Chapter- 2

CRITICAL PLANNING ISSUES

2.1 Existing Development Pattern

2.1.1 General

The project area is located at the north of DND (Dhaka-Narayanganj-Demra) Triangle. It is situated in the peripheral and fringe area of Dhaka City covering an area of 2154 acres. According to its physical development, the area can be divided into two parts. The western part covers roughly ¼th portion of total project area characterized by high land where a dense urban growth has taken place during the last decade (**Map 2.1-**Existing Land Use).

The western part is very nearby to Motijheel Commercial Area and well accessible by means of Janapath Road and Gulistan - Jatrabari Road. Most of the constructions here are haphazard, incompatible and therefore, inefficient and unhealthy. An unplanned infrastructure already overburdened and incapable to handle the ever increasing demand of services in the western part and also besides Manda-Mugda Road and old Demra Road.

Although urban area by definition donates a settlement of non-agrarian occupation, yet the middle and part of eastern portion still prevails rural scenario. This part covers roughly 3/4th portion of the total project area. The land over here is low-lying beels and depressions which merges into Balu river flood plain and remains under water during the wet monsoon and dried up during winter. This part is largely unsettled with the exception of a rural settlement in the eastern portion and few isolated homesteads on the natural and man-made raised grounds. Lack of road network indicates that during the rainy season the people of this part has to rely on water transport for access market and for inter-village movement.

2.1.2 Socio-Economic Profile

The socio-economic information which have been placed in the sub clause 2.1.2 of the final report on the basis of direct field survey conducted by BETS in 1999, under the same project. So, due to long time gap, there might be some changes with respect to recent time frame. However, just to get an idea, about the socio-economic activities of the people of the project area, the previous data have been used.

Our sampling was based on the data and information provided by the Bangladesh Bureau of Statistics' (BBS), Bangladesh Population Census, Report of 1991, Dhaka Zila about the number of households comprising the aforementioned mauzas constituted the population of the survey. The survey concentrated on residential households of all 8 mauzas. The consultant had decided to collect three percent sample of households in involved area of seven (8) mauzas, in proportion to the total number of households in each of them.

Sample households were 377 which were 3 percent of total households of 12499. To conduct the survey of the 377 households, the beginning of the main thoroughfare of each mauza was selected as the starting point of the survey. Survey of every 11th household at regular interval was done. Considering the time limit and resources the Consultant followed almost proportional simple (random sampling), making the sample systematically representative of the Population.

Mauza- wise Sampling of Households **(Table 2.1)** is presented below:

Table 2.1- Mauza- wise Sampling of Household

SL.No.	Name of Mouzas	Total No. of Households	Percentage of Involved Area	Involved Households	Sample Households
1	Brahmanchiron	4286	90	3857	116
2	Jatrabari	3178	50	1589	48
3	Manda	4649	80	3719	112
4	Matuail	5251	40	2100	63
5	Paradigir	2358	15	354	11
6	Rajarbag	1127	5	56	2
7	Kazirbag	670	100	670	20
8	Damripara	154	100	154	5
	Total	**21673**		**12499**	**377**

Source: Socio-Economic Survey conducted by BETS, 2007

a. Family size

The total populations of the sampled households of 377 numbers are 1736 persons. Out of the total population 52.1 percent wes male and 47.9 percent wes female. The average number of member per households, was 5.4, that for males being 2.8 and females 2.5. Compared to the National average household size, which is 5.52 according to 1991 census report, which is slight lower.

b. Age and Sex Structure

The age distribution pattern of the sampled households shows that about 39.4 percent of the household members are below 20 years of age, and only 23.3 percent of household members are above 40 years of age. The rest 33.4 percent comprised of 21 to 30 years and 13.6 percent comprised of 31 to 40 years of age group. The ratio of both youth and middle aged were nearly the same. The households of Matuail had the highest percentage (88.1 percent) of age under 40 years; whereas Damripara had the lowest (6.4 percent). On the other hand, Brahmanchiron had the highest percentage of population above 40 years of age (86.4 percent) followed by Manda (20.2 percent). Average age of household for the entire project area was 29 years. This Figure-1 below suggests that population in this project area are preponderantly youthful.

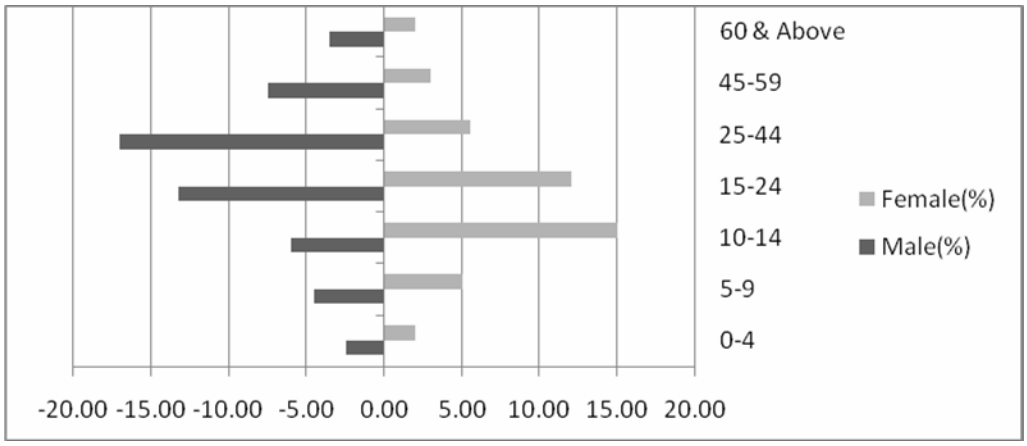


Figure-2.1: Age-Sex Pyramid

According to age-group population distribution of the mauzas in the DAP project area it is apparent that Brahmanchiron has the highest number of youthful population of age below 30 years and Damripara is the lowest. According to age-group population distribution of the mouzas in the project area it is apparent that Brahmanchiron has the highest number of youthful population of age below 30 years and Damripara the lowest.

c. Religious Group

About 100 percent of sampled households was Sunni Muslims. The Non-Sunni, Hindu, Buddhist and Christian households were not found in the sample areas. It can be presumed that the area is predominantly Muslim inhabited area.

d. Educational Status

Among the members of the sampled households, only 231 persons about (11.2%) were illiterate, 214 persons about (10.4%) were graduates, and 78 persons about (3.8%) were post graduates comprising master's degree and professional degree/higher degree holders. About 683 persons (33.2%) had their primary education, 544 persons (26.4%) had passed their S.S.C. and 15.12 percent (312) had passed their H.S.C. The percentage of literacy was 88.8 % in the sampled households and the percentage of formally educated member of the households (i.e. S.S.C. and above) in the sampled was as high as 55.72%. The highest and lowest concentrations of illiterate households were at Manda (4.3 %) and Rajarbag (0 %) respectively. Both Brahmanchiron (2.1 %) and Matuail (3.8 %) followed Manda in the concentration of illiteracy. The percentage of S.S.C. level was highest at Brahmanchiron (7.9%) and lowest at Rajarbag (0.2 %). Both graduates and master's degree holders were highest at Brahmanchiron and Manda (2.8% and 1.9 % respectively). These were again lowest at Rajarbag (0 %).

The percentage of formally educated household was highest at Brahmanchiron i.e.29.5% and lowest at Rajarbag i.e.0.5 %. Figure-2 shows the educational status of the people in the project area of DND North triangle. It is highest in the Brahmanchiron mauza and lowest in the Rajarbag mauza.

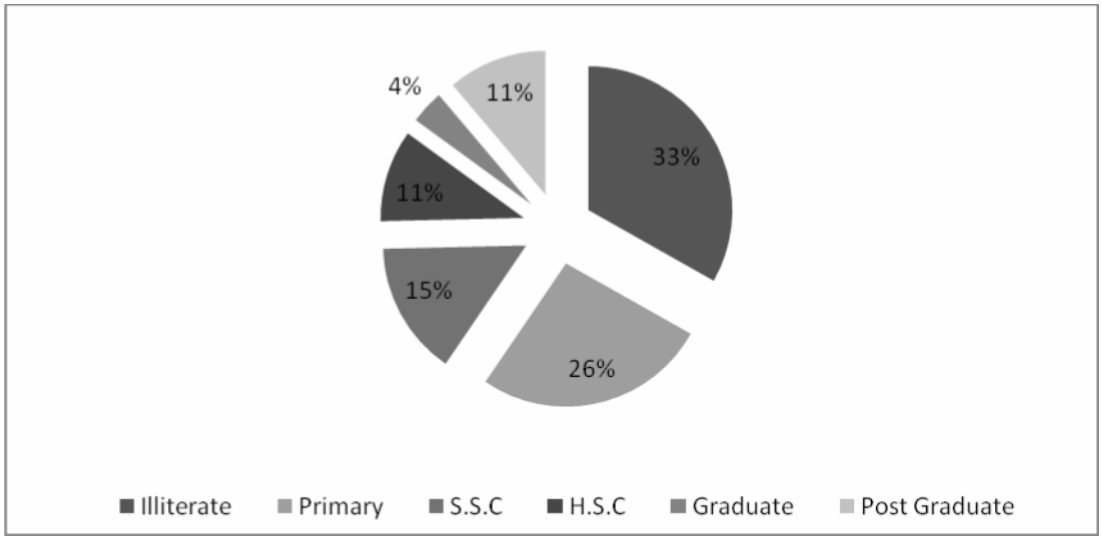


Figure-2.2: Educational Status

e. Monthly Income and Expenditure Levels

Average monthly income of the sampled household was divided into five categories. For analyzing the socio-economic condition of the households and for detailed investigation and analysis the households were categorized into five (5) groups based on monthly income as follows:

1. Very Poor = Having monthly income up to five thousand
2. Poor = Having monthly income between five to ten thousand
3. Low Income = Having monthly income between ten to fifteen thousand
4. Middle income = Having monthly income between fifteen to twenty thousand
5. High income = Having monthly income between twenty thousand and above

Brahmanchiron ranked highest among the six mauzas in monthly average income of households, monthly average income of all family members. This would confirm that Brahmanchiron is the "richest" mauza. On the basis of monthly income Manda occupied the second position though with wide gap. Matuail and Jatrabari enjoyed respectively the third and fourth position in term of average monthly income. A graphical composition of monthly income distribution is shown in **Figure-3**.

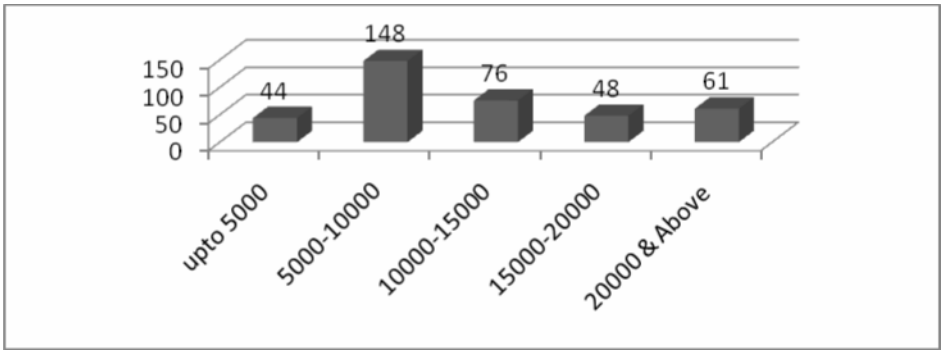


Figure-2.3: Monthly Income distribution of the sample households

Brahmanchiron had the highest number of income groups of all the categories i.e, 116 (30.8 percent), followed by Manda 112 (29.7 percent). Matuail and Jatrabari had 63 (16.8 percent) and 48 (12.7 percent) respectively of households of different income categories. Brahmanchiron had 47 (56.0 percent) number of households who earned more than 20 thousands taka per month whereas the percentage of Paradagair was 1.2 (1 percent).

Monthly income distribution of the sampled households along with number and percentage of households are presented in the **Table-2.2**.

Table-2.2: Distribution of households according to different categories of income

Sl. No.	Category	Range of Incame	Household		Average Monthly Income in Tk.
			No.	%	
1	Very Poor	Up to five thousand	44	11.7	4,227.27
2	Poor	Five to ten thousand	148	39.3	8,057.27
3	Low Income	Ten to fifteen thousand	76	20.2	13,147.37
4	Middle Income	Fifteen to twenty thousand	48	12.7	18,866.25
5	High Income	Twenty thousand and above	61	16.1	33,213.11
Total			**377**	**100**	

Source: Socio-Economic Survey conducted by BETS, 2007.

The average monthly expenditure has been distributed into seven categories. The total average expenditure of the sampled household was Tk. 11,501.9/-. Among then food occupied an average of Tk. 5713.3 about 49.7 percent of the total monthly family expenditure in the sampled area. As such most of the household's expenses were spent on food. The other significant category of expenditure were utility services like gas, electricity, water etc. was average Tk. 1461.1 about 12.3 percent. The people of the sample household would spent Tk. 1335.2 about 11.2 percent and Tk. 1258.78 about 10.57 percent and Tk. 843.15 about 7.08 percent on conveyance, education and health services respectively. A comparatively less number of people about 2.31 percent would like to spent for recreational purposes. The percentage under different categories of expenditure revealed, to a considerable extent, the underlying Socio-economic level of the households.

The overall savings status among the sampled households under three categories such as cash saving/bank

saving/pension account and other saving were Tk. 17,53,200/-, Tk. 5 6,08 1/- and Tk. 4,200/- respectively. The average amount of savings for 210 households who had cash saving per month was Tk. 10,822.2/- whereas the average amount of bank savings/ pension account for 42 sampled households was Tk. 4,286/- and the average amount of savings other than cash and bank for 6 sampled households was Tk. 700/-. In **Table-2.3** below furnished the total picture of savings earned by the households.

Table-2.3: Distribution of Households According to the Number and Average Amount Of Monthly Savings

Sl. No.	Category of Savings	Total Households	Range of Amount (Tk.)	Total Amount (Tk.)	(%)	Average (Tk.)
1	Cash	162	200-10,00,000	17,53,200	96.7	10,822.2
2	Bank/ Pension Account	42	500-1,00,000	56,081	3.1	1,335.3
3	Others	6	500-1,00,000	4,200	0.2	700.0

Source: Socio-Economic Survey conducted by BETS, 2007.

Bank credit of the sample households ranged from Tk. 3,000 to Tk. 12,00,000. About 25 households had bank credit amounting to Tk. 2,99,98,000 with average amount of Tk. 1,38,392.60. The average amount of cash credit for 64 households was Tk. 11,99,920. The cash credit of households ranged from Tk. 100-15,00,000. The total amount of cash credit was Tk. 13,68,3 10.60. The overall figures of debts by the households are shown in the following **Table-2.4.**

Table-2.4: Distribution of Households According to Different Category of Loans

Sl. No.	Category Of Loans	Total Household	Range of Amount (Tk.)	Total Amount	(%)	Average (Tk.)
1	Bank credit	25	3000-12,00,000	29,998.000	77.1	1,38,390.60
2	Cash credit	64	100-15,00,000	8,857,000	22.8	11,99,920.00
3	Others	1	30,000	30,000	0.1	30,000.00
Total						13,68,310.60

Source: Socio-Economic Survey conducted by BETS, 2007

f. Source of Income

From the household survey various types of occupation of the people have been found. The primary occupational structure of the households as identified in the survey is given below in **Table-2.5.**

Table-2.5: Source of Income of households

Sl. No.	Categories of Occupation	Total	
		No.	percent
1	Farm Households	520	25.65
2	Unemployed	318	15.69
3	Business	294	14.5
4	Service in private firm / Banks	134	6.61
5	Service in Govt. / Semi-Govt. /Autonomous / Corporation	92	4.54
6	Labourer	18	0.89
7	Cultivators	19	0.94
8	Others	632	31.18
Total		**2027**	**100**

Source: Socio-Economic Survey conducted by BETS, 2007

In order of importance, the three top most occupations were farm household 25.65 percent, business 14.5 percent and services in private firm and banks 6.61 percent. Among these three, the dominating one was the farm household. The

percentage of service holding households in government/semi-government/corporation/autonomous bodies constituted 4.54 percent. The other occupations included doctors, lawyers, teachers, and private technicians, MLSS, drivers, which amounted to 31.18 percent of the total employed persons. Farm households indicated the occupations that mainly depended upon the income from cultivable land in village home and leasing out landed property as absentee farmers/land lords. The percentage of cultivators and labourer who solely depended upon cultivation of land and physical labour were 0.94 and 0.89 percent respectively. The reasons of small percentage of cultivators/labourer might be attributed to absence of industrial enterprise and also cultivable land. Figure-4 illustrates the percentage composition of occupation.

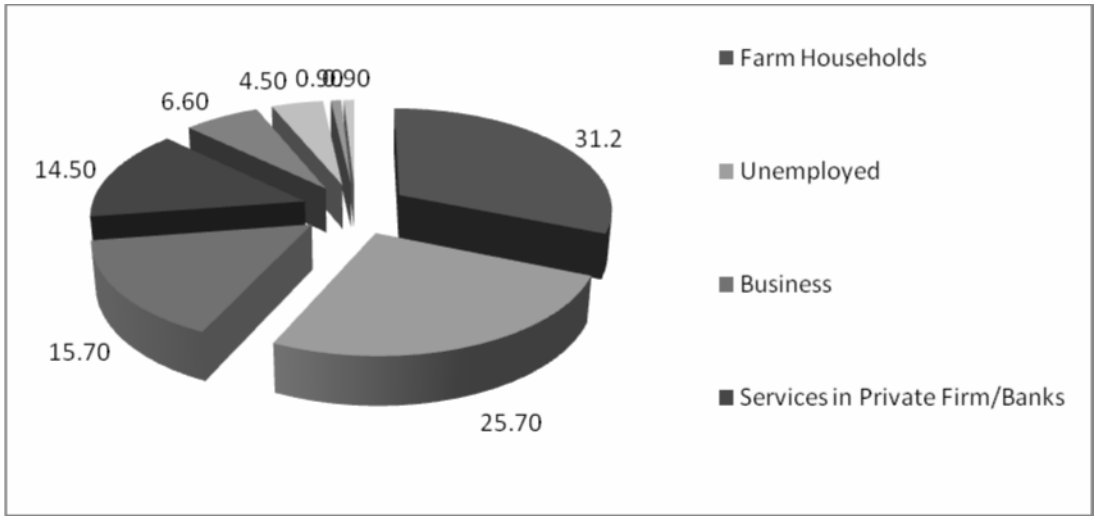


Figure-2.4: Source of Income of the sample households

Service oriented occupations both govt. and privates sector wise most concentrated at Brahmanchiron (1.6 percent) and (2.8 percent) respectively whereas least concentrated at Rajarbag (0 percent). On the other hand, even trade and commerce as an occupation was most prominent at Brahmanchiron (7.3 percent) and least so at Rajarbag (0 percent). The highest percentage of persons depending on cultivation (0.5 percent) was at Manda whereas percentage of the same was nil at Brahmanchiron, Jatrabari, Rajarbag. The percentage of unemployed was quite significant at Manda 6.3 percent (162) followed by Brahmanchiron 4.9 percent (127) whereas none was unemployed at Rajarbag.

g. Migration

The project area is inhabited by more than half percent people are migrated while less than half percent are local people. Mostly in the urban section of the project area migration has taken place. As result it is found that 40 percent of the people are local while 60 percent people have migrated in the project area.

h. Ownership Pattern

Among 387 sampled households only 367 households had some portion of habitable land where they had either erected structure or constructed building and started living.

About 97 percent of sampled households had habitable land which averaged 3.6 or less than ten (10) kathas. Nearly 2.8 percent of sampled households had less than twenty (20) kathas, 0.2 percent of sampled household had thirty (30) kathas of land.

2.1.3 Land Use

The existing land use characteristics of Project Area (DND north area-location-5), its type of categories and occupied areas are stated below in the Table-2.6 and Map-2.1.)

Table-2.6: Existing Land use of the project area

Gross Land use	Area in Acres	Area in Hectares	% of Total Area
Agriculture	1309.35	530.07	60.79
Residential	405.27	164.06	18.81
Water body	129.90	52.59	6.03
Vacant Land	111.23	45.03	5.16
Circulation Network	77.03	31.18	3.58
Service Activity	46.28	18.74	2.15
Manufacturing & Processing Activity	32.42	13.12	1.51
Open Space	11.58	4.69	0.54
Commercial Activity	9.31	3.77	0.43
Transport & Communication	5.67	2.29	0.26
Community Service	5.21	2.11	0.24
Mixed Use	4.99	2.02	0.23
Education & Research	4.75	1.92	0.22
Governmental service	0.32	0.13	0.01
Miscellaneous	0.65	0.26	0.03
Total	**2153.95**	**871.99**	**100.00**

Source: Land use Survey conducted by BETS, 2007.

a. Residential Areas

Total acreage under residential use has been found to be 405.27 acres. As expected the second highest land use category is the residential use which occupies18.81% of the total land of project area. Residential uses are spreaded over mainly the western part, eastern part and along the roads. The middle portion of the project area is almost vacant. The residential use mostly covered Uttar Jatrabari, Saidabad, Dholpur, Golapbag, Maniknagar, South Mugda and Manda mohallahs **(Map 2.1).**

The residential uses occupies 27.19% land of ward no.85, 20.16% land of ward no.84, 16.03% land of ward no. 30, 14.41% land of Manda Union, 12.11% land of Matuail Union, 9.97% land of ward no.29 and 0.13% land of ward no. 31. The cause of remarkable lowest percentage in ward no.29 is that, it is the part of Kamlapur where land area is almost vacant.

Majority residential buildings are unplanned with few exceptions e.g. DCC's staff quarter in Brahmanchiron mouza, Bank colony and WAPDA colony beside Mugdha – Manda Road (**Table 2.6**).

b. Industrial Areas

Industry occupies 32.42 acres of land and which is only 1.51 percent of the total land of the project area. Within the main built-up part i.e. the western part of project area (east of Janapad road); there is no remarkable manufacturing and processing industry. Few workshop, carpenter store, small milling and similar type of service activities are there. Most of the Industries of the project area are located in Kazla & Konapara Mohallas of Matuail and Paradagar mauzas under Matuail Union. The major light, general, heavy and noxious industries of that locality are given in **Annexure-01.**

c. Commercial Areas

The commercial activities have been found to occupy 9.31 acres of land, which is very insignificant and covers about 0.43 percent of the total land of the project area. The commercial activities are mostly developed along the peripheral roads i.e.

Mugda- Manda road, Janapad (Atish Diponkor) road and western part of Old Demra /Chittagong road also in major internal roads and junctions. The concentration of commercial activities occur along the Mugda - Manda road, Maniknagar road, Dhalpur bazaar and road passes through Uttar Saydabad and Jatrabari mohallahs. The highest concentration (46.25%) found in ward no.84 i.e. around Saidabad road junction followed by 26.93% in Manda Union along the Mugda – Manda road.

d. Amenities and Urban Facilities

I. Educational Institutions

There were in all 57 educational establishments in the project area. It has a total 40 schools, 3 colleges, 14 Madrashas. Most of schools were located in DCC areas e.g. Ward No. 84 and 85. The institutions were located scatteredly and not fully served the entire area.

I. Religious Facilities

The religious institutions were mosque, eidgah and graveyard in the project area. There were as many as 4 graveyards and 40 mosques. The eidgahs were scatteredly distributed all over the project area where settlements were existed. A graveyard occupied a small portion of garbage disposal ground at Matuail mauza under of Matuail Union was one of the exception.

II. Recreational Facilities

Open space and recreational area covers about 11.58 acres. The Stadium / Swimming pool is included under this category. The recreational facilities were very insufficient in the project area. Planned open spaces and places for active and passive recreational facilities for the children and elderly people were very rare.

III. Health Facilities

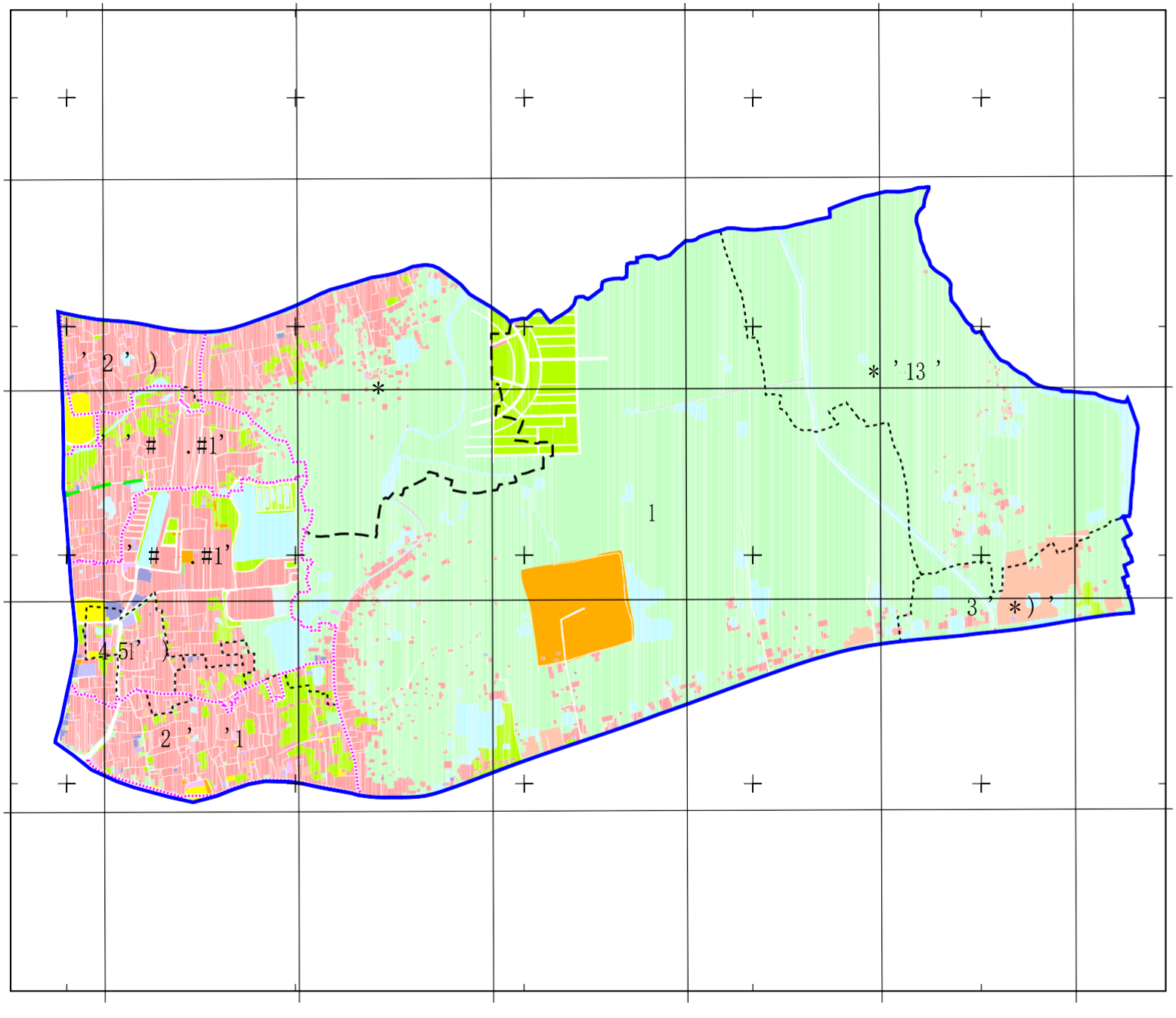
Health services were not enough as per the total population of the project area. There were one nursing home and one satellite clinic at Mugda and two general private hospitals, one located at east of Jatrabari over bridge and another is beside Old Demra Road . The services of those nursing home, clinic and private hospitals were not satisfactory and numbers of beds were very limited.

IV. Services

Service activities occupy 46.28 acres of land of project area and which is 2.15 percent of the project area. In fact all the urban areas are found to have higher amount of land in this category compared to rural areas. Service Activity in the project area covers Financial Institution/Organization like-Bank and Insurance; Professional Service & Offices e.g. Construction Office, Law Chamber, Doctor Chamber, Political Party Office, Labour Union; Workshop like-Mechanical and Electrical workshop, Welding, Automobile workshop; Hotel & Restaurant, Tea Stall; Service like-Barber Shop, Laundry, Decorator, Beauty Parlor, Tailors; Health Service like-Hospital/Clinic; Water & Power Supply Installation e.g. Water Reserviour, Water pump house, Water Treatment Plant, Power Plant, Waste Disposal, Gas Transmission, Police Box and Fire Service.

e. Non Urban Area

Non urbanized areas are mostly areas with predominantly agricultural use. The overwhelming portion of land of the project area is under agricultural use. The agricultural use covers part of Manda mauza, Matuail mauza, part of Dhamripara mauza and part of Paradagar mauza. The land under agricultural use are mostly single cropped because the land is low lying in nature and often affected by annual external monsoon flood and remain under water. Total land under agricultural use is 1309.35 acres which is 60.79 percent of the total land of the project area. The Agricultural use cover all most middle part of project area .The land area is low lying in nature and often affected by annual external flood.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2.1.4 Infrastructure

a. Circulation Network

Road

The Road network of the built up part of project area developed naturally, not in a planned manner. So, most of them were narrow, haphazard, zig-zag and failed to accommodate increased traffic demand. More over there were no road hierarchy system. The project area was served mainly by 3 peripheral roads namely-Janapad (Atish Diponker) road was along the west boundary and runs north-south direction, Old Demra road was along the south boundary and runs east-west direction and Mugda-Manda road was along the north boundary and runs east-west direction. This Mugda-Manda road started from Janapad road (Map 2.2-Existing Road Network). Besides, there were some access roads in the project area namely-Manik Nagar road, Dhalpur bazar road, Kazla road, Saidabad mosque road, Golapbag road etc. The project area has pucca, semi-pucca and kutcha roads. Total area of road occupied 79.59 acres of land and covered by road network was only about 76.006 kilometer. There were no railway lines in the project area.

The traffic conditions of the project area were characterized by a conflict in the use of available road space. There was a poor institutional and regulatory framework, and a reluctance to enforce existing legislation. As a consequence, the capacity of the existing roads was reduced by lack of enforcement. Traffic management was so inefficient that further road investment will be of limited value until there is a demonstrable improvement in enforcement. Further, the road hierarchy was poorly established. As population grows in this urban fringe area and car ownership and traffic densities increased, accessibility will deteriorate.

b. Utility Services

Water Supply

There were piped water distribution system that covers about 80.5 percent of the built-up part of the project area & the area is under zone-1 of Dhaka WASA. There were 5 pump stations of Dhaka WASA. Two of them were in Jatrabari mouza and three in Brahmanchiron mouza. The water pumps serve as direct pumping system and their capacity was 0.057m3/s each. There was no overhead water tank in the project area.

Electricity

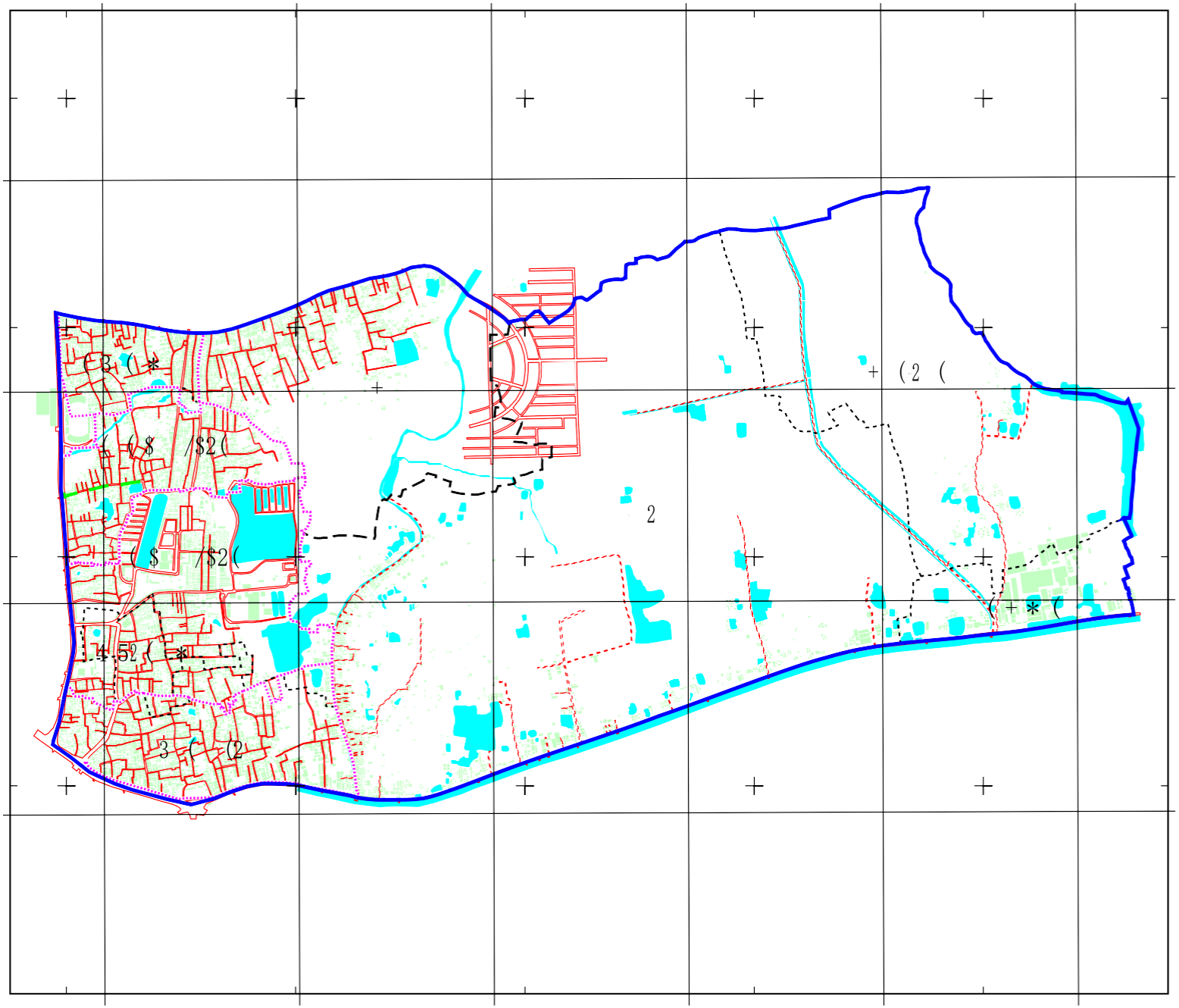
Electricity supply was available in the project area. There was a 33/132 KV electric sub-station at Maniknagar. A 132KV power line passes through the middle of the project area from east to west.

Gas

About 84.4 percent of the sampled households of the built-up part of project area have Gas supply system. There are 3 types of pipe lines covered the built-up part. 200 mm dia followed old Demra road and Sayadabad-Jatrabari road, 150mm dia followed Janapad road and Golapbag-Dhalpur road and 100mm dia followed Mugda-Manda road.

Sewerage and Solid Waste

Presently Dhaka WASA looks after the sewerage system. The water borne sewerage system covered only 55.2 percent of the sampled households of the built-up part of project area. Remaining percentages are mostly imported type septic tank. Garbage disposal is the responsibility of Dhaka City Corporation (DCC). There was no door to door collection system. Disposal of waste is usually done in the khals. A vast waste disposal site also exists in the Matuail mouza.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2.1.5 Land Ownership and Value

The ownership of land of the project area belongs to private, community and government. All roads, canals, stadium, children park, staff quarter, electric substation, water treatment plant, waste disposal ground, sub-register office, union parishad office, govt. primary schools etc. are belongs to government property. The mosques, eidgahs, graveyards etc. are the property of the community concern. Remaining lands are privately owned.

The value of land depends on its location, height and accessibility. A high land is always costly than a low land. The land beside peripheral roads is always high priced due to its commercial importance. The land area of entire built up part as well as beside the old Demra road are higher valued. It differ place to place but not less than Tk. 10 lakhs per katha in any place of built up part and along the said old Demra road. In Manik Nagar, Mugda, Kazirbagh and Jatrabari the price is higher than Tk. 12 lakhs per katha. Land price is comparatively lower (around 3-5 lakhs per katha) in Manda, Matuail and Paradigair which are located away from the main roads. The lowest (around 1-3 lakhs per katha) priced land are at northern part of Matuail mauza and Damripara mauza due to its remote location and condition.

Regarding the price of land BETS Consulting services conducted a field survey in the beginning of this project on October 1999. The result of that survey can be seen below:

It may be mentioned that initially in every household there was serious concealment regarding ownership viz a viz price of land. When it was divulged that survey was being conducted under the aegis of RAJUK they tried to resort to falsehood and exaggeration. Of course, there was no way the consultants could expect a truthful response in this regard. Then they asked some casual questions regarding price of land to the persons other than sampled households. Thereby they tried to record the approximate price of land being transacted in the project area. **Table-2.7** shows the unit price of land of the sampled households.

Table-2.7: Distribution of Price of Lands of households according to different Categories

Mauza	Land Value per katha (in Taka)			
	Habitable land	High land	Medium land	Low land
Brahmanchiron	5,12,830.6	4,00,000.0	2,00,000.0	3,60,000.0
Jatrabari	1,25,333.8		5,00,000.0	2.94,736.8
Manda	2,63,217.6	2,45,454.5	2,50,000.0	8,02,65.41
Matuail	1,37,000.4	78,125.0		60,907.02
Paradigir	67,470.53			51,891.89
Rajarbag	5,67,741. 9			
Kazirbag	6,17,482.5			
Damripara	1,50,000.00	1,00,000.00	70,000.00	40,000.00

Source: Field conducted by BETS, survey October 2007.

The price of land depends upon many factors. Among these, existence of urban facilities, physical elevation with built-up surrounding, and a well-knit communication system are worth mentioning. It may be mentioned that the housing problem has become acute by the alarming rise in land values. This price can be compared with that of many developed countries. Thus on an average, one katha of land in the project area would cost about Tk.2,31,433.74.

2.2 Expected Development

2.2.1 Population

As per 1991 census the population of the project area was 116762 which were increased to 162628 in the year 2001. The rate of increase was 3.37% per year. According to this growth rate, the projected population of the project area will be 2, 58,610 after full development.

According to projected population density of the project area is 157 persons / acre. But if we calculate the same for the densely populated built-up part the figure will be about 350 persons / acre. If it is possible to implement the Flood Action Plan in FAP-8A and FAP-8B report then the project area will be free from external flood. At that time the densification of existing urban areas as well as new occupations will be started by means of land filling.

2.2.2 Economic Activities

The economic activities of the major portion of the project area at present are confined into agricultural practice only. But after the implementation of plans, when the DAP area will be well equipped with necessary road network, space for commercial activities, provision for utilities and community facilities etc. then the project area will invite numerous new economic activities. At the same time the existing economic activities will also be increased.

2.3 Development Problem

2.3.1 Hydrology (Drainage and Flooding)

Hydrology of the project area is greatly influenced by Balu river located outside the project area and their tributaries .Water levels of these rivers / khals are lowest in January –February and highest in August – September. Normally the low area of the project is submerged by over flowing of Balu river during August-September.

Excessive local rainfall sometimes causes flood in the low area damaging properties. The annual average rainfall in the project area is about 2037 mm. High area of the project was flood free during 1988 flood. Low area of the project remains under water in most of the time of the year.

Storm water from high area discharges into low lying area through over land flow and natural drain and drainage of low lying area normally happens through Balu river. Dulai khal also plays role in the discharge systems of the project area. The natural drainage system of the project area is being obstructed due to land filling activities for housing development.

In the project area ground water is met at depth ranging from 5 meter to 9 meter below the surface and the seasonal fluctuation of ground water table ranges from 0.5 meter to 2.50 meter.

DND north (Location-5) is divided into two types of slopes(1) Plain gentle slopping and (2) Basin shape slopping.

DMDP has identified the Dhaka – east, southern polder of the JICA proposed FAP 8A flood protection embankment as the preferred option. DMDP believes that the most likely development of the city will occur in continued expansion of the urban area into the land adjacent to and bounded by the city to the west, Balu river to the east and Dhaka –Demra road to the south.

The JICA scheme comprises the empoldering of the area between the city and river by the construction of earth fill embankment and the construction of 3 number retention ponds for storing the drainage water prior to discharge in to Balu river. The storm water will be discharged by gravity at time of low river flow and by pumps when the river levels are too high to allow for gravity discharge and there is the risk of flooding to the city.

Due to volumes of water that will fall for the design storm it will not be possible to pump dry the system and therefore the use of the retention ponds for temporary storage of the storm water is vital.

Should the ponds not be constructed or should they either be filled in or silted up then the city will be subject to greater flooding from storm water than is experienced at the moment.

The project area is affected by internal and external flood. External floods are caused in the low area by over flow of sorrowing river and khal, while internal floods are caused by storm water due to rainfall and insufficient drainage facilities. The storm water discharges into Balu River through natural drainage. The capacity of the natural drainage system of the project area is not enough and which is being obstructed due to land filling activities for housing and commercial development.

It is evident that quite a large area of the DND north is inundated by annual flooding. These areas are Manda, Matuail, Damripara and Paradagar mouzas. Among 4 mouzas the settlements of Damripara termed as rural homesteads and houses are built by way of raising land above flood level. Practice of constructing Houses on raised land also scatteredly distributed in the low lying areas of Manda and Matuail mouzas. Due to the nearness to Motijheel Commercial Area, here the urban innovation cannot be stopped but the consultants recommend regulating those developments.

2.3.2 Geological Fault

The Dhaka city falls in the earthquake zone 11 of the Seismic Zonic map of Bangladesh. The project area is lying between the Pagla Fault and Balu Fault.

Any moderate earth quake may invite zonal settlement or change in the topography of the area. Considering this and the implied risk for future catastrophes, heavy construction along or near the fault should be restricted. A belt of minimum 750 meters on both sides of the fault has to be considered as 'high alert' zone (Atlas of Urban Geology, vol.-II,ESCAP,UN, New York). Within this zone, covering more or less 1750 acres i.e. about 20% of the total DND area, all building should be constructed taking into account seismic forces in order to minimize any future human hazard.

2.3.3 Spontaneous Development Leading to Conflicting Use

Development control function is very poor in the project area. With present capacity RAJUK cannot over see or pro-act to guide and steer development in desired areas of urban expansion. This result in:

- Un-necessary invasion of agricultural land by urbanization.
- Non-conforming uses are found everywhere.
- Residential areas are being invaded by commerce.

2.3.4 Transportation

a. Road

The project area road network consists of National and Local roads. The National roads provide access to the area which situated along the western boundary and south-west boundary of the project those are namely Atish Diponkor road and Chittagong road. The southern margin occupied by a Regional road namely-Old Demra Road. The local roads of the project area are narrow and lack sufficient interconnection. The urbanized area occupied mainly the western portion of project area and suffers from North-South connector roads.

b. Transportation Problem versus Urban Land Use

As described earlier that only one-fourth part of the project area is developed. The road network of this part is narrow and insufficient which cannot bear the growing demand. So widening of existing roads has been proposed.
For remaining ¾ part is almost vacant and non urbanized area and there is no road network. Here several roads have been proposed to commensurate the proposed land use.

2.3.5 Utility and Services

As per household sample survey of the project area it has been observed that, the essential utility and services has not yet fulfilled. About 99.2 percent of the sampled households have access to electricity and 80.5 percent have to water supply system. Regarding other utilities, about 85.4 percent have gas connections. The water bone sewerage system covered only 20.3 percent and only 14.2 percent have been covered by disposal of garbage facilities. In the built up part only 38.1 percent households have pucca drainage system in front of the residence. For about 6.7 percent have kutcha drainage but substantial numbers (55.2 percent) have no drainage at all.

a) Electricity

Dhaka Electric Supply Authority (DESA) is responsible for electric supply to the project area. A 132 KV high tension power grid panes through the middle of the project area from east to west which extends coverage to the whole project area. There is a 33/132 KV Electric sub-station at Mariknagar Mohallah of the project area. All most all households of the project area have access to electricity. But load-shading, breakdown, a period of limited or no supply and system losses are very common. So for the improvement following have been recommended:

- Load shading should be minimized
- Low voltage should be improved
- Poor wearing should be improved
- Unplanned poles to be re-arranged
- Uncovered wearing should be replaced
- The existing system should be reinforced rather than major extensions
- Adequate line clearance will be necessary
- Location of transformers to e re-arranged
- Street lighting arrangement to be improved.
- Communal arrangement to be provided for low income neighborhoods.

b) Telecommunications

The T&T Board operates a telephone network based on underground primary enables throughout project area. Demand considerably exceeds supply and the T&T Board cannot install surplus capacity to meet further growth.
Adequacy of trench sizes and clearances for underground line installations with suitable clearances to poles and wires are recommended. Besides, a cellular network should also be provided as early as possible.

c) Gas supply

The nationalized Titas Gas Company supplies gas in the project area. The existing supply failed to cover the total households. There also exists a low pressure in the supply. The major consumption is by large non-domestic users. It became difficult for the poor to obtain bio-mass supplies for domestic cooking. So, recommendation have been made in the DAP to increase the community cooking facilities together with extension of lines in the growing parts of project area.

d) Water Supply

The water distribution system of the project area operated by DWASA. The piped water distribution system covers about 80.5% of the built up part of the project area. The built up part is under zone-i of the Dhaka WASA. There are 5 pump station of DWASA within the built up part. The capacity of each pump is 0,057 m3/5. There is no overhead tank in the built up part. Sayadabad water treatment plant in lies within the project area in Brahmanchiron mauza. It covers an area of 22.93 hectares. The existing supplies are less than demand. The system suffers from high leakage and poor maintenance. Meter tempering and non-billing are also prevalent.

The present major source of water is aquifers, but ground water abstraction is increasingly straining aquifer resources. Abstraction by private users is to be controlled by DWASA, but effective control is hardly possible. Private developers should be encouraged to connect to the municipal system where possible. The extraction of water from the existing piped network by pump, as is presently done in many places, has to be addressed as this endangers the health quality of the supply. Specific one-way meters might help to solve the problem. The pollution of sub-soil with untreated waste from pit latrines and leaking of septic tank/sewerage should be prevented.

The Sayedabad water treatment plant getting its water from the Lakhya River by the way of irrigation channel. The urbanization around the irrigation channel will mean increasing pollution of the channels raw water. In the future the channel may have to be replaced by a raw water main.

e) Drainage

Drainage should be developed in accordance with the FAP proposal. For land development, the main concerns are to collect street drainage and minor plot run-off, and to conduct the storm water into the main water courses. For street drainage, converted box drains are recommended for the built up part and open drains for the non-built up part.

f) Sewerage and sanitation

Dhaka sewerage is under the jurisdiction of DWASA since 1963. The water borne sewerage system of Dhaka WASA covered only a part of built up portion of the project area. Urban growths outside DCC area are not linked to the system. The system is not designed for sludge and storm water. The flow is from north to south to Pagla treatment works, which is currently running at full capacity.

Remaining households are depends on septic tank and most of which are imported type. In absence of such water borne sewerage systems, these tanks overflowed into the adjacent yards, kutcha drains and roads during rainy season.

The dependency on or-site sanitation measures to be reduced and sewer lines & sewer connections in the peripheral fringe areas are to be increased.

g) Solid Waste

DCC manage the solid waste collection, transport and disposal at matuail site. The community bin system of collection is used.

Insanitary land fill by dumping of solid waste is the general practice. The major site of dumping is beside Janapad road at Maniknagar area. It seems that solid waste is considered simply as a resource of land filling material, of value in a low-lying area. It has been always overlooked the adverse environmental and public health implications of insanitary land filling.

It has been estimated that, per capita solid waste generation rate is 375 g / capita / day. So, it is difficult to carry for the inhabitants to the location of community bin. Instead of community bin covered bucket in front of individual households should be introduced. Besides, the existing community bin system also need improvement, location on of coactions point, case of collection vehicle access, adequate space around containers for emptying and clearing and generally an open location visible to the public to minimize misuse of the container.

DCC's existing permanent waste disposal site at matuail within the project area is questionable. A fast urbanization surrounding the site, especially from the west, south and east sides. This may impact on site's operation and may force relocation. A feasibility study has been recommended for identifying possible alternative sites. It once it shifted to elsewhere, the site could be developed for residential purposes.

2.3.6 Amenities and Urban Facilities

a. Active and Passive Recreation

Although recreational facilities of the project area cover about 11.58 acres yet the recreational facilities were considered to be very insufficient. Planned active and passive recreational facilities for children and elderly people were very rare. The active recreation is confined to a stadium (Golapbag stadium) and play fields but there is no cinema hall or park (passive recreational facility) in the project area except a children park.

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b. Educational Institutions

There were in all 57 educational establishments in the project area. It has a total 40 schools, 3 colleges, 14 Madrashas. Most of schools were located in DCC areas e.g. Ward No. 84 and 85. The institutions were located scatteredly and not fully served the entire area.

c. Market Facilities

Market facilities in the project area are also limited. The inhabitants of that locality depend mainly on the linear shops developed besides Mugda-Manda road, Janapad road, Maniknagar road and Jatrabari junction (round about). Due to the necessity of locality few inner road sides and nodal points commercially developed. The large concentration of shops & commercial activities is also in Dhalpur Bazar.

d. Community Facilities/Structures

Community centre

For socio-cultural and religious necessity the importance of community centres are increasing day by day. There are 4 community centres and one social welfare society in the project area. Considering the growing demands their service should be improved.

Religious Facilities

The religious institutions were mosque, eidgah and graveyard in the project area. There were as many as 40 mosques and 4 graveyards. The eidgahs were scatteredly distributed all over the project area where settlements were existed. A graveyard occupied a small portion of garbage disposal ground at Matuail mauza under of Matuail Union was one of the exception.

e. Urban Facilities

Job opportunity, Education facility, Commercial & marketing facility, Recreational facility, Health facility e.t.c. can be considered as Urban facilities. In the sub-clause 2.2.6.the consultants tried to focus something about them. However, health facility is also a vital urban facility which discussed below:

Health services were not enough as per the total population of the project area. There were one nursing home and one satellite clinic at Mugda and two general private hospitals, one located at east of Jatrabari over bridge and another is beside Old Demra Road . The services of those nursing home, clinic and private hospitals were not satisfactory and numbers of beds were very limited.

2.3.7 Environmental Concern

In DND north area at present the environment is a major concern. Textile Mill, Steel Mill, Paint Industry, Food processing Industry, Re-rolling mill, Tube mill, Agro-Engineering Industry, Metal Industry and Garments Industry are the major Industries of project area. Uncontrolled dumping of effluent of industries in the water bodies pollutes water bodies affecting fish resources and crops of agricultural area.

Unplanned and haphazard urbanization has resulted in drainage problem causing inundation of larger areas of DND north with every occasion of moderate to heavy rain. This has also become a major environmental concern.

Environmental impacts of the proposed plan have been carefully evaluated. An attempt was made to examine closely the

capabilities of the natural system likely to be effected by proposed developments. Naturally the surface run-off are accumulated in the low—lying part of the project area. Those low-lying depressions also accommodate maximum external flood water of Balu river. The low lying areas including ponds, ditches and water bodies are ideal place for different vegetation and fishes. Seasonal agriculture also common there. If the proposed development e.g. embankment, railway line, road network and urban development e.g. housing, commercial establishment, industries etc. takes place then obviously it will hamper the natural system. It's flora and fauna and also hamper the natural—agriculture, fisheries and livestock will be affected. The people who depend on agriculture, livestock and fisheries will loose their job.

A major portion of the project area is flood prone area and subject to inundation seasonally. So, different types of landless suitability of land have been examined. Depending on depth, the requirements of earth/ sand filling also recommended.

The overlay method of environmental impact has been employed to carry out the suitability analysis. By using overlays over base map it was possible to determine which areas are especially sensitive to development impact and which could bear development without severe damage. At the same time recommendations are also made for prepared urban development with minimum sound, air and water pollution.

2.3.8 Shelter and Settlement

Due to ineffective development control measure indiscriminate and unplanned growth of Settlements has become a common phenomenon. It has been found that new areas are brought under settlements without adequate provision of infrastructure and services. On the other hand it has become very difficult to provide secured shelter to the urban poor at their affordable prices. The majority of the people of the project area are grouped in the middle and low income range and they are unable to buy land in the established urban areas. As a result they are finding shelters in remote areas without basic services including access facilities. This is resulting in conversion remote agricultural land into settlement where living environment provides little or no basic services resulting in urban deprivation.

2.4 Current Investment Program

As we stated earlier that only 1/4th part of project area is comparatively developed where a dense development has taken place during last decades. There is very minimum scope over here for any development scheme. The remaining 3/4th of the project area is low lying area where at this stage no development scheme is feasible.

However, the current annual development plan gives an idea about the type and nature of scheme of the project area.

2.5 Stake Holders' Wish List of Project

From several discussion with the stake holders it appears that the stakeholders wishes DND North area as a healthy urban center where every urban facilities for the inhabitants will be available as follows:

- To Provide Recreational Facilities
- Road Network Improvement
- To Provide Health Facilities
- Less Affect of Their Valuable Urban Land
- To Provide Educational Facilities