a number of high intensity earthquake occurred in this country. The 1885 earthquake of Manikganj, 1887 earthquake of Great Assam, 1918 earthquake of Srimongal, 1930 earthquake of Dubal, and the 1950 earthquake of Assam are all that exist in living memory and which caused great disasters. Records of earthquake show that Bangladesh and its surroundings experienced at least 1000 earthquakes in the last 100 years with a magnitude greater than or equal to 4 in Richter scale.

There no fault line within the project area.

2.3.3 Spontaneous Development

The project area is predominately a rural based area which shows moderately fast trend of urbanization but limited urbanization is viewed. With the implementation of DAP, a wide range of rural area would be accompanied with urbanization. This urbanization will improve the socio-economic and living condition of the rural people in communication, sanitation, electricity, health, education, industrialization, business and social services.

Conflicts of drainage and waterways arise whenever and wherever the road networks cross the drainage networks. The conflict may be minimized if the systems are made parallel as far as possible so that they do not cross each other. Practically this is not possible in all cases. In a project roads are developed straight and in a gridiron frame to minimize the cost. In the process it crosses the rivers and waterways; and its drainage function is thus hampered, on the other hand, roads should not be let to remain open at the drainage crossings for continuous flow of the traffic.

To reduce the vulnerability of the drainage-road conflicts, the DMDP proposed certain principles. Its recommendation was, “Roads have to be aligned in such a way (when necessary) khals and ponds have to be somewhat remodeled that as much as possible of the land along the roads can be put to high value uses, with khals and ponds in peripheral position, roughly halfway between a pair parallel roads.

2.3.4 Transportation

Before formulating the Detailed Area Plan (DAP), it was crucial to identify the critical planning issues which are required to be addressed properly. To this end, a review and analysis of the Structure Plan, the Urban Area Plan, and the Strategic Transport Plan (STP) for Dhaka was undertaken. A thorough assessment of the current transport situation of project area was also made and the follow up critical planning issues were identified.

Traffic Management: Traffic management in Dhaka city is very week and as a result, large sections of road network have been taken over by traders and others for purposes other than traffic use. Prominent among these inappropriate uses are: stalls set up on the pedestrian ways and also on the roads themselves; setting up bus ticket sales booths; storage of solid waste baskets and building materials on roads; as well as uncontrolled parking of rickshaws and other vehicle on traffic lanes. Drivers’ behaviors also adversely impact the traffic management. Another most important aspect of traffic management is the lack of effective enforcement of traffic rules and regulations.

Road Hierarchy and Earmarking the Right of Way (ROW): In the absence of a proper road classification, the city road network is developing in a haphazard manner. Although Urban Area Plan (1995-2005) proposed geometric design standards for different classes of roads in the city, these were not adopted officially. Over and above, in the past, the rights of way (ROW) of many important roads were not strictly earmarked. As a result a lot of compensations are being paid for major road widening in the city. It is critical therefore, that road classification is completed soon, and a

new set of road design standards be developed and adopted.

Incomplete Road Network: Dhaka City has a very inefficient road network. The primary orientation of the major roads is in the north-south direction. Lack of sufficient east-west connections require the motorists to travel longer distances, as a result, the existing roads get congested easily. The Strategic Transport Plan (STP) Completed in 2006 has identified a large number of east- west links, which need to be implemented soon to address this critical issue.

Pedestrians Facilities: In the absence of a clearly defined pedestrian system, pedestrians are forced to walk on the road, and therefore subjected to unnecessarily high risks of injuries. There are many factors contributing to this situation including absence of continuous footpaths; encroachment on the footpath and absence of facilities suitable for movement of disabled persons, etc. This issue needs to be addressed immediately.

Parking: With increasing number of vehicles plying on city roads, more and more road space is being occupied by parked vehicles. Again haphazard parking of vehicles (both motorized and non-motorized) causes substantial misuse of road space. Off-street parking and lack of restriction for on- street parking has been the root cause of parking every where on the street. As a result congestions develop here and there which has become a major cause of concern to the road users, city authorities and traffic managers. This issue needs urgent attention of planners and the Government.

Non-Motorized Transport (NMT): Non-motorized transport plays an important role in the transportation system of Dhaka city. In 2004, around 34% trips were made by non-motorized transport (NMT). In addition to rickshaws, there are at least five other types of NMTs which are operating in Dhaka, and these include bicycles; rickshaw van; thela garis; hand trolleys; and horse-drawn carriages. In the context of future urban transport, it is highly important that the role of NMTs, particularly the rickshaws, be clearly defined.

Public Transport: Public transport is a major means of travel for the dwellers of this area. But its present state is very poor. Bus stops are not provided with any bus bays and waiting areas for rickshaws and baby taxis are not properly earmarked, as a result these vehicles are often parked on traffic lanes. The interfaces between different modes are not properly planned as well designed among buses, rickshaws and baby taxis stopping in the same areas causing congestion and disorder. There is virtually no strategy for public transport priority. Another big problem is that at present there are 2000 large buses owned by big companies. There are nearly 4000 mini buses playing in Dhaka City, and these are owned by more than 1000 owners. Existences of so many owners make the bus transport operation very chaotic and inefficient.

All the above mentioned adverse conditions are to be addressed properly to make the public transport efficient, comfortable and reliable.

2.3.5 Utility Services

a. Electricity

The physical feature survey reveals that only one power station is available in Yearpur union. Electric poles of different sizes exist in the project area to carry power supply network and the total number is 2190. They cover almost every Union in the project area. High voltage towers are distributed evenly and transformers are used to transform the high voltage to low voltage for distributing to the clients. There are HT/LT transformer stations which step down high voltages into low voltages and reach various Mohallah, Villages and Community areas through this electric supply line.

b. Water Supply

Water supply activity is controlled by the municipal authority. But the project area is out of municipal area. Therefore the water supply network, overhead tank and water pump house are not available here. The surveys show that tube well is the main source of water supply all over the area. Most of the houses have their own hand tube wells which provide necessary water supply for the people. But there are some multi storied buildings that has own water reservoir to provide water supply. They use private pumping units and store water in their water reservoirs.

c. Gas Supply

Gas supply network is available in EPZ area and some parts of Ashulia Union. In other areas like Zirabo, Ashulia, Narsinghapur, Nishehintapur, Zamgora, Boga Bari, Burir Bazar, Uttar Gazirchar, Dakhan Gazirchar, Baipail, Tayebpur etc., the gas supply network is under construction. But other remote areas from the Ashulia- EPZ road, the gas supply facility is totally absence.

d. Sewerage Disposal

Sewer system is a drainage system that carries sewage, waste and polluted water from the household latrines, community latrines and other waste water. It is very important component from the environmental point of view.

But no sewerage system exists in the project area. Most of the households are using pucca and semi-pucca sanitary latrines which are mostly built on own initiatives and others are provided by NGOs. They build individual septic tanks for disposal of human excreta.

e. Drainage

Two types of drainage channels are observed from the physical feature survey. They are natural and man made drainage. River and khals are the natural drainage and pucca and katcha drainage are man made drainage. Total length of drainage channel in the project area is about 7.8 km. There are 5 km river and 1.9 km khal. Maximum length of river is available in Ashulia union (3.1 km) and 1.9 km river in Yearpur Union. But pucca drain is totally absent and only 0.9 km of katcha drain is found beside the road in the project area.

f. Solid Waste Disposal

The project area is out of municipal area so the overall garbage disposal system of the project area is not satisfactory. There is little or no provision for the disposal of household and other solid waste. Most of the dwellers disposed their garbage sporadically which degrade the aesthetic view of the respective area. For the lack of final disposal site, the waste is polluting the surrounding environment continuously. The nearby dumping location (near Savar) is a long distance for the project area.

2.3.6 Amenities and Urban Facilities

a. Active and Passive Recreation

A number of amusement parks namely Fantasy Kingdom, Water Kingdom and Heritage Park, are the main attraction of the project area. Those attractions are the only recreational establishments not only for the project area but also for Dhaka City, but accessibility from different corners of the Dhaka City generates problem. Further expansion of those recreational facilities will be needed but non-availability of the adjacent land (as a vacant land) are creating expansion problems of those establishments. More active and passive recreational facilities will be needed as presented in the Detailed Area Plan.

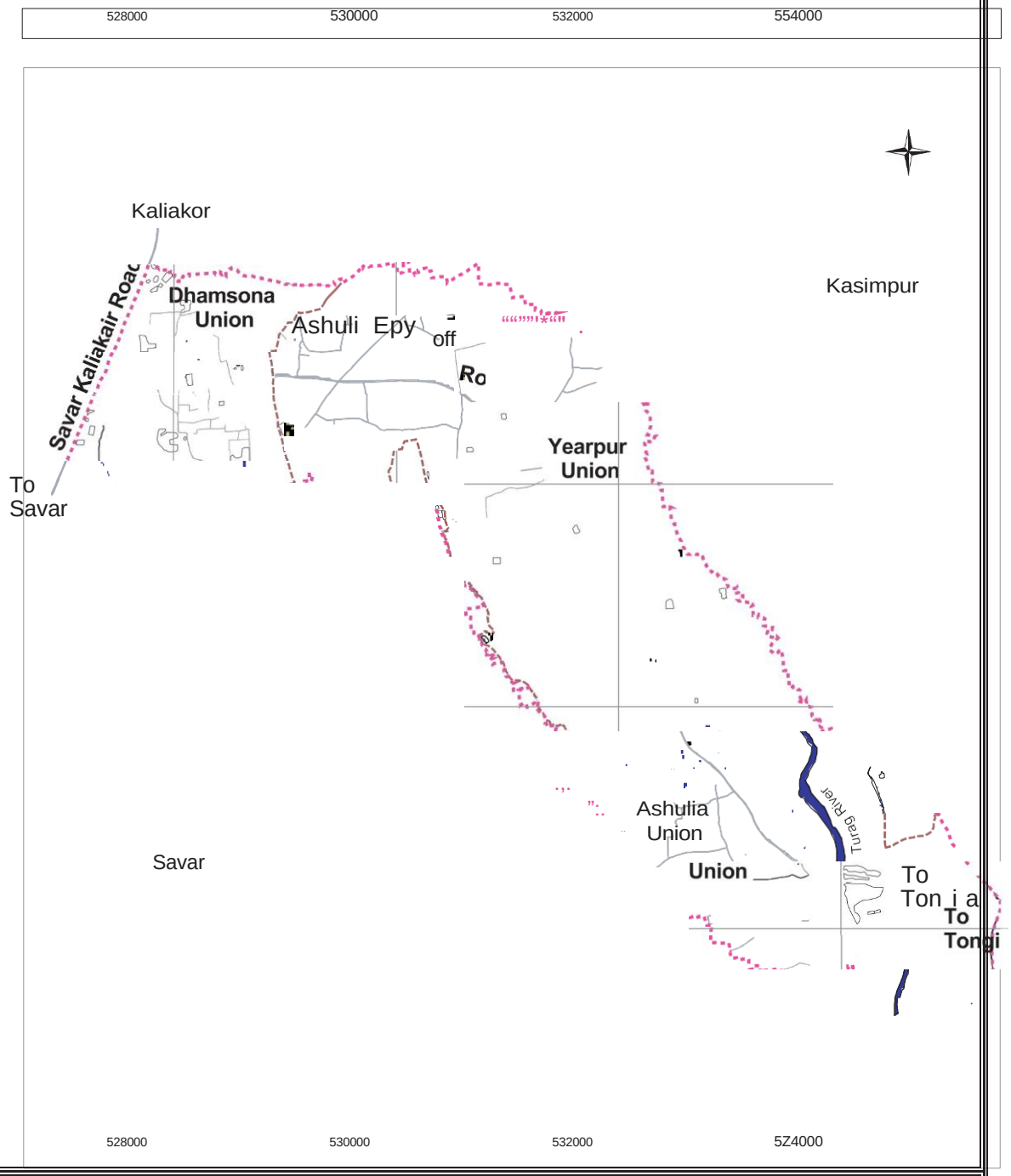
b. Educational Facilities

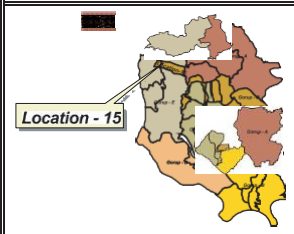
A small number of educational institutions is found in the project area. At present, some of the private university campus has been established in the Ashulia mouza. Further new development of educational facilities as proposed in the Detailed Area Plan may be provided with the increase in population.

c. Market Facilities

Market and shopping facilities in the project area is not well distributed. Internal circulation system and management facilities in the centers are well developed. In total, 7 hat / bazars of various sizes have been identified. Those commercial facilities include hat and katcha bazars as per gross distribution within the project area (1 hat and 6 bazars).

MAP 2.2: EXISTING NATURAL DRAINAGE NETWORK OF THE STUDY AREA



CONSULTANT Development Design Consultants 1.td. 4z Mohaxhali C/A, Dhaka 1212, Bangladesh	Detailed Area Plan for DMDP Area (Location-15) 500 0 500 1000 Meters	**CLIENT** Government of the People's Republic of Bangladesh **Ministry of Housing and Public Works** **Rajdhani Unnayan Kartripakkha (RAJUK)**
	LEGEND Group boundary Existing Road Network Waterbody Ditch Khal Pond River	NOTES GPS & Total Station based advanced topographic physical feature and land use survey conducted by Development Design Consultants Ltd.

Source: Physical Feature Survey 2006

Mixed-use areas are those landuse areas where, either commerce is mixed up with residence or residence with commerce or residence with office or admixture of all the three. Sometimes small processing plants 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 the country. Degree of such admixture depends on specific location of the area. In the Project Area, 3.76 acres of mixed use (0.1%) is found. Out of total mixed landuse, about 70% is available in Yearpur union, 15% in Ashulia union and rest 15% in Dhamsona union.

d. Community Facilities

Service facility is an important issue for an area. Among the different types of service facilities, bank, post office, fire station, police station, powerhouse, petrol pump etc are of worth mentioning. But in the project area there is no sufficient service facilities. Among the service facilities only 2 petrol pumps are available in Dhamsona union and 1 power station in Yearpur union. Further establishment of the community facilities may be provided in the project area according to the Detailed Area Plan.

e. Urban Facilities

Poor urban facilities discourage the human habitation in the project area. Low density of population in the project area is the result of poor urban facilities. Urban facilities like bus terminal, bus stoppage and truck terminal are the major issues and absence of those facilities creates congestion and overcrowding in the project area. The facilities recommended in the Detailed Area Plan may be introduced in the project area with preferences.

2.3.7 Environmental concerns

Landuse Change

Major portion of the project area is of rural set up, with predominance of agricultural landuse. However, urban and semi-urban landuses are observed in the area. With implementation of the DAP, rural setup and agricultural landuse pattern will be changed radically into urban landuse type.

Drainage Congestion

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 project 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. But the conditions of these natural khals are dilapidated due to unauthorized encroachment. These khals will be silted up 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.

Surface Water Pollution

Surface water quality of rivers, ponds and beels are very poor in respect of pH, turbidity and coliform bacteria as compared with National standards. Main causes of surface water pollutions are wastewater, sanitary sewage, solid waste dumping and discharge of untreated industrial wastes. With implementation of the DAP, surface water pollution level may further increase for high volume of discharge of wastewater, sanitary sewerage, over spilling of pit and septic tank, industrial effluents, surface run-off of katcha bazars, indiscriminate solid and medical waste dumping.

Groundwater Table Declination

Fall of groundwater table is a common phenomenon in the project area during dry period (February-May). With expansion of urbanization and industrialization through the Detailed Area plan, the groundwater table may further fall if present tradition of over-use of groundwater is continued.

Groundwater Pollution

Groundwater pollution due to manganese, iron and hardness is a major problem of the project area. With expansion of urban area, more dependency on groundwater sources may increase the pollution level of sub-surface water.

Loss of Wetlands

Wetlands are mainly affected by the urbanization process. Earth filling fills up the beels, ponds and khals. Wastewater affects the aquatic ecosystem and makes the beels, ponds and khals unproductive and as a result the aquatic plants, fishes and animals die or migrate to other places. For high value of highlands, the developers stretch their hands to the low cost wetlands. There is no strict regulation on earth filling of ponds for RAJUK area. The RAJUK or Municipality can impose penalty with fine if some one fills the ponds. However, Wetlands Conversation Act exists in Bangladesh, which is applicable only for natural beels and khals. Number of ponds in the project area is reduced every year to accommodate housing and commercial structures. Wetlands play an important role as a reservoir of rain and floodwater. They are also important to maintain the balance of ecosystems and for replenishing the ground water level through seepage.

Loss of Biodiversity

The habitat for fauna and wildlife has already been lost in the urban area. However, with urban expansion in rural area, natural habitat will be lost. For urbanization and industrialization, agriculture land will be reduced, water bodies will be filled up, rivers and khals will be polluted and trees will be cut down for new settlement. Birds, mammals, fishes and other animals will permanently loose their habitat and food in the new rural and urban areas.

2.3.8 Shelter and settlement

There prevail different types of housing problems in the project area. From the survey it is found that most of housing problems are inadequate civic facilities, air pollution, sound pollution, high land price, in all over the project area.

About 19% of households adduced lack of civic amenities as the main problem of housing in the project area. Another 14% thought the problems were due mainly to low income of the households. There exist various types of heavy, medium and light industries in the whole project area and so air pollution, sound pollution and bad smell occur spontaneously which accounts for 17%, 15% and 6% respectively.

Regarding the structural quality of housing (buildings and residential units) in the project area, the semi-pucca structures dominate and this is because of the project area is located in the most semi-urbanized zone. About 75 percent of the structures are semi-pucca, while there is also very temporary-material made ‘Jhupri’ housing unites. There are 16.7 percent katcha buildings in the project area. In Ashulia, Dhamsona, Yearpur there are 75%, 80% and 73.2% semi-pucca structure respectively. There is significant number of katcha structure in Yearpur, which accounts for 22.8%, while the presence of pucca structure is negligible in the project area.

Building height of an area directly refers urbanization status and this is also related to the housing demand. On the other hand building height refers the building development strategy of the local Municipal Corporation and the Development Authority as well. Significant number of buildings are one and two storied building. About 94 percent of the buildings are one-storied, 4.7 percent two-storied and 1.2 percent are three-storied. One-storied buildings are found in all over the project area. Two storied buildings are mostly clustered in Mirpur area accounts 33.3 percent of the total buildings in that area.

The Municipal Authority preserves right to approve plans for construction of buildings, while RAJUK is also responsible for the same for Dhaka city and its surroundings. It is important to observe the building construction regulations provided by the government. It is found that, most of the people in the project area are not conscious about the building construction regulations. So it is clearly evident that most of the dwellers do not think that it is mandatory to approve the plan from the concerned authority during the construction of the building.

2.3.9 Lack of Co-ordination among Agencies

A number of Departments / Agencies are operating in Dhaka. One estimate says as well 46 government agencies are involved in the metro Dhaka’s development works. But unfortunately it found that these organizations are working accordingly to their own agenda completely disregarding the projects of other agencies.

a. Duplication of Efforts

It is found that more than one organizations are engaged in the same work at different time ignoring the fact other agencies are doing the same work resulting in duplication, chaos and wastage of valuable resources.

b. Disregard of Abiding Plans by Line Agencies/Authorities

Line agencies often disregard the binding plan in implementation of their projects. They do not care whether Landuse plan allows them to undertake those projects in the areas they are implementing them. There are thousands of examples of this violation..

c. Weak Plan Implementation Mechanism

There are various laws and regulation for development control. But there is no effort to enforce them. As a consequence, violation is common.

2.4 Current investment program

In the project area, two projects upto the year 2008 have been proposed in the Annual Development Plan as public sector investment program (Table-2.25). A large number of private sector investments including foreign investment have been registered in the Board of Investment. Those industries are at two locations namely Savar EPZ and Dhamsona area. Most of those industries are garment, woolen and fabrics. The scenario encourages high potentiality of the project area.

Table-2.25: Annual Development Program of different government agencies - 2007-08

Agencies	Name of the project	Sanctioned amount in the ADP 2007-2008 (in million Tk.)
Petro Bangla	Dhaka Clean Fuel Project (GTCL part): Dhanua – Savar High Pressure Gas Pipeline Construction (2nd Phase) (01/07/2002-31/12/2008)	100
BIWTA	Construction of Circular Water ways around Dhaka City (2nd phase) (01/07/2005-30/06/2008)	2767

Source: Annual Development Program, 2008.

2.5 Stake Holders' Wish List of Projects

Stakeholders wish list include following projects:

- Establishment of Transport Terminal for bus, truck and other vehicles.
- Preserve the Flood Flow land of Ashulia as a water reservoir and recreation spot by removing all illegal occupants.
- Replacement of katcha toilets by sanitary latrines in the whole project area.
- Improvement of solid waste management system to prevent environmental degradation.
- Improvement of important roads to facilitate movement of industrial goods and providing hazard-free walkways for the people.
- Introduce circular waterways as designed for Dhaka City and extended it up to Turag River.
- Establishment of a University Complex in the project area.
- Supply of piped water in the project area.