

CHAPTER

1

CHAPTER 1

BACKGROUND AND BASIC INFORMATION

1.0 INTRODUCTION

Chapter-1 of the Detailed Area Development Plan describes the background, purpose and the format of the report. It also describes the study area and the project area and the provisions of the higher level plan.

1.1 BACKGROUND

Khulna Development Authority (KDA) prepared for the first time, a Master Plan in 1961 for an area of 70 sq.mile (181 sq.km) for a duration of 20 years. After expiry of the first Master Plan in 1981, a new Master Plan project was launched in 1997. The plan titled, '**Structure Plan, Master Plan, and Detailed Area Plan for Khulna City**', was a package of three urban development plans comprising Structure Plan, Master Plan and Detailed Area Plans. However, while the first two plans were prepared in totality, the third was not. Only three Detailed Area Plans were prepared as samples as per directives of the project ToR. The idea was that, KDA, on a later stage, would undertake another planning project and formulate the Detailed Area Plan for its potential urban areas following these samples. The current project is the follow up of 2001 Master Plan aimed at preparing Detailed Area Plan. The current project has been undertaken out of the urge to ensure planned development of the future city and promote congenial urban living and expedite economic uplift in a more efficient way through promotion of infrastructure and services.

Inception Report was the first report of this project submitted by the consultant. It was approved by the Technical Management Committee (TMC) in May, 2011. Inception report contained, among other things, preliminary information about the study area, study methodology and future activities of the project including a work schedule. The next report was the Study Area Report which was approved by the TMC in May 2012. This report was formulated to determine the actual 'project area' for which DADP will be prepared. Third report was the Survey Report that contained all the findings of surveys and studies conducted. It was a comprehensive report that also analyzed various issues of the study area considering the existing conditions ascertained through different kinds of surveys and studies including mapping of the Study Area. The next report of the project was Interim Report. The main focus of this report was to make an interim review of the project including a preliminary Detailed Area Plan for the project area. The current report is the Final Planning Report. It is the 5th report of the project (according to the ToR, it is Report IV) describing the draft Detailed Area Plan proposals.

1.2 PURPOSE

Purpose of the Detailed Area Development Plan is to prepare a local level infrastructure development plan including revision of the prevailing land use plan in order to enable organized growth of the future city imbued with basic urban services and livable environment.

1.3 REPORT FORMAT

The DADP explanatory report has been prepared following the ToR of the project. It is composed of six chapters including the introductory chapter.

The introductory chapter gives the background of the project followed by the purpose of the project. The Chapter also contains delineation of the study area and the project area. The major provisions of higher level plans have also been explained in this chapter.

Chapter two describes the existing development pattern of the study area followed by the socio-economic conditions. It makes an appraisal of the developments taken place in the study area since preparation of the Master Plan in 2001. The Chapter makes estimation of the future population and ascertains the critical problems faced by the study area. An assessment has been made in the chapter about the status of various infrastructures and services.

The third chapter of the report is about the development plan proposals and future land use. The chapter makes a review of the higher level plans prepared by KDA in 2001. These higher level plans serve as the guiding principles or frameworks for the current plan. The chapter also formulates principles and standards to help prepare infrastructure development proposals. This is followed by development strategies. As per provisions of the ToR, the Chapter carries out a revision of the prevailing land use plan prepared under previous Master Plan. It also makes recommendations about development of physical and social infrastructure and prepares an integrated plan.

In fourth chapter, the report makes recommendations about area development priority and phasing. It also contains public sector action programmes and recommendations about project implementation management, land use zoning and development control.

Fifth chapter is about description of some projects and their cost estimations and comments on some legal issues.

Chapter six describes the follow up actions about additional project plan preparation, updating and review of Detailed Area Development Plan, rules of plan deviation and governance and coordination.

1.4 AREA AND ZONING CONCEPT

Four kinds of zones have been used in this plan for different purposes. This section of the chapter clarifies the zones used in the current project. This has been done to avoid confusions regarding various areas and zones provided in the plan.

1.4.1 Master Plan Area (Study Area)

As per Terms of Reference (ToR) of the project, the consultant was awarded an area of 231.67 sq.km (57,248 acres) as the study area to conduct all necessary surveys and studies. This is the same area of 2001 Master Plan (second tier). Please see **Table-1.1** for details. After GIS operation, the actual total area was found 233.346 sq.km. (57,661.182 acre).

1.4.1.2 Project Area

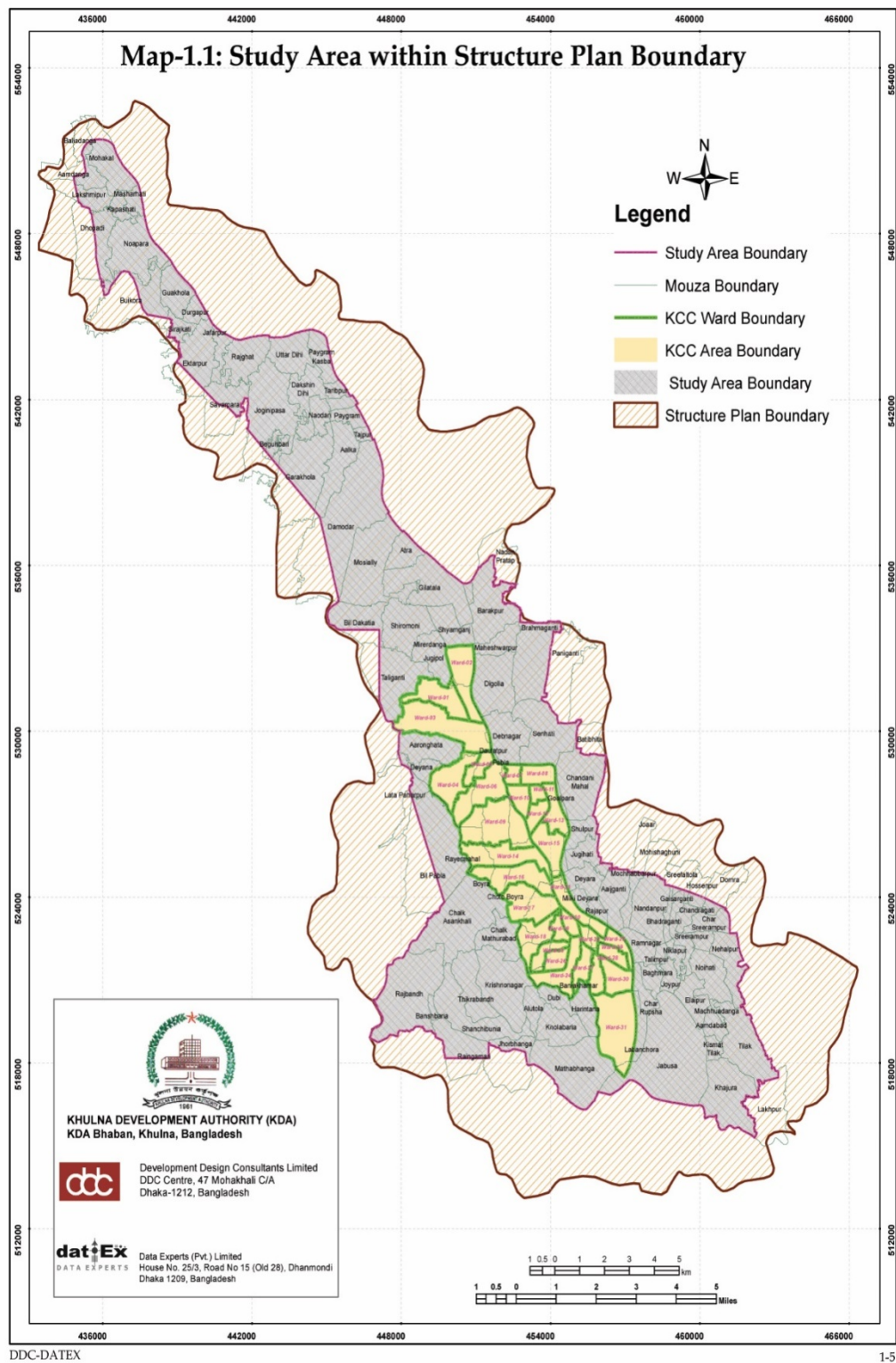
According to the ToR, from the study area, the consultant, in collaboration with the client, shall determine the DADP area which will not be less than 30,000 acres and henceforth this area will be called the 'project area'. Accordingly, after field visit and discussion with the client the consultant determined an area of 181.26 sq.km (44,789.48 acres) as the project area for preparation of DADP Map-1.1 and Map-1.2. present the details of project area including ward and mouza.

Table-1.1: Study Area Coverage

KCC / Thana	Study Area		
	Sq.km	Acre	Hectare
KCC	45.65	11,280.37	5,141.15
Khanjahan Ali Thana	22.48	55,56.00	2,249.39
Dumuria Upazila (Part)	13.24	3,271.23	1,324.30
Batiaghata Upazila (Part)	31.02	7,666.10	3,103.68
The Rupsha Upazila	39.89	9,841.20	3,984.29
Fakirhat Upazila (Part)	4.09	1,011.40	409.47
Dighalia Upazila (Part)	22.32	5,515.90	2,233.16
Fultala Upazila	25.63	6,333.10	2,564.00
Abhaynagar Upazila (Part)	27.41	6,772.70	2,741.98
Total	231.67	57,248.00	23,177.33

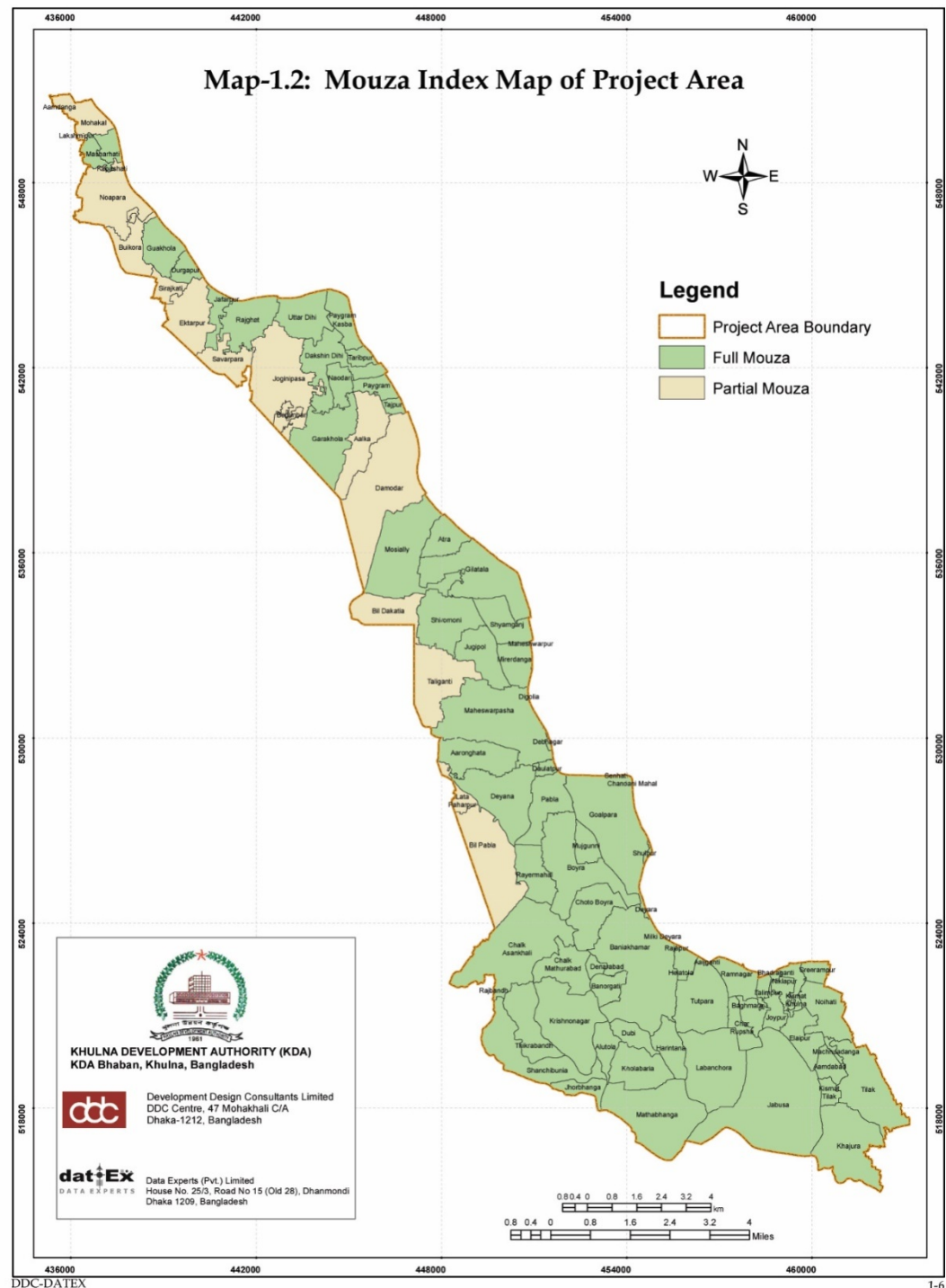
Source: Terms of Reference (TOR)

Map-1.1: Study Area within Structure Plan Boundary



Source: Khulna Master Plan 2001, KDA

Map-1.2: Mouza Index Map of Project Area



1.4.2 Urbanized and Urbanizing Area

Urbanized Area

Urbanized area within the project area is divided into two different areas. Area under **Khulna City Corporation (KCC)** is the oldest and most densely populated part of the project area. It is also interchangeably called **Khulna City**. Currently, KCC has an area of 45.48 sq.km (11,239.82 acres) with its 31 wards.

Noapara Paurashava is located at the northern part of the project area comprising 20.88 sq.km (5,137.28 acres) with 9 wards. However, except parts of some mouzas, almost entire Paurashava is within the project area. The area of Noapara Paurashava included within the project area stands at 18.23 sq.km or 4,504.73 acres.

Urbanizing Area (Extended Area)

This is the area beyond KCC area and Noapara Paurashava included within the project area. This area is basically rural and agricultural, mostly undeveloped area. Extended Area comprises [233.34 (Study area) - 45.48 (KCC) - 20 (Noapara)] = 167.85 sq.km. Extended Area is gradually urbanizing or likely to urbanize in near future.

1.4.3 Detailed Area Development Planning (DADP) Zones

To create exclusive planning zones and ease plan preparation, the consultant created 27 DADP Zones as planning zones. The population growth (depicts future growth potentiality) and the existing condition of physical growth (structural occupancy rate) have been considered as the basis for preparation of these zones. Please see **Appendix-3.4** for details.

1.4.4 Drainage Zone

Based on topographical features, existing internal network of khals and river system, KCC Drainage Master Plan divided the entire KCC area into six drainage zones. The current project has adopted this drainage zones for making drainage development proposals. Details of these drainage zones have been presented in drainage section of **Chapter-1**. A drainage network map has also been provided as **Map-3.11** in **Chapter-3**.

1.5 BASIC FEATURES

1.5.1 Population Growth

Khulna City Corporation (KCC) is the largest segment of the study area comprising about 63% of the total project area population. The population data of this segment gives clear indication of growth trend of the study area. In this area, the growth rate of population between 1991 and 2001 was 1.51%. In 1991, the population of KCC was 6,63,338 that rose to 7,70,498 in 2001. During a period of 10 years, the KCC population increased by 16.15%. **Table-1.2** also shows the growth of population between 2001 and 2011 in Noapara Paurashava area and in Extended Area of the project area. In Noapara, population increased by 15.67%, while in Extended Area the increase

was the highest in terms of number of population (growth rate was 2.90%).

Table-1.2: Population Increase in KCC Area, 1991-2001 and 2001-2011

Area	Growth Rate (%)		Population						
	1991-01	2001-2011	1991	2001	%increase 1991-2001	2001 (Adjusted)	2011 (Adjusted)	2011 (Projected)	% increase 2001-2011 (Adjusted)
Khulna City Corporation	1.51	1.35	6,63,338	7,70,498	16.15	8,29,595	6,88,881	9,48,814	-9.26
Noapara Paurashava	0.06	2.04	72,595	73,006	0.57	77,248	89,353	94,490	7.26
Extended Area	2.31	1.25	3,02,585	3,80,240	25.66	4,11,980	4,23,916	4,66,551	1.42

Source: National Population Census 1991, 2001, 2011, District Community Series, Khulna, Jessore, BBS.

Whatever the growth rate is, the observation from projected data indicates that the absolute population of the **Khulna City** has increased moderately during the last two census periods. During the post-independence years, **Khulna City** experienced exorbitantly high increase in population caused by socio-political turmoil during 1971 that led to massive rural-urban migration all over the country following liberation. According to Population Census Report 2001, KCC Population was 7,70,498 persons. As per instruction of BBS (www.bbs.gov.bd) in 2012 (after publication of 2011 Population Census Report) it was asked to increase the population by 7.67% that give a new population figure of 8,29,595 persons for 2001. In the same way, BBS declared KCC population for 2011 as 6,63,342. But later on instructed to raise it by adding 3.85% that gives a population of 6,88,881 persons for 2011 for KCC area. It is evident that population of KCC area has reduced compared to 2001. According to new estimation, population of KCC area is 9,48,814 (adjusted) which is 10.59% less than 2001 population.

When it is evident from preceding census reports that urban population of KCC area and of the country are consistently rising, such data creates serious confusion and casts doubt on the authenticity of the 2011 census data. Moreover, considering the impact of construction Padma Bridge at Mawa Point, rejuvenation of Mongla port, gas supply at Khulna from Bhola etc. on the development of the city, diminishing rate of population is not a feasible option for population projection of KCC area.

The consultant has projected the population of 2011 based on the growth rate between 1991 and 2001 (Table-1.2).

1.5.2 Physical Characteristics

a. Physiographic

The physiography of Khulna region is broadly characterized by the Ganges-tidal floodplain. It has lower relief and crisscrossed by large number of tidal rivers and channels. It is nearly flat and the surface is poorly drained. **Khulna City** was developed on natural levee of Bhairab-Rupsha. The landscape of city and its environs is composed of natural levee, floodplain, old meander complex, bar, tidal marsh and back swamps. Natural levee is well developed along the Bhairab-Rupsha banks (mostly on the west bank) and is occupied mainly by the present built-up area of the city.

Apart from the topographic conditions the city has the following natural peculiarities:

- The City has a unique linear shape, extending from southeast to northwest along the Bhairab-Rupsha Rivers. Subsequently, railway line and Khulna-Jessore Road played a dominant role in shaping the city a linear one.
- **Khulna City** experiences high impact of salinity in its surface and ground water. This poses a problem because of a saline natural environment around the city.
- The city is almost free from natural disasters like flood, cyclone and earthquake. Both frequency and intensity of disasters are also low in Khulna.

b. Topography: Height of the Land Surface and Land Level

The field survey (2012) has identified 2.1 m SoB above MSL as the mean height of the land surface of **Khulna City**. The value of the highest level is 7.89 m SoB above MSL, while the lowest is -2.263 m SoB below MSL. Topographic survey by the consultant shows the height of the level varies from -4.19 m SoB to 3.79 m SoB above MSL, spreading about ½ km. to 4 km inside from the river bank. The general slope of the city's land is from north to south along the bank of the river, while the lateral slope is away from the river bank. Next to levee is the flood plain extending about 4 km inside (western side) from the river. Flood plain is followed by back swamp and tidal marsh lands. The southwestern segment of the study area is broadly characterized by tidal flood plains having lower relief and crisscrossed by large number of rivers and canals. The land elevation decreases towards the west. Towards north, the study area the land level is higher.

c. Geology

The Study Area covers the natural levee, floodplain-estuarine plain, oxbow lake etc. of the Rupsha-Bhairab-Pasur Rivers on the east and flood plain, flood basin, swamp, abandoned channel etc. of the Mayur-Hatia Rivers on the west and is characterized by tidal and flood inundation with low relief. The area is completely underlain by alluvium composed of sand, silt and clay in varied proportion. On the basis of geomorphology, relief and drainage, sediment characteristics, vegetation cover, water logging and flooding, the study area has been divided into the following geomorphologic units of, channel, ox-bow lake, abandoned channel and point bar.

d. Soil

There is a sedimentary peat soil deposit in an area of about 0.13 million ha in Bangladesh that is also found in the low-lying areas of the Gopalganj-Khulna region. In general, organic materials occupy more than half of the upper 80 cm of the profile and sometimes in different layers within

the same soil. The area remains wet in the dry season, and is mainly deeply flooded in the rainy season. Poor peat soils have a low bearing capacity when wet. They shrink and eventually are lost by oxidation when dry.

e. Building Structure Use and Density of Structures

Physical feature survey reveals, about 85.37% of the study area structures belong to residential use. Only about 3.92% buildings have been found under commercial use, while 0.83% structures are under industrial and manufacturing use. The survey identified 1.84% structures under mixed use and 0.92% structures providing services of different kinds.

The average density of structures in KCC area is 71.65 per acre. The highest density has been found in Ward No.07, with about 86.45 structures per acre, and the lowest in Ward-8 with 21.13 structures per acre.

f. Existing Land Use

In the study area, 35.76% land goes to agriculture **Table-1.3**. About one third land (34.38%) of the study area goes to residential use and about 10.49% to water body that include pond, canal, wetland, river and their tributaries.

Only 4.92% of the study area land is under commercial and industrial use, Recreational facilities including recreational open space, covers only 0.26%.

The overall picture of the study area shows, that the land use pattern is changing mainly in the city fringe areas. As the population and economic activity increases demand for new land also rises proportionately.

Any new demand for urban use land presses on existing agricultural land. Thus, agricultural lands are gradually being converted into non-farm use. It is evident from the land use survey that only about half of the study area is under urban activities, if agriculture, water body and vacant lands are excluded.

Table-1.3: Existing Land Use of the Study Area

Land Use Category	Sq. Km	Area (Acre)	Percentage
Agriculture	83.45	20620.20	35.76
Circulation Network	15.50	3930.08	6.64
Commercial	1.72	424.90	0.74
Community Service	0.89	219.14	0.38
Education and Research	3.10	766.89	1.33
Government Services	0.56	137.60	0.24
Manufacturing and Processing Activity	9.76	2411.62	4.18
Miscellaneous	0.14	34.37	0.06
Mixed Use	2.19	540.08	0.94
Non-Government Services	0.07	17.84	0.03
Recreation Facilities	0.61	151.66	0.26
Residential	80.23	19824.79	34.38
Restricted Area	4.00	988.36	1.71
Service Activity	0.57	140.24	0.24
Transport and Communication	0.36	89.00	0.15
Urban Green Space	1.50	371.11	0.64
Vacant Land	4.23	1044.22	1.81

Waterbody	24.48	6049.08	10.49
Grand Total	233.35	57661.18	100.00

Source: Survey by the consultant, 2012.

1.6 PROJECT AREA CLASSIFICATION: EXISTING AND NEW URBAN AREA

To make planning more pragmatic and worth executing, the ToR asked to divide the entire project area into **Existing Urban Area** and **New Urban Area** based on the increase of population density in five years. The consultant, accordingly made division of the project area into **Existing Urban Area** and **New Urban Area** based on population density increase between 2001 and 2006. This is to enable follow the two separate principles and standards of planning and make the plans need based and pragmatic. According to ToR following criteria was followed to determine the existing and the new urban area.

1.6.1 Existing Urban Area

According to ToR, existing, partially developed urban area will show an increase in density of average 30 ppa over five years (for instance from 100 ppa to 130 ppa or 50 ppa to 80 ppa). According to this definition, only 09 wards/Unions or Mouzas of the KCC could be identified as the "Existing Urban Area" as listed in **Table-1.4**. The existing urban area gives a total land area of 8,285.14 acres.

Table-1.4: Existing Urban Area

Area	Ward & Mouza Name	Population				Area (acre)	Population Density (PPA, 2013)	Population Density (PPA, 2018)	Change
		2013		2018					
		Total Population in Mouza	Within Project Area	Total Population in Mouza	Within Project Area				
KCC Area	Ward -05	24,656	24,656	29,156	29156	196.94	125.20	148.04	22.85
	Ward -07	24,215	24,215	28,821	28821	113.57	213.22	253.78	40.56
	Ward -09	69,628	69,628	90,341	90341	887.05	78.49	101.84	23.35
	Ward -11	30,273	30,273	35,336	35336	94.52	320.29	373.86	53.57
	Ward -20	45,837	45,837	59,743	59743	119.98	382.04	497.94	115.90
	Ward -23	32,650	32,650	40,267	40267	124.90	261.42	322.40	60.99
	Ward -26	29,853	29,853	35,669	35669	164.26	181.74	217.15	35.41
	Ward -30	38,575	38,575	45,684	45684	297.64	129.60	153.49	23.88
Extended Area	Bagmara	15,814	15,814	19,837	19837	185.39	85.30	107.00	21.70

Source: Survey by the consultant, 2012.

1.6.2 New Urban Area

All KCC Wards and mouzas other than identified wards/mouza in "Existing Urban Area", are considered as '**New Urban Area**' according to ToR. According to ToR new urban area will absorb 50 ppa over first five years of development (starting from zero). But in **Khulna City**, where economic growth is extremely low, it is very unlikely that it will be possible to have 50 persons or near 50 ppa density of population in next five years.

1.7 HIGHER LEVEL FRAMEWORK

Higher level framework refers to the superior planning, policy or legal framework that serves as the guide to the current planning initiatives. Two Master Plans prepared for Khulna are the higher level planning frameworks for the current planning exercise. These are Khulna Master Plan 1961 and Khulna Master Plan 2001. Since Khulna Master Plan 1961 has expired long ago, it has very little implications to the current DADP. The current DADP is, actually, the continuation of the Khulna Master Plan 2001. In Khulna Master Plan 2001 three sample DADPs were prepared to guide subsequent formulation of DADP. It also set forth mid-level development proposals for core part of the city and the planning standards. The current DADP is prepared based on the framework set by the Khulna Master Plan 2001, following is the review of 1961 and 2001 Master Plans.

1.7.1 Khulna Master Plan 1961

The first **Khulna City** Master Plan was prepared in 1961 for **Khulna City** and its environs for an area of 70 sq.mile (181 sq.km). The plan was marked by four basic sets of proposals:

- Land Use Zoning
- Development
- Basic Infrastructure Development and
- Administration and Implementation of the plan.

The entire set of proposals was prepared in a macro framework emphasizing on the physical setting of the plan area. Stated in simplified form, the plan does not go for detailed analysis of the situation and background of the proposals. Most proposals were set in the form of outline instead of programs and projects. Following are the major features of 1961 Master Plan of **Khulna City**:

The plan made a 20 year forecast of Master Plan area population and proposed various urban services and development projects. The future city area was demarcated on buildable land and the entire area was grouped into major land use zones divided by hierarchy of road networks.

Sites for health and education facilities and market centers, waste disposal points, and drainage were demarcated. Legal and administrative measures were set forth for implementation of the plan provisions. This land use allocation of the 1961 Master Plan served as one of the major guides to Khulna Master Plan 2001 as many parts of the city and its infrastructure were developed based on this plan. However, since this plan expired in 1981, it has little significance to the current planning exercise.

1.7.2 Khulna Master Plan 2001

The 2001 Khulna Master Plan titled '**Structure Plan, Master Plan and Detailed Area Plan for Khulna City**' was launched in 1997 and was approved in 2001. The plan comprised of three hierarchical Plans-Structure Plan, Master Plan and Detailed Area Plans. Structure Plan was the apex plan that laid down development policy proposals for 20 years in outline form. Master Plan proposed land use and infrastructure for the main city and its environs for a period of 10 years. Three Detailed Area Plans were prepared as samples for subsequent preparation of Detailed Area Plans. Detailed Area Plans, prepared under the framework of Structure Plan and Master Plan, are local level plans that are more detail in format and aims to address local problems and issues. The 2001 Master Plan serves as the higher level plan to guide the activities of the current plan.

1.8 REVIEW OF DEVELOPMENT PROPOSALS OF UPPER LEVEL PLANS

1.8.1 Master Plan 2001 (2nd tier plan) Development Proposals

Master Plan is the second tier of Khulna Master Plan 2001 where land use and physical development proposals including infrastructure were set. Duration of Master Plan was 10 years from 2001 that expired in 2011. This component of the plan package has not been officially extended further. The Master Plan report starts with anticipated growth assumptions followed by sector wise development proposals as stated below.

1.8.2 Transport Sector Development Proposals

The Master Plan made the following major development proposals:

1. The plan called for effective traffic management to ensure proper road transport function.
2. The plan proposed to develop a multi-modal transport system in the city combining road, railway and water way.
3. It proposed second bridge on the river Bhairab to connect Dighalia and bridge gap between the city and its eastern fringe.
4. The plan identified some areas of traffic congestion in the city.
5. To increase efficiency of the highways the Master Plan proposed to develop service road along highways to channelize local and slow moving traffic.
6. The plan proposed extension of railway up to Mongla. The alignment was to start from Bajerdanga station and proceed east across Bhairab through Athanarobanki river and Rupsha towards Mongla Port.
7. It proposed to expedite STOL airport development at Foila, Mongla.
8. In the waterway sector the plan proposed river training for stability in the river through development of some embankment, guide banks, groynes, artificial cut off, pitching of bank and dredging.

Execution of Development Proposals

The plan proposed development of multi-modal transportation in **Khulna City** at Railway Station area. But no initiative in this regard has been taken by any authority. It proposed a second bridge over the Bhairab, but no step has yet been taken in this regard.

To increase efficiency of the highways, the Master Plan proposed to develop service road along highways to channelize local and slow moving traffic. But no such service road has yet been developed. The initiative of extension of railway line up to Mongla Port area has recently been taken up. The STOL airport project at Foila, Mongla did not proceed further after land acquisition. Initiatives are observed to ease traffic congestion in the city. No initiative has been taken to link eastern part of the Bhairab river with the main city through construction of bridge.

1.8.3 Housing Sector Development Proposals

It was estimated by the plan that in year 2020, the Structure Plan area would require 2,24,376 housing units with another 90,000 units as replacements. Out of the total housing need in 2020, about 70 % would be in the Master Plan area. The plan also reviewed the housing initiatives of KDA and finally made the following recommendations for housing sector development:

01. The plan called for involving private sector in housing development and suggested to promote private real estate in developing local infrastructure and services to help real estate development.
02. Develop local infrastructure and realize cost of development from the local beneficiaries.
03. Development of site and services projects for low income groups near employment centers.
04. KDA in collaboration with public sector agencies could develop housing for their staff.
05. KDA could undertake housing for the poor living in slums, particularly in city's khas lands.
06. It suggested KDA to prepare and implement improvement plans for unplanned and spontaneously developed areas.
07. Development of infrastructure to enable housing development by land owners in new or fringe areas.
08. Develop planned housing areas in the form of neighborhood unit.
09. Promote organized or planned housing.
10. Proposed development of planned housing at Dhopadi and Amdanga-Laxmipur in Noapara, Teligati, Samaganj and Thikrabadh.
11. Proposed streamlining and promote plot based housing development by real estate with the introduction of new rules.
12. Promotion of private cooperative housing.
13. Community based housing development in the fringe areas with cost sharing by the land owners using the concept of guided land development.
14. Creation of resettlement area for people affected during implementation of Master Plan 2001.

Execution of Recommendations

No initiative was taken to promote private real estate companies and for local infrastructure development. No attempt was made to develop local infrastructure and realize cost of development from the local beneficiaries.

KDA took up a sites and services project at Mirerdanga for low income people. But the project was not well designed to make the serviced land affordable to the low income people. No collaboration was made with any public sector agency to develop public housing.

No plan was undertaken to prepare and implement improvement plans for unplanned and spontaneously developed areas. Only three road proposals are currently being executed by KDA, connecting the main city with the City Bypass. This will enable housing development by land owners in new or fringe areas.

Recently, KDA has undertaken a housing project in the in the north of Khulna University in the form of neighborhood unit. Only land use zoning and development control measures are applied by KDA to promote organized or planned housing development.

Lately, KDA has adopted government rules to streamline private land based housing projects. No initiative has been taken for the promotion of private cooperative housing. No scheme has been undertaken to develop community based housing in the fringe areas with cost sharing by the land owners using the concept of guided land development.

No new resettlement area was created for resettlement of people likely to be affected during implementation of Master Plan 2001. This was not required as hardly any major project was implemented through eviction.

1.8.4 Town Centre Development

In the Master Plan, town centre were termed as a major activity area where varied functions are performed dominated by commercial activity and which indicate the vibrancy of the city. Master Plan 2001 recommended developing 8 new town centers. It also proposed a town square near railway station to be developed with a comprehensive plan to accommodate retail and wholesale market, shopping and business precinct. It also proposed another town centre at Doulatpur with stadium, park, hotel, exhibition, education and medical activity.

Execution of Recommendations

None of the town centre proposals were implemented.

1.8.5 Commerce

The 2001 Master Plan put forward some development proposals in the commercial sector, like, development of commercial hubs at Gallamari-Krishnanagar, Rupsha, Rajapur of North Rupsha, New Market-Shib Bari, Fulbari Gate, Shiromoni, Noapara; Ribbon commercial development along major roads with parallel service road; Commercial development around proposed town centers.

Execution of Development Proposals

No attempt was made to execute commercial development proposals.

1.8.6 Industry

The Master Plan 2001 assessed the current status of the industrial sector, reviewed the major industrial locations at Noapara-Rajghat-Fultala area, Atra-Shiromoni area, Mirerdanga-Daulatpur Industrial belt, Khalishpur Industrial area and Rupsha-Labanchara area, Chandani Mahal Industrial Area, Debnagar Industrial Area, Rajapur and Jabusa. It was followed by some industrial development promotion proposals as stated below.

1. Creation of special tax holiday facilities for designated industrial areas within the Master Plan boundary.
2. Development of basic infrastructure facilities, particularly in privately owned areas that have been earmarked as industrial zone in the Master Plan.
3. Improved transport and communication facilities within the capital city that will reduce travel time.
4. Creation of a congenial environment for foreign investment through establishment of industrial processing zone.

5. Provision of encumbrance free credit facilities at reasonable rate of interest.
6. The plan also proposed total 3,032.57 acres of industrial zone that included 620.95 acres of new industrial zone apart from 2,411.62 acres of existing industrial area.
7. Designation of areas for particular industries,
 - for service and processing industries the plan selected Rupsha Strand Road-north and south, Rupsha area, Daulatpur area, Sondanga Bus and Truck Terminal area for service and processing industries.
 - the study team earmarked 61.25 acres of land on the northern confluence of the Rupsha-Atharabanki rivers for establishment of noxious industries.
 - for large and medium scale industries, Noapara, Daulatpur, Mirerdanga, Khalishpur, Debnagar, Chandnimahal, Bhadrageati and Labanchara areas were selected.
 - small scale industries were placed at BSCIC and KDA Industrial Estates at Shiromoni, Rajapur, Ramnagar and Jabusa areas.
 - the study team proposes to develop an IT Village at existing storage and godown site of KDA, west of KDA New Market on an area of about 20.96 acres.

Execution of Recommendations

No industrial estate was developed by the public sector in industrial zones. But some private sector industries were developed in designated industrial zones.

1.8.7 Open Space and Green

The Master Plan 2001 made proposal for about 2008.00 acres open space that included park, play field, green space, river and road side green space and botanical garden, highway forest.

Execution of Recommendations

None of the above open space and green area proposals were implemented by any relevant agency. No waterfront green area was developed. No attempt has been made to set up urban or highway forest. No initiative was taken to establish botanical garden, park, play field and stadium. KCC is implementing a linear park development project on the Mayur River, near Gallamari Bridge. KDA has implemented a recreation spot at Mujgunni and a new water based recreation centre at Religate is under process.

1.8.8 Social Services

The Master Plan 2001 first carried out an overview of all available the social services facilities and then made assessment of the future need of services. Standard provision of respective services was followed next. Then for each category of social services, the necessary proposals were set.

• Health Care Facility

The Master Plan 2001 proposed a new 200 bed general hospital in Noapara area to serve this fast expanding urban centre. Another 200 bed new general hospital was proposed at Labanchara to serve the southern part of the city, particularly, the poor or working people living in the southern part of the city. Keeping in mind the increasing number of mental patients, the plan proposed to set

up a 100 bed mental hospital at Fultala. In order to strengthen health related manpower development, a nurse training institute was proposed to be established at Fultala.

Execution of Recommendations

No healthcare facility proposed by the Master Plan 2001 was developed by any relevant agency.

- **Education Facility**

The plan proposed that additional primary schools needed for local areas might be considered during preparation of Detailed Area Plans depending on availability of sufficient land in the locality. The plan also apprehended that large number of primary schools would be established on community and private initiatives.

Regarding Secondary Schools, the plan estimated 1,34,826 secondary school going population by 2010 and assumed that 50% of the existing schools would be able to introduce two shifts that would be able to accommodate 91,200 students. Another 43,626 students would have to be accommodated in new schools and this number of students would need 55 additional secondary schools. If it is assumed further that half of these students would-be accommodated in schools established on community and private initiatives, then the Master Plan would need to provide only 28 secondary schools. To save land the plan suggested to introduce two shifts in new schools, which means, the same number of students could be accommodated in 14 schools only. So it was decided to provide only 14 new secondary schools in the Master Plan Area, each on an area of 5 bigha (1.67 acre) or 0.067 ha.

The plan recommended only one new college at Noapara on an area of 10 acres. To fulfill the local needs for sports training the plan recommended setting up a sports complex at Gilatala mouza in Khanjahan Ali Thana on an area of about 50 acres. A technical training centre was proposed at Noapara near the proposed new college, on an area of about 4.8 acres. Additional 146 acres of land was earmarked for extension of the existing Khulna University Campus. An Alia Madrasha was proposed at Fultala to promote religious education. The area for the Madrasha was fixed at 2.87 acres. The Master Plan proposed one new orphanage at Fultala on an area of 4.00 acres to accommodate about 200 orphans who could be trained on general and vocational education.

Based on projected population of the study area it was estimated that the share of proposed educational land allocation rate will be 1.00 acres per 1000 population by the plan period year (2010 AD). This situation calls for careful considerations before putting land for urban uses.

Execution of Recommendations

None of the education facilities proposed for development by the Master Plan were implemented by any relevant authority.

1.8.9 Administration

The plan suggested allocation of unused vacant land of about 30 acres at Boyra area to various ministries for construction of office blocks for accommodating their respective departmental offices. The plan recommended relocating the present jail to a more spacious area and the planning

selected a large site of 48.31 acres on the west of Gilatala mouza in between the railway line and proposed City Bypass.

Execution of Recommendations

No development according to above proposal was made.

1.8.10 Municipal Services

Under municipal service category, before making proposals for various municipal services, the plan first reviewed the current situation and made assessment of future need. After that the following recommendations were made.

- **Water supply**

The plan made the following proposals for water supply:

1. Construction of one Surface Water Treatment Plant using water resources from rivers and storage reservoir/retention basin. The plan saw possibility of extracting fresh water from Majitkhali River and carried it up to Gilatala across the river Bhairab.
2. Package type piped water supply system was proposed in Fultala and Rupsha area considering them as growth centres.
3. Surface water Treatment Plant at Shiromoni, using surface water from the nearby rivers was proposed.

Execution of Recommendations

None of the above water supply development proposals were executed. But Khulna WASA is currently executing a surface water supply project for the city. Under this project, water will be collected from the river Madhumatai at Mollahat, treated and supplied to **Khulna City** through pipe.

- **Sanitation**

The sanitation improvement proposals of the plan were:

1. Production and supply of components of single and twin pit latrines;
2. Construction of public toilets in the public places like, markets, shopping areas, bus stations, bus and truck terminals and river ghats to give wider sanitation coverage to the growing needs of the people.
3. The following guidelines were proposed to be followed for sanitation improvement programme.
 - Provide pit latrines to poor families.
 - Undertaking programme for upgrading unsanitary latrines or conversion of kutchha latrine to sanitary latrines.
 - Introduction of hygiene education programmes for the residents and school children from primary level. Efforts through NGOs may be made to motivate people for this purpose.

- Public latrines with biogas plant may be set up to supply gas to the local area only in small scale for cooking.
- Open excreta disposal system to be controlled/stopped in areas like river/khal banks; stop defecation in drains in low income and slum areas.
- To ensure effective cleaning, operation and maintenance, the public toilets may be leased out to the private parties/NGOs on contract basis. Annual maintenance cost may be funded from the contract fees received from the lessee who will collect the money through a nominal user charge.
- Introduction of small bore pipe sewerage system.

Execution of Recommendations

Latrines of many slums were provided by NGOs and donor agencies. No programme was undertaken to convert kutcha latrines to sanitary latrines. No hygiene education programme at schools and motivation programme by NGOs were taken. No programme or project was undertaken for production of human excreta based biogas. No programme or project was undertaken to prevent excreta disposal in areas like river/khal banks. In fact such bad habits seem to be no more among poor families.

Very few new public toilets have been provided around public places such as bazars, shopping areas, transport terminals, stadiums, etc. No provision of separate public toilets for handicapped people is found. At many places public toilets have been leased out to the private parties on contract basis as per recommendation. Small bore pipe sewerage system was not introduced.

c. Solid Waste Management

Following were development proposals of the Master Plan 2001 under solid waste management:

1. Setting up Controlled Dumping System for final disposal of the solid waste.
2. Adoption of Sanitary Landfill System for final disposal of waste.
4. Introduce common package type incinerator for disposal of clinical and hazardous waste.
4. Recycling of waste for resource recovery and reuse of waste.
5. Adding new vehicles and logistics in the KCC conservancy department.
6. The plan recommended community participation and public awareness campaign for better management of solid waste.
7. Plan also called for privatization of solid waste management.

Execution of Recommendations

KCC is currently executing solid waste recycling project and new waste dumping sites.

d. Drainage

Regarding improvement of the drainage condition the Master Plan proposed preparation of a comprehensive Drainage Master Plan with an integrated network of drainage system. It also called for formulation of a storm water drainage improvement plan. The plan recommended KCC to take immediate steps for removing the unauthorized structures like earthen barriers; small culverts etc., from the drainage paths/khals and ensure clear right-of-way. It also called to involve NGOs/CBOs

in cleaning and maintenance of the drainage and environmental sanitation activities. Pipe drain was recommended at places where road is narrow and where there is no space for roadside drain. For improvement of present drainage situation, it made specific proposals for improvement works as stated below:

- (a) Construction of additional drainage sluices at Tutpara and Helatola;
- (b) Construction of link drains in Boyra, Rayermohal, Nodal point of Khan Jahan Ali and KDA Avenue, end point of Daulatpur, Torun Sena Sarak, Khapara, Anjuman road, Dattabari slum, Mistripara.

The plan proposed the responsibility of protection of khals under the threat of encroachment on KDA and KCC.

Execution of Recommendations

KCC in 2011 prepared a drainage Master Plan for its area. It is expected that with the execution of the plan much of the drainage problems of the city will be solved.

e. Graveyard

The plan recommends additional land for graveyard, one at Moheshwarpasha on an area of about 38 acres and the other at Sirajkathi, Noapara on an area of about 10 acres.

Execution of Development Proposals

No graveyard was developed at Moheshwarpasha and Sirajkathi, Noapara. However, KCC has developed a new graveyard close to Nirala Residential area. A new graveyard development project is being undertaken by KCC.

f. Slaughter House

The plan suggested abandoning the present slaughter house and relocating it on a better site away from the core area of the city. For this purpose the plan has recommended a new site at Thikrabandh, south of Gallamari Bridge, on an area of 2.40 acres.

Execution of Recommendations

No slaughter house was built at Thikrabandh. KCC, however, is contemplating to develop a modern slaughter house.

1.8.11 Fire Service

The plan recommends three more sites for fire station at,

- west of weather station near Khulna University on an area of about 2.35 acres;

All these sites are located in expanding urban areas that would serve the future population and properties.

Execution of Recommendations

No proposal of the Master Plan was implemented by the concerned authority.

1.8.12 Postal Service

The following sites have been suggested for new post offices,

- north-west of proposed Satellite Town at Rupsha on an area of 0.73 acre; and
- north of proposed Ahasanbad Residential area at Goakhola, Noapara.

These are to serve the future population of the fast expanding settlements of the areas.

Execution of Recommendations

The proposals about post office were ignored by the concerned authority.

1.8.13 Police Outpost

The plan recommended police outposts at strategic locations. The study team recommended that KDA, in its housing estate plans should reserve space for police outpost. Space for police outpost should also be reserved at important locations during preparation of the area specific Detailed Area Plan.

Execution of Recommendations

Many police outposts have been developed at strategic locations. KDA has not developed any housing estate since preparation of the Master Plan 2001, so the proposal to include police outpost in KDA housing estate does not apply.

1.8.14 Land Use Zoning

Master Plan recommended 27 land use zones for the study area. Among the major land uses, the plan reserved 52.87% land for residential use, followed by 5.71% land for agriculture, 7.80% for transport and terminals, 6.77% for industries, 1.10% for commerce and related uses. This land use zoning provision will undergo revision due to changed circumstances.

Execution of Recommendations

The land use zoning plan prepared by Master Plan 2001 is being effectively used by KDA for offering land use permit to prospective developers, under the East Bengal Building Construction Act 1952. However, KDA could not protect the unapproved building construction.