

CHAPTER- 10

PLAN FOR URBAN SERVICES

10.1: Analysis of Existing condition and demand of the Services

10.1.1 Introduction

This section of the chapter describes the urban basic services development proposals for future development of the Paurashava. The proposals have been made at the town level, that is, the area under the urban area plan. The local level development proposals will be addressed in the Ward Action Plan. The development proposals deal with the basic urban services, like, water supply, drainage, sanitation, solid waste, telecommunication, electricity and gas, community facilities, education and health.

10.1.2 Analysis and projection on existing and proposed Urban Services

10.1.2.1 Electricity

Electricity is provided by PGCB in the Paurashava area. PGCB office is located in Ward 09. Details are given in the following table:

Table- 10.1: Scenario of Electricity in the Paurashava

Ward No.	1	1 (external)	2	3	4	5	6	6 (external)	7	7 (external)	8	9	Total
No. of Electric Pole	18 6	62	18 9	256	38 2	324	28 6	45	100	194	242	227	2493
High volt Electric Pole	3	0	3	9	5	6	8	0	3	2	1	2	42

Source: Physical feature survey, 2009

The household sample survey reveals that 70.78% of the households are using electricity for the purpose of source of light. Rests of others only 2.02% are using Kerosene and candle after sunset at night as source of light. Table 10.2 shows the distribution of households by source of light.

Table-10.2: Distribution of Household by Major Source of Energy

Name of source	No. of household	% of the total household
Cylinder Gas	26	6.55
Bio Gas	5	1.26
Ghute Muthe	74	18.64
Kerosin	8	2.02
Lakri	281	70.78
Heater	3	0.76
Total	397	100.00

Source: Socio-economic survey, 2009.

The survey report also reveals that city dweller have been facing the serious troubles with the frequent load shedding of electricity. About 4.62% households face serious electricity problem. The problem becomes acute at the peak hour when the students supposed to sit at the table to prepare their routine study. Insignificant respondents mentioned about low voltage of the supply of electricity. The failure of the Power Development Board/ Rural Electrification Board in providing regular electricity to the area has become a cause of a lot of hazards in living, contributed to deterioration of security situation of the area, helped in growth of crimes and have been great inconvenience to the students.

Table-10.3: Level of Satisfaction of Electricity Supply

Level of satisfaction of Electricity Supply	No. of household	% of the total household
Satisfactory	52	13.10
Moderate	282	71.03
Non-satisfactory	14	3.53
No Connection	49	12.34
Total	397	100.00

Source: Socio-economic survey, 2009.

Future requirement of Electricity for the area has been calculated by using the following method:

$$E_r = P_r \times e$$

Where, E_r = The quantity of electricity demand

P_r = The projected population at the end of design period

e = The rate of electricity.

Assuming that

- Per capita electricity consumption 0.5 kwh
- Technical loss 20%
- Industrial/Commercial demand 20%

According to 2011 Census Report, the Paurashava is comprised of 9945 households. As per projection it will be 23903 households by 2030. If the residential consumption per household is calculated as 0.5 kwh then the total requirement of electricity will stand at about 11.95 mwh in 2030. This is a very conservative estimate because nowadays people of even rural areas have become habituated in the use of many electrical gazettes. The length of the distribution network could not be calculated at the moment. However, this will depend very much on the ability of the government to establish more power generation projects and ability to pay by the people. On the other hand, the following rules should be considered in future for better facility:

1. Location of power line should be carefully planned not to disturb the traffic movement.
2. There are provisions in the BC Rules about line clearance which should be strictly enforced.
3. There are standards in street light arrangements which should be adhered to while selection is made for light post locations.
4. Communal arrangements can be made in low income housing areas. The existing REB system has proved worthwhile, particularly in bill collection management.

Table-10.4: Projected electricity consumption

Ward No.	Household in 2011	Electricity Consumption (kwh)	Household in 2015	Electricity Consumption (kwh)	Household in 2020	Electricity Consumption (kwh)	Household in 2025	Electricity Consumption (kwh)	Household in 2030	Electricity Consumption (kwh)
WARD-1	798	399	970	485	1180	590	1435	717	1745	872
WARD-2	850	425	1034	517	1258	629	1529	765	1860	930
WARD-3	1933	966	2350	1175	2858	1429	3476	1738	4226	2113
WARD-4	1493	747	1816	908	2208	1104	2685	1343	3265	1633
WARD-5	1560	780	1897	949	2307	1153	2805	1403	3412	1706
WARD-6	1489	744	1811	905	2202	1101	2678	1339	3256	1628
WARD-7	1165	582	1416	708	1722	861	2095	1047	2547	1274
WARD-8	741	370	901	450	1096	548	1332	666	1620	810
WARD-9	902	451	1096	548	1333	667	1621	811	1972	986
Total	9945	5465	13292	6646	16164	8082	19656	9828	23903	11952
Total In mwh		5.47		6.65		8.08		9.83		11.95

** Estimated by the consultants

10.1.2.2 Water supply

Narail Paurashava has its well organized own water supply system. Its capacity is increasing day by day. According to the Paurashava source there are 734 hand tubewells ('09) and 5 production tubewells for piped water supply is available in the Paurashava. There is no overhead tank. In this Paurashava, Piped Water Supply System is the main source of drinking water. In Narail Paurashava, the total length of water supply pipe line is about 33.80 Km. Out of which 15.35 Km is of 50mm diameter pipe, 12.13 Km is of 100mm diameter pipe, 41.27 Km is of 150mm diameter pipe and 21.65Km is of 200mm diameter pipe. Following table shows that the concentration of tube-wells in wards 4, 5, 6 and 8 is higher compared to others in Narail Paurashava. In case of

piped water supply it is observed that mainly in wards 3, 4, 5 and 6 there exist greater concentration of piped water supply network.

The majority of the people in the study area have proper access of safe drinking water. Availability of pure water is almost present in the study area. About 44.33% and 39.04% of the household in the surveyed area are using own tubewell and pipe line for drinking and there is no surveyed household using Khal/river and pond/well water.

Table-10.5.: Distribution of Household by Major Source of Water

Name of source	No. of household	% of the total household
Pipe Line	155	39.04
Own Tubewell	176	44.33
Common Tubewell	34	8.56
Other	32	8.06
Total	397	100.00

Source: Socio-economic survey, 2009.

Only 30.23% household is satisfied with the water supply services. About 18 Percent household answered that the service is average and 3.53 Percent household is not satisfied of Paurashava water supply services. On the other hand 48% respondent has no access to Paurashava water supply system.

Table-10.6: Level of service of water supply

Level of satisfaction of Supply water	No. of household	% of the total household
Satisfactory	120	30.23
Moderate	71	17.88
Non-satisfactory	14	3.53
No facilities	192	48.36
Total	397	100

Source: Socio-economic survey, 2009.

Future requirement of Water for the area has calculated by using the following method:

$$Q_r = P_r \times q$$

Where, Q_r = The quantity of water required per day
 P_r = the projected population at the end of design period
 q = The rate of water consumption per day.

Assuming that

- Per day per capita water consumption 120 liters
- Technical loss 20%
- Industrial/Commercial demand 20%

Using the above equation and assumptions the demand for water in different years is calculated. The Paurashava has now the production of 1200 thousand liter per day. Assuming that this production will be constant in the future the backlog of water supply is calculated. The findings are shown in the following table.

Table-10.7: Projected water demand in Narail Paurashava up to 2030

Ward No.	Per capita per day Water Demand (thousand liter) in different year				
	2010	2015	2020	2025	2030
Ward 01	584	664	757	861	981
Ward 02	628	715	814	927	1055
Ward 03	1337	1522	1733	1973	2247
Ward 04	1087	1237	1409	1604	1826
Ward 05	1150	1310	1491	1698	1933
Ward 06	1029	1172	1334	1519	1730
Ward 07	890	1013	1153	1313	1495
Ward 08	521	594	676	770	876
Ward 09	630	718	817	931	1060
Total Demand	7856	8945	10184	11596	13203
Backlog	7056	8145	9384	10796	12403

Source: Estimated by the Consultant.

By considering the above assumption, the total demand of water in Narail Paurashava will be about 13203 thousand liter per day by 2030. Backlog at present is 7056 thousand liter. If the supply situation doesn't improve then the backlog in 2030 will be 12403.

10.1.2.3 Telecommunication

According to survey, the Paurashava accommodates 72 telephone poles. Besides, in Narail Paurashava there are 8 telephone boxes and one big telephone tower. From the survey report it has been found that in ward no 5 there is highest number of telephone poles and in ward no 1 and 2 there is the lowest number of telephone poles in Narail Paurashava. That means that in these wards the condition of telephone is not so good. According to Paurashava source (2007) there are about 780 nos telephone connections (house and office) in Narail Paurashava. But at present according to telephone and telegraph board there are 1210 connections in Narail Paurashava.

Demand for land phone has substantially reduced in recent years owing to widespread introduction of mobile phone, which is handy and easier to acquire. The BTCL service is easier and rates are cheaper now. To provide better service, the new land phone companies may think of installation of underground cables. Another advantage is that many new land phone companies in Bangladesh have introduced wireless phones. This system does not need wire, as a result not substantial cost is saved, but the company gets rid of the complexities involved in installation of network using limited road space.

10.1.2.4 Gas line/LPG

The people of the Narail Paurashava do not enjoy the piped gas facility. They use LP cylinder gas, kerosene and fire wood for day to day cooking.

As there is no gas production site in this region so there need no consideration of gas supply system and distribution network in the project area.

10.1.2.5 Solid Waste Management

Condition of solid waste management at Narail Paurashava is also very poor. Narail Paurashava generates a sub standard quantity of solid waste everyday from various sources. There are only 24 dustbins/locations for dustbin, earmarked by the Paurashava; five of these could be identified during physical feature during the survey; however claimed total number is not sufficient for the city dwellers. Among the five, two in each ward 3 and ward 4 (core areas) and one in extension area have been identified. In the absence of any specific rule and criteria for placing the dustbins, most of the household don't use the dustbin properly. As a result, they dispose their waste on roads, drain sides, low-lying areas or individual's backyards. The Paurashava have does not have any dump site of its own. All wastes are being dumped in a low-lying suburban area. But the Paurashava does not have any solid waste management facilities. Hospital waste has been dumped at their own dustbins. Garbage of kitchen markets is dumped at nearby dustbins or vacant places.

CBO initiative has proved effective in household waste collection and should be encouraged. This is not only good in indiscriminate waste disposal but also low cost in terms that the beneficiaries themselves pay for the service. Suitable dumping site should be selected for sanitary land fill. Arrangements may also be made for waste recycling.

According to Waste Database of Waste Concern, an NGO working on the waste management system of Bangladesh, per capita per day waste generation rate for the Paurashavas is 0.25 Kg and the waste collection efficiency for the Paurashavas is 54%. Assuming that this rate of waste generation and collection efficiency is constant the estimation of the amount of total generated waste and backlog in Narail Paurashava was calculated. According to this calculation the present and future waste generation amount is calculated. The following table shows that statistics.

Table-10.8: Projected Solid waste generation according to the Paurashava

Ward No.	Waste Generation 2011 (Ton/day)	Waste Generation 2015 (Ton/day)	Waste Generation 2020 (Ton/day)	Waste Generation 2025 (Ton/day)	Waste Generation 2030 (Ton/day)
Ward 01	0.87	0.99	1.13	1.28	1.46
Ward 02	0.93	1.06	1.21	1.38	1.57
Ward 03	1.99	2.26	2.58	2.94	3.34

Ward 04	1.62	1.84	2.10	2.39	2.72
Ward 05	1.71	1.95	2.22	2.53	2.88
Ward 06	1.53	1.74	1.99	2.26	2.57
Ward 07	1.32	1.51	1.72	1.95	2.22
Ward 08	0.78	0.88	1.01	1.15	1.30
Ward 09	0.94	1.07	1.22	1.38	1.58
Total	11.69	13.31	15.16	17.26	19.65
Backlog	5.38	6.12	6.97	7.94	9.04

Source: Estimated by the Consultant.

From the table it can be seen that the total amount of waste generation is 9.25 ton/day. This amount is going to increase in 2030 to 19.65 ton/day. The highest amount of waste generation founds in Ward no. 3 (1.57 ton/day). Backlog at present is 4.26 ton/day which will increase to 9.04 ton/day in 2030. At present there is no facility available in Narail Paurashava to treat this solid waste in scientific manner. This is why a proper place is necessary for scientific waste management to ensure a good and healthy environment of the Paurashava. Land fill site will be a good choice for the management of solid waste. The required land for land fill sites in Narail Paurashava is given below.

Table-10.9: Projected Solid waste generation according to the national average

Year	Landfill requirement with 4 m depth in acre		
	Waste generation (Ton/day)	With 54% efficiency	With 100% efficiency
Year 2011	11.69	0.07	0.13
Year 2015	13.31	0.08	0.15
Year 2020	15.16	0.09	0.17
Year 2025	17.26	0.10	0.19
Year 2030	19.65	0.12	0.22
Total	86.31	0.52	0.96

Source: Estimated by the Consultant.

From the above calculation it can be seen that the with 4 m depth the required amount of land for land filling site is 0.07 acre when the efficiency is 54%. But with 100% efficiency the requirement is 0.13%. At present in year 2010 the required area with 100% efficiency is 0.07 acre. The total area required for land filling in 2030 will be 0.96 acre with 100% efficiency. So this amount of area for land filling should be provided for Narail Paurashava.

The required area for land filling can be minimized by composting the collected solid waste. Composting is a process by which the organic and decomposable waste is decomposed and recycled as a fertilizer and soil amendment. So in the preparation of Master Plan this matter should be considered too.

10.1.2.6 Sanitation

The number of sanitary latrine in the Paurashava is 9344 and coverage of the sanitation in the Paurashava is about 91.1%. The Paurashava has 5 public toilets to serve the general public coming to this trading center every day. The level of present should be cent percent future through awareness development and Paurashava initiative. Improved low cost sanitary system can be encouraged in low income areas.

10.1.2.7 Education and Research

The project area accommodates different types of educational institutions. It is observed from the Physical feature survey that there are 18 primary schools, 9 Secondary Schools and 9 Colleges in the project area. Besides, there are 11 Madrashes, and 1 University Ward 03 and Ward 04 have the highest concentration of educational institutions in the project area.

Table-10.10: Different Type of Educational institution in Narail Paurashava

Ward No	Type of Institute						Total
	Primary School	High School	College	Madrasha	NGO	University	
1	2	0	0	1	0	0	3
2	2	1	0	2	0	0	5
3	3	2	2	3	1	1	12
4	5	1	4	2	0	0	12
5	1	0	0	0	0	0	1
6	1	4	3	1	0	0	9
7	0	0	0	1	0	0	1

8	3	1	0	0	0	0	0	4
9	1	0	0	1	0	0	0	2
Total Area	18	9	9	11	1	1	1	49
Extension Area	2	2	0	0	0	0	0	4
Total	20	11	9	11	1	1	1	53

Source: Physical Features Survey, 2009.

According to the planning standard of DTIDP the educational facilities has been projected and presented in the following tabular form. Map 10.1 shows the existing Educational Institutes in Narail Paurashava.

Table-10.1: Projected Educational Facilities

Educational Facilities	Ward 01	Ward 02	Ward 03	Ward 04	Ward 05	Ward 06	Ward 07	Ward 08	Ward 09	Total
Nursery	2	2	5	4	5	4	3	2	2	30
Primary School	2	2	5	4	5	4	3	2	2	30
Secondary/High School	1	1	3	2	2	2	2	1	1	15
College	0	1	1	1	1	1	1	0	1	8
Others (Madrasha)	0	1	1	1	1	1	1	0	1	8

10.1.2.8 Health facilities

There are 10 health establishments in the Paurashava area. 3 hospitals/health complexes have been identified. There are various other types of privately owned health facilities available. These include NGO health facilities, community clinic, satellite clinic, etc.

Table-10.12: Health Facilities in the Narail Paurashava

Ward No	Hospital	Clinic	Total
Ward 1	0	0	0
Ward 2	0	0	0
Ward 3	1	1	2
Ward 4	1	2	3
Ward 5	1	4	5
Ward 6	0	0	0
Ward 7	0	0	0
Ward 8	0	0	0
Ward 9	0	0	0
Total Gazette Area	3	7	10
Extension area	0	0	0
Total	3	7	10

Source: Physical Features Survey, 2009.

According to the planning standard of DTIDP the health facilities have been projected and presented in the following tabular form. Map 10.2 shows the existing health Facilities in the Paurashava Area.

Table-10. 13: Projected Health care facilities

Health & Welfare	Ward 01	Ward 02	Ward 03	Ward 04	Ward 05	Ward 06	Ward 07	Ward 08	Ward 09	Total
Upazila health complex/ hospital	0	0	1	0	0	0	0	0	0	3
Health Center/Clinic / Maternity	0	0	1	1	1	1	1	0	0	6

10.1.2.9 Community Facilities

The number of religious facilities reflects the proportion of the religious communities present in the country. As the majority of the population of the Paurashava area is Muslim according to the religious importance the number of mosques are the highest in number followed by temples and churches, respectively. It can be observed from the table, there are 54 mosques in the Paurashava followed by 38 temples and 1 church at Ward No. 06.

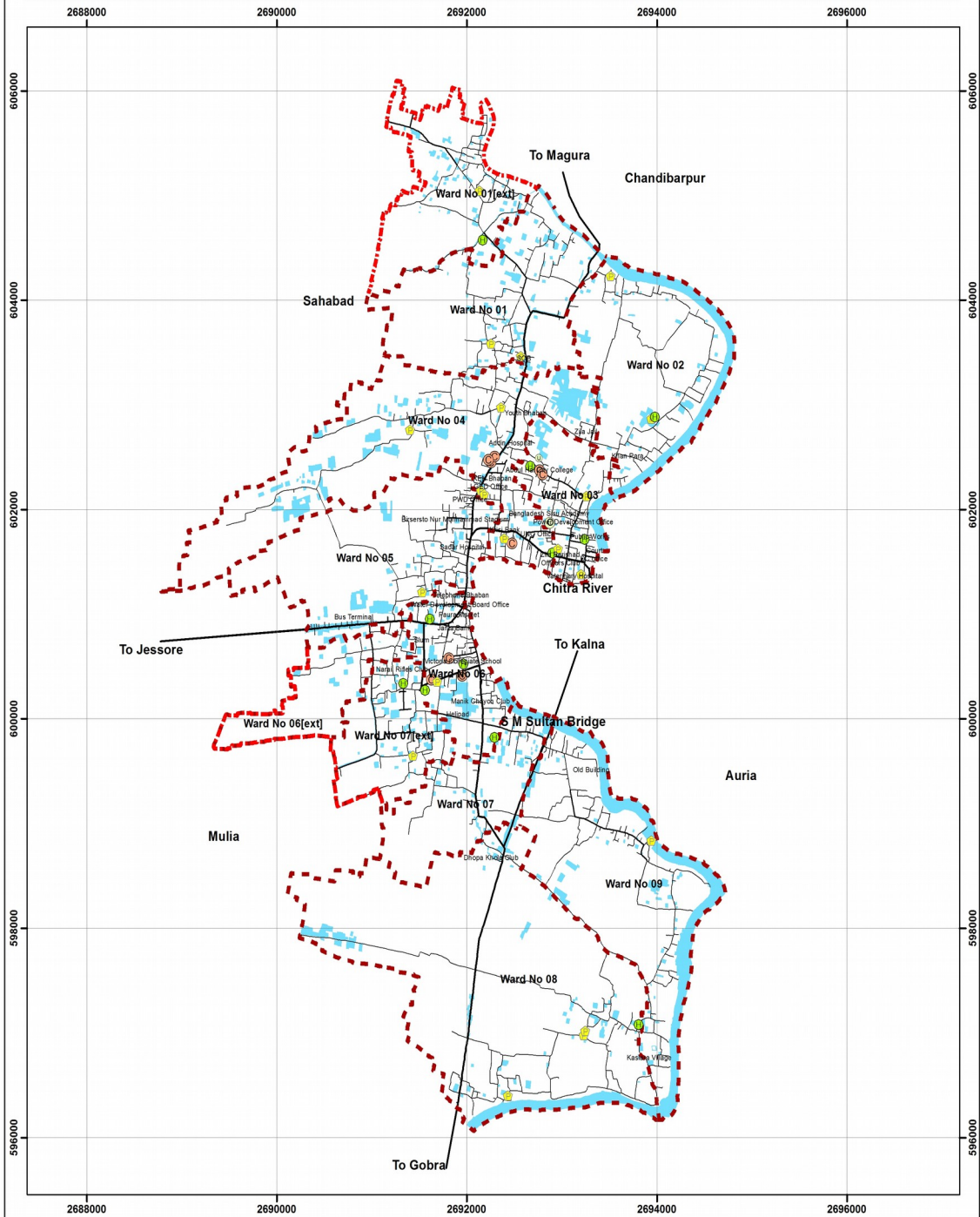
Table-10.14: Religious Structure

Ward No	Mosque	Temple	Church	Total
Ward 1	6	0	0	6
Ward 2	6	0	0	6
Ward 3	8	4	0	12

Ward No	Mosque	Temple	Church	Total
Ward 4	9	5	0	14
Ward 5	7	2	0	9
Ward 6	5	11	1	17
Ward 7	3	2	0	5
Ward 8	4	3	0	7
Ward 9	6	0	0	6
Total Gazette Area	54	27	1	82
Extension area	7	7	0	14
Total	61	34	1	96

Source: Physical Features Survey, 2009

Map 10.1: Existing Educational Facilities in Narail Paurashava



North arrow pointing upwards with the letter 'N' below it.

Scale bar showing distances in Kilometers: 0, 0.2, 0.4, 0.8, 1.2, 1.6.

Legend

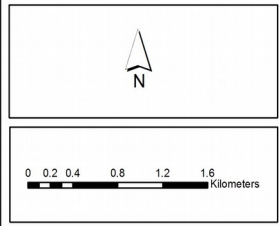
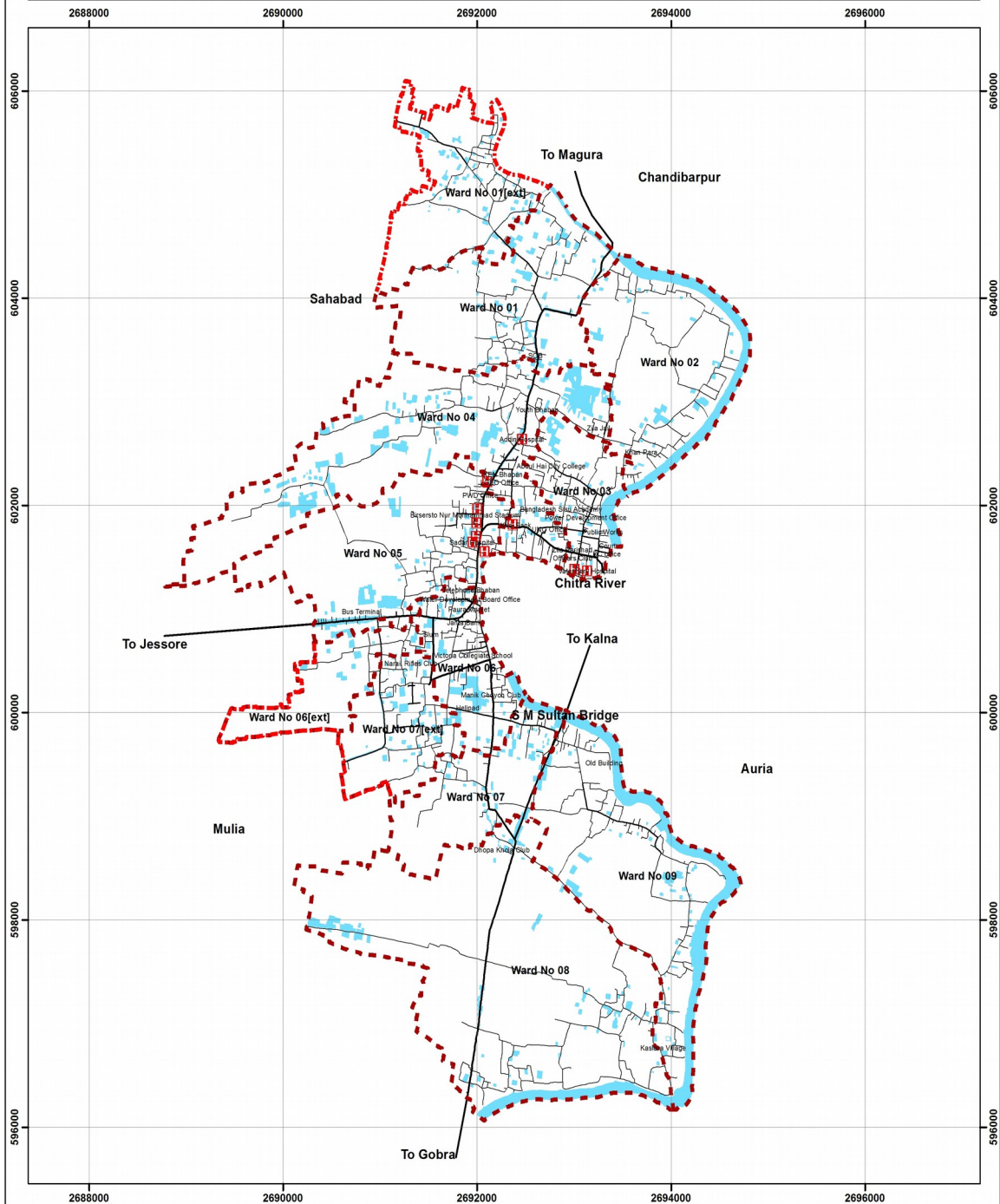
- Primary School
- High School
- College
- NGO School
- University
- Project Boundary
- Ward Boundary

Existing Road Category

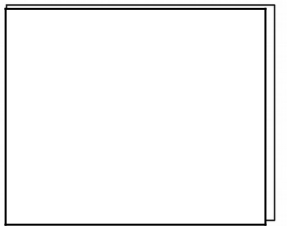
- Primary
- Secondary
- Access/ Local
- Water bodies

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Map 10.2: Existing Health Facilities in Narail Paurashava



Legend	
	Hospital/Clinic
	Project Boundary
	Ward Boundary
	Primary
	Secondary
	Access/ Local
	Water bodies



According to the planning standard of DTIDP the Community facilities have been projected and the facilities presented in the following tabular form.

Table-10.15: Projected Community facilities

Community Facilities	Ward 01	Ward 02	Ward 03	Ward 04	Ward 05	Ward 06	Ward 07	Ward 08	Ward 09	Total
Mosque	1	1	3	2	2	2	2	1	1	15
Eidgah	0	1	1	1	1	1	1	0	1	8
Graveyard (Area in acre)	2.5	2.9	6.6	5.3	6.1	4.7	4.3	2.3	3.0	38
Community Center	1	1	3	2	2	2	2	1	1	15

Map 10.3 shows the existing Community Facilities in the Paurashava.

10.1.2.10 Recreational Facilities

There are 1 Cinema Halls in Ward 03 and one stadium in Ward 05 at Narail Paurashava. Some play grounds within the educational institutes fulfills the sporting urge of the youth.

According to the planning standard of DTIDP the Recreational facilities has been projected and the projected facilities presented in the following tabular form.

Table-10.16: Projected Recreational facilities

Recreational Facilities	Ward 01	Ward 02	Ward 03	Ward 04	Ward 05	Ward 06	Ward 07	Ward 08	Ward 09	Total
Play field/ground	0	0	1	1	1	1	1	0	0	6
Park/ Neighborhood park (Area in acre)	1.99	2.31	5.28	4.21	4.85	3.73	3.43	1.81	2.38	30
Open Space (Area in acre)	17.4	20.2	46.2	36.9	42.4	32.7	30.0	15.9	20.8	263
Stadium/sports complex	0	0	1	0	0	0	0	0	0	3
(Area in acre)	1.0	1.2	2.6	2.1	2.4	1.9	1.7	0.9	1.2	15
Cinema/ Theatre	0	0	1	1	1	1	1	0	0	6

10.1.2.11 Administration-Government Office & Non-Government Office

The physical feature survey has depicted all types of government offices like DC office, Zila Parishad, Upazila Parishad, Paurashava Office, LGED, DPHE, Fisheries, Social Welfare, and RHD, BWDB, PDB, Post office etc. It has also includes all types of Non-government offices like NGO (Allow, BRAC, Proshika, Solti, Bangladesh Mohila Parishad, Nari Jagoroni Sammitte, TMSS, NSKS, etc), different Associations and clubs (Monobins Songgho, Sakam, Shilpokola academy, Alaipur sporting club, etc). The maximum concentration of Government office has been found in ward 03, 04 & 05 and non-government has been found in Ward 03, 04 and Ward 06.

Table-10.17: Name of Important Government Offices with location

Government Office	Ward No.	Government Office	Ward No.
Agricultural Extension Department	Ward_No 06	Palli Bhaban	Ward_No 04
Assistance Engineer Office	Ward_No 05	Paurashava Office	Ward_No 03
Bangladesh Sisu Academy	Ward_No 03	Police Super Office	Ward_No 05
Bangladesh Women Cooperative	Ward_No 06	Power Development Office	Ward_No 03
Bungalow	Ward_No 04	Power Substation	Ward_No 03
Civil Serjeant Office	Ward_No 05	Public Works	Ward_No 03
Councilor Office	Ward_No 04	Registry Office	Ward_No 04
Court	Ward_No 03	Reserve Office	Ward_No 07[external]
DC office	Ward_No 03	Sanirvar Bangladesh Local Office	Ward_No 03
District Adjutant office, Narail	Ward_No 05	Seeds Office	Ward_No 04
Education Office	Ward_No 04	Sonali Bank	Ward_No 06
Fisheries Office	Ward_No 04	Thana	Ward_No 04
Food Control Office	Ward_No 03	UNO Office	Ward_No 04
Judge Court	Ward_No 03	Upazila Engineers Office	Ward_No 04
Krisi Bank	Ward_No 04	Upazila Resources Centre	Ward_No 06
LGED Office	Ward_No 04	Water Development Board Office	Ward_No 06
Land Office	Ward_No 04	Water Supply Office	Ward_No 04
Land Register Office	Ward_No 04	Zila Animals Office	Ward_No 03
Nirbas Office	Ward_No 03	Zila Parishad	Ward_No 03
PTW	Ward_No 04	Zila Women welfare Office	Ward_No 07[external]
PWD Office	Ward_No 05	Zila primary education Office	Ward_No 06

Source: Physical feature survey, 2009