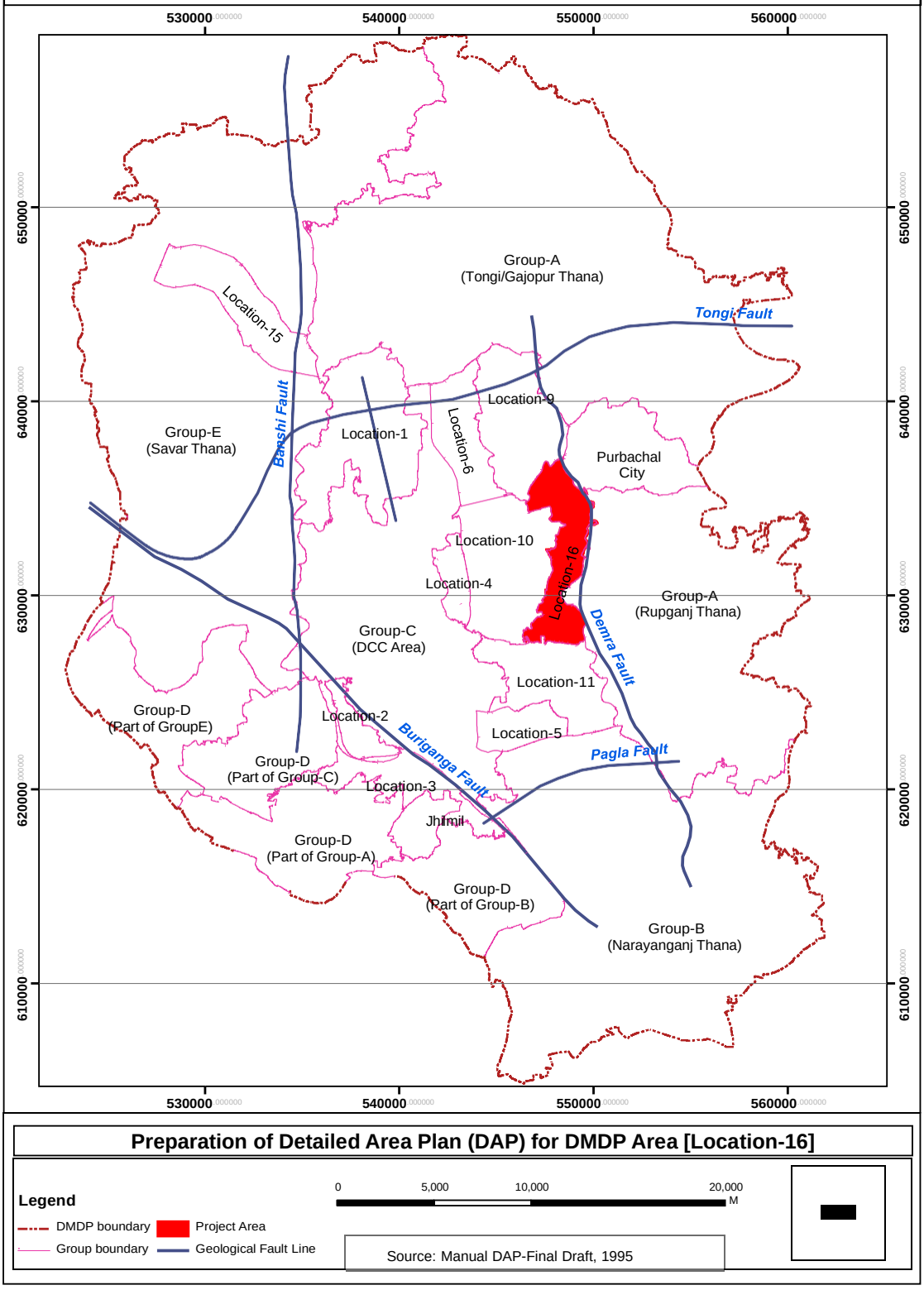
Map 2 7: Fault Lines in Project Area



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

Legend

- DMDP boundary
- Group boundary
- Project Area
- Geological Fault Line

0 5,000 10,000 20,000 M

Source: Manual DAP-Final Draft, 1995

2.1.1 Environmental Concern

a. Flooding and Drainage

Flooding in the location-11 area is a major concern. It causes unbearable sufferings for the people by creating difficult situation for traffic movement as well as unhygienic environment that has long lasting consequences. Following are the main reasons for flooding in the area:

- Unplanned and uncoordinated development of the area;
- Continuous filling of wet lands for expansion of the city both by the public sector and private organizations;
- Unauthorized and illegal occupation and destruction of natural drainage system and retention basins;
- Inadequate storm water drainage facilities;
- Disposal of solid waste, waste water and septic waste into the drainage system;
- High water level in the peripheral river system.

Drainage congestion increases further with the 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 enough to carry the surface run-off properly. The outlets of these drainage networks are mostly connected with the natural channels or khals like Beupar khal. Dumni khal, Bhatara khal etc. But, the conditions of these natural khals are dilapidated due to unauthorized encroachment. These khals have also been silted up due to re-excavation; as a result they cannot carry the water properly, which generates drainage congestion. Thus, many areas are subjected to water logging during the heavy rainfall causing inconvenience to the people of the area. It negatively impacts health and sanitation problem, disrupts of business and commercial activities, disrupts communication, outbreak of water borne diseases, loss to economic activities etc.

b. Pollution

The surface water quality of Balu river, ponds and beels is polluted in respect of pH, turbidity and coliform bacteria with national standard. The main causes of surface water pollutions in this location are wastewater discharge from city area, sanitary sewage, solid waste dumping and discharge of untreated industrial wastes. With implementation of the DAP, the surface water pollution level may further increase for high volume of discharge of waste water, sanitary sewerage, over spilling of pit and septic tank, industrial effluents, surface run-off of kutcha bazaars, indiscriminate solid waste dumping.

Fall of ground water table is a common phenomenon in project area during dry period (February-May). With expansion of urbanization and industrialization through this project, the ground water table may further fall if present tradition of using ground water is continued. Groundwater pollution due to manganese, iron and hardness is a major problem in the project area. With expansion of urban area, more dependency on groundwater sources may increase the pollution level of sub-surface water.

c. Loss of Wetlands and Depletion of Ground Water

Earth filling fills up the beels, ponds and khals. Wastewater affects the aquatic ecosystem and makes the beels, ponds and khals unproductive and as a result the aquatic plants, fishes and animals die or migrate to other places. For high price of highlands, the developers enlarge their hands to the low cost wetlands. Number of ponds in the study area is reduced every year to accommodate housing and commercial structures. These encroachments of rivers, lakes, khals, diminishing of the arable lands, filling of low-lying areas are the major cause of loss of groundwater recharge sources. Polluted groundwater and/or a diminished supply of groundwater are of particular concern where groundwater is the major source for drinking and irrigation water. As wetlands play an important role as a reservoir of rain and floodwater. They are also important to maintain the balance of ecosystems and for replenishing the ground water level through seepage.

d. Controlling Instruments

For sound and sustainable development, there exist some controlling instruments such as

i. Town Improvement Act 1953
ii. Dacca Master Plan 1959

iii. Dhaka Metropolitan Development Plan 1995-2015
iv. National Environmental Policy 1992
v. Environmental Conservation Act 1995
vi. Environmental Conservation (Amended) Act 2010
vii. Environmental Conservation Rules 1997
viii. Jaladhar Sangrakkhan Ain 2000
ix. Dhaka Mahanagar Imarat Nirman Bidhimala 2008
x. Besarkari Abashik Prokolper Bhumi Unnanayan Bidhimala 2004
xi. Bangladesh National Building Code 2006

Due to absence of application and very weak provision of punitive measure for its violation, these acts and rules have become ineffective and plan violation has become a common practice.

2.1.2 Shelter and Settlement

The location-16 is low laying area and a part of flood plain of the Balu river. Situated in the middle of Dhaka eastern fringe, it is broadly bounded by Location-9 and by proposed Purbachal Road on north, Balu River on east, Location-11 on south and Location-10 on west. The area has geo-physical fault line.

Presently Real Estate activity comprises of nine proposed model towns, which will provide various sizes of plots for lower middle income to upper middle-income classes of people. The average plot size varies from 2.5 to 10 katha. Presently the area is low lying and flood plain zone with comparatively lower land prices. In spite of, this areas nearness to Dhaka city the development is still very poor. The area has substantial attraction to turn itself into a place for living as natural canals are there. There are Pink City, North South Society, Jamuna City, Bangladesh Police Housing Association, Sawdesh property, American City, Dhaka, Neptune, Rauf City, and Aftab Nagar - about nine proposed model town. The trend of development by these model towns varies from providing plots to duplexes (selling two story duplexes built by the developers). The Pink City Real Estate developers have already built the duplex houses.

One of the specific problems of this location is that, the area has a major geo-physical fault line; therefore high-rise apartment blocks construction will be a matter of concern as threat of earthquake is a major concern. Therefore, Location-16 can have very limited development similar to Uttora and Banani with 3-10 katha plot permission. However, the condition is that the Real Estate developers must ensure 50% of the land/ plot as open space including 40% of the total space for recreation and plantation. In addition, the density will be strictly under regulation. Since it is a major geo-physical fault line area; rather than allowing private developers to implement housing schemes; ensure a greater part of this location under “Wilderness Area” which is an area in natural state for scenic, geological and ecological values.

As for commutating to inner city, proposals to connect location-16 with national road grid or to “Express way” serving as national highway is must, to facilitate quick journey to inner Dhaka city for work.

2.2 Current Public Sector Investment Program

Table below shows the current investment project in the study area.

Table 2-21: List of Current Investment Project and Implementing Agency

Serial No.	Project Name	Implementing Agency
1.	Khilkhet to Purbachal Road	RAJUK

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 Plan (1995-2015) 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 defined a broad set of policies to achieve the overall plan objectives. It is a 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 rainwater retention and maintenance of ecological balance. The development impetus is located in satellite communities of Savar, Gazipur, Tongi, Dhamsona 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-year period and were conceived as “nested” written all over the 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 was to provide detailed planning proposals for specific subareas of Dhaka. For this reason, the location-16 divided into SPZ i.e Special Planning Zone that contains detail landuse proposals including infrastructure.

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

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-16 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 for the area are has been prepared based on the following principles:

- Environment friendly sustainable development of the area.
- Urban periphery function to develop as per major landuse zones.
- Effective drainage through minimum hindrance to Flood Flow zones.
- Safe residential areas with major communication routes.
- Safe yet faster connectivity.
- Develop to serve the surrounding hinterlands.

A 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, sessionals/practicals and other extracurricular 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
	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-16 has been given in Table 3-5.

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

Table 3-5: Road Proposed by Consultant in Location-16 Area

Road Id	Road Type	Road Name	Width (Feet)	Width (Meter)	Length (Km.)	Area (M2)	Area (Acres)
S1	Secondary	Barua, lahunia to Eastern Embankment	60.00	18.30	5.57	102220.06	25.26
S2	Secondary	Damirkandi Road to Eastern Embankment	60.00	18.30	2.03	37313.21	9.22
-	Secondary	Mastul to Baro Barayed, Uttarpara, Badda	60.00	18.30	4.44	80914.36	19.99
	Secondary	Khilgaon Nasirabad Bridge to RP-1B	60.00	18.30	1.66	30689.65	7.59
	Secondary	Eastern Embankment (Barayed, Uttar Badda) to Damirkandi Road	60.00	18.30	4.56	83678.87	20.68
Total					**18.24**	**334816.15**	**82.74**

The following strategies should be adopted to promote circulation in the study area:

- A comprehensive road network should be prepared for the entire study 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 to reduce cost involved in land acquisition for road

development.

- Proposed roads in these areas should be chosen for immediate development that is needed to promote growth in that area.
- Incremental development approach should be adopted to get rid of unnecessary costs in development of roads that will remain underutilized.
- Service roads should be created along major roads to allow free flow of long distance traffic.

3.3 General Development Strategies

The formulation of plan 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-16 areas without disturbing the natural drainage systems. Such pattern of development will also be encouraged in Location-9, Location-11 and Group-D areas dueto 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 layout, the public space, findings of the survey of the existing situation is the starting point.

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 aims at more efficient land use by increasing density, in fully developed areas that are already very dense, 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. Table 3-6 and Table 3-7 show the detail of existing and proposed landuse in the Location-16 area.

Table 3-6: Details of Existing Landuse

Sl No	Land Use Type	Area (Acre)	Percentage
1	Residential	568.42	12.53
2	Commercial	50.47	1.11
3	Institutional	2.12	0.05
4	Open Area	1585.81	34.95
5	Agriculture	1843.84.55	40.64
6	Mixed Use	30.08	0.66
7	Road Network	31.05	0.68
8	Water Body	425.29	9.37
Total		**4537.08**	**100.00**

Source: Landuse Survey, 2005-2006

Table 3-7: Details of Proposed Landuse of Location-16

Sl. No	Land Use Type	Area (acre)	Percentage
1	Flood Flow Zone	213.00	4.69
2	Institutional Zone	22.71	0.50
3	Mixed Use Zone (Residential-Commercial)	171.06	3.77
4	Open Space	206.62	4.55
5	Overlay Zone	175.00	3.86
6	Proposed Road Network	444.12	9.79
7	Rural Settlement Zone	23.61	0.52
8	Transportation & Communication	46.84	1.03
9	Urban Residential Zone	1472.83	32.46
10	Water Retention Area	1507.85	33.23
11	Waterbody	253.44	5.59
Total		**4504.79**	**100.00**

Source: Proposed Landuse

Table 3-8: Status of Proposed Overlay Zone of Location-16

Sl. No.	Proposal Type	Locality	Area (Acres)
1	WASA Sewarage Treatment Plant	Baidertek (Gazaria)	101.99
2	WASA Water Treatment Plant	Khilkhet/Patira	123.27

Table 3-9: Details of Existing and Recommended Facilities: Social Infrastructure

Sl. No.	Type of Services	Existing Services		Additional Proposed	
		Number	Area in Acre	Number	Area in Acre
1	Primary School	11	0.64	3	3.00
2	High School	4	0.34	7	14.00
3	College	1	0.15	5	25.00
4	Madrasha	6	0.17	3	3.00
5	University	--	--	1	5.00
6	Park/Open Space	3	0.12	6	12.00
7	Neibourhood Center	--	--	3	0.90
8	Community Center	--	--	3	0.90
9	Health Center*	--	--	3	0.90
10	Graveyard	--	--	3	9.00
11	Kutcha Bazar/ Market	4	0.42	1	1.00
12	Post Office	--	--	3	0.30
13	Fire Station	--	--	3	3.00
14	Police Outpost**	--	--	3	0.45
15	Mosque	30	1.31	6	1.80
16	Temple/Church	3	0.05	1	0.15
17	Bank Branch	--	--	3	0.30

Source: Physical Features survey 2005/2006

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

** *Out of three proposed police out posts, one will be a full-fledged Thana with 0.30acre of land.*

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

Neighbourhood concept should be developed and high-income housing is proposed to locate near Neighbourhood Park.

Institutional development
Schools i.e. primary, secondary, collage, madrasa and where needed, university should be developed acoording to future population within the plan period.

Health facilities
Health facilities will 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.

Markets/Bazars
To accommodate the additional population, markets, grossary shops, places of waste disposal and community center have to be provided.

Drainage
Among different types of infrastructure, drainage 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 FAP-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 is 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, will be restored its original form. Another is Dumni khal, which is south of Beupar khal is of same length.

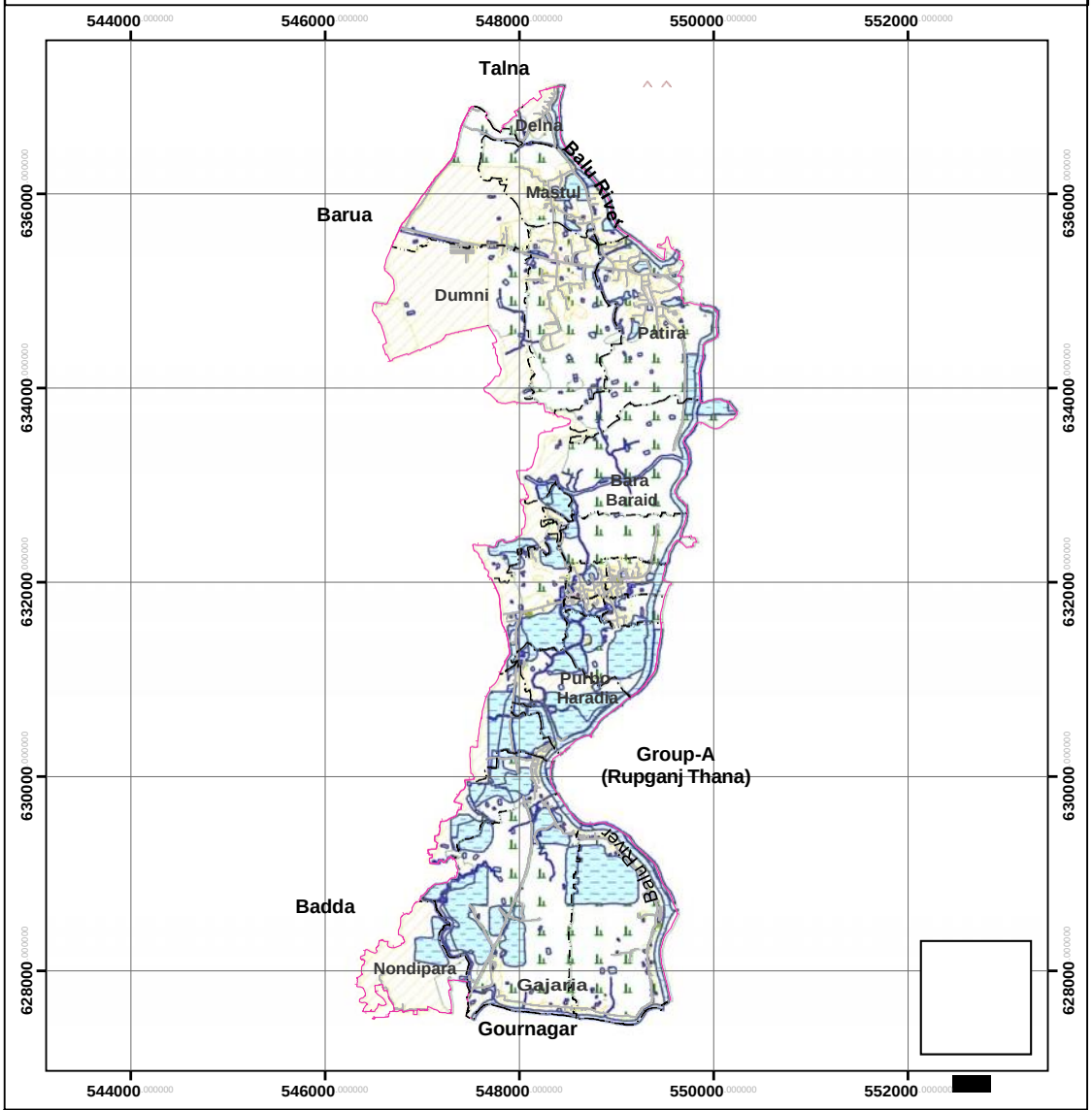
3.4 Proposed Infrastructure Development

3.4.1. Major Existing and Planned Networks

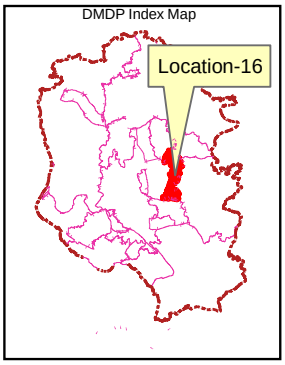
The review of the physical feature survey of existing road network revealed that various types of road exist, having different width and follow without any proper circulation pattern. There are different categories of roads like pucca, semi-pucca and kutcha roads in the study area. The total length of pucca roads is 10.62 km. The condition of pucca roads is not good in the study area. Some of these roads are good and some are in poor condition. The next category of the roads is semi pucca, also called HBB (Harring Bone Bond) or brick soling road, which have been identified as of almost similar in character in the whole study area. The length of semi pucca roads is about 6.33 km. The significant portion of the roads is kutcha, and its length is about 33.22 km.

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, STP has been incorporated, and some new roads have been suggested in DAP. Consultants have been proposed road in location-16 area. All the proposed roads with Location, Implementing Agency and Phasing are shown in the Table 3-10 (Details are presented in **Annexure-II**). After establishing arterial road network, internal roads have been suggested in the neighborhood level in such a way so that a gridiron pattern has been developed and mobility will be easier.

Map 3-1: Existing landuse of Location-16



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



0 1,700 3,400 6,800 Meters

Legend

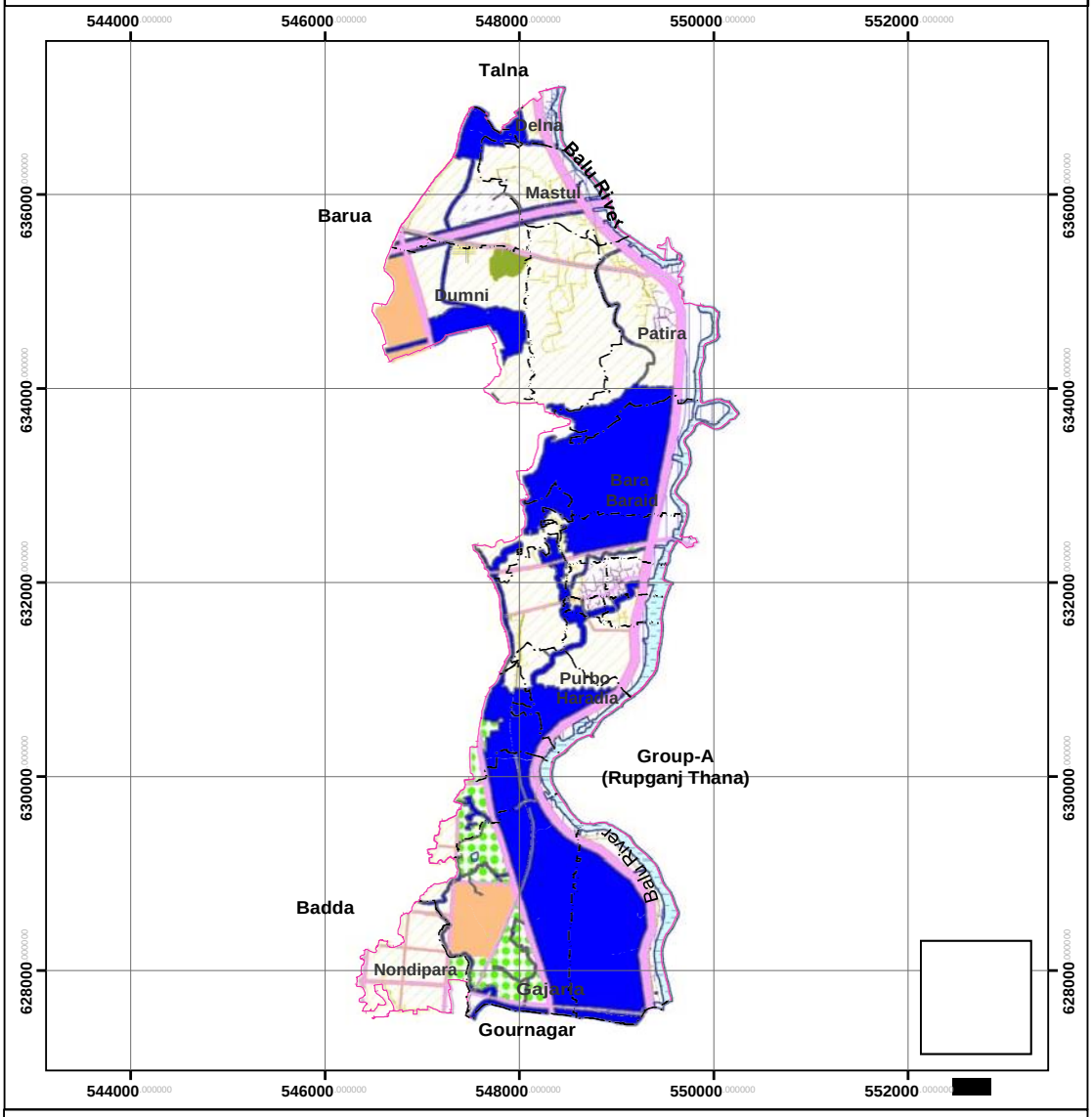
- Group boundary
- Mauza boundary
- Sheet boundary

Landuse Categories

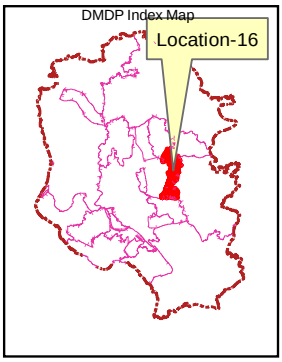
- Agriculture
- Circulation Network
- Commercial Activity
- Community Service
- Education & Research
- Manufacturing and Processing Activity
- Mixed Use
- Non Governmental Services
- Recreational Facilities
- Residential
- Service Activity
- Water Body

Source: Landuse Survey, 2005-06

Map 3-2: Proposed landuse of Location-16



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



0 1,700 3,400 6,800 Meters

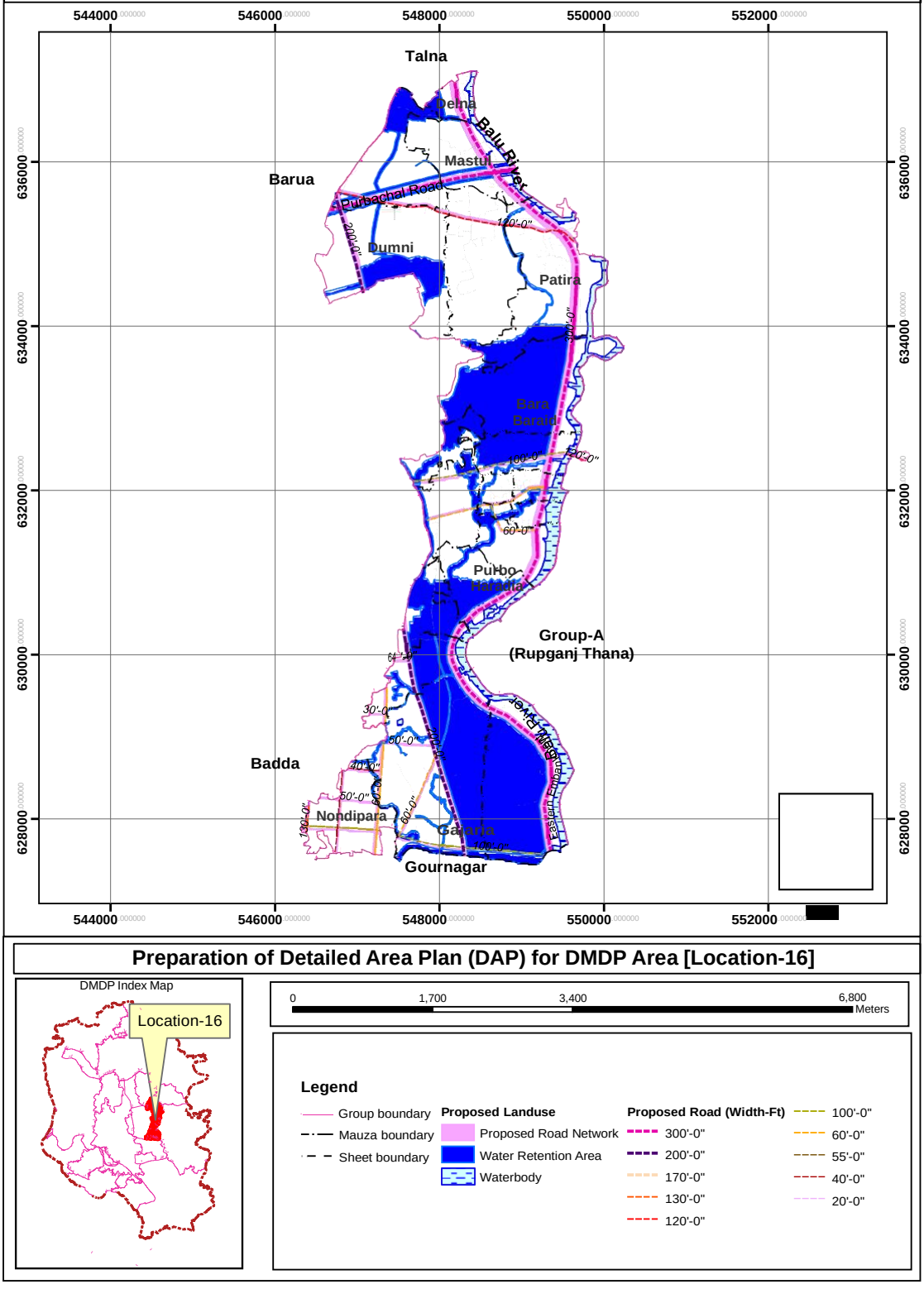
Legend

- 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

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



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

DMDP Index Map

0 1,700 3,400 6,800 Meters

Legend

- Group boundary
- Mauza boundary
- Sheet boundary

Proposed Landuse

- Proposed Road Network
- 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"

Table 3-10: List of Proposed Roads with Location, Implementing Agency and Phasing

Road ID	Road Name	Implementing Agency	Phasing		
			2007-2011	2011-2015	Beyond 2015
M3	Progati Sharani near Rampura Bridge to Eastern By-pass	RAJUK	√		
M5	Progati Sharani to Balu River	RAJUK		√	
L57	From Airport Road to First Balu Bridge	RAJUK		√	
L13	Merul Badda to Golakandial	RAJUK			√
L22	Progati Sharani to Balu River	RAJUK		√	
L23	Eastern By-pass	RAJUK	√		
P1	Airport Road to Purbachal	RAJUK	√		
S1	Barua, Lahunia to Eastern Embankment	RAJUK		√	
S2	Damirkandi Road to Eastern Embankment	RAJUK		√	
S3	Khilgaon Nasirabad Bridge to Eastern Embankment	RAJUK		√	

3.4.2. Link Road Development program

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 15 meter width and collector road with 12.5 meter width for the study 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.

a. Arterial Road Proposals

The purpose of arterial road is to set up regional links. The consultant supports STP proposals with some modifications.

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 main focus of collector roads is to promote accessibility in fast growing urban centers and establish link with nearby arterial road and adjoining urban centers.

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. Road Widening Programme

To ease traffic movement and to enhance the mobility of the urbanized zones, 25 km of existing roads were prioritized for widening. Several of these roads fell in the area covered by location - 16.

- 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.

3.4.4. Commuter Rail Network

Commuter rail network should have to be developed By Bangladesh Railway involving other organizations.

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 study area has been summarized, followed by explanation of the planning process and the planning components and finally the plan in detail.

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,

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

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

III. **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. areas (Table 3-11 & **Map 3-4**).

A copy of integrated planning Map of Location-9, 11 and 16 Area (1:35,000 Scale) and DMDP Area has been attached with this Report (1: 80,000 scale).

This stage of planning proposal describes only the primary roads and collector roads in the study 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 3-11: 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