DHAKA METROPOLITAN DEVELOPMENT PLAN (DMDP) 1995-2015

DETAILED AREA PLAN (DAP)

PART - XIX

JUNE 2010

RAJDHANI UNNAYAN KARTRIPAKKHA (RAJUK)
DHAKA

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

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Part-II (Group – B)	**:**	Narayanganj Paurashava, Kadam Rasul Paurashava and its surrounding areas, Dhaka-Narayanganj-Demra (DND) Triangle flood protected areas including Siddhirganj Paurashava.
Part-III (Group – C)	**:**	Areas under Dhaka City Corporation (DCC) jurisdiction and surrounded by the river Buriganga, Sitalakhya, Balu, Turag and Tongi Khal
Part-IV (Group – E)	**:**	Entire Savar Paurashava and Part of Gazipur
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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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   DMDP: Integrated Detailed Area Plan 2010 - 2015
   1:80,000

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
CO	Carbon Monooxide
CO2	Carbon Dioxide
C.S.	Cadastral Survey
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 Engineering
DPZ	Detailed Planning Zone
e.g	For Example
EPZ	Export Processing Zone
FAR	Floor Area Ratio
FFZ	Flood Flow Zone
GIS	Geographic Information System
IAB	Institute of Architects, Bangladesh
i.e.	That is
JICA	Japan International Cooperation Agency
J.L.	Jurisdiction List
JU	Jahangirnagar University
LGED	Local Government Engineering Department
LPC	Landuse Permit Committee
LPP	Landuse Permit Planner
mld	Million liter per day
MoHPW	Ministry of Housing and Public Works
NGO	Non Government Organization
NOx	Nitrogen Oxide
NUC	Nagar Unnayan Committee
PVC	Polyvinyl Chlorate
REB	Rural Electrification Board
REHAB	Real Estate & Housing Association of Bangladesh
RHD	Roads and Highways Department
RMG	Ready Made Garments
R.S.	Revisional Survey/Revisional Settlement
SoB	Survey of Bangladesh
SP	Structure Plan
SPZ	Strategic Planning Zone
SO_2	Sulphur Dioxide
STP	Strategic Transport Plan
TGTDC	TITAS Gas Transmission & Distribution Company

TWG	Technical Working Group
UAP	Urban Area Plan
UNCHS	United Nations Centre for Human Settlement (Habitat)
UNDP	United Nations Development Programme
viz	Namely
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), Urban Area Plan (UAP) 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 was 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 an 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), Locations-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), Locations-9,11,16; Sheltech (Pvt.) Ltd. for Group-E, Group-E Ext. (Part-D), Locations-1,2,10; BETS Ltd. for Locations-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 (North-East Part) covers three paurashavas including Tongi, Gazipur and Kaliganj together with surrounding rural settlements and flood Plain areas of Balu, Sitalakhya and Brahmaputra river. Group-B (South-East Part) covers Narayanganj Paurashava, Kadam Rasul Paurashava and its surrounding areas, Dhaka-Narayanganj-Demra (DND) Triangle flood protected areas including Siddhirganj Paurashava. 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 (South-West Part) covers Keraniganj and Zinjira. Rest of the area of this Group is mainly Dhaleswari flood plain. Group-E (North-West Part) covers Savar Paurashava, Export Processing Zone (EPZ), Turag flood plain. Locations-9,11,16 covers the eastern fringe areas of Dhaka. Other locations are in the 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 mauza 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 landuse survey 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 & Paurashavas), 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 and 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 Final Report is the most important and comprehensive of all the reports submitted as per TOR. This report of Location-16 describes about the development strategies, critical planning issues, development plan proposals and implementation of the plans. It incorporates the survey results, findings of stakeholders' consultations, formulation of planning principles and standards, development activities and proposals of other development agencies, private sectors and NGOs and finally consideration of opinion of Professional Bodies and report on Public Hearing. It also includes the broad land use plans and policies for existing and new urban areas.

Location-16 is the eastern fringe of Dhaka City and it includes 11 Mouzas (part and full) and part of SPZ 12. The total area of Location-16 is approximately 4537.08 acres (1,836.099 hectares). With the growth in core city of Dhaka, the development trend will increase as well with the influx of population from DCC area which foster little availability of buildable land in Nandipara (pop. 17,611 in 2001 and 23,078 in 2015). However, overall population will reach to 53984 in 2015 because of the area's potential to develop as commercial and industrial zone. Hence, present residential character with the provision of basic services will prevail in other parts; it is assumed that there is likelihood for densification with the relocation of garments industry there.

The consultant has thoroughly examined the planning standards recommended in the Metropalitan Development Plans of Dhaka, Chittagong, Khulna and Rajshahi for different facilities like, educational institutions, open space/park, neighbourhood/ community centre, health centre, market, graveyard etc. and hierarchy of road network and suggested a suitable standard for detailed area plan areas under Location-16. The other significant concern like population pressure, incompatible land use and immense pressure on urban facilities and services creating an acceptable living condition needs for urgent intervention.

At Dumni, Beraid, Mastul and Gazaria area under Location-16, most of the proposals of Higher Level Plan, i.e. Structure Plan and Strategic Transport Plan have been kept as it is, except two locations of Retention Ponds to retain storm water of the area. These two retention ponds have been shifted along Eastern Embankment according to the proposal of Halcrow Study for effective results.

Since the considerable lands of Location-16 area are not suitable for urban development about one third of the total land may be reserved for urban agriculture, one-third area for retention ponds and rest one third of the lands are proposed for urban development. Some Private Developers are developing through earth filling some areas in location-16 in low laying flood flow areas including some existing khals and retention ponds without considering future drainage and water logging problems of the flood prone areas. It has been suggested to control and monitor the activities of the developers and guide them to develop the area in a planned manner indicated in the DMDP plan.

Chapter- 1
BACKGROUND

1.1 Introduction

This Final Report of Location-16 describes about the Mouza level detailed development proposals based on present situation. It incorporates the survey results, findings of stakeholders' consultations, formulation of planning principles and standards, development activities and proposals of other development agencies, private sectors and NGOs, integrated planning proposals, the broad land use plan and policies for existing and new urban areas and the detailed area plans.

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 superseded and 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 & studies and covers individual parts of town where immediate intervention is needed.

The DMDP Consultants prepared the first two items in considerable details but did not prepare any DAP. 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 problem 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. However, 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.

The on-going project of preparation of Detailed Area Plans is grouped on the basis of geographical location and settlement pattern seek to prepare detailed spatial plans. 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

Dhaka City, being the administrative, commercial and cultural capital of Bangladesh serves as the nerve center of the country. Out of the urge to streamline the prevailing uncontrolled and unmanageable spatial development of the rapidly growing urban Dhaka, RAJUK initiated the Dhaka Metropolitan Development Plan (DMDP) under the Project, "Preparation of Structure Plan, Master Plan and Detailed Area Plan for Dhaka City (Metropolitan Development and Plan Preparation : Dhaka" (UNDP/UNCHS-BGD/88/052 Technical Assistance and TAPP No. TA/BGD/88/052). The project was a three-tier Plan Package, viz. the Structure Plan (SP), the Urban Area Plan (UAP) and the Detailed Area Plan (DAP). The first two tiers are completed and published in two volumes under the DMDP. The Plan Documents are approved and published in the Bangladesh Gazette under the notification of SRO No. 184-Law/97 dated August 4, 1997. Due to paucity of funds, the

project UNDP/UNCHS could not be run any further and had to be closed down without preparing Detailed Area Plan component.

The Dhaka Metropolitan Development Plan indicates that until a Detailed Area Plan is prepared for a sub-area, land use management functions will be exercised through the policies, guidelines and principles found in the Structure Plan and Urban Area Plan. However, without DAP efficient land management would not be possible. Therefore, RAJUK has taken initiatives to accomplish the preparation of Detailed Area Plan (DAP) for the entire area under its jurisdiction, within stipulated time through engaging local competent consulting firms.

Location 16 comprises the eastern fringe areas of Dhaka city. It consists of Demra, Beraid union that becomes more important in the city context. Development activities are taking place in a broad scale. In most cases, development is happening haphazardly. Detail area plan, thus, introduced with the aim to shapeup the infrastructural and economic developments in those areas in a sustainable way. It was done considering the settlement patterns, urban activities, topography and sustainable environment, compatible land use indicated in the Structure Plan and Urban Area Plan as mixed use planned, mixed use spontaneous, hazardous industrial, flood flow, agriculture high value zone etc. would be reviewed for appropriate proposal. The DAP also considered the safety and critical environmental issues like drainage, flood flow, retention pond, geological fault lines etc.

1.4 Objective of the Project

The main objective of Detailed Area Plan (DAP) is to implement the Structure Plan (SP) and Urban Area Plan (UAP) policies and recommendations providing a basic Urban Design of good quality functional aesthetic quality and flexibility.

1.4.1 General Objectives

The general objectives of the consultancy services for the preparation of Detailed Area Plan for RAJUK Structure Plan area 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 Objectives

- 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

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 been 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 of plans including the Detailed Area Plan prepared under the present project, RAJUK has the responsibility of development control of 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 (DAP) and Amendment Options

Usually a plan is prepared for a period of 20 to 25 years. DMDP has been prepared for 20 years carrying 1995-2015 periods. As such, the Detailed Area Plan prepared under this project extends to 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 at

the end of 2015, so that it can be extended for a further period of 10 years, i.e. 2025. Section 74 (2) of the Town Improvement Act empowers RAJUK to amend its plan from time to time. If development trend during this period 2015 to 2025 calls for the preparation of a fresh three tier development plan, RAJUK by dint of the authority conferred to 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

The Detailed Area Plan consists of

a) The Explanatory Report
b) The Integrated Planning Map

1.7.1 The Explanatory Report

The Explanatory Report provides an account of the design process, demographic and socio-economic data, and sector wise 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.

1.7.2 Format of Maps

The Maps shows different layers of information like the cadastral base, administrative boundaries, geo-physical features (contour line, water bodies), infrastructures and existing/proposed land use. The Table 1-1 shows the required maps of the planning area.

Table 1-1: Required Maps with Corresponding Scale

Sl No.	Description	Scale
1	Base Map (Project area Map)	1:1980
2	Physical Feature Survey (Road+Structure Floor Heights)	1:1980
3	Physical Feature Survey (Road+Structure Type)	1:1980
4	Physical Feature Survey (Road+Structure Use)	1:1980
5	Land Use Survey Map	1:1980
6	Topographic Survey Map	1:1980
7	Utility Services (Thematic)	
	a) River/Khal/Drainage	1:1980
	b) Gas/Electricity/Water Supply	1:1980
8	Comprehensive Detailed Plan	1:3960
9	Comprehensive Detailed Plan	1:1980
10	Identified Projects in separate layers	1:1000

Source: Terms of Reference (TOR), DAP

An important parallel objective of DAP project is to prepare urban development plan within the framework of a new planning process named, Detailed Planning Zone or DPZ; which are smaller than Spatial Planning Zone or SPZ. An SPZ is broad zone of different land uses, character and population density, showing main lines of communication, principal institutional uses and its homogenity and other main functions whereas, a DPZ is further breakdown of SPZ along with the similar lines. Considering the settlement patterns, urban activities, topography and environment, compatible land use indicated in the Structure Plan and Urban Area Plan as mixed use planned, mixed use spontaneous, hazardous industrial, flood flow, agriculture high value zone etc. would be reviewed for appropriate proposal. The DAP also have considered the safety and critical environmental issues like flooding and drainage, pollution, loss of wetlands etc. The advantages of DPZ are:

- Perception of stakeholders can be drawn on a more specific and accurate basis.
- Issues like infrastructure, social amenities and general expectations can be graphically portrayed or articulated.
- It helps in finding better diagnosis to the problems besetting the area.
- A clean area profile emerges, which includes specific city development strategies & programs and provide a useful base for analysis and micro recommendations.
- It enables easy and accurate planning of a series of action plans (short-term investment decisions) which can provide the framework for the capital investment program of the local level.

The size of the location-16 is not so large, therefore instead of dividing it into several DPZs, it has kept as a one unit to prepare detailed area plan.

1.8 Description of the Planning Area

1.8.1 Administrative and Cadastral Boundaries

The area under Location-16 is broadly bounded from the north by the Location-9 and the proposed Purbachal Road, from east by the Balu River, from south by Location-11, the Begunbari Khal, and the Gazaria Khal and from west by Location-10. The total area of Location-16 is approximately 4537.08 acres (1,836.099 hectares) covering 11 Mouzas (part and full) and part of SPZ 12 (Details are presented in **Annexure-I**).

According to 2001 census report the total population and the number of household of the study area is 41195 and 8923 respectively.Table 1-2 contains Mouza wise total area, population and household of the study area. The average gross density of population is 9.08 persons per acre and average size of household is 4.62. Among the 11 Mouzas, Gazaria covers maximum areas (1134.23 acres) and Nandipara represents the highest population (17611) in 2001. The maximum gross density of population is in Nandipara (76.86 persons per acre) and minimum in Purba Haradia Mouza (1.28 persons per acre).

The Table 1-2 shows that the population of the project area in 2007 was 69068. It also reveals that Uttar Khan Mouza represented the highest population (21,353), on the other hand, Nirni Mouza shows lowest population. The population density of the area is comparatively lower than the Group-C (Dhaka City).

Table 1-2: Mouza-wise Distribution of Population (2001)

Mouza Name	Area (Acre)	Population			
		2001	2011	2011	2015
Dhelna	59.57	102	115	124	134
Dumni	1031.08	2697	3028	3272	3534
Mastul	218.98	298	335	361	391
Patira	442.34	3880	4357	4707	5085
Bara Baraid	957.51	10470	11756	12700	13720
Chhotta Baraid	91.49	1038	1166	1259	1360
Nigur Apaid	67.24	758	851	919	993
Paschim Haradia	130.74	209	235	254	274
Purba Haradia	174.78	223	250	271	292
Gazaria	1134.23	3909	4389	4742	5123
Nandipara (P)	229.13	17611	19775	21363	23078
Total	**4537.08**	**41195**	**46256**	**49971**	**53984**

Source: Bangladesh Population Census, 2001
Growth rate= 1.95 P = Part

1.8.2 Geo-physical Profile

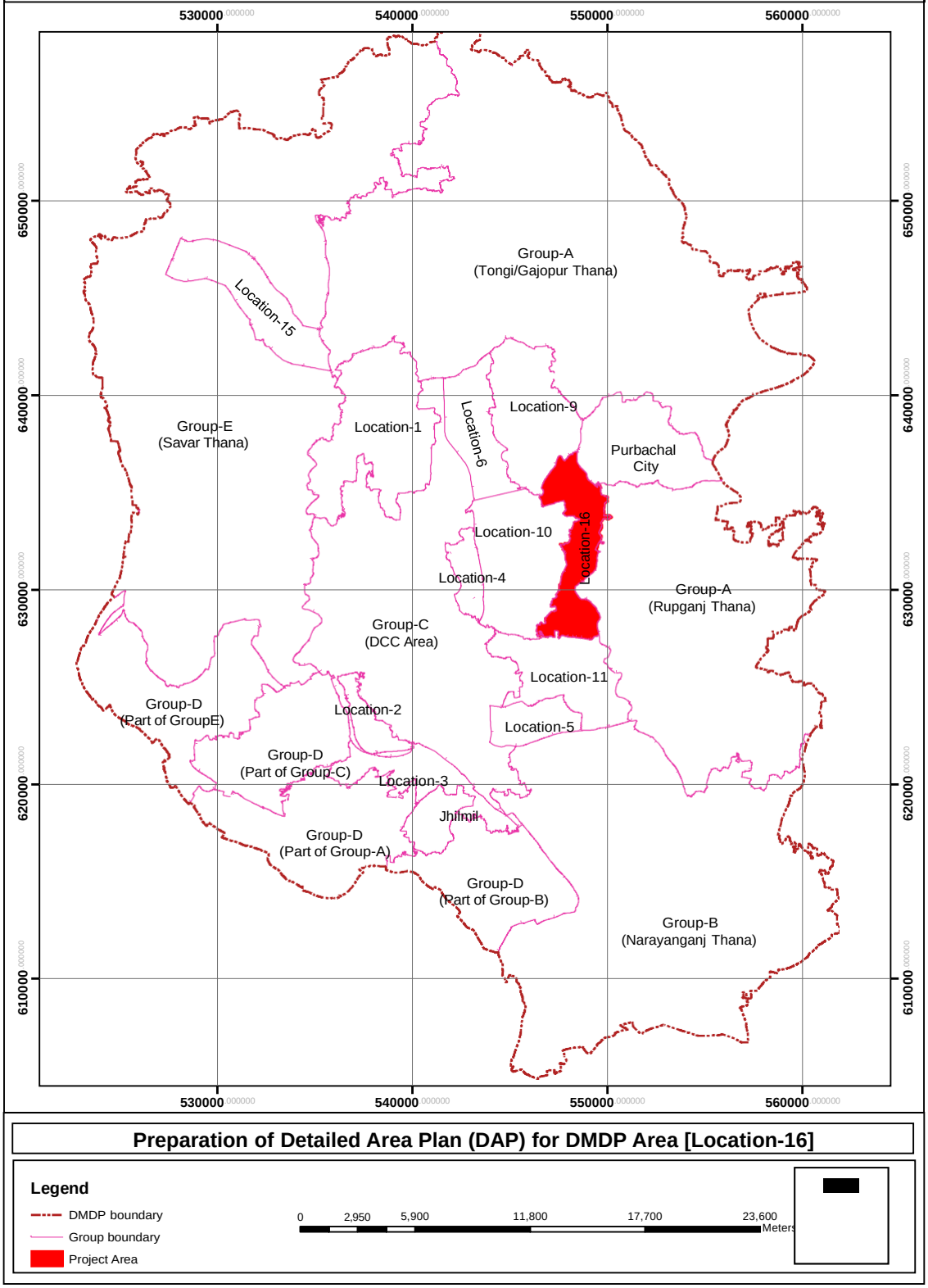
a. Geology and Soil

The Location-16 is low lying and a part of flood plain of the Balu River. It seems that the geo-physical condition of the area may not be favourable for vertical expansion. Rampura fault line on Begunbari-Jirani Khal makes the area vulnerable to settlement.

The project area is covered with Pleistocene Madhupur Clay and Holocene sediments belonging to the Ganges-Brahmaputra flood plain. The area is covered with recent flood plain deposits. On the basis of geomorphological expression and sediment characteristics, the area has been divided into nine geological units having deposits of the following:

1. Sand bar/ point bar
2. Active natural levee
3. Flood plain

Map 1-1: Location and boundary of Location-16 in the context of DMDP



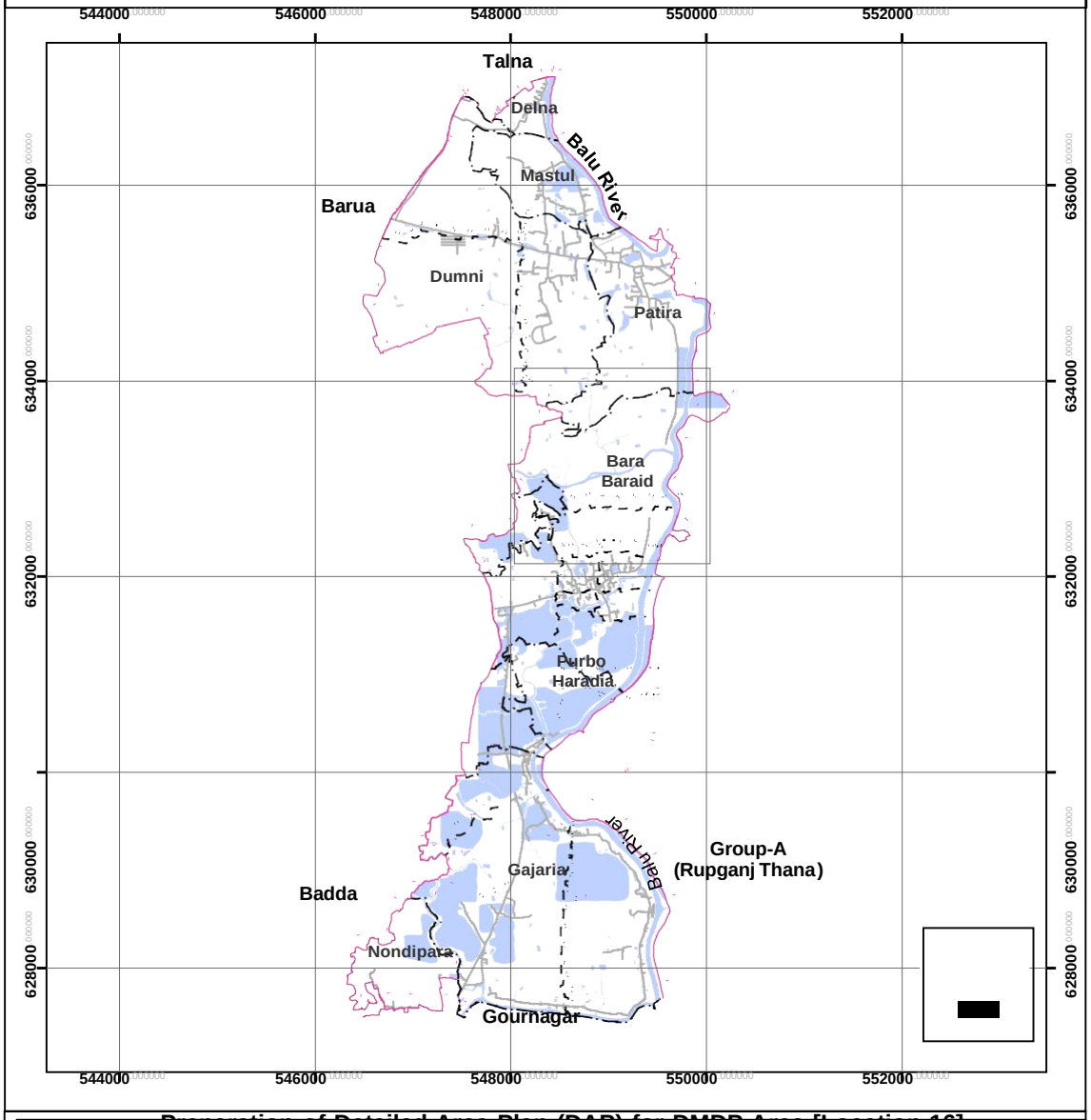
Preparation of Detailed Area Plan (DAP) for DMDP Area [Location-16]

Legend

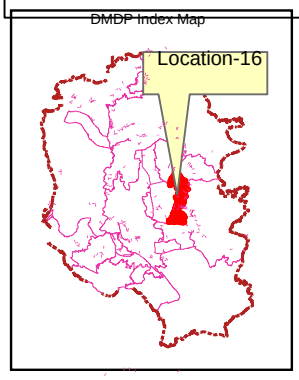
- DMDP boundary
- Group boundary
- Project Area

0 2,950 5,900 11,800 17,700 23,600 Meters

Map 1-2: Administrative boundary of Location-16



Preparation of Detailed Area Plan (DAP) for DMDP Area [Location-16]



0 800 1,600 3,200 4,800 6,400 Meters

Legend

- Group boundary
- Mauza boundary
- Sheet boundary
- Existinf Road
- Waterbody

Source: Physical Features Survey, 2005-06

4. Depression
5. Abandoned channel
6. Gully fill
7. High flood plain
8. Old natural levee
9. Madhupur Clay

Subsurface engineering bore logs up to 30 meters and open pits up to 10 meters were studied to determine both the engineering and geological characteristics of the sediments.

Sand bar/Point bar Deposits

These deposits consist mainly of loose and fresh sand and are medium to fine-grained. Some yellowish-brown sand patches are observed at many places like dumni, patira, baraid, gazariaetc. Few laminations of silty materials are found in the sand. At places, the percentage of silt is comparatively high.

Active Natural Levee Deposits

These deposits consist dominantly of sand with many discontinuous thin laminations of sand silt and clay silt. The sand is light brown to light gray in color, fine to course grained and moderately compact. This unit is more elevated than its surrounding areas.

Flood Plain Deposits

The flood plain is the extended flat, poorly drained land that is flooded annually. At many places, peat layers are a few centimeters to 0.3 meters thick within 1 meter from the surface.

Generally, the upper 1 meter is silty clay to clayey silt, which is light gray to light yellowish brown in color. Below this, thick layers of light gray to yellowish-brown silty clay with mottling and ferruginous concretions are found. Alternating layers of blackish-ray organic clay and blackish-brown silty clay are generally found in the unit in down slope areas near depressions. At places, alternative fine sand layers are found irrespective of depth, where peat layers from a few centimeters to 0.3 meters thick are found in near surface. Decomposed and partially decomposed grass roots and animal burrows are common at the upper part of the unit.

Depression

Depressions are the deepest part of the area situated 1.3-2 meters above mean sea level. Most of the area is usually covered with water year round but occasionally dry during the winter. In aerial photographs, the area shows dark-gray tone.

The deposit consists of gray to light gray organic clay, dark gray to blackish gray peaty clay and blackish to dark brown peat. Decomposed and partially decomposed vegetal matters are common. The sediments are highly sticky and plastic with high natural moisture content. Some alternation of light gray sand and silty layers is found in this unit. A few patches of reddish to yellowish brown silty clay with orange red mottling are sporadically present. This silty clay is medium to high plastic and compacted. Some blackish gray, thin, fine sand layers (+0.6 meters) with a large amount of silicified tree branches (0.26 centimeters mean diameter and 2 centimeters length) coated with yellowish brown, fine sand are present near the reddish to yellowish brown, silty clay patches.

Generally, two layers of peat with average thickness of 1 meter were found. These layers are present within 1-4 meters below the surface. These peats, containing fibers from decomposed and partially decomposed tree branches, are spongy, medium to light weight when dry and mixed with some clay. According to local people and field investigation, buried partially decomposed tree trunks are found 3-5 meters below the surface at many places in depressions.

Abandoned Channel Deposits

Channel segments that are abandoned by avulsion or cut-off process become flood plain lakes of identifiable origin. On aerial photographs, abandoned channel deposits show medium-gray tone, smooth texture and elongated patterns. Surface deposits are silty clay or clayey silt that are dark gray, greenish gray to yellowish gray with yellow and brown mottling in many localities. Below tile near surface, thick layers of organic clay and peat are common.

Root tubes and worm burrows are filled with gray silty clay. Partly decomposed and broken shells and organic matters are common. Lenses of very fine sand interblended with clay are found at some places.

Gully Fill Deposits

Along the edge of the high Madhupur Clay unit, several small drainage channels of dendritic patterns have formed to drain out water to low-lying areas. Due to partial or complete obstruction of the main channel of the drainage system, the amount and velocity of the water flow decreases; as a result, sedimentation starts on the channel base and the channels are filled up. On aerial photographs of the area shows light to medium tone with little relief.

The main sediments constituting this unit are light gray to dark gray sticky, clayey silt. A few thin layers of yellowish-brown, fine sand and blackish-gray organic clay are present. The thickness of the top layer ranges from 1.5 to 2.5 meters, which is underlain by Madhupur Clay.

High Flood Plain Deposits

In aerial photographs, high flood plain shows light gray tone. The top layer of this unit is light gray to yellowish brown sandy silt and bluish gray silty clay, which is underlain by yellowish brown to reddish brown Madhupur Clay. Thickness of the top layer is I.7-3 meters. Worm burrows, root tubes and vegetal matters are common.

Old Natural Levee Deposits

The sediments are mainly grayish brown, sandy silt and silty clay with thin lamination of yellowish brown, fine sand. Few peaty matters are present at places. The sediments are well compacted and oxidized along rootlets and fractures. The thickness of the sediment is generally 2-3 meters, underlain by Madhupur Clay.

In aerial photographs, the unit shows light gray tone, elongated shape and relatively high relief. The area gently slopes towards the city side. This unit generally lies above high flood level and general elevation is more than 6.5 meters above mean sea level. The old natural levee sediments were deposited on Madhupur Clay unit.

Madhupur Clay

This unit mainly consists of yellowish brown to reddish brown, highly oxidized, silty clay. The main characteristics of this unit are orange red mottling, high oxidation and a metallic black iron oxide accumulation in nodular form with a nucleus. This black nucleus might have been formed by manganese. Some yellowish brown ferruginous nodules are also present. The reddening of color increases with depth. Some sand and mica are present in this unit. The clays are mainly kaolinite and illite (Chowdhury and others, 1989). Secondary light bluish gray, plastic silty clay is deposited along fractures and animal burrows. The sediments of this unit are highly compacted, medium plastic and sticky. The average thickness of this unit is about 8 meters. This unit is underlain by Dupi Tila Formation and is probably a residual deposit.

The chemical analytical data reflects that the water holding capacity as well as clay content is higher in Madhupur Clay than the Alluvium Sediment (flood plain deposit). On the other hand, the carbon, calcium and magnesium contents are higher in Alluvium than in Madliupur Clay. The percentage of iron in both the units is almost the same, but Madhupur Clay is much redder in color than the Alluvium. This indicates that the iron in Alluvium is mostly in ferrous form whereas in Madhupur Clay it is in ferric form. From this view, one can infer that the Madhupur Clay unit was well exposed for a longer time to oxidation than the Alluvium (see Table 1-3).

Table 1-3: Chemical Composition of Soil Sediments of the Project Area

Items	Madhupur Clay Average [%]		Alluvium Average [%]	
Number of Samples	8		5	
Adsorbed water	3.93	0.79	1.54	0.57
Combined water	4.70	0.88	2.08	0.19
Carbon (CO2)	0.047	0.028	0.11	0.06
Silica (Si O2)	61.20	1.37	66.49	1.10
Aluminum (AI2 03)	17.83	0.34	14.59	0.99
Iron (Fe 03)	6.88	0.69	6.37	0.65
Titanium(Ti O2)	0.96	0.14	0.82	0.07
Calcium (CaO)	0.76	0.46	2.34	0.19
Magnesium (Mg)	0.81	0.32	1.70	0.28

Source: Engineering and Planning Consultants, 1991

Note: Number of samples taken for Madhupur Clay and Alluvium were 8 and 5 respectively

b. Topography

According to the survey data, most of the study area has an elevation of four to six meter. The highest elevation has seen in the northern part of the study area and it covers very small areas. At that point, elevation reaches nearly 7 meter. The lowest elevation has beed observed in the western part along the side of the Balu River and at that point, elevation reaches less than 1 meter of the study area (See **Map 1-3**).

It has been observed that most of the areas are flat which represents 47 percent of total area. There are many low lands in the study area that covers 45 percent of the total area. Only minor portion of the lands (8 percent) are high. Flood and water logging are there on the undulation of the land. When the lands are more undulated, there is a greater chance of water logging and flood.

There are many low lands by the side of the Balu River. The Balu River passing through the eastern side of the study area and the area of this river is 621556.61 sq.m.

c. Climate

Temperature

The climate of Dhaka is fairly equable, the maximum temperature recorded in Dhaka is 42.22°C, the minimum 5° C and the average temperature is 25.66°C. Good weather, generally begins in November and for four months, the climate remains fairly pleasant. In March, however, the days grow hot. May to June is hotter. January is the coldest month.

Rainfall

The Maximum rainfall recorded in Dhaka is 2633 mm, the minimum is 1197 mm. and the normal is 1863 annually. During the dry season (from November to March), the total rainfall is 133 mm.

Prevailing Winds

From November to March, the prevailing winds are often from the north and north-west. In March, sudden storms from the north-west are by no means un-common, and are a source of considerable danger to the light crafts cruising in the rivers. From April to October the wind is generally from the east and southeast. It is heavily laden with moisture, but it does much to mitigate the rigorous of the climate.

1.9 Review of Previous Plan and Proposals

The statements and recommendations of previous higher-level plans relevant to the current plan and their success and failures have been considered. These plans include Master Plan for Dacca, 1959, Dhaka Metropolitan Integrated Urban Development Plan, 1981, Report of the Task Force on Bangladesh-Development Strategies for the 1990's, Formulation of Land Development Controls and Proceeding for Dhaka City, Greater Dhaka Metropolitan Area Integrated Transport Study, Dhaka Metropolitan Development Plan, 1995-2015 and Strategic Transport Plan of 2006. However, the project area (Location-16) was outside the planning area of 1959 Master Plan but to get knowledge about plan and policies, plan has been reviewed.

1.9.1 Master Plan for Dhaka, 1959

The proposed ensuring the existence of Khals with further expansion as, this is low-lying and better as a drainage channels. Rural agricultural practice be maintained.

1.9.2 Dhaka Metropolitan Area Integrated Urban Development Project (DMAIUDP)

a. Relevant Recommendations

The Dhaka Metropolitan Integrated Urban Development Plan was prepared in 1981, evolved from a series of Reports and Missions concerned with storm water drainage and flood protection. The study was funded by ADB, which strongly recommended that further flood protection investment shall await the outcome of a broad multi-sectoral strategic study to evaluate metropolitan planning options. Following the serious floods of 1987 and 1988, a National Flood Action Plan (FAP) was formulated – Dhaka is covered by two such FAPs.

The Dhaka Integrated Flood Protection Project (FAP–8B) for the western part of Greater Dhaka executed and funded by the ADB. It addresses the integration of flood protection works for Dhaka Metropolitan Area, covering an area of 260 sq. km. with other infrastructure and environmental improvement measures in order to maximize its impact. The components of FAP-8B are embankment strengthening, pumping stations, drains, slum/squatter area improvement, sanitation/sewer and solid waste management.

The Greater Dhaka Protection Project (FAP-8A), funded by JICA, formulated a framework for comprehensive flood control and storm water drainage in the Dhaka Metropolitan Area, covering an area of 850 sq. km. It is proposed that an area of 453 sq. km. would be protected, drainage improvements are proposed within the area and non-structural measures are proposed outside. It is expected that the Eastern Bypass will provide the basis for an accelerated implementation of the protection works on the eastern side of the Greater Dhaka area.

b. Application of DMAIUDP

Most of the components is under implementation, especially development in the Eastern Fringe, schemes involving retention pond in the Location-9, 11 and 16. Under this plan, greater Dhaka protection project (FAP-8A) will facilitate eastern bypass, which will protect the eastern side of greater Dhaka and will supply flood free land much closer to heart of the Group-C area. In addition, there will be faster southeast development by optimizing exiting and potential new land development areas and natural drainage system and khal will be protected.

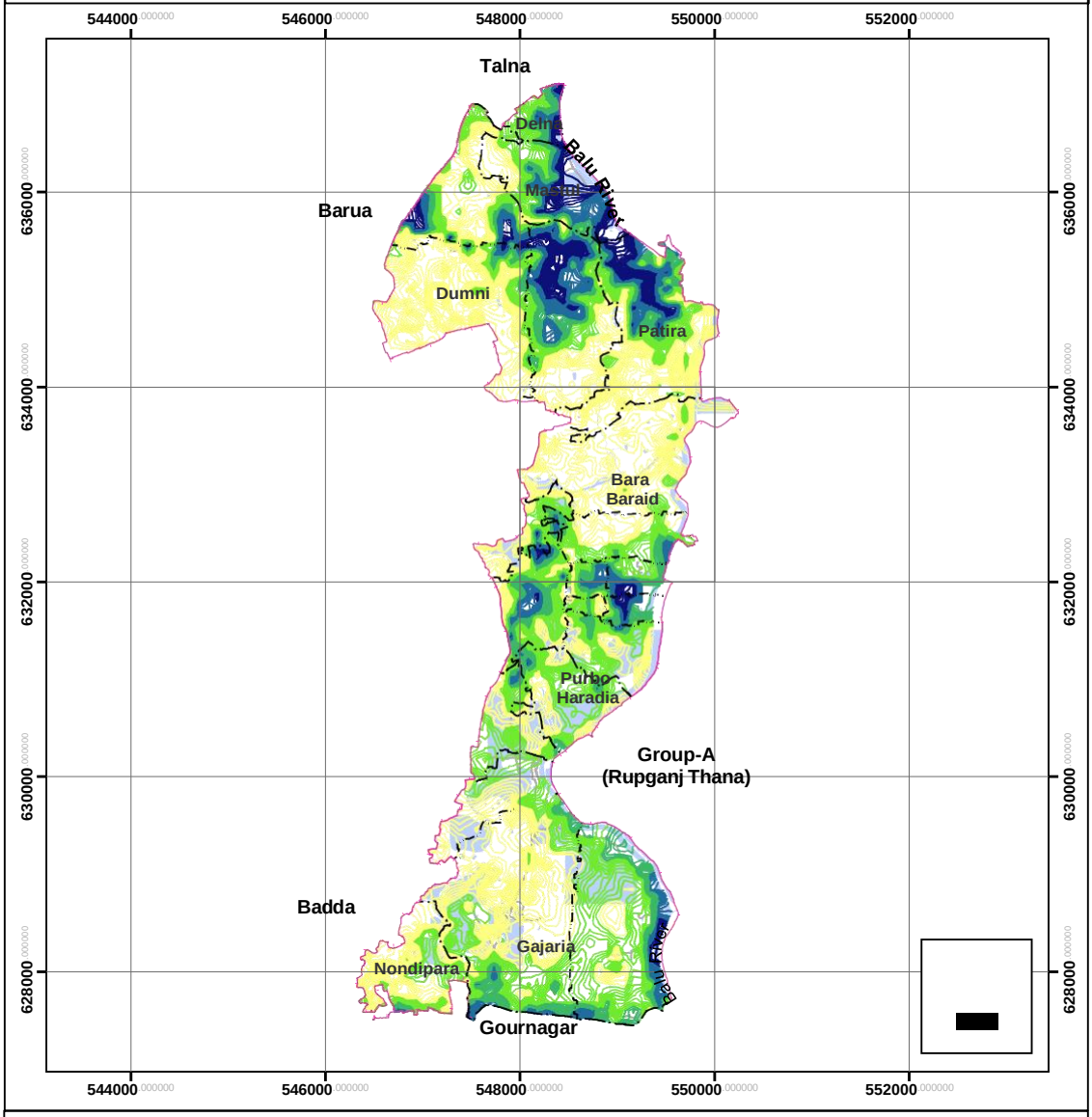
1.9.3 DMDP Structure Plan and Urban Area Plan

a. Relevant Recommendations

The Dhaka Metropolitan Development Plan (1995-2015) project was a three-tier Plan Package, viz. the Structure Plan (SP), the Urban Area Plan (UAP) and the Detailed Area Plan (DAP). The first two tiers are completed and published in two volumes under the DMDP. The Plan Documents are approved and published in the Bangladesh Gazette under the notification of SRO No. 184-Law/ 97 dated August 4, 1997. Due to paucity of funds, the project could not be run UNDP/UNCHS any further and had to be closed down without preparing detailed area plan component.

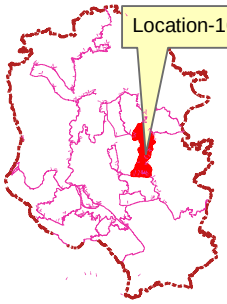
The DMDP Structure Plan provides a long-term strategy for the 20 years for the development of the greater Dhaka sub-region covering 590 sq. miles. It consists of a written report and policy document with various support maps. The report identifies the order of magnitude and direction of anticipated urban growth and defines a broad set of policies considered necessary to achieve the overall plan objectives. The future development proposals were marked in maps in an indicative manner. The Structure Plan recommended strategies for planned new area development, special area development, infrastructure development etc. through community participation.

Map 1-3: Contour Map of the Project Area



Preparation of Detailed Area Plan (DAP) for DMDP Area [Location-16]

DMDP Index Map



0 800 1,600 3,200 4,800 6,400 Meters

Legend

- Group boundary
- Mauza boundary
- Sheet boundary
- Existinf Road
- Waterbody
- **Contour (PWD-M)**
  - 0.500 - 2.000
  - 2.001 - 2.900
  - 2.901 - 3.900
  - 3.901 - 4.900
  - 4.901 - 6.500

Source: Topographic Survey, 2005-06

The Structure Plan described the features of spatial development strategy, how the city's existing urban resources can be utilized by means of consolidation and accelerated development. It recommended planned new area development through infrastructure led development initiatives. The plan also suggested long-term planned new area development through flood protection and conventional development in dispersed flood free areas. Suggestions were also made to integrate cantonment and control and rehabilitation of the urban core. The plan prepared sectoral plans, policies and proposals under the broad headings of socio-economic sectors and infrastructure sectors.

The DMDP Urban Area Plan (UAP) provides an interim mid-term strategy for the development of existing urban area within the RAJUK administrative boundary. The validity of UAP, though expired in 2005, has been extended up to 2009 through a gazette notification. The area covered by the UAP comprises DCC, Narayanganj, Jinjira, Uttara and Eastern Fringe, while additionally the outlying areas as Tongi, Gazipur, Savar and Dhamrai/Dhamsona are put under consideration. The UAP through its explanatory report, reference maps, interim development management report, interim planning rules, multi-sectoral investment program and urban area plan map provides guidelines for planning and development control of the entire RAJUK area. The following sections make a review of the UAP proposals made for the study area.

b. Application of the Structure Plan and the Urban Area Plan

Planned new area development, long term planed new area development opportunities, special areas development strategies, infrastructures investment strategies, impact identification on Dhaka spatial development pattern, etc. This was a broad landuse policy guideline for the existing city including urban expansion areas in the form of structure plan.
Secondly, there was another setoff plan named Urban Area Plan, which were interim-mid term strategies for 10 years upto 2005. Under this entire DMDP area was divided into 17 SPZ and detail landuse development recommendation has been given after identifying the problems of each SPZ.

The adoptions of recommendations of above two plans are under implementation.

1.10 Public Consultation

1.10.1 Consultation with Local Government Authorities

Inventory of existing plans by public agencies, ongoing or scheduled implementation of projects, inventory of public sector objectives and wishes, and spatial problems affect the objectives and wishes of this study. The inventory has to start with desk research, followed by additional consultations.

1.10.2 Consultation with Different Communities

For consultation (also in later stages), it is advisable to draw up a separate Communication Plan and reserve sufficient budget for the implementation of this plan. In the Communication Plan an inventory has to be made of interested parties, according to the following categories:

- Public agencies (concern ministries, semi-government, utility agencies and companies, local government, etc.)
- Local communities (e.g. elected representatives, community leaders, local CBO's)
- Private developers
- Relevant NGO's
- Professional and business groups

Prior to start of the consultation, a plan was drawn up to carry on the consultation in an organized manner. The plan contains the categories of stakeholders to be consulted, issues to be discussed and the application of the findings of consultations as shown in the Table 1-4.

Table 1-4: Communication Plan

Category	Stakeholders	Issues Discussed	Application of Findings
Public Agencies	• Service providing authorities • Public companies, Local government	• Possible location of infrastructure & service expansion, • Problems of infrastructure development,	• Designing of infrastructure & services, • Developing policy proposals for future development
		• Future urbanization & spatial expansion	
Local Communities	Public representatives, Teachers, General Public	• Local problems, • Aspirations of different groups about future development • Potentialities & opportunities	Inclusion of people's aspirations in designing service facilities & in formulation of future development policies
Private Developers	Real estate companies & housing cooperatives	• Problems of real estate development • Filling of flood flow areas, • Planning criteria & standards	• Integration of housing estates in DAP • Formulation of planning standards
NGOs	Representatives of major national & local NGOs	• NGO programs & activities in the project area, • Social problems & the role of NGOs	Integration of NGO activities in the DAP
Professionals, Business Group	Engineers, Doctors, Lawyers, Journalists etc	• Problems of environment, open space, encroachment etc • Problems relating industrialization	Preparation of environment friendly DAPs for the area

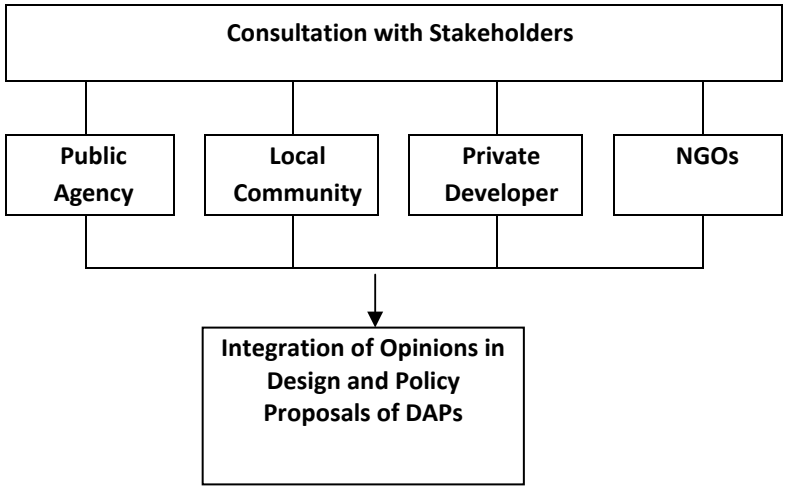


Figure 1-1: Integration Process of Consultation Findings

Processing and Integration of Consultation Findings

After review and consultation with stakeholders at the field level, the information has processed through systematization and assimilation and later integrated with detailed area plans. The interview records were brought from the field in text form in notebooks. The text records have edited, revised, synthesized and assimilated. Photographs taken during interview have processed for inclusion in the text as evidence. From synthesized text, key points has identified and separated for inclusion in the DAPs. The proposals were set in the form of recommendations. Integration of findings was carried out through design of plan components and policy proposals.

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 3, 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) at various locations
  - RAJUK Auditorium
  - DAP, PD Office
  - 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
- Mauza Plot level digital display 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.

Numbers of complaints/comments were made on the plans by the stakeholders of Location-11 Area. Complaints were received from 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 landowners 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

As not much information is readily available, emphasis has been on direct consultation, with careful introduction of the background, the status and the purpose of the project to avoid conflicts and make meetings fruitful.

Communities and their leaders ware the focal persons to participate in planning and implementation of different development programs and spatial planning. They have been asked regarding their problems they face and which they are able to solve by themselves and for which they need government support.

Key issues discussed

The teachers and other people of the union councils have mentioned that only a few planning agencies come or consult with the local people regarding the problems and development of the area. The project area is outside the DCC jurisdiction so there is no gas supply and sewerage coverage. The project area has no recreational facilities like parks or playground. People dispose their household and other wastes in open ground. Drinking water supply is also absent in the area. The existing Khals and other low lands are almost occupied by some influential people and constructed illegal structures, which causes flood and water logging in the adjacent areas. There are private developers occupying low and agricultural lands.

Findings of discussion

- The utility services like gas, drinking water and waste disposal system should be provided as early as possible.
- There is lack of medical facilities in project area so more hospital facilities should be provided.
- The illegal structures inside the Khal should be evicted. It is also important to keep the canal navigable.
- The activities of the private developers should be monitored closely so that their development activity could not deteriorate the flood situation of the area.

1.11 Draft DAP Review by Review Committee

After finalization of the Draft Plan and public hearing the out of DAP was placed before review committee composed of eminent academics, experienced town planners and representatives from concerned interests groups. The purpose of this review was to find out how far accurate and pragmatic the proposals were. The review committee raised certain issue

related to future population growth, appropriateness in changing the flood flow zone, retention pond area, etc. This was reviewed and new recommendations from review committee was made and incorporated in the plan.

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. Dr. 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

2.1.1 General

Within a timeframe of two decades, Dhaka spanned both north, east and west ward triggering urban development both haphazard and few planned by Government. The progress of urban development has occurred with unrivaled speed and dimension. The development trend has propelled the city's growth into the future with amazing velocity; an entirely new urban reality accelerated the current development trends within the city which became characterized, by a steady population growth and density, an ongoing haphazard urbanization with moderate economic growth and a rapid motorization.

In Location-11, haphazard and unplanned urban growth and development pattern exist. Few residential areas are planned and most of the areas are unplanned. There is no clearly defined industrial zone in the project area. Major portion of the lands are non-urbanized with scattered rural settlements. A part of this location is full of water bodies and wet lands. Infill development in the low-lying areas is noticeable picture in this location.

2.1.2 Socio-economic Profile

a. Family Size

The Table 2-1 shows the distribution of union wise male and female population in the study area. The table also presents the distribution of household size of the study area, where the biggest household size (5.34) is in the Satarkul Union.

Table 2-1: Union wise Average Household Size

Union Name	Household Number	Sex		Total	Household Size
		Male	Female		
Satarkul	50	129	138	267	5.34
Beraid	183	472	435	907	4.96
Total	**233**	**601**	**573**	**1174**	**5.04**

Source: Socio-Economic Survey, 2006

b. Age and Sex Structure

The overall age-sex composition of population of the study area appears to be somewhat different from the national scenario and this is due to population growth and urbanization in the study area. Table 2-2 shows about 51.53 percent of the sample population is 24 years of age or bellow what is a significant phenomenon that shows more than half of the population in this study area is between 0 to 24 years of age group. About 20.10 percent population is in between the age group of 25 to 39 years, about 22.32 percent are in the age group of 40 to 54 years, about 5.54 percent population is in the age group of 55-64 and the rest 0.50 percent are of age 65 years and above.

Table 2-2: Age Sex Structure of the Project Area

Age Group	Male		Female		Total	
	Number	%	Number	%	Number	%
Below 5	28	2.39	34	2.90	62	3.40
5-14	168	14.31	103	8.77	271	23.73
15-29	159	13.54	204	17.38	363	28.61
30-44	96	8.18	136	11.58	232	24.80
45-59	123	10.48	94	8.00	217	13.88
60 and above	27	2.3	2	0.17	29	5.58
Total	**601**	**51.19**	**573**	**48.81**	**1174**	**100.00**

Source: Socio-Economic Survey, 2006

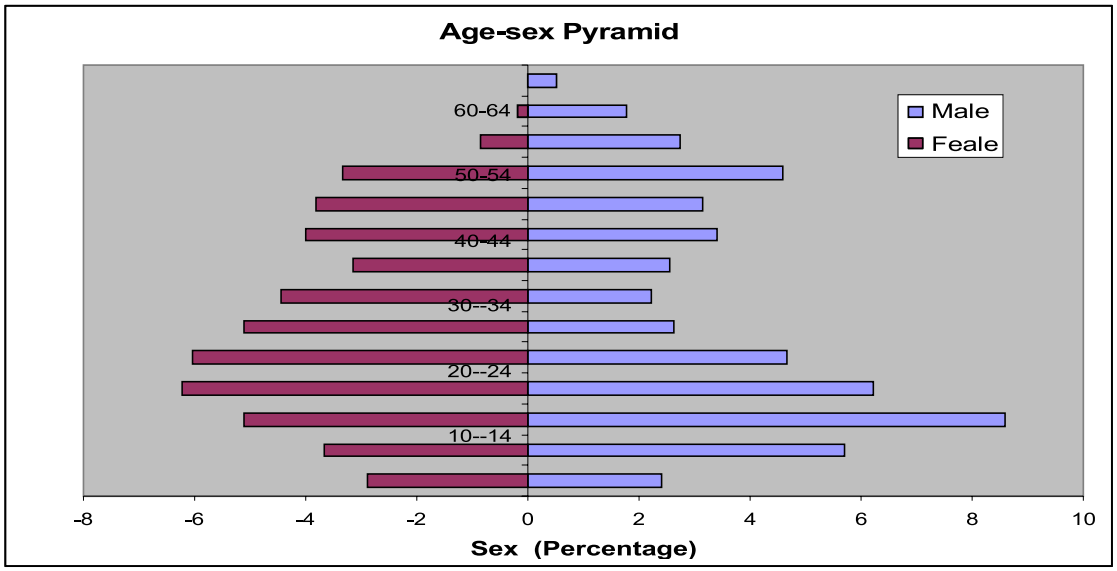


Figure 2-1: Age-Sex Pyramid

Source: Socio-Economic Survey, 2006

The above age-sex pyramid shows a graphic scenario of the age and sex distribution of the study area population. This indicates the study area population to be currently in a state of population transition with birth rate falling, which indicated by the shortening of the base of the pyramid by the adjacent rows above as well.

c. Religious Groups

Table 2-3 shows the religion wise population distribution in the project area. Muslim population will be significantly high in the study area and hence the survey result shows about 95 percent are Muslims and the rest 5 percent are Hindus. In the study area, the survey data do not present any other religious households.

Table 2-3: Household by Religion

Name of the Union	Religion								Total	
	Muslim		Hindu		Buddhist		Christian			
	Number	%	Number	%	Number	%	Number	%	Number	%
Satarkul	45	19.31	5	2.15	-	-	-	-	50	21.46
Beraid	177	75.97	6	2.58	-	-	-	-	183	78.54
Total	**222**	**95.28**	**11**	**4.72**	**-**	**-**	**-**	**-**	**233**	**100.00**

Source: Socio-Economic Survey-2006

d. Educational Status

Table 2-4 represents the educational status of the population of the project area. Among the surveyed households about 4 percent population are illiterate, 30 percent have elementary level of education, about 26 percent have junior level of education, about 17 percent respondents have S.S.C. level education and about 11 percent have H.S.C and higher level of educational qualifications.

Table 2-4: Educational Status

Level of Education	Number Persons	Percentage
Illiterate	48	4.09
Elementary	361	30.75
Junior	305	25.98
S.S.C	199	16.95
H.S.C	79	6.73
Degree	44	3.75
Doctor/Engineer/Advocate	3	0.26
Master Degree and Above	8	0.68
Technical (Diploma)	-	-
Vocational	-	-
Religious Education/Madrasa Degree	-	-
Under age	127	10.82
Alim	-	-
Others	-	-
Total	**1174**	**100.00**

Source: Socio-Economic Survey-2006

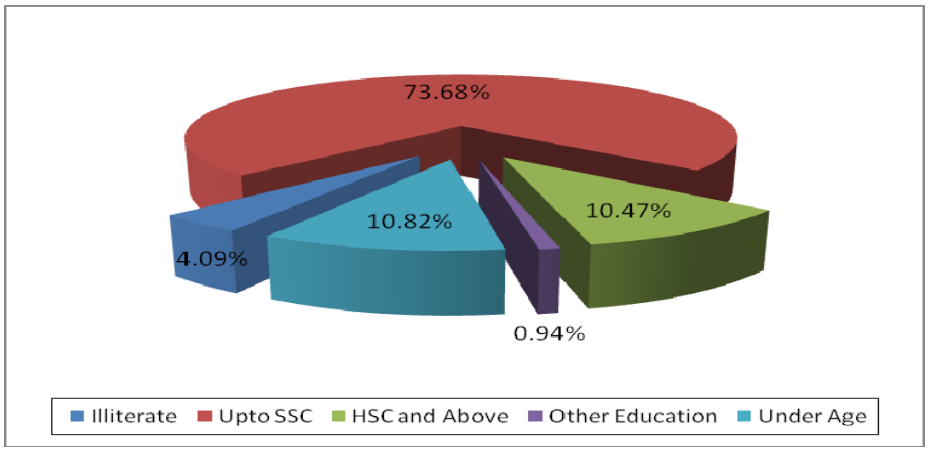


Figure 2-2: Educational Status in the Project Area

Source: Socio-Economic Survey, 2006

e. Occupation/Employment Status

The occupation pattern of the project area's population is diversified and dynamic as well. Table 2-5 shows the distribution of household occupation of the study area. Hence, the significant portion of population is engaged in household work (about 33%) and on the other hand, about 11 percent are engaged in different activities of business, whereas about 24 percent are student and about 11 percent completely unemployed in consideration of income generating activities.

Table 2-5: Occupational Status

Occupation	Number Persons	Percentage
Self Employed	2	0.17
Working in Govt./ Autonomous Body	7	0.60
Staff of Non Govt. Office	23	1.96
Business	128	10.90
NGO Staff	-	0.00
Rickshaw/ Van Puller	15	1.28
Car Driver	7	0.60
Skilled Mechanic/ Technician	7	0.60
Industrial Worker	22	1.87
Day Labourer (Non-agri)	3	0.26
Farmer(Land Owner)	59	5.03
Share Cropper	-	-
Day Labour (Agri.)	8	0.68
Household work	387	32.96
Unemployed	129	10.99
Student	281	23.94
Under age	90	7.67
Day Labour(gen.)	-	-
Expatriate	6	0.51
Disable People	-	-
Other	-	-
Total	**1174**	**100.00**

Source: Socio-Economic Survey-2006

f. Income and Expenditure Level

Income and expenditure pattern of the population reflects their socio-economic status and the status of the area as well. The income and expenditure pattern also refer to the savings status of a selected population in a certain area. The income and expenditure here presents the monthly income from different sources and expenditure for different items of household and their other common needs.

Table 2-6 shows the household monthly income is distributed in a situation of unequal status i.e. we find a high-income inequity among the households. From the survey data, it is significant and unbolted that about 78.60 percent households'

monthly income is up to Tk. 8,000, where only about 18.80 percent of the households' monthly income is Tk. 8,001 to 15,000 and about 2.60 percent of the household earn monthly Tk. 15,000 and above.

Table 2-6: Percentage Distribution of Household Monthly Income

Income range	Household Number	Percentage
0-1500	4	1.50
1501-2500	5	2.26
2501-3500	13	5.64
3501-4500	36	15.41
4501-5500	37	15.79
5501-6500	34	14.66
6501-8000	54	23.31
8001-10000	28	12.03
10001-12000	10	4.14
12001-15000	6	2.63
15000+	6	2.63
Total	**233**	**100.00**

Source: Socio-Economic Survey, 2006

Table 2-7: Expenditure Range of the household

Expenditure Range	Household Number	Percentage
0-1500	2	0.86
1501-2500	6	2.58
2501-3500	14	6.01
3501-4500	46	19.74
4501-5500	46	19.74
5501-6500	59	25.32
6501-8000	39	16.74
8001-10000	12	5.15
10001-12000	7	3.00
12001-15000	1	0.43
15000+	1	0.43
Total	**233**	**100.00**

Source: Socio-Economic Survey, 2006

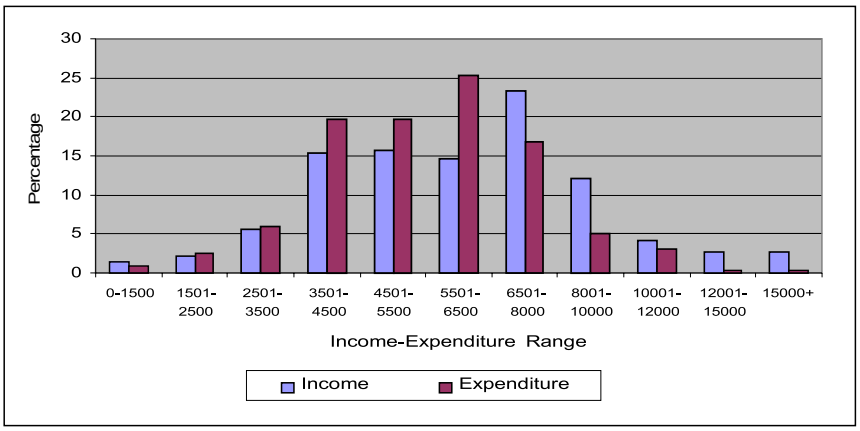


Figure 2-3: Income-Expenditure Pattern

Source: Socio-Economic Survey, 2006

The most important significance between income and expenditure pattern of the project area's household is more reflective and clear in the Figure 2-3. What we see from the figure is that the income group of up to Tk. 6500 per month does not have any savings, while they have to manage some part of their expenditure through some other ways, like

borrowing or any other informal ways. On the other hand, the income-group of Tk. 6501 to 15,000 per month shows a significant savings and the income-group of Tk. 15,001 and above per month has a handsome saving as well. Another significant phenomenon is that a very small percentage of population (about 3.90 percent) earn a higher level of income, while about 96.10 percent household is under the income level of Tk.10,000 per month. This indicates that the high-income inequity in the project area and that refers to diversified socio-economic classes in the study area as well.

g. Source of Income

The sources of income of the project area's population are very much diversified. Table 2-8 represents the sources-wise income distribution in the project area. The major significant income sources of the population are about 45.50 percent of their income comes from business, about 22.60 percent income comes from agriculture, about 13.50 percent comes from daily wages and about 17.30 percent income comes from salary (salary from service, both private and public sectors). Although the study area is a part of the eastern fringe of the Mega city Dhaka but considering the presence of agriculture, day labor and household work etc. at a higher level in the sources of income, it would be said that the study area is not a fully urbanized area rather than a suburban economy exists.

Table 2-8: Source of Income

Income Source	Household Number	Percentage
Salary	40	17.29
Income from assets	-	-
House rent	3	1.13
Business	106	45.49
Wages (daily)	32	13.53
Agriculture	53	22.56
Poultry/Livestock	-	-
Pisciculture	-	-
Cottage Industries/Handicraft	-	-
Remittance	-	-
Total	**233**	**100.00**

Source: Socio-Economic Survey, 2006

h. Migration

Table 2-9 shows that about 77.25 percent households are originated from the local areas (unions) of the project area, while 22.75 percent households have migrated from the different areas and regions of Bangladesh and settled in the study area. Considering the origin of the birthplaces, Beraid Union shows the highest score as 57.94 percent while the Saratarkul Union shows the score 19.31 percent as the settlers are migrated from other places to the study area.

Table 2-9: Origin of the Respondents

Union	Origin of the Respondent				Total	
	Yes		No			
	Number	%	Number	%	No.	%
Satarkul	45	19.31	5	2.15	50	21.46
Beraid	135	57.94	48	20.60	183	78.54
Total	**180**	**77.25**	**53**	**22.75**	**233**	**100.00**

Source: Socio-economic Survey, 2006

The status of in and out migration of household members in the project area is shown in the table 2-10. For the national economy, the migration to outside the country is very important because of inflow of remittance. The remittance of out-migrated people serving in different overseas countries is one of the main income sources of many households in the study area. The significant phenomenon between in and out migration is that the out-migration rate is comparatively higher than in-migration rate in the Unions of the study area.

Table 2-10: Migration Status

Union	In-migration		Out-migration		Total Population
	Total	%	Total	%	
Satarkul	1	2.00	5	10.00	50
Beraid	4	2.19	4	2.19	183
Total	**5**	**2.15**	**9**	**3.86**	**233**

Source: Socio-economic Survey, 2006

2.1.3 Landuse

a. Residential Areas

More than 80% of the total buildings in study area are used for purely residential purpose. Total number of residential buildings is 5467 with an average area of 45.58 square meters. Total area occupied by residential buildings is 61.55 acres and table 2-11 shows number of residential buildings per acre, percentage of built up area and plinth area ratio for residential buildings in the study area.

Table 2-11: Structure Types of the Residential Buildings

Type	Number	Percentage	Area (m^2)	Area (acre)	Percentage
Pucca	612	11.19	79036.67	19.53	31.72
Semi Pucca	1582	28.94	123947.59	30.63	49.74
Katcha	3273	59.87	46203.05	11.42	18.54
Total	**5467**	**100.00**	**249187.31**	**61.58**	**100.00**

Source: Physical Features survey 2005-2006

Only 11 percent of the total residential building is pucca. Pucca structures are spread all over the area but there are some areas like Gazaria, Nandipara, Paschim and Purba Haradia, Patira, where only pucca structure exists (**Map 2-1**). About 97 percent of the total stock is 1 storied and only 3 percent are above 1 storied. About 92 percent area is occupied by 1 storied buildings and rest 8 percent area is occupied by above one storied building. In this study area, there is no high-rise building. All of pucca structures are up to 4 storied in the study area.

Table 2-12: Height Distribution of Residential Pucca Buildings

Floor	Number	Percentage	Plinth area			Percentage
			m^2	Acres	Average (m^2)	
1	5283	96.63	230127.27	56.87	43.56	92.35
2	155	2.84	15944.78	3.94	102.87	6.40
3	24	0.44	2557.32	0.63	106.56	1.03
4	5	0.09	557.94	0.14	111.59	0.22
Total	**5467**	**100.00**	**249187.31**	**61.58**	**45.58**	**100.00**

Source: Physical Features survey 2005-2006

Buildings that have concrete or brick wall and tin shed roof are considered as semi-pucca. It is seen from table that near one-third (1582) of the total building stock is semi-pucca. All of these buildings are one storied and Semi-pucca buildings are spread all over the study area. The Figure 2-4 shows the percentage of Semi-pucca buildings in the study area.

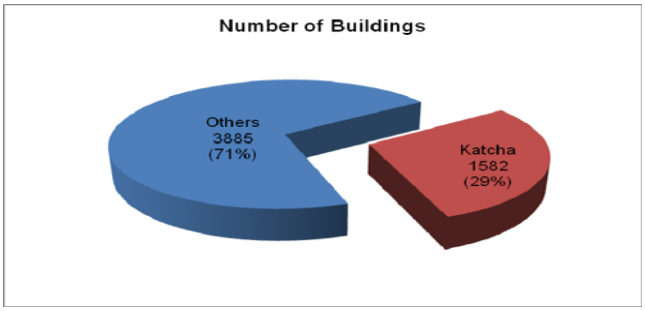


Figure 2-4: Percentage of Semi-Pucca Buildings

Source: Socio-Economic Survey, 2006

Structures having kutcha structure and thatched /tin roof is called Kuthca. About 60 percent of the total residential buildings are of this category. The Figure 2-5 shows the percentage of katcha buildings in the study area.

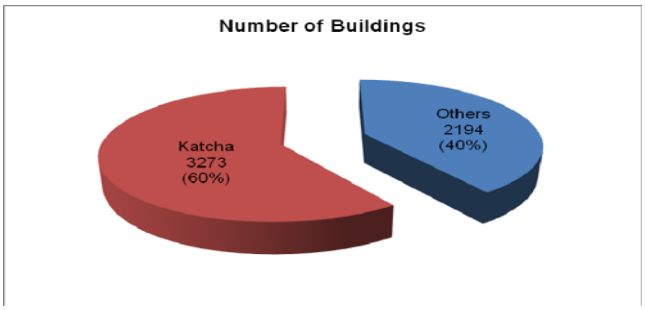


Figure 2-5: Percentage of Katcha Buildings

Source: Socio-Economic Survey, 2006

b. Industrial and Commercial Areas

There are 215 buildings (3 percent of the total building stock) are used for purely commercial purpose in the study area. Commercial buildings are spread along the major roads all over the area. The occupied plinth area of commercial buildings is 9104.74 square meters in the study area. The Table 2-13 and Figure 2-6 shows the standard type commercial buildings (also see **Map 2-2**).

Table 2-13: Structure Type of Commercial Buildings

Type	Number	Percentage	Area (m^2)	Percentage
Pucca	20	9	1358.26	14.92
Semi Pucca	97	45	4385.20	48.16
Katcha	98	46	3361.28	36.92
Total	**215**	**100**	**9104.74**	**100.00**

Source: Physical Features survey 2005-2006

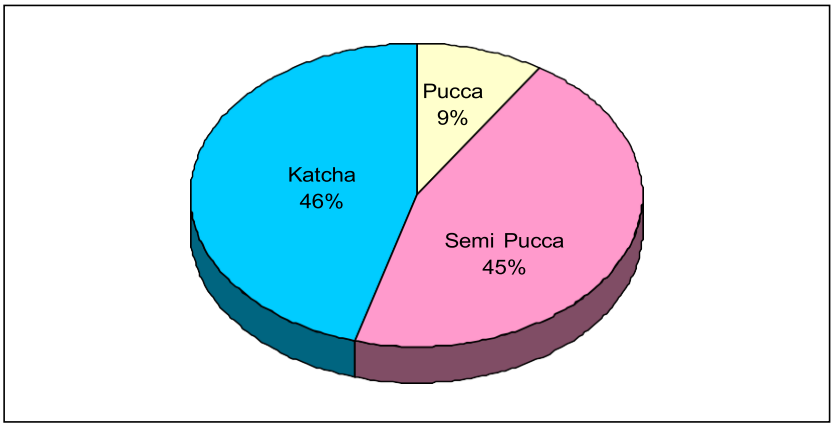


Figure 2-6: Percentage of Commercial Buildings with Structure Type

Source: Socio-Economic Survey, 2006

In the study area, 9 percent of commercial structures are pucca, which occupies an area of 1358.26 square meters (15% of total commercial plinth area). In the study area, most of the commercial pucca buildings (18 out of 20) are one storied and rests are two storied. The Table 2-14 shows heights of these kinds of buildings. There is a small share of high-rise buildings in this category.

Table 2-14: Building Height of Commercial Buildings

Floor	No. of Buildings	Plinth area (m^2)
1	18	1282.35
2	2	75.92
Total	**20**	**1358.27**

Source: Physical Features survey 2005-2006

Out of 215 commercial buildings, 97 are semi-pucca, which represents 45 percent of total commercial buildings and occupied plinth area is 4385.20 square meters (48% of total plinth area). Out of 215 commercial buildings, 98 are kutcha,

which represents 46 percent of total commercial buildings and occupied plinth area is 3361.28 square meters (47% of total plinth area). There are total 3 structures which are being used for industrial purpose; out of them 2 are medium industries and the rest one is light industry. The table 2.15 shows the number of different types of industries in the study area.

Table 2-15: Number of Different Types of Industries

Type of Industry	Name	Number
Medium	Rice Mill	2
Light	Other Factory	1
Total		**3**

Source: Physical Features Survey, 2005-2006

The study area is located in the eastern fringe of Dhaka city. There is no heavy industry in the study area.

a. Non urbanized Areas

Most of the areas under location-16 were not developed yet. The share of agricultural land is still very high. The areas like Gazaria, Baradier Tek has not yet come into the touch of urbanization.

2.1.2 Infrastructure

a. Circulation Network

The review of the physical feature survey of existing road network revealed that various types of road exist in the study area having different width and follows no proper circulation pattern. These different categories of roads are pucca, semi-pucca and kutcha roads. The total length of pucca roads is 10.62 km. The condition of pucca roads is not so good and some are in very poor condition. The next category of the roads is semi pucca, also called HBB (Herring Bone Bond) or brick soling road, which have been identified as of almost similar in character in the whole study area. The length of semi pucca roads is about 6.33 km. The significant portion of the study area road is kutcha, and its length is about 33.22 km. The analysis of circulation network shows that there is no proper circulation pattern in the study area. As the proportion of residential, industrial and mixed uses are low, transport network have not been properly developed. Tertiary and access roads are also inadequate and very narrow. Again, none of the existing roads has followed any proper circulation pattern. In the study area, there is no specific footpath along the road. Only part of the roads is used as walkways.

a. Utility Services

Sewerage System

The study area is situated outside the jurisdiction of Dhaka City Corporation. Therefore, there is no sewerage coverage in the study area. People dispose their sewers in the open land.

Water Supply System

People in the project area are using tube well for the supply of drinking water. For other household use surface water like ponds, ditches, canals and river are utilized. The house hold use includes bathing and cleaning of cooking utensils etc.

Gas Supply System

The gas supply system does not cover the project area.

Electricity

Bangladesh Power Development Board (PDB) supplies the electricity in the study area. The electricity is supplied through the 11 KV lines in the project area. The consumption of electricity at Location 16 is increasing rapidly due to rapid increase of residential buildings and commercial & industrial uses, whereas the electricity supplied to city area are less in respect to the demand. Therefore, load shedding occurs in supply of electricity to the consumers.