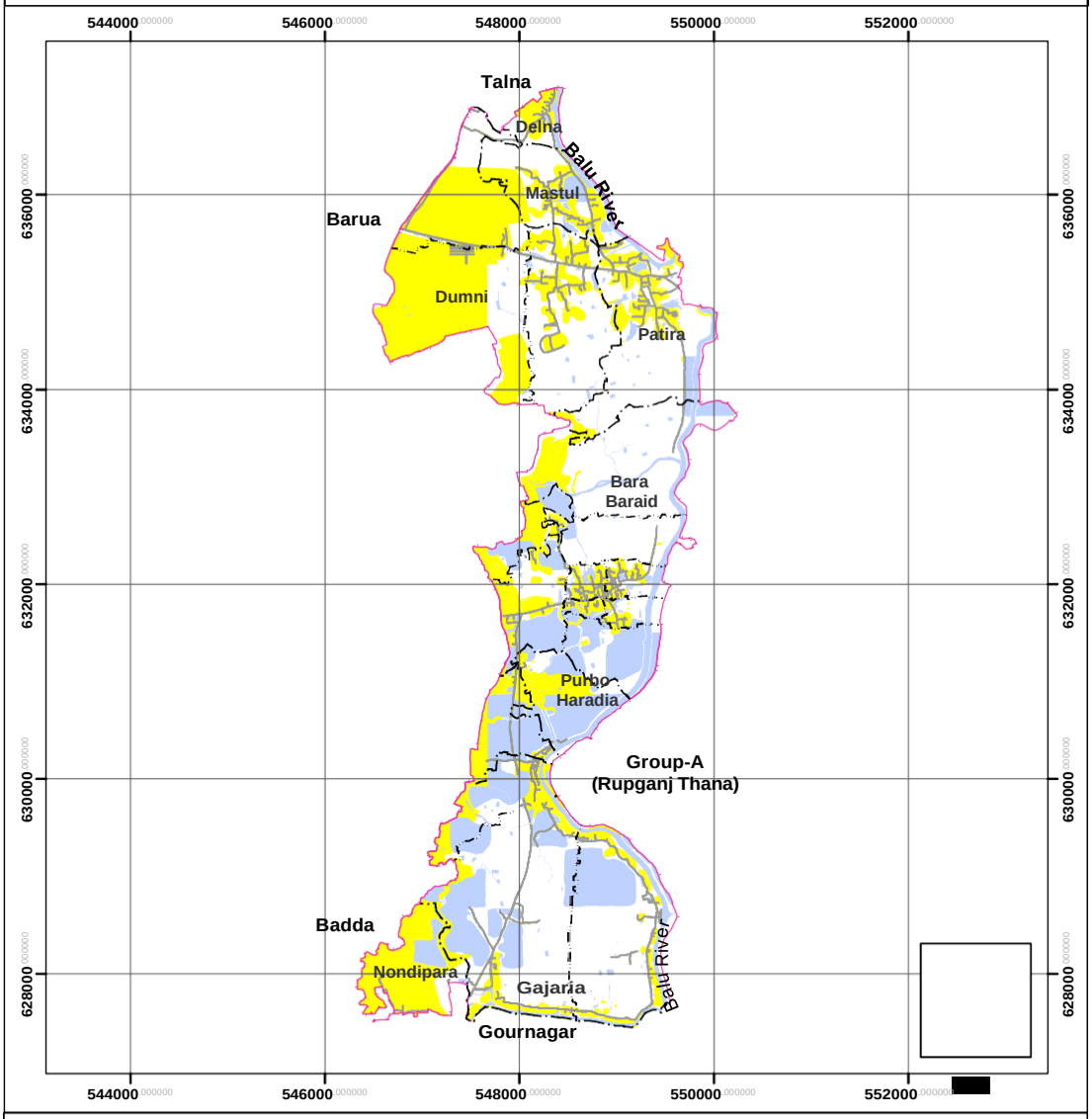
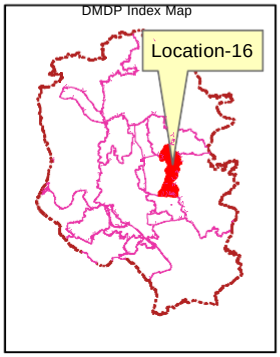
Map 2-1: Location of the existing residential area of the Project Area



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



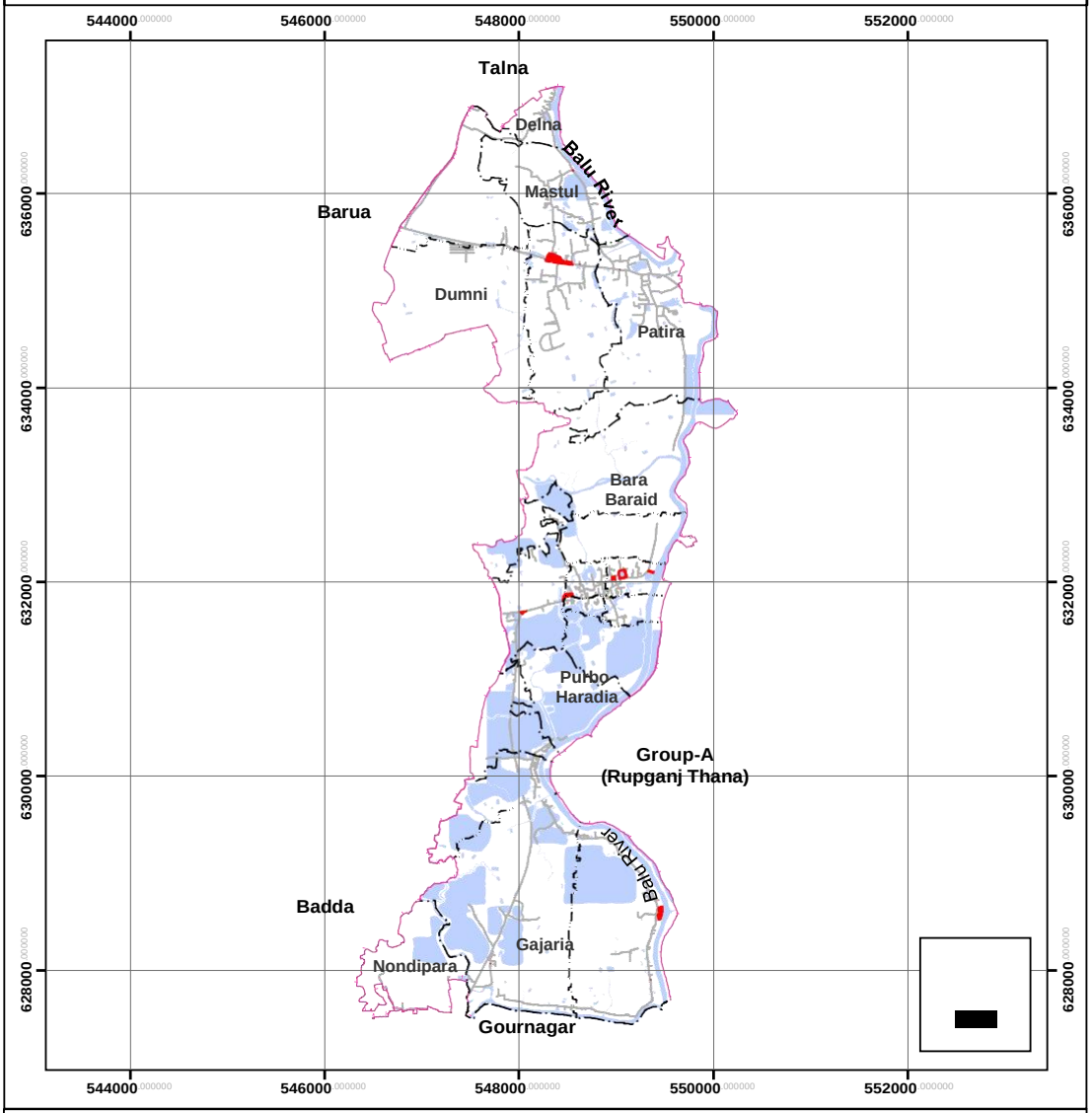
0 800 1,600 3,200 4,800 6,400 Meters

Legend

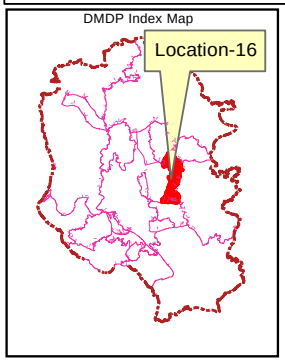
- Group boundary
- Mauza boundary
- Sheet boundary
- Residential Area
- Existing Road
- Waterbody

Source: Landuse Survey, 2005-06

Map 2 2: Location of Commercial Area in the Project Area



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



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

Legend

- Group boundary
- Mauza boundary
- Sheet boundary
- Commercial Activity
- Waterbody
- Existing Road

Source: Landuse Survey, 2005-06

Drainage

There are 6.48 kilometers of drains in the study area out of which only 0.96 kilometers are pucca and the rest are kutcha. Total area occupied by drains is 3155.08 square meters (0.78 acre). In the study area, 86% drains are kutcha. Table 2-16 shows the dimension of drains and Figure 2-7 shows the percentage of different kinds of drains. The study area is outside of the jurisdiction of Dhaka City Corporation. Therefore, there is no sewerage coverage in the study area. People dispose their sewers naturally. There is no provision of solid waste management system. People dispose the solid waste in a traditional way like throwing the generated waste in a place nearby their homestead. People in the study area are using tube well for the supply of drinking water. For other household use surface water like ponds, ditches, canals and river are being used. The household use includes bathing and cleaning of cooking utensils.

Table 2-16: Dimension of Drains in Location-16 Area

Type of Drain	Area (m^2)	Area (Acre)	Length (km.)	Percentage
Pucca	439.62	0.11	0.96	14.81
Kutcha	2715.46	0.67	5.52	85.19
Total	3155.08	0.78	6.48	100.00

SourcePhysical Features survey, 2005-2006

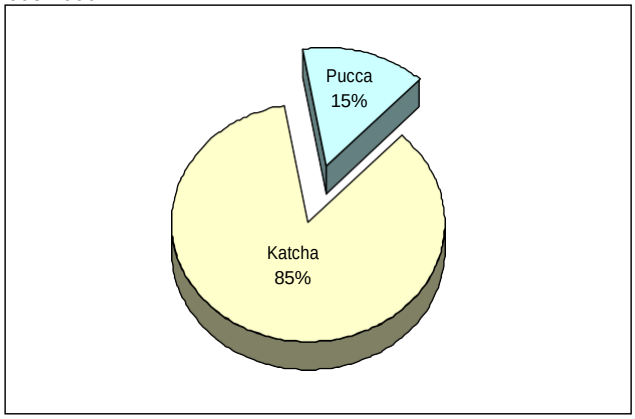


Figure 2-7: Percentage of Area Covered by Different Types of Drains

Source: Socio-Economic Survey, 2006

Tele- Communications

The Tele-Communication system is provided by BTCL through Telephone exchange in this area. Extensive mobile network introduced by private companies has met the short falls experienced in the govt. section operated Telephone system. Location-16 area is well endowed with massive mobile network.

b. Infrastructure: Social

Educational Facilities

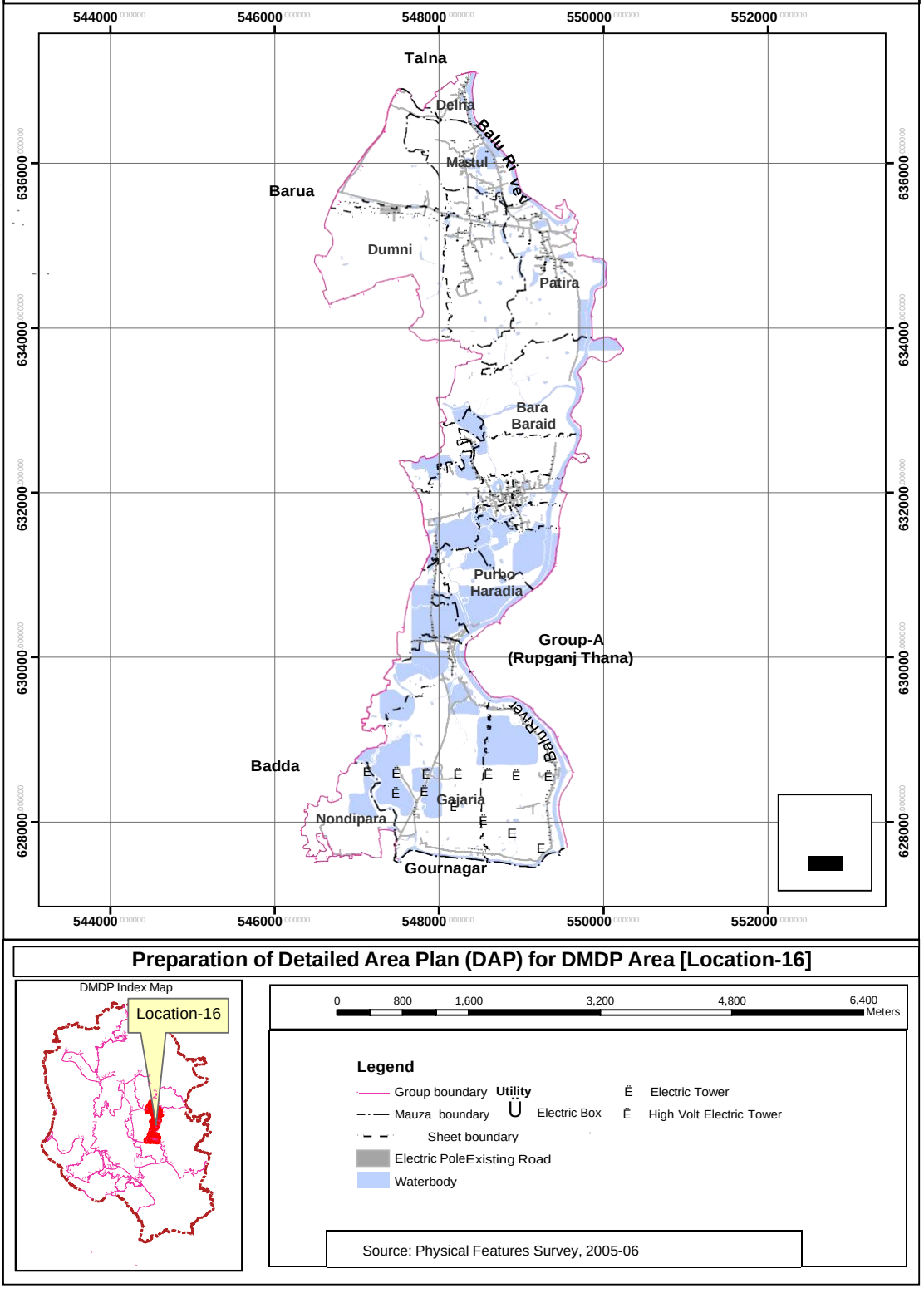
A total of 19 structures are being used for educational purpose. More than half (10) of them are schools. There are 1 college and 8 madrasas in this area. The Table 2-17 shows the number of educational institutions and their occupied plinth area (**Map 2-5**).

Table 2-17: Different Types of Educational Institutions

Type	Number	Plinth Area (m^2)	Percentage of Area
College	1	594.31	13.17
High School	2	1063.12	23.56
Primary School	8	1865.72	41.34
Madrasa	8	989.69	21.93
Total	**19**	**4512.84**	**100.00**

Source: Physical Feature survey 2006

Map 2-3: Location of electric pole in the Project Area



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

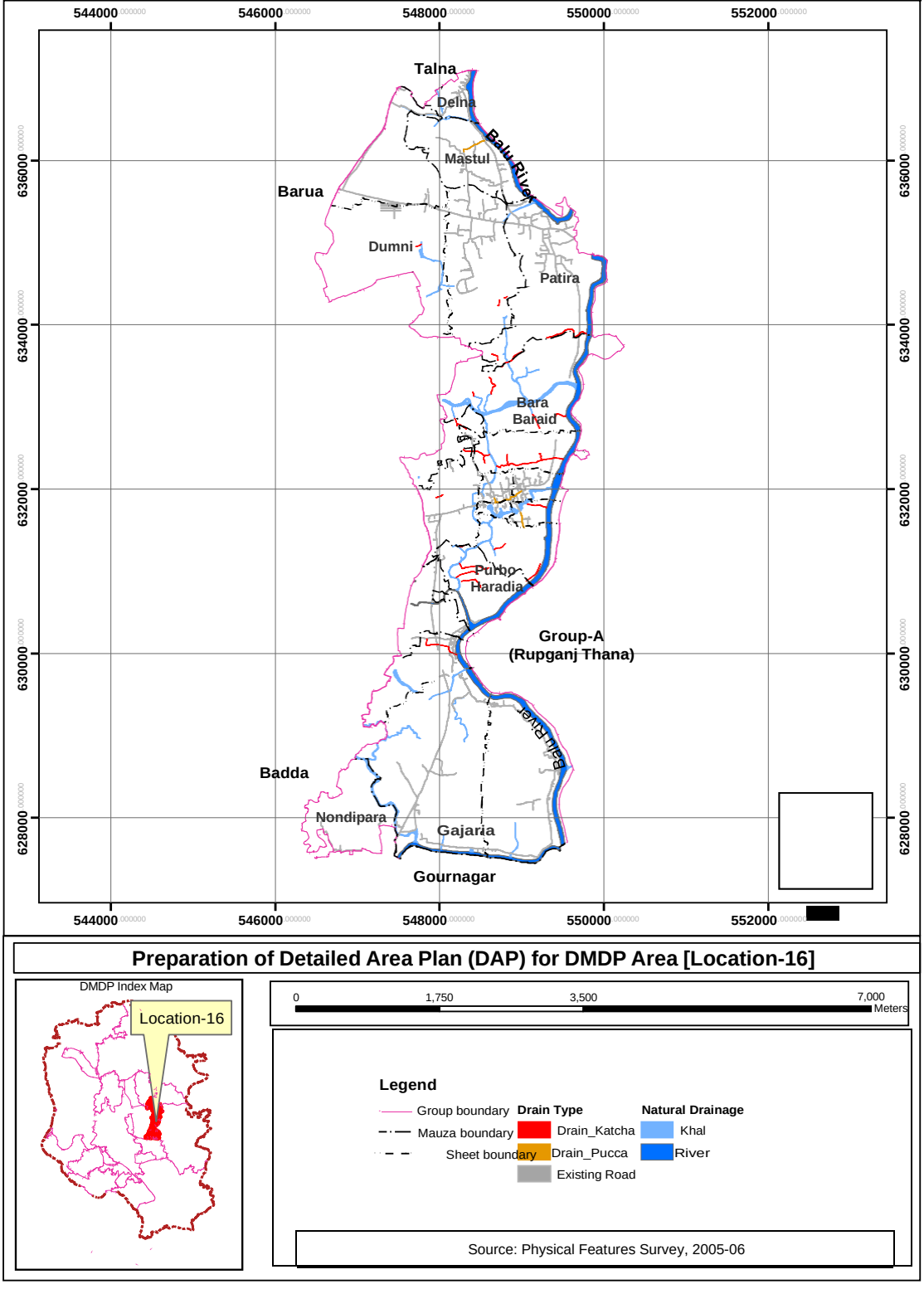
0 800 1,600 3,200 4,800 6,400 Meters

Legend

- Group boundary
- Mauza boundary
- Sheet boundary
- Electric Pole
- Waterbody
- **Utility**
- Ü Electric Box
- Existing Road
- Ë Electric Tower
- Ë High Volt Electric Tower

Source: Physical Features Survey, 2005-06

Map 2-4: Location of Existing Drainage in the Project Area



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

0 1,750 3,500 7,000 Meters

Legend

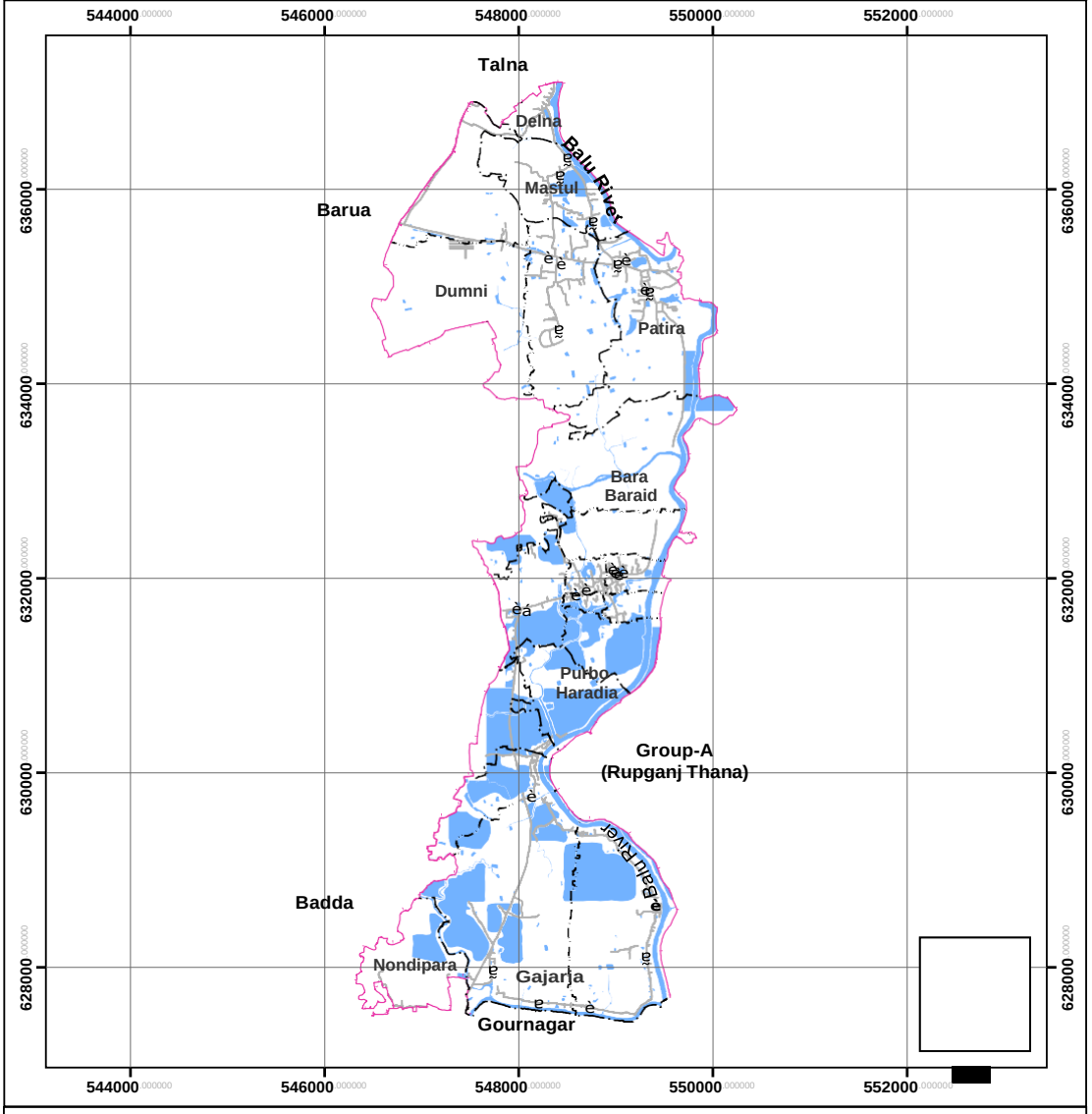
Group boundary
Mauza boundary
Sheet boundary

Drain Type
Drain_Katcha
Drain_Pucca
Existing Road

Natural Drainage
Khal
River

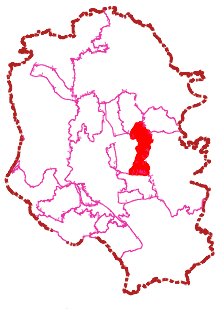
Source: Physical Features Survey, 2005-06

Map 2-5: Location of the educational institution 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

Institutions
è School
á College
Madrasa
University

Existing Road
Waterbody

Source: Physical Features Survey, 2005-06

School

There are 10 schools (with19 buildings) spread all over the study area. Among them 8 are primary school and 2 are high school. Total 2928.84 square meters plinth area covered by these buildings. The **Map 2-5** shows the location of school in the study area.

Madrasa

There are 8 madrasas (in 9 buildings) spread all over the study area. Total 989.69 square meters plinth area covered by these buildings. The **Map 2-5** shows the location of madrasa in the study area.

College

There is one college (with two buildings) which occupied plinth area 594.31 square meters. This college is located in Beraid, Uttar Badda in the study area.

Community Services

The extent of community services include religious and other services like community center, clubhouse, co-operative societies etc. is not so familiar in the study area.

Religious

There are total 41 structures used for religious purpose. It includes mosque, temple, and mazar/dargah. 94.41 percent of the buildings are used for mosque and 2.14 percent of the buildings are used for temple.

Table 2-18: Number of Religious Institutions in the Study Area

Type	Number	Percentage	Area (m^2)	Percentage
Mosque	38	86.36	5519.95	94.41
Temple	3	6.82	125	2.14
Co-operative	2	4.55	106	1.81
Club House	1	2.27	96.08	1.64
Total	**44**	**100.00**	**5847.03**	**100.00**

Source: Physical Features Survey, 2005-2006

Other Community Services

There are two co-operative societies and one clubhouse situated in the study area. 3.45 percent of the buildings are used for co-operative society and clubhouse.

2.1.2 Land Ownership and Value

Most of the areas under location 16 have rural characteristics. Some of them are developing with the improvement of road network and other utility facilities. Private housing developer's initiative in some areas makes the land value higher. Most of lands are privately owned. Land value at present period in different location is shown in table 2-19.

Table 2-19: Present Land Value in the Study Area

Sl.No.	Name of the Area	Price per katha (Taka in Lakh)
1	Badda	15-20
2	Satarkul	5-7
3	Bara Khathaldia	7-10
4	Dumni	8-12
5	Patira	5-7
6	Bara Beraid	7-10
7	Chhoto Beraid	5-7
8	Purba Haradia	7-10
9	Paschim Haradia	8-12
10	Nigur Apaid	5-7
11	Gazaria	7-10
12	Meradia	5-7
13	Nandipara	5-7

Source : Landuse Survey, 2007

2.2 Expected Development

2.2.1 Population

The density of population of Location-16 area according to 2001 Census Report is 9 persons per acre. The projected densities for 2007, 2011 and 2015 are 10, 11 and 12 respectively. Since considerable lands of location-16 area are low lying and presently used as agriculture and not suitable for urban development, about one third of the total land may be reserved for urban agriculture, one third area for retention ponds and rest one third of the lands are proposed for urban development. The selected Mouzas whose density is average density and above (11.90 ppa) are proposed for urban development with further densification considering optimum density as 150 persons per acre in 2015. The area can accommodate additional 162653 populations from the core city of Dhaka. In future, the government can use the urban reserved lands in any specific purposes. The existing infrastructure, utility services and other facilities are inadequate for the total population (53984+162653) 216637 of Location-16 area. The next decade will see increasing growth trend as suitable model towns will make its appearance. Present average gross density will be higher as newly planned towns will attract people from core city to settle down in these towns. Presently there is no well-developed infrastructure and basic utility services. They need to be well developed and well inserted in location-16 area before any population influx can be visualized. With proper infrastructure and planned model town development in proposed urban areas, the following population will be expected to settle down in location-16.

In the Location-16, considerable population concentration (density) is seen in Mouzas namely Bara Beraid, Chhoto Beraid, Nigur Aplaid and Nandipara (northern part). These areas may be targeted for planned model town/housing scheme development by the private developers.

Table 2-20: Mouza wise Projected and Additional Population 2015

Name of Mouzas	Area (Acre)	Population 2015	Density 2015	Additional Population	Total Pop. 2015
Dhelna	59.57	134	2.24	--	134
Dumni	1031.08	3534	3.43	--	3534
Mastul	218.98	391	1.78	--	391
Patira	442.34	5085	11.49	--	5085
Bara Baraid*	957.51	13720	14.33	129905	143625
Chhotta Baraid*	91.49	1360	14.87	12363	13723
Nigur Apaid*	67.24	993	14.77	9093	10086
Paschim Haradia	130.74	274	2.09	--	274
Purba Haradia	174.78	292	1.67	--	292
Gazaria	1134.23	5123	4.52	--	5123
Nandipara (P)*	229.13	23078	100.72	11292	34370
Total	**4537.08**	**53984**	**11.90**	**162653**	**216637**

Source: Population projection based on BBS, 2001, P = Part.

2.2.2 Economic Activities

As the areas are the fringe of capital city, a good number of economic transactions occur. With the development of transportation networks, this volume will be much higher. Development of model towns and housing schemes will generate other economic activities like shopping and other commercial activites.

2.3 Development Problems

2.3.1 Hydrology

In implementing various infrastructures for development, drainage is generally given less importance and is normally considered the last or final steps for development. This scenario is particularly true for Bangladesh; although among different types of infrastructures, drainage has by far the heaviest impact on physical infrastructure network. As a result, physical environment, health, hygiene and standard of living suffer seriously. In development projects in Government, Semi-government and Public sectors funds allocated for the project are mostly spent on buildings, roads and other tangible infrastructures and drainage comes as the final item of development. By the time drainage development is beginning to start, there appears shortage of fund, consequently as a matter of policy-do little or do-nothing situation appears and as eyewash very little is done for drainage development. In case of urban development if drainage is not given due priority, the sufferings of the inhabitants and stakeholders will continuously increase with passage of time.

Flooding

Dhaka Metropolitan Area is surrounded by the Turag, Burigonga, Dhaleswari, Sitalakkhaya and Tongi rivers. The Metropolitan area becomes subject to flooding whenever these rivers rises above flood level. Unprecedented flood in 1988 submerged about 80% of the metropolitan area. Flood Action Plan (FAP) committee recommended for protection of Dhaka city from severe floods under FAP-8 study group. FAP-8 has two components FAP-8A and FAP-8B embankments. FAP-8B recommended embankments have been constructed by the assistance of Government of Japan and ADB. This part of embankment can protect mainly DCC area. When FAP-8A proposed embankment would be implemented, it will protect Dhaka city area in the east. FAP- 8A embankment will begin from Tongi Bridge, will follow Tongi River and the Balu River, and will end at Demra near the confluence of the Balu and Sitalakkhaya River.

Flood protection by embankment creates special situation for providing internal drainage from storm water. Drainage problem so created is solved by special drainage related structures such as network of drains and khals, culverts, sluice gates, regulators, reservoirs, retention ponds, pump stations etc.

2.3.2 Geological Fault

Geographically Bangladesh finds her in one of the most earthquake prone areas of the world. The Dhaka Metropolitan area is intersected by many geological faults. As per Earthquake Risk Index (ERI) Dhaka is one of the high-risk cities in the world. “Although geologically Dhaka is in the second earthquake prone zone, its vulnerability is due to its non-engineered structures’, said experts. The Structure Plan identified three fault lines.

Baunia Fault is a small feature in the Baunia depression, west of Dhaka Zia International Airport; this lineament is characterized by sigmoidal fractures. ***Bansi Fault*** is one of the major structural features in the area. It has developed in the western part of the Madhupur Tract, along which zone the Bansi River flows. The fault is approximately 70 miles long. The western block is the down thrown block and the eastern block is the up thrown block. The Bansi Fault is also characterized by sharp fault scarps, hanging valleys, abnormal ground level and springs. ***Turag Fault*** is approximately 10 miles long. The feature is characterized by abnormal ground level. The northern block of the Turag Lineament moved west and the southern block east. The Turag River (Tongi Khal) flows along the northern boundary of the FAP-8A and FAP-8B project area embankments.

As these may pose restrictions to urban development (especially high rise construction), the alignment of the zone of influence has to be ascertained, while special building conditions may have to be included in the explanatory report that goes with the Detailed Area Plan. Development control should be exercised in these areas through Building Construction Rules, 1996 and Bangladesh National Building Code (BNBC), 2006 to avoid any possible disaster due to earthquake. From geological setting and topography, it is clear that Dhaka City and its surrounding area have experienced major and minor faulting at different times. Some faults and lineaments were observed in satellite images and aerial photographs and were confirmed through field surveys but, in many places, human settlement activities have destroyed the field evidences.

During field investigations, a sharp litho logical change observed in Dhaka City and its surroundings. There are many evidences of down-thrown blocks of the fault. Except for rapid subsidence, there is also evidence that there is a sharp lateral contract between layers. Considering various facts, it may be inferred that there is a displacement due to faulting. The north-south trend is considered the probable alignment of this fault. However, the project area falls in the earthquake Zone-2 of the seismic map of Bangladesh Besides main sediments of the many parts of the project area are poorly compacted, highly plastic, collapsible thick peat and organic clay layers. With the presence of organic layers and sediments with low compaction, the area is considered a weaker foundation layer.

Any civil construction needs attention and special foundation treatment as well as significant design is recommended. Provisions of BC Rules, 1996 and BNBC 2006 have to be strictly followed.

2.3.3 Infrastructure and Services

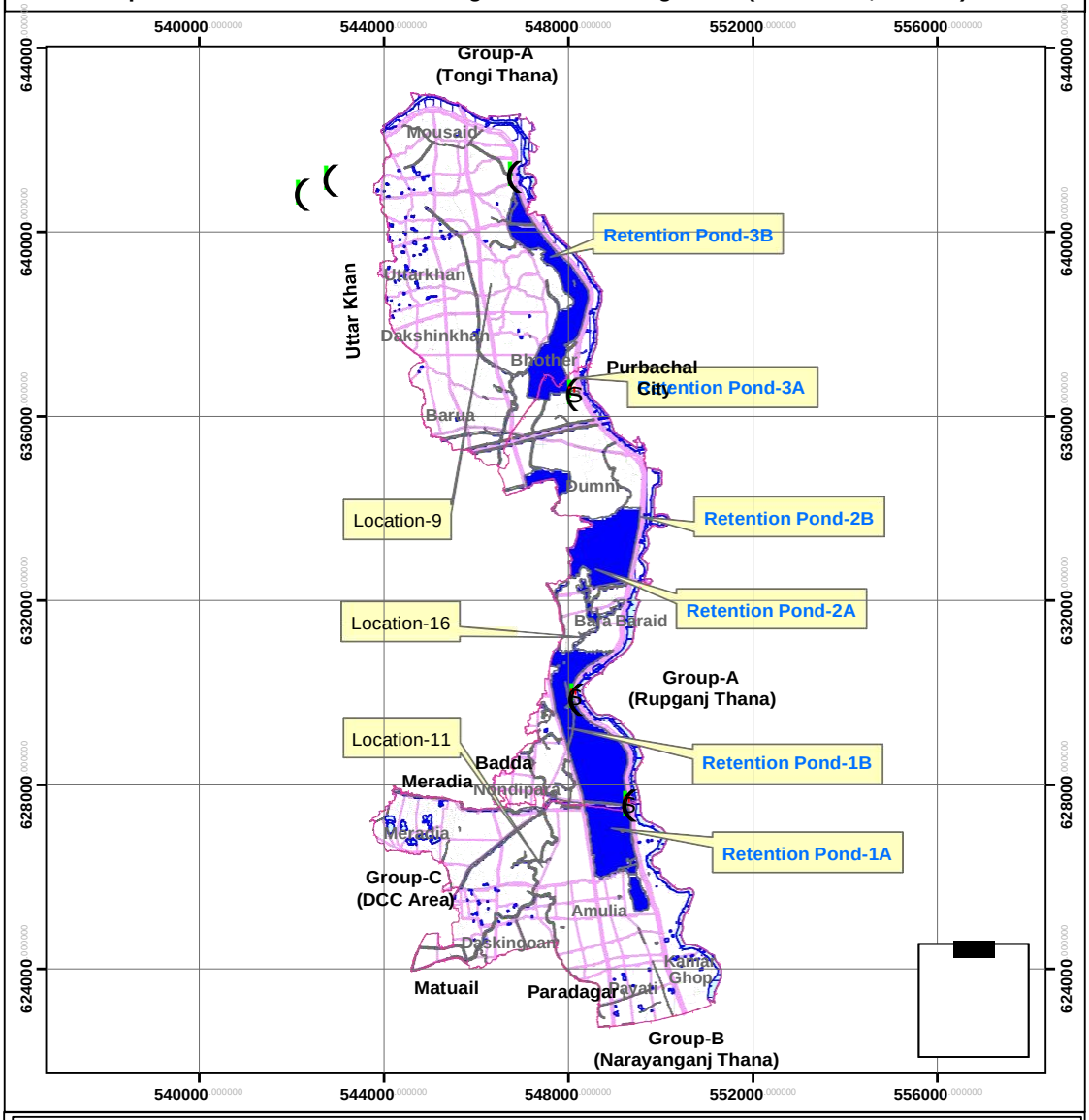
In location-16, infrastructural facilities are very inadequate. There is only about 0.68 % of total land is used for road purpose and 99.32 % are used for other purposes. The total length of road in the study area is 51.81 Km. Among them 31.97 Km. are kutcha. There is no specific footpath along the roads. Only part of the roads is used, as walkways.There is no coverage of rail line in the study area.

The study area is outside of the jurisdiction of Dhaka City Corporation. Therefore, there is no sewerage coverage in the study area. People dispose their sewers naturally. There also absent the provision of solid waste management system. People dispose the solid waste in a traditional way like throwing the generated waste in a place near by their homestead.

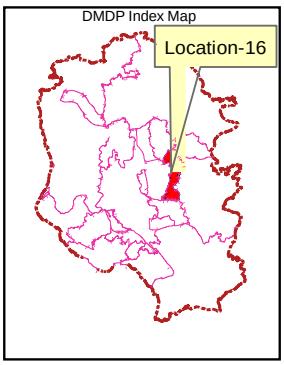
People in the study area are using tube well for the supply of drinking water. For other household use, they use surface water like ponds, ditches, canals and river. The household use includes bathing and cleaning of cooking utensils.

The gas supply system did not cover in the study area. Bangladesh Power Development Board (PDB) supplies the electricity in the study area. The electricity is supplied by the 11 KV lines in the project area.

Map 2-6: Flood Control and Drainage of eastern Fringe Area (Location 9, 11 & 16)



Preparation of Detailed Area Plan (DAP) for DMDP Area (Location-9, 11 & 16]



0 1,550 3,100 6,200 9,300 12,400 Meters

Legend

- Pump Station
- Regulator
- Group boundary

Landuse Categories

- Flood Flow Zone
- Proposed Road Network
- Transportation & Communication
- Water Retention Area
- Waterbody

Source: BWDB, Halcrow, 2006 and Proposed by Consultants