

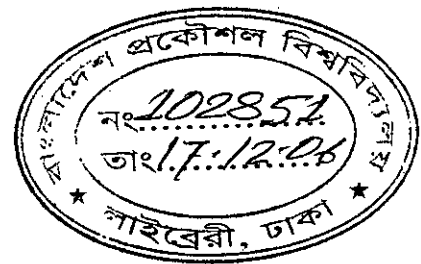
**STUDY OF  
OPEN SPACES IN GOVERNMENT HOUSING  
IN DHAKA CITY**

**BY  
PRNOTI RANI SAHA**

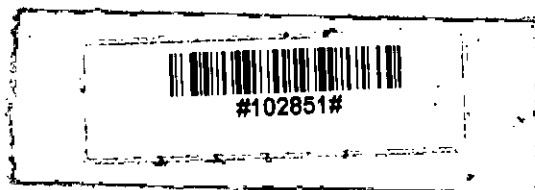
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for the degree of

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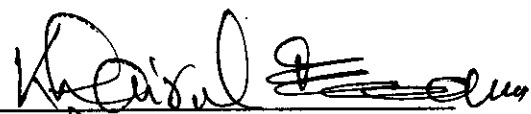
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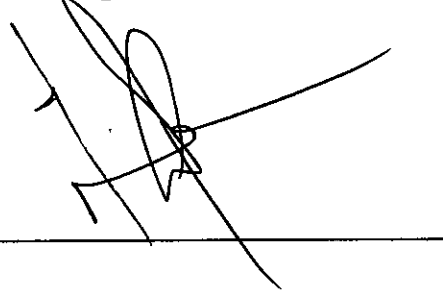
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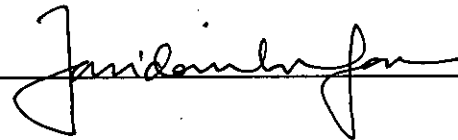
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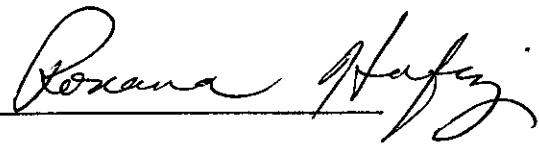
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It is hereby declared that this thesis entitled "**STUDY OF OPEN SPACES IN GOVERNMENT HOUSING IN DHAKA CITY**" or any part of it has not been submitted elsewhere for the award of any degree or diploma.

Signature of the Candidate



Pronoti Rani Saha

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## Abstract

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Open green spaces in the city act like its lungs besides being used as active recreational and leisure areas for its citizens. A healthy city needs a right balance and proportion of open and built-up spaces. Also adequate and planned open spaces contribute to physical and mental well being as well as increases community interaction among residents.

It is not very long ago; Dhaka possessed an image as a city of greenery and water bodies. Within last few decades this image has changed. Children do not find any safe park or playground in close proximity from their residence. The unplanned development and increasing population would result in a city where the young have no playground to play, mother and the old have no place to enjoy their leisure time. In this situation open spaces in the form of parks, playfields and playgrounds are very essential inside the locality to maintain its environmental and ecological balance of the whole city. Open space planning has a huge impact on local microclimate affecting the comfort, quality and usability of spaces in a community. Open space in Dhaka, is taken up as a case study where majority of government housing are developed.

Authorities are more concerned about large-scale public space whereas open spaces at residential neighbourhoods are being overlooked. The planning policies and building regulations seem to be handicapped in retaining open spaces at residential level. As a result most of the open spaces are being encroached by different constructions and government projects.

## CHAPTER ONE

### **PREAMBLE**

### INTRODUCTION

### BACKGROUND OF THE STUDY:

### RESEARCH OBJECTIVES

### RESEARCH OUTCOME

### RESEARCH METHODOLOGY

### SCOPE AND LIMITATIONS OF STUDY

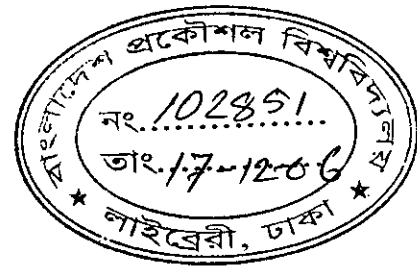
### RESEARCH RATIONALE

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# CHAPTER ONE PREAMBLE



## 1.1 INTRODUCTION

A city may be blessed with a large numbers of different establishments and facilities but it falls short of its highest possibilities if it fails to provide a good quality of living environment to its dwellers. Open spaces have a direct impact on the urban environment and general physical, psychological and social health of the urban dwellers (Mowla, 1989). The advantages to the city that accrue from well-planned recreational areas affect so vitality of the life of community that they cannot be neglected (Lohmann, 1931). Open spaces in neighbourhoods provide a range of active and passive recreation opportunities oriented to the changing needs of a neighbourhood (Siddique, 1990). Open spaces must not be seen just as space remained from development but as an essential element determining the character and the quality of the city environment.

Nevertheless, the essence of community interaction is disappearing from the civic life of Dhaka city due to lack of open spaces. High population density, inadequate infrastructure, economic pressure on land and poor urban management, all contribute to shrinking of open spaces in Dhaka (Rashid, 2003). The population pressure on Dhaka city and its uncontrolled growth has resulted in manifold increase of demand for housing. Environment degradation is creeping in gradually over the city causing adverse effects on health and well being of the apartment dwellers. Fresh airflow, lighting and privacy of the newly built multistoried housing units couldn't reach the desired level of expectations of the users. There is very little or no choice at all left for the provisions of effective open space inside the plot or within the site (Enam, 2003). Almost the entire city is deprived of neighbourhood open space except a very few public residential neighbourhoods traditionally known as Government housing. The government is the major provider of built up housing in Bangladesh mainly in the form of accommodation for its employees.

It has been reported recently that, according to experts 25% area of a city or a big town should be preserved as open space or as gardens and parks to maintain healthy environment for its dwellers. But in Dhaka city open spaces including gardens and

parks would not constitute more than 5% of the total area under Dhaka city Corporation (DCC)(The Daily Independent, April 02, 1999). There is no uniformity in open space standard throughout the whole city. There are considerable variations in open space standards between old Dhaka and new Dhaka. Here in old Dhaka only 5% and in new Dhaka 12% of land is green and open (DMDP, 1995). In Dhaka city distribution of open spaces does not correspond to population distribution. The total amount of open space including its road, footpaths, parks, playfields, lakes, ponds etc. in Dhaka city is about 17%-18% of city area (Alam, Sarker & Mahbub, 1999).

Various authorities like PWD, RAJUK and DCC manage open spaces in Dhaka city. Previously, the maintenance and control of open spaces of Dhaka have been shared by the authority of Public works department and RAJUK. At present, most of the open spaces and parks in local areas are handed over to the Dhaka City Corporation (DCC). The Arbory Culture Department of PWD only takes care of the large green areas of Dhaka. Besides these; other government agencies are responsible for their respective open areas like Zoo, Stadium, Botanical Gardens etc. and several open spaces are under the authority of different institutions. As a result, in absence of any central control of legal bindings these open spaces are not properly maintained. Also authorities are more concerned about large-scale public space whereas open spaces at residential neighbourhoods are being overlooked. The planning policies and building regulations seem to be handicapped in retaining open spaces at residential level. As a result most of the open spaces are being encroached by different constructions and government projects. Due to lack of proper management the conditions of the existing neighbourhood parks and open spaces have become deplorable (Siddique, 1990).

The ongoing development activities are creating constant pressure to maximize floor space and squeezing all open spaces out of the urban landscape. As a result the quality of living environment in Dhaka is getting worse and unhealthy. In this situation open spaces in the form of parks, playfields, playgrounds are very essential inside the locality to maintain its environmental and ecological balance of the whole city.

## **1.2 BACKGROUND OF THE STUDY:**

### **1.2.1 PHYSICAL GROWTH, POPULATION AND URBANIZATION TREND OF DHAKA CITY:**

Dhaka as the capital city of Bangladesh is unique in its formation and unique in terms of physical facts and social practice. Rapid and increasing urbanization is a phenomenon common to almost all developing countries. Natural growth of population in urban areas added to the migration of people from rural to urban areas made Dhaka city to experience rising level of urbanization over the past years. Vantage location of Dhaka, in terms of strategic warfare, topography, communication and geography played a vital role in the formation of this ever-expanding urban conglomerate. Three elements contributed to the development and urban growth in Dhaka: First the Mughal rulers with their paraphernalia's, second Bengali professionals like craftsmen and workers and third the foreign companies and traders. Housing in Dhaka can be seen in a broad historical perspective with respect to the stages of growth of the city. The changes and influences can be understood from the institutional and political changes that characterized the different stages. Dhaka has witnessed several phases of relapse and regeneration as a major city of this region. The growth and development of Dhaka can be categorized into five periods according to its political and administrative changes (Rahman, Tariquzzaman & Sharif, 2001).

- a) Pre-Mughal period (1205-1610),
- b) Mughal period (1610-1757),
- c) British colonial period (1757-1947),
- d) Pakistan period (1947-1971) and
- e) Bangladesh period (from 1971).

a) Pre-Mughal period (1205-1610): In the pre-Mughal period people of Dhaka lived in Mahallas. The conglomeration of Hindu names of localities in this part of old Dhaka (viz. Laksmibazar, Banglabazar, Sutrapur, Jaluanagar, Banianagar, Goalnagar, Tantibazar, Shankharibazar, Sutarnagar, Kamarnagar, Patuatuli, Kumartuli etc) indicate the predominance of the Hindu craftsmen and professionals of pre-Mughal Dhaka, which grew in the vicinity of Sonargaon, the capital, having some commercial importance. Accessibility by river ways from the side of Sonargaon determined the

location of pre-Mughal Dhaka; the Buriganga and the Dulai formed its southern and eastern boundary. Water transport was the principal means of communication for the people because there were very few roads. Pre-Mughal Dhaka with a Mughal outpost, ranged from Babur Bazar on the west to Sader Ghat on the east. Further development took place primarily to the west and northwest after it's becoming a capital in 1608 AD. The area lying to the east, northeast and southeast of Babur Bazar on the left (northern) bank of the Buriganga formed the pre-Mughal town.

b) Mughal period (1610-1757): The second stage of development was during the period of Mughal rule (1608-1757). Dhaka was known to be highly prosperous and developed quickly in the stature as the metropolis of the province during Mughal subahdar (governor) Islam Khan's time. Islam Khan is credited to have excavated a canal joining the Buruganga near Babur Bazar with the Dulai Khal near Malitola-Tantibazar. This canal practically demarcated the 'old Dhaka' with the 'new Dhaka' of Islam Khan. The greatest development of the city took place under Shaista Khan (1662-1677 and 1679-1689). The city then stretched for 12 miles in length and 8 miles in breadth and is said to have nearly a million people (Source: [www.dhakacity.org](http://www.dhakacity.org)). In the available early records of the East India Company (1786 and 1800) the boundary of the city is mentioned as: Buriganga in the south, Tongi in the north, Jafarabad-Mirpur in the west and Postagola in the east. The Mughals introduced road networks and changed some of the physical structures of the city. Dhaka developed as distinctive parts of closed localities of residential quarters and bazaars with pleasure gardens and magnificent villas of the nobility. Being important as an administrative center, its trade and commerce also attracted foreigners. Later in 1704, during Nawab Murshid Quli Khan, the capital was shifted from Dhaka to Murshidabad. Due to this action Dhaka's growth and development waned. During this period Dhaka extended north and westward. Road system was introduced for the first time. The new circulation pattern initiated a process of change in orientation as well as in physical structure of the city.

c) British colonial period (1757-1947): Due to the decadence of Mughal supremacy after the battle of Palashee in 1757 and the subsequent takeover of power by the British in 1765, Dhaka lost much of its position as the most important urban center.

## Growth of Dhaka City 1850-1990

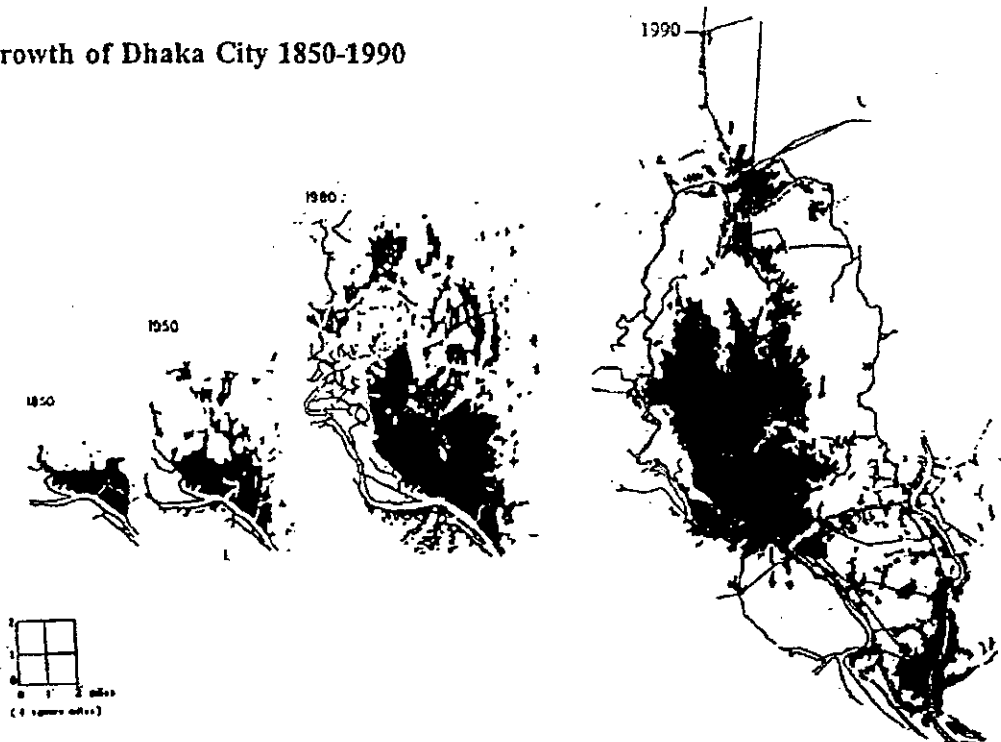


Figure 1.1 Growth of Dhaka city (Islam, 1997)

The absence of any valid authority during this time, the city administration collapsed and the law and order situation worsened (Islam, 1991). The fate of Dhaka was determined as a declining urban center under the control of the East India Company. During that time (1757-1864), being an old center of trade, Dhaka witnessed a tremendous decrease in population and its area. The total urban area during that time rose to a total of 14.5 sq. km and the total population was about 2,00,000 in 1800 and 51,635 in 1867 (Census of Bengal, 1901). The inclusion of Ramna Green Pasture, area from Old Paltan to Nimtoli, Dakesshwari Temple to Azimpur under the town's jurisdiction was done in this period. The urbanized space started to encroach towards north on the high lands during this time mainly for residential and recreational purposes (i.e. Ramna, Paribagh and Shahbagh areas)(Source:www.dhakacity.org). After the partition of Bengal (1905), Dhaka was reinstated as the provincial capital and the state of government of East Bengal and Assam. The Ramna area from the Curzon Hall in the south to the Minto Road in the north and from the Government House, built opposite to the Curzon Hall a little to the east (Old High Court building), in the east to the Nilkhet area in the west was developed during the period 1905 - 1911. The area was adorned with modern European type of buildings and planned

network of metalled roads. It was during this time that the first staff colony for middle and lower ranking government officials was started in the Dhakeswari area and was called the Amlapara, heralding a new culture of urban living in the city and the precursor of the Azimpur staff colony. A well-laid out new capital was envisaged and to befit the new situation a large open space was created to the north to carve out a park to be called the Ramna Park. This phase marks the beginning of new Dhaka. Most of the developments were around Ramna area beyond the old railway line. The railway track was later transformed into road, which still provides the boundary between old and new city. Planning of the new city was done in a formal order, distinctly different from the native city. Foundation of the new city was laid for accommodation of offices and residential houses of the officials. A string of beautifully designed residential houses were constructed for high officials and a larger area was earmarked for future extension especially in the north.

d) Pakistan period (1947-1971): Fifth phase of development in Dhaka began after the partition of Pakistan and India in 1947, when Dhaka became the capital of eastern province of Pakistan. It was followed by a widespread demographic change in the city. The sudden inflow of people in the post-1947 period created the 'new Dhaka' in the available highland north, northeast and northwest of Ramna. The construction of government quarters started in the Dhakeswari, Palashi Barrack (established by the English in the post-Sepoy war period) and Azimpur areas. With the creation of the Dhaka Improvement Trust [DIT] in 1956 (transformed into Rajdhani Unnayan Katrpaksa [RAJUK] in 1987) started planned development of the city. New roads were laid out in Ramna and Tejgoan area. The influx of people caused the population to increase from 335,925 in 1951 to 556,712 in 1961 (Census of Pakistan 1961, Bulletin No. 2, p-18). To accommodate this population Azimpur and Motijheel colonies were built. To cater to the ever-increasing residential needs of the new capital, Dhanmondi was developed as a planned residential area after 1955. The Mirpur road formed an axis and the high land on its either side came under a residential belt right up to Mohammadpur and Mirpur, and these two localities came to be developed by the government in mid-1960s mainly to accommodate the migrant Muslim population (Source: banglapedia).

e) Bangladesh period (started from 1971): Dhaka became the capital of the sovereign country Bangladesh after the Independence in 1971. Development of capital Dhaka involved a large-scale demographic change along with transfer of properties and houses. Non-Bengali population, especially Bihari refugees left the country and vacated many houses, which were later occupied by the locals. Major social, economic, administrative facilities and activities were concentrated in Dhaka. As a result people started to migrate to Dhaka. The city's population rose suddenly to about 15,00,000 and in 1974 it was about 16,100,000 (Census of Bangladesh, 1974). The earlier planned areas of Gulshan, Banani, Baridhara and Uttara came to be fully occupied, leaving very little open space. The city began to expand in all directions including over the low-lying areas on the eastern side, such as in Jurain, Goran, Badda, Khilgaon, Rampura, and in the western side, areas like Kamrangirchar, Shyamoli, Western Mohammadpur, Kallyanpur through the earth filling (Chowdhury, 1991). New areas of residential, administrative, business and commercial importance began to develop. In 1989 the boundaries of Dhaka have been defined as Jaidebpur and Tongi in the north, the Sitalakkha River in the east, Narayanganj and Buriganga River in the south and Savar in the west. The physical boundary of Dhaka has grown from 72 sq. km. in 1951 to 1353 sq. km. in 1999 to 1500 sq. km. according to the 2001 census (Ali, 1999). Present Dhaka is six times bigger than the Dhaka of late fifties (RAJUK 1993, p-6).

### 1.2.2 THE URBAN ENVIRONMENT IN DHAKA CITY:

The city of Dhaka, once a green haven and a city of scenic canals now under the environmental degradation. The population of Dhaka at present is estimated to be 10 million spread over an area of 1629 sq. km (Rahman, Tariquzzaman & Mohammad, 2001). Today this city failed to provide an open and healthy environment to its dwellers. As urbanization is high in Dhaka migration rate is also high. Therefore ponds, canals, parks and other vacant lands have been replaced by houses, markets, workplaces to provide shelter and services for its inhabitants. Like any other sustainable city Dhaka needs a huge stock of open spaces for urban services or utilities and circulation besides space needed for different public functions and recreational activities. We know that for a healthy city we need a right balance and proportion of open and built-up spaces. Open green spaces in the city acts like its

lungs besides being used as active recreational and leisure areas for its citizens. Circulation areas also, though serving active purposes, provide some breathing space to the urbanites. Spaces provided for the utilities also serve some passive needs. We, therefore, must realize that open spaces have a direct impact on the urban environment and general physical, mental and social health of the urban dwellers.

Instead of protecting the open spaces for the sake of a balanced urban environment there were insidious attempts to destroy the greenery since independence. Many open spaces in the city were gradually encroached upon in the last 30 years. In the late seventies there were much-publicized events of mass felling of avenue trees in the name of road development and more recently grabbing of open spaces are noticed in order to create markets and residential plots. The responsibilities to detract the policy makers lie with the organization that manages these spaces. Therefore there is a need for awareness and sensitivity among the relevant officials regarding environmental issues or ecosystem. Many organizations manage and maintain these urban open spaces of which largest chunks are managed by PWD and DCC besides other organizations like Cantonment Board, Educational institutions, Sports bodies botanic and zoological gardens etc. In late eighties open spaces managed by DCC was estimated to be about 250 acres but recent stock taking reveal that the amount has gone down to below 200 acres mark. Problem of private encroachment onto public land – for instance influential real estate interest being allowed to site new development on public land, including parks and green belts (water bodies) is quite common in Dhaka.

The city is becoming more and more crowded not only the inner part but also other built up areas. The ongoing development activities are creating constant pressure to maximize floor space. This situation decreases open and green spaces in the city and makes proliferation of high-rise without leaving ground area open and green for public use. This processes would results a city where the young have no playground to play, mother and the old have no place to enjoy their leisure time. The ultimate result would be to destroy healthy, livable environment and scenic beauty of the urban landscape, fade out the sense of recreation and culture and to close down breathing spaces with in the city. This problem needs to be addressed immediately.



### **1.3 RESEARCH OBJECTIVES:**

1. To identify the physical conditions, problems and maintenance of existing open spaces at selected government housing in Dhaka city.
2. To analyze the socio-economic background of the neighbourhood dwellers, the activity pattern and to assess the effectiveness of open spaces to the social and physical life of the community.
3. To assess the use pattern of open spaces and identify the problems and find out its causes.

### **1.4 RESEARCH OUTCOME:**

1. Identify the need for management and control for recreational open spaces at residential neighbourhood level.
2. Suggest some guidelines to improve the present situation and to generate responsive open spaces for community activities at neighbourhood level.
3. Analyze the existing ratio of open space and density for selected government residential neighbourhoods to determine the quality of the environment.

### **1.5 RESEARCH METHODOLOGY:**

#### **1.5.1 ORGANIZATION OF THESIS:**

The thesis has been organized as to gain knowledge about the problem deal in this research and the method of conducting the research.

Chapter-1 contains background of the problem, research objectives, scope, methodology and limitation of the study.

Chapter-2 gives a general discussion about meaning of open space, classification, main function and typology of urban open space in Dhaka city.

Chapter-3 contains different standards relating open space design.

Chapter-4 highlights different departments of government related to development of residential housing.

Chapter-5 is devoted to a brief discussion of factors that affect open space design.

Chapter-6 gives a brief description of the selected case studies of government housing in Dhaka.

Chapter-7 analysis's the various aspects regarding utilization of open spaces by the users of the respective residential housing, their needs and views on selected areas.

Chapter-8 concludes the paper. Before conclusion the major findings are summarized. At last conclusion are drawn up with some recommendations.

#### 1.5.2 SELECTION OF STUDY AREA:

Dhaka is badly served for open space according to any per capita measure. Distribution of open space does not correspond to population distribution. Indeed the more crowded area, the less open space available (DMDP, 1995). The present population status reached at 10 million (BBS, 2001). But the existing open space is not enough to serve the growing population of the mega city. In 1999 there was 0.16 acres of open space per 1000 population in Dhaka, whereas a minimum standard ratio needs to be 4 acres of green space per 1000 persons (Nilufar, 1999). Open spaces are very essential to determine the character and quality of the environment. For this reason open spaces within housing of Dhaka city have been selected as study area in this research.

#### 1.5.3 SOURCE OF SURVEY DATA:

Due to nature of topic information and data required for this research have been collected from two sources that is primary sources and secondary sources.

##### A) Primary Sources

Field Survey: The method for collecting primary information is used in this case is questionnaire survey, interviews and physical observations. Field surveys of government housing have been selected on the basis of size, location, age and density of the neighbourhood within the city. To collect the preliminary information about the existing situation and to attain the above mentioned objectives, the research has undertake a reconnaissance survey, data collection from the concern authorities, a number of observations regarding the nature of space use, their use pattern, type of users, supporting facilities, scope of development etc. and a questionnaire survey to assess the efficiency and nature of social use of neighbourhood open spaces.

##### B) Secondary Sources

Literature Survey: As secondary sources the literature survey have provided the knowledge base for the research and to develop a clear understanding the need for

recreational open spaces at neighbourhood level. For this purpose related books, journals, reports, documents, seminar paper have been reviewed. Two types of secondary data sources have been used for this research; unpublished data sources i.e. the thesis and research papers of the research students and published data sources i.e. the various journals, magazines, books, articles etc.

#### **1.5.4 ANALYSIS AND RECOMMENDATIONS:**

The collected data from various sources have been analyzed to attain the objectives of the research and to formulate suggestive guidelines to create responsive open spaces in our local context.

#### **1.6 SCOPE AND LIMITATIONS OF STUDY:**

The study was conducted to analyze the utilization of local open spaces by residents and to identify the problems of these open spaces and the causes behind them. This study involves open spaces within housing area of Dhaka city. Government is the major provider of accommodation for government employees in the form of housing. Therefore study areas have been chosen from housing developed by government. Due to limitation of time, resources and lack of manpower this research have been limited to selected housing of Dhaka only.

#### **1.7 RESEARCH RATIONALE**

Open space is an essential element determining the character and quality of the city environment. Up till now few studies were made to find out the public open spaces of Dhaka city but local open spaces had not been explored. From this interest this attempt has been made to find out the physical conditions of the open spaces within housing area and their uses and effects on residents everyday life.

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## CHAPTER: TWO

### **URBAN OPEN SPACES IN DHAKA CITY**

INTRODUCTION

URBAN OPEN SPACES

NEED OF OPEN SPACE FOR THE URBANITY OF DHAKA

CLASSIFICATION OF OPEN SPACES

SIZE OF LOCAL OPEN SPACES

STATUS OF URBAN OPEN SPACES IN DHAKA

OPEN SPACES AT RESIDENTIAL LEVEL

REFERENCES

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## CHAPTER TWO

### URBAN OPEN SPACES IN DHAKA CITY

#### 2.1 INTRODUCTION

Within the junk of concrete and polluted environment the green open areas are very essential inside the city for its environmental and ecological balance. Other than this passive need, one of the primary needs of open spaces in urban life is for recreational purposes during the leisure time. Recreational facilities and open spaces provide an integral and necessary part of urban living, particularly in areas of high density. In our cultural and climatic context, we have the tradition to perform many leisure activities in outdoor spaces in urban life. Such leisure activities are travel like walking or wandering; personal care and exercise like sports, active play; social and institutional activities like meeting, talking, parties etc; and cultural and communication activities like hobbies, passive play etc. For passive recreation open spaces like parks and gardens and for active recreation play fields, playgrounds etc. are essential within a locality.

##### 2.1.1 MEANING OF OPEN SPACE

Open space has been defined as an outdoor area in the metropolitan region - including public meadows and parks, but also unfenced vacant lots and abandoned waterfronts - which is open to freely chosen and spontaneous activity, movement, or visual exploration by a significant number of city people (Cervera, 1999). Open space must fulfill the following three criteria (Islam, Kawsar & Ahmed, 2002).

1. It must be relatively free from man-made structure and give the appearance of a natural landscape.
2. It must be relatively free from vehicular traffic.
3. It must meet requirements that may vary in proportion to the intensity of use and density of development in surrounding areas.

According to Charles Abrams (1971) 'Open space means that portion of the landscape which has not been built over and which is sought to be reserved in its natural state or for agricultural or outdoor recreational use'.

According to Dhaka Metropolitan Development Plan (DMDP 1995) open space means any portion of zoning plot essentially free of structures that serves the purpose

of visual relief and buffering from building and structural mass. These areas may be privately or publicly owned and may or may not be accessible to the general public.

Open space not only serves as an area in which people carry on active and passive recreation activities, but also helps to reduce the densities and build-up of the urban metropolitan areas. Open space and recreation are vital elements in an urban environment. Open space is an extremely valuable commodity for communities for natural systems preservation, recreation, education, cultural heritage, and aesthetics.

### **2.1.2 FUNCTIONS OF URBAN OPEN SPACE**

Open space has often been mentioned as the lung of the city. People benefit from the use of recreational services and activities supplied by urban open space and parks. Non-user benefits, such as the aesthetic value of a scenic view, are also afforded by open space. Other amenities include the essential value of the flora and fauna preserved within open space, the role of open space as habitat in sustaining genetic diversity or stability in ecosystems. According to the Pima County Open Space Committee as cited by White (1988), urban open space serves three primary functions (Cervera, 1999):

1. Maintenance of natural resources (water, gaseous, nutrient cycles and support of flora and fauna).
2. Provision of space for recreational activity.
3. Enhancement of the aesthetic and physical conditions of the urban environment.

### **2.2 CLASSIFICATION OF OPEN SPACES**

Open spaces can be classified into three broad groups according to the extent of utility and services rendered by them (Islam, Kawsar & Ahmed, 2002). These are:

1. Local open space
  2. City open space
  3. Regional or national open space
1. **LOCAL OPEN SPACE:** These open spaces supply the main facilities for local or neighbourhood areas. These are primarily devoted to active play areas for children, youths and adults. Local open spaces include play-lot, playground, playfields, parks

and incidental open spaces. These local open spaces are the main focus of this research.

- i. **Play-lot:** Play-lot is a small area intended primarily for children of pre-school age. It serves as the substitution of the backyard of homes. The play-lot is equipped with devices like low swings, slides, sandboxes, jungle gyms and space for running and circle games. All equipment should be designed and arranged for small children. Enclosure in the form of hedge or fence around the play-lot is advisable for the safety of the children and pergola or benches for mothers should be included.
- ii. **Playground:** Playground is the center of recreation primarily designed for the children of ages ranging from 6-14 years. A playground should be an area with the provision of apparatus and open space for informal play. There might be courts for various games such as soccer, tennis, volleyball etc. Playgrounds should be within walking distance of the neighbourhood. Proper lighting for evening use is essential.
- iii. **Play field:** Play field is intended for young people and adults and provides a variety of recreational activities. A single playfield may serve a larger area than that served by a playground. The space should be designed with the same facilities as playground with the addition of space for sports like football, cricket etc.
- iv. **Parks:** Small parks are designed mainly to serve neighbourhood. These provide an opportunity to get away from the noise and rush of traffic. It also affords a pleasant environment in which to engage in recreation activities. Parks should be accessible for recreation of both young and old and thereby designed correspondingly.
- v. **Incidental open space:** This is not the land just left over but properly designed open space. Design takes account of problems of each piece of such land in order to make it most effective. For example, in some areas plants may be needed to create buffer to give privacy to adjoining dwelling units.

**2. CITY OPEN SPACE:** These are the open spaces that provide facilities for citywide recreation. These include city parks, parkways, green belts, stadium, sports centers, athletic fields, golf courses, racecourses, water bodies etc.





- i. **City parks:** Unlike the neighbourhood parks, which serve the dual purpose of active and passive recreation, the city parks are the spaces for passive recreation only. These are provided in or around the heart of the city. It is designed to provide direct circulation, including diagonal paths and landscaped with grass, shrubs, flowers and trees so as to give attractive effect. Water may be introduced in formal pools and fountains. Seatings should be provided for the conveniences of the park visitors.
- ii. **Parkways:** The parkways and boulevards are important part of the urban park system. The existence of such tree-lined avenue greatly enhances the beauty of a city and enables people who have little time to visit parks to enjoy natural environment.
- iii. **Green belts:** Green belt serves to restrict the further outward growth of the town or city and provide farmlands for cultivation.
- iv. **Stadium, sports centers, athletic fields, golf courses, racecourses etc:** These require comparatively larger areas than the play fields. Organized and competitive sports, games and matches between different clubs, institutions, districts and countries and sometimes between nations are played in those spaces. As a result these attract considerable number of spectators from all around the city, for which these spaces are required to be connected with city's road network system.
- v. **Water bodies:** These areas provide opportunities for swimming, fishing, and boating. These are national water bodies maintained in urban areas for recreational purposes.

**3. REGIONAL OR NATIONAL OPEN SPACE:** this group of open spaces includes the areas within or outside the cities. These provide region-wide or national-wide recreational facilities. They include Regional or national parks, Zoological & botanical gardens etc.

- i. **National park:** Most countries have picturesque mountainous regions, marshy lowlands or foreshores that are of little use for cultivation or grazing, and are a much greater asset as scenic and scientific reserves. These are of immense value to the town dwellers on holiday. In addition they serve most useful purpose to scientists and researchers as study area of natural flora and fauna, geology,

forest ecology, entomology and in some cases seismology and their influence on soil climate and growth under natural conditions.

- ii. **Botanical & zoological garden:** These types of spaces are primarily provided for scientific reasons. Botanical gardens also provide opportunities for passive recreation. The majority of the visitors seek the botanical garden for their pleasant atmosphere to enjoy the beauty of the trees, flowers and lawns rather than to study the specimens. Similarly vast majority of the people visit zoo as an outing, usually with the children.

### 2.3 SIZE OF OPEN SPACES:

The size of open spaces in a locality greatly depends on population density, social and environmental requirements, natural conditions of landscape, technical considerations and economic feasibility.

Open space	Area	Area/1000 population	Size (standard)	Size (max.)	Size (min.)
Play-lot	50 sq. ft./child	.5 acre	5000 sq. ft.		2500 sq. ft.
Playground	100 sq. ft./ child (6-14)	1.5 acres	3 acres	5 acres	2 acres
Play field	600 sq. ft./ person (15+)	1.5 acres	20 acres	50 acres	10 acres
Local park	300 sq. ft./ person	2 acres		50 acres	5 acres
City park		0.5 acre	100 acres		30 acres

Table 2.1: Space requirement and size of open spaces (Islam, Kawsar & Ahmed, 2002).

### 2.4 STATUS OF URBAN OPEN SPACES IN DHAKA:

During 60's western planning standards recommend for 10.5 acres of land per thousand of population for recreational purposes (Koppleman and Chiara, 1969). Experts suggested that an ideal city needs to keep it's 40%-50% of land open or free. In developed countries of the western world 70%-80% land remains open. In these days the standard is revised and is suggested to keep 25% land of an ideal city as open and green. However, Dhaka structure plan urges to have 20% of open spaces in Dhaka for it's future generation (Nilufar, 1999).

The lively spaces have a pattern of events associated with it. Cumulative effect of these spaces, events and morphology gives the city an image. Open spaces are an integral part of this image out of which Dhaka has emerged. Open spaces and parks are insecure and crime prone when they are not properly designed or planned. The proximity or the security of a space, variety and specialty of activities available, visibility or legibility and intimacy or personalization of the area together with its porosity or permeability are the key attributes of a successful design and lively spaces. Quality of particular way or route which leads to a particular space, quality of surrounding spaces and environment within, are very important for assemblage of people and thus keep the cities image intact. So it is fundamentally location, environment and hierarchy of activities leading to a space that constitute orientation. Likewise, a successful residential space must be sufficiently adored with elements, which provide scale and are in harmony with the general sitting, seeing or standing habits of the people. It does not have to be a concrete element, plants can very well serve these purpose.

The prime need is to make the authorities aware regarding the value of open spaces in the city life. They have specific duties to protect and maintain the areas under their control and they are accountable to the general public for what they have been trusted with.

Type of Open Space	Area in acres	Area (acre) per 1000 People	Percent of Total Area
Agricultural	4871.00	1.15	12.12
Garden	362.00	0.086	0.901
Graveyard	14.50	0.003	0.036
Lake	60.71	0.014	0.151
Vacant Space	2004.63	0.470	4.991
Park	358.46	0.082	0.892
Playground	156.46	0.037	0.390
Pond	101.12	0.024	0.252
Swamp	731.00	0.173	1.82
Urban Forest	8.00	0.002	0.02
<b>Total</b>	<b>8668.23</b>	<b>2.040</b>	<b>21.573</b>

Table 2.2: Distribution of Open Spaces in Dhaka City (Bhadra and Shammin 2001).

## 2.5 OPEN SPACE AT RESIDENTIAL LEVEL

The widest meaning to describe open spaces in residential areas is probably as the unbuilt volume of space with in a given built fabric (Roy, 2001).

### **2.5.1 Functions**

These can be easily grouped into three categories.

**UTILITARIAN FUNCTIONS:** These include environmental aspects like light and ventilation inside the built spaces, the provision of access to use areas and the passive functions like parking, storage etc.

**SOCIAL FUNCTIONS:** These include functions, which usually involve direct and active participation of human beings in these spaces. These may include social interaction, recreation etc.

**PERCEPTUAL FUNCTIONS:** These include aspects like aesthetic satisfaction, creating a distinct identity of a given residential area etc.

### **2.5.2 Hierarchy and Classification**

**ORGANIZED SPACES:** These are deliberately planned and meant to serve some definite preconceived functions.

**INCIDENTAL SPACES:** These spaces are ill defined through physical or other controls and usually don't have defined user group.

### **2.5.3 Functional characteristics of Open Spaces:**

#### **1. DOMAIN**

- A. Home-oriented spaces: Enclosed spaces that are entirely private and are the responsibility of the family for management. Usually enclosed by a wall or fence at eye level to achieve privacy and security at ground level. Should meet aesthetic qualities and accommodation of informal activities of active and passive nature, i.e. sitting, reading, gardening, children's play and family activity. Design varies according to housing type. Should be provided immediately adjacent or within 500 feet of each dwelling unit, such as front and backyards, side walks, porch, drive ways etc.
- B. Home cluster or sub-neighbourhood common spaces: These spaces are important in high density areas, providing visual relief and aesthetic qualities for activities like small informal group meetings, walking, jogging etc. Must be visually accessible from dwelling unit. Usually varies from 500 sq. ft. to 2 acres to serve an area of 100 yard to ¼ mile radius (Chiara, 1984). Sub neighbourhood common spaces are play lots, green belts, walk ways, rest areas etc. Should be designed as flexible and adoptable.

- C. Neighbourhood spaces: These spaces are available for use by all resident and maintained and managed by resident groups. Only residents who live close by would normally use communal or local access and 'non route' spaces. These are semi-private spaces. These areas are generally smaller in size and designed to attract a limited population. Parking is generally along the street, and amenities are fewer and unscheduled. Open spaces like neighbourhood parks, play fields, adventure play grounds etc. are provided to accommodate sports for baseball, cricket and football for minor leagues, water play, special event and informal passive activities. These spaces usually varies from 4 to 20 acres to serve 5000 people within an area of  $\frac{1}{4}$  to  $\frac{1}{2}$  mile radius and should be associated with an elementary school.
- D. Community Spaces: Community open space serves the recreational needs of the greater community by offering diverse opportunities in a more natural setting. These spaces accommodate social, cultural, educational and physical activities of particular interest to the community. Community spaces are generally associated with a secondary school and vary from 15 to 20 acres to serve a neighbourhood of 15000 to 25000 people. These spaces are accessible by walking, cycling and public transport such as Community Park, play ground, recreation center, sport fields etc.

## 2. CIRCULATION

Route Spaces- These may be for vehicle, pedestrian or vehicle plus pedestrian use. Local access vehicle spaces often are associated with pedestrian routes.

Non-route Spaces- These spaces are pedestrian only and not designed to be used for access; e.g. grassed courtyards. These spaces are expected to have less intensive use.

## 3. EDGE CONDITIONS

These are related to the form of the spaces enclosed. These spaces are influenced by dwelling type and arrangement of its outdoor privacy zone. The dimensions of these narrow spaces are frequently regulated by housing by-laws, daylight distances, vehicle, service requirements and the characteristic of edge conditions.

## 4. ACCESS TO DWELLINGS

Access points relating of entrance to individual dwellings, groups of dwellings or blocks.

## 2.6 CONCLUSION

Traditionally informal open spaces, like street corners, courtyards etc. helped to generate local social activities and ensure social control. Similar informal and intimate open spaces are rare in new Dhaka in spite of its organic morphological character and spontaneous development. Only a few spaces are kept open in residential areas, which are also being swallowed day by day. The scarcity of required open spaces, both in public and private realm, has restricted and changed our lifestyle to a great extent (Nilufar, 1997). It is a matter of regret that even the small amount of recreational open spaces is not being properly maintained. For lacking of proper management and maintenance, the conditions of existing parks, playfields and open spaces is disdained and turned into abominable to the city dwellers.

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**CHAPTER: THREE**

**OPEN SPACE PLANNING & STANDARDS  
FOR RESIDENTIAL DEVELOPMENT**

**INTRODUCTION**

**LAYOUTS OR PLANNING SYSTEM**

**SENSE OF BELONGING OR TERRITORIALITY**

**DWELLERS RELATIONSHIP TO SURROUNDING OPEN SPACES**

**LANDSCAPE DESIGN**

**CHILDREN- HOUSE RELATIONSHIP**

**CHILDREN- VEHICLE RELATIONSHIP**

**EXTERNAL PLAY ENVIRONMENT**

**FLEXIBILITY IN DESIGN**

**OPEN SPACE STANDARDS**

**REGULATIONS AND BYLAWS AFFECTING DESIGN OF RESIDENTIAL  
OPEN SPACES**

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# CHAPTER THREE

## OPEN SPACE PLANNING & STANDARDS FOR RESIDENTIAL DEVELOPMENT

### 3.1 INTRODUCTION

Open spaces have always been valuable assets to human communities. They are multi-faceted in the kind of value that they have provided to local communities. For this reason all over the world open space have been given much attention during the planning processes of residential development. Open spaces not only provide recreation benefits to communities but also affect human health and quality of living environment. In this chapter different issues related to open space design and standards have been discussed.

### 3.2 LAYOUTS OR PLANNING SYSTEM

#### 3.2.1 SPATIAL ORGANISATION OR DISPOSITION OF SPACE

This refers to the relationship of open spaces to the entire residential area and the nature of areas around it. The relation to the residential site layout is important in two ways.

**The first** refers to the land utilization pattern or the magnitude of area under each level in the hierarchy. The appropriateness of magnitude will depend on the activity and behavior setting choices of the given socio-cultural group and the number of persons to be served. The land utilization pattern then needs to be considered both in terms of proportion of total area under each level as well as the expected human or vehicular density.

**The second** aspect of spatial disposition refers to the location of open space in relation to the site layout.

#### 3.2.2 CIRCULATION SYSTEM

##### 3.2.2.1 CLARITY OF MOVEMENT

The problem of disorientation occurs due to the similarity and repetitiveness of open spaces and built form. This problem can be avoided by laying out large and small collections of units to identify each unit as separate so that finding one's way becomes simpler. Orientation for a person can be made easier if the complex has a central space leading into the other spaces. Often, a center can become confusing by having similar openings into other spaces.



## HIERARCHY OF STREETS IN RESIDENTIAL AREA

Generally, in a large residential development, the form of circulation will determine the importance of different levels of streets. In a site with predominantly exterior circulation, the primary street will lie outside the given residential area. This of course also depends on the size of the residential area. Each level of street reflects different type and number of users.

LEVEL	FUNCTION
Access	Provide access to individual houses or lots.
Collector (Major Residential Road)	Connects the different access streets to the main primary street.
Primary (Arterial Road)	Provides access to the entire residential area and connects it to the rest of the city.

Table 3.1: Hierarchy of Streets in Residential Area

## STREET NETWORK PATTERN

The streets may be broadly distinguished as

- Lines of Circulation: In this case the utilization of the street is the domain of the general public that circulates through the urban area. This corresponds to the primary street.
- Lines of Access: in this case the utilization of the street is the domain of a limited group of neighbors who share its use.

Depending upon the size and the location of the residential area, the street pattern may be distinguished as exterior circulation network and interior circulation network. The difference between these two lies in the extent to which it is possible to curb the flow through traffic from the residential area.

## BUILDING HEIGHT TO STREET WIDTH RATIO:

Well-designed, low rise buildings that are broadly in scale with the width of the street, although building height should respect the local context (a ratio of 1.5 to 2 times the building height is most comfortable). Buildings of three to four storeys in height usually have sufficient scale to provide good definition of the street, although taller buildings may be more appropriate. If the building height is more than the width of the defined open space, the space feels claustrophobic where as if the height is same as the width of the open space, balanced and harmonious space is created interaction.

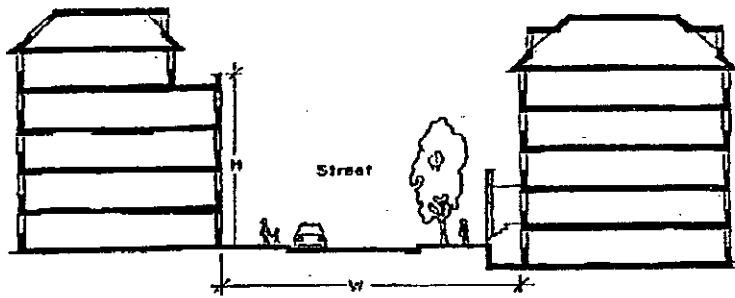


Figure 3.1: Ratio of building height to width of street (most comfortable at 1:1.5 or 1:2)

### 3.2.2.2 SEGREGATION OF VEHICULAR AND PEDIESTRIAN TRAFFIC

This idea was developed as a reaction to the ever-increasing importance of the automobile in the western context. Further developments include the grouping of dwellings on the pedestrian side into urban compositions. In the design of residential areas, the pedestrian movement should be so provided that one could reach the bus stop, shopping center and nursery school without conflicting with the vehicular road.

Segregation may be of two types:

#### 1. PARTIAL SEGREGATION

- A. Transit Ways: Areas that restrict but do not totally ban vehicles by the identification and separation of through and destined automobile traffic.
- B. Time Restricted Segregation: Areas where the traffic is banned at certain times of the day.

#### 2. COMPLETE SEGREGATION

The different types of traffic like pedestrian, bicycle or automobile traffic can be completely segregated in two ways.

- A. Vertical Segregation: Overpasses or underpasses provided for pedestrians or vehicles especially at road junctions are a form of vertical segregation. Since the level difference in case of an elevated vehicular road is required to be 3m. and in case of a pedestrian deck as 6m., this kind of separation is rarely adopted in group housings due to high costs involved.
- B. Horizontal Segregation: Horizontal segregation comprises of an enclosure having one horizontal surface at the ground level without any stream of traffic interrupting its flow. In-group housings this is the most economical and efficient means of traffic movement as it can strike a balance between the need for rapid transit and pedestrian safety if appropriately designed. The ideal

situation is the provision of a peripheral vehicular road and a pedestrian core within the group so that the vehicular traffic system can be designed to serve and not penetrate the human activity spaces. To enhance the pedestrian safety, the vehicular traffic is drawn outward towards the perimeter roads, while the pedestrian traffic flows free of interference in the opposite direction on largely non-vehicular roads. At the same time it is essential that each dwelling unit has easy access to their vehicles for reasons of personal mobility, delivery, servicing or any emergency conditions.

### 3.2.3 PARKING

Parking needs are of three types in Residential Housing.

1. For residents
2. For visitors
3. For service vehicles

Both excess provisions or under provision of parking space can lead to environmental disbenefits. Too much provision or ill-designed parking space will adversely affect the appearance of the development. Inadequate provision of suitable parking space will lead to encroachment of other spaces.

#### TYPES OF PARKING

The most commonly used parking types these days are Peripheral and Cul-de-sac parking. This aids in reducing the through traffic of outsiders and thus ensuring that accessibility is restricted to specific groups only.

The design provision of parking of vehicles requires:

- Estimation of the vehicles ownership by different modes for personal vehicles, those used for economic activities and the likely requirement for visitors.
- Identification of the appropriate standards of dimensions for different modes.
- Conversion of the estimates of vehicles to space-requirements. The ratio of space for vehicles to total space against norms has to be checked.
- Allocation of the space in the layout on the basis of appearance, security of vehicles and value preferences regarding accessibility of parked vehicles. It is also necessary to consider the multipurpose use of this space with other activities.

### 3.2.4 OPEN SPACE SYSTEM

The basic organization of open space system in the residential areas may be identified by using two important criteria:

**First**, these may be distinguished on a Scale or Hierarchy reflecting the most private to the most public domains.

**Second**, these are differentiated in terms of whether their primary function is to provide access or they are alternatively use spaces.

#### HIERARCHY OF SPACES

The hierarchy of spaces (both the movement and use or the combined) considers the following aspect.

1. **Level of Accessibility:** These refers to the intended users of a given level and space. This is clearly related to the nature of controls, which ensures that accessibility is restricted to specific group only. This may be done by either ownership pattern or particular street design like cul-de-sac.
2. **Responsibility for maintenance of spaces:** Within the housing area user groups should clearly maintain these spaces. At higher level of public spaces, the responsibility lies with the public sector.
3. **Size and Design of spaces:** It is related to the differing functions and user group at each level.

Open spaces are categorized in four levels, each reflecting, successively higher level of public ness.

LEVEL	USER GROUPS	SPACE USED
Private	Household	Courtyard, Backyard, Front yard
Semi-private	A large group of Households	Cluster courts
Semi-public	A large group for specific purpose or from a specific spatial area	Smaller parks, Playgrounds, Schools, Smaller shop clusters, Small temple, Courts serving a large group.
Public	Completely open to any group of users	Larger neighborhood shopping complex, Larger temples, Other public facilities, Larger Parks and Playgrounds

Table3.2: Hierarchy of use spaces in Residential area

In particular buildings should have elevations, which overlook the street, to create 'active' frontages, with their building fabric forming the boundary between public and private areas and keeping them secure. Where this is not possible the arrangement must provide some form of clear definition between private areas and the public realm. A street block arrangement can also provide a buffer to traffic noise and create tranquil inner amenity areas within the core of the block.

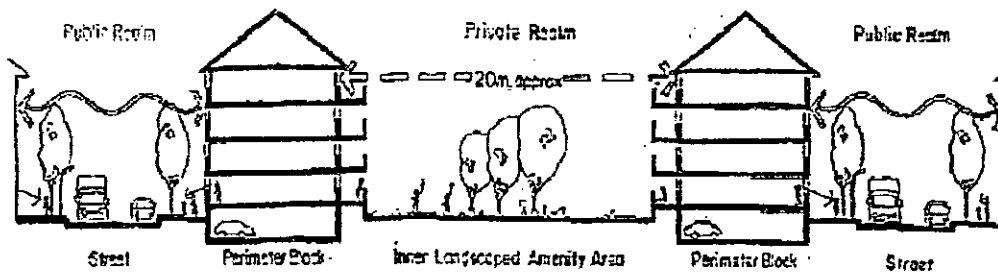


Figure 3.2. Typical arrangement of buildings placed around the perimeter of a street block to provide clear definition of public and private areas.

### 3.2.5 ACCESS SYSTEM AND LINKAGES

An important utilitarian function of open spaces is to provide access to individual dwelling units. Traditionally this function is attributed to the movement spaces or the roads and streets only.

#### NATURE OF ACCESS REQUIREMENTS

In Residential area access is required for four different categories of users.

- Residents: This user groups need access frequently.
- Visitors: These groups of users need access less frequently. The convenience of being able to find their way around the sight is an important aspect.
- Emergency services: Access for services like fire fighting, appliances and ambulances is necessary for health and safety reasons.
- Other services: Access for refuse collection, deliveries of post etc. is necessary, although these require only pedestrian access.

#### NATURE OF ENCLOSURE

The presence of openings provides spatial and visual continuity with the adjoining spaces. They also effect the orientation, flow of space, view and pattern of activity and movement.

- The space should not be too rigidly enclosed

- The space should be enclosed with a number of openings or paths, which lead to other spaces or areas.
- Boundaries may be formed by built form itself, walls, activities, streets, certain landscape elements like hedges, trees etc.

### **3.3 SENSE OF BELONGING OR TERRITORIALITY**

#### **TERRITORY**

This is a particular area or areas which are owned and defended, whether physically or through rules or symbols; which identify an area as belonging to an individual or group, and one important way in which people territorialize is through personalization (Indian Human Settlements Program, 1988).

#### **TERRITORIALITY OF GROUP OPEN SPACES**

- These spaces must create a sense of enclosure and be positive in form. This is very important for people to associate with these spaces and develop a sense of territoriality.
- The family based group spaces must have limited or restricted entry to strengthen the group territoriality. These can be done by use of a variety of measures like having limited access streets; avoiding through traffic by the design of the street pattern; providing gates at entries to this spaces and narrowing the access to the spaces.
- Perception of safety to these spaces should be created by design measures. This is extremely important, especially for children's play activities.
- Although the entry should be restricted, it should not be inhibited. It is necessary to link up different group open spaces through path and links, which provide shortcuts to children and other pedestrian. Prevention of vehicles can be achieved by providing series of steps along the route.

#### **PHYSICAL FEATURES IN TERRITORILISATION**

The designation of particular territories by different users is in part due to the design and utility of the physical equipment in the territory (Indian Human Settlements Program, 1988). Where territorial boundary is to be visually indicated rather than created by a barrier near or above eyelevel, a range of alternatives exists such as plant beds, hedges, trees can be is a choice of surface treatment. Insert strip or studs let into ground surface may delineate extend of ownership and maintenance responsibility.

### 3.4 DWELLERS RELATIONSHIP TO SURROUNDING OPEN SPACES

All the intended users should have direct access to the open spaces or be very close to these. Proper transition between the private realm of the dwelling and the relatively public realm of the open space next to it is necessary.

#### 3.4.1 TRANSITION

The nature of transition spaces varies, as the degree of identity and privacy requirements is different. Between certain levels, weak transition may be more effective in inviting participation. When the transition is very strong, like a private space; it is necessary to ensure that private boundary walls do not further inhibit it. The height of boundary walls should be kept low to maintain the visual continuity. To create a strong sense of transition, gateways are suggested at the points where paths cross the boundary. A private courtyard must be placed in such a way that there is a view out of it to some larger open spaces.

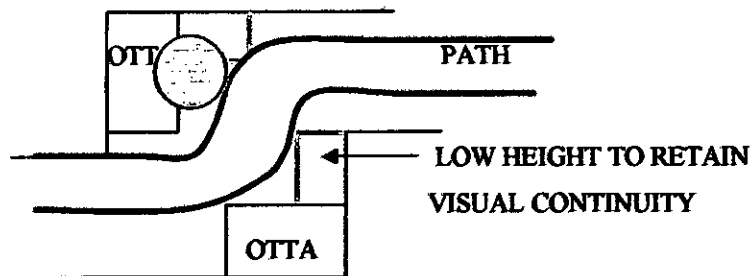


Figure 3.3. Transition between Private and Public Open spaces

#### 3.4.2 SEQUENCE OF ACTIVITY SPACES

The family based group open space must form a series of sequential activity spaces starting from the most active domain in the dwelling to the private open space, then the family based group space, leading to the activity based group space.

### 3.5 LANDSCAPE DESIGN

#### 3.5.1 GREEN AREAS/ LARGE PAVED AREAS

A large part of open spaces in residential areas have paved surface, which is not suitable for motorized vehicles. Children for their play activities prefer such surfaces. Although these surfaces destroy the microclimate by trapping the solar energy but are preferred over lawns because of their effective maintenance and operating costs. Simple landscape elements like steps, trees with platforms, low sitting arrangements

etc. may be introduced in open spaces in order to serve a variety of needs of different user groups.

### **3.5.2 ENTRANCES**

An attractive entrance to a residential area is important, because it encourages residence to take the pride and pleasure in the sitting of their homes. Entrances are areas of intensive use where children tend to congregate, so that grass there is unsuitable. Where flowerbeds are provided, they need to be raised or well protected in some other way. Paved areas at main entrances must be sufficient to accommodate anticipated activities.

### **3.5.3 PATHS**

Path should be wide for pedestrians. Path should follow the shortest route from place to place. Otherwise residents tend to take short cuts, often trampling the grass and other plants. Paths should be functional rather than formal in design and layout. Paths should follow natural lines of movements, widening as traffic increases to accommodate two-way traffic; if needed and narrowing in less used areas. Front gardens facing busy paths need a low railing for protection and a curb or slight rise to stop paper and litter blowing in.

## **3.6 CHILDREN- HOUSE RELATIONSHIP**

The relation ship between the child and the private domain, the small group private domain and the communal domain varies with the child's development. The parents and should have the freedom to choose in which of these the child wishes to play.

Very young children up to five years need close contact with their family and therefore tend to play in the private domain that is the back garden or close to the house entrance. The boundary between the outdoors and indoors must be such that the child moves freely from one to the other enlarging the radius of his activities as his feelings of safety and self-reliance grow.

Older children of primary school age (5 -11 years.) socialize more with their peers and are more mobile. Generally they range beyond home to the communal domain.

Secondary school children (11 years plus) with developing independence and mobility need neutral ground depersonalize from the family. 'Kick- about' areas for energetic and noisy ball games can be far from private domain but should still be related to it.



### **3.7 CHILDREN- VEHICLE RELATIONSHIP**

Parking lots within residential area seems to have an irresistible attraction to children. As children cannot be physically prevented from using parking areas, the total pedestrian environment must be made positive and more attractive alternative to play in than vehicle spaces. This can be achieved by locating a dominant 'play circuit' on pedestrian routes. Usually hard surfaces are used for vehicle routes and soft surfaces for pedestrian routes. Soft surfaces provide a dual function in slowing down cars and deterring children on bicycle.

### **3.8 EXTERNAL PLAY ENVIRONMENT**

Small-scale intimate spaces with simple play equipment at house threshold; a little off main pedestrian route should be provided for young children's play. Informal play equipment is usually provided in open spaces that are shared by small housing group. Communal domain includes pedestrian routes, which link houses to shops, schools and playground. Railing, benches, steps and ramps can be provided as formal equipment for children's play.

Paving, planting and fencing each serve a useful purpose but they also form parts of the whole visual design. Barriers can be designed for the enjoyment of the children such as 'turning rails'. Play equipment should be chosen with an eye to its sculptural qualities. Even purely utilitarian objects, such as well-designed clothes drying equipment, litterbin, lamps etc. contribute their part to the scene.

Sitting-out places should be sheltered from the wind and sited to catch the sunshine. Orientation and other conditions relevant to comfort, such as sense of enclosure, outlook etc. has to be considered. Conflicts of privacy also have to be taken in to account.

Access is important, especially where sitting may risk undue erosion at corner of grass, planted areas. Walls, railings changes of level, should be used to eliminate short cutting. Some sitting space should be sited close to areas suitable for younger children's play.

### **3.9 FLEXIBILITY IN DESIGN**

Assumptions for design and its ability to cope with changing needs have to be checked. Assumptions, which were valid at the inception of design, may become

obsolete during the lifetime of the scheme. Whereas some changes cannot be anticipated, they can be planned for to some extent, and ideally the design should be capable of absorbing normal characteristics of growth. How well this happens may depend on a maintenance program, which the designer cannot necessarily control; though ideally he/she is able to influence it through his/her planning.

### **3.10 OPEN SPACE STANDARDS**

Standards of open space for different countries are not same. So it is very difficult to lay down any rigid open space standards and try to apply them to all urban areas, as it depends upon many factors. These factors are:

- 1) Age structure of the population
- 2) Socio-economic characteristics of population
- 3) Extent of private open space
- 4) Local attitude and habits
- 5) Climatic conditions
- 6) Size of city/ town and proximity of country side
- 7) Density of residential development
- 8) Extent of car ownership

Although community and ecological needs vary geographically, a standard set criteria is useful to determine where and how a region is a park deficient. The National Recreation and Park Association (NRPA) suggest park standards to determine the size, relative location to population center, size of population and type of parks in a region. The main factor influencing the standard of open spaces is density of population. The various standards for open spaces have been advocated from time to time in planning schemes in relation to population. The absence of a nationally recognized and widely applied set of standards for open space has been debated for many years and whilst many organizations (NPFA / English Nature / Woodlands Trust / individual local authorities) have established a framework for standards applicable to either elements of open space (play / playing fields) or local authority areas.

Open space standards advocated by **The Greater London Plan**: The greater London Plan (1944) advocated 10 acres (4 ha.) of open space for every 1000 residents,

comprising 3 acres (1.20 ha.) for education and remaining 7 acres (2.80 ha.) distributed as follows (I.H.Seeley, 1973)

Type	Area (acre/1000 person)	Area (ha./1000 person)
Parks and parklands	1 acre	0.40 ha.
Public playing field	4 acres	1.60 ha.
Private sports grounds	2 acres	0.80 ha.

Table 3.3 The Greater London Plan open space standards.

The **National Playing Fields Association (NPFA)** recommends a minimum standard for outdoor play space of 2.4 hectares (6 acres) for 1,000 people (Scottish executive publication, 2006).

Outdoor playing space is not the same as public open space. It is space that is safely accessible and available to the general public, and of a suitable size and nature, for sport, active recreation or children's play. It is a significant component of open space in residential development. The standard has been broken down into 1.6 hectares (4 acres) of outdoor sport space and 0.8 hectares (2 acres) of Children's playing space.

In Britain the usual recommendation for park provision is a minimum of 0.40 ha. per 1000 population based on the National Playing Field Associations suggestion.

**English Local Authority Open Space Standards** (Scottish executive publication, 2006).

Organization	Open Space Standard	Type of Open Space
<b>Fareham Borough Council</b> <i>Supplementary Planning Guidance: Open Space</i>	<p>Uses NPFA*</p> <p>1.6ha/ 1,000 people outdoor sport which splits into:</p> <ul style="list-style-type: none"> <li>• 1.2ha/ 1,000 people of pitches.</li> <li>• 0.4ha/ 1,000 people of other outdoor sports facilities</li> </ul> <p>0.8ha/ 1,000 people of children's play space which splits into:</p> <ul style="list-style-type: none"> <li>• 0.2ha/ 1,000 people of equipped children's play space.</li> <li>• 0.6ha/ 1,000 people of informal</li> </ul>	<p>Sports facilities</p> <p>Play space</p>

	play space. 0.4ha/ 1,000 people of other outdoor recreational space.	
<b>Rutland County Council</b> <i>Requirements for The Provision of Open Space for New Residential Areas</i>	0.3ha of outdoor playing space per 50 dwellings.	Amenity open space Play space
<b>Stockport Metropolitan Borough Council</b> <i>SPG 4 Recreational open space provision and commuted sum payments (updated Jan 2001)</i>	Overall provision of 2.4 ha per 1000 population for active recreation. <ul style="list-style-type: none"> <li>• 1.7 hectares should be for formal sports provision, including courts and greens for public and private use for all age groups</li> <li>• 0.7 hectares should be available within easy access of homes for casual play</li> </ul>	Play space Outdoor sports Recreation and amenity open space

**Scottish Local Authority Open Space Standards (Scottish executive publication, 2006)**

<b>Aberdeen City Council</b> <i>Open Space Development Guidelines for Greenfield Sites March 2001</i>	Based on 2.8ha of open space per 1,000 people. <ul style="list-style-type: none"> <li>• Sports pitches/ playing fields 1.6ha/ 1,000 people.</li> <li>• Equipped play children's play space 0.3ha/ 1,000 people.</li> <li>• Natural wild space 0.4ha/ 1,000 people.</li> </ul>	Sports provision play space Natural Wild Space
<b>City of Edinburgh Council</b> <i>Open Space and</i>	4 acres (1.6ha) per 1,000 persons or 1 acre (0.4ha) per 100 houses in large developments. <ul style="list-style-type: none"> <li>• Private gardens should be a</li> </ul>	Amenity landscaping Play space

<p><i>Ancillary Facilities for New Housing Development. (Aug 2004)</i></p>	<p>minimum of 9m in depth</p> <ul style="list-style-type: none"> <li>• Amenity landscaping must be greater than 1.5m wide</li> <li>• Small play areas located 60m from home and larger, well equipped play areas 240m from home</li> </ul>	
<p><b>Glasgow City Council</b> <i>Residential Greenspace Standards (2001)</i></p>	<p>Target of 5ha per 1,000 population.</p> <ul style="list-style-type: none"> <li>• 0.7ha children's play per 1,000 population to be accessible within 90m (Open Space without equipment), 300m (Local Play Area), 1000m (District Play Area).</li> <li>• 1.7ha for outdoor sport per 1,000 population to be accessible within 500m for kick-about and 1000m for playing pitches.</li> <li>• 0.5ha amenity green space per 1,000 population to be accessible within 400m.</li> </ul>	<p>Play space outdoor sport amenity green space</p>

NPFA\* 6 acre standard, which equates to 20m<sup>2</sup> per household divided between informal play/ recreation space and equipped play areas.

The recommended quantity of open space ranges from 1.6ha to 2.8ha per 1,000 populations. Some standards are calculated using a quantity of open space required per 1,000 people, whereas others base it upon a quantity per household.

The Committee on Park and Recreation Standards of the **American Society of Planning** officials suggested 1 acre per 200 people in cities with population between 500000 and 1 million, and 1 acre per 300 people or more in cities above 1 million (I.H. Seeley, 1973).

**Singapore**, a city of extremely high population density, which is short of build able land, proposes a standard not exceeding 2.5 acres of open space per 1000 populations.

On the other hand, **Karachi** where ample of land is available, is aiming at 4 acres per 1000 population (Draft Master Plan for Dhaka, 1959).

According to **DDA. Master Plan for Delhi**; provision for recreational facilities for residential neighbourhood of 15,000 populations is as follows (Roy, 2001).

Use	Area (ha./ 15000population)
Tot-lot	0.75
Park	4.5
Play area	2.25

Table 3.4 DDA Master Plan open space standards

A variety of standards have been developed by professionals, which are used throughout the country. Over time, the figure of 10 acres per 1,000 populations came to be the commonly accepted standard used by a majority of communities. Other standards adopted include the "percent of area" approach, needs determined by user characteristics and participation projections, and area use based on the carrying capacity of the land.

In some Asian Cities, a standard of 1.00 acre of open space per 1000 population has been adopted (Siddque, 1991).

However the picture is different in case of Dhaka. In Dhaka city there are no rules about the standards of open spaces. From Bangladesh Bureau of Statistics (B.B.S, 1991) it is estimated that 0.51 acres of open space is available for per 1000 population in Dhaka city. However, a minimum standard ratio needs to be 4 acres of green space per 1000 persons (Nilufer, 1999). Here in old Dhaka only 5% and in new Dhaka 12% of land is green and open (DMDP, 1995). It has been reported recently that the total amount of open space including its road, footpaths, parks, play fields, lakes, ponds etc. in Dhaka is about 17-18% of city area (Daily Janakantha, March 05, 2000). At present there is a dearth of open space, particularly Parks and Playgrounds in Dhaka city.

### **3.11 REGULATIONS AND BYLAWS AFFECTING DESIGN OF RESIDENTIAL OPEN SPACES**

#### **3.11.1 SETBACKS**

The setback line is the distance between the building line and the plot line. It could be

from the front, rear and sides of the plot. The distance related regulations or the setbacks indicate that certain fixed distances are to be left out along the edge of the building and that they be kept free of obstruction, made and capable of taking the weight of a fire engine. These regulations thus are meant for purposes of fire safety, ensuring adequate light and air space for planning, and for approaching to the building and open spaces. The exact depth has to be determined by consideration of the character, height and use of the building as well as by nature of street themselves in a given district or locality. Rajdhani Unayon Kartipakha (RAJUK) controls the construction of buildings in all residential zones within Dhaka city with help of some rules and regulations. In both RAJUK and BNBC codes, the minimum front set back for any type of plot area is 5 ft. from the adjacent road (Building Construction Rules, 1996).

Setbacks for sides and back of plots are given below:

Plot area (SFT)	Back setback		Side setback	
	RAJUK	BNBC	RAJUK	BNBC
Up to 1440	3'	4'	2' 6 "	0'
Above 1440 up to 2160	3'	5'	3'	4'
Above 2160 up to 2880	5'	5' 9"	3'	4'
Above 2880 up to 3600	6' 6"	6' 6"	4'	4'
Above 3660 up to 7200	6' 6"	10'	4'	4'
Above 7200	6' 6"	13'	4'	4'

Table 3.5 RAJUK & BNBC Setbacks

Based on these set backs the amount of open spaces around a building for different area of plots ranges from 28% to 32% of the plot area as per RAJUK codes and 22% to 35% as per BNBC codes. In the previous version of RAJUK building codes there was a rule of minimum open space in a plot and that was 1/3 (33.3%) of the total plot area (Building Construction Rules, 1984). According to the new code the percentage of open space derived from following the side, back and front set back rules is actually almost similar to the previous mandatory open space rule of 1/3(33.3%) of the total plot area.

### 3.11.2 DENSITY

Land area requirements involve the concept of density or the intensity of activity occurring per unit ground area. In case of residential development it is usually measured in terms of families per area.

Though density alone does not convey any idea about the quality of the environment, but still it has a direct bearing on its livability. Areas, which are to be designed with high densities, are a matter of architectural challenge, as on one hand, the planner has to house so many people, and on the other hand he has to see that sufficient open spaces are created without sacrificing the density figure.

Density plays a key role in determining the use of open spaces. As the number increases, the congestion within and without also enhances resulting in the intensive use of open space. There are areas where densities are very high and hardly there is any open space, streets, cul-de-sacs etc. are thronged with people of all groups and not an inch of extra open space can be cited anywhere. On the contrary, there are places where densities are very low and hardly any open space is properly used. A proportionate increase in density in the later would render the unutilized space useful. With varying densities, the amount of open space also varies. More the density, more the open space is required.

High densities pose particular problems of proximity, privacy, access type, car provision and parking arrangements, management policies etc. Low densities pose particular problems also; more space may leave residual little used or neglected areas with problems of care, thus worsening the capital versus maintenance costs relationship. Lower cost investment per unit area is possible by increasing area of common land, or at least by attenuated and therefore less useful spaces along road and boundary edges.

### 3.11.3 BUILDING COVERAGE

Building coverage is the proportion of net or gross residential land area taken up by buildings. For instance, 40% net coverage means that 40% of the residential land area is covered by buildings, leaving 60% open land for residential outdoor uses. Coverage and height are closely interrelated. At the present time, 20-33% coverage of land within property lines appears to be practical and to permit conformity with standards for light, air and open spaces. Controls that set maximum net coverage exceeding



35% may fail to provide sufficient open space and may lead to over crowding on the land.

#### 3.11.4 FLOOR AREA RATIO

Floor area ratio (FAR) expresses the relationship between the amount of usable floor area permitted in a building or buildings and the area of the plot on which the building stands. It is obtained by dividing the gross floor area of a building by the total area of the plot. FAR is usually expressed as a decimal fraction, for example, 0.5 or 12.3. A floor area ratio of 1.00 means that the combined floor area of buildings equals the residential land area. This corresponds to a building coverage of 25% by 4-story buildings or coverage of 50% by 2-story buildings. As FAR establishes a mathematical relation between the land area, the floor area of the building and its height, it is considered among the most accurate indexes for adequacy of light and air.

#### 3.12 REFERENCES

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**CHAPTER: FOUR**

**OPEN SPACE SCENARIO IN GOVERNMENT HOUSING  
OF DHAKA**

**INTRODUCTION**

**GOVERNMENT HOUSING AT DHAKA CITY**

**TRANSFORMATION FROM BUNGALOWS TO FLATS TO MEET THE  
CHANGING NEEDS**

**MAIN INSTITUTIONS AND THEIR RESPONSIBILITIES IN PUBLIC HOUSING  
PROVISION AND FUNDING**

**HOUSING BY PUBLIC WORK DEPARTMENT**

**HOUSING BY NATIONAL HOUSING AUTHORITY**

**REFERENCES**

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# CHAPTER FOUR

## OPEN SPACE SCENARIO IN GOVERNMENT HOUSING OF DHAKA

### 4.1 INTRODUCTION

The government is the single largest provider of built up housing in Bangladesh mainly in the form of accommodation for its employees. The concept of housing as blocks of flats was first initiated by the government. Till the arrival at the scene of private developers, the only effort at large scale housing production was from the government. Although the number of units provided is far less than the number of employees, government housing continues to be a strong influence on urban housing in general. The trends established by government housing are followed by other semi-government agencies and to a large extent by private developers. Though the designs and consequent detailing varied considerably, yet a prototype of four-storied yellow colored two flat type dwelling could be recognizable. Government housing can therefore be said to be representational of urban housing in general (Rashid, 2001).

### 4.2 GOVERNMENT HOUSING AT DHAKA CITY

One of the distinct functional parts of an urban center is its residential area, which occupies a large portion of its urban land. Residential land use represents the largest single class of privately utilized urban land in most cities.

Housing could be generally termed as a habitable shelter but its meaning stretches far from merely a shelter. It is the total living environment including dwelling units, land, the neighborhood services and utilities needed for the well being of its inhabitants. Housing is one of the basic beings, which provides security, and sense of belonging to the owner. The pre-requisite for health and comfort is proper housing.

Bangladesh, like many other developing countries face an acute shortage of affordable housing both in the urban and rural areas. The housing shortage was estimated in 1991 to be 3.10 million units out of which 2.15 million units in rural areas and 0.95 million units in urban areas. The shortage was projected to be 5.0 million by the end of the year 2000 (Source: National Housing Authority, 2006).

For Dhaka city residence occupies 60 percent of its land area (Nazrul, 1992). Through

the proportion of private lands for residence is higher than public lands for Dhaka city, its public land also occupy a significant part. The middle income-group combined represents approx.28 percent of the city population but cover nearly 65 percent of the residential land. Density in these areas may range from 50-400 persons/acre. This wide range is reflection of the significant variation within the group. There is also a high disparity of income between different income levels of the middle class. Urban middle class became a dominant power towards the end of colonial period. After the independence this dominance lead to the planning of housing that catered only to their need.

#### **4.3 TRANSFORMATION FROM BUNGALOWS TO FLATS TO MEET THE CHANGING NEEDS**

The colonial public housing units mostly built for high officials were single-family bungalows on generous lots complete with gardens, patios, servants' quarters and even service stairs and service lanes. The post-colonial fifties witnessed a change. Copies of colonial models but on smaller lots and multi-storey walk-up flats were promoted as the 'modern' and 'optimal' solution.

Changed circumstances brought about many changes in the housing design. During the Pakistan period, open verandas were in vogue as it provided comfort in hot humid climate. With lowering of accommodation sizes, large verandas had to be sacrificed. With time, various types of built forms have evolved in the field of public housing. The earliest and most popular one is rectangular with a central staircase as in most government officers' and employees' colonies.

Housing activity is changing with the basic change in construction system, availability of building materials and their usage along with formulation of government Policy. Efforts are directed towards lowering cost incorporating traditional materials and producing structures, which are relatively permanent, familiar and easy to maintain and repair. Due to reasons of security, grilled or windowed verandas attracted greater attention in Bangladesh period.

#### **4.4 MAIN INSTITUTIONS AND THEIR RESPECTIVE RESPONSIBILITIES IN THE PUBLIC HOUSING PROVISION AND FUNDING:**

In the public sector most activities related to housing are carried out on behalf of the Government by the Ministry of Housing and Public Works and different departments / directorates under it namely Department of Architecture, Public Works Department (PWD), Housing & Settlement Directorate (HSD), City Development Authority namely, Rajdhani Unnayan Kartripakkhya (RAJUK), Urban Development Directorate (UDD) etc.

The responsibilities of different Departments/ Directorates involved in the public housing provision under the Ministry of Housing and Public Works are stated below.

1. **The Department of Architecture** is the lone government architectural organization and responsible for designing all government buildings and public housing schemes across the country.
2. **The Public Works Department (PWD)** is concerned with the construction and maintenance of govt. offices/ institutional building and public housing for the government employees. Previously this body also carried out design and drawings. Presently with the formation of the Department of Architecture its role is limited to construction.
3. **Housing and settlement Directorate (HSD)** is vested with the responsibility of building houses for general public especially for low and lower middle income housing in the country. HSD has been involved in the provision of serviced plots, core houses, semi-pucca houses, flats, and slum upgrading schemes.
4. **The City Development Authority, RAJUK** is responsible for physical plan preparation, land acquisition, land development, distribution of plots, regulation and control on private development and building permission as well as slum clearance and rehabilitation.
5. **The Urban Development Directorate (UDD)** limits its role only to the urban and regional planning policy and plan preparation.
6. **The Ministry of Finance** is responsible for funding the public housing. Therefore supplies finance for house building activities.
7. **House Building Finance Corporation (HBFC)** gives mortgage lending for housing construction to the people.

There are different agencies that are responsible for regulation and control over the design and construction of housing its location, necessary infrastructure, services and social facilities essential for housing areas. There are also other institutions for the distribution of housing and planning in Dhaka city.

8. **National Economic Council (NEC)** is for policy and programme and overall decisions.
9. **Planning Commission** is responsible for policy and programme review.
10. **Water Supply and Sewerage Authorities** are responsible for water, sewerage and drainage.
11. **Titas Gas** is responsible for gas supply.
12. **Dhaka City Corporation (DCC)** is for maintenance of urban services, slum improvement implementation.
13. **Housing and Building Research Institute** is responsible for research and development on building and materials

Although there are so many agencies involved in the housing activities the scope of their services remain limited. Because of the lack of funds and effective housing policy these agencies that are concerned with Mass housing are of benefit only government servants and relatively rich upper income groups.

During the British Era bungalows used to be built for high officials and barracks for employees. In 1947 after the partition of India there arose an immense problem regarding the accommodation of govt. servants who had migrated from India. For the employees of the Central Government, the Pakistan Public Works Department established Motijheel colony in Dhaka and Agrabad Colony in Chittagong. The Provincial Government set up Azimpur Colony and Eskaton Garden Governmental Housing for government officers in Dhaka city. At present altogether 11,678 dwelling units under the jurisdiction of the Ministry of Housing and Public Works are already in existence for about one hundred fifteen thousand government officers and employees in Dhaka City (Afroza, 1997).

#### **4.5 HOUSING BY PUBLIC WORK DEPARTMENT (PWD):**

Most of the housing were created for government servants and also for employees of different organizations during the early fifties and afterwards. These housing areas comprises walk-up apartment and all of these units are proto-type and the only

variation is its limited area in square feet. Almost in every Government residential area buildings are not densely built; so underutilization of land is a common picture. A description on Government residential areas of Dhaka city constructed by PWD is given here (Nahar, 1996):

- i. **Azimpur Government staff housing:** This residential area was created for Government officers and employees to ameliorate the housing needs. In total 71.45 acres of lands were used to implement the project.

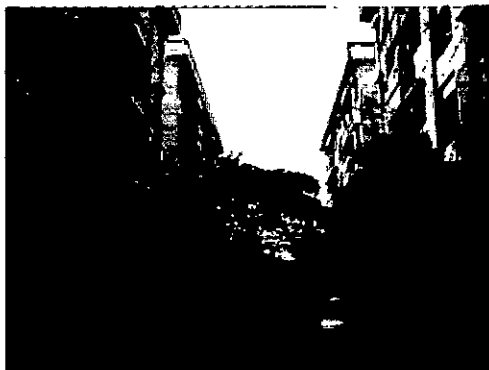


Figure 4.1: Azimpur Government Housing

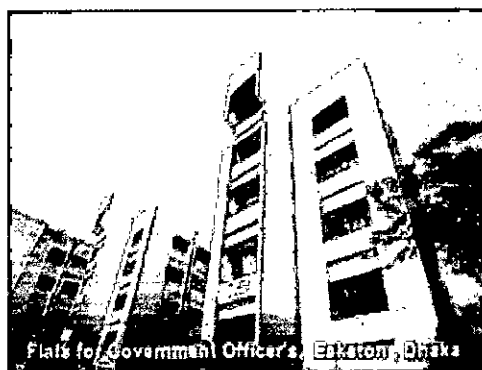
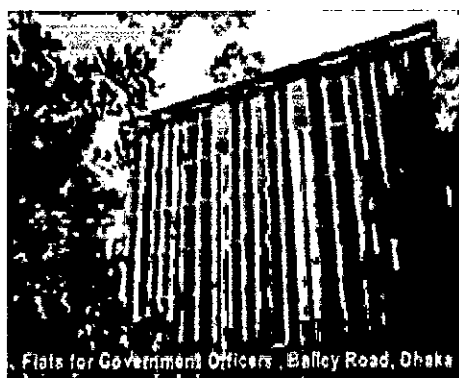


Figure 4.2: Eskaton Officers Housing

- ii. **Zigatola staff housing:** In total 46.50 acres of land were acquired for a Government housing scheme; out of which 21.50 acres were used and 25.47 acres are in illegal possession.
- iii. **Kalabagan and Kathalbagán staff housing:** In total 20.97 acres was acquired for the above purpose and 17.48 acres are in illegal possession.
- iv. **Eskaton officers housing:** These housing areas were developed over 15.45 acres and 1.02 acres of land areas. Flats of different sizes were designed to accommodate Government staff.
- v. **Minto Road Housing scheme:** This is one of the oldest residential area created for high Government officials and Ministers and was developed during the early nineteenth century. This area amounts to 85 acres.
- vi. **Baily square:** During 1977-78, a housing for government officers was developed over 7 acres.

- vii. **Elysium Bhaban:** This high-rise building at Hatkhola road now accommodates Government officials. Amount of land area is 0.65 acre.
- viii. **Motijheel Government staff housing:** It is one of the largest housing schemes. The total land needed to implement this scheme is 79.32 acres.



**Figure 4.3: Baily Dump Officers Housing**



**Figure 4.4: Motijheel Government Housing**

- ix. **Green Road staff housing:** A residential area was developed over an area of 10.42 acres.
- x. **Dhanmondi officers' housing:** Five storied walk-up flats were constructed over an area of 2.93 acres of land for Government officers.
- xi. **Sobahanbagh officers' housing:** During sixties a housing comprising seven buildings was developed over 2.15 acres of land.
- xii. **Rayerbazar staff housing:** This housing scheme was developed during the sixties. There are 156 flats on 10 buildings.
- xiii. **Baily Road officer's hostel:** During the fifties a housing scheme, comprising 41 residential units was created.
- xiv. **Sher-e-Bangla Nagar Govt. housing scheme:** During the sixties with the creation of Sher-e-Bangla Nagar there was an extensive need to accommodate high Govt. officials. Bungalows, hostel and different types of flats were built to serve them.



- xv. Mirpur staff housing: There are 57 buildings with different types of flats built for Government officials over 58 acres of land.
- xvi. Sukrabad staff housing: This housing was designed in 1978. There are in total 15 buildings on 13.47 acres.
- xvii. Taltola staff housing: This housing scheme is located in Taltola, Sher-e-Bangla Nagar. It has 17 six storied buildings.
- xviii. Palasy staff housing: Row type housing is located in this area for Government employees. Some land is lying vacant in this area.
- xix. Circuit House Government Colony: This housing is developed on 3.45 acres.
- xx. NAM Housing at Nakhalpara, Shere-Bangla-Nagar: In 2000 this housing has been constructed on 5.71 acres of land. 7 buildings have total 168 suites for the accommodation of Members of Parliament.

Autonomous organizations in Dhaka city also have their own residential areas. These lands are maintained by the concerned organizations. Large organizations like Power Development Board (PDB), Bangladesh Water Development Board (BWDB), Telephone and Telegraph Board (T& T), Dhaka Water and Sewage Authority (DWASA), University of Dhaka (DU), Bangladesh University of Engineering and Technology (BUET) and other autonomous and semi autonomous organizations have their housing areas either near the concerned organizations or scattered over different places of Dhaka city (Nahar, 1996).

1. Power Development Board (PDB) has its own housing area at Paribagh, which amounts to 1.98 acres of land. This organization also owns 9.00 acres of land at Jatrabari, 0.66 acre at Lalmatia, 2 acres at Mugdapara and 0.69 acre at Dhandmondi for residential purpose (office record of PDB).
2. Bangladesh Water Development Board has its own residential area at Banani, which amounts to 11.15 acres of land and 24.75 acres at Jatrabari for staff

housing. These organizations also possess an abandoned land at Crescent road, which is used for residential purpose (office record of BWDB).

3. Telephone and Telegraph Board has its own housing areas which amount to 2 acres at Azimpur, 10 acres at Motijheel, and 30 acres at Maghbazar (office record of T & T Board).
4. Fuller Road Dhaka University Teachers housing: 12 walkup flat buildings constructed over 6.01 acres for university teachers.
5. BUET Teachers & staff housing: For BUET teachers & staff during 1960s Bakshibazer and Dhakeshari housing were developed on 3.72 and 5.6 acres of land.



Figure 4.5: Bakshi Bazer Housing, BUET



Figure 4.6: Dhakeshari Housing, BUET

6. Dhaka Water and Sewerage Authority have its own residential land at Pallabi. This land amounts to 4.8 acres (office record of DWASA). Bangladesh Railway (BR) also owns 71.85 acres land at Sahjahanpur to accommodate its staff (office record of PWD).

#### **4.6 NATIONAL HOUSING AUTHORITY (NHA):**

The Housing and Settlement Directorate has successfully carried out numerous refugee rehabilitation schemes, low and middle-income housing projects and squatter resettlement projects. It has so far established 34 housing estate throughout the country with all civic and infrastructure facilities. These housing estate consists of

residential and rehabilitation plots, flats, core houses, shops, health centers, schools, mosques, parks, play grounds etc.

List of housing estate established by HSD during 1958-2003 (Source: National Housing Authority, 2006):

1. In 1958, the then government took up refugee rehabilitation schemes primarily in Dhaka, Chittagong, Rajshahi and Khulna considering huge concentration of refugee families in these cities. Three types (Nucleus, flats, service plots) of housing facilities were provided to the various target groups of government employees according to their affordability.
2. Lalmatia Housing Estate: Six storied housing blocks for government staff.
3. Mohammadpur Housing Estate, Dhaka: Six storied housing blocks for government staff & employees.
4. Mirpur Housing Estate: Six storied housing blocks for government staff.
5. Kallayanpur Housing Estate: Six storied housing blocks for government staff.
6. Rupnagar Housing Estate, Mirpur, Dhaka
7. Construction of 500 flats of 1000 sft. for the govt. officers at Mohammadpur and Lalmatia, Dhaka in 1997. These are six-storied housing block for government employees.
8. During 1995-2003 an area of 168.00 acres being developed as multi storied housing block for low and middle-income group people at Sec-9, Mirpur.
9. Construction of 600 flats in section no. 1, 2, 14 & 15 at Mirpur, Dhaka were completed for limited income group of government employees during 1998-99 and 2002-2003. The project implemented on area of 10.00 acres of land.

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CHAPTER: FIVE

**CASE STUDIES: DESCRIPTION & ANALYSIS**

INTRODUCTION

SELECTION CRITERIA OF CASE STUDIES

DESCRIPTION OF CASE STUDIES

CASE STUDY-1

CASE STUDY-2

CASE STUDY-3

CASE STUDY-4

EVALUATIVE CRITERIA FOR ANALYSIS OF CASE STUDIES

RESIDENTS RESPONSE OF STUDY AREAS

COMPARISON OF FOUR HOUSING COMMUNITIES

SUMMARY OF THE FINDINGS

REFERENCES

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## CHAPTER FIVE

### CASE STUDIES: DESCRIPTION & ANALYSIS

#### 5.1 INTRODUCTION

Housing typology has changed gradually but substantially over time, which resulted in clearly distinguishable phases in course of its development. Following broad classification can be made in the context of Dhaka (Habib, 1991).

**Primary Phase:** Most prominent examples of this phase are Azimpur and Motijheel Government Housing Estates, designed by architects E.C.Hicks and R.Mc.Connel in 1950's. Their designs started a whole new era of housing design in this part of the regions. In overall planning and building layouts, two distinct patterns can be traced. One is the linear arrangement of buildings at regular intervals leaving linear open spaces in between and the other is conscious effort for creating enclosed outdoor space with buildings to create a secured and positive outdoor space within the visual control of each dwelling in the block.

**Secondary Phase:** This phase may be termed as experimental and creative stage of housing typology. Staff housing of different University Campus developed during 1960's pioneer the growth of this phase. The buildings designed by S. A. Zahiruddin at Dhakeswari Housing, BUET, Dhaka, indeed created a sophisticated external environment due to sensitive use of form and material.

**Third or Present Phase:** During this phase in public sector housing marked emphasis on space economization through rational planning and design. Government Officers Housing Estates at Baily Road, market the beginning of third phase in public sector housing. This was a pioneering attempt towards architecture- involving both exterior and interior environment.

#### 5.2 SELECTION CRITERIA OF CASE STUDIES:

As government is the single largest provider of built up housing in Bangladesh for its employees and most of the housings were created during the early fifties and afterwards. Case studies have been selected from this period only. All the housings, which have been selected, have been inhabited for more than 10 years with an assumption that the utilization pattern needs time to get established.

1. Size of the neighbourhood: Neighbourhood housings are selected in respect to larger size (Motijheel Government Housing) to medium size (Azimpur Housing) to smaller size (Baily Dump Housing).
2. Age of the neighbourhood: Selection was done one from 50s (Azimpur Housing), one from 60s (Motijheel housing), one from 80s (Baily Dump housing).
3. Density of the neighbourhood: Case studies are selected keeping in mind high density housing area (Motijheel housing) to medium density housing area (Dhakeshari housing) to low density housing area (Azimpur housing).
4. Income Group: All the housing that are selected for case studies are for middle class income group.

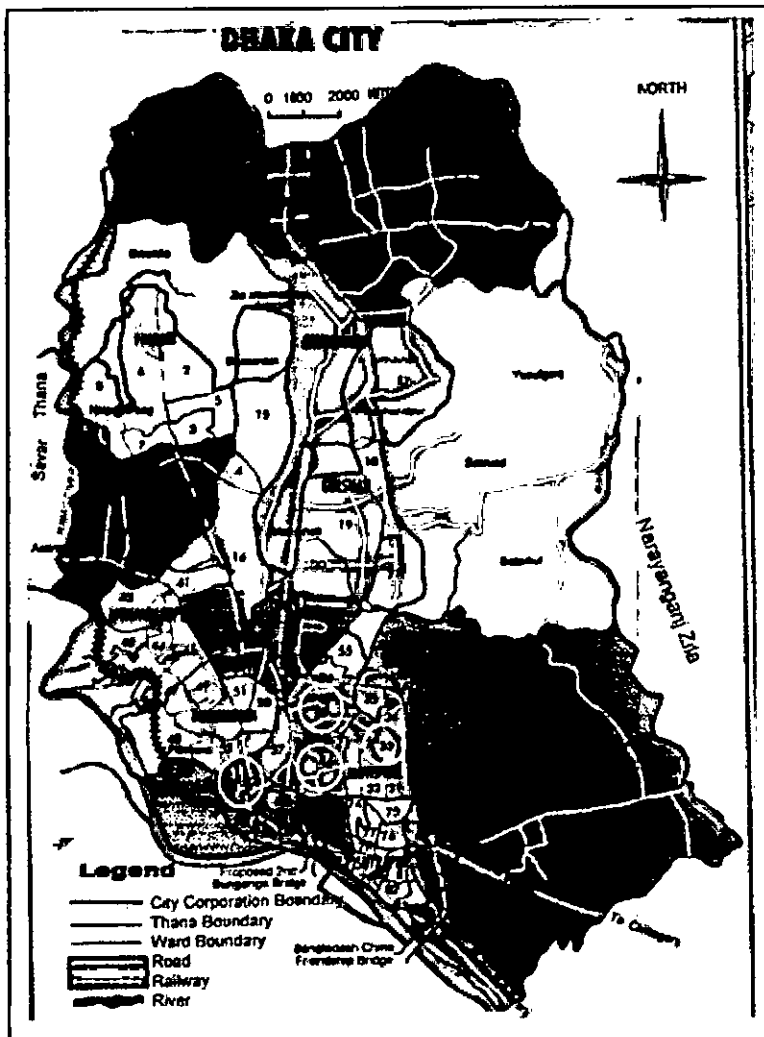


Figure 5.1. Location of study areas in Dhaka city

### 5.3 DESCRIPTION OF CASE STUDIES:

1. **Azimpur Government staff housing:** This residential area was created for Government officers and employees to accommodate the housing needs. In total 85 acres of lands were used to implement the project.

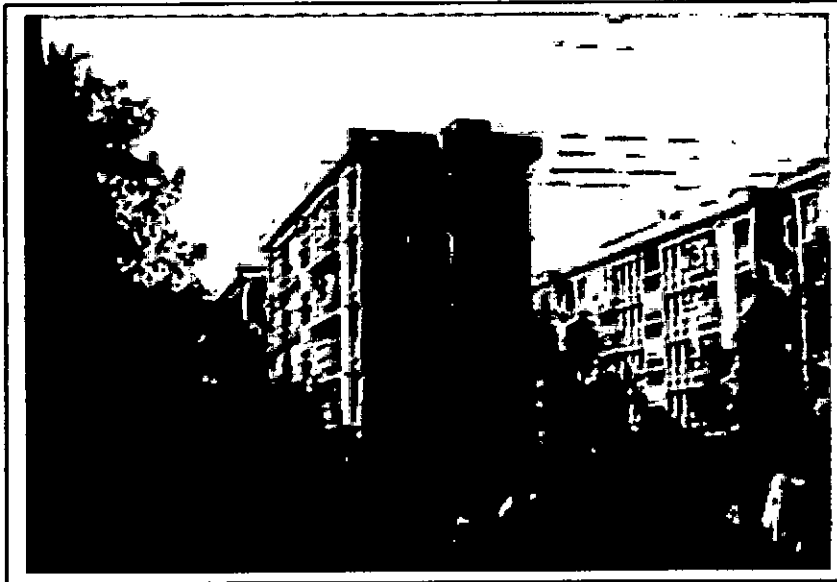


Figure 5.2: Azimpur Government Housing

2. **Motijheel Government staff housing:** It is one of the largest housing schemes. The total land needed to implement this scheme is 57.02 acres. This housing is divided into three sub-zones:

A) Medical Zone, B) Ideal Zone and C) Al-Helal Zone



Figure 5.3: Motijheel Government Housing



3. Dhakeshari staff housing: Row type housing is located in Engineering University Residential area for Government employees.



Figure 5.4: Dhakeshari Staff Housing

4. Baily Dump Housing: During 1977-78, a housing was developed over 7 acres for the government employees at Baily road.



Figure 5.5: Baily Dump Housing

### 5.4.1 CASE STUDY-1

## AZIMPUR GOVERNMENT HOUSING

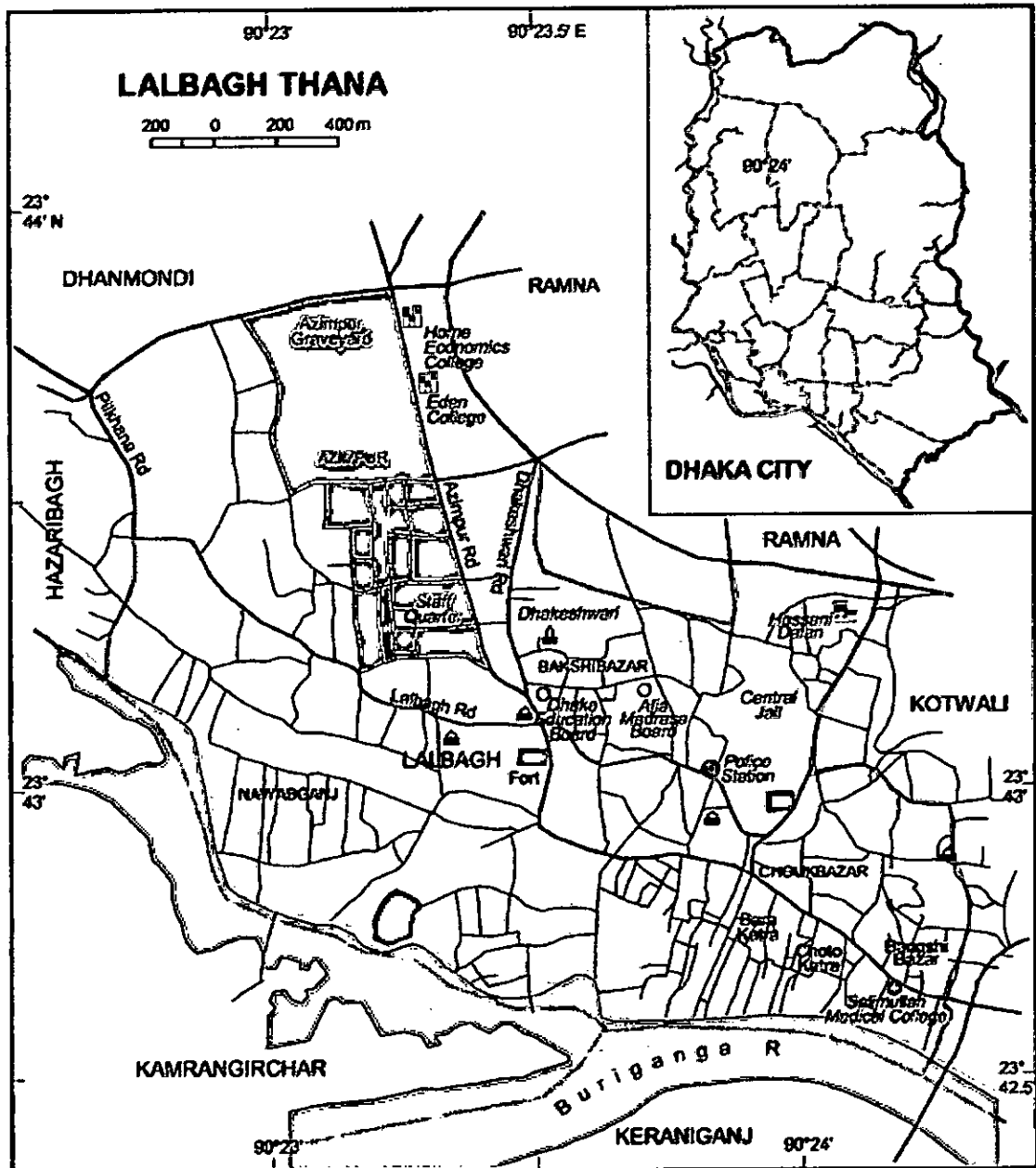


Figure 5.6: Location of Azimpur Government Housing in Lalbagh Thana



Location: Azimpur  
Thana: Lalbagh  
Ward: 62  
Client: Public Work  
Division (PWD)

### **AZIMPUR GOVERNMENT HOUSING**

Designer: Architects E.C.Hicks and R.Mc.Connel in 1950's.

Major Roads around the housing: Azimpur road, New-market Road,  
Pilkhana road.

Housing Typology: Low-rise medium density

Economic Type: Middle Income Group

Total Area of Azimpur Government Housing: 85.00 acres

(82.93 acres excluding zone E, area left for future construction)

Building coverage: 852336sq. ft.= 19.73 acre

Built up area: 23%

Open space: 77%

Total no. of Building:149

Total no. of Flat: 1842

Density: 1842 flat/ 82.93 acre=22 flat/ acre

**PHYSICAL CHARACTERISTICS OF THE HOUSING:** Within the boundaries of Dhaka, Azimpur Governmental housing is the first government multi-stored walk-up residential flats housing project for the govt. servants. During the 1950s the then Provincial Government established this residential flat scheme consisting of 3 storied building units suitable for 6 families based on a typology consisting of two flats/floor and a staircase in between had been arranged in a cluster having an open space in the middle. 240 residential flats ranging from 1531 sq ft to 1741 sq ft (E & F type flats) were designed for the middle and higher-middle income government officers on 46

acres of land. In view of the ever increasing demand for government housing these buildings have been extended into 4 storied during the 1970s. This low density governmental housing consist of community center, playgrounds, girls' school and 3 ponds built on  $(46.00+1.00+2.82) = 49.82$  acres of land bounded by Government New Market, Pilkhana Road and Azimpur road. At the same time D-type. Flat ranging from 950 sq ft to 1037 sq ft and C-type ranging from 650 sq ft to 850 sq ft have been built for middle & lower-middle income government servants on 23.64 acres of land stretching eastward from Pilkhana Road up to Sir Salimullah Muslim Orphanage. Simultaneously 800 sq ft. C-type flats were built on 4.08 acres of land beside Palashee Maternity Centre to the east of Azimpur Road and a government housing known as Palashee Barracks were built on 5.39 acres of land.

This government housing scheme set up on 85.00 acres of land surrounded by a main shopping center at a walking distance, Cinema hall, Eden Girls' college, Home Economics College, Engineering University, graveyard and health center etc.

Within this housing there is one ladies club, one community center, four playgrounds, two ponds, one elementary school (Little Angle school), one primary school (Agrani ladies school), one secondary school (Azimpur higher secondary girls school), two mosques, one child care center and an orphanage (Sir Salimullah Muslim Orphanage).

Zone	Total Area	No of Buildings	Total no. of Buildings	No of Flats	Density flat/acre	Total no. of Flats
A	23.64	55	149	810	34	1842
B	4.08	10		164	40	
C	2.82	06		124	44	
D	46.00	53		484	11	
E	2.07	Vacant land		Vacant land	---	
F	5.39	20		220	41	
G	1.00	05		40	40	

Table 5.1: Building statistics of Azimpur Government Housing (source: Author, Field survey)

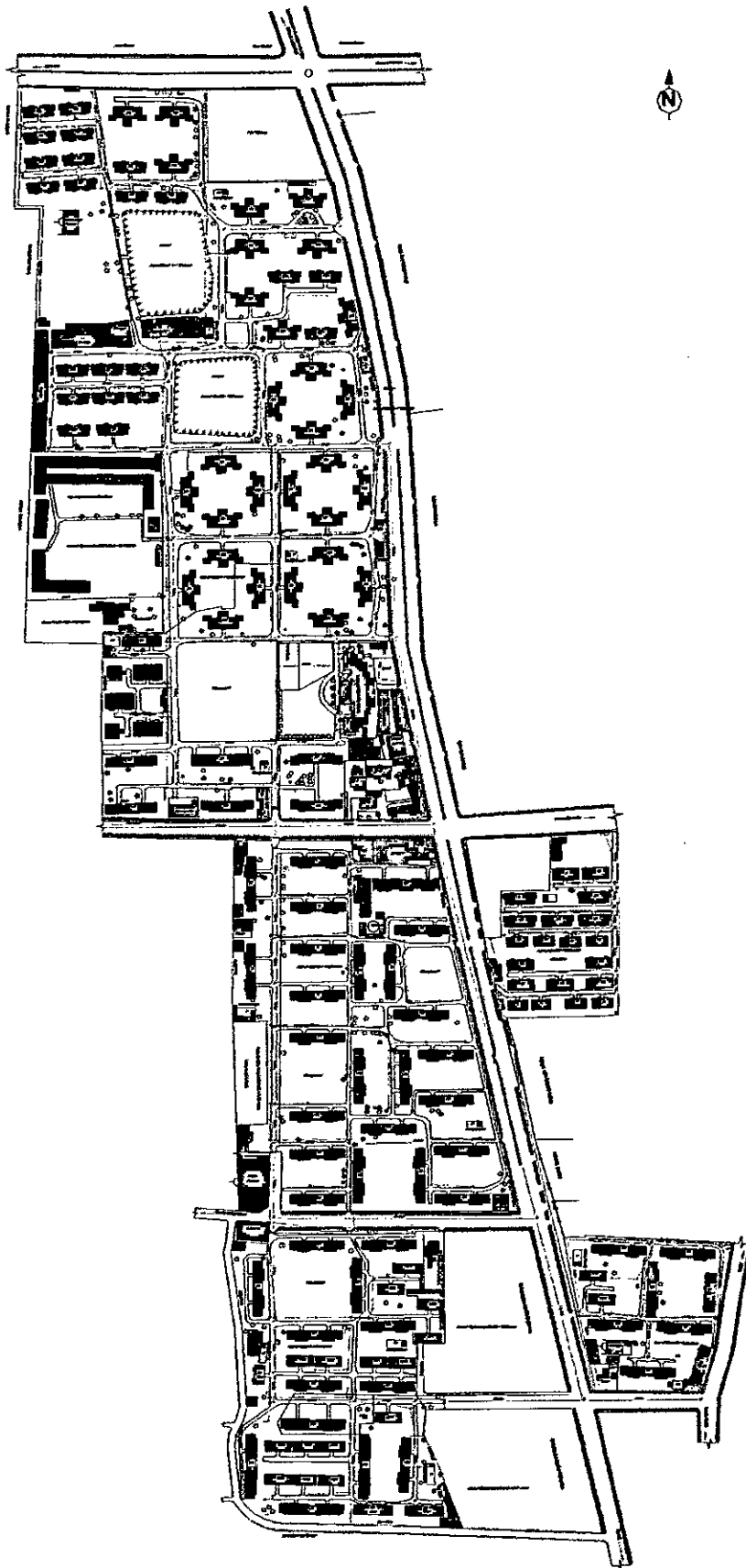


Figure 5.7: Master Plan of Azimpur Government Housing

**CONSTRUCTION PHASES OF AZIMPUR HOUSING:** During 50s government made 3-storied building appropriate for six family members for government officers and employees. During 70s these buildings were renovated to four-storied housing unit. For Government Officers E type flat (1531-1741 sq. ft.) were constructed on 46.00 acres area between New-market and Azimpur road. At the same time for Government Staff/Employees C type flat (650-810 sq. ft.) and D types flat (950-1037 sq. ft.) on 23.64 acres area from Pilkhana road to east of Sir Salimullah Muslim Orphanage, C type flat (800 sq. ft.) on 4.08 acres area beside Palashee Matree Shadan Kendra and Palashee Barrack on 5.39 acres area were constructed. During 90s to fulfill the growing need of housing 5-storied building of 1000 sq. ft flat for 10 family members were again constructed on unused area of 46.00 acres land. The pond next to playfield at the south of this area was refilled to construct three 5-storied 1250 sq. ft. flat and two 1500 sq. ft. flat for Officers of Law Department.

During the 1998's the present government has taken a decision of demolishing old existing housing blocks in order to improve housing environment and construct new houses. The Department of Architecture is responsible for redesigning and planning the existing master plan of Azimpur Governmental Housing Area. In the master plan the entire housing area has been marked as regions A, B, C, D, E, F and G according to location and use. These regions measure respectively, 23.64, 4.08, 2.82, 46.00, 2.07, 5.39 and 1.00 acres totaling 85 acres.

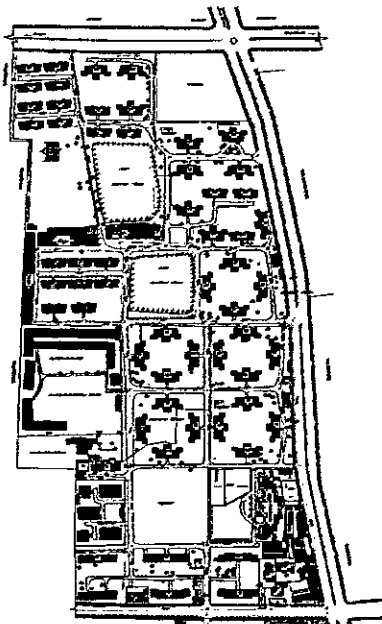


Figure 5.8: Plan of zone D, C & G

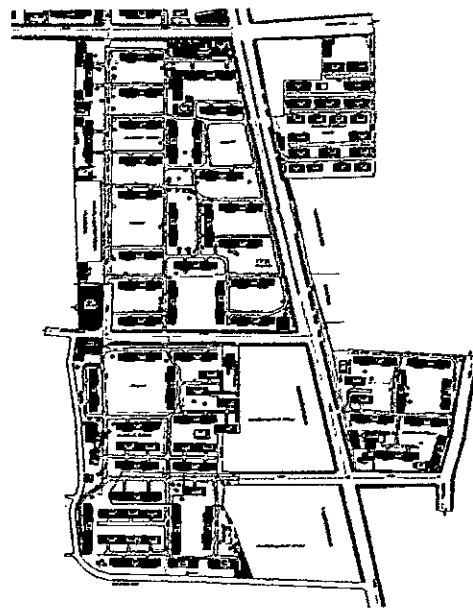


Figure 5.9: Plan of zone A, B & F

## ZONE A

**PHYSICAL CHARACTERISTICS:** This area is bounded by Pilkhana Road, Azimpur Road and stretching up to Sir Salimullah Muslim Orphanage, measures 23.64 acres. This area has four storied 37 no. of building blocks constructed during 1952-54 which have been marked for demolition, five storied 15 building blocks constructed during 1984-85 and six storied 3 building blocks constructed during 1994-95. Total nos. of flats in Old (600) and New (210) buildings are 810. All the housing blocks have been placed linearly in the whole area creating chunk of open spaces between the blocks. Within this zone there are three playgrounds, one play field, one elementary school named Little Angels School, one mosque and an orphanage named Sir Salimullah Muslim orphanage.

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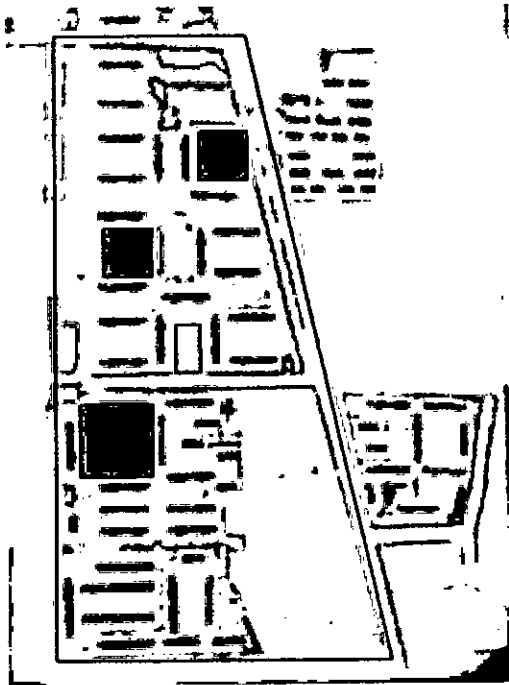


Figure 5.10: Site area showing zone A



Figure 5.11: Buildings in zone A

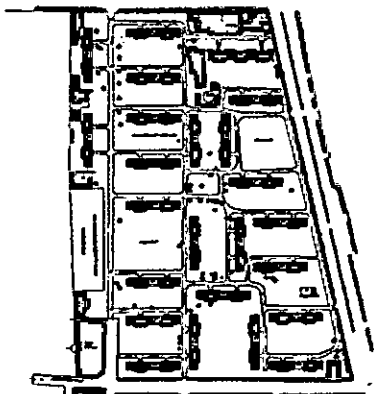


Figure 5.12: North side of zone A

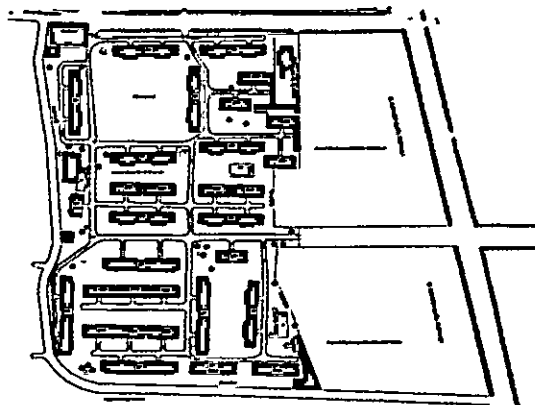


Figure 5.13: South side of zone A

ACCESS TO HOUSING: Access is from Azimpur road and Pilkhana road.

AREA: 23.64 acres (PWD office record)

Housing Building Coverage 152700 sq. ft.=3.54 acres

Building coverage of school, mosque and other buildings: 0.91 acre

Total building coverage = 4.45 acres

Area of Little Angle School: 0.55 acre

Area of S. S. M. orphanage: 2.92 acres

Area of Mosque: 0.36 acre

Area of playground 1: 0.67 acre

Area of playground 2: 0.47 acre

Area of playground 3: 0.33 acre

Area of play field 1: 0.35 acre

No. of Gates: 8

Building No.	Construction Period	Flat Area/ Type of flat	No. of Stories	No. of Flat/floor	No. of Flat/building	No. of Building	No. of flats in Old Buildings	No. of flats in New buildings
1-32	1952-54	800 sq. ft. D type	4	4	16	32	512	
39- 42	1952-54	1000sq. ft. D type	4	4	16	4	64	
54	1952-54	800 sq. ft. D type	4	6	24	1	24	
28(new)	1984-85	550 sq. ft. B type	6	2	12	1		12
40(new), 32(new)	1984-85	550 sq. ft. B type	6	4	24	2		48
26/1,26/2,29/1,2 9/2,30/1,30/2,31 /1,31/2,39/1,41/ 1,41/2,41/3,42/1 ,42/2,42/3	1984-85	800 sq. ft. C type	5	2	10	15		150

Table 5.2: Flat statistics of Zone A (source: Azimpur division, PWD)



**CIRCULATION:** Road network has been designed following gridiron pattern. There is one primary and three secondary thoroughfares from Azimpur road and one primary thoroughfare from Pilkhana road. No separate walkway for pedestrian. All the buildings have north-south orientation for light, air and ventilation.

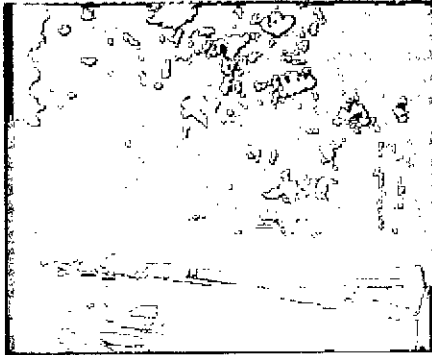


Figure 5.14: 15' road for vehicles & pedestrians

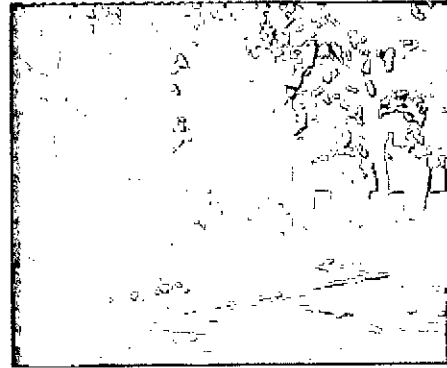


Figure 5.15: Unutilized corner space

**OPEN SPACES:** Hierarchy of open spaces is present in this residential neighbourhood. There are three large playgrounds, one playfield and small green areas within building gaps in this zone. No designed play lots for children with recreational equipments and other facilities. Private open spaces allotted for all ground floor residents. Some of these spaces are being used as dumping grounds for lack of proper maintenance. Community facilities include a mosque and a school.

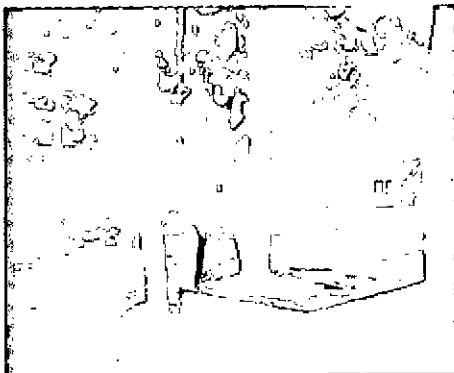


Figure 5.16: Seating designed with landscaping

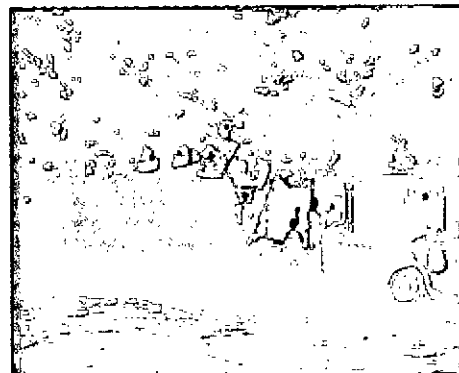


Figure 5.17: Entry controlled by guard

**PARKING & GARAGES:** Garages for parking are inadequate. Therefore cars are parked occupying space in front of the building.

**PLANTATION/VEGETATION:** Lots of plantation along the periphery and inside the housing area.

**LIGHTING CONDITION:** The distribution of street lightings is irregular and inadequate.

**SECURITY:** Security of this housing is hampered due to large number of gates. Out

of eight gates only two have controlled access.

Area	Area (acre)	%	Area (acre)	%
Building coverage of housing	3.54	15	4.45	18.8
Building coverage of other buildings	0.91	3.8		
Paved open space	4.2	17.8	19.19	81.2
Usable green space (playfields, playgrounds, lawns etc.)	5.5	23.4		
Unutilized green space	9.49	40		
<b>Total area of Zone A</b>	<b>23.64</b>			

Table 5.3: Area statistics of different spaces of zone A. (Source: author, Field survey)

## ZONE B

**PHYSICAL CHARACTERISTICS:** This area is located to the east of Azimpur Road and adjacent to Palashee Maternity Centre, measures 4.08 acres. This area has four storied 6 building blocks constructed during 1952-54, which have been proposed to be demolished., six storied 2 building blocks constructed during 1984-85 and five storied 2 building blocks constructed during 1994-95. Total number of flats in old (96) and new (68) buildings is 164 flats. With in the housing there is one small play field and a mosque.

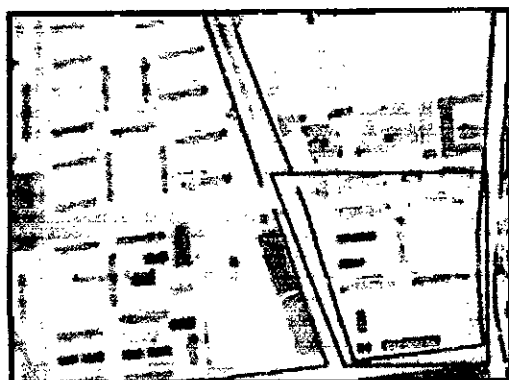


Figure 5.18: Location of zone B in the site

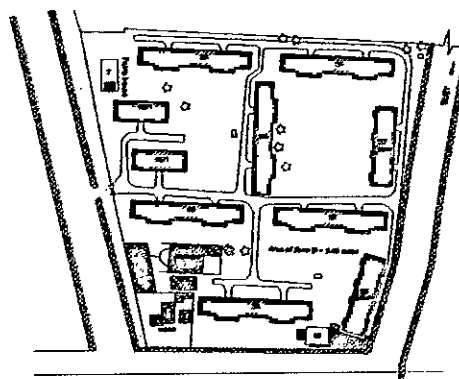


Figure 5.19: Plan showing housing of zone B

**ACCESS TO HOUSING:** Access to this zone is from Azimpur road.

**AREA:** 4.08 acres (PWD office record)

**Building Coverage:** 45840 sq. ft.=1.06 acre

**Area of playfield:** 0.31acre

**No. of Gates:** 1

Building No.	Construction Period	Flat Area/ Type of flat	No. of Stories	No. of Flat/ floor	No. of Flat/ building	No. of Building	No. of flats in Old Buildings	No. of flats in New buildings
33-38	1952-54	800 sq. ft. D type	4	4	16	6	96	
37(new), 38(new)	1984-85	550sq. ft. B type	6	4	24	2		48
33/1, 36/1	1994-95	800 sq. ft. C type	5	2	10	2		20

Table 5.4: Flat statistics of Zone B (source: Azimpur division, PWD)

**CIRCULATION:** There is one primary thoroughfare from Azimpur road. 12' peripheral road running all through the west and north side of this zone. Internal road network has been designed following gridiron pattern. Separation between pedestrians and vehicles is absent. In this area courtyard type open space have been created by placement of building blocks.

**OPEN SPACES:** In this area courtyard type open spaces have been created by placement of building blocks. Within this zone there is one playfield and two small green areas that is used for recreational activities. No designed play lots for children with playing equipments. Community facilities include only a mosque.



Figure 5.20: Play field in zone B

**PARKING & GARAGES:** No garages have been provided in this zone. Cars are parked on the road at the front side of the buildings.

**PLANTATION/VEGETATION:** Scattered plantation inside the open space of the housing area.

**LIGHTING CONDITION:** Adequate street lighting has been provided in this zone.

**SECURITY:** Access is controlled by the guard at the entry gate.

Area	Area (acre)	%	Area (acre)	%
Building coverage of housing	1.06	26	1.06	26
Building coverage of other buildings	X	X		
Paved open space	0.49	12	3.02	74
Usable green space (playfields, playgrounds, lawns etc.)	0.69	17		
Unutilized green space	1.84	45		
<b>Total area of Zone B</b>	<b>4.08</b>			

Table 5.5: Area statistics of different spaces of zone B. (Source: author, Field survey)

### ZONE C

**PHYSICAL CHARACTERISTICS:** This area is located to north east of Pilkhana Road and measures 2.82 acres. This area has four storied 6 building blocks constructed during 1952-54, which are to be demolished. Total no of flats in this area is 124. There is one child day care center in this zone.

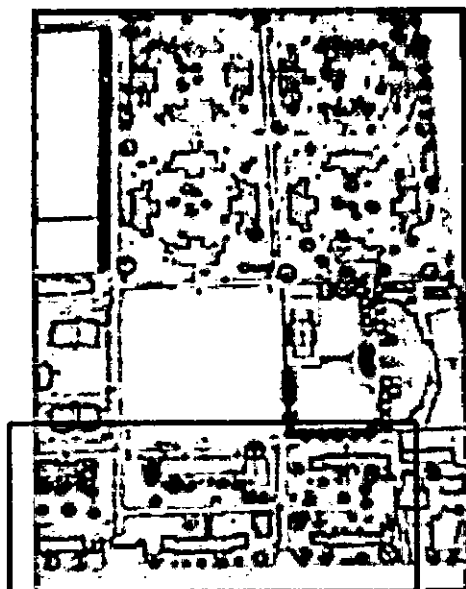


Figure 5.21: Site area showing zone C

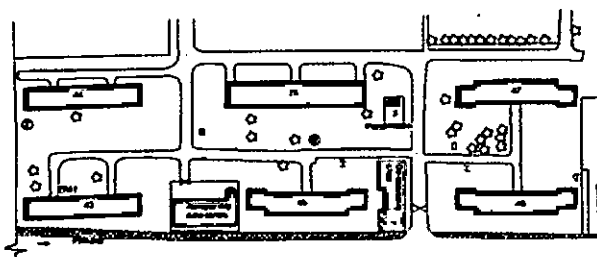


Figure 5.22: Plan showing housing of zone C

**ACCESS TO HOUSING:** Access to this zone is from Pilkhana road.

AREA: 2.82 acres (PWD office record)

Housing Building Coverage: 19040 sq. ft.= 0.44 acre

Building coverage of Childcare center: 0.06 acre

Total building coverage = 0.5 acres

Area of Child-care center: 0.06 acre

No. of Gates: 1

Building No.	Construction Period	Flat Area/ Type of flat	No. of Stories	No. of Flat/ floor	No. of Flat/ building	No. of Building	No. of flats in Old Buildings	No. of flats in New buildings
43,44	1952-54	880sq. ft. D type	4	4	16	2	32	
45,46,47	1952-54	500 sq. ft. B type	4	6	24	3	72	
75	1952-54	600 sq. ft. C type	4	5	20	1	20	

Table 5.6: Flat statistics of Zone C (source: Azimpur division, PWD)

**CIRCULATION:** There is one primary thoroughfare from Pilkhana road. Road network has been designed following gridiron pattern. Two secondary collector roads running parallel to the north and south side of the buildings. All the housing blocks have been placed linearly keeping 80 ft. wide-open spaces between the blocks in this area. No separate walkway for pedestrian.

**OPEN SPACES:** Except the open space between buildings; there is no designed open space, play lots, play fields and playgrounds in this zone. Community facilities include one child day care center situated within this area.

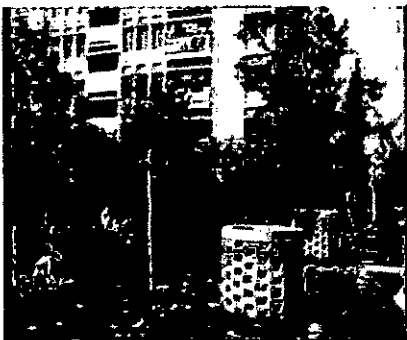


Figure 5.23: Green space between buildings



Figure 5.24: Primary road leading to zone C

**PARKING & GARAGES:** No garages been provided for parking. Cars are parked on front road of the buildings.

**PLANTATION/VEGETATION:** Lots of plantation along the periphery and in front yard of buildings.

**LIGHTING CONDITION:** Street lightings are adequate and properly maintained.

**SECURITY:** Entry point is controlled by guard all the time.

Area	Area (acre)	%	Area (acre)	%
Building coverage of housing	0.44	15.6	0.5	17.7
Building coverage of other buildings	0.06	2.1		
Paved open space	0.56	19.8	2.32	82.3
Usable green space (playfields, playgrounds, lawns etc.)	0.67	23.8		
Unutilized green space	1.09	38.7		
Total area of Zone C	2.82			

Table 5.7: Area statistics of different spaces of zone C. (Source: author, Field survey)

## **ZONE D**

**PHYSICAL CHARACTERISTICS:** This area is bounded by New Market Road, Pilkhana Road and Azimpur Road and measures 46.00 acres. This area has four storied 30 building blocks constructed during 1952-54, six storied 1 building blocks constructed during 1984-85 and five storied 22 building blocks constructed during 1994-95. Total nos. of flats in Old (240) and New (244) buildings are 484. In the region D, out of the 46 acres of land, 11 acres being excluded for accommodating community facilities, playground, mazar, pump house and mosque etc and 35 acres being directly used for housing.

**ACCESS TO HOUSING:** Access to this zone is from Azimpur road and from Pilkhana road.

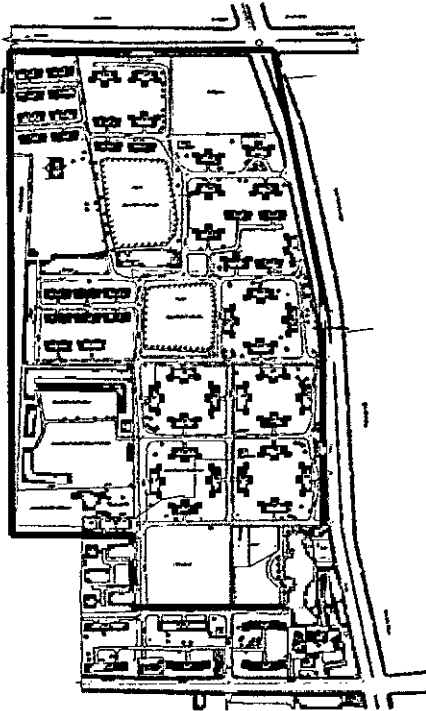


Figure 5.25: Plan showing housing of Zone D



Figure 5.26: New Building in zone D

AREA: 46.00 acres (PWD office record)

Housing Building Coverage: 242720 sq. ft. = 5.62 acre

Building coverage of school, mosque, club, community center and other buildings:  
0.91 acre

Total building coverage = 12.78 acres

Area of pond 1: 1.29 acres

Area of pond 2: 1.00 acres

Area of playground: 1.45 acres

Area of play field: 0.17 acre

Area of community center: 1.43 acres

Area of Agrani school: 3.16 acres

Area of Ladies club: 0.88 acre

Area of Mosque: 1.25 acre

Area of Mazar: 0.13 acre

Area of WASA pump house: 0.31 acre

No of Gates: 4

Building No.	Construction Period	Flat Area/ Type of flat	No. of Stories	No. of Flat/ floor	No. of Flat/ building	No. of Building	No. of flats in Old Buildings	No. of flats in New buildings
48-73,76-79	1952-54	1531/1741 sq. ft. E type	4	2	8	30	240	
54(new)	1984-85	800 sq. ft. C type	6	4	24	1		24
68/1,69/1,70/1, 80-98	1995- 2000	1000sq. ft. D type	5	2	10	22		220

Table 5.8: Flat statistics of Zone D (source: Azimpur division, PWD)

**CIRCULATION:** There are three primary thoroughfares from Azimpur road and one primary thoroughfare from Pilkhana road. Road network has been designed following gridiron pattern. No separate walkway for pedestrian. Courtyard type planning; keeping open space in the middle where old housing blocks have been placed and linear planning of buildings in the area where recent buildings have been placed can be visualized in this zone.



Figure 5.27: 20' wide collector road



Figure 5.28: 12' wide access road for the residents

**OPEN SPACES:** Within this zone there is one playground, one playfield, a large green open area in front of mosque and small green areas that is used for recreational activities. There are two ponds within this housing. No designed play lots for children with playing equipments. Ground floor users maintain private open spaces properly. In cluster of 4 buildings having an open space in the middle; two buildings had been arranged with wrong orientation facing east west in each cluster. Due to the



characteristics of the local hot-humid climate those buildings remain hot in summer and cold in winter leaving an uncomfortable living in the flat. Repetition of standardized flat building in the layout depicting symmetry or convenience ignores the aspect of energy- efficiency and proper orientation. The open space in the middle of the cluster has been unutilized and not properly maintained. The discussed open space has become breeding area for mosquitoes. If well designed and maintained, the open space helps to improve the living environment. Community facilities include one community center, one Party House mosque, one secondary school (Agrani girls school and college), one ladies club and Mazar of Hazrat Ibrahim Adam.



Figure 5.29: Playground at east of community center



Figure 5.30: Green court with in old blocks



Figure 5. 31: Pond at the northeast side of zone D



Figure 5.32: Green area in front of mosque.

**PARKING & GARAGES:** Garages for parking are inadequate. Garages have been provided along the east and west periphery of this zone.

**PLANTATION/VEGETATION:** Lots of plantation along the periphery and inside the housing area helps to keep the environment cool.

**LIGHTING CONDITION:** The distribution of street lightings is irregular and inadequate.

**SECURITY:** All four gates are unguarded most of the time.

Area	Area (acre)	%	Area (acre)	%
Building coverage of housing	5.62	12.2	12.78	27.8
Building coverage of other buildings	7.16	15.6		
Paved open space	2.92	6.2	33.22	72.2
Usable green space (playfields, playgrounds, lawns etc.)	3.92	9		
Unutilized green space	26.38	57		
Total area of Zone D	46			

Table 5.9: Area statistics of different spaces of zone D. (Source: author, Field survey)

### ZONE E

Area: 2.07 acres

This land is kept for future development of Azimpur housing.

This area is located to the east of Azimpur Road, and on other side of Sir Salimullah Muslim Orphanage and to the south of region B and measures 2.07 acres. In 1990s a site plan was prepared for 5-story buildings with 600sqft flats under the 3000 flats scheme but its construction has not been started. At present there are special semi-pucca houses for PWD employees on that land.

### ZONE F

**PHYSICAL CHARACTERISTICS:** This area is known as Palashee Barracks because Barrack type housing had been built during British Period. Under the 3000 flats program, by demolishing Barrack housing, 5 storied flats of different categories for the Government servants were built on 5.39 acres of land in 1995. This zone is at the south side of Eden Girls Hostel. This area has six storied 10 building blocks constructed during 1993-94 and five storied 10 building blocks constructed during 1997-2000.

**ACCESS TO HOUSING:** Access to this zone is from Azimpur road and Eden college road.

**AREA:** 5.39 acres (PWD office record)

**Building Coverage:** 30400 sq. ft. = 0.70 acre

**No. of Gates:** 2

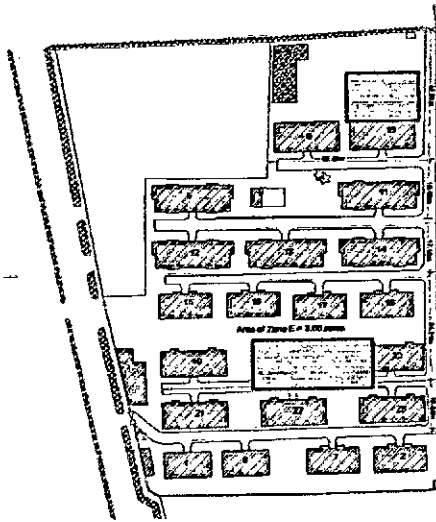


Figure 5.33: Plan showing housing of Zone F

Building No.	Construction Period	Flat Area/ Type of flat	No. of Stories	No. of Flat/ floor	No. of Flat/ building	No. of Building	No. of flats in Old Buildings	No. of flats in New buildings
Palashee 1,8	1993-94	500 sq. ft. A type	6	2	12	2		24
Palashee 2,7,15-18	1993-94	600 sq. ft. B type	6	2	12	6		72
Palashee 9,10	1993-94	800sq. ft. C type	6	2	12	2		24
Palashee 11-14	1997-98	1000sq. ft. D type	5	2	10	4		40
Palashee 19-23	1998-99	800 sq. ft. C type	5	2	10	5		50
Palashee 5	1999-2000	1000sq. ft. D type	5	2	10	1		10

Table 5.10: Flat statistics of Zone F (source: Azimpur division, PWD)

**CIRCULATION:** There is one primary thoroughfare from Azimpur road and one from Eden college road. This road runs all along the western periphery of this zone. Four secondary orthogonal roads lead to the dwellings. All the housing blocks have

been placed linearly having north-south orientation and leaving 30' wide spaces between the blocks.

**OPEN SPACES:** In this zone there are no open areas provided for recreational activities of the residents. Two small areas have been left open which serve as play area within this housing. Also no community facilities been provided.

**PARKING & GARAGES:** No garage facilities for parking have been provided.

**PLANTATION/VEGETATION:** Plantation is scattered within the area.

**LIGHTING CONDITION:** The distribution of street lightings is irregular and most of them are non-functional. Due to poor lighting system the safety and security of the household is hampered at night.

**SECURITY:** Both the entry gates have no controlled access.

Area	Area (acre)	%	Area (acre)	%
Building coverage of housing	0.7	13	0.7	13
Building coverage of other buildings	X	X		
Paved open space	0.52	9.6	4.69	87
Usable green space (playfields, playgrounds, lawns etc.)	0.45	8.4		
Unutilized green space	3.72	69		
Total area of Zone F	5.39			

Table 5.11: Area statistics of different spaces of zone F. (Source: Author, Field survey)

## **ZONE G**

**PHYSICAL CHARACTERISTICS:** This area has five-storied 3 building blocks constructed during 1996-98 and five storied 2 building blocks constructed during 1999-2000. There was a pond in this area before construction of 50 flats for Judicial officers. Three 5-storied building consisting of 30 flats (1250sft/ flat) based on one stair two flats typology and two 5-storied building consisting of 10 flats (1500sft/ flat) based on one stair one flat typology have been constructed on 1 acre of land. Within this zone there is one small playfield.

**ACCESS TO HOUSING:** No direct access from road to this area. Access to this zone is from Azimpur road through zone D and from Pilkhana road through zone C.

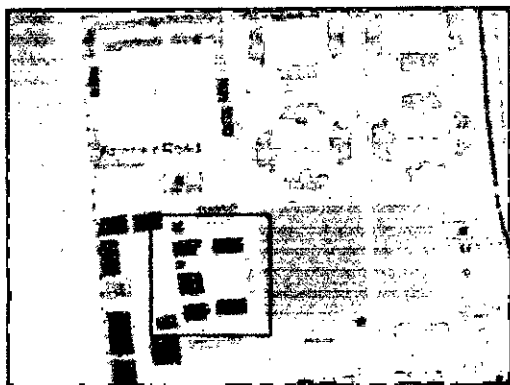


Figure 5.34: Location of zone G in the site

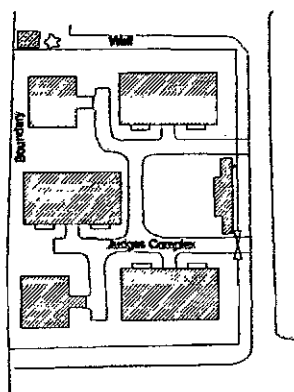


Figure 5.35: Plan showing housing of zone G

AREA: 1.00 acres (PWD office record)

Building Coverage: 10500 sq. ft.= 0.24 acre

Area of playfield: 0.05 acre

No. of Gate: 1

Building No.	Construction Period	Flat Area/ Type of flat	No. of Stories	No. of Flat/ floor	No. of Flat/ building	No. of Building	No. of flats in Old Buildings	No. of flats in New buildings
Kanakchapa, Korobi, Rajanigandha	1996-98	1250sq. ft. E type	5	2	10	3		30
Palash, Shimul	1999- 2000	1500sq.ft. E type	5	1	5	2		10

Table 5.12: Flat statistics of Zone G (source: Azimpur division, PWD)

**CIRCULATION:** Linear street pattern within this zone can be visualized. No separate walkway for pedestrian. Linear planning of buildings with three having north-south orientation and two having east west orientation.

**OPEN SPACES:** There is only one small playfield created by the placement of three building blocks. No designed play lots for children with playing equipments. Also no community facilities been provided for the residents of this zone. Inadequate distance from buildings create privacy problem. Exposed gas lines which are inconveniently situated at the main entry of the building, may be hazardous for the inhabitants.

**PARKING & GARAGES:** No parking facilities been provided in this zone.



Figure 5.36: New Building in Region G

**PLANTATION/VEGETATION:** Lots of plantation along the periphery and inside the housing area helps to keep the environment cool.

**LIGHTING CONDITION:** Street lightings are adequate and maintained properly.

**SECURITY:** This zone is separated from zone C and zone D by boundary walls.

There is only one gate, which is controlled by guard all the time.

Area	Area (acre)	%	Area (acre)	%
Building coverage of housing	0.24	24	0.24	24
Building coverage of other buildings	X	X		
Paved open space	0.21	21	0.76	76
Usable green space (playfields, playgrounds, lawns etc.)	0.05	5		
Unutilized green space	0.5	50		
<b>Total area of Zone G</b>	<b>1.00</b>			

Table 5.13: Area statistics of different spaces of zone G. (Source: Author, Field survey)

Azimpur Housing	Area (acre)	Built up area (acre)	Building coverage %	Open space %	% of Open space		
					Hard surface	Usable open space	Unutilized open space
A	23.64	4.45	18.8	81.2	17.8	23.4	40
B	4.08	1.06	26	74	12	17	45
C	2.82	0.5	17.7	82.3	19.8	23.8	38.7
D	46	12.78	27.8	72.2	6.2	9	57
F	5.39	0.7	13	87	9.6	8.4	69
G	1.00	0.24	24	76	21	5	50

Table 5.14: Open space statistics of different zone in Azimpur housing. (Source: Author, Field survey)

## 5.4.2 CASE STUDY-2

### MOTIJHEEL GOVERNMENT HOUSING

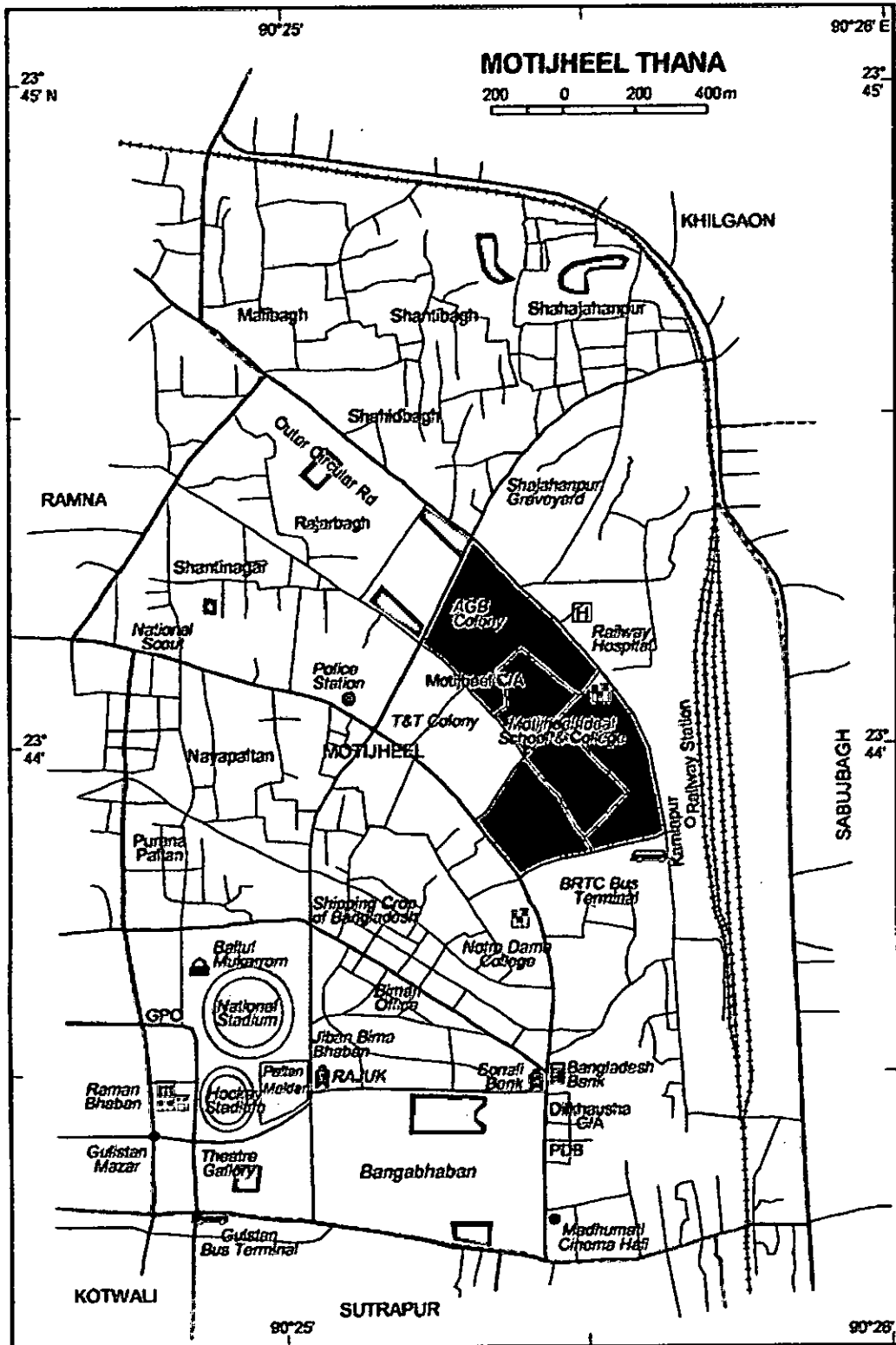
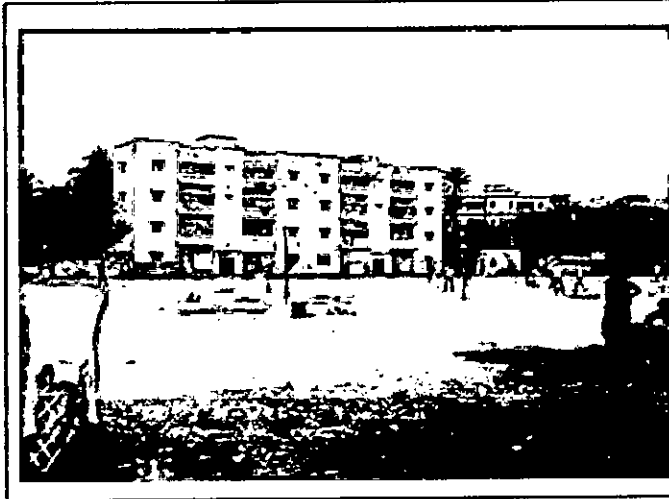


Figure 5.37: Location of Motijheel Government Housing in Motijheel Thana



Location: Motijheel  
Thana: Motijheel  
Ward: 33  
Client: Public Work  
Division (PWD)

### **MOTIJHEEL GOVERNMENT HOUSING**

Designer/ Planner: Architects E.C.Hicks and R.Mc.Connel in 1950's

Major Roads around the housing: Inner circular road

Housing Typology: Low-rise high density

Economic Type: Middle Income Group

Total Area of Motijheel Government Housing: 57.02 acre (PWD office record)

A) Medical Zone: 22.40 acre

B) Ideal Zone: 17.32 acre

C) Al-Helal-Zone: 17.3 acre

Building coverage: 391592 sq. ft.=9.06 acre

Built up area: 16%

Open space: 84%

Total no. of Building: 155

Total no. of Flat: 2346

Density: 2346 flat/57.02 acres= 41flat/ acre



Figure 5.38: Motijheel housing (Medical zone)



Figure 5.39: Motijheel housing (Ideal zone)



**PHYSICAL CHARACTERISTICS:** This housing scheme was developed during 1950s and land needed to implement this scheme is 57.02 acres. 4 storied walkup flats of different sizes were designed for middle class government employees. This low-density governmental housing consist of playgrounds, schools and colleges, dispensary, mosques, gymnasium and library built on  $(22.40+17.32+17.3) = 57.02$  acres of land. Motijheel housing is bounded by outer circular road at the west, DIT Extention road at north, station road at south and Toyenbee circular road at the east. During 70s to fulfill the growing need of housing 5-storied buildings of 1000 sq. ft, 800 sq. ft. 750 sq. ft and 600 sq. ft flats were again constructed on unused area of 57.02 acres. The whole housing area has been marked as Medical zone, Ideal zone, and Al-Helal zone, which measure respectively 22.4 acres, 17.32 acres and 17.3 acres.

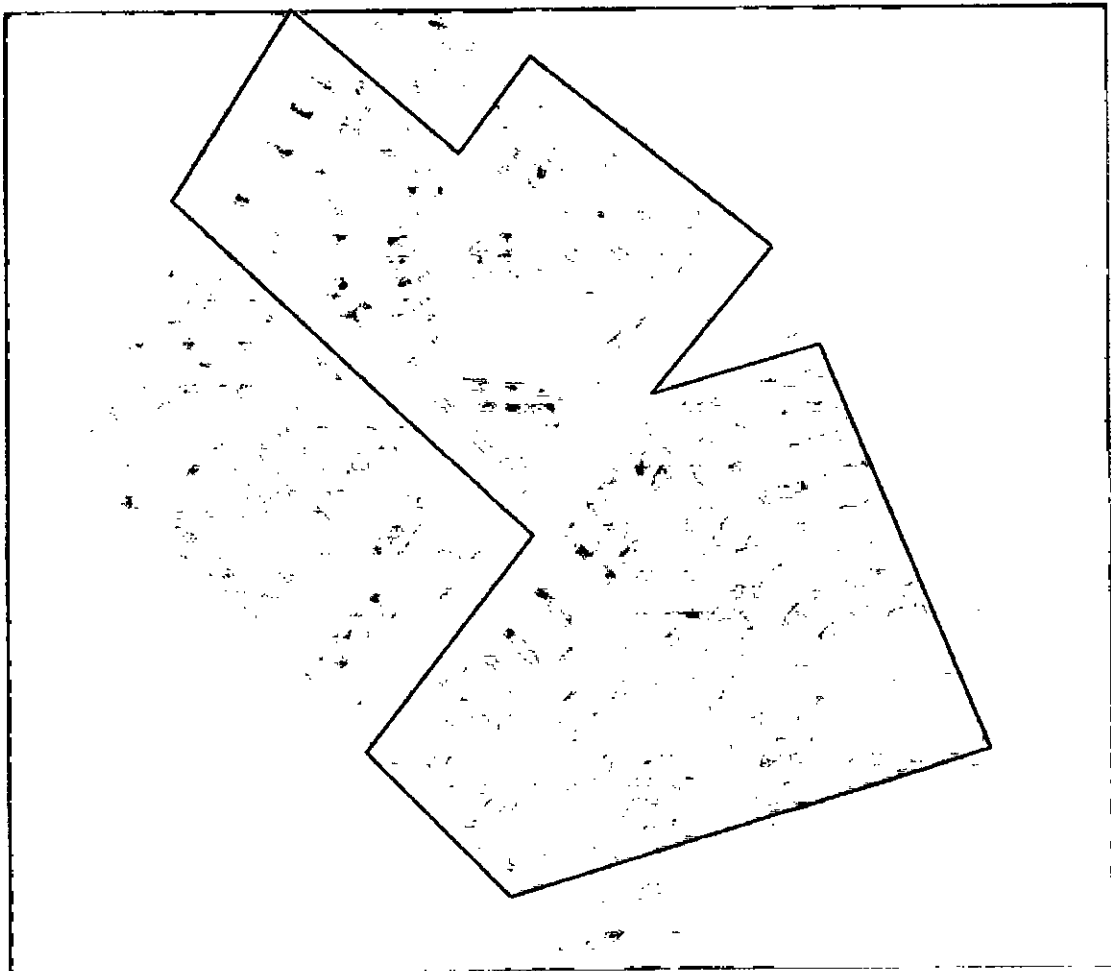


Figure 5.40: Plan showing area of Motijheel housing

Zone	Total area (acre)	No of Buildings	Total no. of Buildings	No of Flats	Density Flat/acre	Total no. of Flats
Medical	22.4	72	155	1222	55	2346
Ideal	17.32	54		750	44	
Al-Helal	17.3	29		374	22	

Table 5.15: Building statistics of Motijheel Government Housing (source: Motijheel division, PWD)

## MEDICAL ZONE

**PHYSICAL CHARACTERISTICS:** This area has four-storied 41 building blocks constructed during 1952-54 and five storied 31 building blocks constructed during 1970s. Within this housing there is a large playground, a primary school, a dispensary, WASA pump house and a mosque. The total area of medical zone is 22.40 acres.

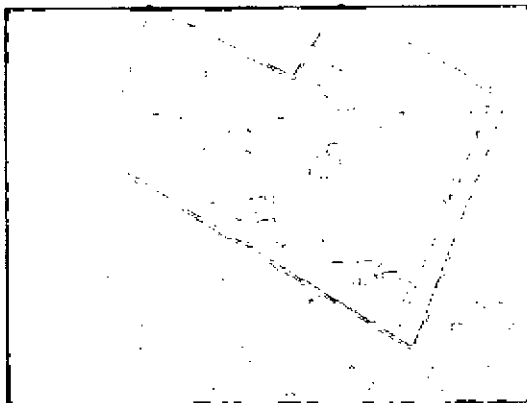


Figure 5.41: Location plan of Medical zone



Figure 5.42: Housing cluster in medical zone

**ACCESS TO HOUSING:** This zone is situated at the west side of T.N.T. colony and bounded by Motijheel Colony Katcha Bazar road at the east and Pir Jahangir Mazar road at the south. Access to this housing area is from Motijheel Colony Katcha Bazar Road and Pir Jahangir Mazar Road.

**AREA:** 22.40 acre (PWD office record)

**Housing Building Coverage:** 161600 sq. ft. = 3.74 acre

**Building coverage of school, mosque, club, community center and other buildings:**  
2.08 acres

**Total building coverage = 5.82 acres**

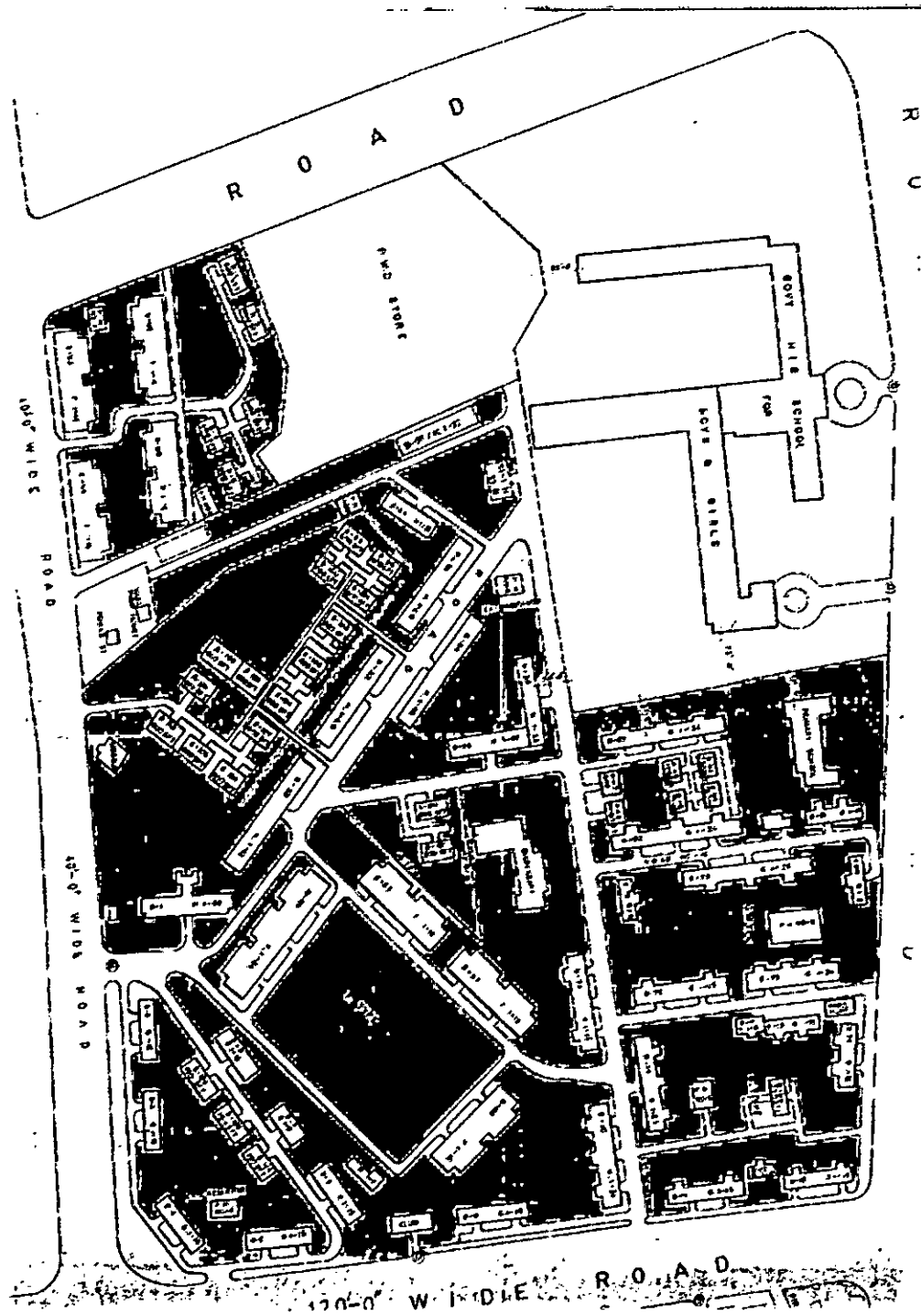


Figure 5.43: Plan of Medical zone of Motijheel housing area

Area of playground: 1.36 acres

Area of school: 0.64 acres

Area of Dispensary: 0.68 acre

Area of Mosque: 0.57 acre

Area of WASA pump house: 0.19 acre

No of Gates: 6

Building type	Building no.	Construction Period	Flat Area/ Type of flat	No. of Stories	No. of Flat/ floor	No. of Flat/ building	No. of Building	No. of flats in Old Buildings	No. of flats in New buildings
H type	1,32-36, 84-85,97	1952-54	460sq. ft.	4	4	16	1	16	
				4	8	32	1	32	
				4	10	40	4	160	
				4	12	48	2	96	
				4	14	56	1	56	
							9	360	
G type	2-15, 74-83	1952-54	500sq. ft.	4	2	8	5	40	
				4	4	16	10	160	
				4	6	24	9	216	
							24	416	
F type	86-88, 89,93-96,	1952-54	800sq. ft.	4	4	16	7	112	
				4	6	24	1	24	
							8	136	
B type	98-104, 107-110	1970's	600sq. ft.	5	2	10	11		110
C type	113-116, 122-124	1970's	750sq. ft.	5	2	10	7		70
C type	117-121	1970's	800sq. ft.	5	2	10	5		50
R type	1-5	1970's	600sq. ft.	5	2	10	5		50
A type	105-106, 130	1970's	550sq. ft.	5	2	10	3		30

Table 5.16: Flat statistics of Medical zone (source: Motijheel division, sub division-2, PWD)

**CIRCULATION:** No system been followed for designing internal circulation. One main primary thoroughfare; from which nine secondary streets leads to housing clusters and tertiary to individual dwelling. Segregation between vehicular and pedestrian is absent. Buildings have been placed haphazardly throughout the whole area. In some points the main primary vehicular road been encroached by tin shade local shops.



Figure 5.44: 12' wide internal street



Figure 5.45: 20' wide main vehicular road

**OPEN SPACES:** Hierarchy of open spaces is present. There is only one big playground for the entire housing as public space. Semi public spaces have been created by placement of building blocks but due to absence of recreational equipments and other facilities these are being used as dumping grounds. Private open spaces allotted for all ground floor residents. There are only three seating places for the whole housing. There is no proper playfield and play lot for children in this area. Community facilities include a club, a mosque and a dispensary.



Figure 5.46: Central playground



Figure 5.47: Private space for ground floor users

**PARKING & GARAGES:** No parking facilities provided for the residents. Therefore cars are parked in front of the dwelling units.

**PLANTATION/VEGETATION:** The plantation is very scattered in this residential area. Some parts are very darkening and some parts are barren. Few trees in the semi public open spaces provide shade and visual relief in the eye.



Figure 5.48: Front yard used for dumping



Figure 5.49: Trees around central playground

**LIGHTING CONDITION:** The distribution of street lightings is irregular in distance and most of them are non-functional. Due to poor lighting system the safety and security of the household is hampered at night.

**SECURITY:** Security of this housing is hampered due to large number of gates. All the five gates are not guarded therefore hijacking is a common event in this neighbourhood. Also the boundary wall is in worse condition.

Area	Area (acre)	%	Area(acre)	%
Building coverage of housing	3.74	16.7	5.82	26
Building coverage of other buildings	2.08	9.3		
Paved open space	2.06	9.2	16.58	74
Usable green space (playfields, playgrounds, lawns etc.)	1.98	8.8		
Unutilized green space	12.54	56		
<b>Total area of Medical zone</b>	<b>22.4</b>			

Table 5.17: Area statistics of different spaces of Medical zone. (Source: Author, Field survey)

## **IDEAL ZONE**

**PHYSICAL CHARACTERISTICS:** This area has four-storied 45 building blocks constructed during 1952-54 and five storied 9 building blocks constructed during 1970s. Within this housing there is a primary school & college, a library and a gymnasium. The total area of Ideal zone is 17.32 acres.

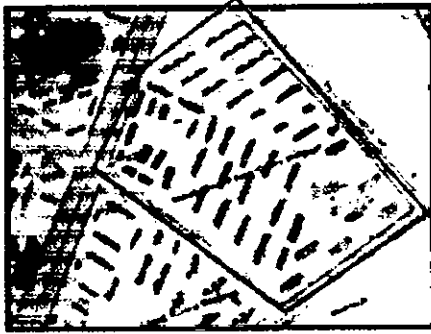


Figure 5.50: Location plan of Ideal zone, Motijheel housing

**ACCESS TO HOUSING:** This zone is situated at the south- west side of medical zone and bounded by Motijheel Colony Katcha Bazar road at the east and Pir Jahangir Mazar road at the north. Access to this housing area is from Motijheel Colony Katcha Bazar Road and Pir Jahangir Mazar road.

**AREA:** 17.32 acre (PWD office record)

**Housing building Coverage:** 155652 sq. ft.= 3.6 acres

**Other building coverage:** 0.85 acres

**Total building coverage:** 4.45 acres

**Area of Ideal school & college:** 0.68 acres

**Area of Gymnasium and library:** 0.17 acres

**No of Gates:** 03



Figure 5.51: Semi public open space



Figure 5.52: Semi private courtyard

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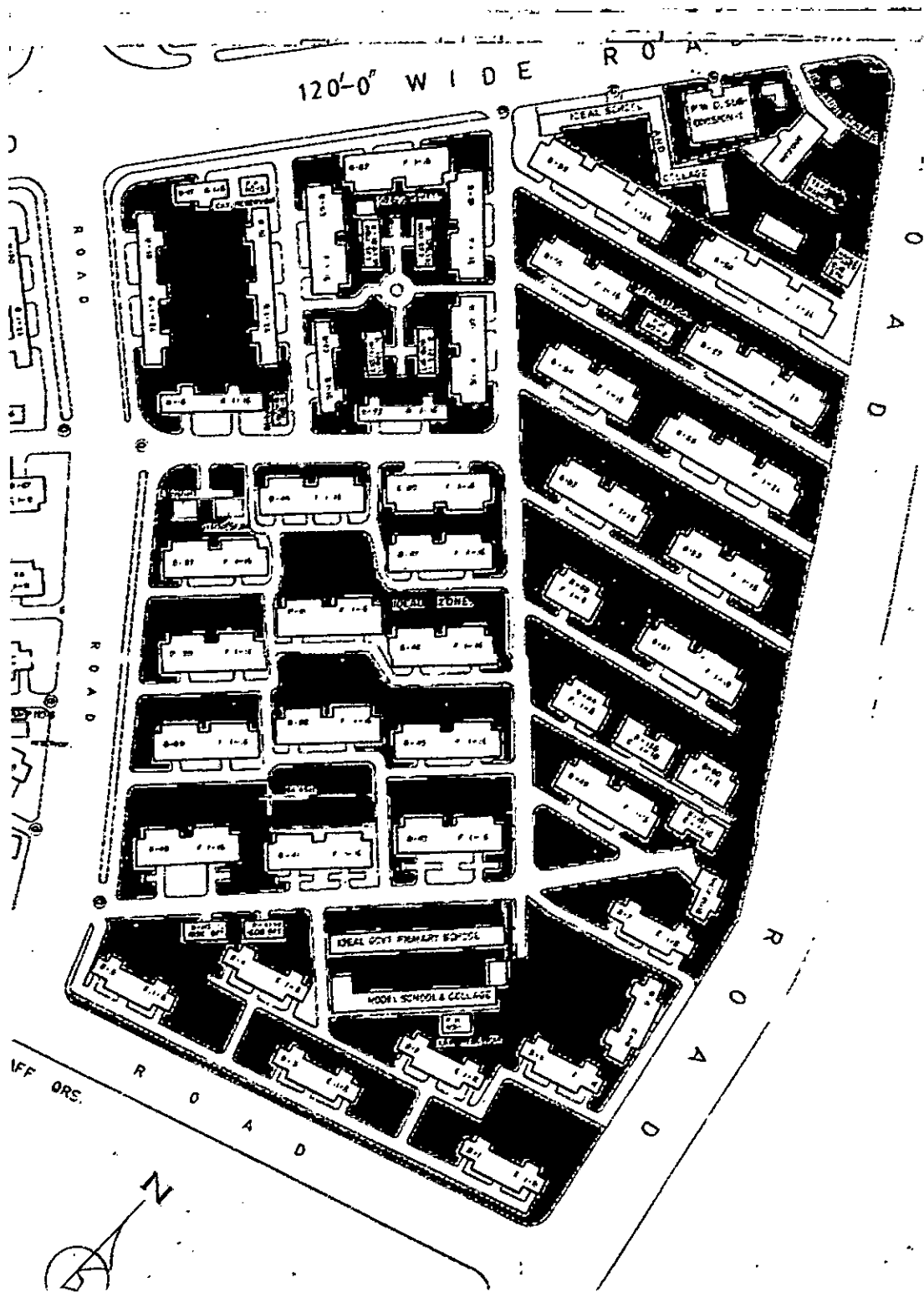


Figure 5.53: Plan of Ideal zone of Motijheel housing area



Building type	Building no.	Construction Period	Flat Area/Type of flat	No. of Stories	No. of Flat/floor	No. of Flat/building	No. of Building	No. of flats in Old	No. of flats in New
E type	1-8,17	1952-54	1756sq. ft.	4	1	4	1	4	
				4	2	8	8	64	
							9	68	
F type	37-63, 90-92	1952-54	800sq. ft.	4	2	8	3	24	
				4	4	16	23	368	
				4	6	24	4	96	
							30	488	
G type	16-19, 72-73	1952-54	500sq. ft.	4	2	8	1	8	
				4	4	16	3	48	
				4	6	24	2	48	
							6	104	
D type	111-112	1970's	1000sq. ft.	5	2	10	2		20
C type	125-131	1970's	800sq. ft.	5	2	10	7		70

Table 5.18: Flat statistics of Ideal zone (source: Motijheel division, sub division-I, PWD)

**CIRCULATION:** Circulation has been designed following linear pattern. There is one major primary thoroughfare from Pir Jahangir Mazar road and two from Motijheel colony Bazar road. All through the north, south and east side of the housing 10' peripheral road is running. Secondary streets lead to semi private spaces and then tertiary streets to individual dwelling unit. Segregation between vehicular and pedestrian is absent. Buildings at the northeast corner have courtyard system planning and having orientation in all directions. All the other housing blocks have been placed linearly at north-south axis throughout the area keeping 40' space in between.



Figure 5.54: Internal street pattern



Figure 5.55: 10' wide peripheral road

**OPEN SPACES:** No formal playground in this residential zone. There is no proper playfield and play lot for children in this area. Semi public spaces used as play field have been created by placement of building blocks. Private open spaces allotted for all ground floor residents. Community facilities include one club, one primary and secondary school, a library and a gymnasium.



Figure 5.56: Ideal school inside the housing



Figure 5.57: Security system at the entry point

**PARKING & GARAGES:** No parking facilities provided for the residents. Therefore cars are parked in front of the dwelling units.

**PLANTATION/VEGETATION:** Lots of plantation along the periphery and inside the housing area.



Figure 5.58: Plantation in internal court



Figure 5.59: Trees along Primary road

**LIGHTING CONDITION:** The distribution of street lightings is irregular.

**SECURITY:** Security is controlled due to less number of gates. All the three gates are demarked by pyramid shaped guardroom.

Area	Area (acre)	%	Area(acre)	%
Building coverage of housing	3.6	20.8	4.45	25.7
Building coverage of other buildings	0.85	5		
Paved open space	2.02	11.7	12.87	74.2

Usable green space (playfields, playgrounds, lawns etc.)	2	11.5		
Unutilized green space	8.85	51		
Total area of Ideal zone	17.32			

Table 5.19: Area statistics of different spaces of Ideal zone. (Source: Author, Field survey)

**AL-HELAL ZONE**

**PHYSICAL CHARACTERISTICS:** This area has four-storied 28 building blocks constructed during 1952-54 and five storied 1 building block constructed during 1970s. Within this housing there is an Eidgah and a mosque. The total area of Al-Helal zone is 17.3 acres.

**ACCESS TO HOUSING:** This zone is situated at the south side of T.N.T. colony and bounded by Motijheel Colony Katcha Bazar road at the west and Toyenbee Circular road at the east. Access to this housing area is from Motijheel Colony Katcha Bazar Road, Pir Jahangir Mazar Road and Station road.

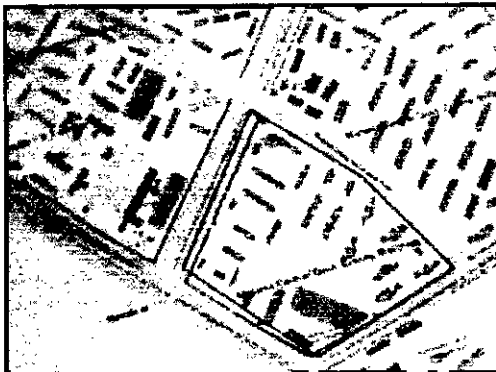


Figure 5.60: Location plan of Al-Helal zone



Figure 5.61: semi public open space

**AREA:** 17.3 acres (PWD office record)

**Housing building Coverage:** 74340 sq. ft.= 1.72 acres

**Other building coverage:** 0.35 acre

**Total building coverage:** 2.07 acres

**Area of Mosque:** 0.35 acre

**Area of Eidgah:** 0.5 acre

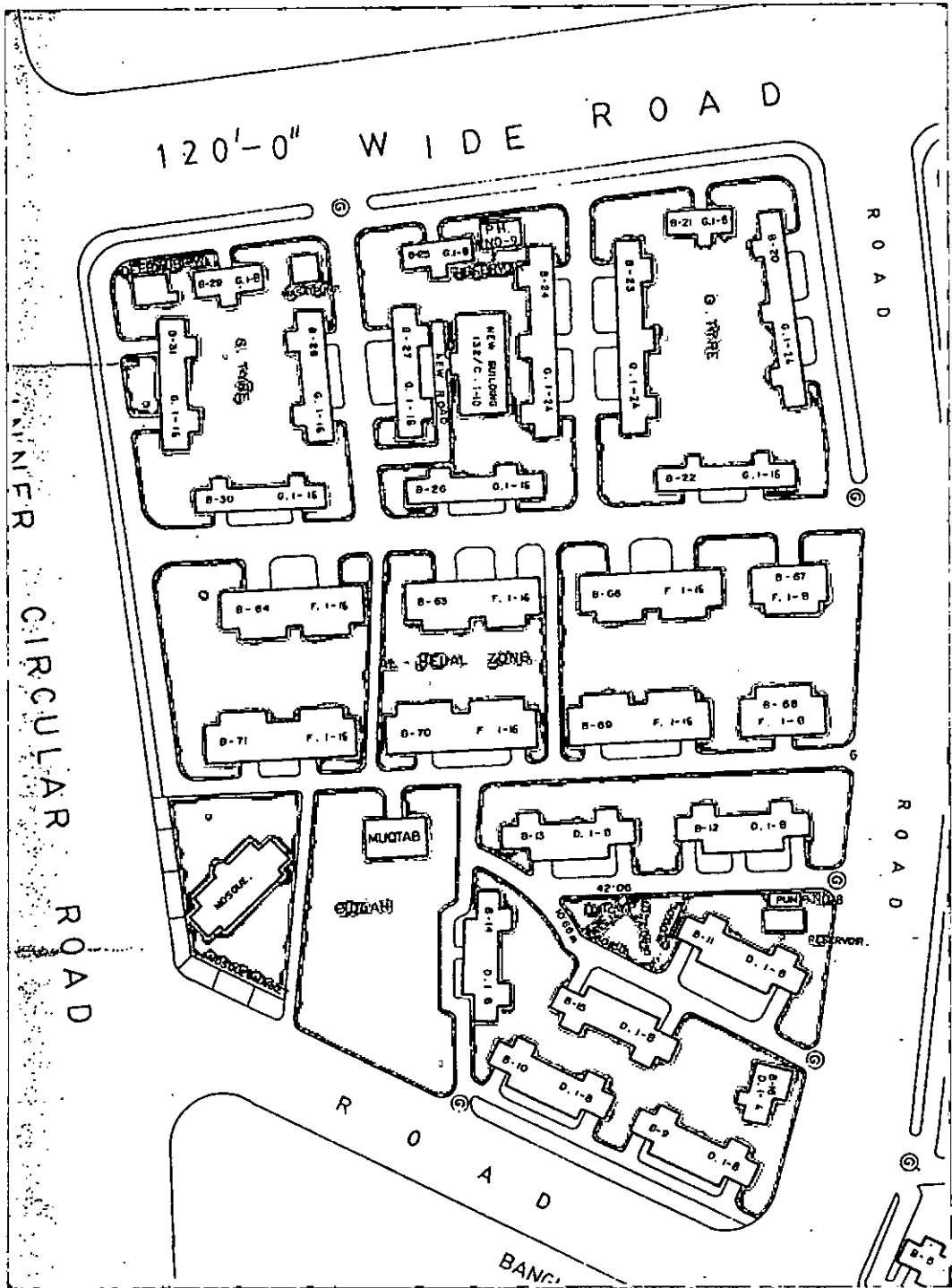


Figure 5.62: Plan of Al-Helal zone, Motijheel housing area

Building type	Building no.	Construction Period	Flat Area/ Type of flat	No. of Stories	No. of Flat/floor	No. of Flat/building	No. of Building	No. of flats in Old Buildings	No. of flats in New buildings
G type	20-31	1952-54	500 sq. ft.	4	2	8	3	24	
				4	4	16	6	96	
				4	6	24	3	72	
							12	192	
F type	63-64, 66-71	1952-54	800sq. ft.	4	2	8	2	16	
				4	4	16	6	96	
							8	112	
E type	9-16	1952-54	1756sq. ft.	4	2	8	7	56	
				4	1	4	1	4	
							8	60	
C type	132	1970's	800 sq. ft.	5	2	10	1		10

Table 5.20: Flat statistics of Al-Helal zone (source: Motijheel division, sub division-7, PWD)

**CIRCULATION:** Circulation has been designed following linear pattern. There is one primary thoroughfare from Motijheel Colony Katcha Bazar road and one from Pir Jahangir Mazar road. 10' peripheral road is running all through the north, east and a portion of west side of the housing. Segregation between vehicular and pedestrian is absent. Buildings at the north side have courtyard system planning. Therefore these have orientation in all directions having internal small courtyard. All the other blocks have been placed linearly at north-south axis having 60' wide space in between.



Figure 5.63: Vehicular road inside housing



Figure 5.64: Absence of pedestrian walkway

**OPEN SPACES:** There is no proper playfield and play lot for children in this area. The youngsters of the housing use two large internal court and open space at Eidgah as playfield. But due to absence of recreational equipments and other facilities semi private spaces between building blocks are lying vacant. Front yard and backyard of ground floor dwellings are not properly utilized. There are few seating places for the whole housing. Community facilities include only a mosque and Eidgah.



Figure 5.65: Internal space used for playing.

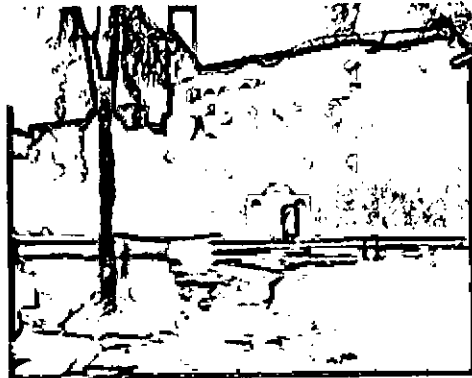


Figure 5.66: Open space in front of Eidgah

**PARKING & GARAGES:** No parking facilities provided for the residents. Cars are parked on internal road.

**PLANTATION/VEGETATION:** The plantation is very scattered in this residential area. Some parts are very darkening and some parts are barren. Few trees in the semi public open spaces provide shade and visual relief in the eye.



Figure 5.67: Poorly maintained green space



Figure 5.68: Backyard facing semi private space

**LIGHTING CONDITION:** Insufficient street lighting throughout the housing area.

**SECURITY:** Security of this housing is hampered due to unguarded entry points.

Area	Area (acre)	%	Area (acre)	%
Building coverage of housing	1.72	10	2.07	12
Building coverage of other buildings	0.35	02		
Paved open space	1.04	06	15.23	88
Usable green space (playfields, playgrounds, lawns etc.)	0.8	4.6		
Unutilized green space	13.39	77.4		
Total area of Al-Helal zone	17.3			

Table 5.21: Area statistics of different spaces of Al- Helal zone. (Source: Author, Field survey)

Motijheel Housing	Area (acre)	Built up area (acre)	Building coverage %	Open space %	% of Open space		
					Hard surface	Usable open space	Unusable open space
Medical	22.4	5.82	26	74	9.2	8.8	56
Ideal	17.32	4.45	25.7	74.3	11.7	11.5	51
Al-Helal	17.3	2.07	12	88	6	4.6	77.4

Table 5.22: Open space statistics of different zone in Motijheel housing. (Source: Author, Field survey)

5.4.3 CASE STUDY-3

DHAKESHARI STAFF HOUSING

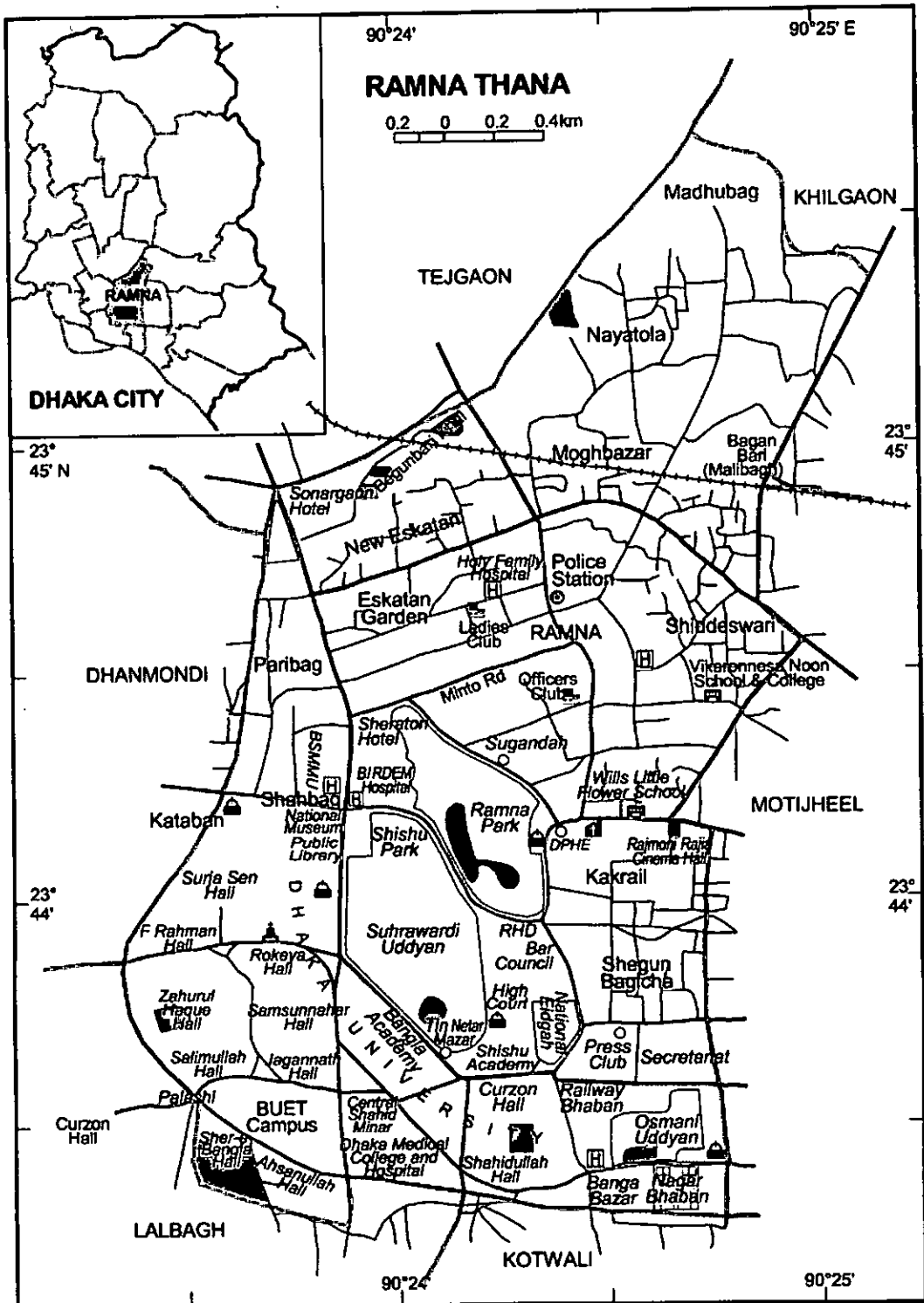


Figure 5.69: Location of Dhakeshari Staff Housing in Ramna Thana





Location: Engineering  
 University Residential Area  
 Thana: Ramna  
 Ward: 56  
 Client: Bangladesh University  
 of Engineering & Technology

### **DHAKESHARI STAFF HOUSING**

Designer: S. A. Zahiruddin in 1960's

Major Roads around the housing: Dhakeshari road

Housing Typology: Low-rise medium density

Economic Type: Middle Income Group

Area of Dhakeshari Staff Housing: 5.6 acres (Source: Engineering section, BUET)

### **LOCATION:**

The campus of BUET, consisting of about 77 acres (31 hectares) of land area has been designed and constructed by the University and is also maintained by it. The University provides housing to 500 teachers and their families in two areas; one of which is Dhakeshari housing area. 4-5 storied high walk-up flats have been built in the 1970s. An 11-storied tower building has been constructed recently in 2004. This teachers' quarter of Bangladesh University Of Engineering and Technology is 900 feet away from the Asian Highway. The total area of dhakeshari hoysing is 5.6 acres. BUET

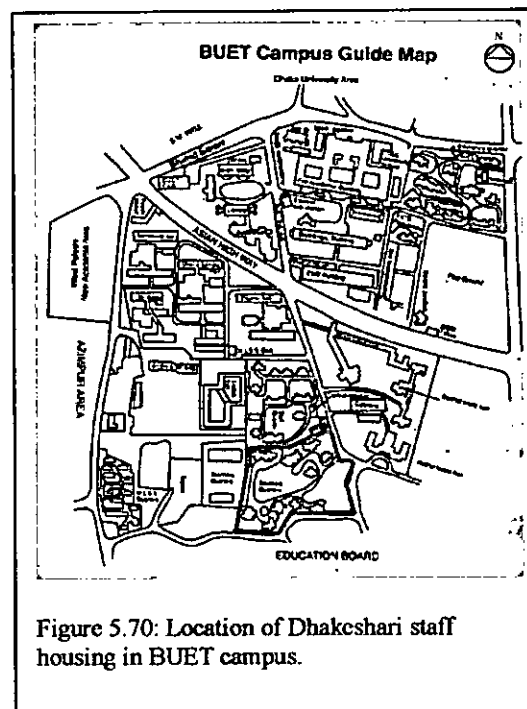


Figure 5.70: Location of Dhakeshari staff housing in BUET campus.

staff quarter at the north side, Dhaka Education Board Office and Madrasa Education Board are at the south side, students hall named Nazrul Islam Hall is at the east side and Dhakeshari Temple is at the west side of this housing area. The housing is bounded by Dhakeshari Temple road at the south and Buet Avenue at the west.

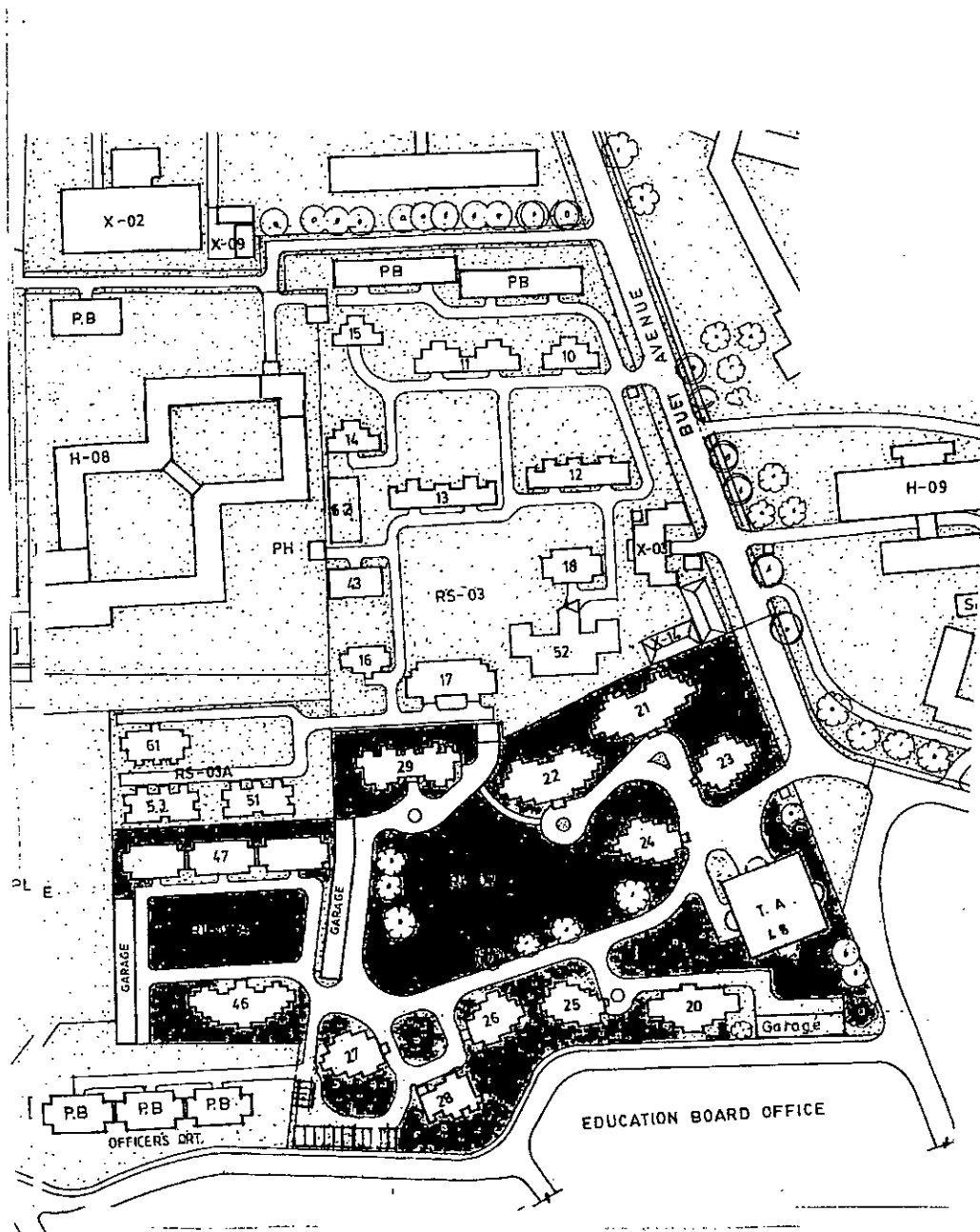


Figure 5.71: Plan of Dhakeshari housing

AREA: 5.6 acres (Source: Engineering section, BUET)

Total building coverage : 44417 sq. ft residential area.+7636sq. ft. garage area  
 =1.03 acre + 0.18 acre = 1.21 acres

Built up area: 21.6%

Open space: 78.4%

Total no. of Buildings: 13

Total no of Flats: 155

Density :155 flat/5.6 acre=28 flat/ acre

Area of central open space/Play ground: 0.81 acres

Area of open space at the east side of the site: 0.21 acres

Building no.	Construction Period	Flat Area/ Type of flat	No. of Stories	No. of Flat/ floor	No. of Flat/ building	No. of Building	Total no of Flats	Area/ floor
20	1976	1802 sq. ft.	5	2	10	1	10	3604 sq. ft
21, 22	1972	2057 sq. ft	5	2	10	2	20	8228 sq. ft.
23,24,25,26, 27	1972	2159 sq. ft.	4	1	4	5	20	10795 sq. ft.
28	1978	1772 sq. ft.	5	1	5	1	5	1772 sq. ft.
29	1978	1829 sq. ft.	5	2	10	1	10	3658 sq. ft.
46	1993	1755 sq. ft.	5	2	10	1	10	3510 sq. ft.
47	1997	875 sq. ft.	6	6	36	1	36	5250 sq. ft.
48(Tower)	2004	1900 sq. ft.	11	4	44	1	44	7600 sq. ft.

Table 5.23: Flat statistics of Dhakeshari Staff Housing (Source: Engineering section, BUET)

**ACCESS TO HOUSING:** Main access to housing is from BUET Avenue and the secondary access from Dhakeshari Road. The entry gate is guarded by security guard.

**CIRCULATION:** Pedestrian and vehicular circulations are not segregated within the area. Same access roads are used for both purposes. Lack of walkway endangers the pedestrians walking through the road. Buildings within the housing area are interconnected by distributory roads, which are 12 –15 ft. wide. There is only one pedestrian walkway that passes through the playground. Communication channels

within the community do not allow any extraneous vehicular traffic. However, children's play areas intersperse with the internal communication channels.

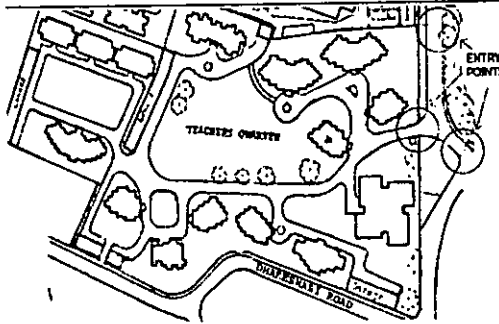


Figure 5.72: Access roads and Circulation Pattern



Figure 5.73: Vegetation around the central open space

**OPEN SPACES:** There are two open spaces in this residential quarter. The large open space is placed centrally and a small open space at the eastern side of the quarter between building 46 and 47. Two access roads and a garage have disconnected the linkage between these two open spaces. Central open space is used as play ground. But no playing equipments or sitting arrangement have been provided here. No well defined play areas for children or toddlers. Islands of green spaces resulting from winding streets act as play spaces for children. These islands also contain flowering and fruit bearing plants and trees.



Figure 5.74: Central open space

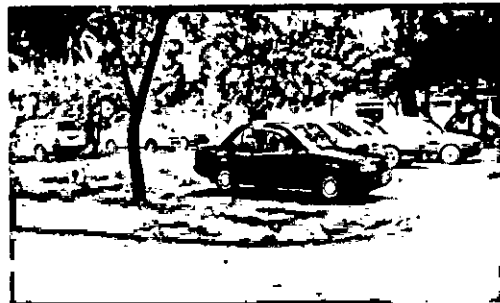


Figure 5.75: Green space at the eastern side of housing

All the buildings are oriented at north- south axis respecting the open spaces; which allow for adequate natural ventilation and light in interior spaces. Buildings are carefully located so that privacy between buildings is not hampered.

Due to inadequate car parking facilities a portion of the space is used for car parking. As the open spaces at the backside of the buildings are not accessible they have become negative open spaces. Also haphazard planting has made these areas completely unusable for the users.

**PARKING & GARAGES:** Although five garages for 54 cars at different places within the housing have been provided but they are not sufficient for the users of this area. As a result a large number of car park haphazardly in the open spaces in front or back side of the buildings. This not only hampered the privacy of the residence of the ground floor occupants and aesthetic view of the area but also destroy the softness of the green open space.



Figure 5.76: Open spaces in front of garages



Figure 5.77: Open spaces used for cloth drying & parking

**VEGETATION:** The streets are lined with shady trees having wide canopies. The housing is quite cool at night because of the low density and extensive vegetation.

**DRAINAGE:** The problem of flooding and water logging has not been taken into account.

**LIGHTING CONDITION:** Adequate lighting has been provided all along the vehicular road and is regularly supervised by university authority.

**SECURITY:** One entry gate to this housing area is controlled all the time by guards.

Area	Area (acre)	%	Area (acre)	%
Building coverage of housing	1.21	21.6	1.21	21.6
Building coverage of other buildings	X	X		
Paved open space	1.04	18.6	4.39	78.4
Usable green space (playfields, playgrounds, lawns etc.)	1.24	22.1		
Unutilized green space	2.11	37.7		
Total area of Dhakeshari housing	5.6			

Table 5.24: Area statistics of different spaces of Dhakeshari housing. (Source: Author, Field survey)

### 5.4.4 CASE STUDY-4

### BAILY DUMP GOVERNMENT HOUSING

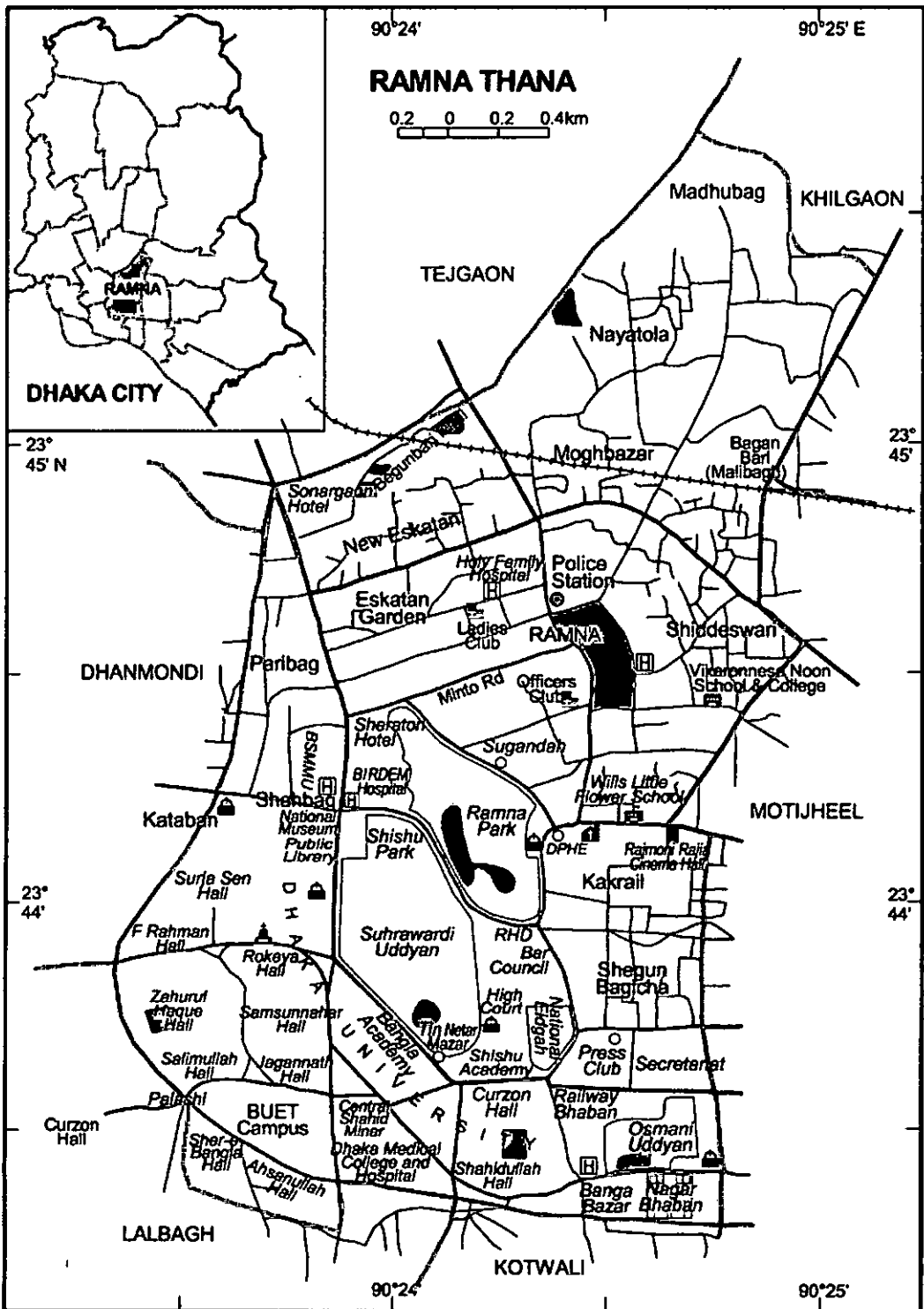
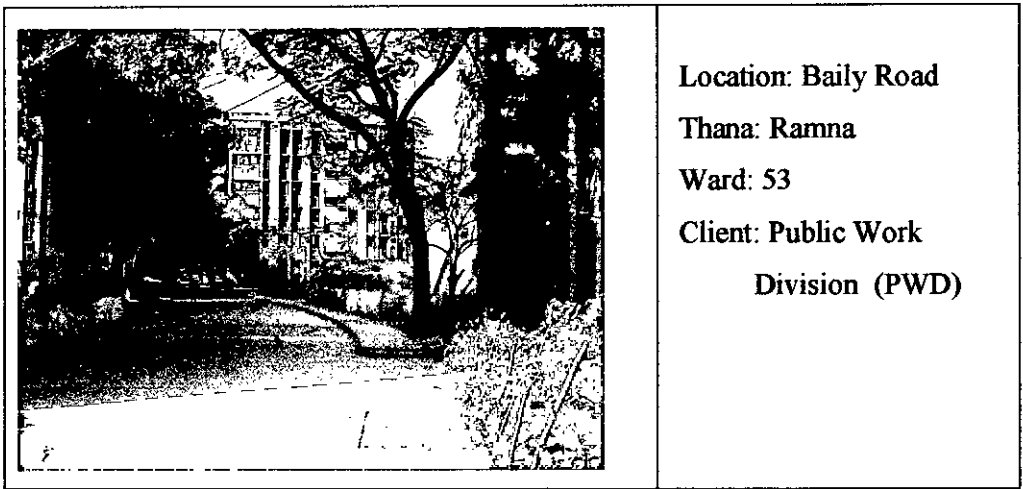


Figure 5.78: Location of Baily Dump Officer's Housing in Ramna Thana



**BAILY DUMP GOVERNMENT HOUSING**

Designer/Planner: S. A. Zahiruddin  
 Year of Completion: 1982  
 Major Roads around the housing: Mogh Bazar Road, Baily Road  
 Housing Typology: High-rise high density  
 Economic Type: Middle Income Group  
 Total Area of Baily Dump Government Housing: 7 acres (PWD office record)  
 Building coverage: 1.93 acre  
 Built up area: 27.6%  
 Open space: 72.4%  
 Total no. of Building: 16  
 Total no. of Flat: 300  
 Density:  $300\text{flat}/7\text{ acres} = 43\text{flat/ acre}$

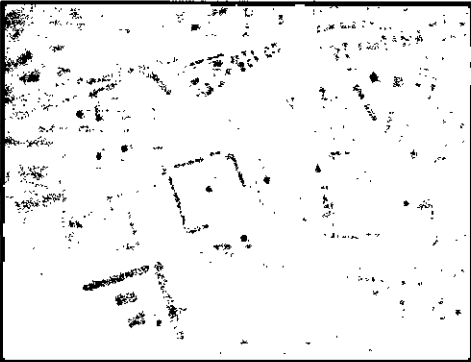


Figure 5.79: Location plan of Baily dump housing

**PHYSICAL CHARACTERISTICS:** This housing is developed in 1980s for middle class government officers on 7 acres of land. The master plan, following the guidelines of Planning Commission, has been prepared by the architects of the Public Works Department. Sixteen number of six-storied high walk up housing blocks, containing two types of flats 80 m<sup>2</sup> apartments and 42 m<sup>2</sup> apartments, are lined up in groups of two along a north-south axis. The center of the site has been kept green that is reserved for the construction of a second phase of high-rise building. The car parks and children's playgrounds are symmetrically arranged between the blocks, along the north-south central axis. This housing area has one mosque; one elementary school named Baily Preparatory school and a large playground.

**ACCESS TO HOUSING:** This housing is at the west side of Mogh Bazar road and at the north side of Baily road. Each of the aforesaid sections is approached from Mogh Bazar main road.

**AREA:** 7 acres (Source: PWD office record)

Housing Building Coverage: 29028 sq. ft. = .067 acre

Building coverage of school, mosque and PWD staff housing: 1.26 acres

Total building coverage : 1.93 acre

Area of central open space/Play ground: 1 acre

Areas of four play lot: 0.29 acre

Area of Baily preparatory school: 0.17 acre

Area of Mosque: 0.16 acre



Figure 5.80: Central green space



Figure 5.81: Green area between building blocks



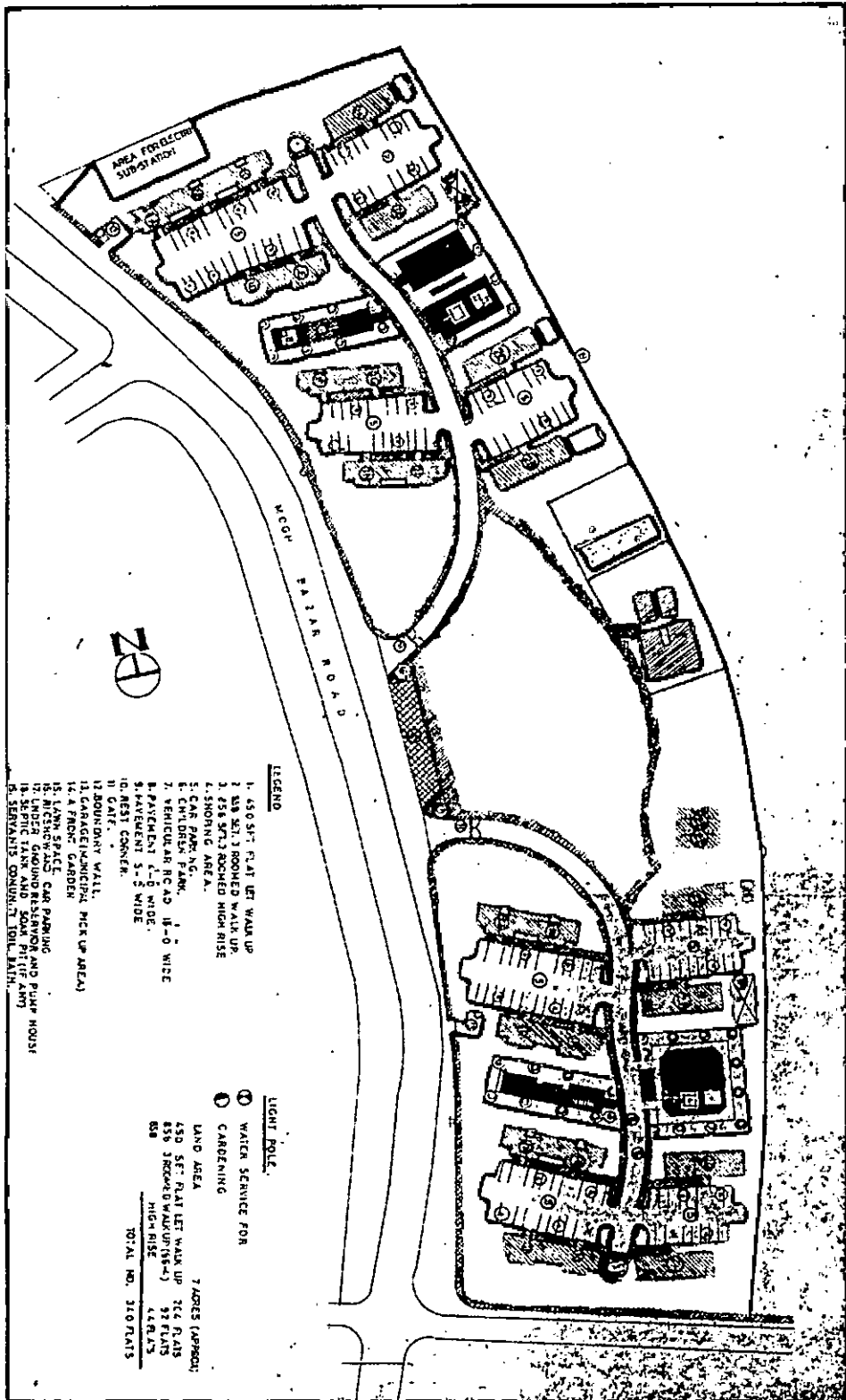


Figure 5.82: Plan of Baily dump housing

Building type	Building no.	Construction Period	Flat Area/Type of flat	No. of Stories	No. of Flat/ floor	No. of Flat/ building	No. of Building	No. of flats
1	1,3,5,7,9,	1982	450sq. ft.	6	4	24	7	168
	6			6	36	1	36	
2	2,4,6,8,10,12,14,16	1982	858sq. ft.	6	2	12	8	96

Table 5.25: Flat statistics of Baily Dump Housing (source: Baily road division-1, PWD)

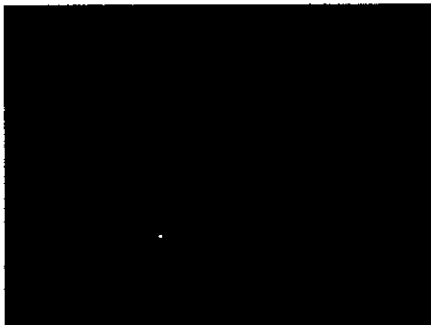


Figure 5.83: Plan of northern side of housing



Figure 5.84: Playlot at the north side of housing

**CIRCULATION:** The approach road, divide the whole housing into two types of dwellings bordered by brick-paved footpaths. This 12' wide road terminates either to a parking lot or to a porch of an individual building. The buildings on the left of the road comprise two roomed dwelling units, four per floor. These are of 450 sq. ft. each; reached by two stairways. Buildings on the opposite side of the road consist of two units per floor of 858 sq. ft. each and are basically for the accommodation of relatively large families.



Figure 5.85: 12' wide vehicular road



Figure 5.86: 5' wide pedestrian walkway

**OPEN SPACES:** The site is linear and divided transversely into two sectors there by creating a large green area in the center. Four playlots have been created in between

the buildings for informal play activities. Other outdoor spaces are merely leftover spaces, formed automatically after locating the building. Therefore these spaces are undefined spaces. Some of them are used for drying cloths.

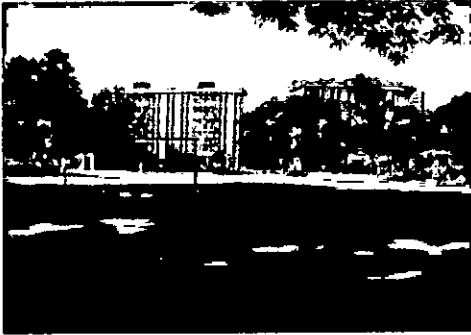


Figure 5.87: Central playground



Figure 6.88: Green court for children play

**PARKING & GARAGES:** The paved open spaces between the buildings are used for parking cars or playing of children. Insufficient numbers of garages have been provided at the west side of the housing area.

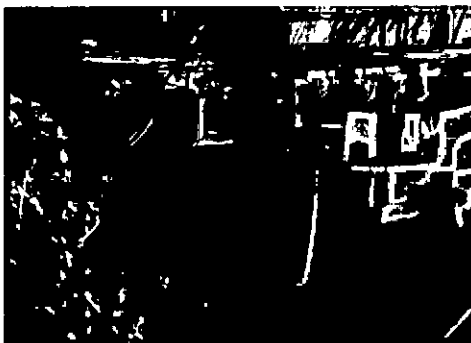


Figure 5.89: Inadequate garage facilities



Figure 5.90: Paved court designed for parking

**PLANTATION/VEGETATION:** The whole housing has been developed as green area. Large trees along the road and the periphery of the housing help to reduce overall temperature and increase airflow.



Figure 6.91: Plantation along the road



Figure 6.92: Trees in paved court

**LIGHTING CONDITION:** Adequate streetlights have been provided inside the housing area along the vehicular road.

**SECURITY:** Three-entry points have been designed for Baily dump housing. Two is vehicular and one is pedestrian. The vehicular entries are guarded by security guards all the time.



Figure 5.93: Main vehicular entrance to housing



Figure 5.94: Pedestrian entry to housing

Area	Area (acre)	%	Area (acre)	%
Building coverage of housing	0.67	9.6	1.93	27.6
Building coverage of other buildings	1.26	18		
Paved open space	0.97	13.8	5.07	72.4
Usable green space (playfields, playgrounds, lawns etc.)	1.93	27.6		
Unutilized green space	2.17	31		
Total area of Baily dump housing	7			

Table 5.26: Area statistics of different spaces of Baily dump housing. (Source: Author, Field survey)

### 5.5 EVALUATIVE CRITERIA FOR ANALYSIS OF CASE STUDIES:

To judge comfortable outdoor spaces criteria that were taken into account were planning of open space distribution in the total community, design of circulation systems, neighborhood livability, social interactions between neighbors, types of open spaces available and their uses, privacy of the dwellings, security of the housing complex and level of outdoors activities. Urban services and residential functions were also considered important in use of open spaces.

Issue	Evaluative Criteria	Measures
Planning system (Spatial organization)	Appropriate location of open spaces in relation to the site layout.	Easy access to open spaces from all the dwellings.
Circulation System for clarity of movement	Simplification of way finding.	Maintaining a certain system. (Grid pattern, linear pattern etc.)
	Reflection of different types and number of users in each level of hierarchy of the streets.	Hierarchy of streets: Primary for large number of residents, collector for certain number of residents and access for residents of clusters.
Segregation of vehicular & pedestrian traffic	Ensuring pedestrian safety	Separate walkway for pedestrians, physical barriers to restrict vehicular entry.
Parking	Adequacy of space	Garage facilities, peripheral parking etc.
	Possible multifunctional use	Meeting places of youngsters, playing area for children, for domestic activities etc.
Open space system	Presence of hierarchy of open spaces	Private, semi private, public spaces.
	Multifunctional usage of open spaces	Domestic activities, children's play, social interaction, community activities.
Access	Convenience of access	Maximum 5 minutes from primary access to dwelling units.
	Convenience of services	Peripheral service road.
	Multifunctional usage of access spaces	Playing, jogging, social interaction etc.



Orientation and micro climate	Ensuring thermal comfort inside dwellings	North-south orientation to ensure good ventilation, natural light and air.
	Plantation	Enhance microclimate.
Privacy	Appropriate spacing of buildings	Spacing between buildings, face each other upfront.
	Sense of enclosure	Intimate scale of street. Narrow width compare to building height create strong sense of enclosure.
Sense of belongingness	Sense of identity and community	Compact clustering, homogeneity of user group.
	Social interaction	Community facilities.
	Proper maintenance	Ensure availability for future generations.
Security	Creating safe environment	Security system: Boundary wall, guards, no of gates, street lighting etc.
Setback and regulations	Ensure healthy and lively environment	Maintaining open space standards, byelaws etc.

Table 5.27 Evaluative criteria (Roy, 2001)

### 5.5.1 TESTING OF EVALUATIVE CRITERIA: AZIMPUR HOUSING

Issue	Azimpur housing
Planning system (Spatial organization)	Easy access to open spaces from all the dwellings.
Circulation System for clarity of movement	Easy access due to grid pattern circulation (Zone A, B, C and D) and linear pattern circulation (Zone F and G)
	Hierarchy of streets: 16' Primary road for large number of residents, 12' collector road for certain number of residents and 8' access road for residents of clusters.
Segregation of vehicular &	In all six zones of Azimpur housing no separate walkway for pedestrians have been provided.

pedestrian traffic	
Parking	No garage facilities in zone B, C, F and G. Inadequate garage facilities in A and D.
Open space system	Private yards, semi private internal court and public open spaces as play grounds, playfields have been provided. But no play lot with playing equipments for children have been seen in any of the housing zone of Azimpur colony.
	Domestic activities, children's play, social interactions takes place usually in front yard, back yard, in internal courts and in streets.
Access	Maximum 5 minutes from primary access to dwelling units in all the zones.
	In some zones there are peripheral service road for easy convenience of services.
	Multifunctional usage of access spaces as playing, jogging, social interaction etc.
Orientation and micro climate	In all zones the buildings have north-south orientation to ensure good ventilation, natural light and air; except in zone D few old buildings have east- west orientation.
	Though unplanned but lots of trees all around the housing area.
Privacy	Street widths and spaces between buildings are not sufficient to allow for privacy between buildings in new blocks of zone D.
	Intimate scale of streets creates strong sense of enclosure.
Sense of belongingness	Compact clustering, homogeneity of user group and availability of community facilities increase social interaction among residents.
Security	Security is hampered due to uncontrolled access, too many entries and poor lighting system.
Setback and regulations	Setback and regulations for open space standards been maintained. Maximum built coverage have not exceeded 33% of land area in all six zones of Azimpur housing.

Table 5.28: Testing of Evaluative criteria: Azimpur housing

### 5.5.2 TESTING OF EVALUATIVE CRITERIA: MOTIJHEEL HOUSING

Issue	Motijheel housing
Planning system (Spatial organization)	Distribution of open spaces is not even in the three zones of Motijheel housing. Ideal and Al-Helal zones don't have any playgrounds and playfields.
Circulation System for clarity of movement	Easy access due to linear pattern circulation in Ideal and Al-Helal zone. Medical zone has irregular circulation system, which creates confusion.
	Hierarchy of streets: 20' Primary road for large number of residents, 12' collector road for certain number of residents and 8' access road for residents of clusters. 10' peripheral road running in all three zones.
Segregation of vehicular & pedestrian traffic	No separate pedestrian walkways been provided.
Parking	No garage facilities.
Open space system	Private yards, semi private internal courts have been provided. Only one large playground in medical zone as public open space. But no playfields and play lots with playing equipments for children have been seen in any of the housing zone of Motijheel housing.
	Domestic activities, children's play, social interactions takes place in front yard, back yard, in internal courts and in streets.
Access	Maximum 5 minutes from primary access to dwelling units in all the zones.
	Peripheral road provides easy convenience of services and parking.
	Multifunctional usage of access spaces as playing, jogging, social interaction, parking etc.
Orientation and micro climate	In Ideal zone and Al-Helal zone most of the buildings have north-south orientation. But in medical zone buildings have been placed in all directions.



	Trees are scattered in certain areas and deep in certain areas of housing.
Privacy	Intimate scale of streets creates sense of enclosure.
Sense of belongingness	Due to availability of certain community facilities social interactions among residents is quite strong.
Security	Security is hampered due to uncontrolled access, too many entries and poor lighting system.
Setback and regulations	Setback and regulations for open space standards been maintained. Maximum built coverage have not exceeded 33% of land area.

Table 5.29: Testing of Evaluative criteria: Motijheel housing

### 5.5.3 TESTING OF EVALUATIVE CRITERIA: BAILY DUMP HOUSING

Issue	Baily Dump housing
Planning system (Spatial organization)	Easy access to central open spaces from all the dwellings.
Circulation System for clarity of movement	Linear and easy circulation system.
	12' primary road for large number of residents and access for residents of clusters.
Segregation of vehicular & pedestrian traffic	5' pedestrian walkways been provided at both sides of the primary road.
Parking	Adequate parking and garage facilities.
	Meeting places of youngsters, playing area for children, for domestic activities etc.
Open space system	Private yards, semi private internal courts and large central playground as public open space. Also four play lots with playing equipments for children have been designed for this housing.
	Domestic activities, children's play, social interaction, community activities.
Access	Maximum 5 minutes from primary access to dwelling units.

	Playing, jogging, social interaction etc.
Orientation and micro climate	Buildings have been oriented at north-south axis to ensure good ventilation, natural light and air.
	Plantation in open spaces and in paved court.
Privacy	45' internal court between buildings helps to maintain privacy.
Sense of belongingness	Compact clustering, homogeneity of user group, availability of recreational facilities creates sense of community with in this housing.
Security	Security is controlled by guards
Setback and regulations	Setback and regulations for open space standards been maintained. Maximum built coverage is 28%.

Table 5.30: Testing Evaluative criteria: Baily dump housing

#### 5.5.4 TESTING OF EVALUATIVE CRITERIA: DHAKESHARI HOUSING

Issue	Dhakeshari housing (BUET)
Planning system (Spatial organization)	Easy access to centrally located open spaces.
Circulation System for clarity of movement	Winding circulation pattern, which is slightly confusing.
	Hierarchy of streets: 16' primary road for large number of residents, 12'-15' collector road for certain number of residents.
Segregation of vehicular & pedestrian traffic	No separate walkway for pedestrians.
Parking	Inadequate parking and garage facilities.
Open space system	Private yards, semi private internal court and public open spaces as play grounds, playfields have been provided. No play lot with playing equipments. Islands of green spaces resulting from winding streets act as play spaces for children.

	Domestic activities, children's play, social interactions takes place in front yard, back yard, in internal courts and on streets.
Access	Maximum 5 minutes from primary access to dwelling units.
	No peripheral service road for easy convenience of services.
	Multifunctional usage of access spaces as playing, jogging, social interaction, parking, cloth drying etc.
Orientation and micro climate	The buildings have north-south orientation.
	Lots of trees all around the housing area.
Privacy	All the buildings have privacy due to intermediate spaces between buildings.
	Intimate scale of streets creates strong sense of enclosure.
Sense of belongingness	Homogeneity of user group helps social interaction among residents.
Security	Controlled access to maintain security and safety of the housing.
Setback and regulations	Setback and regulations for open space standards been maintained. Maximum built coverage is 22% of land area.

Table 5.31: Testing of Evaluative criteria: Dhakeshari housing

## 5.6 RESIDENTS RESPONSE OF STUDY AREAS:

Open space planning has a huge impact on local microclimate affecting the comfort, quality and usability of spaces in a community. Dhaka, the capital city of Bangladesh, is taken up as a case study where majority of government housing are developed. This research investigates four housing areas to show how open spaces planning, design and maintenance have produced different quality of spaces within the same city. The study engages analytical investigation using both primary and secondary sources information. A questionnaire survey was conducted among 330 residents randomly selected from the four housing (180 from Azimpur, 90 from Motijheel, 30 from BUET and 30 from Baily dump) and their opinion noted.

### 5.6.1 RESIDENTS RESPONSE ON DISTRIBUTION OF OPEN SPACE:

Field surveys to the selected housing areas revealed maximum building coverage is 28% in Baily dump housing and maximum open space left is 79% in Azimpur & Motijheel housing.

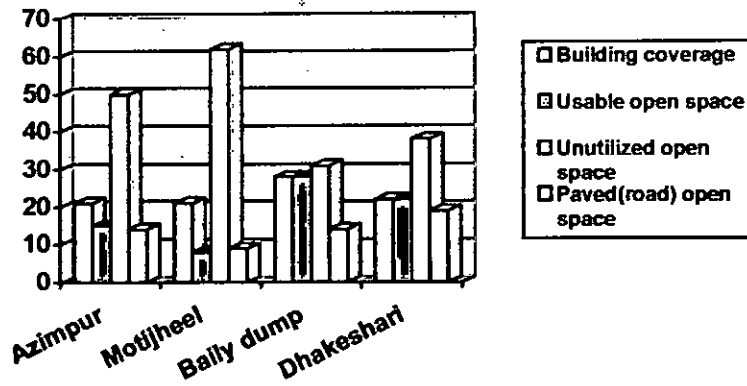


Figure 5.95 : Usability of open spaces

But the respondents of Azimpur & Motijheel housings are quite unsatisfied with the planning of open spaces within their locality. 45% respondents in Azimpur and 28% in Motijheel housing feel there is no open space at all. Whereas 30% users of Motijheel think open spaces are quite far from their locality.

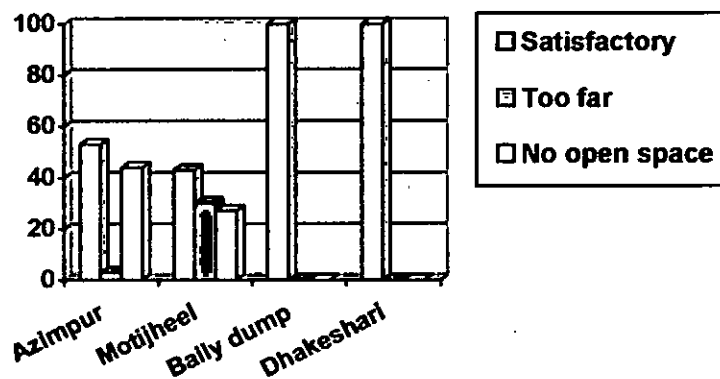


Figure 5.96: Response on distribution of open space

### 5.6.2 RESIDENTS RESPONSE ON CIRCULATION SYSTEM WITH IN HOUSING:

84% residents of Azimpur, 100% residents of Baily dump and Dhakeshari were satisfied with internal circulation system within their respective housing area. But residents of Motijheel feel circulation is difficult (28%) and confusing (16%).

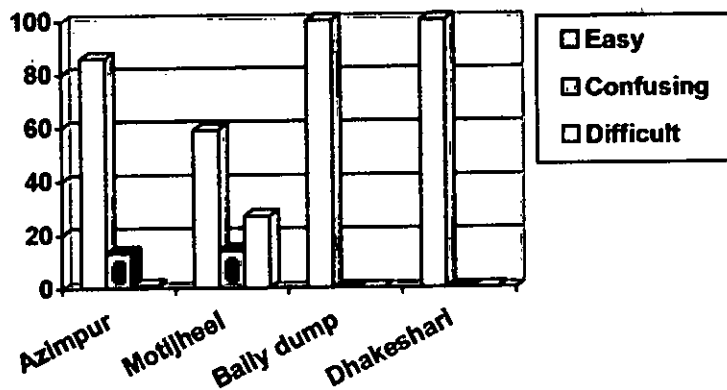


Figure 5.97: Response on internal circulation system

### 5.6.3 RESIDENTS RESPONSE ON OPEN SPACE

Analysis of Survey data shows that most of the respondent responds positively for need of open space. In all the localities the open space is used mainly for jogging, playing cricket, football etc. Playground is the most popular space for outdoor games among youngsters, which involve highest percentage to all housing blocks. Residents of Baily dump were satisfied with open spaces in their locality. Most residents in Azimpur, Motijheel and Dhakeshari were unsatisfied with the appearance of local open spaces, playfields and playgrounds. 65% respondents of Azimpur, 80% respondents of Motijheel and 75% of Dhakeshari complained about absence of informal play area for children. Many simply wanted a safe place for their children to play and run around. 95% users of Motijheel remarked on no provision for parking vehicles.

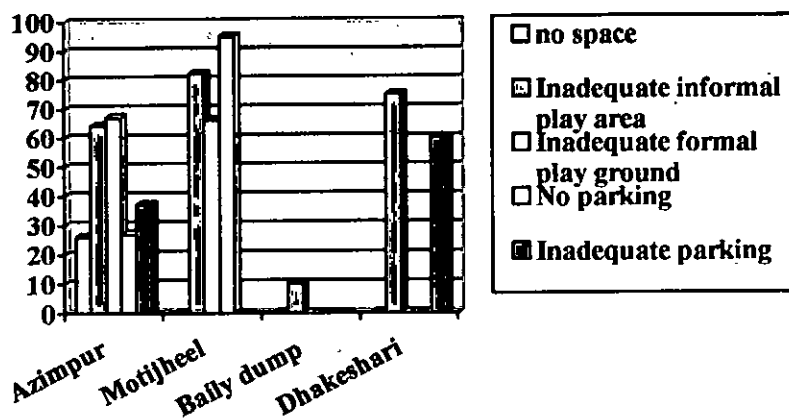


Figure 5.98: Response on open space

#### 5.6.4 RESIDENTS RESPONSE ON PRIVACY IN HOUSING AREA:

According to respondents of Azimpur housing privacy is hampered due to no visual barrier between private space and public space (45%), front road parking (30%) and Street widths and spaces between buildings are not sufficient (26%). Privacy is disturbed in Baily dump (78%) and Dhakeshari (60%) mainly for roadside parking in front of private spaces.

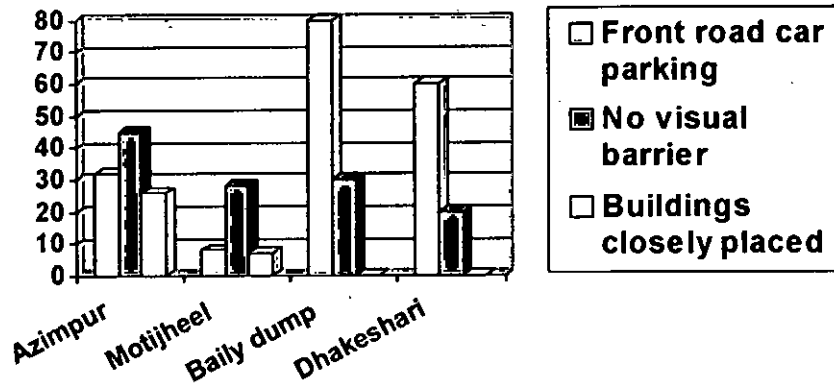


Figure 5.99: Response on privacy

#### 5.6.5 RESIDENTS RESPONSE ON SECURITY SYSTEM:

80% residents of Baily dump and 92% of Dhakeshari is satisfied with the security provided by housing. According to 42% respondent of Motijheel housing security is disturbed due to uncontrolled access and 38% due to poor lighting system. 65% respondents of Motijheel feel security is hampered due to improper street lighting and uncontrolled access. However, they suggested better lighting to improve the safety perception.

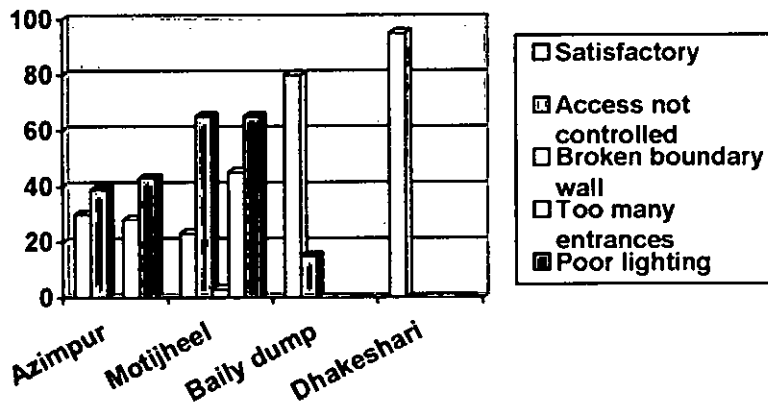


Figure 5.100: User's response on Security

### 5.6.6 RESIDENTS RESPONSE ON SENSE OF COMMUNITY:

Due to variety of community facilities such as mosque, club, school, college gymnasium, library, play area etc. 75% residents of Baily dump; 62% residents of Azimpur and 60% residents of Motijheel housing satisfied with the social interactions and bonding. But social interactions among the residents of Dhakeshari housing are very poor due to absence of any community facilities within the housing area.

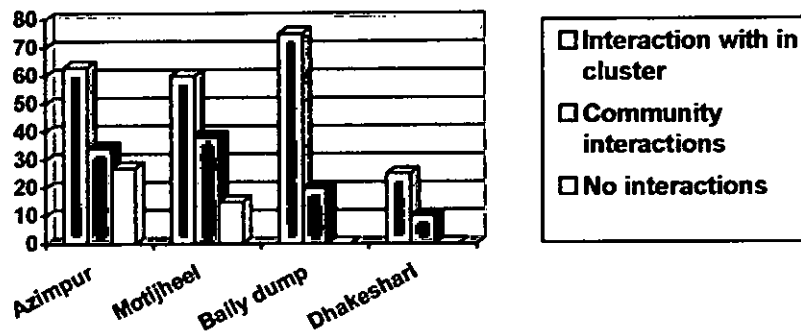


Figure 5.101: Response on sense of community

### 5.6.7 COMPARISON WITH STANDARDS OF OPEN SPACE IN RESIDENTIAL DEVELOPMENT:

At present the planning experts recommend for at least 4 acres of parks and open spaces per thousand populations for Bangladeshi cities (Farida Nilufer, 1999). Field survey reveals that except Azimpur government housing & Dhakeshari housing; other two selected housing areas have less open spaces according to the standards specify. Azimpur (5.7acre/1000 population) and Dhakeshari (4.39 acre/1000 population) have maximum amount of open space for their residents.

Housing	Total area of park and open space (acre)	Total flat	Total population (approximately) (6 person/ flat from survey)	Park and open space Area/1000 populations (acre)	Standards 4 acres of open space/1000 persons
Azimpur	63.2	1842	11052	5.7	Maintained
Motijheel	47.96	2346	14076	3.4	Not maintained
Bailydump	5.07	300	1800	2.8	Not maintained
Dhakeshari	4.39	155	930	4.39	Maintained

Table 5.32: Open spaces and population in study areas

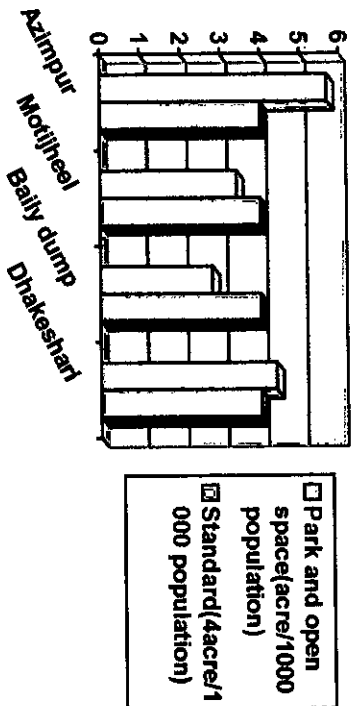


Figure5.102: Open space in study areas according to standards

### 5.7 COMPARISON OF FOUR HOUSING COMMUNITIES:

Community	Parameters	Site and area planning	Community channel	Plantation	Recreation space (playground/playfield, play lot)	Community facilities (school, club, library etc.)	Comparison of Four Housing Communities						
							Azimpur Housing	Motijheel housing	Baily dump	Dhakeshari	Al-Helal	Motijheel housing	Baily dump
	Zone A	Well planned	Well planned	Well planned	Satisfactory 100%	Satisfactory 60%							
	Zone B	Unplanned	Well planned	Well planned	Unsatisfactory 90%	Unsatisfactory 99%							
	Zone C	Well planned	Well planned	Well planned	Satisfactory 95%	Unsatisfactory 100%							
	Zone D	Well planned	Well planned	Well planned	Satisfactory 100%	Satisfactory 100%							
	Zone F	Unplanned	Well planned	Well planned	Unsatisfactory 80%	Unsatisfactory 100%							
	Zone G	Unplanned	Well planned	Well planned	Satisfactory 75%	Unsatisfactory 100%							
	Medical	Unplanned	Unplanned	Unplanned	Satisfactory 75 %	Satisfactory 100%							
	Ideal	Unplanned	Well planned	Well planned	Satisfactory 100%	Satisfactory 95 %							
	Al-Helal	Well planned	Well planned	Well planned	Satisfactory 80%	Unsatisfactory 100%							
	Dhakeshari Housing	Well planned	Well planned	Well planned	Satisfactory 100%	Unsatisfactory 100%							
	Baily dump Housing	Well planned	Well planned	Well planned	Satisfactory 100%	Unsatisfactory 100%							



Set back rule	Maintained 100%	Maintained 100%	Maintained 100%	Maintained 100%	Maintained 100%	Maintained 100%	Maintained 100%	Maintained 100%	Maintained 100%	Maintained 100%	Maintained 100%
Density	Medium 34 flat/acre	High 40 flat/acre	High 44 flat/acre	Low 11 flat/acre	High 41 flat/acre	High 40 flat/acre	High 55 flat/acre	High 44 flat/acre	Low 22 flat/acre	Medium 28 flat/acre	High 43 flat/acre
% of open space	81.2	74	82.3	72.2	87	76	74	74.2	88	78.4	72.4

Table 5.33: comparative analysis of study areas

### 5.8 SUMMERY OF THE FINDINGS:

The findings of the research restate that there remains a tremendous need of open spaces for the urban dwellers of Dhaka city. To serve the recreational need of the middle-income group well equipped large open spaces are needed within neighbourhood in proximity to residences. These open areas should be easily accessible and clearly visible from surrounding areas to ensure maximum utilization. Some focal points and activity centers are needed to generate activity inside the open spaces. This study has tried to find out the importance of open space in local environment particularly in a densely developed city like Dhaka and to identify various problems that exist in housing which discourages residents to use these open spaces. In terms of security, many residents want improved security. Some suggested gates around their unit and others recommended better lighting. Regarding amenities, residents want play area for children such as play lot, playground, yard or community center. Most raised maintenance issues related to an uncertainty of management responsibilities and requirements for open space. Residents had many recommendations in terms of maintenance of open space. Others recommended landscaping to improve the appearance of the grounds.

The study reveals that although in government housing more than 70% spaces have been kept as open; a significant amount of open space is left unutilized. The reasons are

- Lack of play space for children
- Lack of entertainment and recreational opportunities in area
- Condition of neighborhood and local parks

- Unplanned distribution of open space
- Pedestrian safety issues
- Security issues
- Poor maintenance and management of open spaces
- Unawareness among residents regarding the utility and preservation of open space

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CHAPTER: SIX

**CONCLUSION AND RECOMMENDATION**

INTRODUCTION

RECOMMENDATIONS

CONCLUSION

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# CHAPTER SIX

## CONCLUSION AND RECOMMENDATION

### 6.1 INTRODUCTION:

In short the findings of the previous chapters of this research work are:

- Identification of typology and functional characteristics of open spaces in residential development.
- Exploring different planning issues and standards for open space design in residential development.
- Identification of different government institutions & their responsibilities in public housing provision.
- Identification of the physical characteristics of open spaces in selected government housing.
- Finding out the problems regarding planning & maintenance of open spaces in government residential area & identification of the factors that should be considered during open space design.

### 6.2 RECOMMENDATIONS:

Open spaces should be developed with the needs of people in mind, which are attractive, have their own distinctive identity but respect and enhance the local character. Planning and design should basically aim at improving the quality of space in order to improve the living environment of the people.

**Climate responsive planning and design:** According to climatic consideration, placing a building in the north-south orientation is one of the best ways to incorporate cross ventilation and other climatic advantages. The street network should be properly oriented to facilitate comfortable outdoor life. Landscape design and the quality and quantity of open spaces needs to be integrated with urban planning and design. The microclimate of a residential development can be modified to a desirable level by the use of various landscape devices, careful location and sensitive selection of plant materials. Extensive plantation is also necessary for shade and pollution control.

**Layout/Orientation:** The benefits of appropriate orientation should be maximized to ensure that all dwellings have access to sunlight, and thereby help in the reduction of energy demand. Similarly, overshadowing of dwellings and private open space should

be avoided. Outdoor space and particularly communal space should be located on the southern elevation, where possible. Houses should face onto roads.

**Planning rules and regulations:** Within the broader aspect of urban planning, each of the following aspects needs careful elaboration and how they are to be implemented, these are- Site and area planning; Building and planning codes; Set-back rule and Floor Area Ratio (FAR); Landscape and preservation of existing trees and vegetation; Water bodies and drainage channels, and other natural heritage; Environmental issue etc.

**Hierarchy of open space:** There should be a hierarchical arrangement of open spaces to accommodate activities at various levels. These should be defined using appropriate elements of transition. The transition from the private domain to the public space should not be abrupt. It must provide a gradual change between the two domains. Public spaces should occur along well-used movement paths. The form of public space in terms of enclosures, restricted access, landscaping, furniture and features affects its usability. These aspects should be taken care of during design.

**Adequate well designed shared open space in the context of available public open space:** Open space shall be located and designed as a community amenity and should be available for passive and active outdoor recreational purposes for the enjoyment of all residents. Open space must be provided in a manner where it is easily accessible from all lots or units Shared open space encourages community interaction and should be designed to reflect practical and recreational requirements by providing facilities such as drying greens, toddler play areas, trails, pleasant seating areas and similar passive recreational facilities to satisfy the needs of future residents of the development. The landscaping of these areas should be surfaced with any practical combination of lawn, paving, decking, concrete, or other serviceable material and hence provide a connection to nature in a city living context.

**Appropriate useable private outdoor space:** All dwellings should have useable private outdoor space such as ground floor gardens, usable balconies, roof gardens or roof terraces. The size of private open space should be directly related to the number of people living in the dwelling and hence the dwelling size. The private open space

should be designed to maximize sunlight access, safety, and adaptability for a variety of family activities.

**Safe play areas for children:** Children of all ages should have easy access to appropriately located, designed and landscaped outdoor play areas suited to their developmental and play needs. Separation of adjacent play areas for different age groups may be achieved either by landscaping, surface treatment, or a change of grade within the common open space. It is essential to strictly segregate children's play and circulation areas from vehicular routes, parking and loading areas.

**Grouping of people:** Grouping on the basis of socio-cultural background and occupation should be encouraged. Consciousness of community emerges when a group of families share and participate in activities vital to them such as cultural or religious festivals, recreation, management of amenities and utilities etc.

**Privacy:** Privacy is a basic qualitative aspect to residential design. Distance between buildings should depend on the height of the building. All dwellings should be provided with a private amenity space in the form of a garden, patio, balcony or terrace. Direct views into one private open space from another should be avoided though the use of landscaping and screening devices.

**Safe pedestrian circulation routes:** Ensure that both internal and external circulation routes are designed to enhance security, especially for women, children and seniors and to accommodate the full range of activities, which can be expected to occur in them. For more than 1000 population pedestrian walkway in housing area is a necessity. Focus on the quality of the place and living environment being created and give priority to the needs of pedestrians rather than the movement and parking of vehicles.

**Minimum impact of car parking on streetscape and open space:** Parking should be secure, accessible and adequate for the needs of residents and visitors. Residents' parking should be sited so as to minimize walking distance to units. Underground, basement or multi-level secure parking should be encouraged. On-street parking should be limited to visitor, improving the visual and environmental quality of the

street. Back yard parking should be avoided as this generally results in the loss of quality shared open space.

**Landscaping:** Landscape with a combination of structures, communication channels, open-space, vegetation, etc. make up the city and illustrates a standard of urban development. The conditions of landscape in neighbourhood open spaces are degraded due to lack of care and maintenance. Landscape makes open spaces more user friendly. Plantation, water body, meaningful sequence of walkways, hierarchy of open spaces, sittings etc. integrated with green environment attracts human mind. So concerned authorities should give attention to various landscaping features and their regular maintenance and treatment. The local authority should also provide the utility facilities like electricity, drainage, water supply etc.

**Ensure security:** Too many entrances and security control system are one of the major problems of open spaces in government housing. Haphazard access creates major security problem. Improper maintenance of the boundary walls, improper lighting and other infrastructures also cause insecurity. Therefore controlled, restricted, well-organized and integrated security system should be introduced. Outdoor lighting for a safer nighttime environment should be installed and maintained along all vehicular access ways, major walkways and access points.

**Encourage public participation:** To preserve, to maintain and to improve the quality of the local as well as urban environment, public and the government must act equally. Awareness for better living environment will guide residents to proper maintenances of physical resources and greenery in their locality.

### **6.3 CONCLUSION:**

The quality of life in urban areas is severely threatened by extreme population pressure, lack of facilities, amenities and air and noise pollution. The importance of actively addressing a broad range of interrelated issues both in neighbourhood and site design is required if successful open space is to be created. High-density housing will never be successful in isolation and therefore neighbourhood context is critical. The nature of high density housing means that there are more shared facilities and there needs to be robust processes in place to oversee these, such as residents involvement in the management process and ensuring high standards of management and

maintenance of open spaces. Nurturing a sense of community responsibility and respect for neighbours is also important.

Authority needs to be aware of the value of the open spaces for city life and they should be accountable to the public for the protection, maintenance and control of these areas. It is also necessary to adopt new laws and regulations to save open spaces from misuse and encroachment. The quality of existing open spaces in government residential development can be improved significantly through further direct and indirect initiatives from the Government framing proper legislation, adopting and implementing proper policy towards open space planning.

The city should create a sense of belonging and have connection with its communities and the residents that live therein. This responsibility lies not only with the city development authorities but with the residents as well. A proper understanding of the nature of human needs is of crucial importance in the formulation of housing and space standards. Traditionally outdoor spaces are regarded as important as indoor spaces, because they are intensively used year round in Bangladesh. Outdoor spaces are used, by the housewives to perform other household chores, by children to play, by adults to stroll or interact with their neighbors. But present urban planning and design tend to ignore these facts and the sense of belonging to the community is gradually being lost. The local authorities should aim to maintain or form networks of green and open spaces, which are:

- **Well located** - linking into the open space network, connecting into well-used routes and overlooked by buildings, helping to foster a feeling of safety and discourage anti-social behavior as well as being easily accessible to all.
- **Well designed** - designed to reduce vandalism and, where appropriate, maintenance, with the use of high quality durable materials.
- **Well managed** - covered by a management and maintenance regime attuned to the type of space, durability, level of usage and local interests.
- **Adaptable** - be capable of serving a number of functions and adapting to different uses while promoting a range of benefits such as biodiversity, flood control or environmental education.



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## APPENDICES:

### QUESTIONNAIRE SURVEY FOR FIELD STUDY:

1. Name of the housing scheme:
2. Building no. & flat no.:
3. Name & occupation of the resident:
4. Family structure

Age group	Occupation	Working hour	Leisure time	Outdoor activity in leisure time
Children M 0-13 F				
Youngsters M 14-22 F				
Men/Woman M 23-55 F				
Elders M 55+ F				

5. Out door activity in leisure time:

Jogging                                      Playing games                                      Strolling  
Sun basking                                      Social interaction                                      Relaxing

6. Does your family use the open space within the housing area? Yes\_\_\_\_\_No\_\_\_\_\_

7. If no, why don't they use it?

No time	Not safe (no segregation between road and play area)
Open space quite far	Have to cross vehicular road
Not visible from the dwelling unit	Deficiency of playing equipments
Poor maintenance	Absence of seating area

8. How often is the open space used?

Time	Children	Youngsters	Men	Woman	Elders
Daily					
Occasionally					
Rarely					

9. Is there any seasonal variation in the use of the open space? Yes\_\_\_\_\_ No\_\_\_\_\_

10. If yes, when is it more used? Summer\_\_\_\_\_ Winter\_\_\_\_\_

11. How much time is spent in the open space everyday?

Hour	Children	Youngsters	Men	Women	Elders
1					
1-2					
2-4					
4+					

12. Types of open spaces and usage pattern in housing

User type	Type of open space available	Who in the family uses the open space	Purpose	Maintenance (Good/poor)
Private	Courtyards Gardens			
Semipublic	Tot lots Internal court Playfields Pedestrian street			
Public	Large playgrounds Community space Roads Parking			

13. Activities performed in the open spaces:

Activity	Children	Adults	Elders
Household uses			
Playing			
Relaxing			
Social gathering			
Strolling			
Family gathering			
Any other activity			

14. Maintenance of the open spaces?

Good .....Satisfactory .....Poor.....

15. Comment on the adequacy of open space in the housing

	Recreational purpose	Community facilities	Parking
Adequate			
Inadequate			

16. Is the open space safe for children? Yes..... No.....

17. Do you feel that the open space is conveniently located for outdoor activities?  
Yes..... No.....

18. How much the open space is utilized?  
Fully used..... Partially used..... Unused.....

19. Any facilities provided to carry out community interactions:

Club.....Community center..... Mosque..... School.....

20. What else would you like to have in open spaces?

Trees	Children play equipment
Lawns	Seating
Walkway	Variation in sizes of open spaces
Shading devices	Water pool/fountain
Security	Lighting



21. Is there enough space to park your vehicles? Yes \_\_\_\_\_ No \_\_\_\_\_

22. Do you have enough privacy at home? Yes \_\_\_\_\_ No \_\_\_\_\_

If no; then why?

Parking in front yard	No separation between road & front yard
Buildings close by	No open space between access road & dwelling unit

23. If your house is at ground floor, then what happens to the open space that is next to your house?

Privacy disturbed	Domestic activities get extended to the open space
Noisy	Enough light & ventilation

24. How often do you interact with your neighbours?

Daily	Weekly	Occasionally	Rarely
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25. Where does the interaction among neighbours take place?

Court yard	Open space next to the house	Street	Community open space	Others
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26. Is the entry to your house easily noticeable? Yes \_\_\_\_\_ No \_\_\_\_\_

27. Is your house easily accessible for an outsider? Yes \_\_\_\_\_ No \_\_\_\_\_

28. How is the security system of your housing?

Good	Fair	Poor
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29. Are you satisfied with the overall environment of your housing?

Yes	No
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30. Suggestions to improve the outdoor environment of your housing.

Issues	User's response	Azimpur Housing						Motijheel Housing			Baily dump %	Dhak-eshari %
		%						%				
Distribution of open space		A	B	C	D	F	G	Medi cal	Ideal	Al-Helal		
	Satisfactor y	75	80	10	100	20	5	70	20	40	100	100
	Too far		20					30		60		
	No open space			90		80	95		80			

Table A.1 User's response on distribution of open space

Issues	User's response	Azimpur Housing						Motijheel Housing			Baily dump %	Dhak-eshari %
		%						%				
Circulation system		A	B	C	D	F	G	Medi cal	Ideal	Al-Helal		
	Easy	70	100	100	75	70	100		88	90	100	100
	Slightly confusing	25			25	30		20	12	10		
	Difficult	5						80				

Table A.2 User's response on internal circulation system

Issues	User's response	Azimpur Housing						Motijheel Housing			Baily dump %	Dhak-eshari %
		%						%				
Open space		A	B	C	D	F	G	Medi cal	Ideal	Al-Helal		
	No space			90		25	40					
	Inadequate informal play area	70		100	60	80	75	90	80	75	10	75
	Inadequate formal play ground		80	100	20	100	100		100	98		
	No parking			75		80		95	90	100		
	Inadequate parking	30	20		85		85					60

Table A.3 User's response on open space system

Issues	User's response	Azimpur Housing						Motijheel Housing			Baily dump %	Dhak-eshari %
		%						%				
Privacy interrupted		A	B	C	D	F	G	Medi cal	Ideal	Al-Helal		
	Front road car parking		75		20	80	15			25	80	60
	No visual barrier	70	30	70	70		30			85	30	20
	Buildings close by				30	88	40			20		

Table A.4 User's response on privacy

Issues	User's response	Azimpur Housing						Motijheel Housing			Baily dump %	Dhak-eshari %	
		%						%					
Security		A	B	C	D	F	G	Medi cal	Ideal	Al-Helal			
	Satisfactor y		60	30				90		70		80	95
	Access not controlled	75		15	70	75			80	30	85	15	
	Broken boundary wall								30				
	Too many entrances	85				80			45		90		
	Poor lighting	80	15	30	60	75			70	60	65		

TableA.5 User's response on security

Issues	User's response	Azimpur Housing						Motijheel Housing			Baily dump %	Dhak-eshari %
		%						%				
Sense of community		A	B	C	D	F	G	Medi cal	Ideal	Al-Helal		
	Interactions with in cluster	90	75	20	95	35	60	70	65	45	75	25
	Community interactions	70	50		85			70	15	30	20	10
	No interactions	25	20	30	20	60	5		45			

TableA.6 User's response on sense of community

