

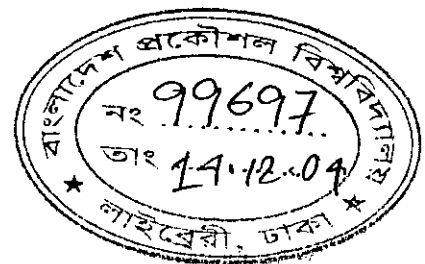
**TREND OF DEVELOPMENT OF FORMAL PRIVATE RESIDENTIAL
AREAS AND ITS IMPACT ON THE GROWTH PATTERN OF
KHULNA.**

By

ABIR-UL-JABBAR

A thesis submitted in partial fulfillment of the requirements for the degree of
MASTER OF URBAN AND REGIONAL PLANNING (MURP)

August 2004



#99697#

Department of Urban and Regional Planning

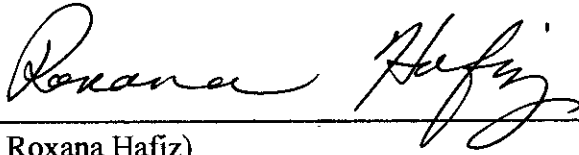
**BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY
(BUET) DHAKA.**

**TREND OF DEVELOPMENT OF FORMAL PRIVATE RESIDENTIAL
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KHULNA.**

Submitted by ABIR-UL-JABBAR, Roll no. 100015014 F

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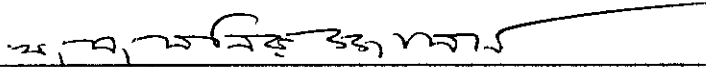
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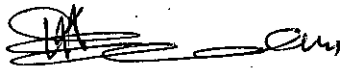
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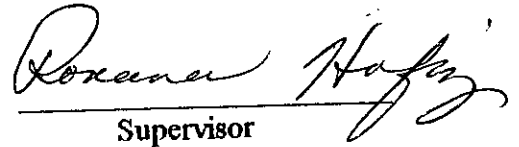
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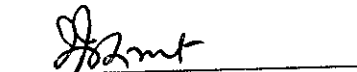
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LIST OF ABBREVIATIONS

ADP	Annual Development Programme
BBS	Bangladesh Bureau of Statistics
BUET	Bangladesh University of Engineering and Technology
CBD	Central Business District
CUS	Centre for Urban Studies
DPHE	Department of Public Health and Engineering
GIS	Geographical Information System
GOB	Government of Bangladesh
HBFC	House Building Finance Corporation
HBRI	Housing and Building Research Directorate
H / E	Housing Estate
HSD	Housing and Settlement Directorate
KCC	Khulna City Corporation
KDA	Khulna Development Authority
PWD	Public Works Department
R / P	Residential Project
Sft	Square Feet
Tk.	Taka

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TREND OF DEVELOPMENT OF FORMAL PRIVATE RESIDENTIAL AREAS AND ITS IMPACT ON THE GROWTH PATTERN OF KHULNA.

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ABSTRACT

Housing is the one of the basic needs for human being. Land is scarce in Bangladesh, a country with a large population and limited land resource. The housing problems primarily arise from the huge migration of rural people to the cities. In order to mitigate the housing problems private land developers are developing private housing projects in Khulna. These private housing projects are being developed out side the Khulna City Corporation area. There are 19 private housing projects under 12 private Real Estate Development Agencies in Khulna. Majority of these projects is located on the south-western fringe of Khulna. The studied 19 projects provided 2481 residential plots, where Khulna Development Authority (KDA) and Housing and Settlement Directorate (HSD) provided 3679 plots in planned residential areas of Khulna. The developers supplied these plots to the house buyers through an easy process. Buyers can get theses plots without any bureaucratic complexity and lengthy formalities. The developers hand over the deed of plots to the buyers after full payment of the price of land. It has been seen that all developers converted agricultural land to residential areas. As a result agricultural land is also gradually being reduced in Khulna. The local development authority, KDA has no control over these private housing development schemes. As a result, the developers can start a housing project anywhere they like. As real estate is a profitable business, mainly the land brokers are coming into this business with little or no knowledge regarding planning and requirements of housing, such private developers are developing housing projects possessing low quality service facilities and the rate of conversion of agricultural land for housing is also significant. This research attempted to analyze the trend of formal private residential development and investigate its impact on the growth pattern of Khulna.

CHAPTER 1: INTRODUCTION

1.1 Statement of the Problem

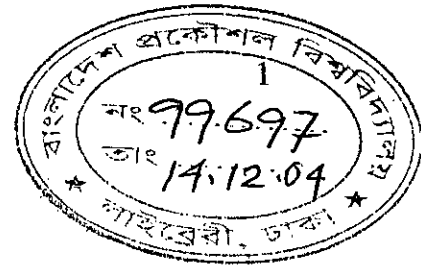
1.2 Background of the Study

1.3 Objectives

1.4 Methodology of the Study

1.5 Justification of the Study

CHAPTER 1: INTRODUCTION



1.1 Statement of the problem:

People want to live in a safe and comfortable environment. It is not possible for individual households to create such an environment (in terms of well-planned plots with adequate infrastructure and services, open spaces, greenery, safety, security, etc). In this regard, Real Estate Developers have come forward to provide planned residential plots to city residents at their chosen locations. People are interested to buy residential plots from real estate developers because of the above stated reasons. Plots and apartments of developers are popular in Dhaka and similar trend is being observed in other cities.

Khulna is the third largest city in Bangladesh and an important industrial and apart city of the country. Khulna showed rapid increase in population after the liberation of Bangladesh in 1971 and this trend continues till today. Government agencies, like the Khulna Development Authority (KDA), have been trying to provide residential plots to the residents of the city of Khulna. However, their supply falls far short of the demand. In this regard, real estate developers have come forward to develop residential projects to meet the rising demand of housing or plots for housing to the city dwellers of Khulna. The problem is that private residential projects in Khulna are not equipped with adequate services and facilities. Even plots are of irregular sizes and shapes. Low lying and undeveloped lands are found in the formal private residential area and are sold at low price. In this situation, people are buying the plots just to be owner of land and there is no ceiling for selling and buying land.

The present study is based on the analysis of the development of private formal residential areas that are situated within the jurisdiction of the Khulna Development authority (KDA). These residential areas are being developed without adequate provision of the utility services in an unplanned manner, contrary to the Master Plan adapted by the KDA. Such development activities may hamper the proper development of Khulna in near future as the land is used for residential purpose or

left frozen instead of agricultural and marshy land. Thus, the agricultural productivity is on the decline and supply of food for city dwellers are collected from far away areas and it affects the whole urban economy of Khulna. The main issue is that large tracts of land have been bought by the private Real Estate Developers and are lying idle because these lands are not developed right way. This not only restricts the supply of land for housing but these housing schemes are being developed in an unplanned manner and hampering the proper growth of the City.

1.2 Background of the study

The origin of the human settlements in the region, that now constitutes Bangladesh, is believed to be several thousand years old. The land in this region has always been very fertile and has thus been able to support large population. Before 1971, the eastern province of Pakistan, which now constitutes Bangladesh, had a population of 75 million. During the period of 1951-1991, the population growth was rapid where the total population of Bangladesh rose from about 44 million to 111 million, 2.52 times of the 1951 base population. While population of the country has increased at such galloping rate, the land area of the country remained nearly constant, at only 56,977 sq.mile or 147,570 sq.km. The density of population is nearly 755 person per sq. km. Until 1951, Bangladesh was almost completely a rural-agrarian country, with 95.66 percent of the population living in the rural areas and only 4.34 in urban areas (Islam 1998). Urban centers of nearly all categories have experienced rapid growth during the last 40 years. Many new centers were formed during post liberation period, but most conspicuous and rapid growth has been observed that of the large cities particularly on Dhaka, Chittagong, Khulna and Rajshahi. This continuous population growth increased the need for housing, The housing shortage was estimated in 1991 to be about 3.10 million units composed of 2.15 million units rural areas and 0.95 million units in urban areas (Hasan-2000).

After two basic needs food and cloth, housing is the third basic need of human being. Due to increase in land price and building materials and population growth in Bangladesh, people face formidable problems to satisfy their housing need with scarce resources. As a result of increasing demand, value of the buildable urban land

is increasing very rapidly. In such a situation, the real estate developers can play an important role to provide housing facilities for the urban people.

It is a traditional practice that people want to live in pollution free, noise free environment where they can breathe fresh air and feel comfortable. Lands, found on the periphery of the city are of comparatively lower land value than in the city corporation areas. The private real estate developers of Khulna started their activities of buying land and developing housing in the urban fringe of the Khulna City. People are also interested to buy the plot from those residential areas, because they can get a plot within a reasonable price. People are also interested to purchase plot in these areas to avoid the complexity of land purchasing procedure. So private real estate developers have a number of reasons to develop residential projects and simultaneously they play an important role in the provision of housing facilities in Khulna.

In the context of Bangladesh, the private real estate business or real estate developers are mainly concentrated in Dhaka City. In Dhaka City, the activities of the real estate companies are various in dimensions, like residential plot distribution, apartment development, market complex construction and distribution etc. But in Khulna City, there are only twelve private real estate developers who mainly develop land and subdivide land for residential plots and sell plots without service facilities. It is remarkable that for the lack of installed services people buy the plots in cheaper rate than government serviced plots.

1.3 Objectives

The main objective of the study is to identify the trend of development of formal private residential areas by the developers and to assess the impact of such development on the growth pattern of the city of Khulna. This objective can specifically be divided into the following specific objectives.

1. To investigate the total number of housing projects developed by the public and private sector of Khulna.
2. To investigate the pattern of growth of formal private residential development of Khulna.
3. To study all the facilities and services provided by private developers in the selected residential areas.
4. To identify the effects of such residential development on the overall growth pattern of Khulna.
5. To study the policies adopted for Khulna and investigate the extent of their implementation in the selected residential areas.

1.4 Methodology of the study:

Methodology is a logical as well as systematic part of the study to guide scientific investigation. A method involves a process or technique in which various stages or steps of collecting data or information are explained. The Dictionary of Social Science defines, methodology as “the systematic and logical study of the principals guiding scientific investigation” (Hamid, 1997). For good accomplishment of a research work, a well-defined methodology is extremely needed. The methodological steps for the present study are discussed below.

1.4.1 Conceptualization

Several things, which are relevant to the present study, have played an incremental role for developing the concept about this study. After completing the several courses on Housing, a fair idea about the current research has been developed. Articles from journals, books and newspapers and conversation with knowledgeable person also helped to formulate concept. Finally, the present situation prevailing in the urban housing sector in Khulna helped to decide to conduct a research on the present topic.

1.4.2 Selection of the topic:

The increasing growth of urban population is resulting in a huge demand for housing. On the other hand, housing development in the urban area of Khulna is far from satisfactory. Some Real Estate Developers as well as government agencies are trying to meet the demand for housing. A reconnaissance survey of the private developers' projects in Khulna and their impact on the growth pattern of Khulna helped to select this topic for research.

1.4.3 Defining the problem and formulation of the objectives

After conceptualization and selection of the title, problems of residential projects were clearly identified and understood. Then necessary objectives have been set up to conduct the research in order to achieve the designed goal.

1.4.4 Review of literature

Afroza in her article, 'People's Needs and Public Housing,' 1997 made a comparison between the public sector housing and private sector initiatives. The article states the government initiatives in the housing sector comprises only of supplying land for high income people, and private initiatives for housing involves both supplying land and apartments for high income people.

In his report "Two Million Housing Programme in Bangladesh" 1997, Fakhruddin states about the housing situation in Bangladesh. The paper states the problem of housing shortage is particularly acute in the urban areas for the poor and the low-income population. Although there is no reliable housing statistics in the country. It was estimated that nearly 5.28 million units of new housing were required in Bangladesh by the year 2000. In order to cope with such a tremendous need, necessary policy decisions and programmes are to be taken without any further delay. Experts and professionals may be consulted and ideas put forward by them are to be taken into consideration for a pragmatic solution of this gigantic problem.

Interim Report Vol. 1, of Master Plan Project, KDA, 1999 shows the existing situation in housing stock of Khulna City. In 1991, there were 1,87,195 housing units in the KDA areas and the amount of shortage of housing units was about 12,358 (6.6 percent). In KCC Area such shortages are comparatively larger, nearly 8 percent. Thus it can be said that nearly 7 percent of all households in Khulna are homeless or do not have proper housing.

Umashankar and Girish; in their book "Public-Private Responsibilities in Urban Housing" 1993, expresses about the need of financial assistance for housing and need of establishment of institutional framework and some financial mechanism for housing. Till recently, the progress of urban development and provision of developed sites, services and houses has been the prime responsibility of Improvement Trusts, Housing Boards and Development Authorities. The performance of these agencies unfortunately has not been very encouraging primarily due to inadequacy of finance,

other problems and delays in land procurement through acquisition, insufficient expertise and manpower, problems in executing or implementing land development and house development or construction programmes. Therefore, the Government and the policy makers of late have realized that the efforts of the above bodies must be supplemented by ascribing a major role to the Non-governmental Organizations and private corporate sector. Out of the above, the maximum contribution has to be made by motivating the private corporate sector in the progress of urban development and provision of housing. Housing finance is another important input to housing. A number of housing finance institutions has come into the existence and they cater to the middle and higher income groups. In view of the fact that 30 percent of the urban population lives in slums and another 10 per cent in substandard houses, it is imperative that housing finance is made available to them if they are to build or develop their houses. These people cannot get finance from the existing housing finance institutions as the rules and regulations discourage them. Consequently either the rules and regulations of the existing financial institutions are to be changed or new institutions are to be established, if housing finance is to be made available to the lower income families and slum dwellers.

1.4.5 Selection of the study area

To conduct a complete study on Private Real Estate Developers in Khulna, the whole of Khulna City and its surrounding fringe areas has been selected as the study area. By a preliminary physical visit and oral communication with the local people within the Khulna City and its surrounding areas, it was clear that the study area consists of 19 individual projects of 12 Real Estate Developers of Khulna City region. These projects are mainly located on the southern and western ends of the Khulna City area. All of these projects selected for investigation for this research.

1.4.6 Reconnaissance survey

After the selection of the study area a preliminary survey was conducted on the study areas, which is noted as the reconnaissance survey. The reconnaissance survey included the following aspects:

- Site visiting with a note book
- Identification of the developers address and communicate with them personally
- Note the name of the projects and their location roughly for the convenience of the collecting locational map

1.4.7 Data collection

Here two types of data are necessary, primary and secondary. Data, which are collected from the direct survey, is called primary data and which are collected from different organizations, books, researches; journals etc. are called secondary data.

1.4.7.1 Secondary data collection

In this stage, the secondary information has been collected from both governments and private real estate developers. The attributes that have been collected from the secondary sources are as follows

- Number of housing projects that have been executed by the Khulna Development Authority (KDA).
- Housing provision that has been made in the KDA Master Plan
- Number of housing projects that have been taken up by both government and private sectors.

1.4.7.2 Primary data collection

To collect primary data, first a questionnaire was prepared with the assistance of the supervisor. Then a physical survey was conducted with the questionnaire. By the conversing with the Real Estate Developers, this questionnaire was filled up. This helped to collect the actual number of Private Residential Developers, location of the projects, year of establishment, services and facilities provided by them etc.

1.4.8 Map collection

The location map of the study area had been collected from the KDA. The lay out map of the projects have been collected from respective organization. The projects were located on the base map to record the development trend.

1.4.9 Data processing and Analysis

The data collected from the primary sources have been assembled according to the objectives. The attained information have been edited and summarized in a sequential order. The surveyors collected primary data regarding the field survey through formatted questionnaire. Then data was compiled to the tables and analyzed according to the technique of SPSS for comparison of different field of investigation.

1.4.10 Data presentation

The collected information have been presented in tabular form, textual form as well as graphical form using appropriate software such as MS Excel, SPSS and other GIS based software. This would help to analyze the existing condition of the field that enriches research. Data obtained from the secondary sources have also been compiled.

1.4.11 Suggestion and Conclusion

On the basis of the analysis and findings, some recommendations have been formulated for the removal of housing problem and to ensure sound and sustainable housing development in the study area.

1.4.12 Preparation of the draft thesis

After processing and analysis the data, a draft report has been prepared before final submission for necessary corrections.

Methodology is further represented by as flow chart 1.4.1

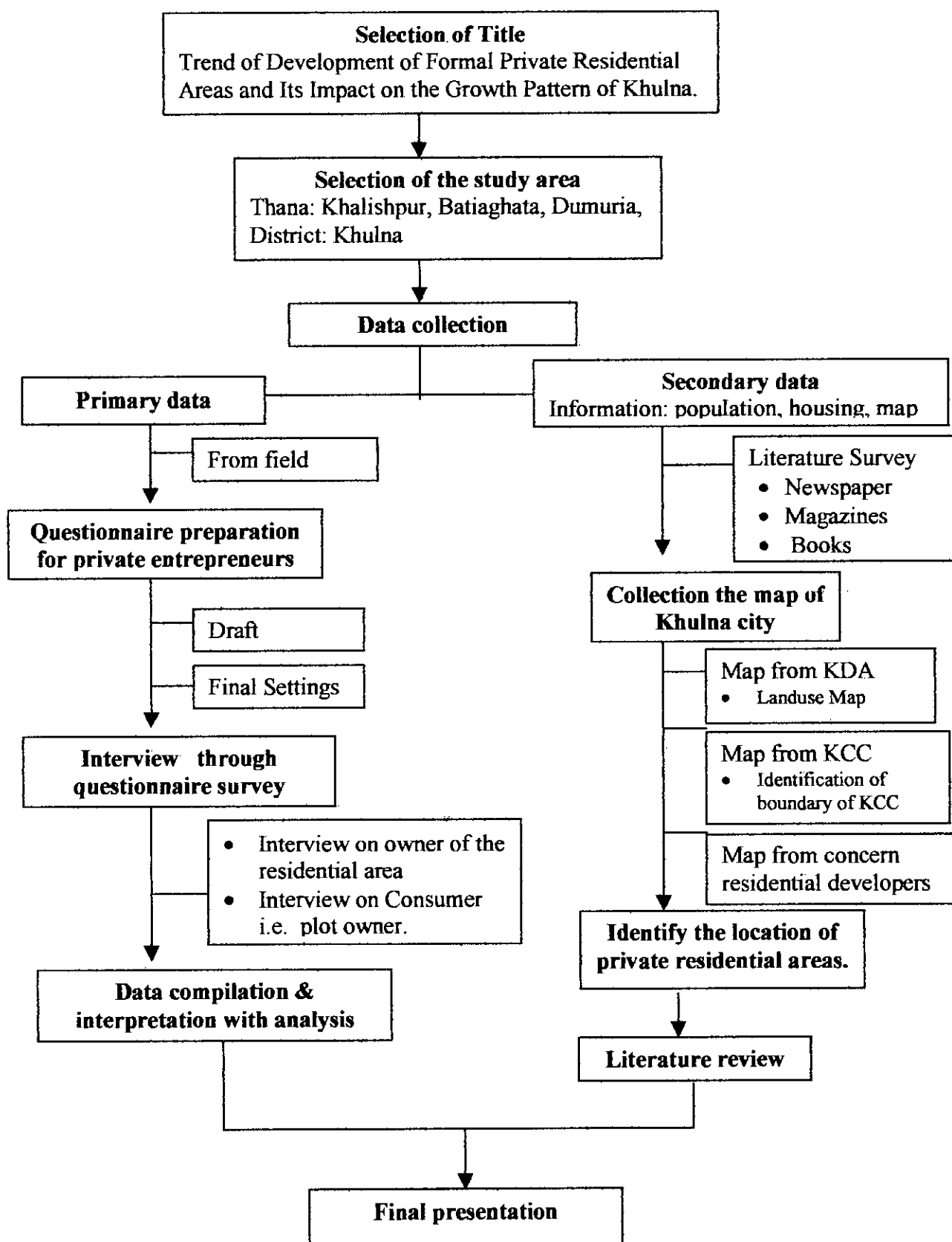


Figure no 1.4.1: Detailed flow chart of Methodology

1.5 Justification of the study

There has been a rapid growth of urban population and is concentrated in a few cities and towns. But there has been no concomitant supply or construction of affordable housing. There is an acute shortage of fund for the development of settlements and extension of urban infrastructure in the public and private sectors in the urban areas of Bangladesh. Moreover the continuous migration of rural poor people to the urban areas particularly to the metropolitan cities of Dhaka, Chittagong and Khulna for job opportunities has given rise to slums and squatters settlements, and created problems of transportation and environmental degradation. This has led to an increasing congestion, and overcrowding in small houses, growth and development of informal settlements creating pressure on existing civic services. To resolve these problems, in Khulna, recently a group of Private Developers has started to develop land for private residential projects. They mainly develop land within KDA area. However, most of these Private Developers do not provide the citizen facilities at a satisfactory level in their housing projects.

At present, there are a considerable number of formal private developers who are operating mainly in the sub-urban areas. The developers buy land from private landowners, elevate them by earth filling, and then sell it to prospective homebuilders. In most cases, they do not provide any services (such as water, telephone, electricity, etc). Due to lack of services, constructions of houses are also hampered. But these sorts of housing projects are playing a vital role on the growth pattern of Khulna. In this regard, this research intends to study the trend of development of formal private residential area development and its subsequent impact on the growth of Khulna. The study also attempts to identify the number of developers now involved in developing residential projects, the actual number of projects and location of these projects. The study attempts to evaluate the performance standard of the private developers and how their activities affect the pattern and the growth of Khulna. It is assumed that this study will help to relate the public authorities to formulate same regulatory measure in order to guide and regulate growth. The study will also help public authorities and private developers with required information that enriches to prepare the plan for development.

CHAPTER 2: HOUSING POLICIES IN BANGLADESH & KHULNA

2.1 National Housing Policy, 1993 and Fifth Five Year Plan

2.2 Housing Policies, Programs and Projects for Khulna City

2.3 Implementation of Housing Policies

CHAPTER 2: HOUSING POLICIES AND PROVISION IN BANGLADESH AND KHULNA

2.1 National housing policy, 1993 and Fifth Five Year Plan

The Global Strategy for Shelter by the year 2000 adapted by the United Nations in November, 1988, calls upon governments to take steps for formulating a national housing policy in the light of the enabling approach for achieving the goals of the strategy. The United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in June, 1992, urged governments to formulate National Settlement Strategies to implement the recommendation of the UNCED in the field of human settlements. In the light of the above and in the context of the objects of the Fourth Five Year Plan of Bangladesh, the government formulate the national housing policy in 1993 (GOB, 1993).

Objectives

The objectives of the national housing policy are to:

- Make housing accessible to all strata of the society and to accelerate housing production in urban and rural areas, with major emphasis on the needs of the low and middle-income groups. The major priority target groups will be the disadvantaged, the destitute, and the shelterless poor.
- Make land available in suitable locations and at affordable prices for various target groups, especially for low income and middle income people.
- Development effective strategies to reduce the growth of slums, unauthorized constructions, encroachments and shanty dwellings, and to improve the existing housing stock environmentally and, where possible, to relocate them in suitable places.

- Rehabilitate disaster affected households, and houses affected by accidental fire.
- Mobilized funds for housing through personal savings, different financial inputs and by developing suitable financial institutions.
- Make an effective implementation of the housing programs, promote the use of locally available materials and construction techniques, and to increase production of forest based building materials such as timber, bamboo, and grass. Attempts will be made to develop alternative and durable building materials, based on locally available inputs.
- Develop institutional and legal framework to facilitate housing.
- Improve and enhance the character, quality and environment of the existing residential areas.
- Develop new strategies, and revise existing housing policies from time to time to cope with the emerging housing needs, and problems in the country,
- Undertake action-oriented research in different aspects of housing, particularly to reduce house building costs and rents.
- Develop a proper tax base to promote housing.

Strategies

The Fourth-Fifth Year Plan objectives implied the mobilization of resources gradually from the government to the private sector. Keeping this view, the strategy of the government will be to act as a promoter and facilitator of housing, provided by the private sector, while retaining the government's role as a provider to a limited extent. The salient features of the housing strategies are:

- Housing will be given due priority in the national development plans, treating it as a separate sector by itself.
- The role of the government in housing will primarily be that of a facilitator in order to provide access to land, infrastructure, services, and to ensure

availability of building materials at a reasonable price. Especially for the low and middle income groups, and to create and promote housing financial institutions, whereas the actual role for construction of housing will be left to the private sector developers, the people themselves, and the NGOs.

- Greater emphasis will be given on affordability, personal savings, self help building, and cost recovery of houses. Efforts would be made to enhance the affordability of the disadvantaged and low income groups, through the provision of credit for income generation, housing loans at low income interest rates, and space for running a workshop, business or related activities.
- Improvement and rehabilitation of the existing housing stock will be given priority by the government alongside new housing.
- Encroachment on public land and formation of unauthorized construction will be discouraged.
- Austerity will be maintained in housing development, and efforts will be made to economize housing costs. This strategy would discourage extravagant construction, facilitate incremental house building, ensure wider application of low cost technology, and encourage optimum use of resources at individual and national levels, both in the public and private sectors.
- Regeneration of forest based building materials would be encouraged, and environmental conservation will be given due consideration.
- Due attention would be given to construction, protection, replacement and rehabilitation of shelters in disaster affected and fire prone areas.
- Special care would be taken for the preservation of cultural heritage and promotion of vernacular architecture in new housing projects.
- Universities, research institute and centers will be encouraged to conduct research on housing projects.
- The National Housing Policy will be coordinated with other development policies e.g. land, environment, population, employment, social welfare, fiscal, and monetary policies at national and local levels.

Fifth Five Year Plan

A major concern of the Fifth-Five Year Plan (1997-2002) is to improve the physical facilities of living such as housing, water supply, sanitation and environment. During the Fifth Five Year Plan, physical planning, water supply and housing sector envisage the provision of these basic amenities through formulating appropriate policies and undertaking effective programs in these areas (GOB, 1998). The objectives, policies and strategies in this connection are given below:

Housing

At present, there is an acute shortage of affordable housing both in urban and rural areas of Bangladesh. A National Housing Policy was approved by the government in 1993 with the prime objective of ensuring housing for all strata of the society, especially the low and middle income groups and the disadvantaged and the shelterless poor. However, its follow-up activities have been very limited. There has been virtually no government program for improving the condition of housing in rural areas. The same has been the case with resettlement program for the slum dwellers. The construction of low-cost houses for the low and middle income groups has also been limited. Then again, it has primarily been confined to areas in and around the metropolitan cities. In Bangladesh, private sector participation in house construction, especially in the metropolitan cities, is encouraging. Residential quarters for government employees can only meet 10 percent of the requirement. Against this backdrop, the objectives and strategies of housing sector has been set for the Fifth Five Year Plan (GOB, 1998).

Objectives

1. Development of low cost houses, and multi-storied buildings for housing, and resettlement of slum-dwellers, the disadvantaged, the destitute and the shelter-less poor, and *in situ* development of the slums and squatter settlements.

2. Development of sites and services schemes for accommodation of the low and middle-income groups of people.
3. Developing condominiums for low and middle-income groups of people.
4. Construction of multi-storied flats for sale to government employees, at different places to ease accommodation problems.
5. Developing housing facilities for working women.
6. Construction of low cost houses in the coastal areas of Bangladesh, and
7. Greater involvement of the private sector through necessary incentives in the housing sector.

Policies

1. A National Housing Authority has been set up in accordance with the National Housing Policy of 1993, to address the housing problem of the low and middle income groups, the disadvantaged, the destitute and the shelter-less poor.
2. Government *Khas* land will be used to its maximum extent, to resolve housing problems, especially for the poor households;
3. Tax exemption will be given to those, who build houses with their own resources;
4. Hire purchase system for house ownership in the private sector will be encouraged;
5. Tenancy Act will be updated for rented houses in the urban areas, for mutual benefits of both the owners and tenants.
6. Abandoned houses will be turned into multi-storied buildings by the Housing and Settlement Directorate (HSD) in different phases to resolve housing problems;
7. The size of residential plots will be limited to 3 *katha* in Dhaka city and to 5 *katha* in other urban areas for housing estates developed by the government and the private sector;
8. Necessary actions will be taken to enforce strictly the Building Code of 1993.

9. Arrangements of soft loans for housing will be made available for the poor, to this end, the government will create a special fund
10. Rural housing will be given priority by the relevant city, and town authorities; and
11. Houses for working women will be developed by the relevant city, and town authorities; and
12. The government will fund the local bodies to develop low cost houses in the coastal areas of Bangladesh.

2.2 Hosing Policies, Programs and Projects for Khulna City

Policy Recommendations

Policy 01: The development authorities will play the role of facilitators of housing development apart from their existing role

Policy 02: Providing assistance to the government agencies in the development of housing schemes.

Policy 03: Providing assistance to undertake housing schemes under private sector

Policy 04: Making provision for housing for the low- income people

Policy 05: Providing necessary infrastructure to facilitate housing development

Policy 06: Planning interventions in the spontaneously developed areas

Policy 07: Upgrading slums and squatter settlements

Policy 08: Continuous monitoring of housing market

Policy 09: Facilitate of finance and investment in the housing sector

Policy 10: Promotion of participatory development process in the housing sector

Policy 11: Appropriate technology should be innovated to develop and promote housing particularly for the low income people.

Programs and projects of Khulna

KDA and HSD are two major actors in supplying planned housing in the forms of sites and services. KDA is the only public sector organization in the city, which is still going on with its housing programme since its inception. Currently KDA is going ahead with a low-income sites and services housing project at Mirerdanga. It has also formulated 5 other sites and services projects that are at various stages of approval. The 42.55 acres Mirerdanga Low-income Housing Project will provide plots for the low-income people.

A new project for upper income people is underway in Sonadanga area known as Sonadanga phase 3. This project will generate more than 1366 plots of various sizes on about 121.44 acres of land.

Rupsa Satellite Town (100.00 acres) will be the first ever-housing project of KDA on the other side of the River Bhairab and River Rupsa. This project is expected to supply 320 serviced plots for a cross section of income groups.

Ahsanabad Residential Area to be undertaken on the western fringe (west of Sonadanga Bus Terminal) and will be one of the largest housing project of KDA. It will generate over 1500 plots of various sizes.

It is estimated that KDA's on going and coming projects altogether will supply over 5474 plots in 6 to 7 years. KDA is perhaps one of the most successful organizations in the country in respect supplying serviced housing land.

HSD has not undertaken any housing project after 1960s. Lately, it is contemplating to undertake an ambitious housing project titled, "Two Million Housing Programme" in Bangladesh. Under this project, 2 million housing units will supposed to be developed all over the country. Khulna division will get a share of 2,00,000 housing units under the programme. The development of housing will be spreaded over divisional, district, thana headquarters and growth centers. The scope of the project

covers, site and service schemes, construction and delivery of small housing units and credit for the middle income people in Khalishpur.

Considering the housing condition in Khulna as mentioned above the following conclusion may be made:

- 1) Despite a slow growth of population, at least 225,000 housing units will be required by the year 2020.
- 2) If KDA and other government agencies carryout their on going and future housing programme, at best these can meet less than 4 percent of the total housing needs. Thus, a bulk of housing units will be constructed by the private individuals, if further planning intervention is not made to achieve the goal.

The Master Plan, in the line with the objectives of the national housing policy 1993, aims to promote organized development within the master plan area. Such organized development will be attained in four different ways. These are:

- I. Planned housing development by public sector housing agencies
- II. Planned housing development by private sector real estate housing companies.
- III. Private cooperative housing development.
- IV. Community based partnership housing area development with minimum public sector intervention.

In this master plan, all four provisions have been accommodated. The implementation will be made in areas allocated for housing, which is about 17002 acres or about 30.80 percent of the master plan area. In addition, over 1041 acres have been allocated as mixed area where housing activities will be accommodated.

Policies for private housing of KDA

Presently, there are over 12 private real estate like Arafat Housing, Shugandha Housing, Rangdhanu Housing, Prottasha Housing Companies operating in Khulna having their projects of various sizes around the city. The number of such companies is increasing due to growing demand for service of housing land in planned environment. But in absence of any control mechanism the service provides in the lay out plans including the road network are not always up to standard. This might affect healthy and congenial to put aside at least 40% of the gross planning area for services including road network. To compel the real estate companies to follow minimum standard rules, KDA can bring necessary amendments in the KDA ordinance. However, in the meantime KDA should allow them to operate with ease as they are at least contributing to meet the increasing demand for housing land through organized development.

KDA should also encourage private organized housing area development based on cooperative act. This is a kind of self-help housing development involves little or no public expenditure. KDA can extend its assistance to such housing efforts by according land use clearance. Supplying acquired land on long term lease basis can also assist them. But to ensure sound living environment in such housing area conditions may be imposed on the standard provision of services and facilities.

2.3 Implementation of housing policies

Implementation of National Housing Policy, 1993 & Fifth Five Year Plan (FFYP)

In National Housing Policy, 1993, there are no policies for private housing. In Fifth Five-Year Plan (1997-2002), one objective is fixed for private housing area development and the objective is that greater involvement of private housing through necessary incentives.

On the focus of Fifth Five-Year Plan, in the recent master plan of KDA, there are some proposals are formulated for the private housing development.

2.3.1 Implementation of Local Housing Policies

Policies of Khulna Master Plan

At the time of the formulation of Master Plan, about 12 private housing projects exists and those haven't any control mechanism. For this, KDA can work out measures to compel these companies to put aside at least 40% gross planning area for services including road network.

Implementation

But the policies are not followed by maximum housing projects. Among them maximum have no service area except road network and anyone of them has 40% gross planning areas. Private housing areas after 2000 have no service areas except road network. Till now maximum private housing developers do not follow the rules and regulations of KDA. They operate business of land using a label of private housing developers.

Cooperative housing development by various initiatives like encouraging private organized housing area development based on co-operative act, extending its assistance and imposing the standard provision of services and facilities.

Policies of Private housing developers

- Development of service lands
- Developing road network
- Constructing electric pools and supplying water supply
- Earth filling in the plots
- Constructing mosques, security rooms etc

**CHAPTER 3: DEVELOPMENT OF PUBLIC AND PRIVATE HOUSING
IN KHULNA**

3.1 Housing Demand in Khulna City

3.2 Housing Delivery System in Khulna City

3.3 Public Housing in Khulna City

3.4 Comparison of Public and Private Housing Projects in Khulna

CHAPTER 3: DEVELOPMENT OF PUBLIC AND PRIVATE HOUSING IN KHULNA CITY

3.1 Housing demand in Khulna City

3.1.1 Population growth of Khulna city

After the partition of Indian sub-continent in 1947, a large number of Muslim refugees migrated to Bangladesh (the then East Pakistan) from India. Khulna, being in close proximity with the Indian border, was a major area of their resettlement. There was impressive industrial growth in Khulna in the late 1960's but the trend of industrial development slowed down after 1970. Although population of Khulna continued to rise after the liberation of Bangladesh, industrial development did not match with population increase. The new migrants mostly found jobs in the tertiary service sector.

The demographic transition of the city was accompanied by two major political events-the partition of India 1947 and the Indo-Pak war in 1965. As a result, Khulna achieved the rapid growth, the greatest in the then East Pakistan, at annual growth rate of 20.9 % during the period of 1951-61 (CUS, 1981). According to the population of census, 1991 and 1998, the population of Khulna City Corporation (KCC) was 663340 and 647580 (KDA, 1999) respectively. During the last few decades, Khulna City showed tremendous rise of population due to industrialization and urbanization in that area. Locally KDA estimated the growth of population in KCC area which shown in table 3.1.

Table 3.1 : Growth of Population in KCC Area

CENSUS YEAR	SIZE OF POPULATION	ANNUAL GROWTH RATE (%)
1901	12460	-
1911	18170	5.55
1921	23500	2.57
1931	28000	1.75
1941	34000	1.94
1951	42220	2.17
1961	80220	6.42
1974	437300	13.04
1981	561950	3.58
1991	663340	1.66
1998	647580	3.50

Source: KDA Interim Report-1999, Vol. 2.

3.1.2 Housing needs in Khulna City

In Khulna City Corporation area, there were 1,50,000 households according to the Census of 1991. The dwelling unit in the same period were 1,06,700 thus, there was a housing backlog of 8,300 units. In 1998, considering 3.3% annual rate of growth in population, of Khulna City Master Plan Project estimates that in 1998, there will be 1,44,700 household with 1,29,300 dwelling units. The present backlog is about 15,000. Considering this trend in the growth rate of households and backlog the study team of KDA Master Plan Project has calculated the requirement of housing units for the year 2000, 2005, 2010, 2015 and 2020. It can be mentioned here that the study has also considered 20% replacement of existing housing units through this period (KDA Draft Structure Plan, 2001, pp-75). The estimated housing need is shown in the following Table

Table 3.2: Housing need in K.C.C. area in different times.

Year	Households	Growth rate	Dwelling unit	Backlog	Replacement	Total need
		Percentage/ Year				
1961	24535	--	21386	3149	837	--
1974	80629	9.15	63384	17245	2481	61724
1979	87202	1.57	86531	671	3387	27205
1991	114218	2.30	106739	8179	4178	32565
1998	144781	3.30	129397	15384	5065	43107
2000	156213	3.80	138087	18126	5405	32221
2005	193683	4.30	166565	27118	6519	62115
2010	246219	4.80	206002	40217	8063	87717
2015	305278	4.30	248486	56792	9726	109002
2020	369157	3.80	292331	11442	1442	132113

Source: KDA Draft Structure Plan, 2001,

The above Table shows that, the estimated growth of household between the year 1998 and 2020 and the growth of dwelling units during the same period. It clearly indicates the number of dwelling units required at various point of time in the K.C.C. area. Similarly housing units need to be replaced in various projected year are also shown. Thus from this Table it can be estimated that by the year 2020 Khulna will require an additional of 2,24,376 new dwelling units. Besides this, nearly 90,000 housing units will have to be replaced during the period. It should be noted that here this estimation is moderate and considers the present rate of growth and potentials. However, if the city has better investment and development opportunities in future, the need for housing will be much more than the number estimated (Debnath, 1999).

3.2 Housing delivery system in Khulna City

Housing delivery system in Khulna City is dominated by private informal sector, like other cities of Bangladesh. While the cooperative housing system was found to be absent, private formal sector in Khulna City has not yet been developed properly. There is public housing sub-system that provides housing for the employees of the

government and semi-government organizations. The following table shows the major housing delivery sub-system in Khulna City. (Islam, 1997)

Table 3.3: Housing delivery system in Khulna City.

Sl no.	Housing delivery sub-system	Percentage
1	Private housing sub-system	90
2	Public housing sub-system	1.5
3	Development authorities site and service scheme	04
4	Slum and squatter sub-system	4.5

Source: Islam, 1997.

3.2.1 Private housing Sub-system

In K.C.C area it has been estimated about 90% of all housing units were provided through this sub-system. Operation of private housing sub-system takes place in two ways, formal and informal. Private sector in Khulna City is still limited, providing a very few site and service land. The most dominant actor in the housing market, carry out housing activities informally through the private informal sub-system.

3.2.2 Public housing sub-system

Public Works Department (PWD) of the Government and other autonomous agencies build houses for public employees. Under this programme, roughly 2% of government employee's households in the K.C.C. area were accommodated.

3.2.3 Development authority's site and service scheme

KDA and HSD supply serviced plots among the various income groups in the city dwellers. Under this sub-system planned residential areas such as Sonadanga, Mujgunni, Nirala residential projects etc. in Khulna City were developed. In reality however, low-income people have little access to this type of plots. In the KCC area about 4% of households were accommodated by this system.

3.2.4 Slum and squatter sub-system

Generally, the poor people of different occupation like rickshaw puller, cart pullers, scooter drivers, small shop keepers, household servant and labours, live in this type of houses. Low income poor people, mainly the newly migrants to the city, occupy public and semi-public land illegally. It was observed that, most of the slum dwellers have limited access to community service and facilities, although they are citizens of the community. The quality of service and facilities was also found very poor. There are 172 slums and squatter clusters in Khulna city where nearly 18 percent of the city population live. (Khulna Master Plan 2001, Vol.-III).

3.3 Public housing in Khulna city

KDA and HSD (now NHA) are two agencies of public sector responsible for developing planned urban residential area. A major part of the city dwellers live in poor housing and poor sanitation condition with little access to urban services and facilities. The ancillary physical, social, and economical services and facilities essential for the development of the healthy and harmonious community life are inadequate. For creating a healthy living environment of the city, KDA created some urban planned residential area. Such as Sonadanga Residential Area, Nirala Residential Area, Daulatpur Residential Area, Mujgunni Residential Area, Shiromony Industrial Residential Area etc. Beside these, another development organization Housing and Settlement Directorate (HSD) created the Boyra Housing Estate with 458 plots (KDA, 1998). Planned Residential Areas are those which consist of well planned roads, recreation facilities, school, utilities and service facilities etc. and so on and so forth. This housing situation of planned residential areas has been paying a great role in the demand and supply need of the growing people in Khulna City. There are 9 planned residential areas in Khulna City. Among them, 8 have been developed or created by the Khulna Development Authority (KDA), and the rest has been developed by Housing and Settlement Directorate (HSD). Moreover, these two agencies have generated 3679 plots. The following table shows contribution of KDA in residential area development.

Table 3.4: Residential area development projects of different public agencies

Agency	Number of area	Total area (acre)	Total plots	Percentage (%)
KDA	8	264.00	3221	87.55
HSD/NHA	1	45	458	12.45
Total	9	309	3679	100.00

Source: KDA, 2003.

According to Table 3.4, in public sector residential area development, KDA has developed 264 acres of land as planned residential area with 3221 plots, which is about 87.55% of the total public sector share.

Till now KDA has developed 8 residential areas in different locations of Khulna City for different income groups. KDA started to take such initiative from the Pakistan period, and till it is providing this type of service for the city dwellers. These residential areas occupy a substantial amount of land and have produced a significant number of plots of different sizes. The following table presents some information regarding Residential Areas developed by KDA.

Table 3.5: Residential Area development projects of KDA

Name of the residential area	Area (acre)	Project period	Total Plots
Sonadanga R/A (1 st phase)	30.69	1967—81	205
Sonadanga R/A (2 nd phase)	35.14	1987—94	444
Sonadanga low-income Housing	5.00	1994—95	104
Nirala R/A	67.31	1967—81	595
Mujgunni R/A	67.71	1966—82	771
Daulatpur Housing Estate	5.43	1985—88	81
Shiromony Industrial Housing	10.17	1990—94	243
Mirerdangha low-income Housing	42.55	2000	778
Total	264.00	--	3221

Source: KDA, 2003.

However, KDA has developed three types of residential areas like industrial housing, low-income housing and upper and middle-income housing. The following table shows this picture.

Table 3.6: Types of residential Areas Developed project of KDA.

Types of Residential Area	Area (acres)	Percentage (%)	Plots	Percentage (%)
Middle and upper-income housing	206.28	78.14	2096	65.07
Low-income housing	47.55	18.01	882	27.38
Industrial Housing	10.17	3.85	243	7.54
Total	264	100	3221	100

Source: KDA, 2003.

Table 3.6 shows that, until, KDA has developed 264.00 acres of land as residential area. Among these lands, 78.14% of total areas have been developed as middle and upper-income housing. Low-income housing has occupied 18.01% of the total land and the rest 3.85% of total land has occupied by Industrial housing. However, in plots distribution, major portion has occupied by middle and upper-income housing, which is 65.07%. Whereas, lower-income housing has provided 27.38% plots and industrial housing has provided 7.54% plots.

3.4 Comparison of Public and Private Housing Projects in Khulna

3.4.1 Process of public residential area development (KDA housing)

Khulna Development Authority provides planned residential areas through site and service schemes. However, the detail process of site and service scheme, which is followed by KDA are described in the following through different steps:

3.4.1.1 Decision Making

Decision Making is the first step of such process of residential area that KDA arrange a board meeting of its executive body consisting 15 members (like Chairman

of KDA, Secretary of KDA, 1 representative of Mayor, 1 representative of Deputy Commissioner, 2 representative of political party on power, 1 representative of Railway, 1 representative of Public Works Department etc.). In the meeting, the decision about new housing project is approved. Moreover, this meeting considers the following:

- Existing housing demand and market of the city;
- Selling condition of previous housing project;
- Required capital and sources;
- Time schedule of Master Plan for new housing project;

After considering all these aspects, the Board takes decision on new housing project or new site and service project. It has also considered who will be benefited with this project like middle, upper, low-income group people.

3.4.1.2 Location selection

Location of new residential area depends on the proposal of Master plan of KDA. In Master Plan, such proposals have identified housing development. According to the guideline of Master Plan, KDA selects the location of new residential area. In this purpose, KDA also consider the adjacent area of new roads or vacant area which is suitable for housing or locational preference of city dwellers. However, the location may vary sometime than the proposed location in Master Plan after consideration of such aspects. This has occurred rarely. This location is marked on Cadastral Map.

3.4.1.3 Layout design

After selection of the location for new residential area, the planning section of KDA makes a few surveys such as

- Household survey for estimating households income;
- Land use survey for collecting information regarding the site;
- Survey on plot demand etc.

After completion of information collection, Planning Section of KDA prepares a layout of new project with necessary consideration of such income groves, required space for community services, required space for roads etc. Then it makes a feasibility study on this on going project. If the project is feasible, then it is sent to the Project Section of KDA. Otherwise it makes necessary changes and then sends it to Project Section.

3.4.1.4 Project proposal and appraisal

Whenever the necessary layout and information arrive in project Section of KDA, then it conducts a detail survey on site, which includes:

- Existing land use;
- Necessary earth work;
- Necessary land requirement;
- Socio economic information collection;
- Existing land value;
- Estimate future value of the plots; etc.

After collecting these information, project Section estimates the cost of the project. Moreover, it also estimates the project output like future benefit of the project. With these considerations, it prepares a project proposal and an appraisal, which is submitted to the Board Meeting of KDA. If the Board agrees, then it goes to the Ministry of Housing and Public Works for approval.

In this period, KDA also notifies the local people through the newspaper about the new project area. Moreover, they are also notified regarding the acquisition of land by the KDA.

3.4.1.5 Project approval

In this stage KDA has no duty on project approval. After arrival of the project proposal to the Ministry of Housing and Public Works, they make a feasibility study

of the project. If necessary, they send their official of 'Planning Cell' of Ministry of Housing and Public Works to monitor the project feasibility. If the project is feasible, then they send it to Planning Commission or Executive Committee for National Economic Council (ECNEC) for approval. However, if the project cost exceeds 20 million taka, only then it is approved by the ECNEC, otherwise it is approved by the Planning Commission.

Another important aspect is that, if the project is funded by any foreign investor then the project is approved quickly, otherwise it takes long time.

3.4.1.6 Land acquisition

When the project proposal of new housing project is approved by Planning Commission or ECNEC, then KDA goes for land procurement through acquisition. For land acquisition, KDA requests the Deputy Commissioner to acquire the land demarcated for the project area. Then the Deputy Commissioner forms a body with his official and Assistant Commissioner of Land (AC Land). This body collects the value of land of surrounding area for that current year through different sources like Land Registration Office, Records of Land Office, and field survey. According to these values, the Board selects the price for per unit of land (like katha or bigha etc). This Board notifies the land owner before collecting land value. Then Deputy Commissioner goes through compulsory acquisition of land by giving necessary compensation according to the Acquisition and Requisition Act, 1894 to the land owners within a time frame.

3.4.1.7 Project implementation

After approval of the project by ministry, it goes for implementation. In the implementation phase its responsibility goes beyond the Work Section of KDA. Works Section of KDA invites bids for land development. After selection of contractor through bids, land development works starts. Work Section starts to

subdivide the land into plots and construct roads of different length and widths. Others spaces for community services are also developed.

3.4.1.8 Plot selling and handover

After subdivision of land into plots, KDA gives sale notice in newspaper for invitation for bid for plot selling within a given deadline. Also the plot number and their sizes are given in the notice. According to bids, the buyers buy bid paper from Estate Section of KDA and submit it after fulfilling the requirements. Moreover, the notice of plotted land also present in the bid paper. Buyer gives their price which they would be able to pay for a specific plot. Generally price is given for per katha land. After passing the deadline, KDA arrange a staff meeting about the sell of plots. Selling of plots depends on the bid quantity for respective plot. If there is only one application for one plot, then the plot is sold to that person who has give highest price in the application. However, if there found more than one same highest price for one plots. Then KDA arrange a lottery to select the plot owner. In lottery, KDA select owner of the plot who won the lottery. All these tasks are completed by the Estate Section of KDA.

After completion of selection of the plot owner, Estate Section also prepare necessary document for each plot against respective owner. When this task completes, then Estate Section handover the sold plot to the respective owner.

This is the process of Residual Area Development which has been followed by Khulna Development Authority (KDA, 2003).

3.4.1.9 Limitations of the residential area development process

Following this process, KDA developed residential area in Khulna City. However, this process coincides with several limitations. These are discussed in the following:

- This process takes long period of time. In the case of government funding, it generally takes more time then other funded project. So, the estimated project

cost in project proposal differs with the implementation cost, because of devaluation of money in this longer period of time. For example, according to the table 3.5, the first project started in 1966 and was finished in 1982, which means it has taken around 27 years for completing the first project. However, in the case of other projects, this time duration has varied significantly. Among 8 projects, 4 projects have taken less than 5 years and rest 4 projects have taken more than 5 years. Therefore, time being is an important feature for limitation of this process.

- The appraisal and approval phase of this process needs to go through the bureaucratic procedure. However, in Bangladesh, it is a lengthy and time consuming procedure. If the project is funded by the government, then generally it takes more time than other projects. However, the approval of foreign funded project takes less time. This is a drawback of bureaucratic procedure and makes injustice in the case of housing demand.
- This process involves agricultural land conversion into residential area. But, this is a threat to our agro-based economy and food security.
- Since, residential areas are developed by this process like Site and Service Scheme. So, the utility services like electricity, water supply, road, drainage, sewerage etc. will be provided within the project. In reality KDA do not provides such services except road.
- This process can not ensure housing development on the plots or construction of dwelling units on the plots. Because, this is dependent on the affordability of the plot owners. If the plot owners can construct dwelling unit on their plots within a short time of plot allocation, only then the housing situation will be improved. However, construction of dwelling units is also related to the economic ability of the plot owners.
- This process needs large amount of money and a long time investment period.

3.4.2 Private Housing Scheme

There are some private real estate developers in Khulna City who has developed 18 housing projects out side the City Corporation area. According to the field survey, it has been found that maximum private housing scheme does not provide any facilities

other than road and mosque. There are only two private housing projects, which provide a primary school, super market, play field, etc. Even there are some housing projects, which have no facilities except road.

3.4.2.1 Private housing projects in Khulna city

Private housing developers are those who entail different housing scheme by buying but not acquiring barren land and selling that to the customer. There are some private developers in Khulna who performs these activities. The First private housing scheme started in 1978 in Khulna City and its name was Nabarun Housing Estate. At present, there are 19 individual private housing projects in Khulna, which are owned by 12 Real Estate Developers. Out of the seven private housing developers, only four developers have separated registered as business agency. Three of them conduct their business as a side business. Thus the developers can be classified into two groups; registered and non-registered. The following table provides a brief introduction of the private-land developers and their housing projects in Khulna.

Table 3.7: Private housing projects in Khulna City

	NAME OF COMPANY OR AGENCY.	NAME OF THE PROJECT OF THE DIFFERENT DEVELOPERS	YEAR OF ESTABLISHMENT
Registered	Nabarun Housing Agency	Nabarun Housing Estate	1978
	Green view	Shabuj Palli Residential Projects	1987
		Prottasha Residential Project	1997
		Palashibag Residential Project	2000
	Mukta Agency	Arafat Residential Project	1996
	Modhumoti Salt & co.	Monorama Residential Project	1992
Shugandha Residential Project		1995	
Non-registered	Arafat Rice Mill	Rangdhanu Residential Project	1997
		Shapnapuri Residential Project	1998
		Shahibag Residential Project	1999
	Sharnali	Sharnali Residential Project	2000
	Amenabag	Amenabag Residential Project	2000
	Madani Group	Madani Housing Project	2001
	Bonofota	Bonofota Housing Project	2001
	Aslam-Sefa	Aslam-Sefa Residential Project	2002
	Sonargaon	Sonargaon Residential Project	2002
	Shikdar Agency	Shikdar Housing Agency	2002
	Adorybag	Adorybag Housing Project	2002
	Mouza Krishna Nagar	Mouza Krishna Nagar Housing Project	2003

Source: Field Survey, 2003

3.4.2.2 Process of private residential area development

There are about 12 Real Estate Developers are operating housing projects in Khulna. The processes of the private residential area development are described in the following through different steps:

3.4.2.2.1 Decision Making

Decision-making is the first step of such process of development of a residential area. The cost benefit analysis of a project first intends to go forward to develop the residential projects. Then developer arranges a meeting with the owners of the particular land. If the owners agreed to hand over their land then developers decided to develop the land as private residential area. Here both developer and the original landowner are decided to develop the land as residential project.

3.4.2.2.2 Location selection

The developers select the location of new residential area where the land is more available. Besides the criteria of selection of land are-

- low land price;
- adjacent road network,
- vacant area,
- managing power of real estate developer in that particular area, etc:

Sites upon which to create a development must be selected with the greatest possible care. As far as possible, the site selected should be in the natural path of the city's growth. As a general rule, cities move outward from their original point along main arteries of traffic in a pattern influenced by natural and artificial barriers.

3.4.2.2.3 Demarcation of area

After select of the location of residential area the developer mark the boundary of the project in Mouza Map. Then selected area is hanged with project name on a signboard for display to attract the people. The developer also marks a physical demarcation made of bamboo, RCC pillar, shaft etc.

3.4.2.2.4 Layout design

After selection of demarcated area the developer prepares layout design. Layout design is made only for location, plot size and road network.

3.4.2.2.5 Land acquisition

The land acquisition process of private developers is not following the government rules and regulations. When a buyer come to buy a plot then developer contact with the original landowner. The deed of the land occurs between the original landowner and new buyer in sub-registry office. Here the developer acts as an agent. The land acquisition process is shown in figure no. 3.4.1

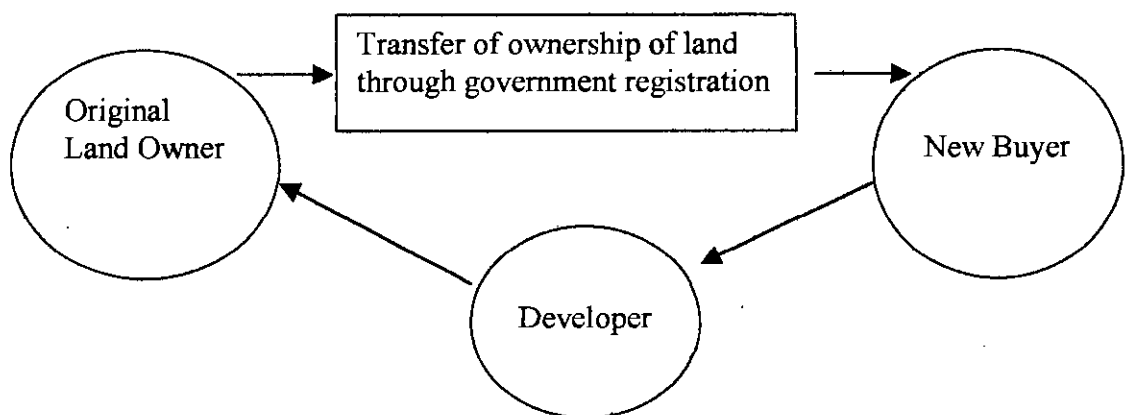


Figure no. 3.4.1: Transfer of Ownership of land.

3.4.2.2.6 Plot selling and hand over

After completion of registration the new buyer becomes the owner of the particular plot and finally the developer hand over the plot with marked boundary. Then the owner enters into possession of the plot of the concern housing project.

3.4.3 Comparison of Public and Private Housing Projects in Khulna

The public housing schemes are more popular to the city dwellers due to the planned residential development furnished with services and facilities. On the other hand private housing development is easy process for buying the land but it is not suitable for living place which denotes the table no. 3.8.

Table 3.8: Comparison of public and private housing projects in Khulna.

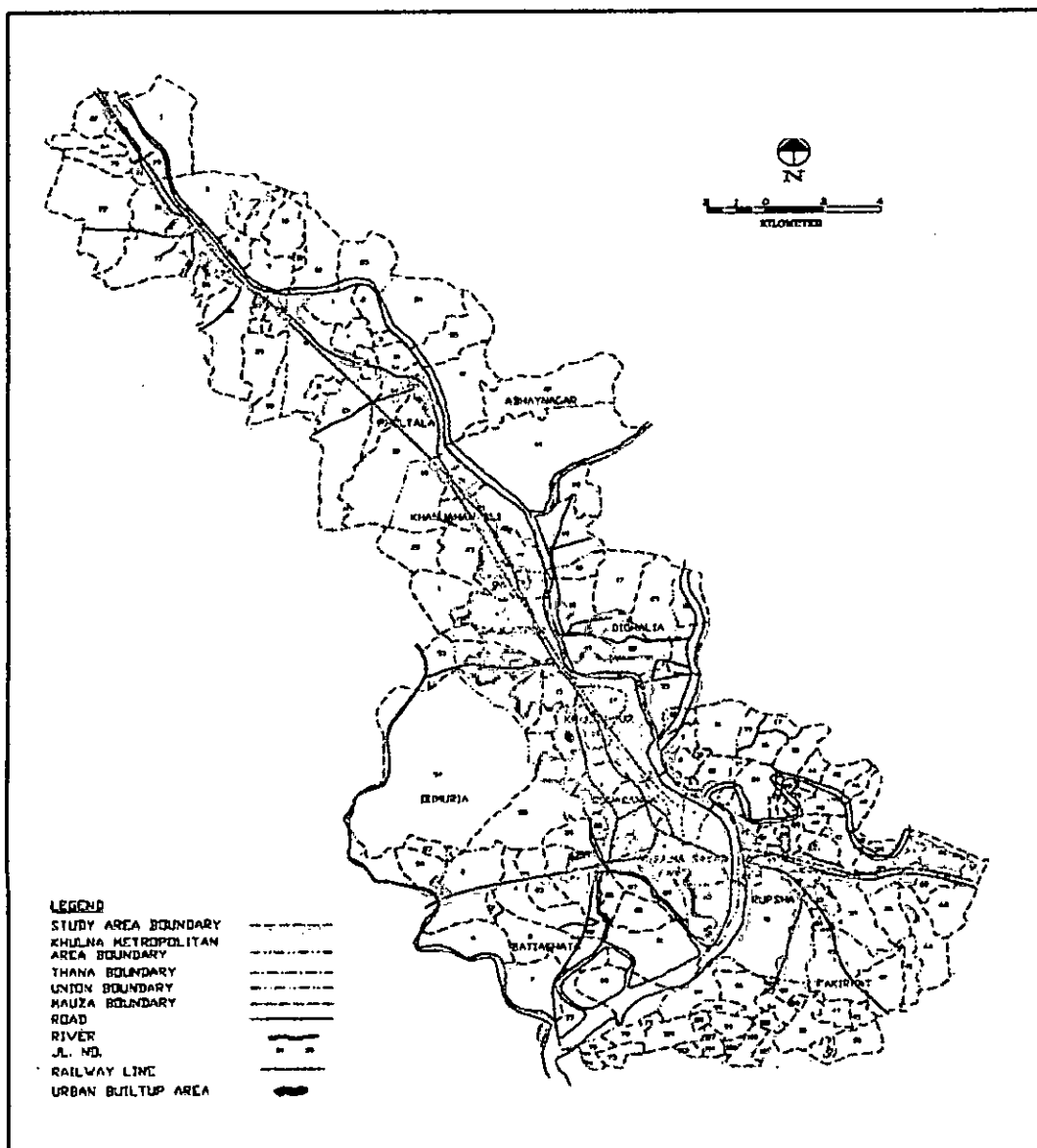
Parameter	Public Housing (KDA)	Private Developers (PD)	Consumer's Right	
			KDA	PD
Year of Establishment (1 st project)	1967	1978	Better	Better
Existing number of projects	8	19	Better	Better
Total area for housing	264 (acre)	237.55 (acre)	Better	Better
Total plots of housing projects	3221	2481	Better	Better
Plot size	2.5 – 10 katha	1.5 to unlimited	Best	Bad
Price per katha (average)	90,000 – 2,50,000 (Taka)	10,000 – 65,000 (Taka)	Better	Best
Location	In KCC area	Out side KCC area	Best	Bad
Income level of buyer	High income group (more than 30,000 taka per month).	Middle income group (more than 15,000 taka per month).	Best	Bad
Planning perspective	Well planned	Irregular planning	Best	Bad
Utility services:				
Road	Metallic, Not less than 20 feet	Dirty, Not exceeding 20 feet	Best	Bad
Drainage	Water logged	Nil	Bad	Nil
Dustbins	Planned	Nil	Better	Nil
Water supply	Well	Nil	Good	Nil
Electric supply	Well	Nil	Best	Nil
Telephone	Well	Nil	Best	Nil
Market place / shops	Well	Nil	Best	Nil
Institutional facilities				
School	Present	Proposed	Best	Nil
Medical services	Well	Nil	Best	Nil
Community facilities	Well	Nil	Best	Nil

Source: Field survey 2004

3.4.4 Major aspects for private housing development in Khulna City

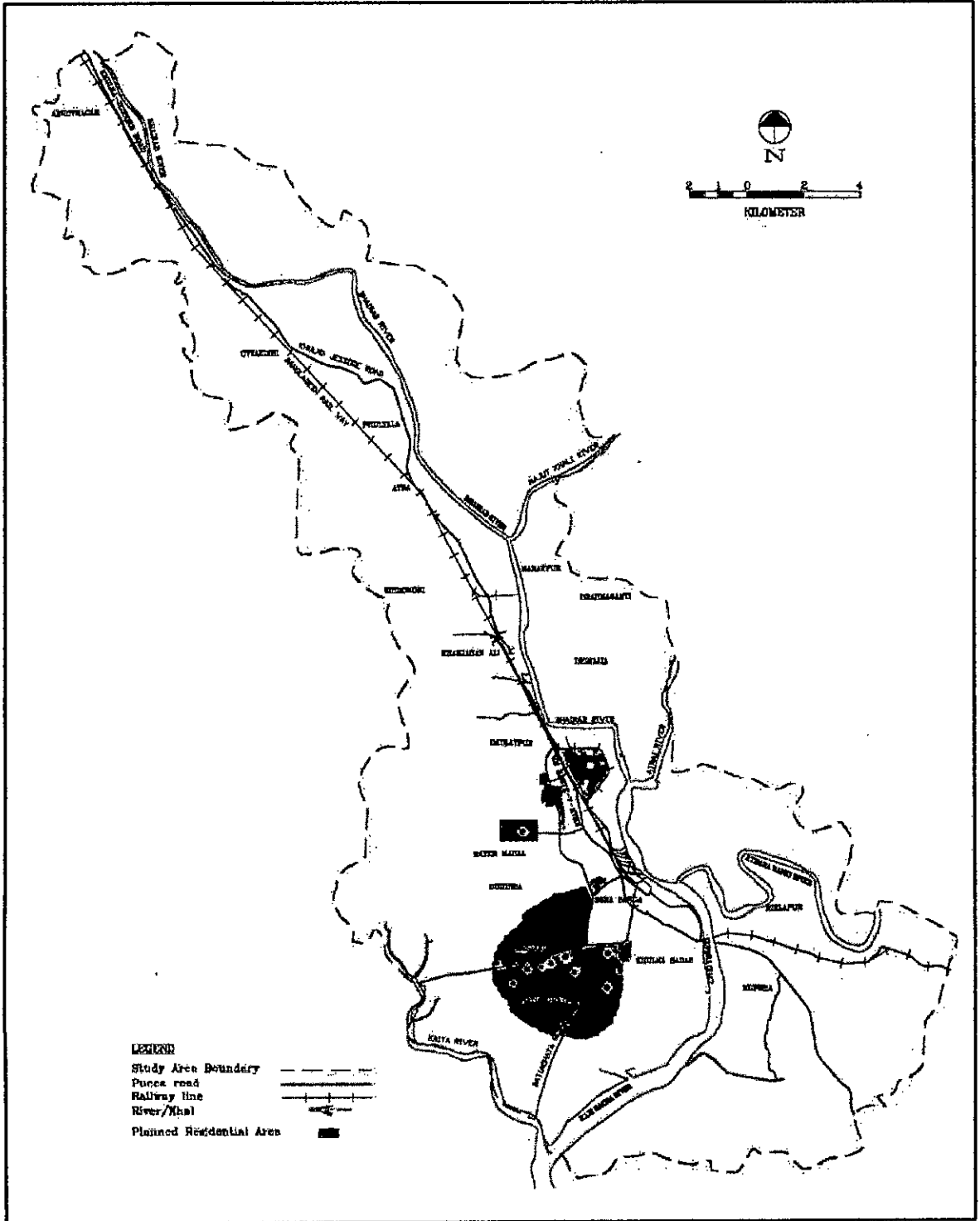
Location of business activities is most important factors. Every one wants to develop his projects or business in such a place, where he can earn profit. The real estate developers of Khulna City mainly develop their projects on the out skirt of city, near south- west corner of Khulna City Corporation. Map 3.1, Map 3.2, represents sequentially the built-up areas and planned residential areas with the study area.

Map 3.1: Khulna City Structure Plan (Existing Built-up Area)



Source: KDA Master Plan, 1999

Map 3.2 : Khulna City Master Plan Area; Planned Residential Area and Study Area



Source: KDA Master Plan, 1999

Interviewing with the real estate developers revealed some of the following reasons for choosing these locations.

3.4.4.1 Lower Land Value

Maximum projects have been set up in the low land, which was primarily, or till today are agricultural land. Being low land or agricultural land, these lands have lower land value. As a result the developers buy these lands with lower investment and then they subdivide these lands with a little facilities such as roads, school and mosque. By selling these lands they earn more profit.

3.4.4.2 Establishment of Khulna University

Before establishing the university, these lands are used only for agriculture production and most of the other lands were marshy and low land. Even the residents of Khulna are never interested to live there because these areas are far away from the CBD. A university consists of students, teachers and other staffs. These students and employees create the housing demand. Most of them want to live near to work place. In Shapnapuri Residential Project, Rangdhanu Residential Project and Sharnali Residential Projects most of the plot owners are Khulna University teachers.

3.4.4.3 New Infrastructure Development

New Infrastructure Development creates opportunities for better investment. A new road, to be named 'Bangabandhu Sharak' (Rupsha Bridge Bypass Road) has been proposed as the approach road from the 'Rupsha Bridge'. In the meantime the concerned authority acquired land required for 'Bangabandhu Sharak'. The proposed road has spurred development and as a result the 'Green view' one of the real estate developers has established a residential project, named Palashibag Residential project is situated on the acquired area.

3.4.4.4 Suitable Communication System

Suitable communication system is one of the major factors for developing a residential project in an area. Most of the private housing scheme, which is undertaken by private real estate developers, is situated beside the Khulna-Shatkhira highway and Khulna-Batiaghata link road. Both of these roads are suitably linked with the main city. Though these residential projects are about 3-5 Kilometer far from Khulna City Center, people have good access to facilities in the town center.

3.4.4.5 Attractive Price of the Plots

These private residential projects offer attractive land price. Because the project areas are situated on the fringe of Khulna City, where the land price is lower than the public residential areas or land within the city. The land price of these areas is within the range of Tk. 10,000-65,000 per katha, where the land price in a public residential area in the city, is in the range of Tk. 90,000-2,50,000 per katha. As a result, consumers are interested to buy the plots from private developers.

3.4.4.6 Environmental Condition

As the private residential projects are located at a distance from the hustle and bustle of the city people want to live in such a place where fresh air and water are abundant. These private housing schemes provide environmentally sound living places. Mainly these areas are free from noise pollution and air pollution. There are ample open spaces and greenery around the projects.

3.4.4.7 Future Development of Khulna City

In the new Master Plan of Khulna Development Authority (KDA), there is a proposal for another residential project named 'Ahsanbad' which is to be located on the western side of Sonadanga Bus Terminal. Besides this, due to the siting of Khulna University and proposed Bangabandhu Sharak, the city is likely to expand to

the southwestern direction. There is no scope for expansion to the southeastern part of the city, because the River Bhairab is passing through the southeastern part of the city. So considering the trend of the city expansion, the developers are likely to develop their projects on the southwestern part of the city.

CHAPTER 4: PRIVATE FORMAL RESIDENTIAL AREAS OF KHULNA

4.1 General

4.2 Activities of the different Real Estate Developers

- 4.2.1 Nabarun Housing Estate**
- 4.2.2 Shugandha Residential Project**
- 4.2.3 Monorama Residential Project**
- 4.2.4 Rangdhanu Residential Project**
- 4.2.5 Shapnapuri Residential Project**
- 4.2.6 Shahibag Residential Project**
- 4.2.7 Amenabag Residential Project**
- 4.2.8 Sharnali Residential Project**
- 4.2.9 Arafat Residential Project**
- 4.2.10 Prottasha Residential Project**
- 4.2.11 Palashibag Residential Project**
- 4.2.12 Shabuj Palli Residential Area**
- 4.2.13 Aslam Shefa Residential Project**
- 4.2.14 Sonargaon Residential Project**
- 4.2.15 Shikdar Housing Agency**
- 4.2.16 Adorybag Housing Project**
- 4.2.17 Madani Residential Project**
- 4.2.18 Mouza Krishna Nagar Housing Project**
- 4.2.19 Bonolota Housing Project**

CHAPTER 4: PRIVATE FORMAL RESIDENTIAL AREAS OF KHULNA

4.1 General

There are twelve private housing projects located in Khulna. The following Table consists of some information regarding location, area coverage and distance from the Central Business District (CBD), for each of the private housing projects.

Table 4.1: Location, area and distance from CBD of private housing projects

NAME OF THE PROJECTS	TOTAL AREA (IN ACRE)	NO. OF PLOTS	LOCATION (MOUZA)	DISTANCE FROM CBD
Nabarun Housing Estate	21.49	232	Ward # 14	2.5 km
Shabuj Palli Residential Project	10.58	126	Dubi	3.0 km
Prottasha Residential Project	12.21	100	Dubi	2.5 km
Palashibag Residential Project	5.00	69	Khola Bari	6.0 km
Arafat Residential Project	140.00	1354	Chakmothurabad	1.5 km
Monorama Residential Project	10.11	104	Thikraband	5.0 km
Shugandha Residential Project	7.12	91	Hugladanga	5.5 km
Rangdhanu Residential Project	5.48	67	Krishnanagar	4.5 km
Shapnapuri Residential Project	2.03	26	Krishnanagar	4.5 km
Shahibag Residential Project	6.5	82	Thikraband	6.5 km
Sharnali Residential Project	2.31	30	Krishnanagar	4.5 km
Amenabag Residential Project	2.58	33	Krishnanagar	4.25 km
Aslam-Shefa Residential Project	1	20	Thikraband	5.5km
Sonargaon Residential Project	1	18	Krishnanagar	4.5 km
Shikdar Housing Agency	2.08	25	Thikraband	5.5 km
Adorybag Housing Project	2.03	26	Krishnanagar	4.5 km
Madani Housing Project	1.5	23	Thikraband	6.5 km
Mouza Krishna Nagar Housing Project	2.03	25	Krishnanagar	4.5 km
Bonolota Housing Project	2.5	30	Thikraband	5.0 km
Total	237.55	2481		

Source: Field survey, 2003

The above Table shows the location, area, number of plots and distance of each private residential area from the CBD of Khulna. All the private residential areas are situated outside the KCC area and these are located far from the CBD. Most of the private residential areas are located on both sides of the Khulna-Satkhira road. Most of the residential areas are located at Thikraband and Krishna Nagar areas.

Land Use

Allocation of right amount of land for each aspect of community needs is one of the most important tasks of land use planners. Careless allocation of land can lead to misuse of land. It is not only the allocation of inappropriate proportion of land for various uses but also the incompatible interrelationship of services, which result in the wastage of land. Although the optimum utilization of land in order to achieve both the acceptable levels of planning standards and compactness in design is a matter of detailed exercise for residential area design (Hamid, 1997). The following ranges of land uses may be used as a general guide:

Table 4.2: Standard for land use.

LAND USE ALLOCATION	TOTAL LAND AREA (%)
Residential	40-65 %
Community Facilities	5-10 %
Roads and Streets	20-30 %
Open spaces (Parks and Playgrounds)	5-10 %
Shopping	5-10 %

Source: Hamid, 1997

Table 4.3: Land Allocation of Each Private Housing Projects

NO	NAME OF THE PROJECTS	LAND USE PARAMETER					
		Residential plots		Road		Service & Facilities	
		Area (in Acre)	%	Area (in Acre)	%	Area (in Acre)	%
1	Shugandha R/ P	6.15	86.31	0.81	11.37	.016	0.23
2	Monorama R/ P	7.72	76.38	2.22	21.99	0.17	0.16
2	Rangdhanu R/ P	4.55	83.00	4.55	17.00	Nil	Nil
4	Shapnapuri R/ P	1.64	80.61	0.39	19.39	Nil	Nil
5	Amenabag R/ P	2.13	82.35	0.45	17.65	Nil	Nil
6	Sharnali R/ P	2.03	87.40	0.28	12.6	Nil	Nil
7	Arafat R/ P	111.91	79.93	27.38	19.56	0.71	0.50
8	Shabuj Palli R/ P	9.36	88.44	1.06	10.00	0.16	1.56
9	Prottasha R/ P	9.16	75.41	0.73	18.50	2.32	4.87
10	Nabarun H/ E	16.13	75.08	4.63	21.53	0.73	3.39
11	Palashibag R/ P	4.31	85.95	0.53	10.74	0.16	3.30
12	Shahibag R/ P	5.48	84.46	0.85	13.00	0.17	2.54
13	Aslam-Sefa R/P	0.80	80	0.20	20	Nil	Nil
14	Sonargaon R/P	0.80	80	0.20	20	Nil	Nil
15	Shikdar R/P	1.68	80.61	0.40	19.39	Nil	Nil
16	Adorybag R/P	1.77	87.40	0.26	12.6	Nil	Nil
17	Madani R/P	1.13	75.65	0.37	24.65	Nil	Nil
18	Mouza Krishna Nagar R/P	1.64	80.61	0.39	19.39	Nil	Nil
19	Bonolota R/P	2.18	87.40	0.32	12.6	Nil	Nil

Source: Field survey, 2003

Note: R/P = Residential Project,

H/E = Housing Estate.

4.2 Activities of the different Real Estate Developers

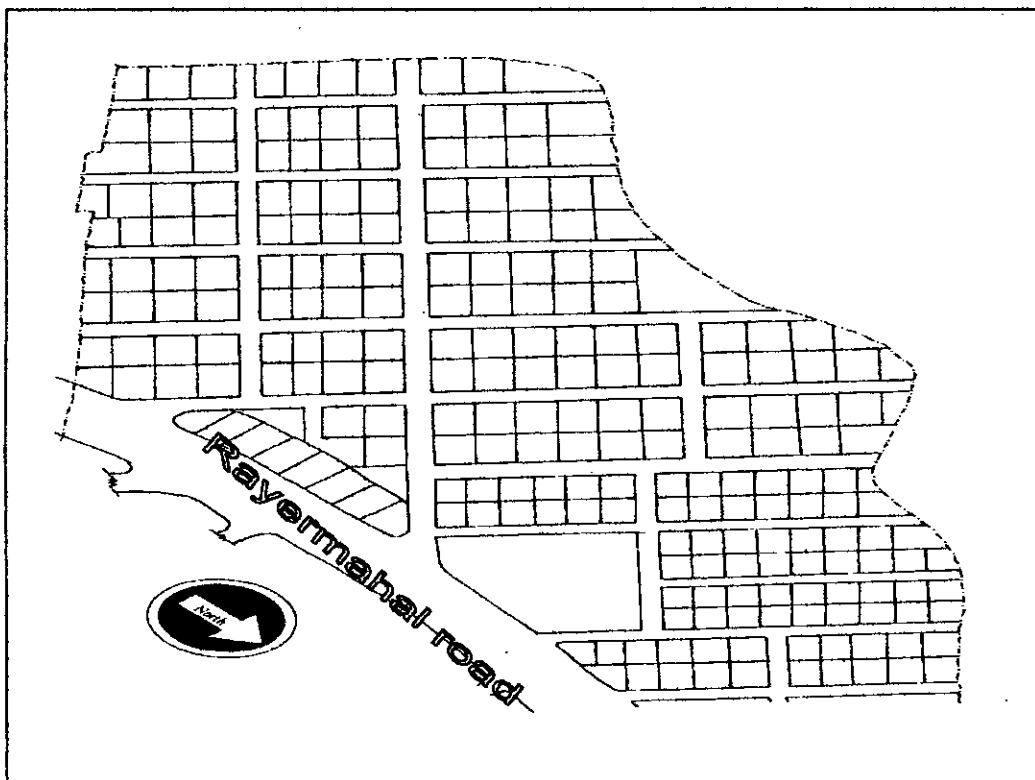
There is a number private real estate developers in Khulna City. They carry out more or less the same type of activities. A short description of the general activities of the private residential projects is narrated below.

4.2.1 Nabarun Housing Estate

4.2.1.1 Location of the project

“Nabarun Housing Agency” was established in 1978 at Baikali of Khulna City under the management of local representatives. The owner of the project lived in Dhaka and mainly gave the financial support. “Nabarun Housing Agency” is the first private housing agency in Khulna City. The Nabarun Housing Estate is taken place in the Rayermahal area, which is located at the last corner of ward no. 14 (old) of KCC.

Map 4.1: Existing Layout Plan of Nabarun Housing Estate



The existing layout plan of the project indicates just plots without showing scale and size of plots and other facilities. This plan only for attracts the buyers. Photographs 4.1 Shows the actual situation in the project area.

4.2.1.2 Services and facilities

The site of the Nabarun Housing Estate is well accessible and furnished with municipality services like electricity, water supply line, proper drainage etc. In reality, the construction work of the site has not yet started. The vital change in landuse pattern of this area is that previously it was mostly a low lying land marshy area and at presents, it is used as a cultivable land.

4.2.1.3 Land development process of Nabarun Housing Estate

- **Land Accumulation**

This housing agency took the housing scheme to provide plot to prospective homebuilders. Under the scheme they first bought the necessary land in Rayermahal area, which was under 1- 1.5 feet water.

- **Land Development and Layout Plan**

They developed the land by land filling through three years (1978-81). In the mean time, they prepared the layout plan by consulting with a civil engineer in 1979.

- **Important Feature and Cost**

A 100 feet wide road proposed in Khulna Master Plan, 1961, influenced this layout plan. At that time, land value of that area was not high. They mainly brought their land at Tk.50, 000 per acre (Tk. 850 / katha). But land was sold Tk. 1,200 per katha.

They also took Tk. 3,000 per katha from the buyers for development. They spend Tk.2, 000 per Katha for development. It means they took Tk. 4,200 per Katha from buyers and their benefits was = $(4,200-2,850) = \text{Tk.}1, 350$ per katha.

4.2.1.4 Performance of the Nabarun Housing Estate

The site of the Nabarun housing estates seems to be good, as there is better accessibility to the heart of the city and well located. But in reality the Agency has done nothing. The electricity line and the water supply connection already available in the area provided by KCC. The activities they done by the name of a private developer are shown below:

- They developed land by earth filling. The lands were mostly low-lying and marshy.
- They created access roads, but not according to the layout plan.
- The service facilities they provide are as follows:
 - i. Primary school.
 - ii. Shopping centers
 - iii. Mosque
 - iv. Playground
 - v. Community center
 - vi. Health center.
 - vii. Overhead water tank
 - viii. Power station.
- The power cable and water supply line are not extended to the site, it ends up near the site of Nabarun Housing Estate.
- They collected Tk. 3000 at that time from the clients per katha to develop the roads. However, in reality access road has not been provided yet.

Table 4.4: Land allocation of the Nabarun Housing Estate

Land Use Parameter				Total Land	
				Area (in Acre)	%
Residential Plots	Plot size	No.	Total	16.13	75.08
	3 katha	92	232		
	5 katha	140			
Roads				4.63	21.53
Facilities				0.73	3.39
Total				21.49	100

Source: Field Survey, 2003.

There are mainly two types of residential plots in the Nabarun Housing Estate. There are total 232 plots under this project. The number of five katha sized plot are much higher than two katha sized plots. The residential plots takes up two third area of the total project. Residential plots, facilities and roads like other residential projects in the country constitute this project. Among them residential plots occupy a total 75% of the area (702720 sq.ft.). The roads also occupy a high-lightened amount of area as 201520 sq.ft. There are provisions for primary school, shopping center, playground, graveyard, health center, community center etc.

4.2.1.5 Problems and Prospects of the Nabarun Housing Estate Problems

Nabarun Housing Estate is the first formal private housing project in Khulna City, which was established at Rayermahal, in 1978. They just developed the land by filling the low land after buying lands from different owners. Construction of structures has not started yet. The water supply and electricity line passes by the project site, but the water supply line and power line was not extended into the site. This is one of the major reasons for the sluggish construction of structures. During the rainy season, it was found that most of the areas of the projects are still being cultivated. It is interesting to note, when land was bought for the project site was not under cultivation, whereas, plot owners have put these land to agricultural use.

Another problem of the projects is road construction. The agency made the access road but it was not according to the layout plan and the constructed road is in poor condition. The road is presently dirt and there are path holes all over the road. For this reason some plot owners are pending house for construction for want of adequate access road.

Prospects of Nabarun Housing Estate

Despite of some problems the Nabarun Housing Estate has tremendous prospects which are described below:

- **Locational aspects of the Nabarun Housing Estate:** The location of the project is one of its major assets. The project is located at the western side of the Khulna City. On the other hand the middle class income people have the accessibility of this project due to comparatively lower price of the land.
- **Service and facilities:** The project have surrounded by some remarkable services and facilities. In case of urban amenities the project has the accessibility of the high way road (By-Pass road, from Sonadanga to *Natun Rasta*). The water supply line that is provided by Khulna City Corporation is placed through the road but not yet in the project.
- The Nabarun Housing Estate possesses some schools and colleges of good reputation are took place just around the project. Among them, Munnujan School and Boyra Girls College are the most renowned. The project is also surrounded some primary schools as well as NGOs non-formal education.
- In the case of health service, the Khulna Medical Collage, the largest government hospital (more than 250 beds) is located within a kilometer distance which served a tremendous prospect of the project. This hospital serves mainly lower, lower-middle and middle income people. Generally, the upper income people prefer the expensive medical facilities that are provided by some private clinic, located near the project (about 3 kilometers away).
- The people of this residential area have access to the nearby shopping center. This renowned shopping complex is KDA New Market, which is located about 2.50 kilometers away.

4.2.2. Shugandha Residential Project

4.2.2.1 Location and size of the Project

To the north side of Khulna-Satkhira Road is situated the Shugandha residential project. It is also located on the western side of Khulna City. The distance of this project from the heart of the city is about 5.5 Km. This project is one of the projects of Modhumoti Salt Industries.

The project has total 91 plots, which comprises different sizes, such as 3.5 katha, 4 katha, 5 katha and above 5 katha. The total area of the project is 7.12 acres. The project was developed in 1995.

Locational Address of the Project

The Shugandha Residential Project is located in Hugladanga mouza at Jalma union of Batiaghata Thana.

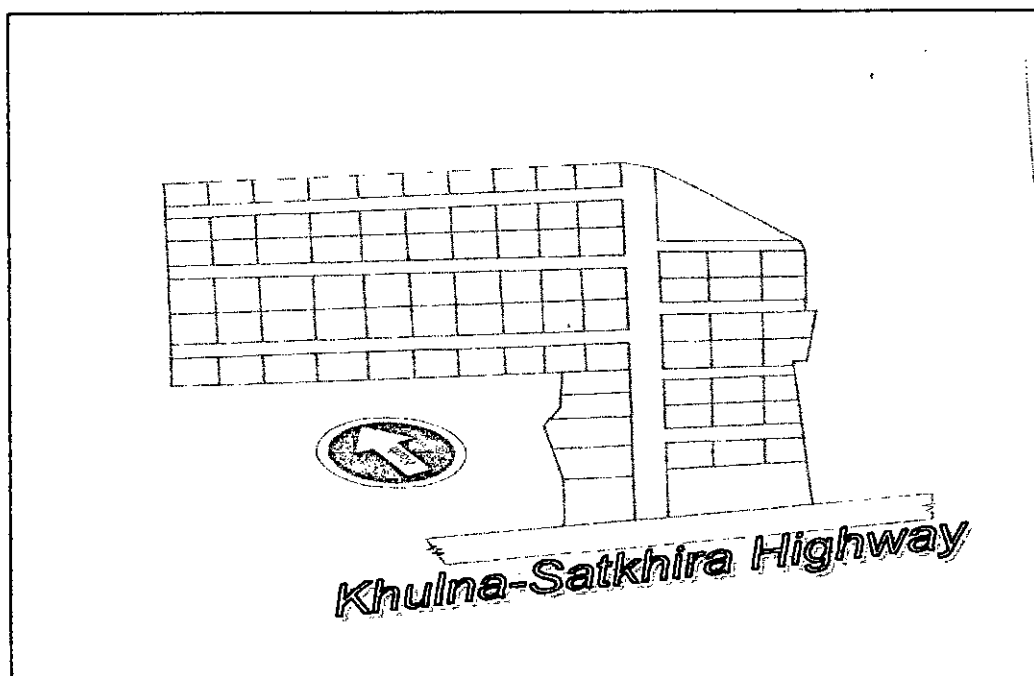
General Information

- Name of the project: Shugandha Residential Project.
- Establishment year: 1994.
- Total land area of the project is 7.12 acre.
- The area is comparatively low land.
- Plot sizes are 3.5, 4, 5 and 5+ katha.
- Total no. of plots are 91.
- 10 katha of total land is allocated for mosque.
- Selling price of plot = Tk. 40,000 per katha.
- The developer provided roads, the width of which will be,
 1. Approach road = 30'
 2. Collector road = 12'

- Previous land use before the intervention of the project: agricultural land.

Map 4.2 the existing layout plan of the project indicate just plots without showing scale and size of plots and other facilities. This plan only for attracts the buyers. The photographs 4.2 and 4.3 show the actual situation in project area.

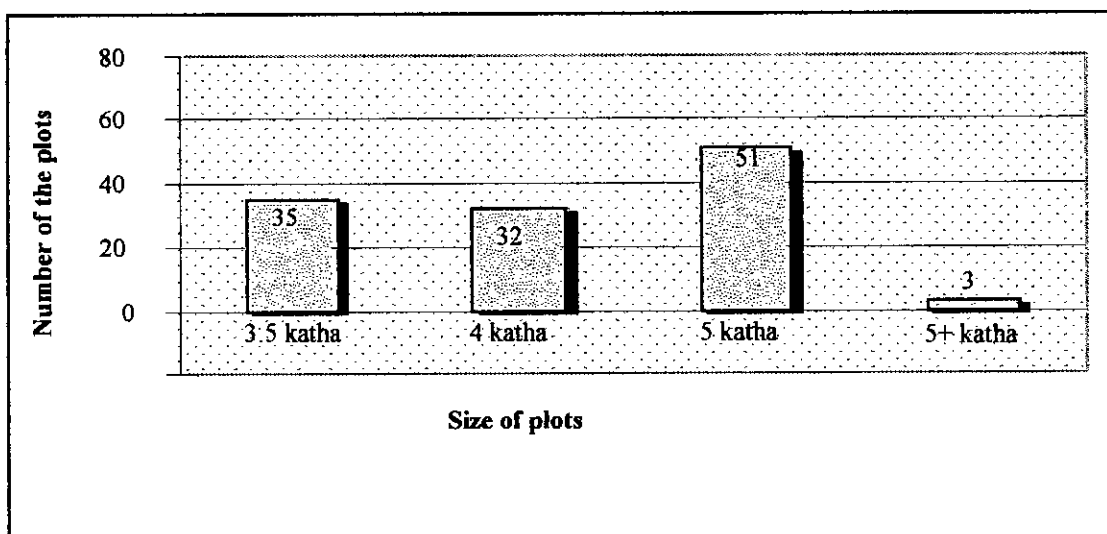
Map 4.2: Existing Layout Plan of Shugandha Residential Project



4.2.2.2 Services and Facilities of the projects

The site of the Shugandha Residential Projects is well accessible and there are provisions of different services and facilities. A 30 feet wide approach road and a 12 feet wide collector road have been aligned through the project. The project has good accessibility with Khulna-Satkhira high way. Water supply and telephone connections are in process. The layout plan shows provision for school, play ground, mosque even a hospital. The development work of the site has not yet started. The previous land use before the intervention of the project was agricultural land.

The following figure 4.1 shows the number of plots in the Shugandha Residential project



Source: Field Survey, 2003.

Figure no. 4.1 Number of plots in the Sugandha Residential project

The above table shows that five katha plots dominates the project. Out of total 91 plots the total 51 plots are of five katha. On the other hand 3.5 katha and 4 katha are occupied in almost equal number (near to the peak in the above figure 5.1) and the selling price of the project is Tk. 40,000 per Katha.

The following table indicates the land use pattern of the Shugandha Residential Project.

Table 4.5: Different Land Uses of the Shugandha Residential Area

Land use parameter		Total land	
		Area (in Acre)	%
Residential plots	Number	6.15	86.31
	91		
Roads		0.81	11.37
Facilities		0.16	2.32
Total		7.12	100

Source: Field Survey, 2003.

Above 86% of the land is residential plot, which is total 6.15 acre. Two types of road as approach and collector road as well as different types of facilities occupied total 13.59 % of the land.

4.2.2.3 Problems of the Shugandha Residential Project

Shugandha Residential Project is one of the formal private housing projects in Khulna City, which is established beside the Khulna-Satkhira road in 1995. They just developed the land by fulfilling the low land after accumulating the land from different owners. But the construction process is yet to done in the projects. The water supply and electricity line was existed there, but the water supply line and power line was not extended so far. This is one of the major constrains for the sluggish construction for the present plot owners. Even it was found that the maximum areas of the projects are being cultivated lands.

The price of the land is minimal. But there is no cross subsidy system. The selling price of the different size plots is Tk.40, 000 per Katha. But cross subsidy system may encourage the middle income class people, which provision is not made in that project. Under the cross subsidy system, the selling price of the below five katha plots can be sold below 40,000 and five katha and above five katha can be sold above Tk.40, 000.

Another problem of the projects is road construction. The agency made the 30 feet approach road and 12 feet collector road but it was not according to the layout plan. Even the constructed road is now poor conditioned. And for this reason some plot owners are still waiting for the construction of their housing work for better accessibility road. And this also one of the main reason for not constructing the dwelling units.

The Shugandha Residential Project has made the provision for different necessary facilities as schools, community center, health center, play ground etc. But these sorts of services are not provided so far. People purchased the plots under such

residential projects to get a combined of urban services by costing much money to led the life conformability. Since the services were not provided so far, so the constructions of dwelling units are processing with slow rate.

4.2.2.4 Prospects of the Shugandha Residential Project

Despite of some problems the Shugandha Residential Project is having some tremendous prospects as given below.

- Locational aspects of the Shugandha Residential Project: Like the Nabarun Housing Estate the location of the project is also constituted as prospect. Generally a planned residential area take place at either far beside the central business districts of the city (CBD) or the side of the city to escape the cities civic pressure. In this way, the project is also located at the south-west side of the Khulna city (just beside the Khulna city). On the other hand the middle class income people have the accessibility of this project due to comparatively lower price of the land.
- Service and facilities: The project have surrounded by some remarkable services and facilities. In case of urban amenities the project has the accessibility of the high way road (Khulna-Shatkhira high way).
- In the case of education the project has also some remarkable facilities. Some good reputed schools and colleges are took place just around the project. Among them SOS Shisu palli is a prominent school of the Khulna city that is located within 2 kilometers of the project. The project is also surrounded some primary schools as well as NGOs non-formal education. On the other hand the Khulna University is positioned just beside (within 1 kilometer) the project.
- In the case of health service, the Khulna Medical Collage, the largest government hospital (more than 250 beds) is positioned within just three kilometers which served a tremendous prospect of the project. This hospital serves mainly lower, lower-middle and middle income people. Generally the upper income people take the higher medical facilities that are provided by

some private clinic, which are also located around the project (within three kilometers).

- The people of this residential area will have the minimum possible distance from the nearby good reputed shopping center. This renowned shopping complex is KDA New Market, which is located within three to four of the projects.

4.2.3. Monorama Residential Project

4.2.3.1 Location and size of the Project

Monorama is a private housing project of Modhumoti Salt Industries. This project is located to the south side of Khulna-Shatkhira Road. It is quite far from the main city of Khulna about 5 Km away. The distance of Khulna University from this project is about 2 Km. Khulna Rural Electrification Board (REB) office is situated on the eastern side of this project. The total area of the project is about 10.11 acre. The location of the project is in Mouza Thikrband, in union of Jalma in the Batiaghata Thana of Khulna.

Background of the Project

Previously the land of the project was agricultural land. The developer purchased the land from the owner at the rate of three-lakh taka per Bigha. Then the developer developed this land by providing road and other facilities.

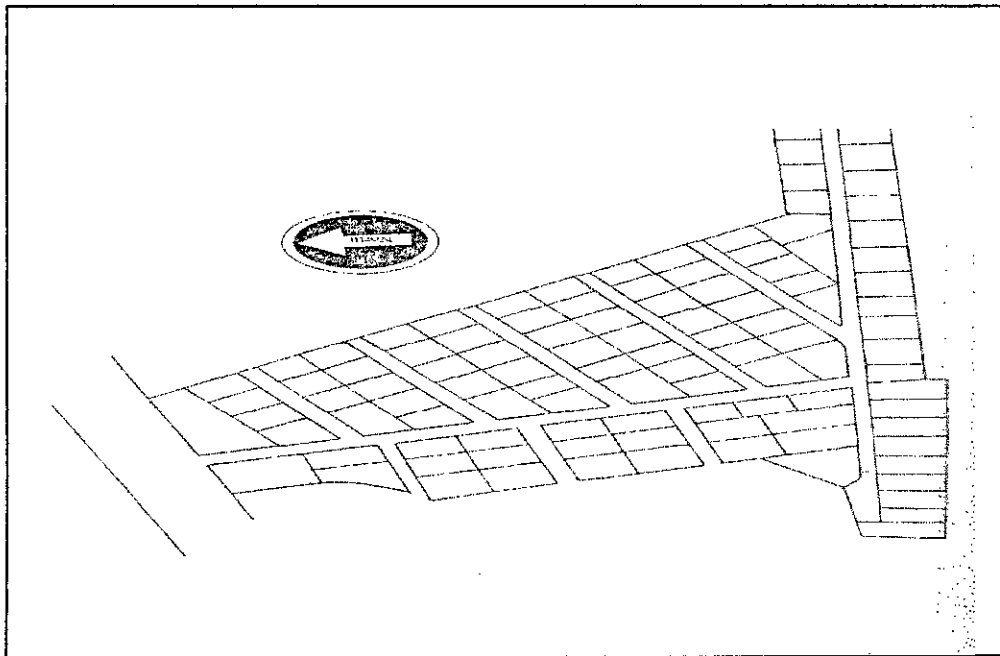
General Information

- Name of the project: Monorama Residential Project.
- Establishment year: 1992.
- Total Land area of the project is 10.11 acre.
- Plot sizes are 3.5, 4, 4.5, 5 and 5+ katha.
- Total no. of plots: 104.
- 10 katha of land is allocated for mosque.

- Selling price of plot = Tk. 40,000 per Katha.
- The developer provided roads, the width of which will be,
 1. Approach road = 30'
 2. Collector road = 12'
- Previous land use before the commencement of the project: Agricultural land.

Map 4.3 the existing layout plan of the project indicates just plots without showing scale and size of plots and other facilities. This plan only for attracts the buyers.

Map 4.3: Existing Layout Plan of Monorama R/P



4.2.3.2 Service and Facilities

The site of the Monorama Residential Projects is well accessible and furnished with different services and facilities. Monorama Residential Project 30 feet approach road and 12 feet collector road have been aligned through the project. The project has accessibility to Khulna-Satkhira high way. Water supply and telephone have not so been provided but it is on the process. Rural Electrification Board (REB) is situated

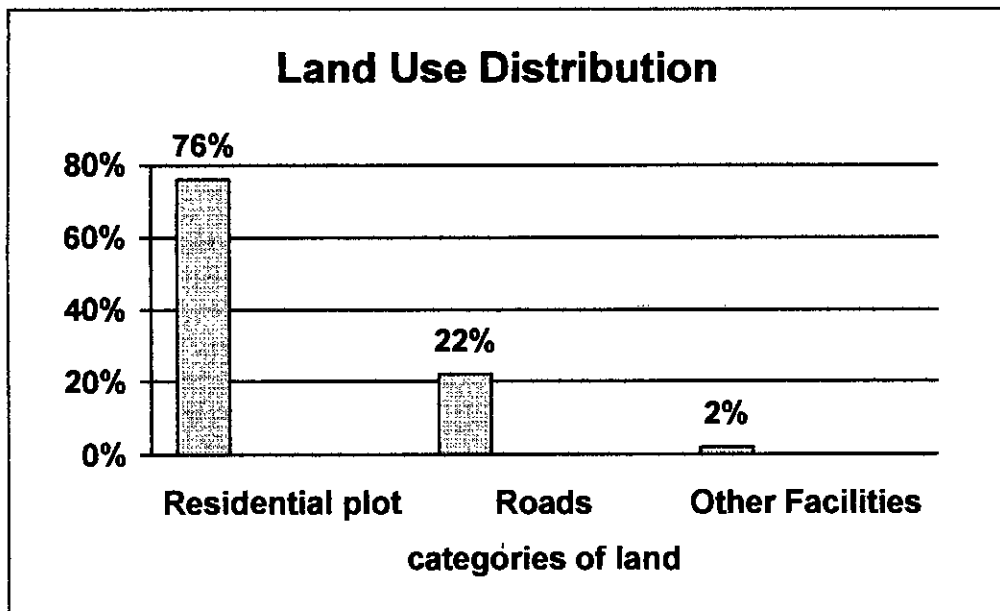
just beside the project. School, play ground, mosque even a hospital has been provided in the lay out of the project. In reality, the construction work of the site has not yet started. The previous land use before the intervention of the project was agricultural land.

The following table and figures represents the land use pattern of the Monorama Residential Area

Table 4.6: Land Use Pattern of the Monorama Residential Area

Land use of the project				Total land Area (in Acre)
Residential plots	Plot size	No.	Total	7.72
	3.5 katha	54	104	
	4 katha	8		
	4.5 katha	14		
	5 katha	21		
5+ katha	7			
Roads				2.22
Facilities				0.17
Total				10.11

Source: Field Survey, August 2003.



Source: Field Survey, August 2003.

Figure no. 4.2: Land use of the Monorama Residential Area

From the above Table it is seen that like the other residential projects the Monorama Residential Area has about 76% of the total land is residential plots. These residential plots have been sub-divided as 3.5, 4, 4.5, 5 and above 5 katha plots. Among the total 104 plots 3.5 katha plots comprises of 50% of the total plots. The selling price of the plot is Tk.40, 000 per katha just like Shugandha Residential Project.

4.2.3.3 Problems of the Monorama Residential Area

Monorama Residential Area is one of the formal private housing projects in Khulna City, which is established beside the Khulna-Shatkhira road in 1992. They just developed the land by filling the low land after acquiring the land from different landowners. But the construction process is yet to be completed. The water supply and Telephone connection has not been provided there, because the project is quite far away from the City Corporation boundary. However, the project will arrange itself the water supply provision in their project area.

The price of the land is low. But there is no cross subsidy system. The selling price of the different size plots is Tk.40, 000 per Katha. But cross subsidy system may encourage the middle income class people, which provision is not made in that project. Under the cross subsidy system, the selling price of land below five katha plots can be sold below taka 40,000 and five katha plots and above five katha plots can be sold above Tk.40, 000. This will enable more people to buy plots. Another problem of the projects is road construction. The agency made the 30 feet approach road and 12 feet collector road but this was not constructed according to the layout plan. Poor construction and poor maintenance of land is resulted very poor road. For this reason, plot owners are pending the construction of their housing work until better accessibility road.

The Monorama Residential area has made the provision for different necessary facilities as schools, community center, health center, play ground etc. But these services have not been developed so far. People purchased the plots under such

residential projects to get a combined of urban services by costing much money to led the life conformability. Since the services were not provided so far, so the constructions of dwelling units are processing with slow rate.

4.2.3.4 Prospect of the Monorama Residential Area

Despite of some problems the Monorama Residential area is having some tremendous prospects as given below.

- Locational aspects of the Monorama Residential Project: Alike the Nabarun Housing Estate and Shugandha Residential Project the location of the project is also constituted as prospect. Generally a planned residential area take place at either far beside the central business districts of the city (CBD) or the side of the city to escape the cities civic pressure. In this way, the project is also located at the south-west side of the Khulna city (just beside the Khulna city corporation boundary). The rural electrification board (REB) is located just beside the project, which also serves tremendous prospects of the project area. On the other hand the middle class income people have the accessibility of this project due to comparatively lower price of the land.
- Service and facilities: The project have surrounded by some remarkable services and facilities. In case of urban amenities the project has the accessibility of the high way road (Khulna-Shatkhira high way).
- In the case of education the project has also some remarkable facilities. Some good reputed schools and colleges are took place just around the project. Among them SOS Shisu palli is a prominent school of the Khulna city that is located within 2 kilometers of the project. On the other hand the Khulna University is positioned just beside (within 1 kilometer) the project.
- In the case of health service, the Khulna Medical Collage, the largest government hospital (more than 250 beds) is positioned within just three and half kilometers which served a tremendous prospect of the project. This hospital serves mainly lower, lower-middle and middle income people. Generally the upper income people take the higher medical facilities that are provided by some private clinic which are also located around the project.

- The people of this residential area will have the minimum possible distance from the nearby good reputed shopping center. This renowned shopping complex is KDA New Market, which is located within three to four of the projects. On the other hand, the Batiaghata Thana (in where the project is located) is quite near to the project area, which may server, the people as prospect to access the Thana to acquire the necessary bureaucratic services.

4.2.4. Rangdhanu Residential Project

4.2.4.1 Location of the Project

On the southern side of Khulna University, the Rangdhanu Residential Project is situated. Arafat Rice Mill undertook this private housing scheme. After the accumulation of land, the developer prepares a rough sketch by subdividing the land. This project consists of residential plots only. There is no provision of other facilities except road. From the CBD area of Khulna City, the distance of this project is about 4.5 Kilometer.

Locational Address of the Project

Name of the Mouza: Krishna Nagar, Union: Jalma, Thana: Batiaghata, District: Khulna.

General Information

- Name of the project: Rangdhanu Residential Project.
- Establishment year: 1997.
- Total land area of the project is 5.48 acre.
- Plot sizes are 3, 4, 5 and 5+ katha.
- Total no. of plots are 67.
- Selling price of plot = Tk. 50,000 per Katha.
- The developer provided roads, the width of which are,
 1. Approach road = 15'

2. Collector road = 15'

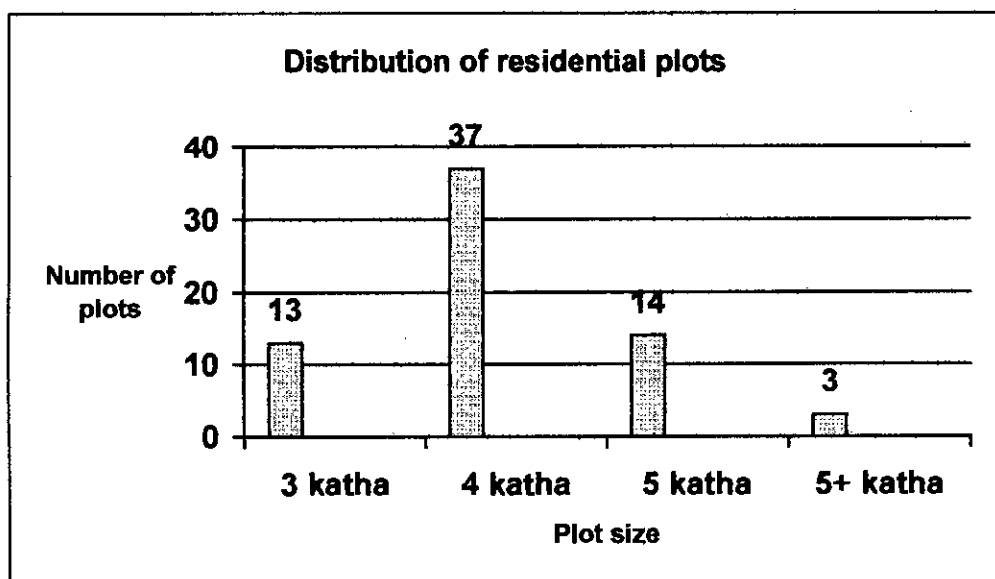
- Previous land use before the intervention of the project: Agricultural land.

4.2.4.2 Service and facilities

The site of the Rangdhanu Residential Projects is well accessible and furnished with different services and facilities. Alike Shugandha Residential Project and Monorama Residential area 15 feet approach road and 15 feet collector road have been aligned through out the project. The project has the good accessibility of Khulna-Shatkhirā high way road. Water supply and telephone have not so been provided but it is on the process. Rural Electrification Board (REB) is situated beside the project. The previous land use before the intervention of the project was agricultural land.

4.2.4.3 Land use pattern of the Rangdhanu Residential Project

The following figure 4.3 and table 4.7 shows the land use pattern of the Rangdhanu Residential project.



Source: Field Survey, 2003.

Figure no. 4.3: Number of plots in the Rangdhanu Project

Here in the table it was clearly viewed that, the total project is dominated by four katha sized plots. Above 50% of the plots are four katha sized. This system may encourage the cross subsidy system. On the other hand three katha plots and five katha plots are in equal number. And above five katha sized plots are in very few numbers.

The following table shows the types of land and its use on the Rangdhanu Residential Project.

Table 4.7: Different Land Uses allocation of Rangdhanu Residential Area

Land use parameter		Total land	
Residential plots	Total plots	Area (in Acre)	%
	67	4.55	83
Roads		0.93	17
Facilities		Nil	Nil
Total		5.48	100

Source: Field Survey, 2003.

Here in the table it is as usual that, the residential plots are highly occupied in the project. Above 80% of the total land is occupied by residential plots. But here it is interesting that, there are no services and facilities provision has not been made in the project.

4.2.4.5 Problems of the Rangdhanu Residential Project

Rangdhanu Residential Project is one of the formal private housing projects in Khulna city, which is established beside the Khulna-Shatkhira road in 1997. They just developed the land by fulfilling the low land after accumulating the land from different owners. But the construction process is yet to done in the projects. The water supply and Telephone is not provided there. Because the project is quite away from the city corporation boundary, so water supply line has not been provided. But the project made itself the water supply provision in their project area. On the other hand the telephone line has not been aligned through out the project so far.

The price of the land is minimal. But there is no cross subsidy system. The selling price of the different size plots is Tk.50, 000 per Katha. But cross subsidy system

may encourage the middle income class people, which provision has not made in that project. Under the cross subsidy system, the selling price of the below five katha plots can be sold below 45,000 and five katha and above five katha can be sold above Tk.55, 000. Another problem of the projects is road construction. The agency made the 15 feet approach road and 15 feet collector road, but the constructed road is Katcha constructed now, even the constructed road is now poor conditioned. And for this reason some plot owners are still waiting for the construction of their housing work for better accessibility road. And this is also one of the main reason for not constructing the dwelling units.

The Rangdhanu Residential Project has made the provision for only two types of roads as 15 feet approach road and 15 feet collector road. But neither of the facilities such as school, play ground, mosque community center's provision have made there. This is one of the major obstructions for the construction of the dwelling units. Even purchasing the plots. When the plots owners see that, there are no facilities at least some necessary facilities around the project then generally then will not go for house construction even they will not be interested for purchasing the plots.

4.2.4.5 Prospect of the Rangdhanu Residential Project

Despite of some problems the Rangdhanu Residential Project is having some tremendous prospects as given below.

- Locational aspects of the Rangdhanu Residential Project: Alike the Nabarun Housing Estate and Shugandha Residential Project the location of the project is also constituted as prospect. The project is located at south-west side of the Khulna city and just south of the Khulna University. The rural electrification board (REB) is located beside the project, which also serves tremendous prospects of the project area. On the other hand the middle class income people have the accessibility of this project due to comparatively lower price of the land.

- Service and facilities: The project have surrounded by some remarkable services and facilities. In case of urban amenities the project has the accessibility of the high way road (Khulna-Shatkhira high way).
- In the case of education the project has also some remarkable facilities. Some good reputed schools and colleges are took place just around the project. Among them SOS Shisu palli is a prominent school of the Khulna city that is located within 1.5 kilometers of the project. On the other hand the Khulna University is positioned beside (just opposition of Khulna University) the project.
- In the case of health service, the Khulna Medical Collage, the largest government hospital (more than 250 beds) is positioned within just three and half kilometers which served a tremendous prospect of the project. This hospital serves mainly lower, lower-middle and middle income people. Generally the upper income people take the higher medical facilities that are provided by some private clinic which are also located around the project.
- The people of this residential area will have the minimum possible distance from the nearby good reputed shopping center. This renowned shopping complex is KDA New Market, which is located within three to four of the projects. On the other hand, the Batiaghata Thana (in where the project is located) is quite near to the project area, which may server, the people as prospect to access the Thana to acquire the necessary bureaucratic services.

4.2.5. Shapnapuri Residential Project

4.2.5.1 Location of the Project

This project is situated on the western side of Khulna City Corporation (KCC). It is located the outer fringe of KCC and it just on the opposite of Khulna University (KU). The developer just has started construction work here. Earthwork has done only for those plots, which are sold. The site has attracted many teachers and personnel of Khulna University, as it is close to their work place.

According to the master plan of KDA, the city will be expanded to the western direction of Khulna City. Moreover, being beside a major and important highway like Khulna-Satkhira road, this area bears a greater importance in the coming years. It is also worth of mentioning that proposed Bangabandhu Sharak (Rupsha Bridge Bypass road) in the master plan for connecting Rupsha Bridge to the other side of the city.

General Information

- Name of the project: Shapnapuri Residential Project.
- Location of the site: By the side of Khulna-Shatkhira Road and in front of Khulna University.
- Year of project establishment: Oct. 1998.
- Previous land use of the Project: Agricultural Field.
- Total area of the project: 1.83 acre.
- Selling price of plot = Tk. 50,000 per Katha.
- Provided facilities: only road.
 1. Access road, 15'
 2. Approach road, 20'
- Previous land use before the intervention of the project: Agricultural land.

4.2.5.2 Service and Facilities

The site of the Shapnapuri Residential Project is well accessible and furnished with different services and facilities. Alike Shugandha Residential Project and Monorama Residential area 20 feet approach road and 15 feet access road have been aligned through out the project. The project has the good accessibility of Khulna-Shatkhira high way road. Water supply and telephone have not so been provided but it is on the process. The previous land use before the intervention of the project was agricultural land.

4.2.5.3 Land use of the Shapnapuri

Table 4.8: Land Use Allocation of the Shapnapuri Residential Project

Land allocation			Total land		
Residential plots	Plot size	No.	Total	Area (in Acre)	%
	3 katha	9	26	1.64	80.61
	4 katha	13			
	5 katha	4			
Roads				0.39	19.39
Facilities				Nil	Nil
Total				2.03	100

Source: Field Survey, 2003.

Here in the table it is as usual that, the residential plots are highly occupied in the project. Above 80% of the total land is occupied by residential plots. But here it is interesting that, there are no services and facilities provision has not been made in the project. On the other hand among the total 26 plots, there are total 13 plots which are 4 katha in sized. This means that 50% of the residential plots are in four katha sized. The rest of the plots are three katha and five katha in sized.

4.2.5.4 Problems of the Shapnapuri Residential Project

Shapnapuri Residential Project is one of the formal private housing projects in Khulna City, which is established beside the Khulna-Shatkhira road in 1998. They just developed the land by fulfilling the low land after accumulating the land from different owners. But the construction process is yet to done in the projects. The water supply and Telephone is not provided there. Because the project is not located within the city corporation boundary, so water supply line of the Khulna City Corporation (KCC, the only water supplier in Khulna City) has not been provided. But the project made itself the water supply provision system in their project area. On the other hand the telephone line has not been aligned through out the project so far.

The price of the land is minimal. But there is no cross subsidy system. The selling price of the different size plots is Tk.50, 000 per Katha. But cross subsidy system may encourage the middle income class people, which provision has not made in that

project. Under the cross subsidy system, the selling price of the below five katha plots can be sold below 45,000 and five katha and above five katha can be sold above Tk.55, 000.

Another problem of the projects is road construction. The agency made the 20 feet approach road and 15 feet access road, but the constructed road is Katcha constructed now, even the constructed road is now poor conditioned. And for this reason some plot owners are still waiting for the construction of their housing work for better accessibility road. And this is also one of the main reason for not constructing the dwelling units.

The Shapnapuri Residential Project has made the provision for only two types of roads as 20 feet approach road and 15 feet access road. But neither of the facilities such as school, play ground, mosque community center's provision have made there. This is one of the major obstructions for the construction of the dwelling units. Even purchasing the plots. When the plots owners see that, there are no facilities at least some necessary facilities around the project then generally then will not go for house construction even they will not be interested for purchasing the plots.

4.2.5.5 Prospect of the Shapnapuri Residential Project

Despite of some problems the Shapnapuri Residential Project is having some tremendous prospects as given below.

- **Locational aspects of the Shapnapuri Residential Project:** Alike the Nabarun Housing Estate and Shugandha Residential Project and other projects the location of the project is also constituted as prospect. The project is located at south-west side of the Khulna city and just opposition of the Khulna University. The rural electrification board (REB) is located beside (within half km) the project, which also serves tremendous prospects of the project area. On the other hand the middle class income people have the accessibility of this project due to comparatively lower price of the land.

- Service and facilities: The project has surrounded by some remarkable services and facilities. In case of urban amenities the project has the accessibility of the high way road (Khulna-Shatkhira high way).
- In the case of education the project has also some remarkable facilities. Some good reputed schools and colleges are took place just around the project. Among them SOS Shisu palli is a prominent school of the Khulna city that is located within 1.5 kilometers of the project. On the other hand the Khulna University is positioned just opposition of the project.
- In the case of health service, the Khulna Medical Collage, the largest government hospital (more than 250 beds) is positioned within just three and half kilometers which served a tremendous prospect of the project. This hospital serves mainly lower, lower-middle and middle income people. Generally the upper income people take the higher medical facilities that are provided by some private clinic which are also located around the project.
- The people of this residential area will have the minimum possible distance from the nearby good reputed shopping center. This renowned shopping complex is KDA New Market, which is located within three to four of the projects. On the other hand, the Batiaghata Thana (in where the project is located) is quite near to the project area, which may server, the people as prospect to access the Thana to acquire the necessary bureaucratic services.

4.2.6. Shahibag Residential Project

4.2.6.1 Location of the Project

Shahibag is one of the private housing schemes of Arafat rice mill. It is an on going project. This project is situated about 6.5 Kilometer far from Khulna City. The Communication facilities of this project area with the main city are not satisfactory.

Locational Address of the Project

Name of the Mouza: Thikrabad, Union: Jalma, Thana: Batiaghata, District: Khulna.

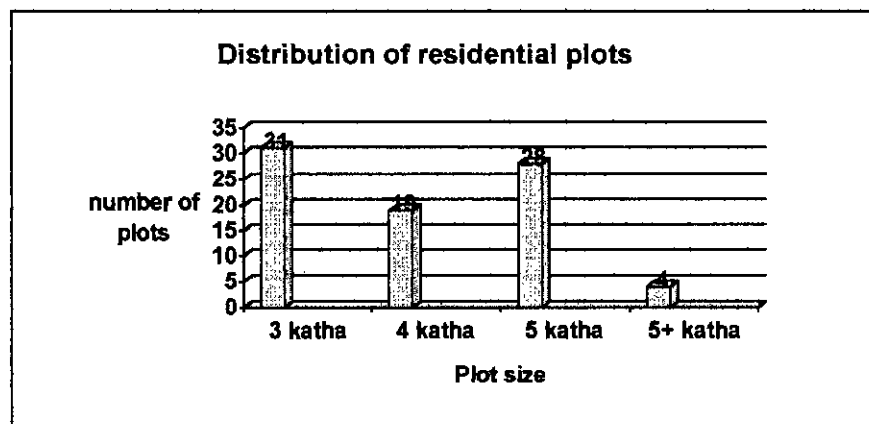
General information

- Name of the project: Shahibag Residential Project.
- Establishment year: 1999.
- Total land area of the project is 6.5 acre.
- Plot sizes are 3, 4, 5 and 5+ katha.
- Total no. of plots are 82.
- Selling price of plot = Tk. 10,000 per Katha.
- Among the facilities there has only a provision of a mosque.
- The developer has provided roads, the width of which are,
 1. Approach road = 12'
 2. Collector road = 10'
- Previous land use before the commencement the project: agricultural land.

4.2.6.2 Services and Facilities

The site of the Shahibag Residential Project is well accessible and furnished with different services and facilities. Alike other Residential Project 12 feet approach road and 10 feet collector road have been aligned through out the project. The project has the good accessibility of Khulna-Shatkhira high way road. Water supply and telephone have not so been provided but it is on the process. The previous land use before the intervention of the project was agricultural land.

4.2.6.3 Land use of the Shahibag Residential Project



Source: Field Survey, 2003.

Figure no. 4.4: Number of plots in Shahibag Residential Project

Here in the above table it was clearly viewed that, the number of three katha plots and five katha plots are in almost equal number. On the other hand there are 19 four katha sized plots where as the total number of plots are 82. There are very few plots in that project which are occupied more than five katha sized.

The following table represents the land use pattern of the Shahibag Project.

Table 4.9: Different Land Uses of the Shahibag Residential Area.

Land use parameter		Total land	
		Area (in Acre)	%
Residential plots	Number of plots	5.48	84.46
	82		
Roads		0.85	13.00
Facilities		0.17	2.54
Total		6.50	100

Source: Field Survey, 2003.

Here in the table it is as usual that, the residential plots are highly occupied in the project. Above 80% of the total land is occupied by residential plots. Total 13% of the land is occupied by approach road and collector road. But here some sorts of land are still kept for the provision of services and facilities where there are no provision for services and facilities in those projects as Shapnapuri Residential Project and Rangdhanu Residential Project.

4.2.6.4 Problems of the Shahibag Residential Project

Shahibag Residential Project is another formal private housing projects in Khulna City, which is established beside the Khulna-Shatkhira road in 1999. They just developed the land by fulfilling the low land after accumulating the land from different owners. But the construction process is yet to done in the projects. The water supply and Telephone is not provided there. Because the project is not located within the city corporation boundary, so water supply line of the Khulna City Corporation (KCC, the only water supplier in Khulna City) has not been provided. But the project made itself the water supply provision system in their project area.

On the other hand the telephone line has not been aligned through out the project so far. Another problem of the projects is road construction. The agency made the 12 feet approach road and 10 feet collector road, but the constructed road is Katcha constructed now, even the constructed road is now poor conditioned. And for this reason some plot owners are still waiting for the construction of their housing work for better accessibility road. And this is also one of the main reason for not constructing the dwelling units.

The Shapnapuri Residential Project has made the provision for only two types of roads as 12 feet approach road and 10 feet access road. But neither of the facilities such as school, play ground, mosque community center's provision have made there. This is one of the major obstructions for the construction of the dwelling units. Even purchasing the plots. When the plots owners see that, there are no facilities at least some necessary facilities around the project then generally then will not go for house construction even they will not be interested for purchasing the plots.

4.2.6.5 Prospect of the Shahibag Residential Project

Despite of some problems the Shahibag Residential Project is having some tremendous prospects as given below.

- Locational aspects of the Shahibag Residential Project: Alike the Nabarun Housing Estate and Shugandha Residential Project and other projects the location of the project is also constituted as prospect. The project is located beside the Khulna-Batiaghata road and within one kilometer from Gallamary On the other hand the middle class and lower-middle class income people have the accessibility of this project due to comparatively lower price of the land.
- Service and facilities: The project has surrounded by some remarkable services and facilities. In case of urban amenities the project has the accessibility of the high way road (Khulna-Satkhira high way).
- In the case of education the project has also some remarkable facilities. Some good reputed schools and colleges are took place just around the

project. Among them SOS Shisu palli is a prominent school of the Khulna city that is located within 2.5 kilometers of the project. On the other hand the Khulna University is positioned just opposition of the project.

- In the case of health service, the Khulna Medical Collage, the largest government hospital (more than 250 beds) is positioned within just three and half kilometers which served a tremendous prospect of the project. This hospital serves mainly lower, lower-middle and middle income people. Generally the upper income people take the higher medical facilities that are provided by some private clinic which are also located around the project.
- The people of this residential area will have the minimum possible distance from the nearby good reputed shopping center. This renowned shopping complex is KDA New Market, which is located within three to four of the projects. On the other hand, the Batiaghata Thana (in where the project is located) is quite near to the project area, which may server, the people as prospect to access the Thana to acquire the necessary bureaucratic services.

4.2.7 Amenabag Residential Project

4.2.7.1 Location of the Project

Just in front of the main gate of the Khulna University, Amenabag Residential Project is located. It is about 4.25 Kilometer. far from Khulna City Center. The south side of the Khulna-Shatkhira high way also establishes this project. This project consists of comparatively high land, which is fit for construction just now. The maximum land of this project was owned by one owner. Before the establishment of the project, the owner wanted to sell his land including a rice mill. But after being failed, the owner collected some surrounding lands and then subdivided them. In the subdivision plan of this project there is no provision of ancillary facilities except road.

Locational Address of the Project

Name of the Mouza: Krishna Nagar, Union: Jalma Thana: Batiaghata District: Khulna.

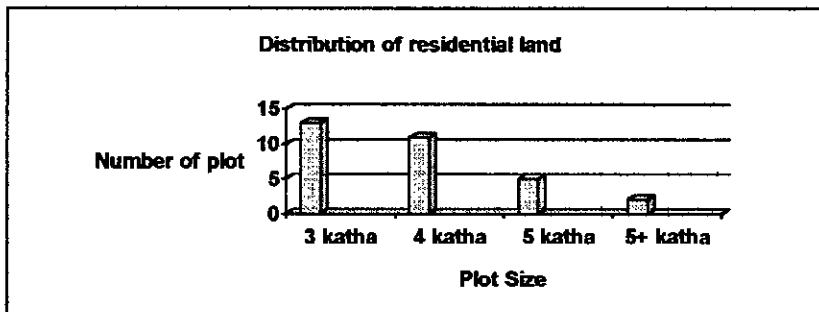
General Information

- Name of the project: Amenabag Residential Project.
- Establishment year: 2000.
- Total land area of the project is 2.58 acre.
- Plot sizes are 3, 4, 5 and 5+ katha.
- Total no. of plots are 33.
- Selling price of plot = Tk. 65,000 per Katha.
- The developer has provided roads, the width of which are,
 1. Approach road = 20'
 2. Collector road = 12'
- Previous landuse before the commencement of the project: Agricultural land.

4.2.7.2 Services and facilities Amenabag Residential Project

The site of the Amenabag Residential Project is well accessible and furnished with different services and facilities. In this project 20 feet approach road and 12 feet access road have been aligned through out the project. The project has the good accessibility of Khulna-Shatkhira high way road. Water supply and telephone have not so been provided but it is on the process. The previous land use before the intervention of the project was agricultural land.

4.2.7.3 Land use of the Amenabag Residential Project



Source: Field Survey, 2003.

Figure no. 4.5: Number of the plots of the Amenabag Residential Project

Here in the table it was clearly viewed that, the total project is dominated by three katha sized plots. Above 45% of the plots are three katha sized. This system may encourage the cross subsidy system. On the other hand there are 11 plots and 5 plots are four katha and 5 katha sized respectively.

Table 4.10: Various Land allocation of the Amenabag Residential Area

Land use parameter		Total land	
		Area (sq.ft.)	%
Residential plots	Number	2.13	82.35
	33		
Roads		0.45	17.65
Facilities		Nil	Nil
Total		2.58	100

Source: Field Survey, 2003.

Here in the table it is as usual that, the residential plots are highly occupied in the project. Above 80% of the total land is occupied by residential plots. But here it is interesting that, there are no services and facilities provision has not been made in the project. On the other hand among the total 33 plots, there are total 13 plots which are 3 katha in sized. This means that 45% of the residential plots are in three katha sized. The rest of the plots are four katha and five katha in sized.

4.2.7.4 Problems of the Amenabag Residential Project

Amenabag Residential Project is one of the formal private housing projects in Khulna City, which is established beside the Khulna-Shatkhira road in 2000. They just developed the land by fulfilling the low land after accumulating the land from different owners. But the construction process is yet to done in the projects. The water supply and Telephone is not provided there. Because the project is not located within the city corporation boundary, so water supply line of the Khulna City Corporation (KCC, the only water supplier in Khulna City) has not been provided. But the project made itself the water supply provision system in their project area. On the other hand the telephone line has not been aligned through out the project so far.

The price of the land is minimal. But there is no cross subsidy system. The selling price of the different size plots is Tk.65, 000 per Katha. But cross subsidy system may encourage the middle income class people, which provision has not made in that project. Under the cross subsidy system, the selling price of the below five katha plots can be sold below 50,000 and five katha and above five katha can be sold above Tk.75, 000.

Another problem of the projects is road construction. The agency made the 20 feet approach road and 12 feet collector road, but the constructed road is Katcha constructed now, even the constructed road is now poor conditioned. And for this reason some plot owners are still waiting for the construction of their housing work for better accessibility road. And this is also one of the main reason for not constructing the dwelling units.

The Amenabag Residential Project has made the provision for only two types of roads as 20 feet approach road and 12 feet collector road. But neither of the facilities such as school, play ground, mosque community center's provision have made there. This is one of the major obstructions for the construction of the dwelling units. Even purchasing the plots. When the plots owners see that, there are no facilities at least

some necessary facilities around the project then generally then will not go for house construction even they will not be interested for purchasing the plots.

4.2.7.5 Prospects of the Amenabag Residential Project

Despite of some problems the Amenabag Residential Project is having some tremendous prospects as given below.

- Locational aspects of the Amenabag Residential Project: Alike the Nabarun Housing Estate and Shugandha Residential Project and other project the location of the project is also constituted as prospect. The project is located at south-west side of the Khulna city and just opposition of the Khulna University. The rural electrification board (REB) is located beside (within half km) the project, which also serves tremendous prospects of the project area. On the other hand the middle class income people have the accessibility of this project due to comparatively lower price of the land.
- Service and facilities: The project has surrounded by some remarkable services and facilities. In case of urban amenities the project has the accessibility of the high way road (Khulna-Shatkhira high way).
- In the case of education the project has also some remarkable facilities. Some good reputed schools and colleges are took place just around the project. Among them SOS Shisu palli is a prominent school of the Khulna city that is located within 1.5 kilometers of the project. On the other hand the Khulna University is positioned just opposition of the project.
- In the case of health service, the Khulna Medical Collage, the largest government hospital (more than 250 beds) is positioned within just three and half kilometers which served a tremendous prospect of the project. This hospital serves mainly lower, lower-middle and middle income people. Generally the upper income people take the higher medical facilities that are provided by some private clinic which are also located around the project.

- The people of this residential area will have the minimum possible distance from the nearby good reputed shopping center. This renowned shopping complex is KDA New Market, which is located within three to four of the projects. On the other hand, the Batiaghata Thana (in where the project is located) is quite near to the project area, which may server, the people as prospect to access the Thana to acquire the necessary bureaucratic services.

4.2.8. Sharnali Residential Project

4.2.8.1 Location of the project

Sharnali Residential Project has been established in 2000. The side of Batiaghata sharak locates this project. It is situated on the southern part of Khulna City.

Locational address of the project

Name of the Mouza: Krishna Nagar, Union: Jalma Thana: Batiaghata District: Khulna.

General Information

- Name of the project: Sharnali Residential Project.
- Establishment year: 2000.
- Total land area of the project is 2.31 acre.
- Selling price of plot = Tk. 35,000 per Katha.
- The plot sizes of the project are 4, 4. 5, 5 and 5+ katha.
- Total no. of plots are 30.
- The developer has provided roads, the width of which are,
 1. Approach road = 12'
 2. Collector road = 12'
- Previous land use before the intervention of the project: Agricultural land.

Table 4.11: Land allocation of the Sharnali Residential Area

Land allocation				Total land	
				Area (in Acre)	%
Residential plots	Plot size	No.	<i>Total</i>	2.03	87.40
	4 katha	6			
	4.5 katha	7			
	5 katha	9			
	5+ katha	8			
				30	
Roads				0.28	12.60
Facilities				Nil	Nil
Total				2.31	100

Source: field survey, 2003

4.2.8.2 Problems and prospects

Problems

- The developer mainly works as broker of the land owner.
- The developer of this project has no land in this project.
- The developer has no trade license to conduct such a business.
- The developer has no well-defined plan or layout plan of the project.
- The plots have no definite size and number.
- The plot is marshy
- The developer do not yet provide electricity and water supply line
- There is no mosque within 1 km of the residential area
- High school and primary school is not situated with in 1 km
- There is no time boundary for execution of that process.
- The area is comparatively low land
- The soil condition is not good enough for heavy structure.

Prospects

- The developer provides roads in the residential area

4.2.9 Arafat Residential Project

Arafat Residential Project is a project of Mukta Agency, which is a private real estate developer in Khulna. Arafat Residential Project is situated in the east of Rupsha Bypass road (proposed Bangabondhu Sharak) and near Khulna University, along with Mayour River. Sonadanga bus terminal is on the East Side of the project. Arafat Residential Project started their activities since 1996 with only 36 acres of land. The developer agency pooled the land from 127 owners and in this way now the total area of this project has become 140 acres. Because of being a big project, the developer divides his land into three separate blocks.

4.2.9.1 Locational Address of the Project

Name of the Mouza: Chakmothurabad Thana: Dumuria District: Khulna.

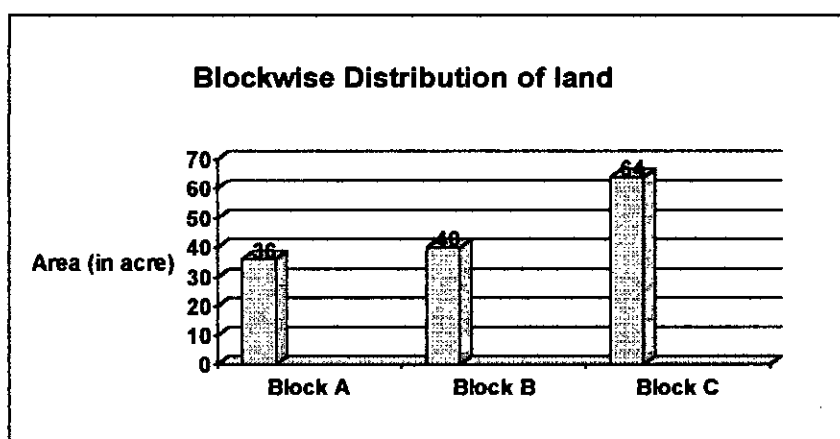
General Information

- Name of the project: Arafat Residential Project.
- Establishment year: 1996.
- Total land area of the project is 140 acre.
- Selling price of plot = Tk. 25,000 per Katha.
- The area is comparatively low land.
- Plot sizes are 2.5, 3, 3.5, 4, 4.5, 5 and 5+ katha.
- Total no. of plots are 1354
- 10 katha of total land is allocated for mosque and madrasha.
- The developer provided roads, the width of which will be,
 1. Approach road = 15'
 2. Collector road = 15'
- Previous landuse before the intervention of the project: Agricultural land.

4.2.9.2 Service facilities

Service facilities they provide there as follows:

- i. A Primary school.
- ii. A Shopping centers
- iii. Mosque
- iv. Playground
- v. Grave yard
- vi. Police fari
- vii. Madrasha



Source: Field survey, 2003.

Figure 4.6: Distribution of Land According to Blocks

Table 4.12: Different Land allocation of the Arafat Residential Area

Land use parameter				Total land	
				Area (in Acre)	%
Residential plots	Plot size	No.	Total	111.91	79.93
	2.5 katha	31			
	3 katha	53			
	3.5 katha	89			
	4 katha	423			
	4.5 katha	563			
	5 katha	128			
5+ katha	67				
Roads				27.38	19.56
Facilities				0.71	0.51
Total				140	100

Source: Field Survey, 2003.

4.2.10. Prottasha Residential Project

Prottasha Residential Project is one of the private housing projects of “Green View”. Prottasha is situated on the southern side of Nirala Residential Area. It is at the adjacent area of the ward no. 24 of KCC. Though it was demanded by the developer that it is in the City Corporation, but it is not yet. The process is going on, but there is no time boundary for execution of that process.

4.2.10.1 Locational Address of the Project

Name of the Mouza: Dubi Union: Jalma Thana: Batiaghata District: Khulna.

General Information

- Name of the project: Prottasha Residential Project.
- Establishment year: 1997.
- Total land area of the project is 12.17 acre.
- Selling price of plot = Tk. 50,000 per Katha.
- The project area is more or less has a triangular shape.
- Plot sizes are 3, 4 and 5 katha.
- Total no. of plots are 100.
- One plot of 10 katha is allocated for mosque.
- Super market consists of about 35 katha.
- It also has the option of buffer land, which will help the owner or developer to mitigate the litigation conflict in the long run.
- The developer will provide brick soling roads, the width of which will be,
 1. Major road = 30'
 2. Collector road = 20'
- The developer will also provide electricity with the help of the concerned authority.
- The plots will be sold on a “First come first take” basis.
- Previous landuse before the intervention of the project: Agricultural land.

Table 4.13: Land allocation of the Prottasha Residential Area

Land Distribution				Total land	
				Area (in Acre)	%
Residential plots	Plot size	No.	Total	9.16	75
	3 katha	9	100		
	4 katha	13			
	5 katha	52			
	5+ katha	26			
Roads				0.73	6
Facilities				2.32	19
Total				12.21	100

Source: Field Survey, 2003.

4.2.10.2 Problems and Prospects

Problems

- There is no time boundary for execution of that process.
- The area is comparatively low land
- The soil condition is not good enough for heavy structure.

Prospects

- Khulna New market is within 2 Km radius from the project area.
- Bus terminal is within 5 minutes walking distance
- Electricity supply is provided by the developers
- Primary school is within 5 minutes walking distance
- Main CBD (Central Business District) is within 3 km
- Nirala Katcha bazar is within 10 minutes walking distance
- Primary school namely SOS Shishu polli is in front of the residential area
- Mosque is within 5 minutes walking distance
- Near the Khulna-Shatkhira highroad
- Khulna university is within 1 km

4.2.11 Palashibag Residential Project

‘Green View’ established their project of private housing, named Palashibag by the side of newly proposed Bangabondhu sharak. The project is situated on the south side of Khulna City. It is about 5.75 Kilometer far from the zero point of Khulna.

The land of the project is not suitable at the present period for construction. Because the land is too much lower and marshy till now. After execution of the proposed Bangabondhu sharak and the Rupsha Bridge, the development of this project will be increased.

4.2.11.1 Locational Address of the Project

Name of the Mouza: Thikraband, Union: Jalma Thana: Batiaghata District: Khulna.

General Information

- Name of the project: Palashibag Residential Project.
- Establishment year: 2000.
- Total land area of the project is 5.00 acre.
- Plot sizes are 2.5, 3, 3.5, 4, 4.5, 5 and 5+ katha.
- Total no. of plots are 69.
- Selling price of plot = Tk. 10,000 per Katha.
- Among the facilities there has only a provision of a mosque.
- Previous landuse before the intervention of the project: Agricultural land.
- The developer has provided roads, the width of the roads are,
 1. Approach road = 15’
 2. Collector road = 12’

Table 4.14: Land Use Pattern of the Palashibag Residential Area

Land use parameter				Total land	
				Area (in Acre)	%
Residential plots	Plot size	No.	Total	4.31	85.95
	2.5 katha	3	69		
	3 katha	27			
	3.5 katha	6			
	4 katha	10			
	4.5 katha	11			
	5 katha	10			
5+ katha	2				
Roads				0.53	10.74
Facilities				0.16	3.31
Total				5.00	100

Source: Field Survey, 2003.

4.2.11.2 Problems and Prospects

Problems

- The area is comparatively low land
- The soil condition is not good enough for heavy structure
- The developer mainly works as broker of the land owner.
- The developer of this project has no land in this project.
- The developer has no trade license to conduct such a business.
- The developer has no well-defined plan or layout plan of the project.
- The plots have no definite size and number.
- The plot is marshy
- The developer do not yet provide electricity and water supply line
- There is no mosque within 1 km of the residential area
- High school and primary school is not situated with in 1 km

Prospects

- After the completion of the Bangabadhu Sharak the plot value may increase.

4.2.12 Shabuj Palli Residential Area

Shabuj Palli Residential Area is a combination of some individual project of ‘Green View’ private land development agency. There are six separate projects in the Shabuj Palli residential area. This residential area is located on the western side of Nirala Residential area. It is about 3 Kilometer far from the CBD of Khulna. SOS shishu polli is situated in front of this residential area.

4.2.12.1 Locational Address of the Project

Name of the Mouza: Dubi, Union: Jalma, Thana: Batiaghata District: Khulna.

General Information

- Name of the project: Shabuj Palli Residential Area.
- Establishment year: 1987.
- Total land area of the project is 10.58 acre.
- Plot sizes are 3, 4, 4.5, 5 and 5+ katha.
- Total no. of plots are 126.
- Selling price of = Tk. 30,000 per Katha.
- One plot of 10 katha is allocated for mosque.
- The developer will provide brick soling roads, the width of which will be,
 1. Major road = 12'
 2. Collector road = 10'
- The plots were sold on priority basis i.e. “First come first take”.
- Previous landuse before the intervention of the project: Agricultural land.

Table 4.15: Land Use Pattern of the Shabuj Palli Residential Project

Land use parameter				Total land	
				Area (in Acre)	%
Residential plots	Plot size	No.	Total	9.36	88.44
	2.5 katha	13	126		
	3 katha	37			
	3.5 katha	26			
	4 katha	18			
	4.5 katha	16			
	5 katha	14			
5+ katha	2				
Roads				1.06	10.00
Facilities				0.16	1.56
Total				10.58	100

Source: Field Survey, 2003.

4.2.12.2 Problems & Prospects

Problems

- No play ground
- No graveyard provision
- There is no drainage provision

4.2.12.3 Prospects

- Primary school is within 5 minutes walking distance
- Main CBD (Central Business District) is within 3 km
- Nirala Katcha bazar is within 10 minutes walking distance
- Primary school namely SOS Shishu polli is in front of the residential area
- Mosque is within 5 minutes walking distance
- Near the Khulna-Shatkhira highroad
- Khulna university is within 1 km
- Electricity supply is provided by KCC
- Water supply is provided by KCC

4.2.13 Aslam Shefa Residential Project

4.2.13.1 Location of the Project

This project is situated on the western side of Khulna City Corporation (KCC). It is located the outer fringe of KCC and it just on the opposite of Khulna University (KU). The developer just has started construction work here. Earthwork has done only for those plots, which are sold. The site has attracted many teachers and personnel of Khulna University, as it is close to their work place.

General Information

- Name of the project: Aslam Shefa Residential Project.
- Location of the site: By the side of Khulna-Batiaghata Road.
- Year of project establishment: Oct. 2002.
- Previous landuse of the Project: Agricultural Field.
- Total area of the project: 1 acre.
- Selling price of plot = Tk. 45,000 per Katha.
- Provided facilities: only road.
 1. Access road, 15'
 2. Approach road, 20'
- Previous land use before the intervention of the project: Agricultural land.

4.2.13.2 Service and facilities of the Aslam Shefa Residential Project

The Aslam Shefa Residential Project is not well articulated by it services and facilities. The site of the Aslam shefa Residential Project is well accessible and furnished with different services and facilities. Alike Shugandha Residential Project and Monorama Residential area 20 feet approach road and 15 feet access road have been aligned through out the project. The project has the good accessibility of Khulna-Shatkhira high way road.

4.2.13.3 Land use of the Aslam Shefa Residential Project

Table 4.16 Land Use Pattern of the Aslam Shefa Residential Project

Land allocation		Total land	
		Area (in Acre)	%
Residential plots	Total number of plots	0.80	80
	20		
Roads		0.20	20
Facilities		Nil	Nil
Total		1	100

Source: Field Survey, 2003.

Here in the table it is as usual that, the residential plots are highly occupied in the project. Almost 80% of the total land is occupied by residential plots. But here it is interesting that, there are no services and facilities provision has not been made in the project. On the other hand among the total 20 plots, there are total 11 plots which are 4 katha in sized. This means that 50% of the residential plots are in four katha sized. The rest of the plots are three katha and five katha in sized.

4.2.13.4 Problems of the Aslam Shefa Residential Project

Aslam shefa Residential Project is one of the formal private housing projects in Khulna City, which is established beside the Khulna-Shatkhira road in 2002. They just developed the land by fulfilling the low land after accumulating the land from different owners. But the construction process is yet to done in the projects. The water supply and Telephone is not provided there. Because the project is not located within the city corporation boundary, so water supply line of the Khulna City Corporation (KCC, the only water supplier in Khulna City) has not been provided. But the project made itself the water supply provision system in their project area. On the other hand the telephone line has not been aligned through out the project so far.

The price of the land is minimal. But there is no cross subsidy system. The selling price of the different size plots is Tk.50, 000 per Katha. But cross subsidy system may encourage the middle income class people, which provision has not made in that project. Under the cross subsidy system, the selling price of the below five katha plots can be sold below 45,000 and five katha and above five katha can be sold above Tk.55, 000.

Another problem of the projects is road construction. The agency made the 20 feet approach road and 15 feet access road, but the constructed road is Katcha constructed now, even the constructed road is now poor conditioned. And for this reason some plot owners are still waiting for the construction of their housing work for better accessibility road. And this is also one of the main reason for not constructing the dwelling units.

The Aslam Shefa Residential Project has made the provision for only two types of roads as 20 feet approach road and 15 feet access road. But neither of the facilities such as school, play ground, mosque community center's provision have made there. This is one of the major obstructions for the construction of the dwelling units. Even purchasing the plots. When the plots owners see that, there are no facilities at least some necessary facilities around the project then generally then will not go for house construction even they will not be interested for purchasing the plots.

4.2.13.5 Prospect of the Aslam Shefa Residential Project

Despite of some problems the Aslam Shefa Residential Project is having some tremendous prospects as given below.

- Locational aspects of the Aslam Shefa Residential Project: Alike the Nabarun Housing Estate and Shugandha Residential Project and other projects the location of the project is also constituted as prospect. The project is located at south-western side of the Khulna city and beside the Khulna- Batiaghata road.

- Service and facilities: The project has surrounded by some remarkable services and facilities. In case of urban amenities the project has the accessibility of the high way road (Khulna-Satkhira high way).
- In the case of education the project has also some remarkable facilities. Some good reputed schools and colleges are took place just around the project. Among them SOS Shisu palli is a prominent school of the Khulna city that is located within 1.5 kilometers of the project. On the other hand the Khulna University is positioned just opposition of the project.
- In the case of health service, the Khulna Medical Collage, the largest government hospital (more than 250 beds) is positioned within just three and half kilometers which served a tremendous prospect of the project. This hospital serves mainly lower, lower-middle and middle income people. Generally the upper income people take the higher medical facilities that are provided by some private clinic which are also located around the project.
- The people of this residential area will have the minimum possible distance from the nearby good reputed shopping center. This renowned shopping complex is KDA New Market, which is located within three to four of the projects. On the other hand, the Batiaghata Thana (in where the project is located) is quite near to the project area, which may server, the people as prospect to access the Thana to acquire the necessary bureaucratic services.

4.2.14 Sonargaon Residential Project

4.2.14.1 Location of the Project

This project is situated on the western side of Khulna City Corporation (KCC). It is located the outer fringe of KCC and it just on the opposite of Khulna University (KU). The developer just has started construction work here. Earthwork has done only for those plots, which are sold. The site has attracted many teachers and personnel of Khulna University, as it is close to their work place.

General Information

- Name of the project: Sonargaon Residential Project.
- Location of the site: By the side of Khulna-Batiaghata Road. (Khrishnanagar Mouza)
- Year of project establishment: Oct. 2002.
- Previous landuse of the Project: Agricultural Field.
- Total area of the project: 1 acre.
- Number of plots 18.
- Previous land use before the intervention of the project: Agricultural land.

4.2.14.2 Service and facilities of the Sonargaon Residential Project

The Sonargaon Residential Project is not well articulated by its own services and facilities. The site of the Sonargaon Residential Project is well accessible and furnished with different services and facilities. Alike Aslam Shefa Residential Project and Monorama Residential area 20 feet approach road and 15 feet access road have been aligned through out the project. The project has the good accessibility of Khulna-Satkhira high way road.

4.2.14.3 Land use of the Sonargaon Residential Project

Table 4.17 Land allocation of the Sonargaon Residential Project

Land use parameter		Total land	
		Area (in Acre)	%
Residential plots	Total number of plots	0.80	80
	18		
Roads		0.20	20
Facilities		Nil	Nil
Total		1	100

Source: Field Survey, 2003.

Here the land use of Sonargaon Residential Project is almost same to the Aslam Shefa Residential Project. Here in the table it is as usual that, the residential plots are

highly occupied in the project. Almost 80% of the total land is occupied by residential plots. But here it is interesting that, there are no services and facilities provision has not been made in the project.

4.2.14.4 Problems of the Sonargaon Residential Project

Sonargaon Residential Project is one of the formal private housing projects in Khulna City, which is established beside the Khulna-Satkhira road in 2002. They just developed the land by fulfilling the low land after accumulating the land from different owners. But the construction process is yet to done in the projects. The water supply and Telephone is not provided there. Because the project is not located within the city corporation boundary, so water supply line of the Khulna City Corporation (KCC, the only water supplier in Khulna City) has not been provided. But the project made itself the water supply provision system in their project area. On the other hand the telephone line has not been aligned through out the project so far.

Another problem of the projects is road construction. The agency made the 20 feet approach road and 15 feet access road, but the constructed road is Katcha constructed now, even the constructed road is now poor conditioned. And for this reason some plot owners are still waiting for the construction of their housing work for better accessibility road. And this is also one of the main reason for not constructing the dwelling units.

Sonargaon Residential Project has made the provision for only two types of roads as 20 feet approach road and 15 feet access road. But neither of the facilities such as school, play ground, mosque community center's provision have made there. This is one of the major obstructions for the construction of the dwelling units. Even purchasing the plots. When the plots owners see that, there are no facilities at least some necessary facilities around the project then generally then will not go for house construction even they will not be interested for purchasing the plots.

4.2.14.5 Prospect of the Sonargaon Residential Project

Despite of some problems the Sonargaon Residential Project is having some tremendous prospects as given below.

- Locational aspects of the Sonargaon Residential Project: Alike the other projects the location of the project is also constituted as prospect. The project is located at south-western side of the Khulna city and beside the Khulna -Batiaghata road.
- Service and facilities: The project has surrounded by some remarkable services and facilities. In case of urban amenities the project has the accessibility of the high way road (Khulna-Shatkhira high way).
- In the case of education the project has also some remarkable facilities. Some good reputed schools and colleges are took place just around the project. Among them SOS Shisu palli is a prominent school of the Khulna city that is located within 1.5 kilometers of the project. On the other hand the Khulna University is positioned just opposition of the project.
- In the case of health service, the Khulna Medical Collage, the largest government hospital (more than 250 beds) is positioned within just three and half kilometers which served a tremendous prospect of the project. This hospital serves mainly lower, lower-middle and middle income people. Generally the upper income people take the higher medical facilities that are provided by some private clinic which are also located around the project.
- The people of this residential area will have the minimum possible distance from the nearby good reputed shopping center. This renowned shopping complex is KDA New Market, which is located within three to four of the projects. On the other hand, the Batiaghata Thana (in where the project is located) is quite near to the project area, which may server, the people as prospect to access the Thana to acquire the necessary bureaucratic services.

4.2.15 Shikdar Housing Agency

4.2.15.1 Location of the Project

Shikdar Housing Agency is one of the privates housing in Khulna City. It is an on going project. This project is situated about 5.5 Kilometer far from Khulna City. The Communication facilities of this project area with the main city are not satisfactory.

Locational Address of the Project

Name of the Mouza: Thikraband, Union: Jalma Thana: Batiaghata District: Khulna.

General information

- Name of the project: Shikdar Housing agency.
- Establishment year: 2002.
- Total land area of the project is 2.08 acre.
- Plot sizes are 3, 4, 5 and 5+ katha.
- Total no. of plots are 25.
- The developer has provided roads, the width of which are,
 1. Approach road = 12'
 2. Collector road = 10'
- Previous land use before the commencement the project: agricultural land.

4.2.15.2 Services and Facilities of Shikdar Housing agency

The site of the Shikdar Housing Agency is well accessible and furnished with different services and facilities. Alike other Residential Project 12 feet approach road and 10 feet collector road have been aligned through out the project. The project has the good accessibility of Khulna-Satkhira high way road.

4.2.15.3 Land use of the Shikdar Housing Agency

Table 4.18: Different Land allocation of the Shikdar Housing agency.

Land use parameter		Total land	
		Area (in Acre)	%
Residential plots	Number of plots	1.68	80.61
	25		
Roads		0.40	19.39
Total		2.08	100

Source: Field Survey, 2003.

Here in the table it is as usual that, the residential plots are highly occupied in the project. Above 80% of the total land is occupied by residential plots. Total 19.39% of the land is occupied by approach road and collector road. And there is no provision for different types of necessary services and facilities.

4.2.15.4 Problems of the Shikdar Housing agency

Shikdar Housing agency is another formal private housing project in Khulna City, which is established beside the Khulna-Satkhira road in 2002. They just developed the land by fulfilling the low land after accumulating the land from different owners. But the construction process is yet to done in the projects. The water supply and Telephone is not provided there. Because the project is not located within the city corporation boundary, so water supply line of the Khulna City Corporation (KCC, the only water supplier in Khulna city) has not been provided. But the project made itself the water supply provision system in their project area. On the other hand the telephone line has not been aligned through out the project so far.

Another problem of the projects is road construction. The agency made the 12 feet approach road and 10 feet collector road, but the constructed road is Katcha constructed now, even the constructed road is now poor conditioned. And for this reason some plot owners are still waiting for the construction of their housing work for better accessibility road. And this is also one of the main reason for not constructing the dwelling units.

The Shikdar Housing agency has made the provision for only two types of roads as 12 feet approach road and 10 feet access road. But neither of the facilities such as school, play ground, mosque community center's provision have made there. This is one of the major obstructions for the construction of the dwelling units. Even purchasing the plots. When the plots owners see that, there are no facilities at least some necessary facilities around the project then generally then will not go for house construction even they will not be interested for purchasing the plots.

4.2.15.5 Prospect of the Shikdar Housing agency

Despite of some problems the Shikdar Housing Agency is having some tremendous prospects as given below.

- Locational aspects of the Shikdar Housing Agency: Alike other projects the location of the project is also constituted as prospect. The project is located beside the Khulna-Batiaghata road and within one kilometer from Gallamary. On the other hand the middle class and lower-middle class income people have the accessibility of this project due to comparatively lower price of the land.
- Service and facilities: The project has surrounded by some remarkable services and facilities. In case of urban amenities the project has the accessibility of the high way road (Khulna-Shatkhirahigh way).
- In the case of health service, the Khulna Medical Collage, the largest government hospital (more than 250 beds) is positioned within just three and half kilometers which served a tremendous prospect of the project. This hospital serves mainly lower, lower-middle and middle income people. Generally the upper income people take the higher medical facilities that are provided by some private clinic which are also located around the project.
- The people of this residential area will have the minimum possible distance from the nearby good reputed shopping center. This renowned shopping complex is KDA New Market, which is located within three to four of the projects. On the other hand, the Batiaghata Thana (in where

the project is located) is quite near to the project area, which may server, the people as prospect to access the Thana to acquire the necessary bureaucratic services.

4.2.16 Adorybag Housing Project

4.2.16.1 Location of the Adorybag Housing Project

This project is situated on the western side of Khulna City Corporation (KCC). It is located the outer fringe of KCC and it just on the opposite of Khulna University (KU). The developer just has started construction work here. Earthwork has done only for those plots, which are sold. The site has attracted many teachers and personnel of Khulna University, as it is close to their work place.

General Information

- Name of the project: Adorybag Residential Project.
- Location of the site: By the side of Khulna-Batiaghata Road. (Krishna Nagar Mouza)
- Year of project establishment: October 2002.
- Previous landuse of the Project: Agricultural Field.
- Total area of the project: 2.03 acre.
- Number of plots 26
- Distance from the center of the city is 4.5 kilometer
- Previous land use before the intervention of the project: Agricultural land.

4.2.16.2 Service and facilities of the Adorybag Residential Project

The Adorybag Residential Project is not well articulated by its own services and facilities. The site of the Adorybag Residential Project is well accessible and furnished with different services and facilities. Alike Aslam Shefa Residential Project and Monorama Residential area and Sonargaon Residential Project 20 feet

approach road and 15 feet access road have been aligned through out the project. The project has the good accessibility of Khulna-Satkhira high way road.

4.2.16.3 Land use of the Adorybag Residential Project

Table 4.19: Land allocation of the Adorybag Residential Project

Land use parameter			Total land	
			Area (in Acre)	%
Residential plots	No.	Total	1.77	87.40
		26		
Roads			0.26	12.60
Facilities			Nil	Nil
Total			2.03	100

Source: Field Survey, 2003.

Here in the table it is as usual that, the residential plots are highly occupied in the project. Almost 87.40% of the total land is occupied by residential plots, and there is 12.60% of the land is occupied by different types of road. But here it is interesting that, there is no services and facilities provision has not been made in the project.

4.2.16.4 Problems of the Adorybag Residential Project

Adorybag Residential Project is one of the formal private housing projects in Khulna City, which is established beside the Khulna-Satkhira road in 2002. They just developed the land by fulfilling the low land after accumulating the land from different owners. But the construction process is yet to done in the projects. The water supply and Telephone is not provided there. Because the project is not located within the city corporation boundary, so water supply line of the Khulna City Corporation (KCC, the only water supplier in Khulna City) has not been provided. But the project made itself the water supply provision system in their project area. On the other hand the telephone line has not been aligned through out the project so far.

Another problem of the projects is road construction. The agency made the 20 feet approach road and 15 feet access road, but the constructed road is Katcha constructed now, even the constructed road is now poor conditioned. And for this reason some plot owners are still waiting for the construction of their housing work for better accessibility road. And this also one of the main reason for not constructing the dwelling units.

Adorybag Residential Project has made the provision for only two types of roads as 20 feet approach road and 15 feet access road. But neither of the facilities such as school, play ground, mosque community center's provision have made there. This one of the major obstruction for the construction of the dwelling units. Even purchasing the plots. When the plots owners see that, there are no facilities at least some necessary facilities around the project then generally then will not go for house construction even they will not be interested for purchasing the plots.

4.2.16.5 Prospect of the Adorybag Residential Project

Despite of some problems the Adorybag Residential Project is having some tremendous prospects as given below.

- Locational aspects of the Adorybag Residential Project: Alike the other projects the location of the project is also constituted as prospect. The project is located at south-western side of the Khulna city and beside the Khulna Batiaghata road.
- Service and facilities: The project has surrounded by some remarkable services and facilities. In case of urban amenities the project has the accessibility of the high way road (Khulna-Satkhira high way).
- In the case of education the project has also some remarkable facilities. Some good reputed schools and colleges are took place just around the project. Among them SOS Shisu Palli is a prominent school of the Khulna city that is located within 1.5 kilometers of the project. On the other hand the Khulna University is positioned just opposition of the project.

- In the case of health service, the Khulna Medical Collage, the largest government hospital (more than 250 beds) is positioned within just three and half kilometers which served a tremendous prospect of the project. This hospital serves mainly lower, lower-middle and middle income people. Generally the upper income people take the higher medical facilities that are provided by some private clinic which are also located around the project.
- The people of this residential area will have the minimum possible distance from the nearby good reputed shopping center. This renowned shopping complex is KDA New Market, which is located within three to four of the projects. On the other hand, the Batiaghata Thana (in where the project is located) is quite near to the project area, which may server, the people as prospect to access the Thana to acquire the necessary bureaucratic services.

4.2.17 Madani Residential Project

4.2.17.1 Location of the Project

Madani Residential Project is one of the privates housing in Khulna City. It is an on going project. This project is situated about 6.5 Kilometer far from Khulna City. The Communication facilities of this project area with the main city are not satisfactory.

Locational Address of the Project

Name of the Mouza: Thikrband, Union: Jalma Thana: Batiaghata District: Khulna.

General information

- Name of the project: Madani Residential Project.
- Establishment year: 2001.
- Total land area of the project is 1.5 acre.
- Plot sizes are 3, 4, 5 and 5+ katha.

- Total no. of plots are 23.
- The developer has provided roads, the width of which are,
 1. Approach road = 12'
 2. Collector road = 10'
- Previous landuse before the commencement the project: agricultural land.

4.2.17.2 Services and Facilities of Madani Residential Project

The site of the Madani Residential Project is well accessible and furnished with different services and facilities. Alike other Residential Project 12 feet approach road and 10 feet collector road have been aligned through out the project. The project has the good accessibility of Khulna-Satkhira high way road.

4.2.17.3 Land use of the Madani Residential Project

Table 4.20: Different Land Uses of the Madani Residential Project

Land use parameter		Total land	
		Area (in Acre)	%
Residential plots	Number of plots	1.13	75.35
	23		
Roads		0.37	24.65
Total		1.50	100

Source: Field Survey, 2003.

Here in the table it is as usual that, the residential plots are highly occupied in the project. Above 75% of the total land is occupied by residential plots. Total 24.65% of the land is occupied by approach road and collector road. And there is no provision for different types of necessary services and facilities.

4.2.17.4 Problems of the Madani Residential Project

Madani Residential is another formal private housing project in Khulna City, which is established beside the Khulna-Satkhira road in 2002. They just developed the land by fulfilling the low land after accumulating the land from different owners. But the

construction process is yet to be done in the projects. The water supply and Telephone is not provided there. Because the project is not located within the city corporation boundary, so water supply line of the Khulna City Corporation (KCC, the only water supplier in Khulna City) has not been provided. But the project made its own water supply provision system in their project area. On the other hand the telephone line has not been aligned through out the project so far.

Another problem of the projects is road construction. The agency made the 12 feet approach road and 10 feet collector road, but the constructed road is Katcha constructed now, even the constructed road is now in poor condition. And for this reason some plot owners are still waiting for the construction of their housing work for better accessibility road. And this is also one of the main reasons for not constructing the dwelling units.

The Madani Residential Project has made the provision for only two types of roads as 12 feet approach road and 10 feet access road. But neither of the facilities such as school, play ground, mosque community center's provision have been made there. This is one of the major obstructions for the construction of the dwelling units. Even purchasing the plots. When the plot owners see that, there are no facilities at least some necessary facilities around the project then generally they will not go for house construction even they will not be interested for purchasing the plots.

4.2.17.5 Prospect of the Madani Residential Project

Despite of some problems the Madani Residential Project is having some tremendous prospects as given below.

- **Locational aspects of the Madani Residential Project:** Alike other projects the location of the project is also considered as a prospect. The project is located beside the Khulna-Batiaghata road and within one kilometer from Gallamary. On the other hand the middle class and lower-middle class income people have the accessibility of this project due to comparatively lower price of the land.

- Service and facilities: The project has surrounded by some remarkable services and facilities. In case of urban amenities the project has the accessibility of the high way road (Khulna-Satkhira high way).
- In the case of health service, the Khulna Medical Collage, the largest government hospital (more than 250 beds) is positioned within just three and half kilometers which served a tremendous prospect of the project. This hospital serves mainly lower, lower-middle and middle income people. Generally the upper income people take the higher medical facilities that are provided by some private clinic which are also located around the project.
- The people of this residential area will have the minimum possible distance from the nearby good reputed shopping center. This renowned shopping complex is KDA New Market, which is located within three to four of the projects. On the other hand, the Batiaghata Thana (in where the project is located) is quite near to the project area, which may server, the people as prospect to access the Thana to acquire the necessary bureaucratic services.

4.2.18 Mouza Krishna Nagar Housing Project

4.2.18.1 Location of the Mouza Krishna Nagar Housing Project

This project is situated on the western side of Khulna City Corporation (KCC). It is located the outer fringe of KCC and it just on the opposite of Khulna University (KU). The developer just has started construction work here. Earthwork has done only for those plots, which are sold. The site has attracted many teachers and personnel of Khulna University, as it is close to their work place.

General Information

- Name of the project: Mouza Krishna Nagar Residential Project.
- Location of the site: By the side of Khulna-Batiaghata Road. (Krishna Nagar Mouza)
- Year of project establishment: October 2003.
- Previous landuse of the Project: Agricultural Field.
- Total area of the project: 2.03 acre.
- Number of plots 25
- Distance from the center of the city is 4.5 kilometer
- Previous land use before the intervention of the project: Agricultural land.

4.2.18.2 Service and facilities of the Mouza Krishna Nagar Residential Project

The Mouza Krishna Nagar Residential Project is not well articulated by its own services and facilities. The site of the Adorybag Residential Project is well accessible and furnished with different services and facilities. Alike Aslam Shefa Residential Project and Monorama Residential area and Sonargaon Residential Project 20 feet approach road and 15 feet access road have been aligned through out the project. The project has the good accessibility of Khulna-Satkhira high way road.

4.2.18.3 Land use of the Mouza Krishna Nagar Residential Project

Table 4.21: Land allocation of the Mouza Krishna Nagar Residential Project

Land use parameter		Total land	
		Area (in Acre)	%
Residential plots	Total number of plots	1.64	80.61
	26		
Roads		0.39	19.39
Facilities		Nil	Nil
Total		2.03	100

Source: Field Survey, 2003.

Here in the table it is as usual that, the residential plots are highly occupied in the project. Almost 80.61% of the total land is occupied by residential plots, and there is 19.39% of the land is occupied by different types of road. But here it is interesting that, there are no services and facilities provision has not been made in the project.

4.2.18.4 Problems of the Mouza Krishna Nagar Residential Project

Mouza Krishna Nagar Residential Project is one of the formal private housing projects in Khulna City, which is established beside the Khulna-Satkhira road in 2002. They just developed the land by fulfilling the low land after accumulating the land from different owners. But the construction process is yet to done in the projects. The water supply and Telephone is not provided there. Because the project is not located within the city corporation boundary, so water supply line of the Khulna City Corporation (KCC, the only water supplier in Khulna city) has not been provided. But the project made itself the water supply provision system in their project area. On the other hand the telephone line has not been aligned through out the project so far.

Another problem of the projects is road construction. The agency made the 20 feet approach road and 15 feet access road, but the constructed road is Katcha constructed now, even the constructed road is now poor conditioned. And for this reason some plot owners are still waiting for the construction of their housing work for better accessibility road. And this is also one of the main reason for not constructing the dwelling units.

Mouza Krishna Nagar Residential Project has made the provision for only two types of roads as 20 feet approach road and 15 feet access road. But neither of the facilities such as school, play ground, mosque community center's provision have made there. This is one of the major obstructions for the construction of the dwelling units. Even purchasing the plots. When the plots owners see that, there are no facilities at least some necessary facilities around the project then generally then will not go for house construction even they will not be interested for purchasing the plots.

4.2.18.5 Prospect of the Mouza Krishna Nagar Residential Project

Despite of some problems the Mouza Krishna Nagar Residential Project is having some tremendous prospects as given below.

- Locational aspects of the Mouza Krishna Nagar Residential Project: Alike the other projects the location of the project is also constituted as prospect. The project is located at south-western side of the Khulna city and beside the Khulna- Batiaghata road.
- Service and facilities: The project has surrounded by some remarkable services and facilities. In case of urban amenities the project has the accessibility of the high way road (Khulna-Satkhira high way).
- In the case of education the project has also some remarkable facilities. Some good reputed schools and colleges are took place just around the project. Among them SOS Shisu Palli is a prominent school of the Khulna City that is located within 1.5 kilometers of the project. On the other hand the Khulna University is positioned just opposition of the project.
- In the case of health service, the Khulna Medical Collage, the largest government hospital (more than 250 beds) is positioned within just three and half kilometers which served a tremendous prospect of the project. This hospital serves mainly lower, lower-middle and middle income people. Generally the upper income people take the higher medical facilities that are provided by some private clinic which are also located around the project.
- The people of this residential area will have the minimum possible distance from the nearby good reputed shopping center. This renowned shopping complex is KDA New Market, which is located within three to four of the projects. On the other hand, the Batiaghata Thana (in where the project is located) is quite near to the project area, which may server, the people as prospect to access the Thana to acquire the necessary bureaucratic services.

4.2.19 Bonolota Housing Project

4.2.19.1 Location of the Project

Bonolota Housing Project is one of the privates housing in Khulna City. It is an on going project. This project is situated about 5.0 Kilometer far from Khulna City. The Communication facilities of this project area with the main city are not satisfactory.

Locational Address of the Project

Name of the Mouza: Thikrabad, Union: Jalma Thana: Batiaghata District: Khulna.

General information

- Name of the project: Bonolota Housing Project.
- Establishment year: 2001.
- Total land area of the project is 2.5 acre.
- Plot sizes are 3, 4, 5 and 5+ katha.
- Total no. of plots are 30.
- The developer has provided roads, the width of which are,
 1. Approach road = 12'
 2. Collector road = 10'
- Previous land use before the commencement the project: agricultural land.

4.2.19.2 Services and Facilities of Bonolota Housing Project

The site of the Bonolota Housing Project is well accessible and furnished with different services and facilities. Alike other Residential Project 12 feet approach road and 10 feet collector road have been aligned through out the project. The project has the good accessibility of Khulna-Satkhira high way road.

4.2.19.3 Land use of the Bonolota Housing Project

Table 4.22: Different Land allocation of the Bonolota Housing Project

Land allocation		Total land	
		Area (in Acre)	%
Residential plots	Number of plots	2.18	87.40
	30		
Roads		0.32	12.60
Total		2.50	100

Source: Field Survey, 2003.

Here in the table it is as usual that, the residential plots are highly occupied in the project. Above 77% of the total land is occupied by residential plots. Total 12.6% of the land is occupied by approach road and collector road. And there is no provision for different types of necessary services and facilities.

4.2.19.4 Problems of the Bonolota Housing Project

Bonolota Housing is another formal private housing project in Khulna City, which is established beside the Khulna-Satkhira road in 2001. They just developed the land by fulfilling the low land after accumulating the land from different owners. But the construction process is yet to done in the projects. The water supply and Telephone is not provided there. Because the project is not located within the city corporation boundary, so water supply line of the Khulna City Corporation (KCC, the only water supplier in Khulna city) has not been provided. But the project made itself the water supply provision system in their project area. On the other hand the telephone line has not been aligned through out the project so far.

Another problem of the projects is road construction. The agency made the 12 feet approach road and 10 feet collector road, but the constructed road is Katcha constructed now, even the constructed road is now poor conditioned. And for this reason some plot owners are still waiting for the construction of their housing work for better accessibility road. And this is also one of the main reason for not constructing the dwelling units.

The Bonolota Housing Project has made the provision for only two types of roads as 12 feet approach road and 10 feet access road. But neither of the facilities such as school, play ground, mosque community center's provision have made there. This is one of the major obstructions for the construction of the dwelling units. Even purchasing the plots. When the plots owners see that, there are no facilities at least some necessary facilities around the project then generally then will not go for house construction even they will not be interested for purchasing the plots.

4.2.19.5 Prospect of the Bonolota Housing Project

Despite of some problems the Bonolota Residential Project is having some tremendous prospects as given below.

- Locational aspects of the Bonolota Housing Project: Alike other projects the location of the project is also constituted as prospect. The project is located beside the Khulna-Batiaghata road and within one kilometer from Gallamary. On the other hand the middle class and lower-middle class income people have the accessibility of this project due to comparatively lower price of the land.
- Service and facilities: The project has surrounded by some remarkable services and facilities. In case of urban amenities the project has the accessibility of the high way road (Khulna-Satkhira high way).
- In the case of health service, the Khulna Medical Collage, the largest government hospital (more than 250 beds) is positioned within just three and half kilometers which served a tremendous prospect of the project. This hospital serves mainly lower, lower-middle and middle income people. Generally the upper income people take the higher medical facilities that are provided by some private clinic which are also located around the project.
- The people of this residential area will have the minimum possible distance from the nearby good reputed shopping center. This renowned shopping complex is KDA New Market, which is located within three to four of the projects. On the other hand, the Batiaghata Thana (in where the project is located) is quite near to the project area, which may server, the people as prospect to access the Thana to acquire the necessary bureaucratic services.

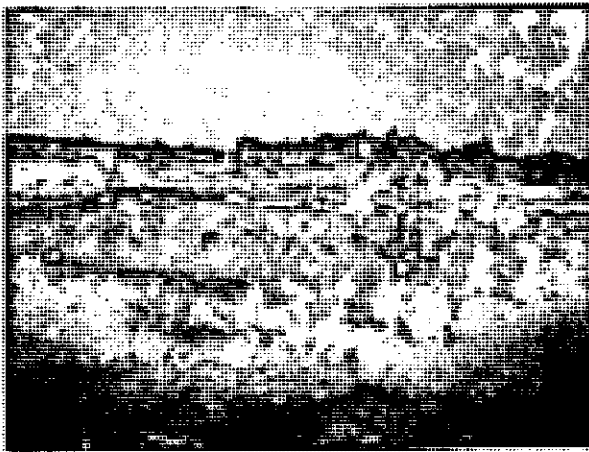
The Existing Condition Of Private Housing Are Shown In Following Photographs:



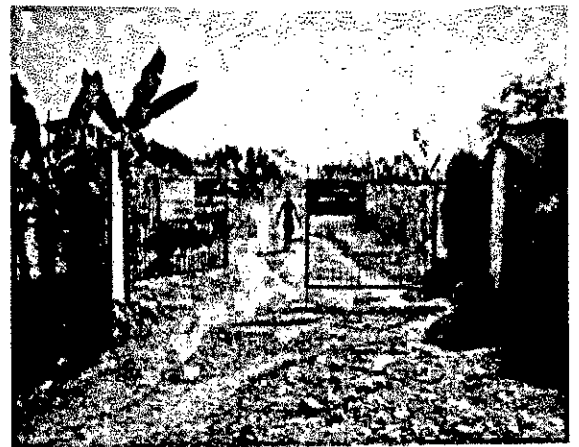
Photograph 4.1: Nabarun Housing State shows the agricultural land in the project area



Photograph 4.2: Shugandha, shows the 18 ft access road



Photograph 4.3: Existing situation of Shugandha, show ditches within the project area



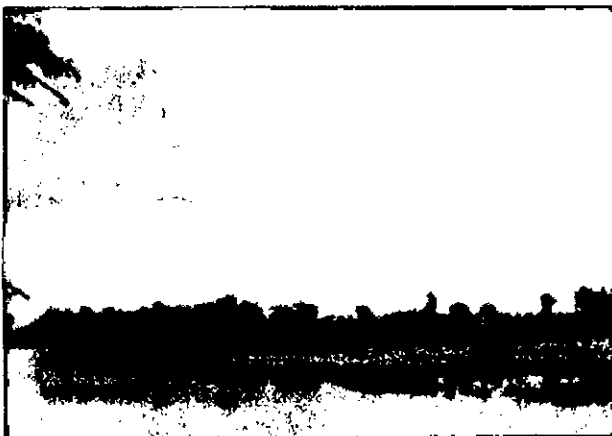
Photograph 4.4: Monorama, shows the 30 ft access road with entrance gate.



Photograph 4.5: Rangdhanu, shows the 15 ft access road and agricultural land



Photograph 4.6: Shapnapuri, shows the undeveloped land



Photograph 4.7: Shahibag, shows existing agricultural land.



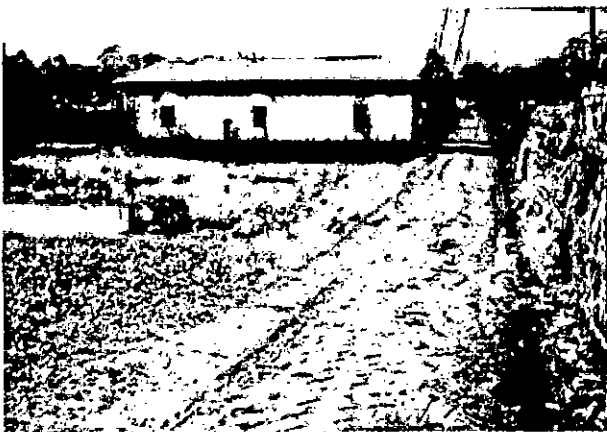
Photograph 4.8 : Amenabag, shows the slums and pond in the project area



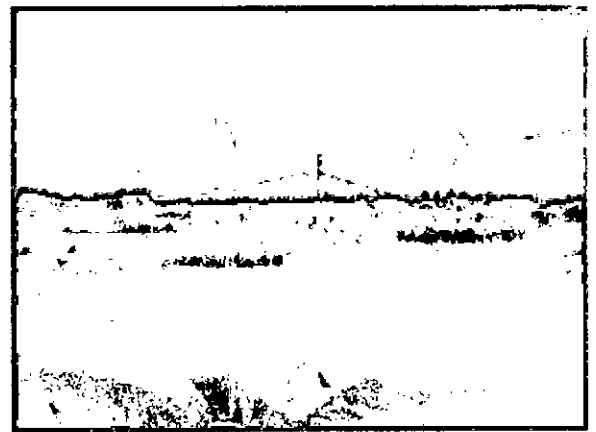
Photograph 4.9 : Amenabag project area, land is not put to any use.



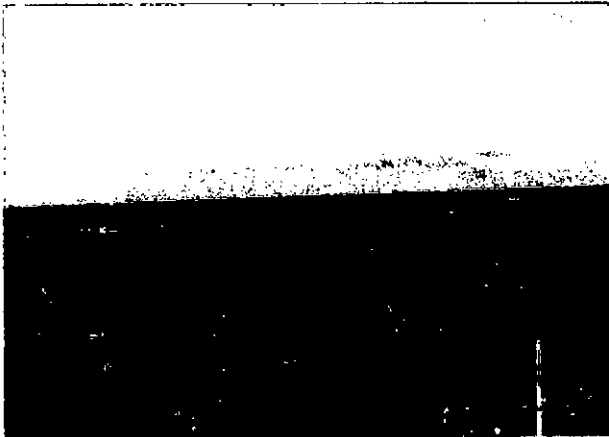
Photograph 4.10: Sharnali, performing the developing activities in the project area.



Photograph 4.11: Sharnali, shows the 12 ft approach road within the project area



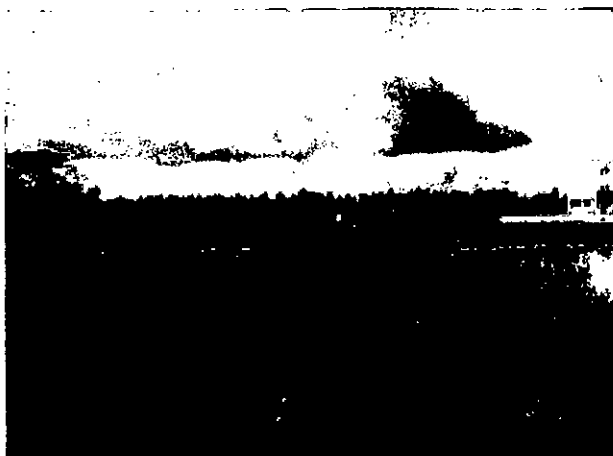
Photograph 4.12: Arafat Residential Project shows the agricultural land.



Photograph 4.13: Prottasha shows the cultivated and low land within the project area



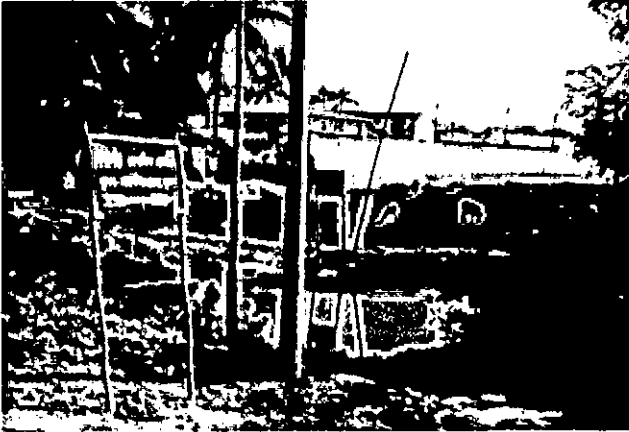
Photograph 4.14: Palashibag, shows the cultivated land within the project area



Photograph 4.15: Sabuj Palli, shows the 12 ft road and agricultural land.



Photograph 4.16: Aslam Sefa shows the barren land and has no boundary demarcation.



Photograph 4.17: Sonargaon Residential Area shows the fallow land.



Photograph 4.18 : Sonargaon, undeveloped land used as grazing field in the project area



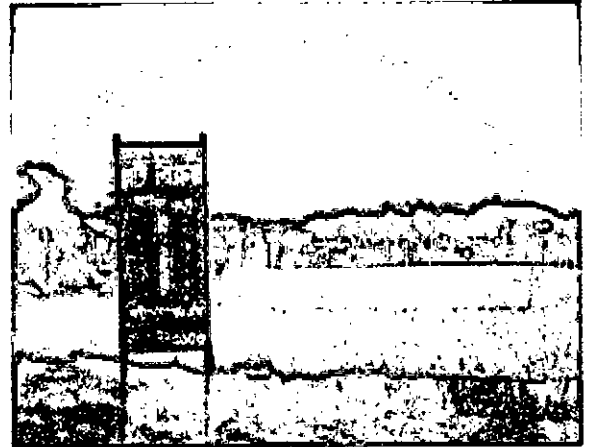
Photograph 4.19: Shikdar Residential Project shows the low land under water.



Photograph 4.20 : Adorybag Residential Project, beside Batiaghata Road.



Photograph 4.21: Madani shows the marshy land in the project area.



Photograph 4.22: Mouza Krishna Nagar shows the undeveloped land



Photograph 4.23 : Bonolota shows the 12 ft access road in 1st phase project



Photograph 4.24: Bonolota Housing Project, 2nd phase shows the agricultural land.

**CHAPTER 5: TREND OF FORMAL PRIVATE RESIDENTIAL AREA
DEVELOPMENT AND ITS IMPACT**

5.1 Trend Of Formal Private Housing

5.2 Private Housing Development and Its Impact

CHAPTER 5: TREND OF FORMAL PRIVATE RESIDENTIAL AREA DEVELOPMENT AND ITS IMPACT

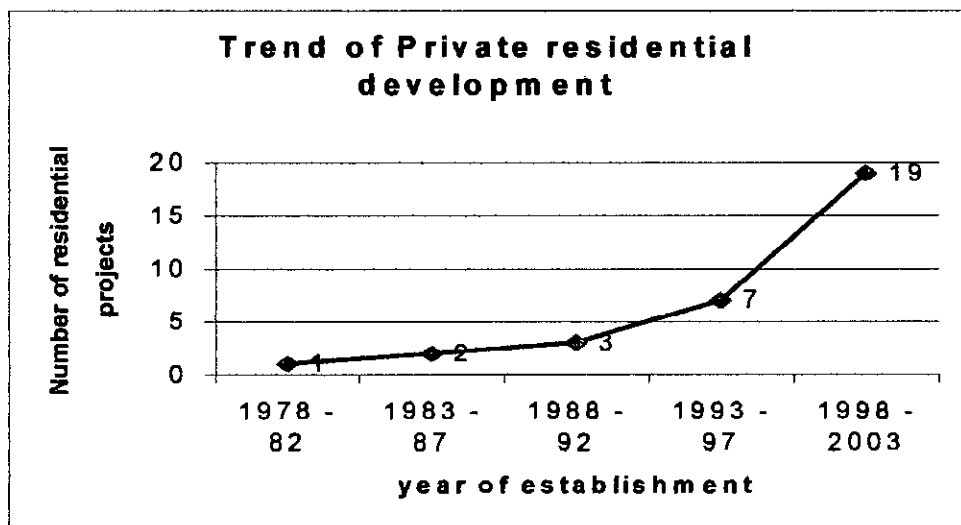
5.1 Trend of formal private housing

The private real estate developers of Khulna City started their activities in 1978. The “Nabarun Housing Estate” is the first private housing scheme, which had been executed by Nabarun Housing projects in 1978. The location of this first private housing scheme is on the borderline of ward no. 14 of Khulna City Corporation. Then in 1987, the Shabuj Palli residential established as a private real estate developer, located on the southern side of Khulna City. Then Monorama Residential Project started in 1992, Shugandha Residential Project started in 1995, Arafat Residential Project started in 1996, Prottasha and Rangdhanu Residential Project started in 1997. Shapnapuri Residential Project started in 1998, Shahibag Residential Project started in 1999, Palashibag, Sharnali, Amenabag Residential Project started in 2000, Bonolota and Madani Housing Project started in 2001, Aslam-Sefa, Sonargaon, Shikdar, Adorybag Residential Project started in 2002, Mouza Krishna Nagar Housing Project started in 2003. At present, there are 19 housing projects are working in Khulna City and adjacent areas.

These developers representing their activities as land broker. Till now some developers have no trade license to conduct the real estate business. Some developers have no office or any project name for identification of his business. Such as the owners of Shapnapuri, Rangdhanu and Shahibag Residential project, has no office for maintaining their business activities. Arafat Rice Mill is given as the communication address for selling information residential plots of Arafat Housing. However, Arafat Rice Mill is a different business of the project owner. To avoid income tax, he did not set up a different office (interview, 2003). There are only two-registered real estate developers in Khulna City. They are Mukta Agency and Green View. The owner of Modhumoti Salt Industry conducts a side business as a real estate developer. There was another registered company named Nabarun Housing

Estate, which was the first real estate developer in Khulna City. Recently, two developers have started their activities in Khulna. These are Sharnali Residential Project and Amenabag Residential Project. But they have no company name or any administrative office. They have only site office in their project area.

In our country people invest money in land, because of lack any other reliable investment for business. Land is such a commodity which price never falls down in the market. Some people also want to legalize their black money to use this type of business.



Source: Field survey, 2003

Figure no.5.1: Trend of formal private residential development in Khulna.

5.2 Private housing development and its impact

Due to the growth of the private real estate business a number of impacts are felt. The major impacts of real estate development are land use change, ecological change, economical impact on land value, environmental impact, social impact, etc.

5.2.1 Land Conversion and Land Use Change

Land conservation is significant, because large amount of land within the city of Khulna has been converted from agricultural, wet land and low land to urban residential use. This type of conversion has decreased agricultural productivity. On

the other hand, they are also not maintained or put to profitable use right away by the present owners. Developers and individual households are buying land for residential development therefore large areas have been converted. Present owners are not investing to maintain and preserve the land. It seemed that the private developers provide land for housing to mitigate the housing problem in Khulna. But in reality they provide only ownership of the concerned land. It creates only transformation of land. Thus, the present landowner establishes poultry firm, hatcheries etc which changed the actual land use of the project area. So from this trend it may be assumed that people purchase land for housing but they do not become interested to construct house. Moreover, the maximum purchaser of plots are rich (interview with the developers, 2003). Land hoarding is the main objective to purchase the plot. As a result the developers develop agricultural land for housing to earn more profit. On the other hand the buyers keep their plots vacant. Thus, agricultural land is decreasing quickly and the land use changed.

5.2.2 Ecological Change

There are two or more small canals are lying on these project areas. Some housing projects have been developed by earth filling of ponds and wet land, even encroaching the canal. As a result the canals are converted to plain land and the habitats of flora and fauna have been destroyed. It creates an ecological change in the local environment. The natural beauty of the area has also been destroyed due to the deforestation and demolished vegetation.

5.2.3 Impact on Natural Drainage

To execute housing projects in the agricultural and low land, earth filling is very essential. Improper land filling, disposal of garbage, etc. are obstructing the natural drainage of the area.

5.2.4 Change in Land Value

Land is an important sector for profitable investment. Normally the value of land increases day by day. Besides this, if any infrastructure is developed beside the land or within the land or if the land consists of a provision of different facilities, the value of land will increase tremendously. Just after the announcement of housing scheme in an agricultural land, it increases the value of land double or triple than market value of agricultural land. The increase in the value of land induces more people to sell their land and profit-seekers to buy land around the housing projects and along the highways. Such a process is using up valuable or prime agricultural land along important communication routes and also far into the interior by creating secondary communication routes.

Table 5.1: Information about the Change of Land Value

No.	Name Of The Projects	Establishment year	Present selling price at 2004 (Tk./katha)	Change of Land value of different project areas with a time span (Tk/ katha).			
				1990	1994	1998	2002
01	Shugandha	1994	42,000	2000	4500	5500	40000
02	Monorama	1992	41,000	2500	4500	6000	40000
03	Rangdhanu	1997	50,000	2000	4500	5500	42000
04	Shapnapuri	1998	50,000	2000	4500	5000	38000
05	Amenabag	2000	65,000	2000	4500	6000	50000
06	Sharnali	2000	35,000	2000	4500	6000	15000
07	Arafat	1996	45,000	2000	4500	7000	18000
08	Shabuj Palli	1987	30,000	1000	12000	15000	26000
09	Prottasha	1997	40,000	2500	4000	10000	35000
10	Nabarun	1978	48,000	6000	10000	15000	30000
11	Palashibag	2000	10,000	1000	1500	2500	5000
12	Shahibag	1999	10,000	2000	3500	4500	5000
Average change of land value in different time span				2250	5208	7333	28667

Source: Field Survey, 2003

5.2.5 Impact on residential area development

Private residential areas were developed mainly beside the Khulna-Satkhira Highway, Khulna-Batiaghata Road and Rupsha Bridge Bypass Road and these projects are located near the Khulna University. Beside Khulna-Satkhira road and Rupsha Bridge Bypass road, marshy lands are in existence. Within 1 km, KDA has a planed to build two residential areas. For this, these private housing projects have a great prospect for fulfilling the housing needs. On the other hand, marshy, low-lying lands, which are much needed for the ecological balance of this region and also to fulfil natural drainage purpose, are fast disappearing. Obstruction of natural flow of water and drainage, water logging, disappearance of flora and fauna and their habitats, a drastic change in the natural scenery has become rampant due to the unplanned location of these residential projects on prime agricultural land and floodplains. Therefore, the time has come to conceive of strategies that provide affordable housing to all strata without making havoc on the natural environment. The impact on residential area development specifically following as-

5.2.5.1 Land blocked for indefinite period

For the establishment of private housing development buyers are buying the plots as their inclination. For this irregularity a buyer can buy unlimited plot in terms of size and more than one parcel of plots. This constitutes the land blocked for indefinite period.

5.2.5.2 Unplanned housing without services

Both the housing projects in context of KDA Master Plan and the individual housing are growing haphazardly which creates unplanned development. These housing areas are situated in the western side of Khulna City in prime agricultural land where there are no service facilities provided.

5.2.5.3 Potential house buyers are buying land near to housing projects

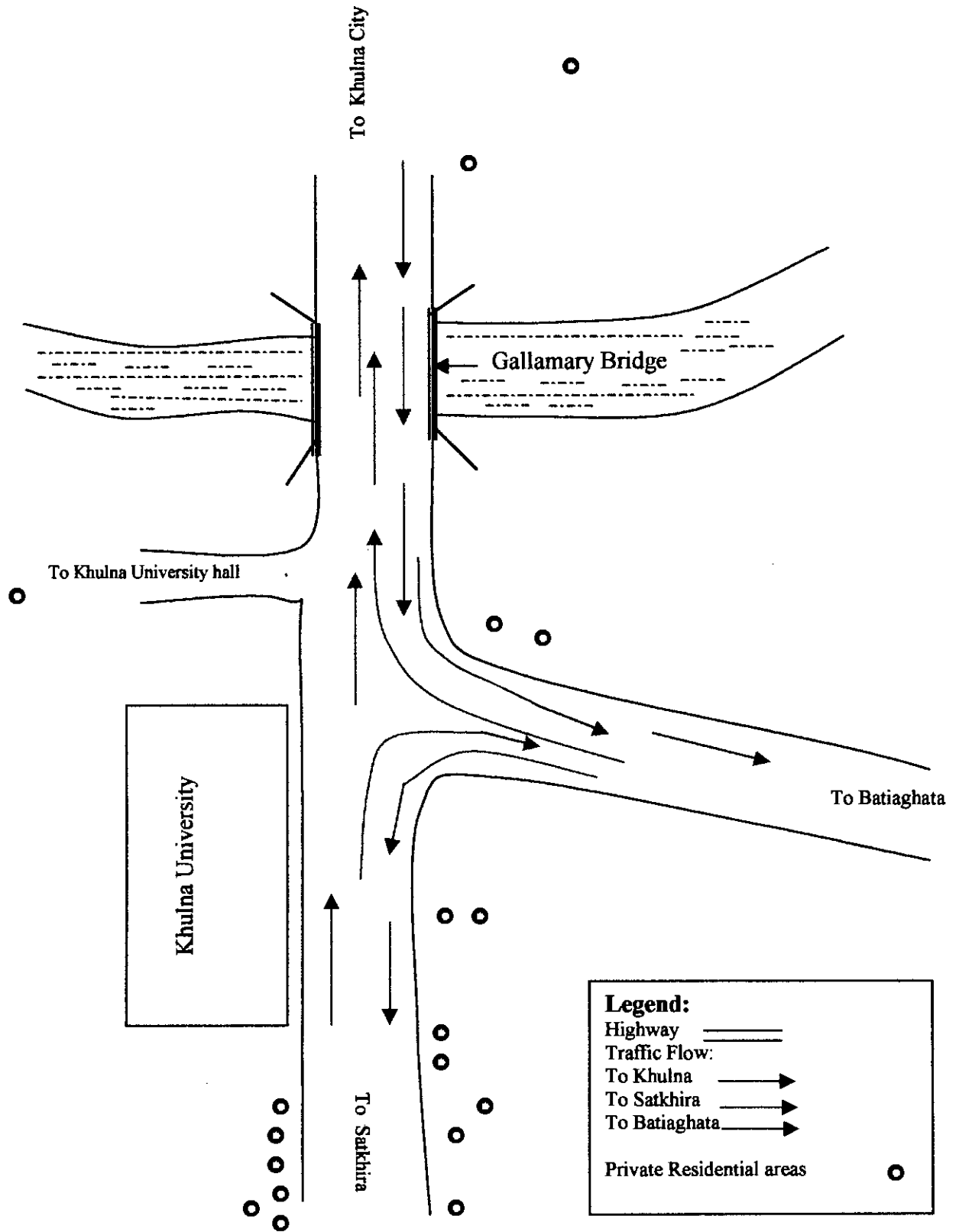
The potential land buyers are buying land near the private housing projects to speculate the land. Map 5.1 shows the actual influential area where the land occupies personally for future development. When KDA or other development agencies will intend to develop the land for any purpose then they have to buy the land in higher price. The development cost of projects then increases substantially.

5.2.5.4 Land lies unused or underused for years

Due to the lack of utility services these private residential projects and surrounding areas of land lies unused or underused for longtime. Most of the lands are using in agriculture and shows as vacant land for tax exemption. The taxes on vacant or agricultural land are very low and government is deprived of large amount of tax.

5.2.5.5 Impact on transportation:

When these private residential areas will execute then vehicle demand would increase and it severely impacts on local transportation. The Khulna-Stkhira Highway and Khulna-Batiaghata Highway intersect into the Gallamary Bridge, which is the main stream to enter into the Khulna City. In this situation huge number of both slow and fast moving vehicles would get-together into Gallamary Bridge and creates traffic jam. Beside though the housing projects are located on both sides of the highways then slow and fast moving vehicles are moving on the highway and generate accidents. Traffic flow on the entrance point of Khulna from highways of Batiaghata and Satkhira is shown in Sketch 5.2.1



Sketch 5.2.1: Traffic flow on the entrance point of Khulna from highways.

5.2.5.6 Impact on utility services

There are 18 housing projects are located out side the KCC area. Water supply, electric supply, telephone supply is not available in this area. These services are beyond the jurisdiction area of KCC. The consequences of non-availability of utility services are-

- **Water supply:**

Due to the non-availability of infrastructure the developers will provide deep tube well in order to supply water to cut down cost. This is going to pose great problem in the future causes water table to go down and cause the natural disaster like earthquake, land subsidence, etc.

- **Drainage & sewerage:**

The western part of the city is drained through the River Gallamary. The private residential projects are also located near the river will be used for drainage and to dispose off sewage. The small ditches and canals have already been encroached by the developers. For this reason huge wastewater enters the river and riverbeds have been filled with waste. This on the other hand causes flood.

- **Supply of Electricity:**

Electricity is necessary for lighting, cooling, etc. in the household. Streetlights provide safety at night. Rural Electrification Board (REB) has a network, but connection could not be provided as houses has not been built as yet. In the future load shedding will in duce people to use generators which in turn will contribute to sound and air pollution.

5.2.5.7 Impact on Institutional Facilities:

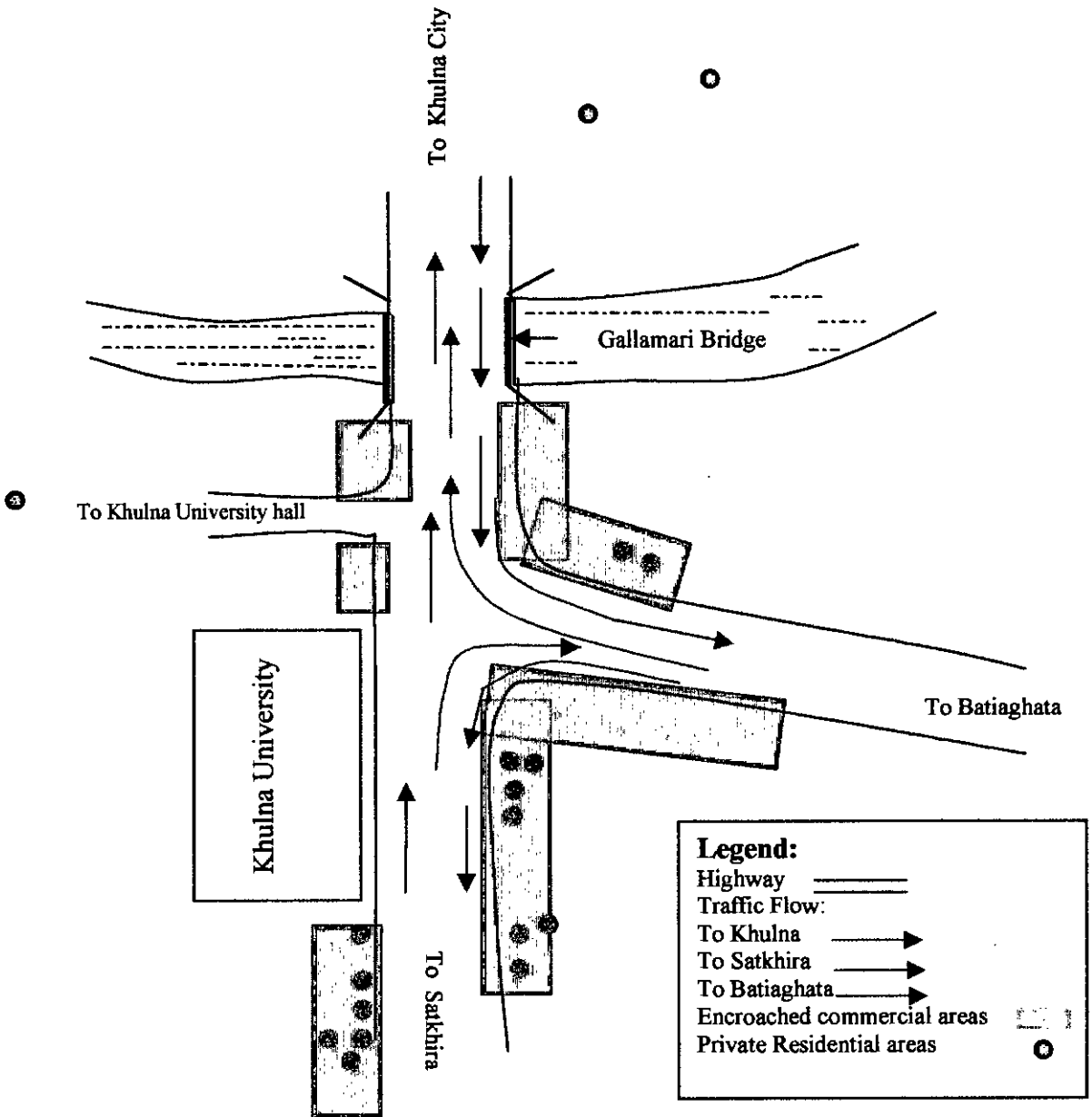
For the establishment of housing projects several types of institutional facilities will be needed for security- police camp, fire service center, pharmaceuticals and medical center, etc. educational facilities- schools, community facilities- mosque etc. these impacts on the construction materials, socio-economic condition, transportation etc.

5.2.5.8 Impact on Recreation:

It has been seen from the survey, that private developers have not provided any space for recreational facilities. Thus there are no play fields or spaces for children to play or older people to walk – the absence of this facility will have a negative impact on the residents of the private housing projects.

5.2.5.9 Commercial Area Development:

Private residential development installing infrastructure services and construction of buildings, automatically establishes several types of supplier's, traders of sand, earth, cement, rod, brick, wood, bamboo etc. on the both side of highways. Storage of these construction materials on both sides of the highways may hamper the smooth movement of vehicles and causes traffic jams and accidents. Encroached commercial growths on the highways are shown in Sketch 5.2.2.



Sketch 5.2.2: Encroached commercial growth on the highways.

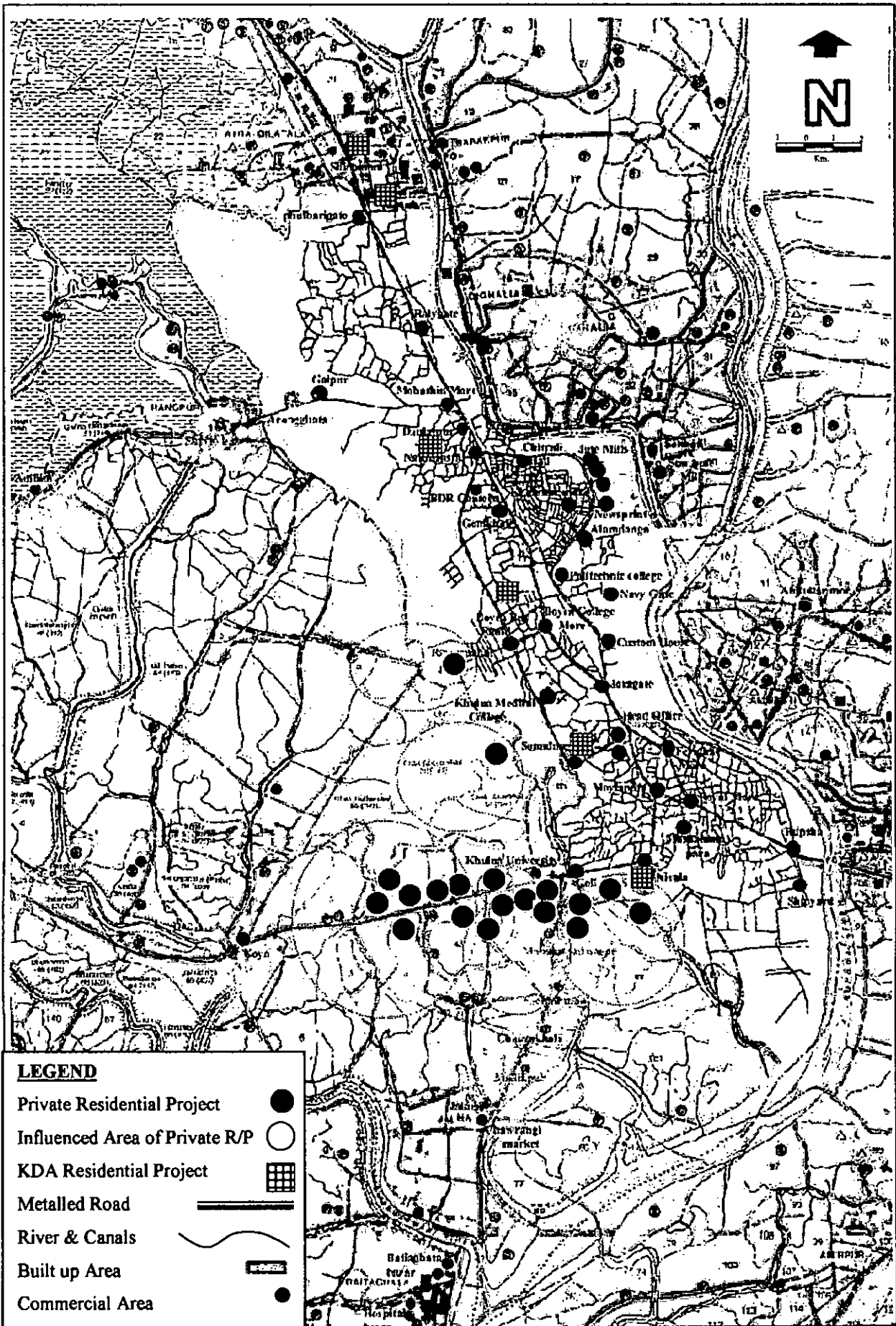
5.2.5.10 Land Filling:

As the agriculture are flood prone, they have to be elevated above regular flood level. Landfill is procured from adjacent land or carried in from a long distance. Procuring landfill from adjacent, land decreases the level of land and water stagnates in this land. Procuring landfill from a distance incurs high cost (increased transport and labour cost).

5.2.5.11 Socio-economic impact:

The development work of these housing will generate a source of income for all level of people. Here different activities of construction work will engage engineers, architects, masons, labours, small entrepreneurs, sellers, etc. Which will mobilize the money among various groups and have a beneficial impact on whole urban economy. After execution of the projects permanent job opportunities will spar economic growth.

The existing private residential projects and surrounding potential area for future development are shown in Map 5.1. It indicates the influenced zones of private residential areas, which may be bought for individual uses. Thus the landuse pattern of surrounding areas of private residential projects are growing haphazardly which is contrary to the Master Plan of KDA. It may not also prove beneficial for the private real estate developers for future development. The map also indicates the public housing projects of KDA in Khulna.



**CHAPTER 6: PROBLEMS AND PROSPECTS OF PRIVATE HOUSING
DEVELOPMENT IN KHULNA CITY**

6.1 Problems of Private Housing Development

6.2 Prospects of Private Housing Development in Khulna City

CHAPTER 6: PROBLEMS AND PROSPECTS OF PRIVATE HOUSING DEVELOPMENT

6.1 Problems of Private Housing Development

Private housing development in a city is associated with so many factors of which economic condition of the people, policy of the city authority, demand for housing and availability of necessary infrastructure are prominent. In connection to these factors, housing development in Khulna City suffers from various problems as-

6.1.1 Physical barriers

Khulna City is physically bounded by the River Bhairab in the eastern side and the low land in the north-western side. The load bearing capacity of soil in the southwestern part of the city is also very low (Soil Test Report, Khulna University, 1999). So, constructions of building in these areas are also very difficult for landowner because of high construction cost. The low-load bearing capacity of the soil makes permanent building construction quite expensive. Although the house buyers somehow manages to buy a piece of land, but house construction is beyond their means. Therefore, plots in residential projects lie vacant for years.

6.1.2 False ownership of land

A very conventional process of land development is through the buying and acquiring of land for housing scheme; the developers purchase land from different landowners having contiguous boundary and thus make it a larger parcel of land. However, sometimes it happens that some unscrupulous people sell their land to the developers and often they resort to fraud and sell the same piece of land to other buyers showing false papers of ownership. The developers buying that land at a cheaper rate for more profit and ultimately the developer become cheated and looser. Although this is not a primary cause of slow growth of private housing development

but about 07 out of 19 real state business owners claimed that fraud land sellers cheated them.

6.1.3 Lengthy process of land accumulation

Private real estate developers state that land acquisition by the private developers is a very lengthy process. The problem in this respect that they face is the problem of land continuity; very often, it happens that owner of one parcel of land is likely to sell his piece of land but the owner of next parcel of land disagrees. So, it often becomes a serious bottleneck for land accumulation. Even landowners may agree to sell their land to the private developers the land acquisition process is quite time consuming. Such a lengthy process often discourages local real state developers to undertake such a project.

6.1.4 Poor economic condition of people

Slow growth of private housing in the Khulna City is closely associated with the poor economic condition of the people. Although Khulna City once had its fame as an industrial city but very recently it has been losing such fame due to the recent lay-off of basic industries like Newsprint Mill, Hardboard Mill, Jute Mills etc. The establishment of Khulna University on the other hand, had a very positive impact on the local economy of Khulna. The establishment of the Khulna University has stimulated the development of many private residential areas in the south-western part of the city such as Arafat Housing Project, Shabuj Palli Housing Project, etc.

6.1.5 Bureaucratic problems

Provisions of electricity, water supply, solid waste management, drainage facilities, sewerage, telephone, etc. are essential elements for developing a proper housing scheme. Due to bureaucratic complexities and corruption in the public sectors, it is really a problem to provide better facilities in their project areas. Imposition of poor facilities in the project area reduces the buyers of plots in these schemes.

6.1.6 Local muscleman

Violation of law and order situation is relatively higher in the southern region of the country particularly in the Khulna district. The same is being exercising in the housing sector also. The local musclemen often collect tolls illegally from the developers. Due to lack of security and the loose administrative system, the developer offers handsome amount of money to appease such musclemen.

6.1.7 Lack of housing finance

Lack of housing finance is a common problem in Bangladesh as well as in Khulna. A very few segment of population has access to public sector loans provided for housing development. Housing loans provided by the Private Banks, Commercial Banks and other Private Finance Institutions offers high degree of benefit in which poor or middle class urbanites have no or very poor access. This reason, probably most effectively stands on the way of swift private housing development throughout the urban areas of Bangladesh in general and in Khulna city in particular. The KDA Master Plan, 2001 identified that, of the 64 per cent of the households owning dwelling units, 96 per cent financed the construction of house from their own sources. Only 1.4 per cent of the households had access to institutional finance such as from HBFC, Banks or NGOs, etc. About 2% of the households borrowed from relatives and friends while a very insignificant proportion borrowed from their employers.

The KDA Master Plan, 2001 identified a number of problems of housing development in the Khulna City during the household survey in the Structure Plan area. Among these problems, three are mentioned here due to their importance. First, is the problem of owning housing due mainly to low levels of income in the one hand and lack of credit facilities on the other. Second, the locational problems, as a substantial proportion of households indicated that it was not very convenient to go to the workplaces from their respective homes and third was the poor living environment due to lack of necessary engineering and social services.

6.2 Prospects of private housing development in the Khulna City

Khulna is the third metropolis and a sprawling urban center of Bangladesh. It is also well known as the second port and Industrial City of Bangladesh. While the city has experienced rapid physical growth with the population increases. Being an industrial city, People come to Khulna City in search of work. Besides this, establishment of Khulna University created many jobs opportunities.

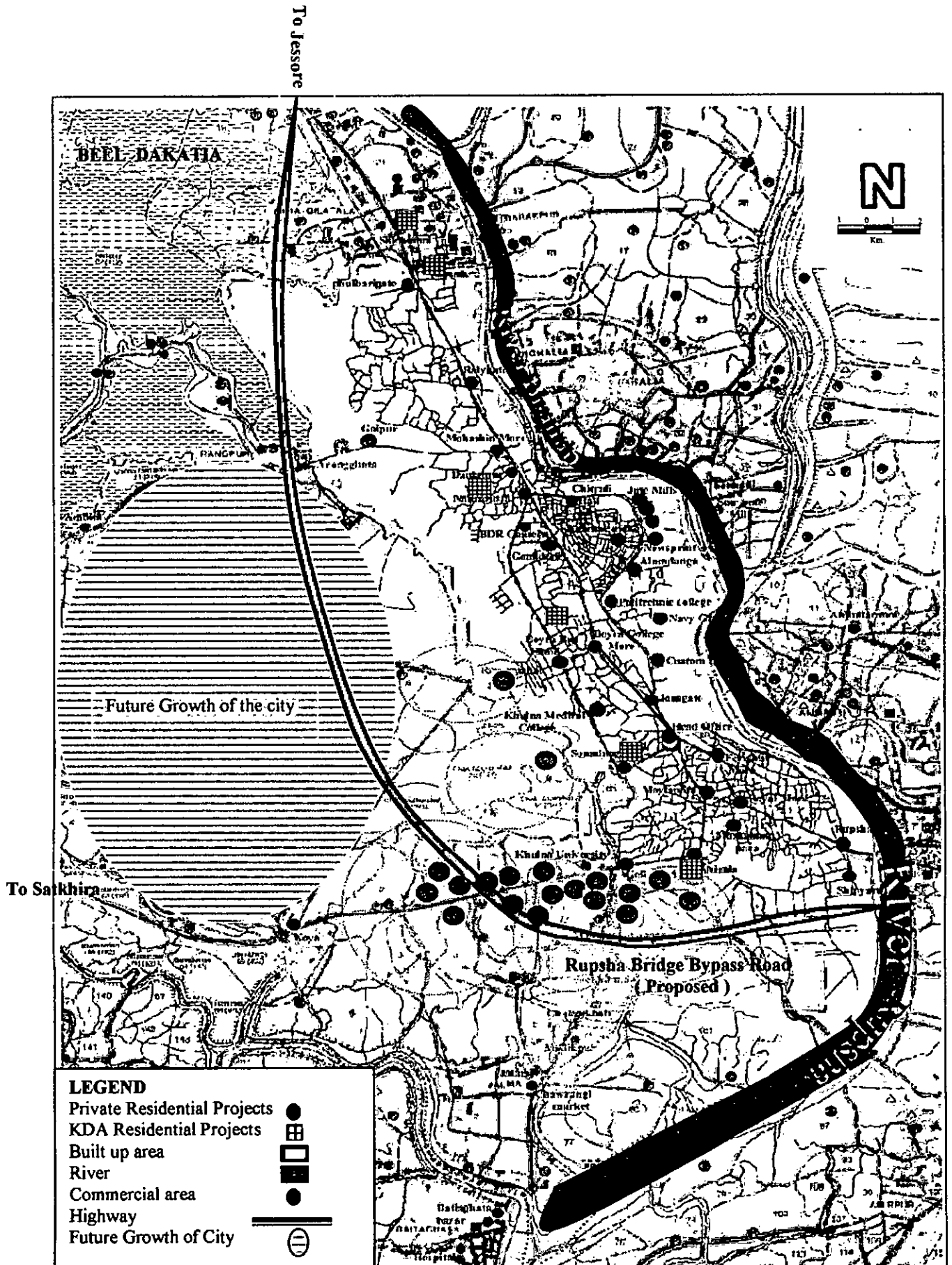
It is usual practices that when people intends to reside in a place, housing needs are created. To fulfill this basic need, the private developers can create a market to meet the demand in this city. A demand will increase the supply of land for housing. The public sector cannot sufficiently supply land for housing. For this reason, people look for land for housing in the private sector. The private sector have consists of two categories, i.e., private landowners and private land developers.

However, now a days people are loosing their faith in the private landowners because of discrepancies in land ownership. The purchasers are often afraid of buying land from the private owners because of forgery. To avoid forgery, interested purchasers of land are now going to the development agencies (from interview with Developers, 2003). This statement of the land developers is true because previously these developers were land brokers. They were the media between the landowner and the purchaser. But now they invest money to develop land. As it is a profitable business, the developers are executing more housing scheme, but there is no regulation regarding housing area development by the private real estate developers.

In the physical growth of Khulna, the city is growing towards the western side. River Bhairab and Rupsha are flowing from the north direction to south direction of the city. As the eastern part of the city has been built up as an industrial and commercial zone, is not possible to expand due to the physical barrier posed by these rivers. Khulna is a linear city and the northern part of the city is spatially developed for industrial zone due to its proximity to the Khulna – Jessore Highway and the north-

western side consists of wet land named Beel Dakatia, where the land is under water year round. Besides, the Rupsha Bridge-Bypass Road will be initiated from the Khulna Jessore Highway passing through the western part of Khulna city and intersect at the Nizkhamar area of Khulna-Satkhira Highway. The private real estate developers, industrialists, entrepreneurs of Khulna and even KDA are expanding the city area towards the western side due to the proposed Highways and availability of lands. On the other hand southern part of Khulna is obstructed by the River Rupsha. People are using this river and also canal, ponds, forests where they are cultivating shrimp. The existing built up area and the expected expansion of the city is shown in Map 6.1.

Map 6.1: Existing Pattern and Future Growth of Khulna City



CHAPTER 7: RECOMMENDATION AND CONCLUSION

7.1 Recommendations

7.2 Conclusion

CHAPTER 7: RECOMMENDATION AND CONCLUSION

7.1 Recommendations

At present, there is 19 number of formal private developers who are operating mainly in the sub-urban areas. The developers buy land from private landowners, elevate them by earth filling, and then sell it to prospective homebuilders. In most cases, they do not provide any services (such as water, telephone, electricity etc). Not a single house has been found in these private residential areas due to lack of services. The constructions of houses are also hampered as the environment for build the houses are not suitable both for physical condition and social security. Nevertheless, these sorts of housing projects are playing a vital role on the growth pattern of Khulna.

To control and regulate the private housing scheme, the local development authority should have a well-defined ordinance. Under this ordinance an executive committee should be formed with the permission of the central government. The ordinance should be identified as "Private housing project scheme ordinance" and the executive committee will be introduced as "the executive committee of private housing project scheme". This committee will be responsible for approving the project and will be engaged to monitor project during the execution. Under this "private housing project scheme ordinance", some criteria should be established depending on which the committee will approve the project. And the private developers should also be respectful to those criteria. Other wise, the project will not be approved by the executive committee. The criteria of approving the private housing scheme should consist of the following things:

7.1.1 Policies for private residential projects:

- There should be a Coordination Board among the local authorities, ministry of housing and public works, ministry of land, ministry of power and ministry of telecommunications. KDA, KCC and representatives of private real estate

developers are defined as local authorities. The KDA will form the executive committee, headed by the chairman of KDA. The bodies of executive committee are Deputy Commissioner (DC), Urban Planner, Engineer, Environmentalist, Sociologist, Economist, Accountant.

- The real estate developers have to submit their project profile to the KDA. Then KDA will examine it and replace to Coordination Board for approval.
- Coordination Board analyze it properly in terms of implementation of Muster Plan of KDA, identify the ownership's of land, need assessment for service facilities etc.
- Every private residential project must have followed the zoning of KDA Muster Plan.
- / Protect the river, canals etc. for environmental and ecological balance.
- / Land must be preserved for plantation on bank of the river, canal and also for roadside area.
- Establish the community based land ownership to protect land banking. In this way 5 katha and more than 5 katha plots will be distributed to 4 or more buyers. Then apartments would be distributed among the owners of the plot such as other developed city like the one Dhaka has been distributed. This will save numerous lands for using residential purpose and this saved land would be used in agricultural production to meet the food consumption of the city dwellers.

7.1.2 Regulatory Measures:

- The developers should have a separate trade license approved by the local development authority to conduct the private real estate development for housing.

- The developers should have office and required staffs. The list staffs and their qualifications must be submitted with the project profile.
- The developers have to submit the approval letter of owner of the land to the project profile. This will protect the false ownership of land.
- For the each project below 5 acres of land, the authority will not approve any private housing project. The final layout plan of the project will be prepared by following the standard land use criteria of subdivision plan (Table 4.2).
- Application should be submitted to the local development authority with the final layout plan and the fees imposed by the authority.
- After the approval of the project, the execution works of the project should be started within 90 days. If the developers fail to start the execution activities within 90 days, the approval of the project will be cancelled.
- The local authority will fix the certain area for Real Estate Development. Outside this boundary no proposal for housing development of any developer will be considered for approval.

7.1.3 Monitoring and Supervision:

- The executive committee of the local authority will investigate and monitor the project activities during developing phase.
- After execution of the project the executive committee supervise every 3 months for investigate the violation of rules as stated in KDA ordinance.

7.1.4 Policy Implications

Khulna Development Authority (KDA) is the local authority in Khulna, which deals with the physical development activities of Khulna. This authority has the empowerment for the control of development activities in the city. In 1961, KDA prepared its master plan, but in reality, the master plan has yet to be executed properly. The second master plan of KDA has already been prepared, which is now ready for the execution. In the master plan more or less new areas have been included proposed areas for future development. Though KDA is responsible for development control activities for public and private sector, the master plan do not consists of any provision for private real estate areas for housing development. Even in the KDA ordinance, there is no rule and regulations for the approval or monitoring of the private housing scheme. But in reality a set of land developers have now accumulated a certain amount of land and then providing very little facilities into that area, and declared them as a private housing area. They earn a handsome profit by selling those plots.

The execution of private housing scheme in Khulna City has been started since 1978. The second private housing executed in 1987. This time span is really too much distant. But after 1996, the number of private housing schemes has increased tremendously in Khulna and is still going on. In this situation, the local development authority has no role in controlling these housing developments. Even the authority has no awareness about this matter.

If this trend continues, in the near future, the local authority will loose it's every vacant land and substandard housing projects, which are developed by real estate developers.

7.2. Conclusion

Housing is one of basic needs of human being. People want to set up their housing unit in such a place, where the environment is free from pollution, fresh air is available and living condition is comfortable. But now a day's it becomes an imagination to find out such a place for housing development. Within the city area, the environment has become polluted because of increasing population gathered, unplanned settlement development, growth of slums, increase of motor vehicles, mismanagement of solid waste, etc. There are only seven public planned residential areas developed by KDA and HSD in Khulna. The supply of the plots of those residential areas is not sufficient to mitigate the housing demand of Khulna City. On the other hand, the land value within the city area is beyond the purchasing power of the middle and lower income group of people. Considering this problem of housing facilities, some private land developers have come into real estate business. The developers accumulate land by purchasing land at lower price. Just after the execution of the project, they sell the plots to the buyers at a comparatively higher price.

From the study of real estate developers of Khulna City, it is found that there are 12 Real Estate Developers in the metropolis, which have established 19 private housing projects. They have developed 2481 residential plots in their projects. The sizes of different plots are 2.5, 3, 3.5, 4, 4.5, 5, 5+ katha which are comprises of total 237.55 acres of land of different projects of private real estate developers of Khulna. In Khulna City government housing has provided 1.5%, Development authority's sites and services scheme provided 4%, and private real estate developers provided 0.3%, individual private housing 89.70% and slums and squatter settlements are 4.5% of total housing. The housing schemes executed and implemented by the public sector agencies are highly popular in the city but they are limited in number. On the other hand, poor and lower middle class people do not have access to the public sector housing. In such a situation, private housing is the most appropriate and perfect way of increasing households owning dwelling units. Both public and private sectors initiatives as well as general people's interests and concerns are necessary in this connection.

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Appendices

Department of Urban and Regional Planning
Bangladesh University of Engineering and Technology

Questionnaire for “Trend of Development of Formal Private Residential Areas And Its Impact On The Growth Pattern Of Khulna”.

Date:

1. Identification:

- ◆ Name of the company or developer:.....
- ◆ Date of Establishment.....
- ◆ Occupation of the owner:
- ◆ Address of the Head Office:
-
-
- ◆ Address of the Branch / Site Office:
-
-
- ◆ Name of the project:

2. Location of the project:

- ◆ In the KCC area.
 - Ward no.....
- ◆ Outside the KCC area.
 - Name of the mouza.....
 - Name of the union:
 - Name of the Thana:
 - Name of the District

3. Area of the project:.....acre

4. Starting date of the project:.....

5. Type of land:

- Inherited
- Bought from the party
- Other(Specify).....

6. Information about the land value:

Plot size	Present Land price (Tk. Per Katha)	
	Buying price	Selling price
2.5 Katha		
3.0 Katha		
3.5 Katha		
4.0 Katha		
5.0 Katha		
More than 5.0 Katha		

7. Trend of land value changing.

Year	Land price (Tk. Per Katha)	
	Buying price	Selling price
1990		
1993		
1996		
1999		
2002		

8. Number of plots of the project in terms of plot size:

Plot size	Number of plots	
	Sold	Not sold
2.5 Katha		
3.0 Katha		
3.5 Katha		
4.0 Katha		
5.0 Katha		
More than 5.0 Katha		

9. Number of plots of the project in terms of land status:

Status of land	Sold	Not sold
Developed		
Under developed		
Not developed		

10. Existing Facilities and Services provided by the developer or local Authority:

Facilities and Services		Provider	
		By developer	By govt. authority
Educational Institution	Primary school		
	High school		
	Madrasha		
Utility services	Road		
	Electricity		
	Drainage		
	Water supply		
	Telephone		
	Market place		
	Post office		
	Bank		
	Police box		
	Fire service		
Community services	Mosque/Temple/Church		
Medical service	Health care centre		
	Pharmacy		
Other services	Play ground		
	Park		

11. Future plan of Facilities and Services provided by the developer or local Authority:

Facilities and Services		Provider	
		By developer	By govt. authority
Educational Institution	Primary school		
	High school		
	Madrasha		
Utility services	Road		
	Electricity		
	Drainage		
	Water supply		
	Telephone		
	Market place		
	Post office		
	Bank		
	Police box		
	Fire service		
Community services	Mosque/Temple/Church		
Medical service	Health care centre		
	Pharmacy		
Other services	Play ground		
	Park		

12. Categories of roads in terms of road width.

Road width	Area (acre)	Existing condition of road		
		Katcha	Brick soling	Metalled
12 feet				
15 feet				
20 feet				
30 feet				

13. Information about the buyers income group:

Buyers types	No.	%
Higher income group (Tk. 20,000+ per month)		
Middle income group(Tk. 10,000 – 20000 per month)		
Lower income group (Tk.5000~10,000 per month)		
Retired person		

14. Why did you choose this location for your project?

.....

.....

15. Investigator's personal comment:

.....

16. Other information (if any):

.....

Signature of the surveyor



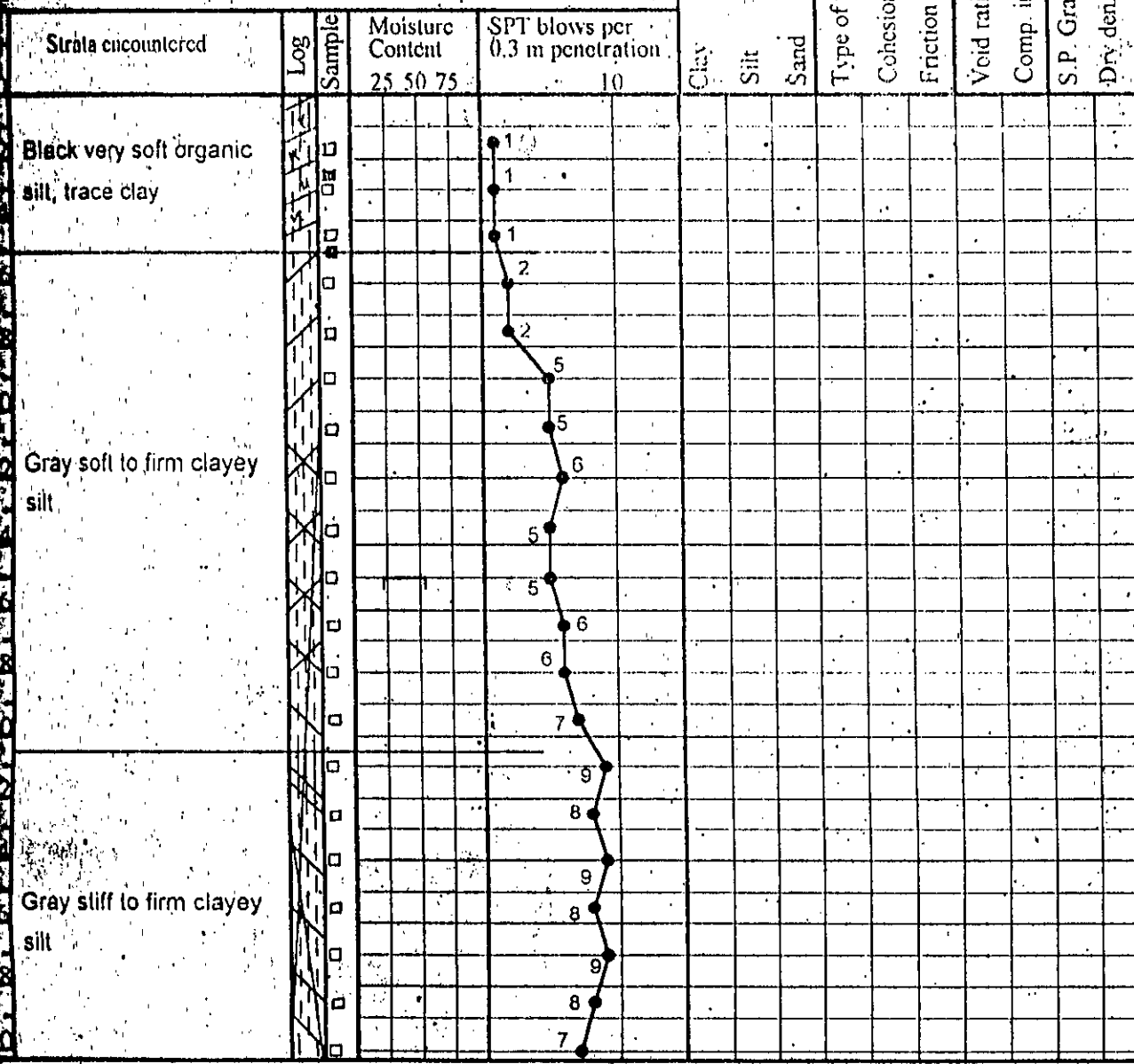
UNIQUE BORING AND ENGINEERING LTD.
 34, GREEN ROAD, NOWAB MANSION
 3rd Floor, Dhaka

BORE HOLE NO: BH-1
 LOCATION : Khulna University,
 Khulna

CLIENT : KHULNA UNIVERSITY

PROJECT : Administrative Building

Particle size Percentage			Shear Characteristic			Consol. Property		
Clay	Silt	Sand	Type of test	Cohesion, C	Friction Angle, φ	Void ratio, e	Comp. index, C _c	S.P. Gravity, G _s
								Dry den. (gm/cc)



□ Disturbed sample (Split spoon) ○ Moisture content ● SPT values
 ■ Undisturbed sample (Shelby tube)
 GWT : 0.45m below EGL
 PL LL

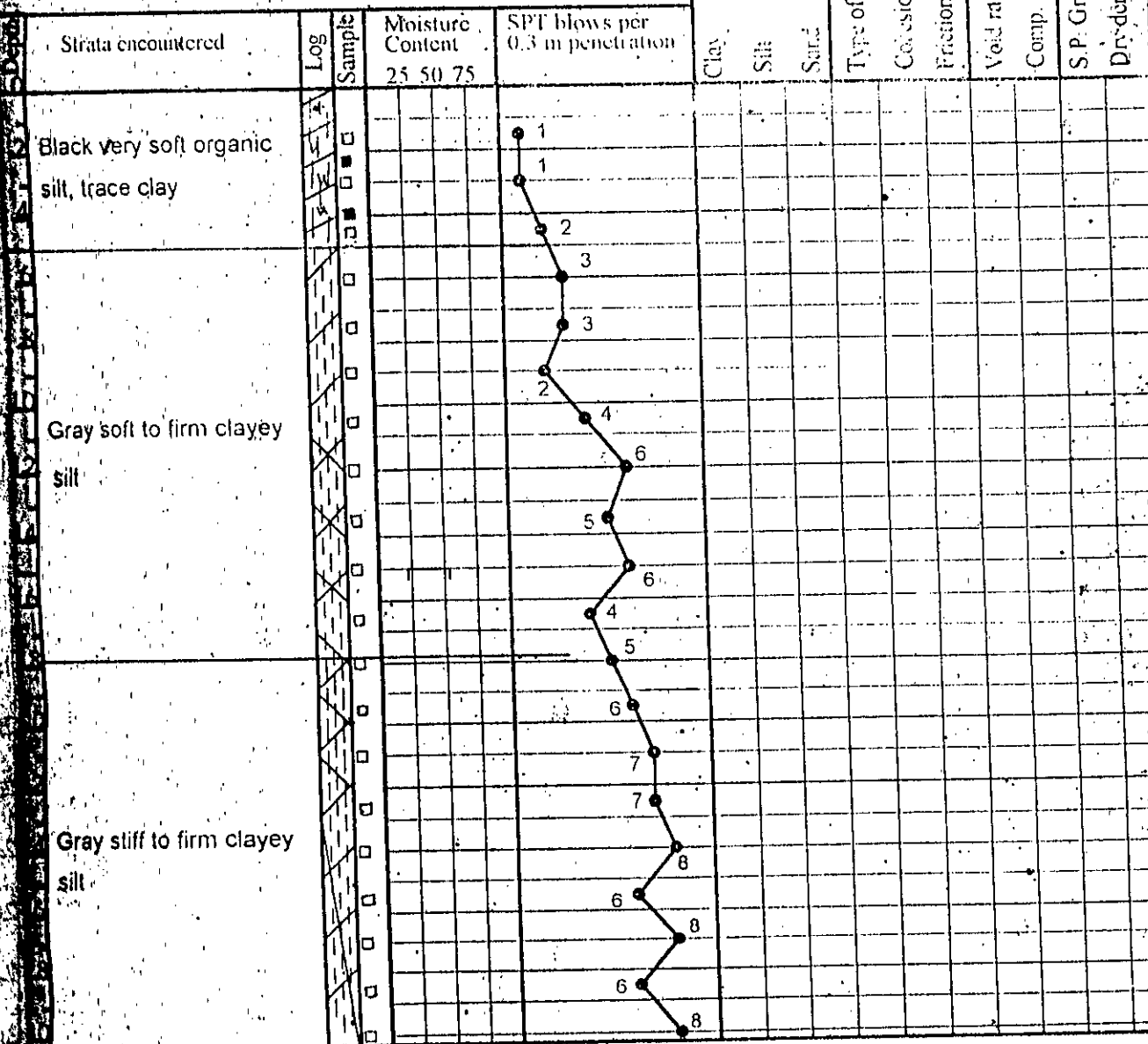


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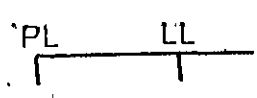
BORE HOLE NO: BH-2
 LOCATION: Khulna University,
 Khulna

CLIENT: KHULNA UNIVERSITY
PROJECT: Administrative Building

Particle size Percentage	Shear Characteristic		Consol. Property	
	Type of test	Cohesion, C	Friction Angle, ϕ	Void ratio, e



□ Disturbed sample (Split spoon) ○ Moisture content ● SPT values
 ■ Undisturbed sample (Shelby tube)
 GWT : 0.30m below EGL





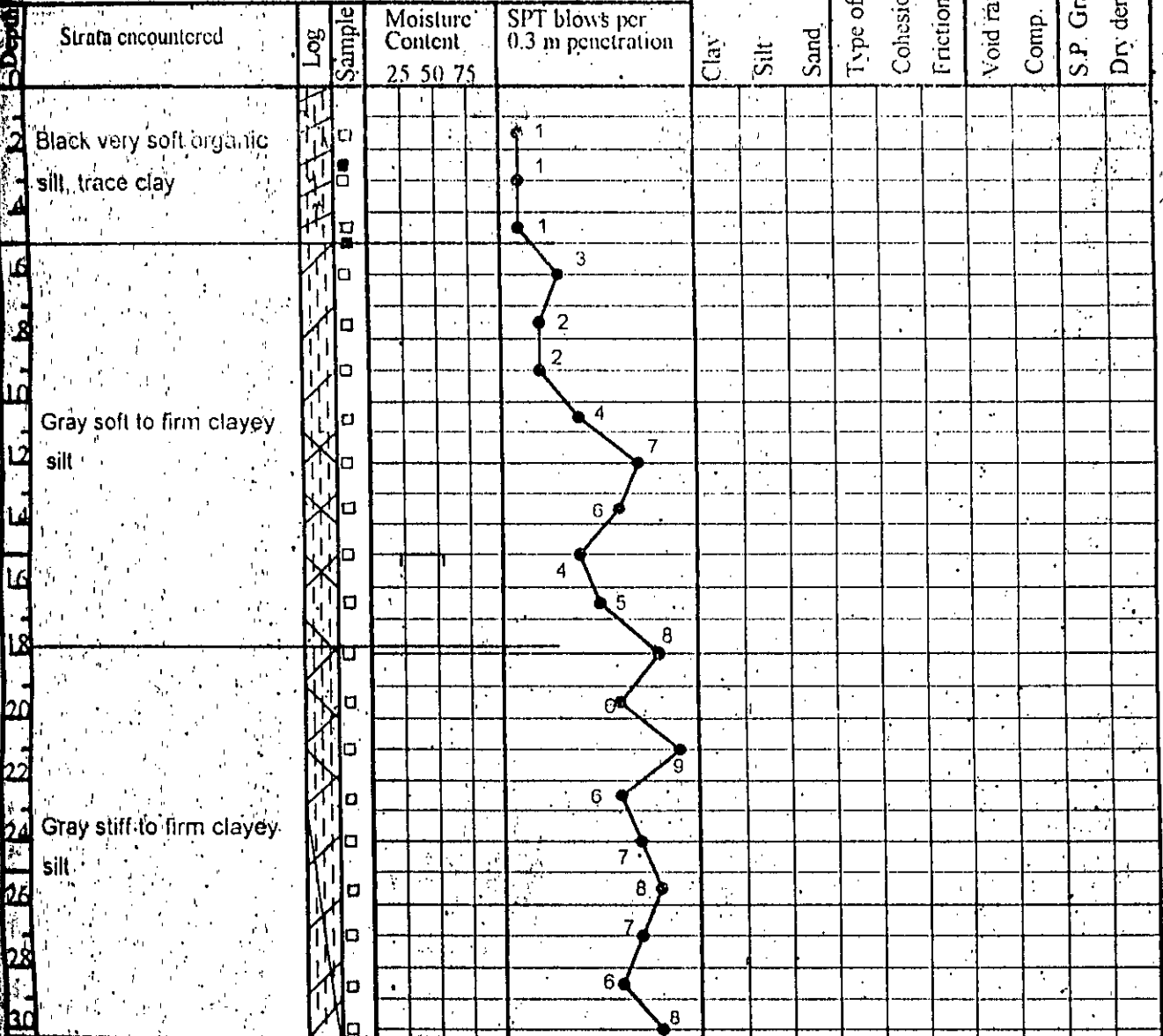
UNIQUE BORING AND ENGINEERING LTD.
 34, GREEN ROAD, NOWAB MANSION
 3rd Floor, Dhaka

BORE HOLE NO: BH-3
LOCATION: Khulna University, Khulna

CLIENT: KHULNA UNIVERSITY

PROJECT: Administrative Building

Particle size Percentage		Shear Characteristic		Consol. Property	
Clay	Silt	Type of test	Cohesion, C	Friction Angle, ϕ	Void ratio, e
				Comp. index, C_c	S.P. Gravity, G_s
				Dry den. (gm/cc)	



□ Disturbed sample (Split spoon) ○ Moisture content —●— SPT values
 ■ Undisturbed sample (Shelby tube)
 GWT: 0.45m below EGL
 PL EL



UNIQUE BORING AND ENGINEERING LTD.
 34, GREEN ROAD, NOWAB MANSION
 3rd Floor, Dhaka

BORE HOLE NO: BH-4 (Part-1)
 LOCATION: Khulna University,
 Khulna

CLIENT: KHULNA UNIVERSITY

PROJECT: Administrative Building

Particle size Percentage Shear Characteristic Consol. Property

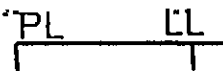
Clay Silt Sand Type of test Cohesion, C Friction Angle, ϕ Void ratio, e Comp. index, C_c S.P. Gravity, G_s Dry den. (gm/cc)

Depth (m)	Strata encountered	Log Sample	Moisture Content			SPT blows per 0.3 m penetration	Clay	Silt	Sand	Type of test	Cohesion, C	Friction Angle, ϕ	Void ratio, e	Comp. index, C_c	S.P. Gravity, G_s	Dry den. (gm/cc)
			25	50	75											
0.0 - 0.5	Black very soft organic silt, trace clay	□				1										
0.5 - 1.0	Gray soft to firm clayey silt	□				1										
1.0 - 1.5		□				2										
1.5 - 2.0		□				3										
2.0 - 2.5		□				4										
2.5 - 3.0		□				5										
3.0 - 3.5		□				6										
3.5 - 4.0		□				5										
4.0 - 4.5		□				4										
4.5 - 5.0		□				5										
5.0 - 5.5		□				7										
5.5 - 6.0	□				6											

- Disturbed sample (Split spoon)
- Undisturbed sample (Shelby tube)

○ Moisture content ● SPT values

GWT : 0.30m below EGL



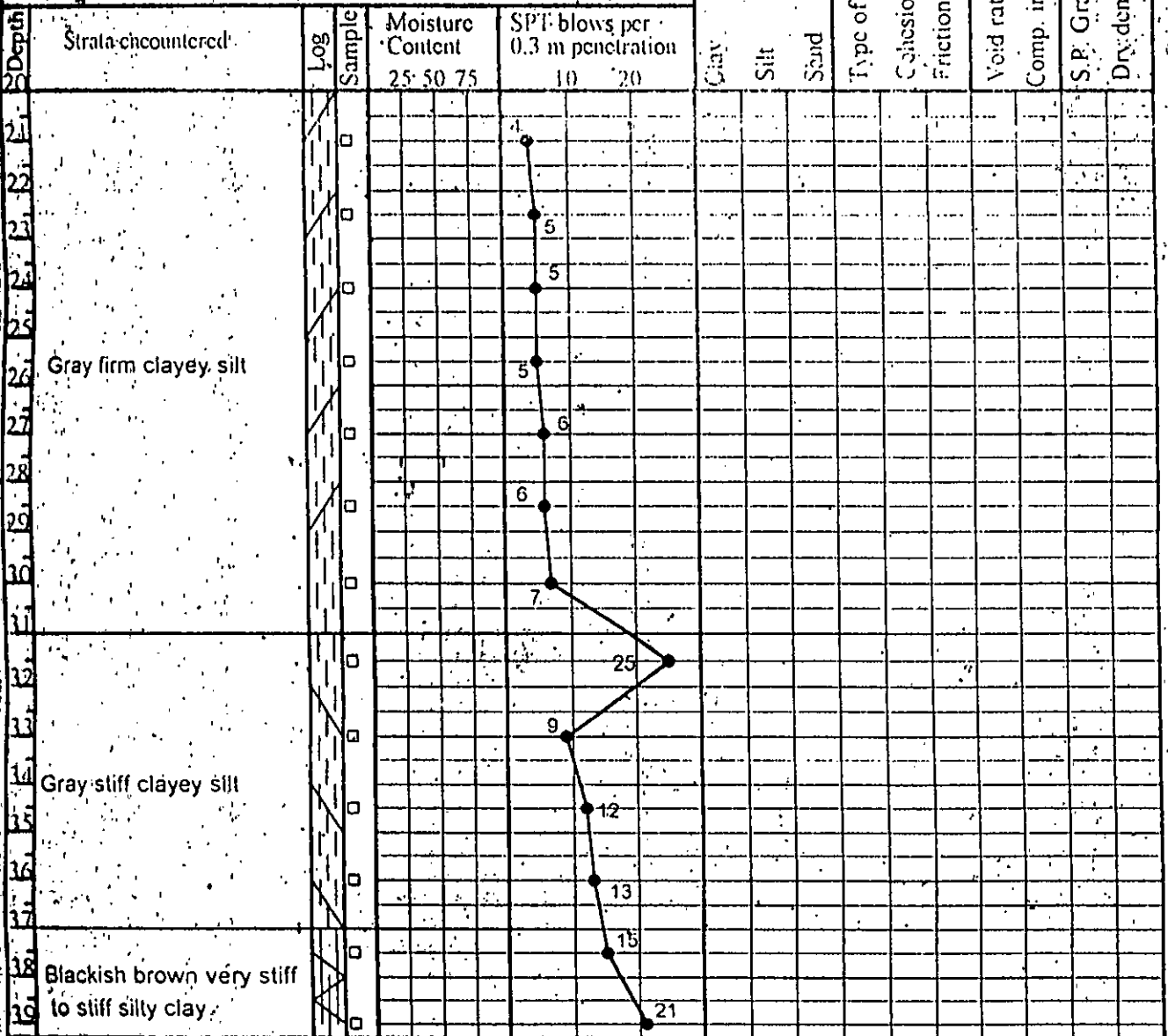


UNIQUE BORING AND ENGINEERING LTD.
34, GREEN ROAD, NOWAB MANSION
3rd Floor, Dhaka

BORE HOLE NO. BH-4 (Part-2)
LOCATION : Khulna University,
Khulna

CLIENT : KHULNA UNIVERSITY
PROJECT : Administrative Building

Particle size Percentage			Shear Characteristic		Consol. Property	
Clay	Silt	Sand	Type of test	Cohesion, C	Friction Angle, ϕ	Void ratio, e
						Comp. index, C_c
						S.P. Gravity, G
						Dry den. (gm/cc)



□ Disturbed sample (Split spoon) ○ Moisture content —●— SPT values
 ■ Undisturbed sample (Shelby tube) PL LL
 GWT : 0.30m below EGL

