Chapter- 3
DEVELOPMENT PLAN PROPOSALS

3.1 Abiding Policy Frameworks of Higher Level Plans

Development of a controlled growth in Dhaka relies upon the adherence to a pre-determined plan. The Dhaka Metropolitan Development Plan (1995-2015) was prepared addressing urban planning issues at three geographic levels: sub-regional, urban and the sub-urban. There were two relevant plans upon which the basis of Detailed Area Plan relied. These are Dhaka Structure Plan; Urban Area Plans (1995-2005) and finally Detailed Area Plan (DAP).

3.1.1 Dhaka Structure Plan (1995-2015)

This Plan was prepared to provide a long-term (20 years) strategy for development of greater Dhaka. It projected a population of 15 million by 2015. The plan defines a broad set of policies to achieve the overall plan objectives. It is supporting documentation proposed actions for the presentation of high quality wetland, agricultural land and watercourses. It highlighted the need for retention ponds around the city limits for rain water retention and maintenance of ecological balance. The development impetus be located in satellite communities of Savar, Gazipur, Tongi, and the plan also stressed the need for land use controls and building regulations that make other recommendations useful. The structure plan called for plan reviews every five years.

3.1.2 Dhaka Urban Area Plan (1995-2009)

The Urban Area Plans were developed for the DCC and its major expansion areas, including the areas to the east of the DCC, the DND Triangle, and for the Tongi and Gazipur, Savar and Dhamsona areas. The Urban Area Plans were intended to provide interim mid term strategies for a 10 years period and were conceived as “nested” written the over all structure plan. This plan provided an interim mid-term strategy for the 10 years to 2005 and cover for the development of urban areas within the metro Dhaka management area. The main theme of structure plan and the urban area plan is to help in providing more detailed planning proposals for specific sub areas of Dhaka.

Both the Structure Plan and Urban Area Plan viewed population growth be treated as a target rather than a prediction. The strategy of both of these plans must be pragmatic and in line with projected population. The plans aimed at lower densification accelerated development of land recently developed, providing basic utility services, road networks, curtailment of development at peripheral low lands, planned development at flood protected areas, and strategic new plan proposals for existing city including planned growth in Tongi-Gazipur and Savar-Dhamsona area.

3.2 Design Principle and Standards

3.2.1 Guiding Principles

Physical Planning in developing countries are regarded as essentially static, lacking effective landuse control mechanism and investment priorities. Planning is restricted by the lack of physical means to ensure implementation, anticipate market reactions, as well as means to consider the cost implications for various income groups.

The most commonly used planning tools include comprehensive general tools like master plan, strategic plan, structure plans. The broad objectives of these planning are to guide the development for a specified time-period and to promote the landuse pattern, which most efficiently fulfills the objectives of the government. However, to attain the future shape there were certain effective landuse control mechanisms which are reviewed. These experiences show quite dynamic planning design principles and tools for developing countries.

The design principles that has been visualized as a set of planning tools, for guiding and controlling the land use management includes investment principles. The planning tool’s broad objectives are to guide the future development of the Location-9 area for a specified period (2015 and beyond) and promote an ideal density landuse pattern which most efficiently fulfill the objective of the detail area plan as sponsored by RAJUK. The set of design principles adopted for landuse proposals are as follows:

The set of design principles adopted for landuse proposals are as follows:

a) Land Readjustment
b) Guided Land Development
c) Land Expropriation and Land Banking
d) Site and Service
e) Land Use Zoning

Details have been explained in Chapter-4.

3.2.2 Planning Standards

Standards for community facilities also need to be fixed to ensure better condition of urban living. Considering the relevant available standards like Bangladesh National Building Code (BNBC), 2006, Dhaka Mahanagar Imarat Nirman Bidhimala 2008, DAP consultants proposes the following standards for different community services. However, Besarkari Abashik Prokolper Bhumi Unnayan Bidhimala 2004 and for density control of an area 'Floor Area Ratio [FAR]' are the two very important legal instruments.

DMDP Structure Plan and Urban Area Plan too have fixed minimum standards for certain facilities. In today's reality of congested unhygienic laissez-faire construction race where planning is a far cry, land is obviously the most scarce and hence most valuable asset.

Facility Standard

Planned development ensuring community's active participation is the key to successful transformation of today's Dhaka into tomorrow's adorned green Dhaka. Keeping this vision in mind, the Consultants developed an optimum standard for the amenities and community facilities that the city dwellers deserve. Table 3-1 shows standard population served with corresponding area requirement for educational institutions as these data is frequently needed for physical planning decisions. Double shift for Primary School is discouraged due to odd timing hampering healthy grooming of the children. However, school of performing or fine arts for the children to complement the learning process is recommended in the school premise in the second half. Double shift for Colleges having Honours and Masters programme is also discouraged for making way to carryout library work, sessional / practical and other extra-curricular activities by the students. Data on university has not been included in this *time saver chart* as the catchment area of university extends far beyond the region it belongs.

Table 3-1: Standard Population Served and Area Required per Educational Institute

Facility		Population/Facility		Area (Acre)	
		Single Shift	Double Shift	Minimum	Optimum
Primary School		5000	10000	1	1.5
High School	Std.VI- Std. X	12000	24000	1.5	2
	Std.VI- Std. XII	16000	32000	3	4
College	Std.XI- Std. XII	12500	25000	3	5
	Std.XI- Upto Hons./Masters	22000	44000	4	6

Note: Double shift for Primary School and college with Hons./Masters is discouraged.

Neighbourhood concept of residential development is recommended in the DAP as strategy. So, the facilities required for a neighbourhood development deserves special mention (Table 3-2).

Table 3-2: Recommended Planning Standards for Different Community Services

Sl. No.	Name of the Facility	Quantity		Area		
		Min. (No.)	Max. (No.)	Minimum for Unit Facility	Sub Class Total	Class Total (Acre)
1	Primary School(Public or private)	2	3	1 Acre		3
2	High School(Public or private)	1	2	1.5 Acre		3
3	Open space			10 Acre		12
	i)Park/children's park	1	2	0.3 Acre	1 Acre	
	ii)Water body/ Canal/Pond	As per Planner		1.5 Acre	6 Acre	
	iii)Play field	2	3	1 Acre	3 Acre	
	iv) Green/Vegetation/Water Front	As per Planner		0.5 Acre	2 Acre	
4	Mosque and Maktab/ Worship Places	2	3	0.2 Acre		0.6
5	Library(central)	1	1	0.1 Acre		0.2
6	Services			0.3 Acre		0.5
	i)Dentist/Doctor's Chamber	2	3	40 sq.m	120 sq.m	
	ii) Beauty Parlour	1	2	50 sq.m	100 sq.m	
	iii) Laundry	2	3	16 sq.m	50 sq.m	
	iv) Hair Dresser	2	3	12 sq.m	40 sq.m	
	v) Cyber Café/Internet service provider	1	2	50 sq.m	100 sq.m	
	vi) Photocopy / mobile / land phone / fax	2	2	12 sq.m	40 sq.m	
	vii) Computer based (word processing, printing etc) services	1	1	30 sq.m	30 sq.m	
	viii) Motor bike Repair, vulcanising etc.(optional)	1	1	50 sq.m	50 sq.m	
	ix) NMT repair service (Rickshaw, bicycle etc)	1	2	30 sq.m	60 sq.m	
	x) Post Office / Courier Services	1	2	20 sq.m	40 sq.m	
	xi) Sports / Recreational facilities(games, indoor games etc)	1	2	50 sq.m	100 sq.m	
	xii) Rickshaw/Auto stand (General)	2	4	100 sq.m	400 sq.m	
	xiii) Restaurant, Tea bar, Fast food	2	4	10 sq.m	100 sq.m	
	xiv) Tailoring	1	2	20 sq.m	40 sq.m	
7	Solid waste transfer station(may also small scale processing)	1	1	0.5 Acre		1
8	Utility Facilities					1*
9	Neighborhood Co-operative Office Complex			0.33 Acre		0.5
	i) Offices	2	4	15 sq.m	60 sq.m	
	ii) Committee rooms	2	3	40 sq.m	120 sq.m	
	iv) Community Club including indoor games (male and female)	2	2	200 sq.m	400 sq.m	
	v) Cultural Facilities (Rehearsal, Music room etc)	1	2	30 sq.m	60 sq.m	
	vi) Community Police Barrack	1	1	40 sq.m	50 sq.m	
	vii) Technician Service (Electrical, Plumber, AC, Freeze etc.)	2	4	25 sq.m	100 sq.m	
10	Community Hall	1	2	0.33 Acre		0.5
11	Shops			0.33 Acre		0.5

Sl. No.	Name of the Facility	Quantity		Area		
		Min. (No.)	Max. (No.)	Minimum for Unit Facility	Sub Class Total	Class Total (Acre)
	i) General store	3	4	25 sq.m	100 sq.m	
	ii) Grocery	4	6	25 sq.m	150 sq.m	
	iii) Stationary	2	3	25 sq.m	150 sq.m	
	iv) Confectionary / Bakery	2	3	25 sq.m	80 sq.m	
	v) Departmental Store**	1	2	100 sq.m	200 sq.m	
	vi) Medicine Shop	2	3	25 sq.m	80 sq.m	
	vii) Sweet Meat Shop	2	3	25 sq.m	80 sq.m	
	viii) Book / Newspaper Stall	2	3	10 sq.m	30 sq.m	
	ix) Fresh Corner (Vegetable, fish, meat, egg, chicken etc.)	2	3	12 sq.m	40 sq.m	
	x) Fruit Shop	2	3	10 sq.m	30 sq.m	
	xi) Flower Stall	2	2	10 sq.m	30 sq.m	
	xii) Gift shop	1	2	10 sq.m	30 sq.m	
Total Area for the Neighborhood Facilities				**22.8 Acres (approx.)**		

Source: Proposed by the Consultants

* May be added as per decision of the Nagar Unnayan Committee under New use category
**Area under Departmental Store shall be calculated on the basis of the spaces allocated against one of the corresponding services in this table (cumulative area)

Urban residential zone shall be developed in terms of neighborhood concept following approximate standards and the area will be free of thorough traffic.

Gross area of neighbourhood : 50 acres [approx.]. It may vary depending on the population density of the Planning Area
Gross density : 225 to 250 persons per acre.

Road Standard

The Table 3-3, Table 3-3a and Table 3-4 represents road standards used in previous higher-level plans. Considering the previous standards road standards for Location-11 has been given in Table 3-9.

Table 3-3: Planning Standards for Roads (Recent Metropolitan Plans)

Sl. No.	Categories of Road	Standards in Recent Metropolitan Plans (RoW)		
		RMDP	KMDP	DMDP
1	Main Road/ Primary Road	New 100ft.-120ft. Widening 60ft.-80ft.	100ft.-120ft.	24.0 m. (78.0 ft.)
2	Arterial Road/ Secondary Road	New 60 ft. Widening 40ft.	60 ft - 80 ft.	14.5 m. (47.5 ft.)
3	Collector Road	New 30 ft.-40 ft. Widening 30ft.	40ft.- 50 ft.	13.00 m. (42.6 ft.)
4	Tertiary Road / Access Road	New 30 ft. Widening 20ft.	--	9.0m.-6.0 m. (29.5ft.-19.7ft.)
5	Non Motorized Road	--	--	4.0 m. (13.1 ft.)
6	Footpath	--	--	2.5 m. (8.2 ft.)

Source: RMDP (2004-2024), DMDP (1995-2015), KMDP (2001-2020)

Table 3-3a: Proposed Road Standard for DAP Area

SL No.	Road Category	Type	Built-up Area	Less Built-up Area
			RoW (Ft)/M	RoW (Ft)/M
1	Primary Road	Type-1	80 (24.39)	170 (51.83)
2	Primary Road	Type-2	80 (24.39)	130 (39.63)
3	Primary Road	Type-3	80 (24.39)	100 (30.49)
4	Secondary Road	Type-1	60 (18.29)	80 (24.39)
5	Secondary Road	Type-2	40 (12.0)	60 (18.29)
6	Tertiary Road	Type-1	40 (12.0)	40 (12.0)
7	Tertiary Road	Type-2	30 (9.19)	40 (12.0)
8	Access Road	Type-1	24 (7.32)	30 (9.19)
9	Access Road	Type-2	20 (6.10)	24 (7.32)

Source: Proposed by the Consultants

Table 3-4: STP Proposed Road

Road Id	Road Name	Width (in ft.)	Width (m)	Length (m)	Area (m^2)	Area (in acre)
L14	Bashabo Mosque to Balu River	Duel 2-lane(80ft)	24.40	3963.89	96719.00	23.900
L45	Bashabo road to Manikdi	Duel 2-lane(80ft)	24.40	1424.92	34768.12	8.591
L23	Eastern By-pass	Duel 2 lane(300ft)	91.50	4771.08	436553.91	107.875
Total			**140.3**	**10159.89**	**568041.03**	**140.366**

Source: STP, 2006

3.3 General Development Strategies

The formulation of plan and development objectives and supporting standards is one of the most important steps in the planning process. This is particularly important because of the value judgments inherent in any set of development objectives. Planning principles and guidelines are set forth to provide for the formulation of reasonable plans responsive to national and local concerns. Likewise, the plans recommended for implementation, in general are to maximize net national benefits. The planning process shall place specific emphasis on sound judgment; planners and other team members shall be guided by common sense in applying the policies and procedures contained herein. It also shall reflect a systematic and comprehensive treatment of resources. This is a very important stage in the design process crucial to the final functional, quality of the result and its efficiency and cost effectiveness. Planning principles have to address two distinct situations: existing and new urban areas (with a further distinction between small scale incremental and large scale planned development).

The DMDP suggested some substantial land fill up for development in Location-11 areas without disturbing the natural drainage systems. Such pattern of development will also be encouraged in Location-9, Location-16 and Group-D areas due to strong demand for buildable land.

For the two situations, planning principles and design rules will work in a different way. Whereas in new urban areas there is a great deal of freedom to make ideal design decisions, in existing situations in most cases only a gradual improvement and restructuring is feasible and desirable. In existing urban areas, the quality of the buildings, the infrastructure, the general lay-out, the public space, findings of the survey of the existing situation is the starting point.

Here design principles and standards cannot be implemented right away, but serve rather as a reference, or target, to be approximated to a degree that depends on available budget, willingness of local inhabitants to co-operate, ability to have formal developers adopt these principles and standards. According to these opportunities, infrastructure may be upgraded, land readjustment, guided land development or slum clearance can be carried out, relocation schemes (either on or off site) can be implemented, facilities and open space may be introduced etc.

Special attention has to be given for managing development in existing urban areas. While in fringe areas that are still only partially developed, the design should aims at more efficient land use by increasing density, measures have to be taken to match the already high and still increasing densities with the required facilities and services (always as related to infrastructure capacity and sustainable environment). Arrangement of separate consultation with representative of different interest group to formulate the design is desirable.

Land use

Table 3-5 and **Map 3-1** shows the details of existing landuse where agricultural use cover highest 27.13% of total land and Table 3-6 and **Map 3-2** shows details of proposed land use where residential use covers 25.02% of total landuse.

Table 3-5: Details of Existing Landuse

Sl No	Land Use Type	Area (Acre)	Percentage
1	Agriculture	1832.40	35.90
2	Circulation Network	97.29	1.91
3	Commercial Activity	6.56	0.13
4	Community Service	2.58	0.05
5	Education & Research	3.79	0.07
6	Manufacturing and Processing Activity	60.58	1.19
7	Mixed Use	22.33	0.44
8	Residential	2175.73	42.63
9	Restricted Area	0.09	0.00
10	Service Activity	0.79	0.02
11	Vacant Land	1.26	0.02
12	Waterbody	900.84	17.65
Total		**5104.24**	**100.00**

Source: Landuse Survey, 2006

Table 3-6: Details of Proposed Landuse

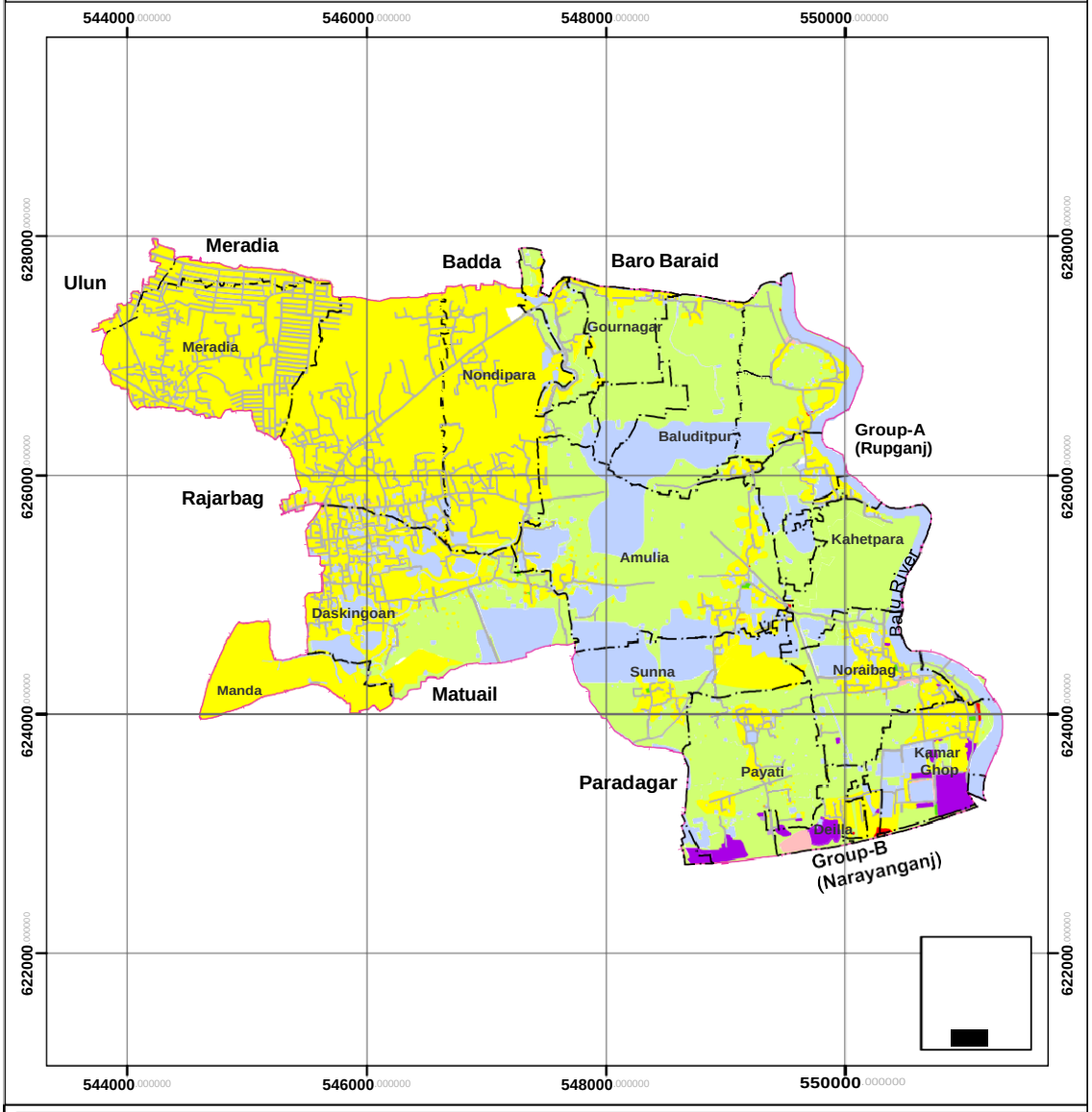
Sl. No	Land Use Type	Area (Acre)	Percentage
1	Agricultural Zone	31.44	0.62
2	Flood Flow Zone	0.81	0.02
3	General Industrial Zone	329.65	6.46
4	Institutional Zone	173.45	3.40
5	Mixed Use Zone (Residential-Commercial)	816.58	16.00
6	Open Space	139.81	2.74
7	Overlay Zone	16.07	0.31
8	Proposed Road Network	463.87	9.09
9	Rural Settlement Zone	96.34	1.89
10	Transportation & Communication	90.61	1.78
11	Urban Residential Zone	2178.33	42.68
12	Water Retention Area	551.32	10.80
13	Water body	215.96	4.23
Total		**5104.24**	**100.00**

Source: Proposed Landuse

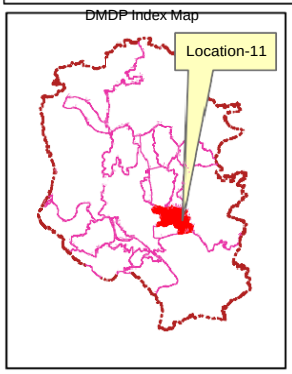
Table 3-7: Status of Proposed Overlay Zone of Location-11

Sl. No.	Proposal Type	Locality	Area (Acres)
1	WASA Water Treatment Plant	Baidertek (adjacent to Begunbari khal)	17.87

Map 3-1: Existing Land use in the Project Area



Preparation of Detailed Area Plan (DAP) for DMDP Area (Location-11]



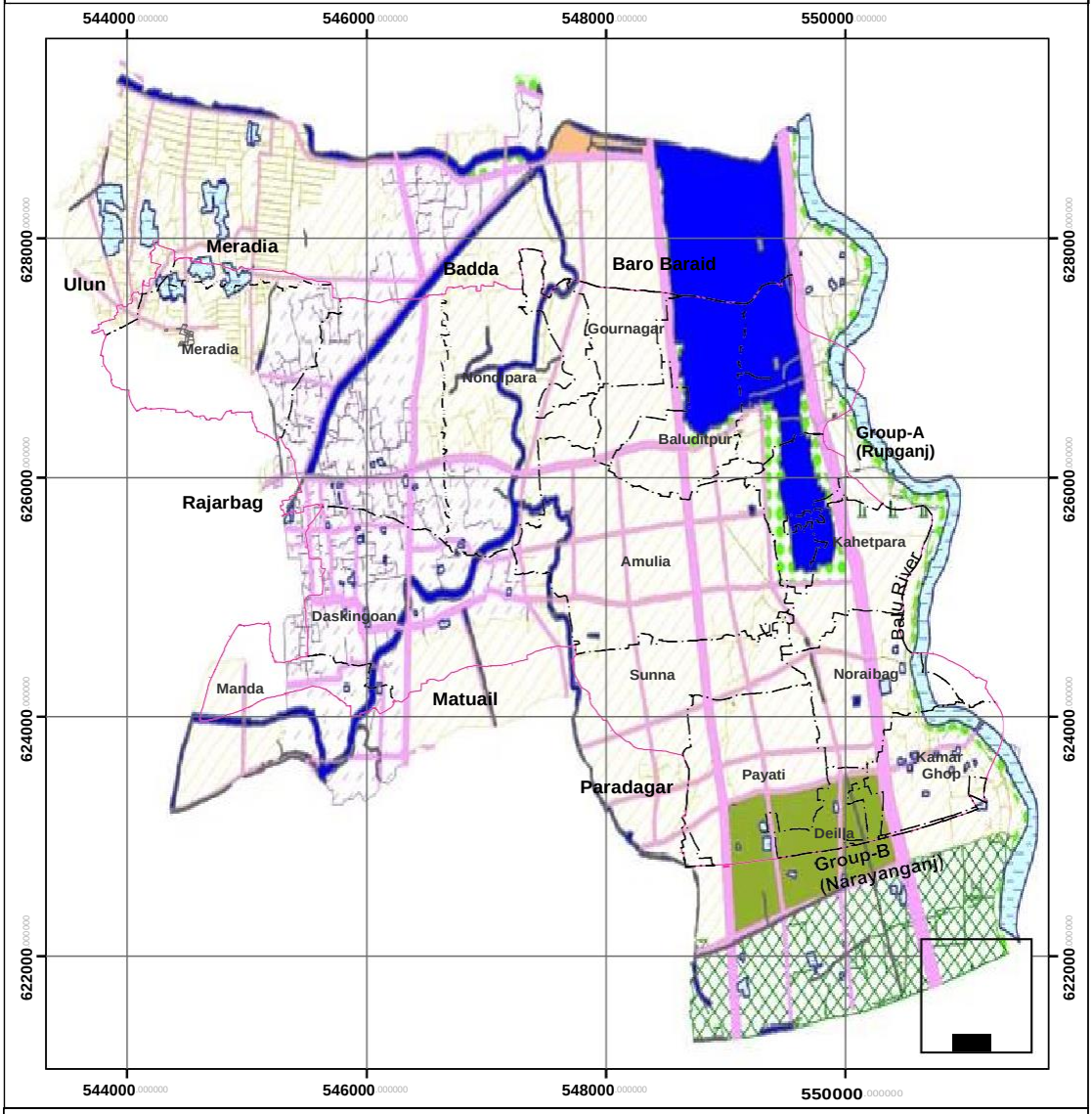
0 600 1,200 2,400 3,600 4,800 Meters

Legend

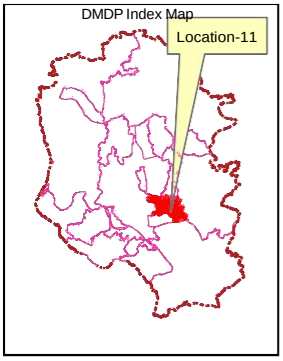
Group boundary	**Existing Landuse categories**	Mixed Use
Mauza boundary	Agriculture	Recreational Facilities
Sheet	Commercial Activity	Residential
boundaryRoad	Community Service	Restricted Area
Network	Education & Research	Service Activity
Waterbody	manufacturing & processing	

Source: Landuse Survey, 2005-06

Map 3-2: Proposed Land use in the Project Area



Preparation of Detailed Area Plan (DAP) for DMDP Area [Location-11]



0 600 1,200 2,400 3,600 4,800 Meters

Legend

- meradia
- Group boundary
- Mauza boundary
- Sheet boundary

Landuse Categories

- Agricultural Zone
- Flood Flow Zone
- General Industrial Zone
- Institutional Zone
- Mixed Use Zone (Residential-Commercial)
- Open Space
- Overlay Zone
- Proposed Road Network
- Rural Settlement Zone
- Transportation & Communication
- Urban Residential Zone
- Water Retention Area
- Waterbody

Community Development

Table 3-8 shows the existing and recommended community services like educational institution, park, community centre, post office, health centre, graveyard, etc.

Table 3-8: Community Services Recommended for DAP

Sl. No.	Type of Services	Existing Services		Additional Proposed	
		Number	Area in Acre	Number	Area in Acre
1	Primary School	25	1.27	--	--
2	High School	11	0.94	2	4.00
3	College	--	--	10	50.00
4	Madrasha	15	0.99	--	--
5	University	--	--	1	5.00
6	Park/Open Space	--	--	10	20.00
7	Neibourhood Center	--	--	3	0.90
8	Community Center	--	--	3	0.90
9	Health Center*	--	--	3	2.60
10	Graveyard	--	--	3	9.00
11	Katcha Bazar/ Market	3	0.27	3	3.00
12	Post Office	--	--	3	0.30
13	Fire Station	--	--	3	3.00
14	Police Outpost	--	--	3	0.60
15	Mosque	79	2.89	1**	1.00
16	Temple/Church	3	0.05	--	--
17	Bank Branch	--	--	3	0.30

* *Out of proposed three health centers, one will be full fledged Hospital with 2.00 acres land.*

** *For central Eldgah.*

New Urban Area

For the development of new urban area, especially large scale planned development; there is more freedom to adopt formal design principles. In general the approach for new urban areas starts with the design of the major infrastructure network (drainage, roads, public transportation), followed by other types of infrastructure such as drinking water, sewerage, electricity, gas, telephone, etc.

The networks have to be combined as much as possible to prevent waste of space. Once the combined infrastructure network has been established, the design process has to deal with land use in each of the cells of the network. Here plot size and principles for clustering and accessibility are the most important issues. Most of the work on infrastructure network has already been done for the Structure Plan and Urban Area Plan; what follows here is updating of Structure Plan and Urban Area Plan policy and guidelines.

Plot Size and Floor Area Ratio (FAR)

For each of the major land use categories and ideal plots have to be assessed, in relation to land use density and affordability levels as well as ways to cluster plots, making them accessible, and with proper orientation.

Plot design also helps to establish typical land use/functional combination (e.g. schools, shops, health care, playground etc. in residential areas). Clusters of typical land use (or land use combinations) have to fit after a first design cycle. Here special care has to be given to relation between affordability and occupancy density on the one hand and infrastructure capacity on the other. After mutual adjustment, the combined land use clusters and infrastructure network cells provide the basic units for further location related design work.

Whereas the first consultation of step 5 was directed at collecting information on problems, wishes and initiatives of interested parties prior to the start of the proper planning work; the separate consultation with different group of this step aims at getting reactions to the design. For RAJUK, the most important question will be whether the draft Detailed Area Plan agrees with already existing Zoning Plans.

It is quite regular that on this sort of study scale, especially while covering this huge area as a complete participation of local communities does not seem feasible. Therefore, for this step mainly local authorities and local community leaders should be identified and consulted.

In the location-11 area, there is no regulation to restrict the sub-division of plots in order to control the aspects of densification. The present law under the Building Construction Rules-2006 tried to address the issue by adopting FAR which discourages small plots by restricting the size of development. However, this FAR rule is conceived under the present Law as a constant factor for all types of buildings and for all areas of Dhaka and its surroundings. The Detailed Area Plan needs to deal with a variable FAR for different building types in consideration to its use. Moreover, this rule must be adjusted for different parts of the city in relation to its present trends of development and also focusing the future needs in order to regulate the uncontrolled process of densification. Moreover, the FAR rules may be supplemented by variable Tax structure in different parts of the project area to attract or resist the users considering the existing density and predicting the future density of the areas. All these steps may play altogether a significant role to address this major problem of densification of the city. Therefore, the Detailed Area Plan needs to propose and apply a suitable FAR in response to this issue.

Spontaneous developments in different SPZ and particularly on the fringe areas of the city must be taken care of in the Detailed Area Plan by applying regulations and FAR control. The FAR ratio must be compatible with the geo-physical aspects of the low lying fringe areas of Dhaka. Urban Area Plan puts directive to transform the patches of rural areas in SPZ-4 into planned areas. In doing so, the Detailed Area Plan must consider an appropriate FAR to apply density control in those newly developed urban areas of Dhaka.

Besides, unfair judgments are being practiced between the public and private sector developments. This situation must be controlled by addition of rules within the framework of RAJUK. According to the Urban Area Plan the industrial area proved insufficient and attracting non-industrial uses. This venture is also taking advantage of lack of appropriate rules for this industrial area. The proposals for variable FAR must derive a regulatory control on the process of transformation in this area. Plot subdivision may also be regulated in this area for density control.

Residential development

Along with the initiatives of private developers, some other housing areas should be developed focusing the low-income people. Thus, three types of housing areas are needed to develop. These are:

- Low income housing
- Middle income housing
- High income housing

Bansri Housing & Adjacent areas are proposed as High and Middle class Housing/ Residential zone (Meradia Mouza). Nandipara, Gournagar, Amulia, Sunna Noraibag areas will be developed as Middle and Low income housing. Dakshin Goran (part of Nondipara and Meradia) has been developed as mixed-use at present. So, this area will bedeveloped as mixed use like Residential-cum-Commercial area. A Low income Housing proposed to the east side of proposed Eastern Embankment (Noraibag and Kumarghop Mouza) that is also located near proposed industrial zone.

Neighborhood concept should be developed and high income housing are proposed to locate near neighborhood park, preferable Eco-Climate sort of development around retention ponds with water based recreation facilities. Besides, the institutional development, health facilities, parks/playgrounds and other community facilities will be considered in detail in neighborhood level planning.

Institutional development

Schools i.e. primary, secondary, collage, Madrasha and where need, university should be developed according to future population within the plan period.

Health facilities

Health facilities should be provided according to the hierarchy of facilities. Primary health care center should be provided in community level and higher level facilities according to the population threshold and requirement.

Parks/Play ground

Community parks should have to be provided according to their standard and requirements.

Drainage

Among different types of infrastructure, drainage network has by far the heaviest impact on the design especially on physical infrastructure network. For drainage the main source of information is the Flood Action Plan (FAP) parts 8A and 8B. The proposals of FAP 8A and 8B do not fit easily in an efficient urban layout. Retention ponds especially with their huge dimensions covering just those areas that is still unoccupied (due to their low level) and might hence be the most convenient for new urban development once the fringe areas are made flood free.

An alternative solution is suggested based on a gradual phasing out of major retention ponds, and replacing these by the creation of sufficient storage capacity in widened khals and in additional canals following the major roads. There are 2-3 noteworthy canals (khals) which needed widening and restoration in this location. One of them is Beupar khal, this khal can be identified from the Termukh of Balu River and is parallel to Balu River. It is about 2.5 km long. Balu River, which should be restored to its original state. Another is Dumni khal, which is south of Beupar khal. Dumni khal is same length as that of Beupar khal. Flow direction of this khal is south to north-east and this should be maintained. Apart from this, there is Bhatara khal system that originates from Kalachandpur. This khal has several branches coming from north. The maintenance and safekeeping of this khal system is crucial for draining storm water and stopping water logging in Location-11.

This alternative is line with a gradual shifting of the balance between land value (of the areas covered by the ponds) and investment and operation costs of heavier pumps, once urban development are well under way. By anticipating this shift for those areas to become urban in the short term, deeper ponds may be adopted which will reduce considerably the conflict between drainage requirements and availability of land for urban development.

Roads

- For the road network, the Structure Plan suggested a grid pattern with distances between major roads at an average 1,200 m.
- Without reducing capacity too far, distances may be set at 1,500 or 2,000 m for north-south roads, and 2,000 or 3,000 m for east-west roads. In fact in the Urban Area Plan such extensive road network is already adopted.
- Some of the major urban roads double as national highways. The Dhaka – Chittagong road may serve as an example, as it gives both access to the northern part of the DND triangle and serves long distance traffic. It is necessary to separate these functions by constructing service roads that take over the access function.
- Even though in the planning period for the Detailed Area Plans, neither the need nor the resources will be there for actually building these service roads and fly-overs, reservations (RoWs) will have to be made of, otherwise this will prove very difficult and costly later on.
- Reservations may also be made for bus lanes or even light railway tracks.

3.4 Proposed Infrastructure Development

Urban Fringe Area

In urban fringe areas low initial densities will make cost-effective levels of service provision difficult to achieve. In this regard, eventual higher densities should be taken into account in the design of levels of initial service provision. In the initial planned period it will be necessary to safeguard the alignments and RoWs of all primary, secondary and tertiary roads, infrastructure service reserves and existing khals, waterways and retention ponds, while this is still possible. This will be necessary to ensure that the rational and phased development of the Structure Plan proposals is not compromised in the short-term.

Urban Core Area

In older established areas, densities will reach higher levels than previously or currently planned. Consequently, capital investment programs and design proposals for levels of service provision should be based on much higher population and density levels.

Difference between Existing and New Urban Area

In existing urban areas the density of population is high, roads are narrow and congested, utility services are insufficient,

less possibility of horizontal expansion due to scarcity of land, paucity of social and community facilities, inadequate and poorly maintained infrastructure and ever-increasing costs for ever-diminishing space. On the other hand, in the new urban areas, the density of population is low, roads are wide, and more scope for development through horizontal expansion areas is present more or less planned way.

Utilities

Following strategies will be followed for development of utility services in the project area:

- To reduce cost of development services the development of utility services will be promoted in phases, based on comprehensive plan for the demarcated entire new urban areas.
- Only those areas will be targeted in new urban areas where the urbanization is likely to be rapid and imminent.
- Except water supply and waste disposal, all other services will be left with concerned service giving agencies.
- Conserve the drainage and all other natural canals and water courses.
- Encroachment should be prohibited in both sides of rivers and canals.
- Primary, secondary and tertiary drains should be maintained by private organizations, NGOs and CBOs.

Urban Fringe Areas (transferred for rapid development)

In urban fringe areas low initial densities will make cost-effective levels of service provision difficult to achieve. In this regard, eventual higher densities should be taken into account in the design of levels of initial service provision. In the initial planned period it will be necessary to safeguard the alignments and RoWs of all primary, secondary and tertiary roads, infrastructure service reserves and existing khals, waterways and retention ponds, while this is still possible. This will be necessary to ensure that the rational and phased development of the Structure Plan proposals is not compromised in the short-term.

Urban core area (For urgent rehabilitation)

Acknowledging the core area's important role in the city's economy the DAP adopts a strategy of selective and gradual change. These are:

- The improvement and upgrading of access to and within the area, with particular emphasis on traffic management.
- To promote comprehensive redevelopment as a means of upgrading existing infrastructure provision on an area basis, in partnership with the private sector where appropriate and feasible.
- To promote comprehensive community based rehabilitation of slum and squatter areas and areas poorly served with infrastructure and social and community services, through participatory and advocacy and planning initiatives involving the community, CBOs and NGOs.
- To limit piecemeal, specific site-by-site redevelopment to a scale commensurate with the capacity of existing public rights-of-way and levels of existing infrastructure services provision.

For the sub area

With the growing demand for land indiscriminate spatial growth in high lands is taking place at an accelerated rate. Present trend shows the main thrust of growth has been in the eastern fringe areas. The more outlying areas that are going to be urbanized spontaneously or in a planned way tend to grow very slowly. As a result, the costly infrastructure facilities and services that have to be provided are under used and even lay idle for a long period.

Promoting development strategy for this urban sub area is to adopt policies, which will accelerate development at specific locations. The purpose of these policies is to optimize the utilization of these extensive but scattered and under-utilizes lands, at the same time promoting further outward, planned urban growth.

Circulation and Transport Network

In order to address the circulation problems, first initiative is to establish arterial road networks proposing some new roads and filling up the missing links considering the proposed land use. DMDP Structure Plan recommended a number of roads to be established as arterial road networks in this area. All of the proposals recommended in Structure Plan were also taken in recently developed Strategic Transport Plan (2006) The proposals made in DMDP and STP has been incorporated and some new roads have been suggested in DAP. After establishing arterial road network, internal roads have been suggested in the neighborhood level in such a way so that grid-iron patterns have been developed and mobility will be easier. All the proposed roads are shown in Table 3-9.

Table 3-9: Road Proposed by Consultants of Location-11 Area

Serial No.	Road Type	Road Name	Width (Feet)	Width (Meter)	Length (Meter)	Length (Km.)	Area (M^2)	Area (Acres)
1	Secondary	Manikdia to Eastern Embankment	60	18.29	2537.501	2.538	30957.512	7.650
2	Secondary	Sunna Tengra to Eastern Embankment	60	18.29	2577.850	2.578	31449.770	7.771
3	Secondary	Nandi Bazar to Eastern Embankment	60	18.29	4695.151	4.695	57280.842	14.154
4	Secondary	Paschim Nandi Para to Nasirabad Trimohoni	60	18.29	2066.690	2.067	25213.618	6.230
5	Secondary	Demra, Chotto Paity To Noraybag	60	18.29	2560.828	2.561	31242.102	7.720
6	Secondary	Shakerjayga-Durgapur Road to Demra Bamel Bazar	60	18.29	3240.612	3.241	39535.466	9.769
7	Secondary	Khilbari Rajarbag to Sabujbag, Begunbari, Dakshin Goran	60	18.29	1365.164	1.365	16655.001	4.116
8	Secondary	Nandipara Mosjid-E-Noor to Begunbari, Sabujbag	60	18.29	1039.742	1.040	12684.852	3.134
9	Secondary	Nandipara jamea Mosque to Manikdia	60	18.29	880.293	0.880	10739.575	2.654
10	Secondary	Shekher Jayga to Manikdia Chairmen Bari	60	18.29	685.604	0.686	8364.369	2.067
11	Secondary	Nandipara bazar to Kasombag	60	18.29	659.632	0.660	8047.510	1.989
12	Secondary	North Gao 1 no Road to Nandipara, Dakshin Goran	60	18.29	1281.696	1.282	15636.691	3.864
13	Secondary	Demra Road to Amulia Govt. Primary School	60	18.29	713.677	0.714	8706.859	2.152
Total					**24304.440**	**24.307**	**296514.167**	**73.270**

The following strategies will be adopted to promote circulation in the project area:

- A comprehensive road network should be prepared for the entire project area using a hierarchy of road network.
- In case of local roads a participatory approach should be developed to realize at least a part of the cost of development from the beneficiaries. This will also help reduce cost involved in land acquisition for road development.
- Proposed roads should be chosen in those areas for immediate development that are needed to promote growth in that area.
- Incremental development approach should be adopted to get rid of unnecessary costs in development of roads.
- Service roads should be created along major roads to allow free flow of long distance traffic

Detailing of Proposed Roads of Location-11 is given in **Annexure-II**.

3.4.1. Road Widening Programme

The road width shown on the maps are actually the Right of Way (Row) to be reserved for the development of the roads immediately after the plan is approved. And no other land use will be allowed within the RoW other than the roads. The present land owners will be allowed to continue to use the land in its present form. They will not be entitled to any compensation for unauthorized construction (if they built later) except the actual value of land at the time of acquisition.
Roads could be built on as incremental basis and when traffic increases. Initially it could be a single lane or a 2-lane road

and could gradually be developed into a dual carriageway, and subsequently service lanes could be added on both sides if provisions have been made for these in reserving the Row.

The following strategies should be adopted to promote circulation in the project area.

- In case of local roads a participatory approach should be carried to realize at least a part of the cost of development from the beneficiaries. This will also help to reduce cost involved in land acquisition for road development.
- In working out the phasing, prioritizing has been accorded to those roads which are (a) in line with the development trend in the particular areas and (b) which further induce development in those areas.

3.4.2. Link Road Development Programme

The consultant thoroughly examined the road standards proposed by the Structure Plan. The Structure Plan recommended two categories of primary roads – main road and arterial road. The consultant suggested only arterial road with 86 feet width and collector road with 60 feet width for the project area. The consultant also suggested two types of access road, one for old areas with 6 meter width and for new areas with 9 meter width. The access roads would be created to link mainly the housing areas with the collector roads. Table 3-7 shows planning standards for roads (Recent Metropolitan Plans).

a. Arterial Road Proposals

The purpose of arterial road is to set up regional links. The consultant supports STP proposals with some modifications (Table 3-8).

b. Collector Road Proposals

The purpose of collector road is to establish link between main road and access road. Collector roads have been proposed in different parts of the existing and new urban areas to link them with arterial roads. The focus of collector roads is to promote accessibility in fast growing urban centers and establish link with nearby arterial road and adjoining urban centers (Table 3-9).

c. Access Road Proposals

Access road provides access to individual houses and links with other external activity areas through collector and main road. Access roads have been provided in existing and new urban areas to enable development on private initiatives.

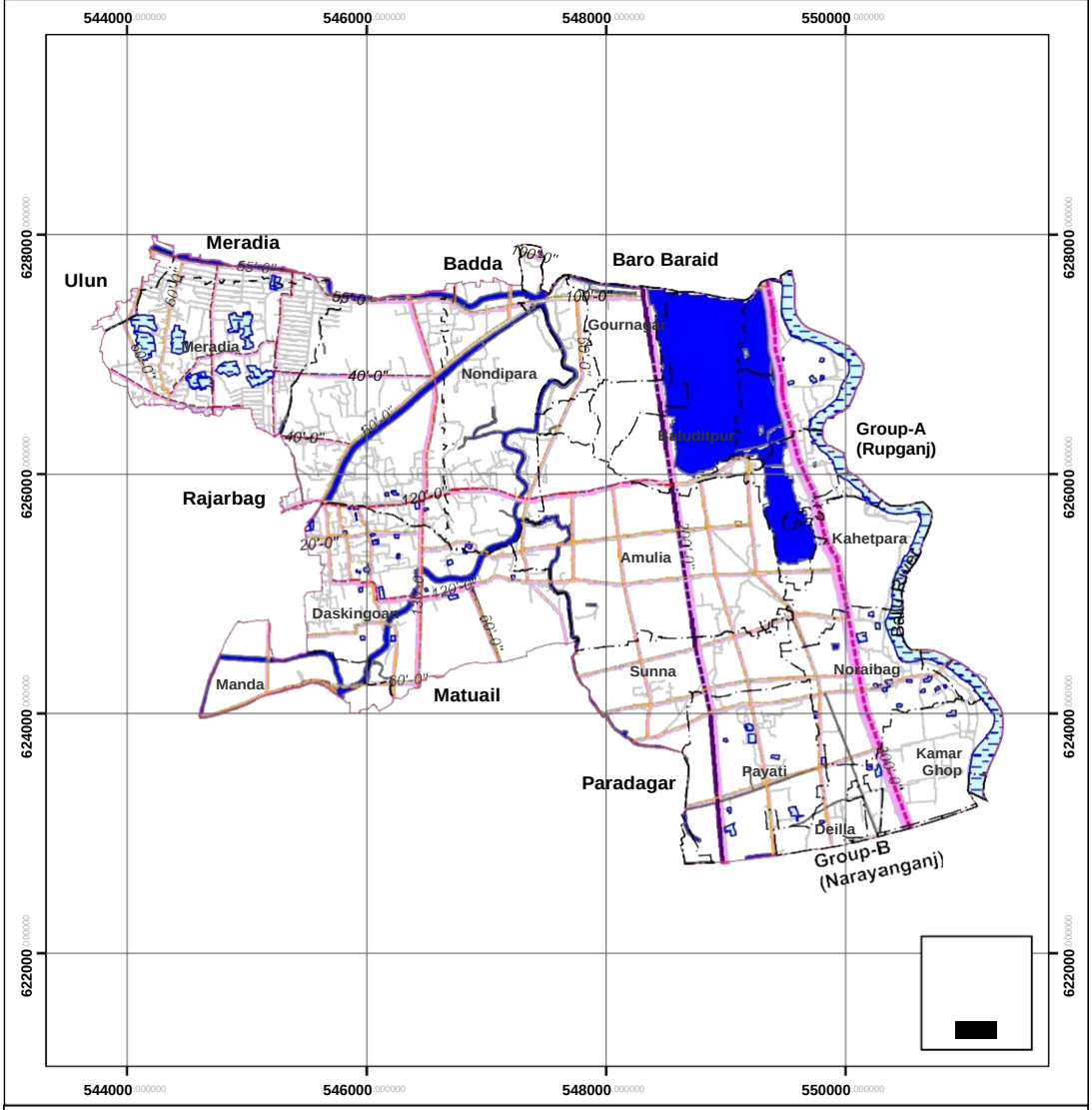
3.4.3. Commuter Rail Network

Recently completed STP did not undertake a detailed study of railway in the context of its role in greater Dhaka. The issue was left to be studied by the Bangladesh Railway for which a feasibility study was to be initiated. Meanwhile a study under DFID assistance was initiated to prepare a “Development Plan for Bangladesh Railway”. Within the scope of that plan, the issues related to the future role of Bangladesh Railway, particularly in the context of commuter railway for Dhaka City is being looked into, besides its antigravity with the rail based Mass Rapid Transit (MRT) proposed by STP.

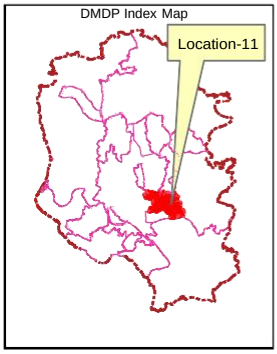
Mass Rapid Transit (MRT) for Dhaka

A metropolitan area, like Dhaka, needs some form of mass rapid transit to provide good quality transport, at an affordable cost, for a large number of users. As the area continues to grow, the need for such a system becomes even more acute. A number of candidate systems were considered in this study, using a number of criteria, principal components among the criteria were – capital cost, capacity provided and ability and time take to construct. The three main candidate systems considered were Metro (heavy rail based, completely segregated, and elevated and partly underground), LRT (Light Rail Transit) mostly elevated and partly underground and BRT (Bus Rapid Transit) either running at street level or elevated). In terms of capital cost Metro is the most expensive and BRT the least expensive. Capacity is highest with Metro (up to 60,000 passengers per hour) and is about the same with BRT and LRT (at 20,000 passengers per hour). In terms of ability to construct, the BRT system is a clear winner since only traffic management required to implement the basic system. Metro and LRT are the most difficult to construct. In short and due to variable travel demand characteristics, the STP study has recommended the creation of a Mass Transit System, which combines both Metro and BRT lines. Developing on demand forecast, the two corridors, which require Metro system, are Airport road and Mirpur road, Rokeya Sharani roads. In addition a circulation MRT corridor, mostly elevated was also suggested. The other areas were proposed to be served by three BRT lines running at-grade.

Map 3-3: Proposed Road Network in the Project Area



Preparation of Detailed Area Plan (DAP) for DMDP Area (Location-11]



0 600 1,200 2,400 3,600 4,800 Meters

Legend

- Group boundary
- Mauza boundary
- Sheet boundary

Proposed Landuse categories

- Proposed Road Network
- Transportation & Communication
- Water Retention Area
- Waterbody

Proposed Road (Width-Ft)

- 300'-0"
- 200'-0"
- 170'-0"
- 130'-0"
- 120'-0"
- 100'-0"
- 60'-0"
- 55'-0"
- 40'-0"
- 20'-0"

3.4.4. Existing and Planned Development of Water Transport

The Bangladesh Inland Water Transport Authority (BIWTA) is already going ahead with the development of a Circular waterways system around Dhaka, for the transport of both people and goods. STP also supported the recommendations made earlier by DMDP and BIWTA to develop circular waterways around Dhaka. A number of road links have been proposed by STP to connect the landing stations with other elements of the multi-modal transport system. The circular waterways are being developed along Turag, Tongi and Balu rivers together with Buriganga River.

An initial study by BIWTA to evaluate the feasibility of such a concept was completed in 2001, for the western section of the Circular waterways (Ashulia-Sadarghat). Since the completion of the feasibility study, BIWTA went ahead with the implementation of the recommendations for the western section of the Circular waterways system, including dredging and construction of landing stations. Several landing stations from Sadarghat to Ashulia have already been developed in that section.

BIWTA has initiated another feasibility study for the eastern section of the Circular waterways system (Ashulia to Demra), including waterway linkages to some of the existing canals. This includes provision for 15 landing stations plus improvements at Tongi River Port and redevelopment of three other canals Once the circular waterways system is fully developed, it would provide additional transport facilities for north-south movement, and also reduce some pressure on the land transport system of the city.

Water Transport Development Program

The DMDP Structure Plan also made a recommendation with regard to water transport, to utilize the available natural resources efficiently. The whole component included dredging of channels and canals and installation of berthing points. Navigability of the encircling waterways would enhance the riverine recreational facilities as well as movement of goods to different parts of the city by water transport. Introduction of efficient water transport could reduce the cost of transportation for both goods and passengers.

3.4.5. Existing Flood Protection Works Dhaka East Area

Dhaka East Area Development Plan Proposal (Flood & Drainage)

Flood Protection Proposal: Dhaka East Area

Dhaka East Area just adjacent and joining to Dhaka West Area has land area of 124 sq.km or 30876 acres as shown in FAP-8 study. Major works of flood protection in Dhaka west is completed under crash programme and Dhaka Integrated Flood Protection Project with cash of about 1,000 crores taka and is proposed here to retain without modification. So in principle the proposed flood protection embankment in Dhaka East is the continuation of Dhaka west embankment. It is further proposed that the embankment will start from Tongi khal railway bridge as zero chainage and will follow Tongi khal clockwise keeping set back distance for flood flow and sub-flood flow zone as per guidelines of Structure Plan and will meet DND project embankment near to the confluence of the Balu and Sitalakkhya river. The distance from Tongi khal railway bridge to Demra is about 25.0 km. This portion of the embankment will be a new construction. The portion from Demra to Syadabad is the existing DND project embankment and will not need reconstruction but may need repair and maintenance. Now the flood embankment of Dhaka West and Dhaka East will form one integrated loop of flood embankment. The road embankment (Progati Sarani) from Syadabad to Dhaka new airport and railway embankment from there to Tongi khal will not require any modification.

Flood Flow Zone: In main flood flow zone, permitted uses are:

- Agriculture, forestry and grazing.
- Aquaculture and fisheries.
- Brick fields.
- Ferry ghats and Jetties.
- Flood management .structures
- Recreations facilities (outdoor).
- Utility installation.

In flood flow zone after permitted use the following conditional uses[1] can be done:

- Road, Railway, Utility Row.

Sub-flood Flow Zone: In sub-flood flow zone permitted uses are:

- Agriculture, forestry and grazing.
- Aquaculture and fisheries.
- Brickfields
- Roads, Railway, Utility Row.
- Farm dwellings
- Ferry ghats and Jetties.
- Flood management structures.
- Institutions
- Public uses and structures
- Recreation facilities(outdoor)
- Religious uses and structures
- Repair shops
- Ship and boat servicing
- Utility installations

In the sub-flood flow zone after permitted use the following conditional uses can be done:

- Dwelling, farm
- Dwelling, minimal housing
- Dwelling, single/ multi-family
- Explosive manufacture and storage
- Industrial class-2
- Petrol/Service stations
- Offices/ Services.

Drainage Proposal Plan: Dhaka East Area

Sluice Gates

Because of the construction of proposed flood protection embankment, outside flood water from the Balu river and Tongi khal will not be able to enter the Dhaka East area, but the internal storm water will not be able to drain out. To drain out internally accumulated storm water, sluice gates are proposed at chainage 0.9 km (SG1), at 5.10 km (SG2), at 10.50km (SG3), at 17.85 km (SG4), at 18.75 km (SG5), at km 20.79 (SG6) and at chainage 23.30 km (SG7).

Pump Stations

Sluice gates can operate and drain out internal pooled storm water when the external river water remains at lower level. However, during the monsoon or rainy season when the river water remains at higher level and inside water level remains low, gates can not drain out water. Under such condition storm water from inside is to drain out by pumps. Three pump stations at chainage 10.02 km (PS1), at chainage 17.15 km (PS2) and at chainage 20.10 km (PS3) are proposed to build on the new flood protection embankment. Thus 3 pump stations and 7 sluice with gates will be able to serve drainage purpose.

Drainage khal Re-excavation Plan:

Drainage khals are described in previous section and identified there. Major khals may be listed as 1) Rampura-Gazaria khal, 2) Bhatara khal and 3) Baothar-Dumni khal. These primary khals will lead to proposed pump stations. Besides there are other khals such as Manda khal, Zirani khal, Mugda khal, Khilgaon-Basabo khal and Ujanpur khal. Rampura-Gazaria khal is the most important of the list. This khal is proposed to re-excavate from Rampura to Gazaria where it will deliver water to pump station-3, and SG6 to proper section, grade and depth.

[1] Ref. Urban Area Plan (1995-2005) Vol-II, Interim Planning Develoment Rules, Page-35, Table- Summary of Permitted and Conditional Uses

Zirani khal is proposed to be re-excavated from Syadabad new stadium to khilgaon-Basabo khal in a new alignment as shown in planning map. At the same time Mugda and Khilgaon-Basaso will be re-excavated and improved from off take of Mugda khal to outfall with Zirani khal. Then Zirani khan will further be re-excavated from new confluence of Khilgaon-Basaso with Zirani khal to its outfall with Rampura khal. Manda khal course is proposed to reverse it flow from Syadabad bridge site to Rampura khal. To achieve this re-excavation of Manda khal will start from Syadabad bridge site towards Trimohani with grade towards Rampura khal. The re-excavation should be done to provide proper section and bed slope. Re-excavation of Bhatara khal and Badda north khal will require to be done from their off-takes to their meeting point and from there Bhatara khal will be given a straight alignment to pump station-2 and sluice # SG5.

Approach khal to pump station-1 and SG3 be excavated along with re-excavation of Dumni khal and Baothar khal. Ujanpur khal and all approach khals to all other sluices will be developed as required.

Water Protection

River pollution control from anticipated urban growth is done by augmenting supply of potable water from artisan sources. The relatively unpolluted Lakkhya has tremendous potential for this and needs necessary environmental protection. Policy RS/4 River pollution control suggests to prevent pollution of the Lakkhya River and its tributary and the Balu River to ensure a long term source of potable water for Dhaka city by Saidabad water treatment plant. In addition, it suggests means of implementation by controlling settlement growth from Demra to about 10 km upstream along the Balu and the Lakkhya River.

Nature Preservation Zones

Nature preservation zones, RS/6- special areas of Dhaka structure plan rural and special area polices mentions national mausoleum, cantonment, Biswa Estema etc. for this purpose. Besides, big size beels, wetland, Nowabbari, Mosques, Churches, Old Rajbari and Puja Mandap etc. may be mentioned as nature preservation zones.

3.5 Description of Integrated Planning Map

The result of this stage of the design work has to be recorded as a first draft of the integrated planning map. For the integrated planning map, the existing situation as shown on the different layers of the base map has been summarized and planning proposals have been added. Prior to DAP formulation the overall existing situation of the project area is summarized, followed by explanation of the planning process and the planning components and finally the plan details.

The integrated planning process of DAP starts from field survey that comprises physical feature survey and socio-economic survey of existing conditions. The integrated plan is formed by combining the proposals mainly from three different areas. These are,

Stakeholders' Aspirations: Stakeholders of the project area were interviewed and their opinions and aspirations were listed up and reviewed and assimilated to determine appropriate projects for incorporation in the integrated plan.

Public and Private Sector Commitments: There is large number of public and private sector commitments in the project area. All these commitments were listed up, located and integrated with the detailed area plan proposals.

Plans and Strategies: The planning proposals and strategic recommendations of infrastructure and development policies made by various plans and strategy report were considered while making detailed area plan proposals. Some proposals like, roads were revised in some cases to fit with practical situations.

Integrated plan has been prepared for three main components of DAP – road network, planning and location of urban amenities in existing and new urban areas and design and policy proposals for new housing areas (Table 3-10 and **Map 3-4**).

A copy of Integrated Planning Map of Location 9, 11, & 16 (Scale 1:35,000) and DMDP Area (Scale 1:80,000) has been attached with the Report.

This stage of planning proposal describes only the primary roads and collector roads in the project area. The road proposals are based on review of Structure Plan and STP proposals. Some modifications have been suggested for STP proposals, while full support has been provided to the Structure Plan recommendations.

Table 3-10: Landuse Classification of Integrated Planning in Eastern Fringe Area (Location 9, 11 & 16)

Sl. No.	Land Use Type	Remarks	Acre (Acre)	Percentage
1	Agricultural Zone		31.44	0.19
2	Flood Flow Zone		526.61	3.25
3	General Industrial Zone		329.65	2.04
4	Institutional Zone		201.82	1.25
5	Mixed Use Zone (Residential-Commercial)		1519.68	9.38
6	Open Space		351.37	2.17
7	Overlay Zone	Proposed Graveyard	42.19	0.26
8	Overlay Zone	Swarage Treatment Plant	100.63	0.62
9	Overlay Zone	Water Treatment Plant	160.05	0.99
10	Proposed Road Network		1543.67	9.53
11	Rural Settlement Zone		150.89	0.93
12	Transportation & Communication		215.70	1.33
13	Urban Residential Zone		7619.68	47.05
14	Water Retention Area		2749.55	16.98
15	Waterbody		651.23	4.02
	Total		**16194.16**	**100.00**

Source: Landuse Survey, 2006