DHAKA METROPOLITAN
DEVELOPMENT PLAN (DMDP)
1995-2015

DETAILED AREA PLAN (DAP)

PART - XII

JUNE 2010

RAJDHANI UNNAYAN KARTRIPAKKHA (RAJUK)
DHAKA

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তারিখ, ০৮ আষাঢ় ১৪১৭ বঙ্গাব্দ/২২ জুন ২০১০ খ্রিস্টাব্দ

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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Part-II (Group – B)	**:**	Narayanganj, Kadam rasul Paurashava and its surrounding areas including Dhaka-Narayanganj-Demra (DND) flood protected areas
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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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 Report for Location-4 contains seven chapters sequentially describing the Background of the project, Critical Planning Issues which influenced the plan preparation process, Development Plan Proposals, Plan Implementation strategies & procedures, the Project Plan and Follow Up Actions required for the implementation of the Plan and lastly, Conclusion. Chapter-1 provides a description of the project objectives, brief background and purpose of the project. It states 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 validity of which extends upto the year 2015. RAJUK's jurisdiction covers approximately 590 sq. miles comprising 26 Strategic Planning Zones as demarcated in the Structure Plan. For the purpose of preparation of Detailed Area Plan (DAP), the whole of RAJUK area has been divided into five Groups and eleven Locations. The Chapter 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. The 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 and even they are against compensation.

The next Chapter describes critical issues that 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. The section 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. 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 150 new roads have been proposed. If realized they will be able to adequately handle the trips projected to be generated in the study area. The roads of various widths are proposed to maintain hierarchy and corresponding the road sections have also been provided. Road section includes adequate space for pedestrian use and utility provision. Land use proposal has been made on the basis of Land use Zoning. At first land use classification, their special function options, principal use and accessory uses have been defined. The proposed Land use Zones are: Urban Residential Zone, Commercial Zone, Industrial Zone, Mixed Use Zone, Institutional Zone, Administrative Zone, Agriculture Zone, Flood Flow Zone, Open Space, Overlay Zone, Rural Settlement Zone, Water Retention Area and Water Body. The summary of land allocation under each zone has been presented in a Table. The plan has been described on the basis of Detailed Planning Zones (DPZs). For convenience of description, the study area has been divided into four Detailed Planning Zones each of which has been elaborated with a map for each zone. At the end of the Chapter, an Integrated Plan has been provided.

Chapter-4 deals with plan implementation priorities and Phasing. DMDP Structure Plan Phasing has been adopted in DAP. The DMDP phases are: (i) Short-term, (ii) medium-term and (iii) Long-term. In DAP short-term has been termed as phase-I, likewise medium-term phase-II and long-term phase-III. The plan period extends to 2015. As such the Phase-I covers 2007-2010 period, Phase-II covers 2011-2015 and Phase-III extends beyond the plan period. In prioritizing various use stakeholders' desire has been taken into account. Road priority has been fixed on the basis of need and enablement requirement. The Chapter also describes the land use control procedures. Three tier permit procedure has been proposed in this plan. In the first tier it will be the function of Land use Permit Planner (LPP), at the mid level Land use Permit Committee (LPC) and at the top level Nagar Unnayan Committee. Land use permit procedure has been explained through flow diagram. For each category of land use 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 to get permit 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, one can approach to the next tier for settlement and finally up to court.

Chapter-5 deals with the project plan. The specific projects which is 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 the list of Follow up Actions which will be undertaken in future. The foremost of the actions are strengthening of RAJUK's capacity to perform its development control function properly all over its jurisdiction. Plan implementation needs people's participation, especially, land development projects. The Consultants strongly feel that successful implementation of the DAP depends on the Action Area Plans to be undertaken by RAJUK at the end of the Detailed Area Plan. Chapter-7 contains the concluding remarks.

Chapter – 1
BACKGROUND

1.1 Introduction

Dhaka Metropolitan Development Planning Project (DMDP) was a planning project aimed at preparing a package of plans in three hierarchies to replace the old Dacca Master Plan prepared in 1959 for Dhaka city and its immediate environs. Funded by UNCHS/UNDP and executed by Rajdhani Unnayn Kartripakkha (RAJUK), the general objective of DMDP project was to prepare integrated development plans and priority Sectoral plans (1995-2015) for Metropolitan Dhaka and its surroundings.

The DMDP Plan package comprises of three levels of plans,

- Structure Plan,
- Urban Area Plan, and
- Detailed Area Plans.

The aim of Structure Plan is to set the policy guidelines for future development in the form of maps, graphs and write ups. Urban Area plan is an interim arrangement for urban management including development control till the Detailed Area Plans are prepared. The urban area plan sets forth rules, regulations and development management provisions. Detailed Area Plan is the third level and the last stage of the composite planning process, which is an area specific micro - level development plan meant for execution in the form of specific projects. However, no Detailed Area Plan (DAP) could be produced within the project period.

For the purpose of detailed area planning, the entire Structure Plan area has been sub-divided into 26 Strategic Planning Zones (SPZ). All the SPZs need detailed area planning. But some of the SPZs are substantially smaller compared to approximate areas needed to be covered under each Detailed Area plans (DAP). Therefore, some of the DAPs tend to cover more than one SPZ. According to Structure Plan DAP may cover one or more SPZs or part of one or more SPZs depending on circumstances. The present status of the project demands a detailed analysis of the assigned SPZ areas with a view to prepare detailed area plan.

Amid rapid development, particularly, in the central areas of the city causing high density, it is extremely difficult to achieve commendable results through detailed area planning in SPZs lying in central areas. Rather, it is easier and manageable to handle development in low density developing areas in the periphery. Under such considerations DMDP prioritized following six sub-area for preparation of DAP under the current program. These are:

i. Mirpur North upto Uttara
ii. Kamrangirchar Area
iii. Keranigonj
iv. Begunbari Khal and its Influenced Area
v. North of DND triangle
vi. Proposed Airport - Demra bypass road and its adjoining urban fringe areas.

Some of these sub-areas are beyond the metropolitan limit but highly influenced by the city based activities, while others are within the city fringe. Some of the sub-areas are within the close proximity of the central areas. But one phenomenon commonly possessed by all the areas is that, they are experiencing fast and haphazard growth which is likely to become a source of environmental degradation very soon. Begunbari and its influenced area falling under SPZ-6 is the concern of the current project are (Location-4) which lies close to the central areas of the city **(Map 1.1**).

1.2 Background

The thrust factor behind rapid urbanization in Bangladesh has been the rural-urban migration. The pace of urbanization in Dhaka City reached an unprecedented pace after the War of Independence in 1971. This unprecedented growth together with the unplanned growth of settlements made the preparation of new urban plan an imperative. Development Plan for Dhaka was earlier prepared by a British firm of Consultants in 1959. However, this plan though proved useful initially for guiding development of the city, but soon was overtaken by events that were not foreseen during 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. 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. The DMDP is a three tier plan package namely Structure Plan, Urban Area Plan and Detailed Area Plan (DAP). The DMDP Consultants prepared the 1st two items in considerable details but did not prepare any DAP as the project was woundup earlier than schedule. However, though late, RAJUK took up the preparation of Detailed Area Plan. Although initially, the idea was to proceed selectively taking the high pressure zones first. But events in metro-Dhaka overtook this idea with the free for all development practices by private and individual developers in areas designated as low priority, flood flow zones and retention pond reserves. Naturally, it became imperative to prepare Detailed Area Plan for the whole of metro-Dhaka. The current project of preparation of Detailed Area Plans are grouped on the basis of geographical location and settlement pattern. 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

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 is 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:

Purposes of the Detailed Area Plan have been set on the basis of the policies of Structure Plan and Urban Area Plan. The detailed objectives of the DAP are as follows:

a. Providing detailed analysis of the project area and a basic urban design of good quality.

b. Providing reference document for land management action.

c. Providing a program for public sector investment aiming at the implementation plan.

d. Providing controls and guidance for private sector land use and development in the area of the plan.

e. Providing clarity and security with regard to future development for inhabitants and investors.

The Detailed Area Plan Component provides the more detailed planning and general pattern of land use for specific sub-areas of the city. The Detailed Area Plans are prepared with detailed implementation guides that integrate the development policies, guidelines, and framework set by the Structure Plan Component and Urban Area Plan Component into various sub-area of the city, because these Detailed Area Plans are prepared at community scale, some of which may be referenced to the Cadastral Survey (CS) maps. Community participation in their preparation can be an important consideration. Where the concerned community is involved in preparation of a Detailed Area Plan, the plan will more likely be implemented, respected and followed by the community. Therefore, the detailed area plan needs community level participation during the preparation and implementation of the project.

The Detailed Area Plans may not initially cover the entire urban area, but Begunbari Khal and its influenced area as a sub-area of the city termed under Location-4 needs immediately a Detailed Area Plan. Its location not so far from the city centre, with high development pressure, needs a Detailed Area Plan. However, this important sub-area where

development pressures are strongest or this fragile area needs some immediate protection and have a high priority for preparation of a Detailed Area Plan. In the light of above considerations, the DMDP planning authority has decided to prepare Detailed Area Plan for this sub-area of Begunbari Khal and its influenced area.

In summary, preparation of a Detailed Area Plan would give consideration to and may appropriately include the followings:

- areas designated for new infill and re-development,
- specific land use categories, target densities and appropriate planning standards,
- right-of-way for new secondary and local roads,
- locations for specific infrastructure facilities,
- locations for new community facilities,
- specific areas/sites requiring special protection or preservation e.g. environmentally sensitive areas,
- areas / sites of special national/local importance.

The Master Plan has largely relied on development control and RAJUK development projects as its principal means of implementation. For a variety of reasons, this approach has not achieved its purpose. Implementation of any urban plan should operate through both government actions as well as those of the private sector. For this reason, the Detailed Area Plan requires a variety of instruments to implement and integrate the various plan components rather than an over reliance on methods used in the past. Such a variety of instruments is necessary to achieve the desired level of integration and co-ordination among the plan's many development elements. The main instruments recommended for implementation of the Detailed Area Plan include:

- Multi-Sectoral Investment Program
- Action Plans and Projects
- Development Control
- Facilitation of Private Investment
- Community Level Participation in Planning and Development.

These plan implementation instruments as approach are described separately in the following sections.

1.3 Objective of the Project

Some objectives of DAP are general and some are more specific in nature. These are separately mentioned below.

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 and (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 from 1995-2015 period. As such the Detailed Area Plan prepared under this project extends to the year 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 year 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 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 the Detailed Area Plan

The Detailed Area Plan consists of

a) Explanatory Report

b) Integrated Planning Map

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 land use.

Table-1.1: Existing Landuse Categories

	Landuse	Illustration
a.	Residential	Planned, unplanned, average density
b.	Commercial (Markets Shops) Shops / Workshops	Established markets with ancillary shops Groups of shops including small workshops
c.	Industrial	Main activity, type of waste effluent
d.	Institutional, Educational facilities, Health Facilities, Govt. Services	Primary/Secondary/other schools/Clinics, hospital, etc. / Post office, police and fire stations.
e.	Mixed Use	Mixed areas without a dominant land use
f.	Agricultural	All types of agricultural uses
g.	Recreation Sports	Parks, play/sports grounds
h.	Religious / Cemetery	Graveyards, mosques, religious sites
i.	Cultural / Historic	Historic structures or sites
j	Borrow Pits	Area cut for fill material
k.	Vacant	Vacant land with no apparent use
l.	Other as given in the format of land use survey	

1.8 Description of the planning Area

Description of the planning area includes procedure of Detailed Area Plan preparation. The procedure envisaged following policies:

a) Reviewing the previous higher-level plans like Master Plan of 1959, DMAIUDP plan of 1981 and DMDP Structure Plan and Urban Area Plan of 1995.

b) Identification of existing and new urban areas.

c) Proposing different infrastructure development.

d) Preparation of communication plan after consulting with the different stakeholders.

e) Demarcation of future and ongoing project from different public and private agencies.

f) Reviewing the different plan programs on NGO's activities.

g) Formulation of planning principles and planning standards.

h) Land management study.

i) Application of land management techniques.

j) Projection and analysis of socio-economic conditions and population.

k) Assessment and analysis of environmental impact for the project area.

l) Incorporation of development proposals in response to community desire.

m) Implementation of public sector action program.

1.4.1 Administrative and cadastral boundaries

Location-4 is bounded on the north by Kalachandpur and Cantonment area and on the south by Begunbari and Ulan Mouzas. On the east, the Progati Sarani forms the project area boundary encompassing the Baridhara J-Block and adjoining informal areas, while Banani Residential Area, T&T area in Mokakhali and Niketan Housing areas are on the west of the project area. The study area comprises of 1786 acres or 4.49 sq. km (722.78 hectare) containing 16,300 households and a population of 90,431 persons.

Table-1.2: Mouza-wise area involved in the project area

Name of Mouza	Area in acres
Bhatara	339.31
Samair	256.54
Bhola	590.07
Lalasarai	31.80
Karail	78.40
Badda	338.91
Ulan	128.57
Begunbari	22.40
Total	**1786.00**

The area encompasses 5 Wards of Dhaka City Corporation (DCC). For planning, the area has been divided into the following 4 Detailed Planning Zone (DPZ):

Table-1.3: DPZ-wise area involved in the project (Location-4) area

1.	DPZ-1: Gulshan, Part of Banani, Part of T&T Area, private land and part of Niketan Housing, part of Begunbari low land (part of Ward No.19 and 37).	986.00 acres
2.	DPZ-2: Baridharaa Residential Area, J-Block and Adjoining Area, Diplomatic Enclave (part of Ward No.18 and Satarkul Union).	326.27 acres
3.	DPZ-3: Shahjadpur-Badda Area.	345.16 acres
4.	DPZ-4: Ulan, Begunbari and Adjoining Areas (part of Ward No. 22)	128.57 acres
	Total	**1786.00 acres**

The areas of Gulshan, Banani, Baridhara and Badda are located in SPZ 6. This zone is served by two commuter corridors namely Progati Sarani and Airport Road. The low lands of Begunbari, Gulshan - Banani Lake, Gulshan-Mohakhali Lake, Gulshan - Baridhara Lake and Gulshan-Badda Lake receive the immediate runoff storm water. It may be noted that no flood water retention pond has been proposed in the delineated planning area by DMDP Structure Plan. The main channel for discharge of storm water from the city areas flows through the Begunbari area and plays an important role in the environmental aspect of the city. The planning area is characterized by mixed density with low density in Gulshan and Baridhara Planned Residential areas and high density Badda and Shajadpur areas.

As per physical features survey, the planning area is divided into following sub-areas:

1. Low/Middle class residential areas of Bhatara (Shajadpur), Badda and Ulan (Mouza).
2. High-class residential areas of Gulshan, Banani and Baridhara including the Diplomatic zone.
3. Lake areas of Gulshan-Banani, Gulshan-Mohakhali, Gulshan-Baridhara and Gulshan-Badda.

1.8.2 Geo-physical Profile

The planning area delineated for the geotechnical survey is situated in the Dhaka-Tongi area of Dhaka Metropolitan City. Dhaka-Tongi area comprises the southern extension of Madhupur Tract. Locally, they are known as Dhaka Terrace and Bhawal Garh (terrace). The terraces are parts of the inliers and tectonically elevated from the adjoining flood plains *(Alam and Aurangzeb, 1975).* The elevation varies from 2 m to 14 m above mean sea level (MSL).

Geologically Madhupur Tract is formed of Pleistocene deposits (older deposits) of Bengal Basin. Madhupur Tract has a complex physiographic characteristics and is closely dissected and broken by faults. The Madhupur Tract covers parts of Old Dhaka, Tangail and Mymensingh districts. Madhupur Tract deposits have been termed as Modhupur clay residuum *(the Geological map of Bangladesh, Geological Survey of Bangladesh in association with United States Geological Survey, 1990).*

Despite the similarity in grain size between Pleistocene and recent sediments, field differentiation is simple. Recent sediments are typically dark, loosely compacted and have high water content and variable but appreciable quantities of organic matter. Pleistocene sediments on the other hand are well-oxidized and typically are reddish brown or tan and are mottled. They commonly contain ferruginous or calcareous nodules and water content is low resulting in more compacted material. Organic material in Pleistocene sediments is commonly confined to the surface soil profile.

Earthquake and Seismicity

The spatial distribution of all the recorded earthquakes dating from 1664 to 1989 in and around Bangladesh shows an increasing trend of earthquakes since 1960.

It is known from the past record that Dhaka was rocked in 1664. The 1737 earthquake claimed thousands of lives in the vicinity of Calcutta. Since then this region has experienced several earthquakes from 1762 to 1950. Dr. Abtab Alam Khan, Associate Professor of Geology, Dhaka University in his article 'Level of Earthquake Hazard in Bangladesh' ("The Daily Independent" Saturday, the 29th November 1997) stated “Bangladesh is extremely vulnerable to earthquake activities”.

The knowledge of Seismicity effect is of great importance for designing multi-storied buildings and tall structures. Based on the severity and intensity of seismic ground motion, Bangladesh has been divided into three seismic zones, Zone 3 being the most severe. The present investigated area lies in Zone 2. The assigned Seismic Zone Coefficient, for the Zone 2 is 0.15. *(Seismic Zoning Map of Bangladesh, Fig. 6.2.10, P.6.51. Bangladesh National Building Code - 1993.*

Soil

There were some soils in some areas near the surface which were either geologically Holocene (recent) alluvium in the low areas or low areas filled by land owners under land development process. These are usually adjacent to the banks of the dead or running water channels and khals. Holocene (recent) deposits were usually medium to fine grained grey sand and silty sand; grey sandy silt, silt, grey to dark grey clay and silty clay; and grey silt, sand and clay depending on the natural conditions, under which they were deposited as low land river bed deposits/natural levee and interstrean deposits / highland deposits in the geological past.

Pleistocene Madhupur clay (geologically older deposits) which occurred predominantly in the investigated area is above the normal flood level. Madhupur clay occurring in the Dhaka Metropolitan City Area is also termed as Dhaka clay by the geotechnical engineers.

Soil types, strength and density characteristics based on Standard Penetration Test Values (N-value) have been mentioned for the different types of deposits at various depths.

Cohesive silt and clay layers having N-values less than 4 are very soft to soft and are not considered suitable to support any civil engineering structures without ground improvement. There are only a few areas near the waterfronts with such low N-values in the surface underlain by comparatively strong clay and sand soil strata. Sand layers with variable quantities of silt/clay having N-values less than 10 are considered very loose to loose. In a few locations such weak sandy layers occurred. They occurred usually in the surface layers.

The natural clay soils of investigated area can be divided into two major groups distinguished by their colour as under:

Red clay:	Light brown to brick red and massive, containing ferruginous and calcareous nodules.
Mottled clay:	Earthy grey with patches of orange, brown colour, massive, and contains ferruginous and calcareous nodules.

Again, in the filled up areas there are mixtures of many coloured soils carried from different borrowing areas. Consistency of cohesive soil deposits (plastic silts and clays) and relative density of cohesionless soil deposits (non-plastic silts and sands) have been described in accordance with internationally accepted terms, which give approximate indication of strengths of the soil strata encountered at different depths.

For plastic silts and clays consistency terms like very soft, soft, medium stiff, stiff, very stiff and hard indicate the following approximate allowable bearing capacity of the different soil strata estimated on the basis of SPT N-values.

Table-1.4: SPT N-Values

Consistency	SPT N-value	Allowable bearing Capacity (kPa)
Very soft	0–2	< 25
Soft	2–4	25–50
Medium	4–8	50–100
Stiff	4–15	100–200
Very stiff	15–30	200–400
Hard	> 30	> 400

For cohesionless soil deposits (non-plastic silts and sands) relative density has been described with terms like very loose, loose, medium dense, dense and very dense on the basis of SPT N-values measured in the different cohesionless soils strata encountered within the explored depth of 15m. These relative density terms give the following approximate strength characteristics based on SPT N-values.

Table-1.5: Strength Characteristics

Relative Density	SPT N-Value	Estimated Shearing Angles	Strength Characteristics
Very loose	> 4	28°	**Very poor**
Loose	4–10	30°	Poor to fair
Medium dense	10–30	32°	Fair to good
Dense and Very dense	> 30	34°	Good to excellent

Drainage Characteristics

i) Type

There are two main channels in the planning area. They are-

a) Gulshan-Banani and Gulshan-Mohakhali Lake.

b) Gulshan-Baridhara and Gulshan-Badda Lake.

They are elongated North-South and finally falls into the Begunbari Khal lying on the south of the planning area. Geologically they are Abandoned Channels.

ii) Size

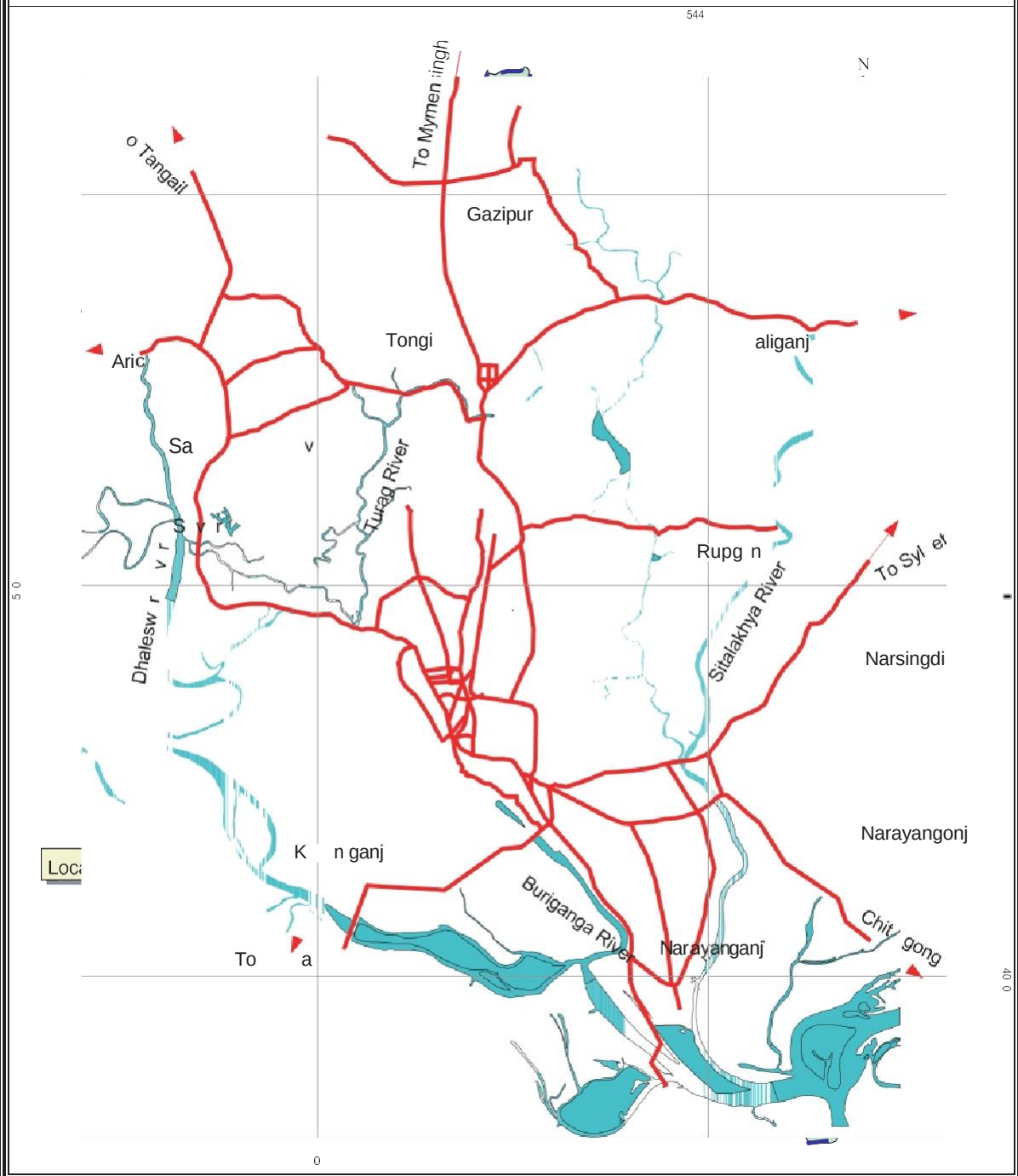
The followings are the identification of Lakes.

a) Gulshan-Banani and Gulshan-Mohakhali Lake.

The length of the lake along the alignments is around 3.5 km.

The width of the lake varies 110 meters to 150 meters. The width of the lake is narrower in some locations. The lake is wider at the middle areas.

MAP 1.1: LOCATION MAP OF THE STUDY AREA IN CONTEXT OF DMDP

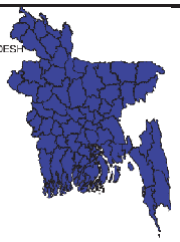


CONSULTANT
Development Design Consultants Ltd

Detailed Area Plan for DMDP Area, Location-04

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

INDEX MAP
IN CONTEXT OF BANGLADESH

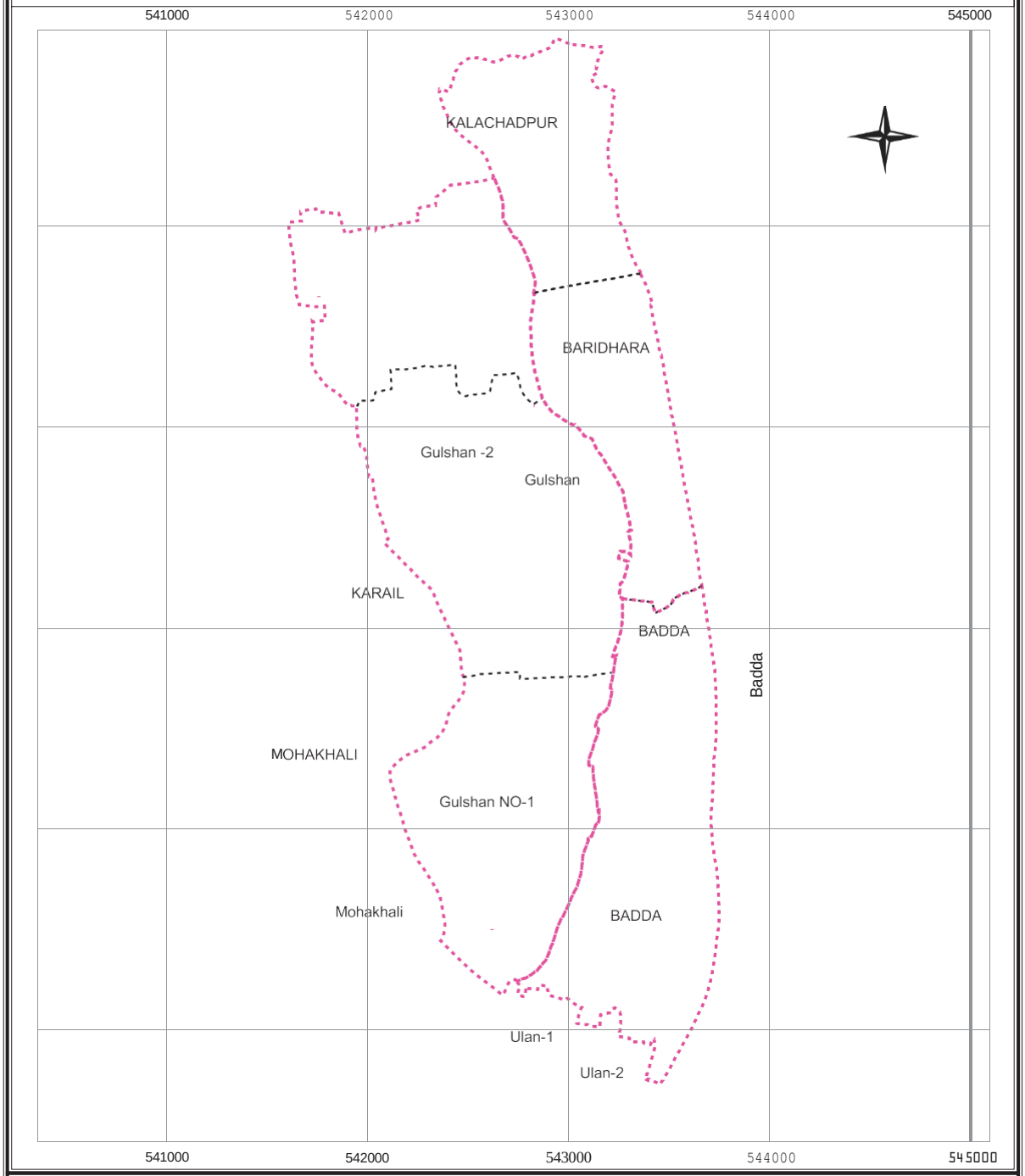


Study area

Project Area
Main Road Network
DMDP River
x DMDP Boundary

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

MAP 1.2: ADMINISTRATIVE BOUNDARY OF THE PROJECT AREA



CONSULTANT

Detailed Area Plan for DMDP Area, Location-04

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

JEA MAP
DMDP

Study area

LEGEND

Admin_Boundary
- DMDP boundary
- Group boundary
- Mauza boundary
- Sheet boundary

NOTES

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

isting

The total area of the lake is around 80.81 acres.

b) Gulshan-Baridhara and Gulshan-Badda Lake.

The length of the lake along its alignments is 3.96 km.

The width of the lake varies from 110 meters to 250 meters. The width varies from place to place. The lake is wider on the south.

The total estimated area of the lake is around 145.48 acres.

iii) Flow Direction

The Gulshan Avenue may be called the spine road of Gulshan Residential Area.

The height of this road varies generally from 6.40 meters to 7.90 meters. The area is gradually sloping down towards the lakes. The height of the banks of lakes varies from 6 meters to 7 meters. The rain water from surrounding areas flows through the lakes. The water flow of both the lakes is from North to South and falls into the Begunbari Khal.

iv) Depth

Both the lakes are deep enough to hold water throughout the seasons.

a) The spot height of the Gulshan Banani Lake is lowest and recorded as more than 3.60 meters below the Mean Sea Level (MSL). The deepest area lies in between Kamal Ataturk Avenue and Road No. 55 of Gulshan. The depth of the lake lying on the south of the Kamal Ataturk Avenue is 0.5 meter below the MSL. The lake area lying on the north of Gulshan-Mohakhali Road is 1 meter above the MSL. On the north of the Gulshan-Niketon Culvert there is a deep depression having height less than one meter above the MSL.

b) The depth of Gulshan-Baridhara and Gulshan-Badda Lake varies from place to place. The northern part of Gulshan-Baridhara Lake is the deepest having height more than 5 meters below the MSL. The depth of lake lying on the south of Madani Road is 1.5 meters below the MSL. The lake is deepest on the west of Marium Tower. The depth of Gulshan-Badda Lake is a little below the MSL. The deepest area of this part of the lake lies on the north of the Gulshan-Badda Road.

The depth of the south Gulshan-Badda Lake is 2 meters below the MSL. For more detailed and clear understanding the contour map and the cross-section of contours is referred.

The analysis of depth of lakes revealed that the depths are not regular. They may be re-excavated to make them regular in depth.

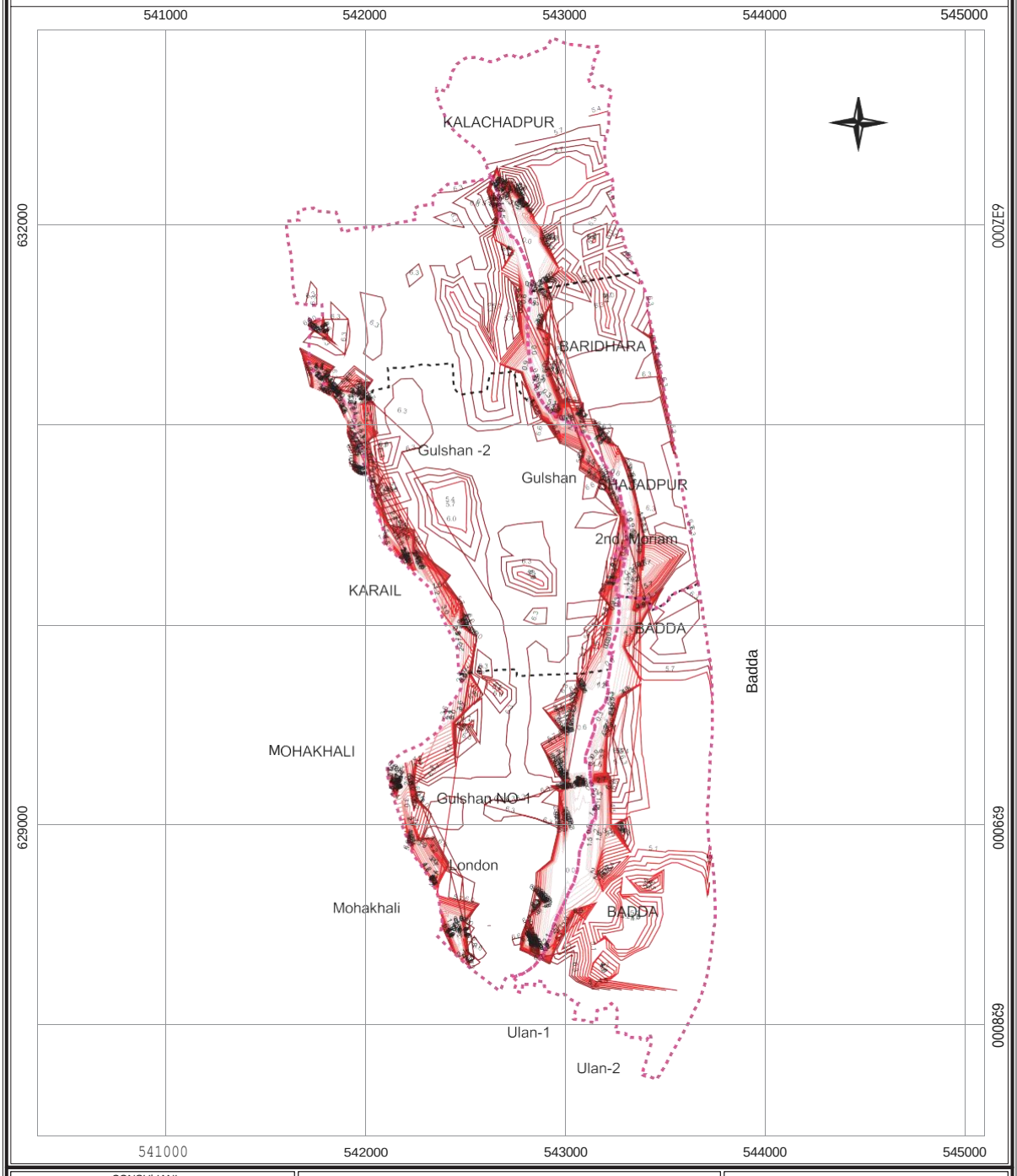
Topography

The Bench Marks (B.M) was found at Sluice Gate Gauge, located under Rampura Bridge as installed by Bangladesh Water Board. The Sluice Gate Gauge shows the height point as 8 meters. From there the height was carried to the fixed station on Progati Sarani by Auto-level and level-staff. From first station, the surveyors of DDC proceeded toward the north following central line of the road. The spot heights were taken by using auto-level. Physical distance from one station to another was 2000 meters. The location of different spots were measured and shown on the map to the scale. Thus the whole length of Progati Sarani starting from the Rampura Bridge up to Kalachandpur road was completed. From the starting point of Kalachandpur Road the level proceeded to Gulshan-Baridhara Lake and Gulshan-Banani Lake by using Temporary Bench Marks (TBM). Then the level survey of Gulshan Avenue from the Bridge over the Tongi Diversion Road and the north most ends near the Pakistan Embassy was under taken and completed.

The height of the banks of lakes varied 6 to 7 meters. Points were marked on the bank of lakes with 200 meter intervals and imaginary perpendicular lines crossing the lake are drawn on the map. The approximate station thus was fixed on the opposite bank of the lake. A rope previously marked using paint with 20 meter intervals was

stretched and joined the two stations located on either side of the lake. One three kilogram stone usually used for this purpose for measuring depth of water hung by rope graduated in meters. It is stated before that the lake crossing rope has also been graduated in 20 meters. One country boat was used to measure the depth throwing hung stone at all points of 20 meter intervals and subsequent readings of length from horizontal rope were recorded. Thus whole areas of all lakes were completed. All level readings have been adjusted in the laboratory and plotted on the map.

MAP 1.3: CONTOUR MAP OF THE PROJECT AREA



CQNSUbIANI

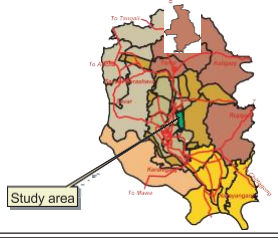
47 Mohakhali C/A, Dhaka 1212, Bangladesh

Detailed Area Plan for DMDP Area, Location-04

0 0.4 0.8 Kilometers

CLIENT

Ministry of Housing and Public Works



LEGEND

Admin_Boundary

DMDP bounda

Mauza boundary

Sheet boundary

Contour Line (0.5 m interval)

0 - 2.1

2.1 - 3.9

3.9 - 5.4

7.5 - 11.1

NOTES

Data Source

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

Chapter–2

CRITICAL PLANNING ISSUES

2.1 General

The current chapter describes the existing development pattern of the planning area that covers socio-economic conditions and spatial development. This is followed by identification of critical planning issues.

2.1.1 Socio-economic Profile

a. Population

As per 1991 population census, the planning area contains 90,431 persons. The average gross density of the area is 50 persons per acre. Density is very low (20 persons per acre) in Gulshan and very high (240 persons per acre) in Ulan area. Table-2.1 shows the population statistics of all the DPZs of the planning area.

Table-2.1: Population Statistics of the Planning Area, 1991

ZONE	Population Statistics as Per 1991 Population		
	Population (1991)	Household Size	Density Per Acre
DPZ-01	22,579	5.53	20.00
DPZ-02	3,202	5.50	50.60
DPZ-03	33,979	5.45	98.00
DPZ-04	30,671	5.60	240.00
Total	**90,431**	**5.54**	**50.63**

The SPZ - 6 lies in the administrative jurisdiction of Dhaka City Corporation and in the area of 1981 SMA. The Planning Area total of the projected population in the table includes a statement of population growth. The 1991 population of the planning area was 90,431 persons.

Table-2.2 shows the build-up of population upto year 2016 by: (a) the natural increase of total resident population in 1981; (b) migration for each five year period; and (c) the cumulative build-up of migration adding its own natural increase (DMDP Dhaka Structure Plan 1995-2015, page 33).

The projection anticipates more than doubling of population over 25 years and an average annual growth rate of 3.10 percent. However, even with continuing large in-migration, overall growth rates show a steady decline.

Of the overall growth during the whole period, 70 percent would be due directly or indirectly to migration. With such a high migration unrestricted growth is assumed, particularly in spontaneous areas.

b. Population Projection

For the purpose of planning the consultant has sub-divided the entire planning area into four sub-planning zones (DAP Zone). The population projection of the planning area for the year 2001 is 1,33,854 and would be 1,93,564 persons in 2015. DAP Zone-1 (Ward No. 19 and a small part of Ward 37) includes Gulshan Residential area and as per projection the population of the area would be 48,396 persons in 2015. The projected population of DAP Zone-2 (Ward No. 18) would be 6,862 persons (2015) where the Baridhara area including the Diplomatic Zone, the informal

area adjacent to J-Block and small part of Satarkul Union. In 2015 the population of DAP Zone-3 (Ward No. 21) would be the highest amounting to 7,28,30 persons. This area includes whole of Badda Mouza. DAP Zone-4 (Ward No. 22) mainly includes the Ulan Mouza and as per forecast the population of the area would be 65,721 persons in 2015.

Table-2.2: Population projection (Ward-wise)

Ward No.	Pop. in 1991	Growth Rate 1991-1996	Pop. in 1996	Growth Rate 1996-2001	Pop. in 2001	Growth Rate 2001-2006	Pop. in 2006	Growth Rate 2006-2011	Pop. in 2011	Growth Rate 2011-2015	Pop. in 2015
Ward No. 18	3202	4.30	3952	3.70	4739	3.10	5520	2.40	6215	2.00	6862
Ward No. 19	19195	4.30	23692	3.70	28412	3.10	33097	2.40	37264	2.00	41142
Ward No. 21	33979	4.30	41940	3.70	50295	3.10	58589	2.40	65965	2.00	72830
Ward No. 22	30671	4.30	37847	3.70	45386	3.10	52870	2.40	59526	2.00	65721
Ward No. 37	3384	4.30	4177	3.70	5009	3.10	5835	2.40	6570	2.00	7254
Planning Area	**90,431**	**4.30**	**111619**	**3.70**	**133854**	**3.10**	**155928**	**2.40**	**175559**	**2.00**	**193831**

c. Population Distribution

The planning area of Begunbari Khal and Its Influenced Area have a total estimated population 1,33,854 persons for the year 2001. The residential area covers 879 acres with density of 152 persons per acre. The projection of population for the year 2015 amounts to 1,93,831 persons. The increase in population from 2000 to 2015 amounts to 59,977 persons.

Vacant land for future residential extension is very limited and amounts to only 183 acres. Therefore, 'projected' population is required to be distributed through the method of population densification in the existing residential areas and extension of new areas for residential use.

As per intensification of population, the density in the existing residential areas rose from 152 persons per acre to 212 persons per acre. In the newly extended areas the population density at this stage will be low and supposed to be 164 persons per acre and in the new residential areas of 44 acres, a total of 7216 persons will be accommodated.

Table-2.3: Distribution of population for the project area

Ward No.	Pop.^{n} in 2001	Residential area (in acre)	Persons per acre	Res. Intensification (Hi)		Residential extension ((He)			Total (Addi. Pop.^{n})	Total Pop.^{n} (2015)
				Persons Per Acre	Addi. Pop.^{n} 2000-2015	Persons Per Acre	Addi. Resi. (Acre)	Addi. Pop.^{n} (2015)		
1	2	3	4=2/3	5	6=(5-4)x3	7	8	9=7x8	10=6+9	11=(3x5)+(7x8)
Ward No.18	4739	159	30	41	1749	26	14	364	2113	6883
Ward No.19	28412	430	66	93	11610	45	25	1125	12735	41115
Ward No.21	50295	173	290	375	14705	325	25	8125	22830	73000
Ward No.22	45386	101	449	651	20402	-	-	-	20402	65751
Ward No.37	5009	15	334	423	1335	400	2	800	2135	7245
Planning Area	133854	879	152	212	52740	164	44	7216	59956	193564

d. Population Density in 2015

In DPZ-1 (Ward No. 19 and 37) where Gulshan Residential area is located, the existing density of population is 33 persons per acre that would tend to be 49 persons per acre by the year 2015. At present RAJUK is allowing 6 storied residential structures in the planned residential areas of Gulshan. It does not seem that all the structures of the area will be 6 storied within the plan period. At present there are 1861 structures in this DPZ out of which 214 or only 12 percent of the structures are 6 storied.

Table-2.4: DPZ Wise, Ward-Wise Population and Density in 2015

DPZ	Gross Area (in acres)	Forecast Population in 2015	Net Area (in acres)	Gross Population Density per Acre		Comments
				2001	2015	
DPZ-02 (Ward No. 19 & 37)	986.00	48396	869.75	33	49	-do-
DPZ-02 (Ward No. 18)	326.37	6862	266.32	12	25	Lake area Diplomatic Zone
DPZ-02 (Ward No. 21)	345.16	72830	271.89	185	268	Lake Area
DPZ-02 (Ward No. 22)	128.57	65721	118.65	382	554	-do-
Planning Area	**1786**	**193564**	**1526.61**	**75**	**126**	Lake Area and Diplomatic Zones

As per survey conducted in the month of September and October 1999, there are 57 plots lying vacant and structures in 56 plots were found under construction.

The average density of population is 12 persons per acre (2001) for the whole of the planning area excluding lake areas and Diplomatic Zones. The population Density in DPZ-02 (Ward No. 18) will be only 25 persons per acre. The present density is 16 persons per acre. Such a low density may be due to the fact that the area has yet to be developed fully.

The existing density of population in DPZ-3 (Ward No. 21) is 185 persons per acre where Badda mouza is located and that the density would be 268 persons per acre during the plan period.

The existing gross density of population in DPZ-4 (Ward No. 22) is 382 persons per acre where Ulan mouza is mainly located. As per population forecast the net density of population would rise to 554 persons per acre.

e. Economic activities

The Location-4 planning area is sharply divided between posh high class area and lower middle and middle income area. As a result the economic activities, employment and income variation is also sharp between these two areas. The high standard Gulshan area is dominated by business people, top level beaurocrate and rich professionals. Gilshan avenue is a high class commercial zone. On the other hand Badda is an area of middle and lower middle income groups where exists large scale small retail business and casual factories like, garment, knitwear and furniture making.

f. Environmental Concerns

The overall physical environment of the planning area is not satisfactory. Improper disposal of domestic trash is major environmental problem for the planning area. Garbage is not properly disposed off from local collection bins. Collection by DCC is also not regular. Garbage is often found scattered around the bin. Sometimes due to irregular collection, garbage overflows and spoil the environment. Unauthorized occupation of the lake side land and construction of thatches by floating people spoils the physical and social environment and also destroys the lake. There a number of waste water outfalls in the lakes of Gulshan and Banani. Draining domestic and other contaminated water into the lake pollutes the lake and endangers the lives of all kinds of species living in the lake.

DCC has to undertake more effective measures for regular clearing of bins. It should take initiative to pursue local CBOs and encourage community participation in creating an effective waste collection and disposal system. Lake and lakeside land belong to RAJUK in planned areas where encroachment and unauthorized occupations are taking place. RAJUK has to be more vigilant to prevent new encroachment and evict the already encroached ones. It is expected that with the construction of lakeside road the tendency of lakeside land encroachment will be greatly reduced. Steps should be taken by DCC and DWASA to close all drain outfalls into the lakes and make alternative arrangements to divert the waste water. A new sewerage network should be constructed to divert the drainage into the sewerage network. The lakes in the area are two of the three major water bodies in the city. In future they will serve as the major breathing and recreational places of the ever growing and crowded city apart from retention pond for excess storm water during monsoon. They must be preserved and maintained at all costs.

g. Land ownership and Land Value

The lands of Gulshan, Baridhara including the diplomatic zone and land of Begunbari low lying area is owned by the Government. The land of Shajadpur, Badda, Ulan and project area land lying on the east of Progati Sarani is owned privately.

As per record of Sub-Register Office, Tejgaon, the value of land varies from Tk. 1.7 Lakh to Tk. 3.8 lakh per katha. But the scenario of market value of land is altogether different. The market value of land varies from Tk. 12 lakh to Tk. 25 lakh per katha. The highest land value prevails in the commercial areas of Gulshan-1 and Gulshan-2. In these places land value is over Tk.20 lakh per katha. In planned areas of Gulshan and Baridhara land value varies between Tk.16 lakh to Tk.20 lakh per katha. In the informal areas like, Shajadpur, Badda and Ulan, the value of land is between Tk.5 lakh to Tk. 11 lakh.

2.1.2 Existing Development Pattern

a. General Development Trend

The study area is an amulgation of natural developed area and planned areas for high-class people. Gulshan, Banani and Baridhara Residential Area (including Diplomatic Enclave) are the planned areas. Those planned areas have

been constructed by RAJUK in different years. The Niketan Housing area is a planned area constructed by the private housing company. The T&T Area, Begunbari low land, Shahjadpur-Badda Area, Ulan, Begunbari and adjoining areas and settlements in the Satarkul Union are mostly private lands. A concentration of low and middle income settlements are found in those private lands. Existing landuse scenario is described in the following paragraphs.

b. Residential

Residential area covers approximately 879 acres or 49.10 percent of land. Ward No. 19 where the Gulshan Model Town is located, land for residential use covers 430.22 acres. In ward No. 21, where maximum part of Badda lies, covers 172.68 acres for residential use.

c. Commercial

For commerce purposes around 37.41 acres of land is used. This Land use is dominant in Ward No. 19 (Gulshan-1 and Gulshan-2) where planned commercial area of Gulshan lies. There are mentionable quantity of land used for commerce in ward No.18 and 21 along Progati Sarani and recorded during survey as 5.94 and 6.77 acres respectively.

d. Educational Institutions

Institutional land use amounts to 23.94 acres of land. Institutional land use is dominant in Ward No. 19 covering 10.82 acres of land and planned educational institutions like Manarat International School are located in this ward. Considerable amount of lands are used for institutions Like American School in Ward No. 18 and 21 and recorded as 6.47 and 4.75 acres respectively.

e. Administrative

For administrative purposes 25.75 acres of land are used. In ward No. 19 (Gulshan R/A) for administrative purposes 23.90 acres of land are used. Administrative land use is nil in Ward No. 22.

f. Health Facilities

Only 1.33 acres of land are used for health facilities. There a big hospital is under construction (Continental Hospital) in the planning area and there are small clinics. The continental Hospital stands on the west bank of Gulshan - Baridhara Lake.

g. Mixed Landuse

As per existing land use map 11.15 acres of land are used for mixed use category. Planned Residential areas of Gulshan, Baridhara and Banani (part) lie in the planning area. Consequently, mixed use of land is found comparatively less, in the planning area.

h. Road

Roads cover 333.34 acres or 18.62 percent of land. At least 15 percent of the total area should be used for roads. Wide roads are existing in planned areas of Gulshan, Banani and Baridhara but internal roads in unplanned areas of Bhatara, Badda and Ulan are very narrow.

There is about 132 km. of road network in the study area. Roads in planned areas, like, Gulshan, Banani, Baridhara and Diplomatic area are wider, well constructed and well maintained, while roads in spontaneous areas like Badda, Shajadpur, Ulan are narrow, zigzag and ill maintained. There is hardly any road in spontaneous areas which is beyond 30 feet wide. In all the areas, however, almost all roads are pucca. Table 2.5 gives detailed information on road network.

Table-2.5 Existing Road Network

Road Width (ft)	DPZ-1 (Km)	DPZ -2 (Km)	DPZ -3 (Km)	DPZ -4 (Km)	Total (Km)
100	-	1.77	-	-	1.77
80	-	2.50	-	-	2.50
70	5.58	-	-	-	5.58
60	2.60	-	-	-	2.60
50	5.46	3.58	-	-	9.04
40	4.14	25.45	-	-	29.59
30	1.15	3.80	-	-	4.95
25-30	-	1.76	-	1.95	3.71
20	21.27	0.60	-	-	21.87
20-25	-	1.61	0.64	2.59	4.84
15-18	-	-	23.20	10.39	33.59
Total	**40.20**	**43.07**	**23.84**	**14.93**	**132.04**

Source: Physical feature survey, 2000.

i. Industrial Landuse

The planning area covers the planned residential areas. There is no industrial zone in the planning area. Only 1.47 acres of land is used for workshops and godowns. These are mostly located along the Progati Sarani. A number saw-mills are located in the Merul Badda along the Progati Sarani.

j. Recreational Facilities and Park and Play Field

Organized indoor and outdoor recreational facilities use 4.57 acres of land. They are dominant in ward No. 19 and use 4.37 acres of land. Amongst the indoor recreational facilities, the Gulshan Club is mentionable (American Club).

For organized parks and play grounds 21.71 acres of land are used. They are located in Ward No. 18 and 19. No such land is available in other Wards. Mentionable park in Ward 19 is the Wonder Land Park, Gulshan Park and in Ward 18, Baridhara Park.

k. Utility Services

According to physical feature survey of the study area pucca drainage is available for 89.9% of houses. Pucca Sanitary System is available for 95.20% of houses.

Table-2.6 Existing Utility Services

Sub Planning Area	Road (Km)	Line Services (Km)					
		Water	Gas	Power	Telephone	Sewerage	Storm Sewer
DPZ -1	40.20	35.00	38.00	39.00	37.00	40.00	26.00
DPZ -2	53.07	39.50	39.00	41.00	36.00	28.23	35.00
DPZ -3	23.84	20.20	20.20	19.00	15.00	00.00	18.00
DPZ -4	14.93	13.50	14.00	14.00	12.30	00.00	14.00
TOTAL	**132.04**	**108.20**	**111.2**	**113.00**	**100.3**	**68.23**	**93.00**

Source: Physical feature survey, 2000.

l. Diplomatic Zone

The diplomatic zone located in Gulshan and Baridhara use 57.70 acres of land. Diplomatic zone is distributed in Ward No. 18 and 19. In Ward No. 18, the Diplomatic zone is organised in one zone, but in Ward No. 19, the Diplomatic zones are found scattered in different locations.

Table-2.7: Existing Landuse (Area in acres)

Landuse Category	Ward No.					Total	%
	Ward No.18	Ward No.19	Ward No.21	Ward No.22	Ward No.37		
Residential	159.34	430.22	172.68	101.26	15.50	879	49.106
Commercial	5.94	22.13	6.77	2.07	0.50	37.41	2.119
Institutional	6.77	10.82	4.75	1.60	-	23.94	1.326
Administrative	1.70	23.90	0.15	-	-	25.75	1.438
Health	0.17	1.08	0.03	0.05	-	1.33	0.074
Mixed	0.62	5.35	1.95	2.23	1.00	11.15	0.622
Diplomatic	27.5	30.20	-	-	-	57.7	3.223
Industrial	-	0.6	-	0.87	-	1.47	0.082
Park and Play Ground	6.72	14.99	-	-	-	21.71	1.212
Recreational	-	4.37	0.2	-	-	4.57	0.255
Roads	50.17	228.24	43.11	10.57	1.25	333.34	18.622
Water Body	33.05	86.03	73.27	9.92	3.15	205.42	11.475
Vacant Land	34.39*	105.65	42.25	-	1.0	183.29	10.463
Planning Area	**330.37**	**963.58**	**345.16**	**128.57**	**22.40**	**1786**	**100**

Source: Land Use Survey 2000

m. Water Bodies

Water bodies cover 205.42 acres or 11.47 percent of land. The Gulshan-Banani, Gulshan-Baridhara, Gulshan-Badda and Gulshan-Mohakhali lakes lie in the planning area. There are three big water bodies in South Badda. In Ulan mouza there is a big water body.

n. Vacant Land

There are 183.29 acres of vacant land in the planning area. They include vacant plots and land reserved for other use. They also include agricultural Land of Bhatara Mouza lying on the east of the Progati Sarani.

2.2 Infrastructure and services

2.2.1 Water Supply

The source of water in the study area is the piped supply network of DWASA. The study area is connected with city supply network. There are five production tube wells in the planning area to meet local water need. Besides, additional supply in some parts is also provided by the city supply network. The main water supply line of 450 mm diameter runs along the eastern side of the Progati Sarani and along Madani Avenue. Another major line of 350 mm diameter passes along the Gulshan Avenue. Access lines exist buied under almost all roads in the planning area. There is deficit of water in the planning area, only in some areas continuous supply is provided by city network.

2.2.2 Power Supply

There is a 70 MW power station east of Gulshan Circle-1. Its command area is bounded by Kuril Biswa Road on the north, Demra on the East, Rampura Bridge on the south and cantonment Area on the west. Planning area is a part of national supply grid. Gulshan, Banani, Baridhara and the Diplomatic Zone enjoy regular power supply. Special privilege in power supply enjoyed by these areas is due to existence of diplomatic area in these localities. Spontaneous zones of the planning area like, Badda, Shajadpur and Ulan have to bear a few hours of load shedding regularly as in other parts of the city due to power shortage. Overhead power supply lines exist along all roads.

2.2.3 Sewerage Management

There is no underground sewerage network in the planning area for management of sewage. WASA makes it mandatory to construct septic tank in every house. But this instruction does not seem to be followed by all. Many households connect their latrines with storm sewer lines. In slum or semi-slum areas unhygienic hanging and katcha latrines are also found. Household survey reveals that over 95 percent households have sanitary latrine facilities.

2.2.4 Fuel / Gas Supply

A comprehensive network of Titas gas line exists along almost all categories of roads in all areas within the planning area. Excepting only a handful of commercial and industrial enterprises, gas is mostly used for domestic purposes. There exists a gas sub-station located in south of Gulshan Avenue. Gas supply in the planning area is steady and smooth.

2.2.5 Drainage and Storm Water Management

Storm water and waste water drainage is a crucial problem for all the DPZs except DPZ-1 and major part of DPZ -2. The problem is found to be more acute in informal or spontaneous areas like, Shajadpur, Badda and Ulan where there is no comprehensive and integrated drainage system. There exist limited storm sewer facilities in the planning area in terms of network. Though there is a comprehensive storm sewer network in the planned areas of Gulshan, Banani and Baridhara, only limited network facility exist for spontaneous areas of Shajadpur, Badda and Ulan. A major sewer line passes along the Progati Sarani but without branch lines into the spontaneous areas on either side of the road. Recently the City Corporation has started construction of paved roads in the spontaneous areas together with storm sewer ducts.

The informal areas are densely built up which does not allow percolation of rainwater into the aquifer and without a sound drainage system it means inevitable accumulation of water in the low lying areas at least for a short period of time. This makes life difficult in the unplanned areas during monsoon. Situation is comparatively better in Gulshan and Baridhara because of existence of large unpaved right of ways and a good surface drainage system. But the most important advantage for these areas is the existence of two large lakes where a substantial part of the rain water from its catchment area is accumulated that saves the adjacent residential areas from flash flood. There are a number of waste water drain connections into the lakes. This pollutes the lake water. The water of the lakes drains out southward through the Begunbari Khal into the river Balu.

2.2.6 Solid Waste Management

Solid waste management is a crucial problem for this fast growing city. The Dhaka City Corporation does not have the sufficient capability to handle the huge waste generated by the residents due to narrowness of roads, lack of local collection sites stand as impediments to waste management. Particularly in informal/spontaneous areas due to existence of narrow roads the municipal garbage trucks can not enter for removal and transshipment of the garbage. In most places there is no road side open space for locating garbage bins. Garbage is often found to be disposed off on roads. As a result rotten garbage spoils the local environment of the area posing health hazard of the local residents. There are only 10 mountable bins and 45 fixed bins in the planning area with total capacity of 55 metric

tons of waste whereas the daily waste produced is about 640 metric tons. In many places, due to inadequate facilities, it is not possible to clear up bins regularly. Roads are swept regularly by DCC conservancy department. But road sweeping is not monitored properly. Sweepers are found to dispose off the dust and litter into the roadside drains blocking the drainage path.

2.3 Expected Development

It is expected that densification in spontaneously grown Badda, Shajadpur area will continue in future. In filling is continuing with increasing participation of real estate developers. It is unlikely that it would be possible to improve the infrastructure facilities like, road widening and creation of park and playfield in these areas. New development scheme is being implemented in Begunbari khal area, south of Gulshan-Badda, which will open up the southern Badda and create new link between Tejgaon Industrial area and Progoti Sarani easing congestion in Mouchak area.

2.4 Development Problems

Spontaneous development of commerce and other non-residential institutions in Gulshan and Baridhara is a threat to residential environment.

- Spontaneous development seriously disturbs promotion of utility services.
- Spontaneous development is a handicap to healthy living.
- Narrow roads are causes for free movement due to traffic jam.
- Lake encroachment and creation of plots on lakes squeeze lake area.
- Poorly maintained lake.
- Lack of East-West arterial Road connection deprives people living in vast spontaneous area from access to major road and public transport system.
- Inadequate drainage facility causes water logging during heavy rains.
- Absence of open space recreation in spontaneous areas.
- Open space in planned areas ill maintained.

There are limited opportunities for widening roads in spontaneous areas and may involve huge expenditure.

- There are still opportunities to protect and conserve water bodies by creating physical separation from existing built up areas.
- Provided efficient drainage system will relieve the water logging in spontaneous areas. Though cost involvement will be high, the areas still offer chances of drainage improvement.
- Innovative ideas in development control can help protect livable environment.

2.5 Negative Impact and Mitigation Measures

2.5.1 Change in Topography and Mitigation

The main ground slope of the study area is in southwest to northeast direction. Natural topography of the RAJUK area has already been changed due to urbanization. Implementation of DAP activities like roads, drainage, bridge/ culvert, housing and industrial estates, bazars and growth centers will radically change the natural topography and landuse pattern of the study area. Agricultural area will be converted into urban and semi-urban area. Present green scenic beauty will disappear, water bodies will be lost and general slope will be diminished owing to indiscriminate earth filling due to urbanization.

1. Careful planning will be needed to minimize the change of topography.
2. Avoid water bodies during planning of roads, housing and industrial estates.
3. Practice good architectural/engineering design during planning of housing estates, buildings and the intersections of main roads.

4. Enhancement of plantation and gardening to increase the scenic beauty of the city.
5. Preserve the Beels, khals as lakes with demarking buffer distance.

2.5.2 Land use Change and Mitigation

Major portion of the study area is of rural setup, with predominance of agricultural landuse. However, urban and semi-urban landuses are observed in the DMDP and its surrounding areas. With implementation of the DAP, rural setup and agricultural landuse pattern will be changed radically into urban landuse category.

1. Careful planning is necessary to reduce change of agricultural landuse and rural setup.
2. Keeping water bodies and productive agricultural land free from urban development as long as possible. Vertical development may be encouraged rather than horizontal.
3. Economic use of land should be emphasized.

2.5.3 Drainage Congestion and Mitigation

Drainage congestion may increase further with urban sprawl development. Faulty design, solid waste and rubbish dumping, encroachment and un-authorized structures, siltation, lack of renovation and re-excavation are the main causes of drainage congestion. Drainage system that exists in the study area is not well enough to carry the surface run-off properly. The outlets of these drainage networks are mostly connected with the natural channels or khals. These khals will be silted due to siltation; as a result, drainage congestion generates. And thus many areas are subjected to water logging during the heavy rainfall causing inconvenience to the people of the area.

1. Make proper drainage network in new area considering the slope and local topographical condition.
2. Remove all unauthorized structures which developed on drainage structures.
3. Prevent the people in dumping of rubbish and solid waste in drain.
4. Regular cleaning and maintenance by the concerned authorities.
5. Demarcation of water bodies, which can act as retention pond to avoid water logging from heavy rainfall.
6. Demarcation of Right of Way to preserve the natural channels.

2.5.4 Groundwater Table Declination and Mitigation

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

1. Introduce rainwater harvesting system and use it in the study area.
2. Stop land filling of ponds and water bodies to maintain the groundwater level through recharge and leaching process.

2.5.5 Groundwater Pollution and Mitigation

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

1. Use of surface water of Sitalakkhya River for supply of water.
2. Introduction of rainwater-harvesting system.
3. Reduction of dependency on groundwater.
4. Preservation of surface water in ponds, khals, Beels, ditches and rivers for irrigation.

2.5.6 Noise Pollution and Mitigation

Although there is no data available on noise pollution of the study area, however, it seems that present noise level does not exceed the Bangladesh Standards. More noisy area may be the Bus Terminal area and Industrial and Market area. Hydraulic horn of buses and trucks are the main noise sources in the study area. However, some noises also generate during piling and construction works. Besides, welding workshops, saw mills, musical instruments and blacksmiths are also common sources of noise pollution in urban areas. With expansion of urban area, the noise pollution will increase due to increasing number of motor vehicles, market places, industries, etc.

Mitigation measures prescribed are:

1. Stop using hydraulic horn in buses, trucks and other motor vehicles.
2. Declare some areas like hospitals, schools, parks, etc. as silent zone.
3. Control abnormally high noise from saw mill, old machines should be repaired or replaced.
4. Foundation of machines should be specially prepared to reduce noise.
5. Special type of silencer may be attached with the machines to reduce noise.
6. Welding and blacksmith workshops can be fenced with glasses to protect the passersby from possible noise pollution effects.
7. People constantly working in welding and blacksmith workshops should wear earplugs and glasses. Regular medical checkups can be carried out to identify possible health problems.

2.5.7 Air Pollution and Mitigation

Present climatic condition of the study area is sub-tropical monsoon. With implementation of DAP this climatic condition is expected to continue if further global climatic change does not occur. However, rainfall may slightly decrease in the study area for indiscriminate felling of trees and diminishing of green vegetation due mostly to urban development. Trees and green vegetation keep environment cool and enhance precipitation and rainfall. Temperature may remain same as present. Urban development keeping vegetation, plants, water bodies and new social forestation in homesteads, educational organizations, roads, embankment and parks will help maintain the climatic condition same as present.

Air-pollution is not a serious problem in the study area. Vehicular emission is also insignificant in the area. Industries and 14 brickfields are the main sources of air pollution. However, the air pollution will be increased in near future with increase of motor vehicles and industries. A huge number of garment industries have already been established in the study area. With the implementation of DAP more industrial zones will be developed which will also induce air pollution in the study area.

1. Use catalytic converter in buses, trucks, taxis and tempos.
2. Use CNG instead of petrol and diesel.
3. Impose ban on movement of sand carrying trucks and conservancy vehicles during office period.

2.5.8 Loss of Biodiversity and Mitigation

Urbanization like roads, infrastructure development, housing, commercial places, industrialization, etc. will replace the existing natural green environment to man made environment. Trees will be felled, water bodies will be filled up and polluted; sugarcane, paddy, banana, papaya and vegetable production will be reduced and mango garden and bush will disappear for urban expansion in new area. Wild animals, birds and fishes will lose their habitats and as a result a big loss of biodiversity will happen for urban expansion.

1. Avoid critical ecological area and refugee sites from development activities.
2. Aware people for keeping some trees and bushes around the homesteads.

3. Increase tree plantation in roadsides and homesteads.
4. Preserve the Beels for aquatic birds and fishes and some bush areas as wildlife preservation sites.

2.5.9 Parasitic Diseases and Mitigation

Parasitic diseases like dengue, malaria and filaria are not common in the project area. However, with the expansion of urban area, the prevalence of these diseases may increase in the project area. Dhaka City is now facing dengue problem in last 3-4 years although this problem was negligible before. This problem may happen also in the study area due to increasing urbanization and industrialization. Mitigation measures:

1. Regular mosquito eradication program in the project area.
2. Dengue carrying mosquitoes live in fresh water captive in old discarded tires, cans, bottles and flower tubs. Segregation of old tires; cans and bottles are required before dumping.
3. Remove additional water of flower-tubs and soft drink cans regularly.
4. Improve drainage system and remove waterlogged areas in the project.
5. Regular cleaning of drain and removal of water hyacinth and other aquatic plants are required from ponds, ditches, khals and Beels.
6. Use mosquito net during sleeping both during night and daytime.
7. Increase people's awareness on parasitic diseases and mosquito control.

2.6 Current Public Sector Investment Program

Any public sector investment program is not found in the Annual Development Program 2007.