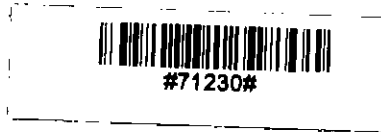
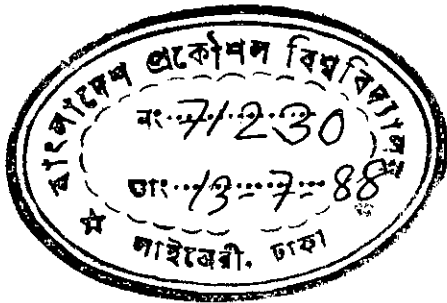


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GUIDED LAND DEVELOPMENT FOR PRIVATE RESIDENTIAL
AREAS IN DHAKA CITY: A CASE STUDY OF
SENPARA PARBATA AT MIRPUR

MD. RAFIUL KARIM



Submitted to the Department of Urban and Regional
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THESIS

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AREAS IN DHAKA CITY : A CASE STUDY OF SENPARA
PARBATA AT MIRPUR

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ABSTRACT

Management of urban land and its proper development is a great problem due to rapid urbanization in Bangladesh. The urban problem of the country is caused by two factors, shortage of land and lack of planned development. Therefore, a positive and effective government intervention in the development process is needed. The present study is aimed at exploring the possibility of an innovative management approach for urban residential development with minimum public expenditure. This new approach, known as "Guided Land Development" has been studied and examined through this study for the proper land management and development of urban fringe areas in Bangladesh.

The whole analysis in this study has been based on an area located near Dhaka city. Through this case study it is examined the possibility of adopting a land management approach for planned development of private residential lands in the urban fringe areas.

The research came out with results that, there is a wide scope for the application of Guided Land Development for the planned development of the cities and towns of Bangladesh. In the newly developing urban-fringe areas, there is lack of streets, utility services, community facilities, open space etc. which are essential. Lack of these in most of the growing private residential areas are deteriorating urban living conditions.

In Bangladesh most of the urban-fringe lands are privately owned. So, there is scope for planned urban development through the Guided Land Development technique which will enable to tackle the problems of piecemeal and scattered land and building development, delayed provision of road network, infrastructure and social facilities. In the initial stage government subsidy can be used for accelerating the implementation of the project. But in course of time it may not be necessary when the owners will see the potential benefits of such kinds of development process.

In this process of land development, it will ensure adequate supply of land for new residential development and to counter land speculation which is a strong barrier in the process of land development and which creates high land price in the market. Guided Land Development can probably reduce these problems.

Title of the Thesis : Guided Land Development for Private Residential Areas: A Case Study of Senpara Parbata at Mirpur.

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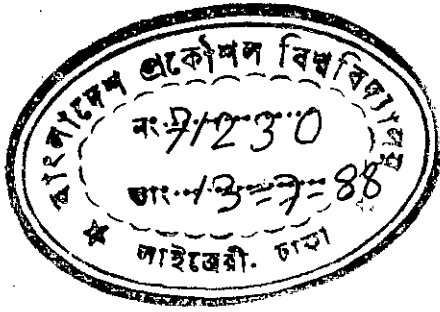
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CHAPTER - 1

INTRODUCTION



CHAPTER - 1

INTRODUCTION

1.1 Statement of the Problem

(The problem of Dhaka city increased in many respects after the liberation of Bangladesh. The problem of housing and transportation reached a critical stage in some parts of the city with Dhaka becoming a primate city. The population of Dhaka Statistical Metropolitan Area increased from 5.57 lacs in 1961 to 34.40 lacs in 1981 with an average annual growth rate of about 8 per cent. By the year 2000 the population of Dhaka city is expected to be around 9 million.

The spatial expansion of Dhaka city has been enormous. The city has expanded in all directions, but the direction of the growth has mostly been towards the north around the new international airport, Tongi and Saver. (But the development has been grossly unplanned and haphazard, since development has taken place on private initiative and absence of public intervention caused this problem.) Houses were constructed and minimum space was not reserved. The facing of houses were not same. Open space is absent and land for institutional development is very costly to acquire. According to the report of Urban Development Directorate

(UDD) only twenty areas in Dhaka city were developed in a planned way and all other areas have grown in an unplanned way.

In a developing country like Bangladesh, scarcity of land is one of the major problems. Hence, in selecting any technique to develop the urban areas, care should be taken about the factors like resource availability, social structure, land potentiality, etc. while efficiency in land utilization should be aimed and equity of participation should also be ensured by the policy makers.

Due to the acute housing shortages sites should be planned in Dhaka city with great care. It has been found that Rajdhani Unnayan Katripakhya (RAJUK) and Housing and Settlement Directorate (HSD) have got programmes to develop housing area through Sites and Services Schemes and some of which have already been implemented. These types of schemes everywhere involved heavy public expenditure and required long time to implement the projects.

With the passage of time it has been realised that the conventional methods of planning for residential areas (e.g. Sites and Services Schemes), particularly in large cities where the demand for land is very high,

has not been an adequate method of residential development. Both the supply and demand problem have been met in a socially costly methods in this process of development. On the other hand, those who originally possessed land have been deprived from the market value of land, deprived of their occupation and have been made to leave the land against their will. Demand on the other hand, has been rising against high price of land. This way of development has been slow and due to high cost involved, it could not be spread over a wide area. Due to this, urban planned housing development have lagged far behind the housing necessity of the growing urban population.

In this situation, the technique of Guided Land Development can probably ensure that, land will be used in the best possible manner and that it can be handed over to the future generation in an improved condition. The technique of Guided Land Development for private residential areas may also ensure availability of adequate land for circulations, service facilities, community facilities, and recreational purposes. Besides, it helps to cope with the housing problems of a rapidly growing urban population with minimum public expenditure.

1.2 Justification of the Study

The present research work was conducted with the aspiration that this would provide an understanding of the effectiveness of the present land development and management method and to examine the possibility of Guided Land Development as a technique for management and development of private unplanned residential areas in Dhaka city. This will help to reduce the problem of spontaneous and haphazard growth of housing settlement in the urban fringe. It is also expected that, the study would come out with a suitable method of land development for private residential areas in the urban areas of Bangladesh. (It is expected that it would reveal important background information about the unplanned growth of private residential areas and would show definite directions for further research in the field of urban land management and development. The present practice of land acquisition and distribution through the traditional Sites and Services Schemes has turned to prove too much expensive, time consuming and having high displacement effects. All these factors have been considered in this study to evolve a new method of land development for developing residential areas in the urban areas of Bangladesh. The research

should be of help to the town planners as well as the policy makers of the country.

1.3 Objectives

Guided Land Development is a technique for carrying out an unified subdivision planning and servicing of separate land holdings for planned urban development. It is also known as land pooling, land consolidation, land readjustment, land replotting and land redistribution in different countries. This technique involves the consolidation of separate land holdings in urban--fringe areas for their planning, servicing and subdivision as a single estate with the sale of some plots to recover the costs of subdivision and redistribution on the other sites to the potential purchasers. The Guided Land Development project is therefore a process of compulsory participation of the landowners. This type of scheme may be implemented by a local level development authority and also by a group of neighbouring landowners by forming a cooperative association.

As the title of this thesis would suggest, the aim of the study is to establish an innovative method of urban land development in Bangladesh. The followings are the main objectives of the study.

- i) To review the existing policy and institutional frameworks of Guided Land Development for resi-

dential areas in different countries of the world.

- ii) To survey and study the problem associated with the unplanned development of a private residential area in Dhaka city.
- iii) To examine the potentialities of Guided Land Development in a private residential area in Dhaka city.
- iv) To make a general policy recommendation for development of private residential areas with a minimum public expenditure based on the policy of Guided Land Development.

1.4 Scope of the Present Study

Land management is one of the important aspect for the development of cities and towns. There are various policies and methods for planned development of private residential areas e.g. sites and services, core or nucleous housing, zoning, taxation policy, building regulations etc. Of these methods, Guided Land Development is one which has some positive benefits. In this system of land development, land acquisition is not at all required and the existing inhabitants are not deprived from their rights and not made to leave the land against their will, on the other hand, this

is a self-financing method of urban land development where public expenditure is minimum. At the time of development works normal functions in project area are not hampered. As the land owners are directly involved in the development work, so smooth functioning is possible.

The present research is confined within one of the above instrument "Guided Land Development" to examine its suitability as an innovative method to improve the condition of an unplanned area. The study tried to apply the Guided Land Development technique to improve the overall situation of unplanned private residential areas in Dhaka city.

1.5 Methodology

The objective of Guided Land Development as outlined in section 1.3 were to establish a working methodology in general and determine the problems of unplanned urban development in the big city, Dhaka in particular. It was intended to investigate to apply the method of Guided Land Development for the planned residential development of Dhaka city and also other urban areas. The problems are insufficient access, circulation system, open space, recreational facilities, and lack of optimum utilization of valuable urban land. At the

same time, the study also envisaged to indicate the socio-economic conditions of an urban area i.e. sources of income, family size, education level, size of the plots, shape of the plots etc. The selected study area is a part of the Senpara Parbata Mauza. With this end in view the following methodology were adopted.

1.5.1 Selection of study area

For the present study, mauza Senpara Parbata has been selected as the study area. But the mauza is a large one which is consisted of six sheets in the mauza map and it is obvious that the entire mauza can not be studied or investigated for a research work like this one. This is why, a small part from the sheet No. 6 (six) has been selected for detailed study. The total area in the sheet No. 6 (six) is about 651 acres from which only 71.38 acres which is about 10 per cent of the total area has been taken. Both time and money was the constraint behind choosing of this limited area.

In respect of administrative status, the study area is a part of Rajdhani Unnayan Katripakhya i.e. RAJUK's zonal plan named "Senpara Parbata Zonal Plan". To build the city efficient, create healthy urban atmosphere and to make the city decent and convenient for

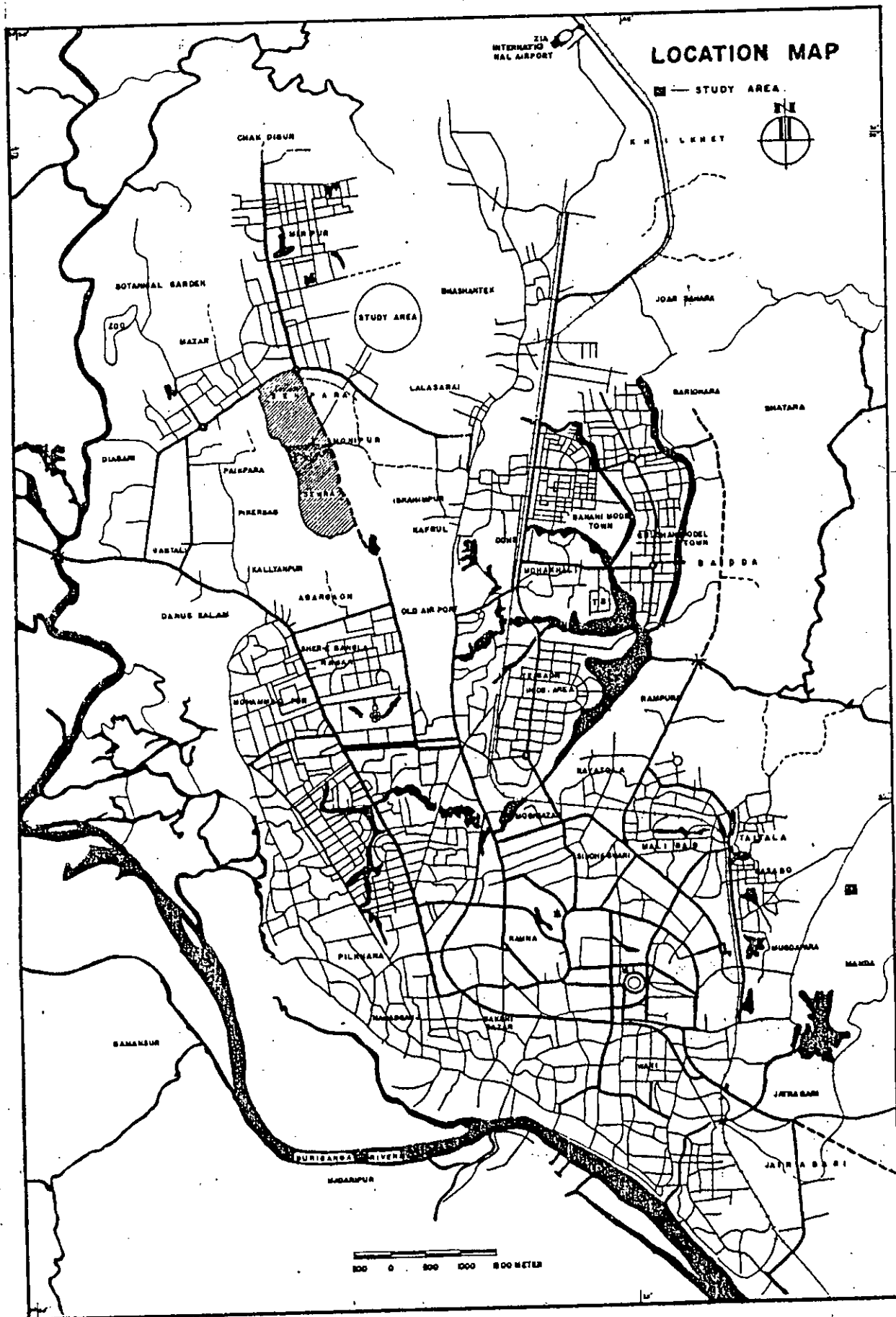


Fig. - 1.

living, it was prepared under the Master Plan of Dhaka in the year 1965.

According to the provisions of Dhaka City Master Plan of 1959 this area was earmarked primarily as a residential area. Some pockets of land were also earmarked as open space, zoo, government housing area, and the extension of the existing cantonment. Very recently Rajdhani Unnayan Katripakhya (RAJUK) has prepared a zonal plan in accordance with the recommendations in the master plan. The study area is a small part of this zonal plan which is still having its original and unchanged character.

1.5.2 Data collection

Data used in this thesis came both from primary and secondary sources, through field survey as well as from office records. The study were conducted between October 1986 and February 1987. Field data were collected by direct field survey, mapping and observation and socio-economic questionnaire survey.

a) Data collection from secondary sources

- i) Map collection: Field survey was conducted on a plot to plot basis. Therefore, it was necessary to identify and study each plot separately. One copy of cadastal survey map on the scale of 16

inches to a mile were collected from the Directorate of Land Record and Survey, Dhaka Bangladesh. Maps on contour and existing access networks were collected from Rajdhani Unnayan Katripakhya (RAJUK) Dhaka.

- ii) Land records and land titles, Land record of the study area were collected from record books of the Directorate of Land Records and Survey of Bangladesh. From the same office, the title of different plots i.e. homestead, agricultural land or water body were collected.
 - iii) Collection of literature and office records: Related literature were collected from different libraries specially from BUET and other Universities. The publications of AIT, Bangkok and City Planning Bureau at Nagoya, Japan, were also collected for this research work.
- b) Data collection from primary sources
- i) Reconnaissance survey: Before conducting the detailed survey a reconnaissance survey was conducted throughout the whole study area. On the basis of this survey the base map was upgraded.
 - ii) Physical and land use survey: A detailed land use survey was conducted on a plot to plot basis

because it was necessary to identify and study each plot separately. Two copies of cadastral survey maps on the scale of 16 inches to a mile were used for this purpose. One of the copies showed plots without plot numbers and was used to show the fragmentation of plots. Each plot was identified and data were recorded in a field book.

iii) Socio-economic and attitude surveys: Socio-economic and attitude surveys were conducted with the help of a questionnaire prepared for this purpose. Questions for the survey were set in a manner so as to extract informations relevant to the purpose of the study. Before the field enumeration the questionnaire were pre-tested and modified to make it easy to understand and respond. The following aspects were included in the questionnaire both quantitatively and qualitatively.

Part one: Socio-economic survey

- a) Socio-economic position of land owners
- b) Health and sanitation
- c) Communication facilities
- d) Education facilities
- e) Shopping facilities

- f) Mode of transport
- g) Land ownership survey
- h) Land value survey

Part two: **Attitude** survey

- a) Existing conditions and satisfaction of the settlers
 - b) Methods of development supported by the land owners
 - c) Financial arrangement for the recovery of project cost.
- iv) Land records and land fragmentation survey: On the basis of Revenue Survey Map (RSM) a plot to plot detailed survey were conducted for final record of each and every plot. The present state of plot fragmentation was recorded on the basis of field information.

1.5.3 Land value survey

The land value pattern has been noted for the year 1987 and the informations were derived from the local knowledgeable persons such as ward members, school teachers and businessmen.

1.5.4 Difficulties faced

- i) During physical and land use survey: The areas studied presented considerable amount of difficul-

ties in identifying plots. The cadastral map used for survey was prepared in 1913. As it is a growing urban area, since that time many changes have occurred in plot sizes, shapes and alignment. Changes have also taken place in many road alignment, pattern and in other features also. Therefore, identification of plots, their size and shape, road alignment and the location of ponds and canals were often difficult. Many of the plots which were vacant when the cadastral map was prepared have now been completely built over with no trace of original plot boundaries. This problem was often solved by identifying two consecutive road junctions and then dividing the road frontage in between them into the number of establishments found according to scale.

A reconnaissance survey was first undertaken to determine the general pattern of land use. The fractional code were used in the land use study.

- ii) Problems encountered in questionnaire survey: Considerable difficulties were also faced in the questionnaire survey in the study area. Most of the owners of the land were not available in and around the plots. The houses so far built were mostly rented out to other persons. In many

houses there were caretakers who could not give right information about the address of the owners. As a growing urban area, the land is highly fragmented but there is no signboard or name plates in the plots and even there were many plots which had no distinct demarcation boundaries. So identification of plots became a great problem. The local persons were reluctant to answer the questions about the amount of land owned by them and land values. There were many owners who had purchased land together but did not yet subdivide their plots.

iii) Limitations: The limitation lies in the methodology adopted for the study as well as the nature of data itself. The purposive selection of the area Senpara Parbata may be subjected to criticism. But in this type of studies, one study area is needed to be chosen according to the purpose of the study. The socio-economic information was collected on a sample basis. So, in the selected sample size, sampling error have been of a more acceptable figure. The various socio-economic classes by stratified sampling system could have been identified and sepa-

rated. But it would have needed very detailed prior informations for dividing the household list into strata. But there was no scope for doing that. It is to be remembered that the emphasis of the study is to find out the suitable method for applying in the Guided Land Development technique to develop the urban unplanned residential areas.

The study was based on purposive selection of one "mauza". However, it has similarities in socio-economic and physical characteristics with other unplanned areas in Dhaka city. The study aims at identifying the problems of such unplanned developed areas, and innovative methods for future urban development.

1.5.5 Data processing and analysis

The data obtained through questionnaire survey were processed through the simple statistical methods. Data were tabulated from the questionnaire and then tables were prepared according to the purpose of the study.

CHAPTER - 2

GUIDED LAND DEVELOPMENT AND ITS APPLICATION IN DIFFERENT COUNTRIES

CHAPTER - 2

GUIDED LAND DEVELOPMENT AND ITS APPLICATION
IN DIFFERENT COUNTRIES

2.1 Theoretical Concept of Guided Land Development

Guided Land Development is a process whereby a public authority assembles numerous small parcels of raw and unplanned urban land without paying monetary compensation to the owners, provides services and subdivides the land for urban uses, returns most of the resulting building sites to the original owners in proportion to the value of their land contributions and sells the remaining sites to recover all public costs. Therefore; Guided Land Development is a temporary form of public ownership to achieve unified control over large areas and a means of financing public service installation during the crucial and expensive land development stage of urban growth.

In this technique of Guided Land Development there are procedure for involvement for local people which will provide a means of achieving the timely completion of a land development project and also regular and uniform subdivision of land. This method of Guided Land Development could also be used to increase the supply of

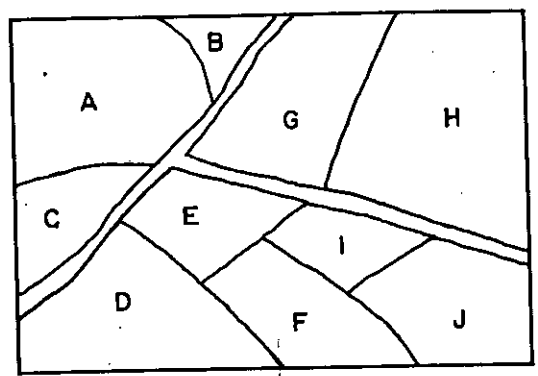
land for low-income housing which was adopted in many Asian countries to improve their urban land and to increase the supply of land for housing development. The traditional method of land development takes a long period of time to complete the project. On the other hand, huge public investments are involved.

It is a technique by which unplanned spontaneous urban settlement areas are improved and public facilities such as road, parks, sewerage, shopping center, educational institutes, open spaces are created and/or improved and individual sites are made easier to use.

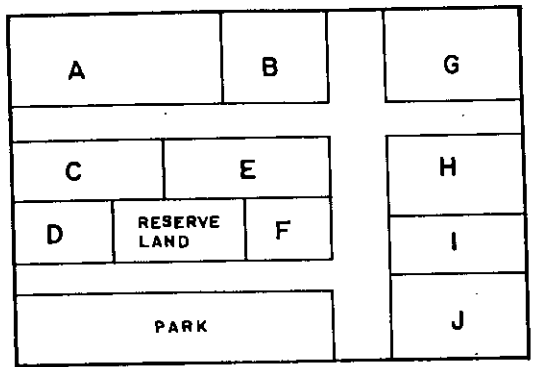
In this system the landowners included in the project area lose a small portion of their land, but in exchange, they receive greater benefits through the project by way of land value increase in their sites greatly as the shape, size and orientation of their present sites become more regular with implementation of the scheme. Now, after development, each plot becomes easier to use as equipped with necessary public facilities which increases the value of their sites greatly. In this system of land development owners participation is compulsory.

In this aspect where land owners give away a portion of their land for the whole project, it is called

CONCEPT OF GUIDED LAND DEVELOPMENT IN DIAGRAM



BEFORE THE PROJECT
FIG.-2A



AFTER DEVELOPMENT
FIG.-2B

REPRESENTATIVE PLOTS OF Mr.X, Y, Z. AND THEIR CONTRIBUTION AND DEVELOPMENT METHOD

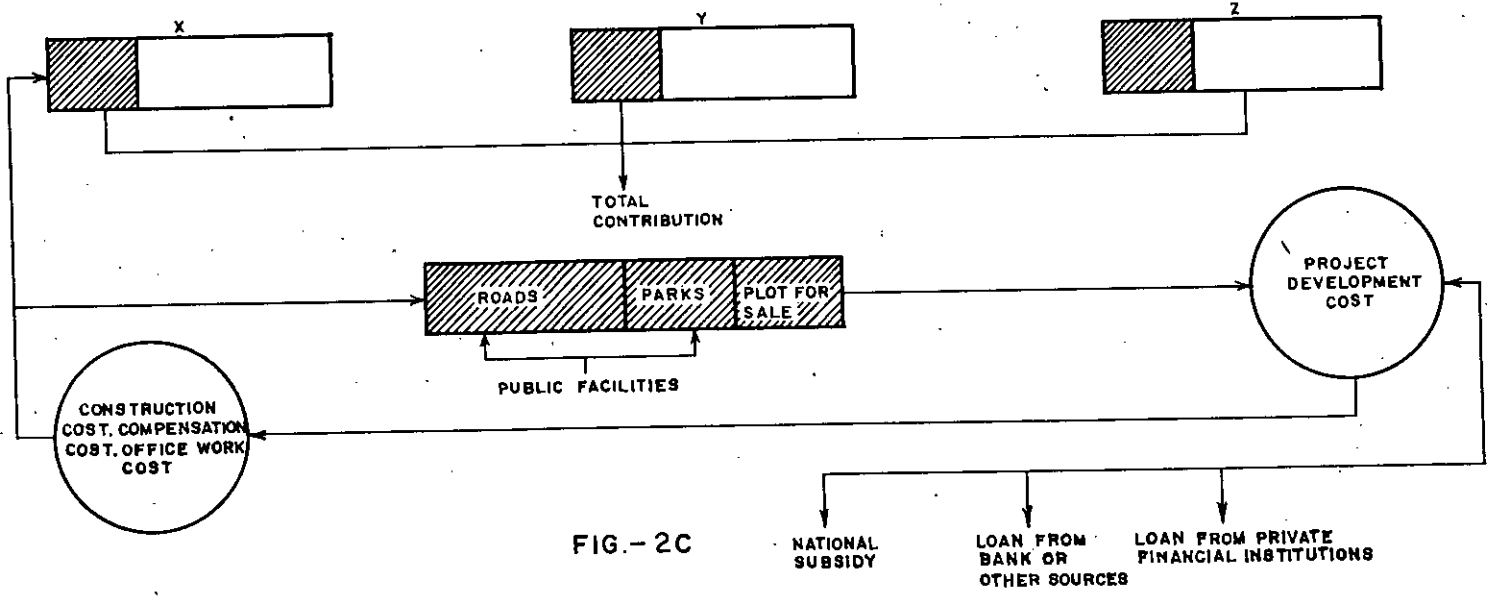


FIG.-2C

Fig-2

"contribution" and this contribution is an absolutely crucial element in the Guided Land Development project.

Similarly, another important element of Guided Land Development technique is "replotting". The original area minus the contribution for public facilities and reserve land is distributed to the individual owners of land after "replotting" and all the rights and interests that have existed to the previous sites are transferred to the new replotted sites. This transfer of sites is called "replotting disposition". These two elements "contribution" and "replotting" are the major characteristics of the technique of Guided Land Development.

The key concept of Guided Land Development has the following common features: (i) a comprehensive improvement of the urban area is ensured, (ii) the owners can enjoy the development benefits equitably, (iii) most of the owners in the area have participation in the implementation of the project, and (iv) the development cost of a Guided Land Development project is less than any other types of land development projects in common practice. The key concept of Guided Land Development method is shown in diagram No. 2 by a flow chart. The concept of Guided Land Development has been shown in three figures - Fig. No. 2-A, 2-B and 2-C. It has been

shown in these figures that the original boundaries of individual plots have been brought to a uniform shape in figure 2-B. The total method is shown in figure 2-C.

2.2 Major Characteristics of Guided Land Development

The countries where mixed economy exists, most of the urban-fringe lands are privately owned and in maximum cases developed privately for urban expansion by the subdivision of the existing land holdings for building construction. This process is subject to the problems of irregular land holding, scattered and remote subdivision, poor design, inadequate services, backlogs in the provision of public utility and road works by the government authorities, land shortage, excessive land speculation and high land price. Guided Land Development can reduce these problems by consolidating separate landholdings for unified subdivision.^{1/}

The very nature of Guided Land Development procedure involves the consolidation or aggregation of a group of adjoining landholdings in an urban fringe or a sub-urban area for their design, servicing and subdivision as a single estate into a proper layout of

^{1/} Introduction to Land Readjustment (Kuka-ku-Seiri) Practice; City Planning Bureau, The City of Nagoya, Japan, 1982, p. 5.

streets, open space and building sites for the planned urban uses of the land. Some of the serviced and developed new sites are sold to recover the project cost and the other sites are distributed back to the landowners who are included in the designed project. Each project of Guided Land Development is therefore a compulsory participation and partnerships of the landowners for greater interest of landholders.

The technique of Guided Land Development provides an alternative to private land subdivision on the one hand, and to the government land acquisition and subdivision on the other.

This method is suitable mainly for subdivision of land for new urban development rather than for the redevelopment of established urban areas.

Residents of the project area can maintain their normal life. Owners of land, leaseholders and other persons who have some rights within the project area can maintain every day life and business activities with little interruption during the project period.

The shapes of the land in the unplanned areas are irregular which creates waste of land. Since lot shapes and land conditions are altered over the whole project area in a Guided Land Development project, there is

imminent, the area is declared a land readjustment project. It is either initiated by the Government or by petition from a qualified percentage (in Korea, 80%) of the landowners in the readjustment area. The city Government or private readjustment authority then prepare a site plan for the entire area, replotting the land to accommodate both private building sites and public uses such as streets, schools, and markets. The city also installs all the public infrastructure, such as paved roads, sewers, water supply and electricity. The resulting market value to the newly created building sites is then estimated, and the government retains a sufficient number of building sites for subsequent auction to pay for all the public costs incurred in the planning and installation of infrastructure. The remaining building sites are then returned to the original owners in proportion to the value of each owner's initial contribution of land to the total project areas, and if possible the sites returned to the original owner are within or near the specific parcel of land that he contributed in the project.

The Guided Land Development in the name of "Land Readjustment technique" has been first introduced in the Republic of Korea in 1934. A total of 392 projects, have so far been completed or in the process of imple-

mentation and a quarter of the built-up areas of Korea's urban places has been developed through this land readjustment programs. It is proved that in a developing country like ours where the public fund for housing development is limited, this technique or Guided Land Development can truly help in shaping the spatial configurations in urban areas and in supplying the urgently needed serviced plots for the incoming migrants from the rural areas as well as for the naturally growing urban population. So, the Guided Land Development technique can be widely used in our country for our urban land development for housing as well.

This program can be quite effective if located in the urban periphery and can help in the conversion of fringe areas into urban residential spaces.

The Guided Land Development technique was separately introduced to the Asia-Pacific Region via two European countries, Germany and Britain. Japan adopted this technique in the late 19th century to rationalise the pattern of agricultural land holdings and then adopted it for the conversion of rural land to urban uses and incorporated it in the City Planning Law of 1919. Japan later introduced it to South Korea and Taiwan when these countries were under Japanese occupation.

In case of India, Australia and Canada, they were linked as a members of the British Empire and Commonwealth, and their land use planning control systems were modelled on the English system. The plot reconstitution technique which is related to Guided Land Development was introduced to India by the Bombay Town Planning Act, 1915 and this technique was introduced to Australia by the Western Australian Town Planning and Development Act, 1928. Land replotting has been used by some provinces in Canada, such as Alberta, for many years. Although these countries had a common link with Britain, the British planning system never incorporated their technique.

It is noteworthy that all these countries adopted Guided Land Development as a town planning measure, as a means of implementing the officially approved pattern of urban land use, rather than as a measure for managing urban development. This has remained its main purpose and it has been little used to co-ordinate the process of urban expansion and to manage the supply of land for building development.

It is also noteworthy that although there were links between the countries adopting Guided Land Development there are significant differences in the techniques.

The practices of Guided Land Development in some countries are discussed in the following sections.

2.3.1 Japan^{2/}

Urban Guided Land Development is officially known in Japan as "land readjustment". It was first authorised by the City Planning Acts 1919 which adopted the "farm land pooling and readjustment" process. Urban Guided Land Development projects were mainly used to rehabilitate earthquake and fire disaster areas (under the Special City Planning Act, 1923) and for urban expansion in some of the rapidly growing cities such as Tokyo, Nagoya and Kyoto. It was widely used for the rehabilitation of the war damaged areas (under the Special City Planning Act; 1946) and then adopted by the government as a favoured method of implementing urban land development. The Land Readjustment Act, 1954 replaced the "farm land readjustment" approach with a more efficient process. This improved process was also extended to the redevelopment of established urban areas, first by the Reformation of Urban Areas Act, 1961 and then by the Urban Development Act, 1969.

^{2/} Archer R.W.; The use of land pooling/Readjustment to improve Urban Development and Land supply in Asian countries, HSD working paper No. 14, P.P. 9. Urban land program, Human Settlements Division, Asian Institute of Technology, Bangkok, Thailand.

The various laws authorising and regulating are administered by the Ministry of Guided Land Development construction.

This "evolution" of the legislation for Guided Land Development for urban land in Japan means that the 312,000 hectares of land pooled and readjusted from 1919 to 1981 was authorised and regulated by four separate laws. But most (some 232,000 hectares) of the pooling was carried out under the 1954 land readjustment law.

The Guided Land Development law authorises government agencies (mainly local governments) and approved landowner groups to undertake these projects. One main requirement in formulating a Guided Land Development Scheme is that at least two third of the affected landowners, by both number and area, support the proposed project. The schemes are approved and authorised by the prefectural (provincial) governments.

These show that over 70% of the Guided Land Development in Japan (by area) is carried out by local government (42.3%) and landowner associations (29.5%), and that the local government projects are more than twice as large on average as the landowner association projects.

Most of the Guided Land Development projects are undertaken in the urban fringe areas that have been zoned for urban development and designated as "urban promotion areas". Guided Land Development become difficult and complex when these areas contain a large amount of scattered building development with only about half the land being used as farmland, so that the cost of compensation for buildings and other improvements to be removed is substantial and there is limited net increase in the amount of residential land.

The different Guided Land Development agencies usually have different land development objectives. Whereas the landowner associations are primarily interested in subdividing their land for profit; the local government undertake many of their projects in order to install major infrastructure works. Similarly, government agencies such as the highways authority are mainly interested in using readjustment projects for highway construction purposes while the Japan Housing Corporation uses them to expand its housing projects and to increase the amount of land available for public housing.

The differences in the objectives and priorities of the various agencies lead to differences in the size, cost structure, financing and land outputs of their projects. This types of projects undertaken by local and central government boides also unusally have a much larger public works content than the landowner projects so that most of their financing is from government subsidies and public works funds, with only a minor part from the land value increases. Likewise, the main land output from the government projects is usually as public facility land rather than as residential land (except in the case of the housing corporation and new town corporation projects).

In the case of local government Guided Land Developemnt projects, the municipality prepares the project regulations and draft project program (with a draft outline design) submits them to the prefectural governor for approval. The proram is exhibited for landowner information and objections which are considered by the city planning council. Any resulting amendments are also exhibited for information and possible objections. The final program is approved by the governor and the project regulations become a municipal ordinance.

In the case of landowner association projects, they can be initiated by seven or more persons (not necessarily landowners) who prepare a project program and articles of association, obtain the support of over 66% of the affected landowners and land lessees (by both number and area) and then obtain the approval of the prefectural governor after public exhibition of the project program. Once the association is established the project is implemented by a board of directors which includes two or more elected landowner members to act as "auditors". The project program, project budget, replotting plan, plot allocation plan, plot selling procedures, etc. are approved and amended by general meetings of all association members. Most proposals and issues are decided by majority vote but some matters require a two-thirds majority vote for their adoption. When the landowners association has over 100 members it can form a forum of elected representatives of the members (in ratio of 1 or more to 10) to replace the general meetings of all members.

Each Guided Land Development project is required to conform to the official land use plan and the official view in that it is primarily a technique for the implementation of city plans. In case of landowner, the street layout plan for the project is prepared by the

municipal planning department while the replotting plan is prepared by consultant experts for the association.

The replotting plan divides the blocks bounded by streets into the areas to be reallocated to the original landowners. Each area should be at or close to the landowner's original landholding, and give him his fair share of the project land by value. However, this allocation of the new plot is not based on the assessed market value of the land but is determined by the use of a land value index or formula that gives weightage for land use, location, street frontage, and other factors that influence land value. This means that the replotting is conducted in secret, and is a source of dispute. It also means that no complete financial analysis, with a statement of land values in and land values-out, of each project is prepared or published. The handsome land value gains usually going to the landowners therefore do not become public information.

Although Japan has long and extensive experience with this technique and has improved its system, it still has a number of shortcomings. Also, the technique is not fully accepted; it is not used in half of the municipalities in Japan, and a significant minority of landowners oppose the technique. They have formed

an organisation to campaign against it in its present form in order to gain greater benefits for the land-owners.

The main shortcoming of Guided Land Development as practiced in Japan relates to land supply. It is not used to increase the effective supply of land for housing except in the case of the Guided Land Development projects undertaken by the Japan Housing Corporation and the new town corporations. Many landowners prefer to retain a substantial proportion of the urban plots they are allocated and to hold them as an investment, so that in effect, they become land speculators. Japanese planners complain that there has been excessive use of Guided Land Development in some cities because there are so many undeveloped vacant plots in their suburban areas.

2.3.2 South Korea^{3/}

As in Japan, urban land pooling in South Korea developed out of the experience with rural land readjustment. This was used on a wide-scale during the 1930's to consolidate and regularise rural landholdings, widen rural roads and provide sites for public facilities

^{3/} Introduction to Land Readjustment (Kuka-ku-Seiri) Practice; City Planning Bureau, The City of Nagoya, Japan, 1982, p. 13.

in villages. This technique began in 1936 under the Urban Land Planning Ordinance based on the Japanese planning law of 1923. This ordinance was replaced by the City Planning Law, 1962 and then by the Land Readjustment Project Law, 1966 which is administered by the Ministry of Construction.

Guided Land Development in Korea is carried out by local governments, landowner associations, the Ministry of Construction and the three national government development corporations engaged in land, housing and industrial estate development. Most urban development in Korea is carried out through this technique, but some local governments and the three development corporations also undertake a considerable amount of land development on land that they have purchased, by both negotiation and compulsory purchases.

The widespread use of Guided Land Development was mainly due to the very rapid urbanisation in South Korea after 1955. Between 1955 and 1980 the national population increased by 77% from 21.5 to 38.1 million persons and the proportion of the population living in the cities and towns rose from 32.3% of the national population. One consequence of this intense pressure for urban development was that Guided Land Development was used primarily as a technique for financing the

installation of network infrastructure and secondly as a means of achieving a good standard of planned urban land use. These projects received little financial support from the national government, even for major infrastructure works, so that they had to be self-financing and this encouraged largescale projects. For example, the ten projects in Seoul completed during the period 1971-80 (mainly by the Seoul City Government) averaged 282 hectares each. This need to finance more than just the local infrastructure works out of the project land value gains plus the pressures from the landowners for the maximum land return to them, meant that there was often an inadequate provision of land for roads, open space and public facilities in land pooling schemes.

A second important factor influencing urban development in Korea is that the country has a limited stock of arable land with small landholdings. The limited area of arable land in a country where there is a high priority for food production means that there is a shortage of land suitable and available for urban development. This is one of the explanations of the shortage of housing land and housing, and their high prices. The large numbers of small landholders in urban-fringe areas has two implications for Guided Land Development

projects. First, many of the farmers involved in projects sell their land to speculators because they cannot afford to await for the completion of a large-scale project. Second, it considerably increases the complexity of the projects and the difficulty of replotting the land.

There is a serious housing shortage in Korean cities. This is shown by 1980 census finding that 49% of the dwellings in Seoul were occupied by two or more households and that each dwelling unit accommodated an average 1.86 households. The brunt of this housing shortage is borne by the urban poor. Two of the causal factors in the urban housing shortage, rapid urbanisation and land scarcity, have been mentioned. A third factor was the secondary priority given to housing in national development programs. However, the government has increased its housing effort over the past ten years and launched a large-scale project for low-income housing in 1981.

Two of the distinctive features of Guided Land Development projects in South Korea are that they are almost wholly self-financing and are undertaken as large-scale projects. They are also undertaken in a context of very high urban land values. Yet they appear to be organised on a crude basis as the landowners' share

in a project is calculated on the basis of land area rather than land value, apparently because of the lack of land valuation skills. This land area approach causes great inequities between the landowners and generates heavy pressure for the maximum land area return to the landowners. M-C. Hwang found in his case study of the Guided Land Development project on 1,120 hectares of land in the Seoul urban-fringe that one landowner obtained a land value gain of 217 times on the farm use value of this land (from US \$ 5,690 to \$ 1,240,700) while a nearby landowner made a gain of only 45 times (from US \$ 4,055 to \$ 182,9910).

2.3.3 Taiwan^{4/}

Urban Guided Land Development is usually referred to as urban land consolidation in Taiwan, reflecting its links with the program for rural land consolidation. This latter program was undertaken to consolidate fragmented farm holdings and install infrastructure and facilities in rural areas. Both urban and rural Guided Land Development in Taiwan are seen as measures for implementing the land policy concepts and principles formulated by Dr. Sun Yat-sen. These included

^{4/} Introduction to Land Readjustment (Kuka-ku-Seiri) Practice; City Planning Bureau, The City of Nagoya, Japan, 1982, p. 16.

the principles of private ownership of land, "the equalisation of land rights", private landownership for use, not speculation, and community ownership of the "unearned increments" in land values

Virtually all the Guided Land Development undertaken in Taiwan has been carried out since 1958, first in rural land and then in urban land. In rural areas this technique began after the completion of the land reform program. This first projects were undertaken on a trial and demonstration basis during 1958/61 and then under the first program of 1962/71 followed by the second program of 1977/82.

The first urban Guided Land Development project in the name of land pooling was begun in 1958 in Kaohsiung, the second city of Taiwan. Although successful, the adoption of this technique was slow up to 1971 with only 11 projects for 358 ha. being completed, as priority was given to the rural program. The urban land pooling program was launched in 1971 and by 1978 some 49 projects for 2,175 ha. had been carried out by 19 local governments. It is estimated that the 44 projects that were undertaken outside Taipei City, saved their local governments a total of US \$ 73.4 million in public infrastructure works costs and US \$ 86.4 million in land acquisition costs (in current prices).

Guided Land Development is authorised by the Land Law between 1930-1955 and urban land pooling is regulated by the Statute for the Enforcement of Equalisation of Urban Land Rights, 1954-1964 and the Bylaw of the Statute, 1956-1964. These laws are administered by the Department of Land Administration in the central government and by the Provincial Land Administration in the central government and by the Provincial Land Bureau at the provincial government level.

These laws authorised local governments to undertake Guided Land Development projects, subject to the requirement that at least 50% of the landowners (holding at least 50% of the designated area) should support or accept the proposed projects. In 1979 the law was amended to authorise landowners to form associations to undertake the programme.

Between 1958 and 1982, 21 Guided Land Development projects were undertaken by the Kaohsiung city government. Most of these projects provided land for mixed residential and business land uses, mainly in walk-up multi-story buildings. Some of the projects were to install major infrastructure works public facilities.

Although the city government began Guided Land Development in 1958 with a successful project it carried out

only a few projects during the sixties. The city did not begin this program until the seventies, and most of the 21 completed projects commenced after 1972. This city program reflected the central government decision to promote urban land. The program made the city government the dominant land developer in the city, particularly for housing land.

The 21 projects carried out between 1958-1984 saved the city government US \$ 96 million in infrastructure works costs and about US \$ 286 million in land acquisition costs (both in current prices). This latter saving reflects the high value of the land going into the projects. In the case of the 15 projects commenced after 1972, the average value of the land going into the projects ranged from US \$ 30 to 120 per sq. meter and averaged \$ 84 per sq. meter. These land values reflected the urban development potential of the land, particularly the urban use zonings placed on the land. This meant that the value increase generated by the rezoning of the land from rural to urban uses was outside the projects and became a project cost instead of a project revenue. A number of features of the projects can be noted below:

There is no standard size or style of Guided Land Development project, as most of the projects differ from the average pattern in some important aspect.

The size of the projects cover a wide range from 0.7 upto 375.5 ha., but only three projects were about 72 ha. and ten of the projects were between 40 to 72 ha. Most of the projects were completed within two years.

An average of 5% of the land from each project was sold as residential plots in order to recover the cost of the infrastructure works and other project costs. In most of the projects the amount of cost-recovery from land ranged between 4 and 8% of the land.

The proportion of the land taken for roads, canals, parks, etc. averaged 32% and was normally less than 40%. In the case of the four projects with large proportions of project land taken for public purposes were primarily to install major infrastructure works and facilities.

The landowners' land value return from the projects was 163% on the average for all the 21 projects. This means that the landowners received an average profit of only 63% from the projects. This was partly due to the high value of the lands going into the projects and partly due to the charging of all infrastructure

costs to the projects. Nevertheless it means that there is little scope for squeezing additional public benefits from these case of the four projects the landowner's profit was nil or small, apparently due to the large proportion of the land taken for public purposes.

Two comments might be made on the Guided Land Development technique being used in Kaohsiung and on the city government's use of land. First, the rezoning of the land from rural to urban uses prior to the formulation of the project means that the land value increase due to the rezoning is outside the project. Therefore, it cannot be shared among the landowners on an equitable basis, nor can it be used to pay compensation to the squatter households that occupy some of the project lands or to subsidize the allocation of some of the project plots at below-market prices for low-income housing. Second, the "valuations" made of the lands going into the projects and building plots produced by the projects in order to calculate each landowners' share is not an assessment of the market value of these lands and plots. These valuations are made on the basis of formula with weightages for the different features of the land. It would be more realistic and

equitable to adopt a market value approach to this land valuation.

2.3.4 Australia^{5/}

The technique of Guided Land Development is used in only one of the six Australian States, i.e. Western Australia (WA). It is authorised by the WA Town Planning and Development Act, 1982-1983 and regulated by the Town Planning Regulations, 1967. The WA Ministry of Town Planning administers the law and regulations.

This law authorises planning authorities to undertake projects for the implementation of their planning schemes. Most town planning in WA is carried out by local governments and they have been the only agencies to date. The state government bodies responsible for the provision of network infrastructure, such as the Department of Highways, have sometimes been able to use technique to implement their works through the cooperation of the relevant local government which organises the project. Alternatively, the government authority could request the Department of Town Planning or the Perth Metropolitan Region Planning Authority

^{5/} Introduction to Land Readjustment (Kuka-ku-Seiri) Practice; City Planning Bureau, The City of Nagoya, Japan, 1982, p. 23.

to organise a project on their behalf. The town planning law does not authorise Guided Land Development by landowner associations as in Japan, South Korea and Taiwan. Although a group of landowners could negotiate and organise a cooperative project this has not happened, probably due to the divergent objectives of the landowners and the availability of alternate means of land disposal and development.

Most of these projects in WA is undertaken in Perth, a small metropolis of one million persons with two thirds of the state's population. Only a minor part of the city's expansion is by way of Guided Land Development projects as most urban development takes place by private land subdivision and housing development projects. Three state government bodies also undertake land subdivision and/or housing projects. The network infrastructure mains are provided by the relevant state government body and the local network infrastructure is provided by the land subdivisions. Only ten of the 26 local governments in the Perth metropolitan area undertake this projects. This is partly because Guided Land Development is mainly used as a means of overcoming development "problems" rather than to ensure orderly development and adequate land supply, and partly

ecause a few local governments prefer to use an alternative procedure known consolidation of the separate landholdings.

Although the town planning law authorised the use of Guided Land Development as from 1928, the first project was not undertaken until 1953 when a Perth local government undertook a project to redesign and resubdivide an undeveloped and absolute subdivision estate and to construct the road and utility networks. By 1982 some 54 projects had been commenced by ten local governments in Perth. They were mainly in residential areas and ranged from a 1.5 hectare project to provide 20 house plots up to a project for 250 hectares in about 105 separate landholdings to provide 1934 plots. Most of the projects are undertaken in order to finance the construction of special infrastructure works such as a drainage system for marshy land, or a sewer mains extension in advance of the programmed extension, or to implement a highway extension, or to replan and service and old undeveloped subdivision estate. Only three Perth local governments, the Stirling, Canning and Bayswater Municipal Councils, have made general use of guided land development to progressively develop their municipal areas.

A mini town planning scheme is prepared for each Guided Land Development project in order to define it and then when approved to authorise and regulate the implementation of the project. Each scheme usually (and desirably) consists of both existing and proposed land use and landholdings maps, a scheme text, a project budget and a schedule of landholdings and valuations. The scheme text sets out the objectives of the project, the steps of the project and the terms and conditions on which the project will be carried out. It therefore can be seen as a form of partnership agreement between the landowners and the local government. The pooling scheme is usually prepared in consultation with the landowners and the various government bodies involved in its implementation. The draft scheme is then placed on exhibition for landowner and public information and for formal objections, if any. After review and possible amendment it is then approved. The scheme text is published and becomes a legal document to authorise and regulate the project.

Each landowner's share of the costs and returns of the project is based on the official assessment of the market value of his land as at the time of the local government's decision to prepare the scheme. There are usually few landowner objections or appeals against

these valuations, or the valuations placed on the new plots. This acceptance of the official valuations is partly due to the professional competence of the valuers and the landowner's awareness of valuations through the land value system of property taxation used in WA.

As Guided Land Development schemes are undertaken to implement the municipal land use plans, they normally do not involve the rezoning of land so that the land value increases generated by the rezoning precede the project and are not available to help finance the project costs. Each Guided Land Development project has to generate sufficient increase in land value to recover the project costs (mainly the cost of the local infrastructure works) and to give the landowners an attractive land value gain. These increases in land values are generated by the consolidation of the separate landholdings, the servicing and subdivision of the land, and the provision of facilities and amenities for the future residents. The projects also usually benefit from the general upward trend in urban land values over time.

Most of the Perth Guided Land Development projects have been implemented successfully, giving the landowners attractive land value gains, saving the local govern-

ments the cost of the infrastructure works and public facilities, and providing the residents with pleasant and well-equipped residential suburbs, and doing so within a reasonable time period. However, some projects have been unsuccessful in that the landowners have received little land value gain and/or have been looked into projects delayed for years due to poor project formulation and management. These projects demonstrate that the benefits are not automatic but have to be achieved by good management, that is, by the formulation of sound projects with the efficient implementation of the projects. This requires skilled and efficient project managers.

Although most Guided Land Development projects in Perth have been successful, the technique could be improved and its use extended in a number of ways:

- i) First, the Department of Town planning could prepare a standard format and procedure to guide local governments in the preparation and implementation of projects. This format should include a model scheme text and a standard costing and pricing policy.
- ii) Second, the projects should be enlarged in order to gain the benefits of larger-scale land develop-

ment and include the rezoning of the land in order to bring this related land value increase into the project. These larger projects will need to be divided into stages in order to limit the amount of loan finance needed and to minimise the risk of a possible loss due to a decline in the market demand for housing. They will require professional management.

iii) Third, the local governments should also participate in these projects on a partnership basis and take a share of the net gain in land value, in recognition of the substantial contribution they make by the use of their government status and powers to promote and advance the project to the benefit of the landowners.

iv) Fourth, it would be desirable to further extend the partnership concept of land pooling by giving landowners a formal role in the formulation and implementation of pooling projects by establishing a management committee for each project with landowner membership.

Finally, the Department of Town Planning and/or the Perth Metropolitan Region Planning Authority and Perth local governments should be making more

general use of the pooling technique to achieve the progressive expansion of the metropolis with an adequate supply of land for housing development.

2.4 Lessons from Review of Experiences of Guided land Development

Many countries of the world have accepted the idea of development contained in the techniques of Guided Land Development. Only a few experiences in few countries has been outlined in the previous section. The experiences gathered from those countries are very important for Bangladesh to see its adoptability in the country. The experiences are however many and varied and suited to the peculiarities of a particular country. However the common benefits are more or less the same. The benefits of Guided Land Development in the above countries are the following.

- i) Guided Land Development helps to achieve a good standard of subdivision design, layout and engineering;
- ii) It helps to provide land required for public streets and parks at no cost to government;
- iii) Helps to carry out the land servicing and subdivision works (i.e. the construction of road

works and public utility services) efficiently and economically;

- iv) Helps to share the cost and returns of land sub-division among the landowners in an equitable way;
- v) Helps to recover the costs of land sub-division from the related land value increases;
- vi) Helps to create new **sites** with clear land titles when the ownership of landholdings is disputed;
- vii) Helps to achieve the timely subdivision of urban fringe landholdings for orderly urban expansion; and
- viii) Helps to ensure an adequate supply of land for new housing development and to counter any excessive speculation in sub-division of land.

Guided Land Development has its potential benefit of developing of its own. In Japan it has been found that 42% of Guided Land Development were implemented by local government and 29.5% by landowner associations. The Guided Land Development projects undertaken by local and central government bodies also usually have a much larger public works content than the landowner projects so that most of their financing is from

government subsidies and public works funds with only a minor part from the land value increases. However, such Guided Land Development project is required to conform to the official land use plan.

In South Korea, Guided Land Development technique is applied not only in urban fringe area but also in rural areas and for infrastructure development. Korea used this technique to match with the requirement of permanent housing due to the huge real income increase in the recent decades. It had to accommodate the large housing and service demand in its limited land area. The participants of Guided Land Development projects made huge gains from their projects.

In Taiwan also, Guided Land Development has taken place in both rural and urban areas. 21 projects so far undertaken has shown huge benefits from the projects. Provisions for both family houses and multistoried houses have been made in it.

The experiences with urban Guided Land Development in Japan, Korea, Taiwan and also Australia have shown that it has greatly assisted the development of many of their cities and rural centres. Their experiences have shown that it is a positive technique for implementing urban plans that is self financing and is acceptable

to the majority of landowners in urban fringe areas. Guided Land Development can therefore fairly be described as an administratively, financially and politically feasible technique for managing urban land development.

CHAPTER - 3

EXISTING CONDITION IN THE STUDY AREA

CHAPTER -3

EXISTING CONDITION IN THE STUDY AREA

The major elements of the Guided Land Development which was discussed in the previous chapter has been taken into consideration in fixing the research objectives. Now, details of existing conditions of the study area are examined through field survey. It was necessary to study and survey the project area in terms of its topographical features, existing land use pattern, physical infrastructure, and land value in details so that the existing condition of the study area is grasped. For successful application of Guided Land Development technique, survey findings are thus the foundation of the project. The maps on existing conditions are drawn on the basis of the collected data which are required for planning and implementation of the project. The survey and study process has been shown in a flow diagram (Fig. No. 3).

3.1 Existing Physical Conditions

3.1.1 Land level

Land level can be defined for the purposes of this study as the relative height of land with respect to

FLOW DIAGRAM SHOWS THE PROCESS OF STUDY AND SURVEY PROCEDURE

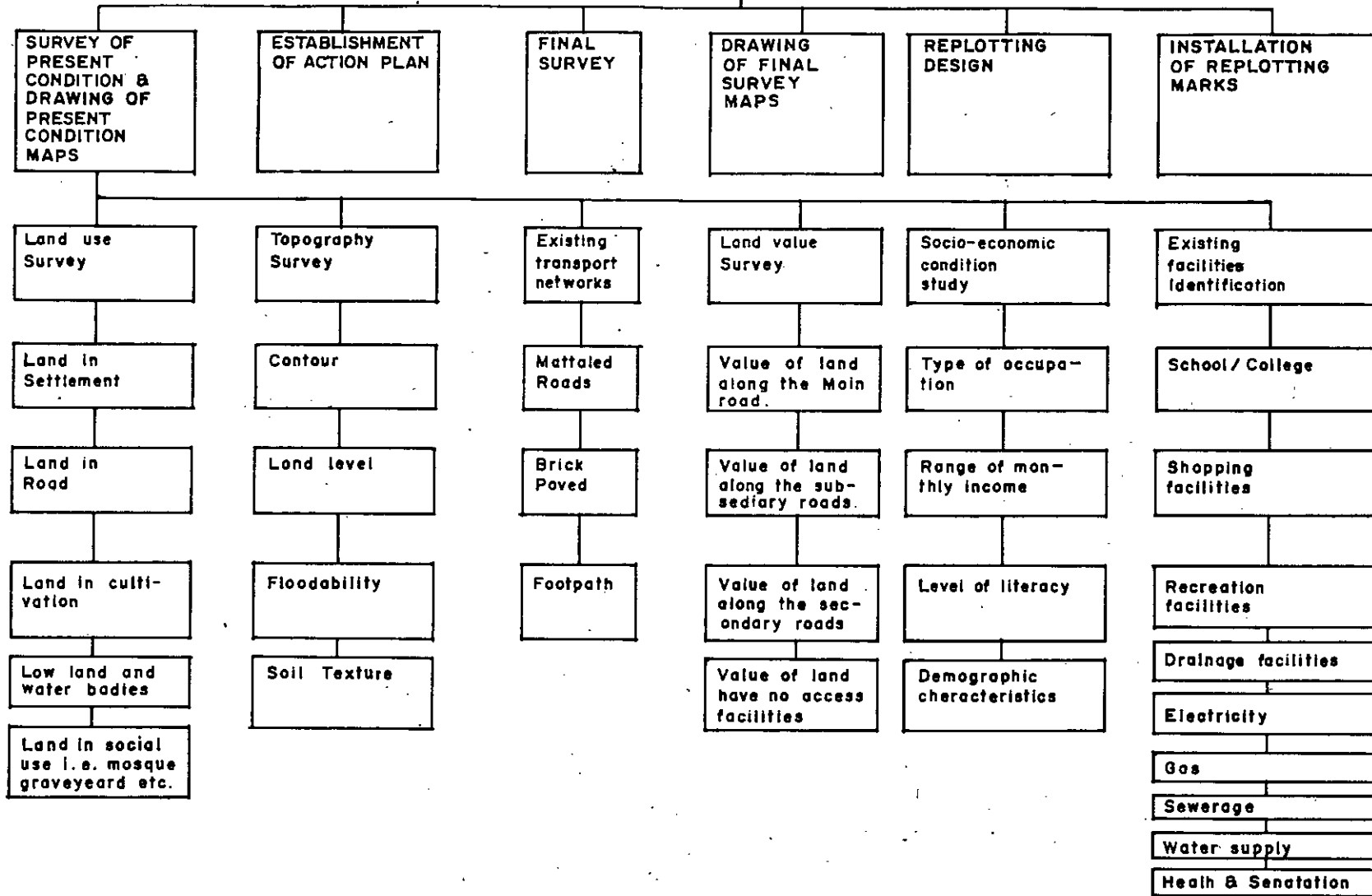


Fig. 3

average flood level during monsoon. In the study area four generalised land levels were identified (Fig.4 & 5).

- i) Level one (L_1) or buildable high land: The level one included the whole of the settlement and other areas having similar height. This level of land, generally flood free, provides the most suitable land for construction of houses and there is no necessity for raising it by earth filling. This class of land is 20.03 acres which is about 28.03 per cent of the total area.
- ii) Level two (L_2) or medium high land: The level two included the category of land which are little lower than that of level 1. During the rainy season, rain water runs-off from level-one land down to the level-two to be collected on level three land. This level of land requires 1-3ft. earth filling for making it buildable. This category of land is locally known as 'chala' land and covers 35.05 acres or 49.10 per cent of total land.
- iii) Level three (L_3) or low land but buildable: The level three include the agricultural land which is comparatively low and requires 3-5 ft. earth filling. This category of land is locally known as "Nals" land and covers 15.72 acres which is 22.02 per cent of the total land.
- iv) Level four (L_4) or low land not buildable: This level of land includes some ponds and ditches which are not buildable. This type of land can serve as a water

CONTOUR MAP
OF THE STUDY AREA
1987

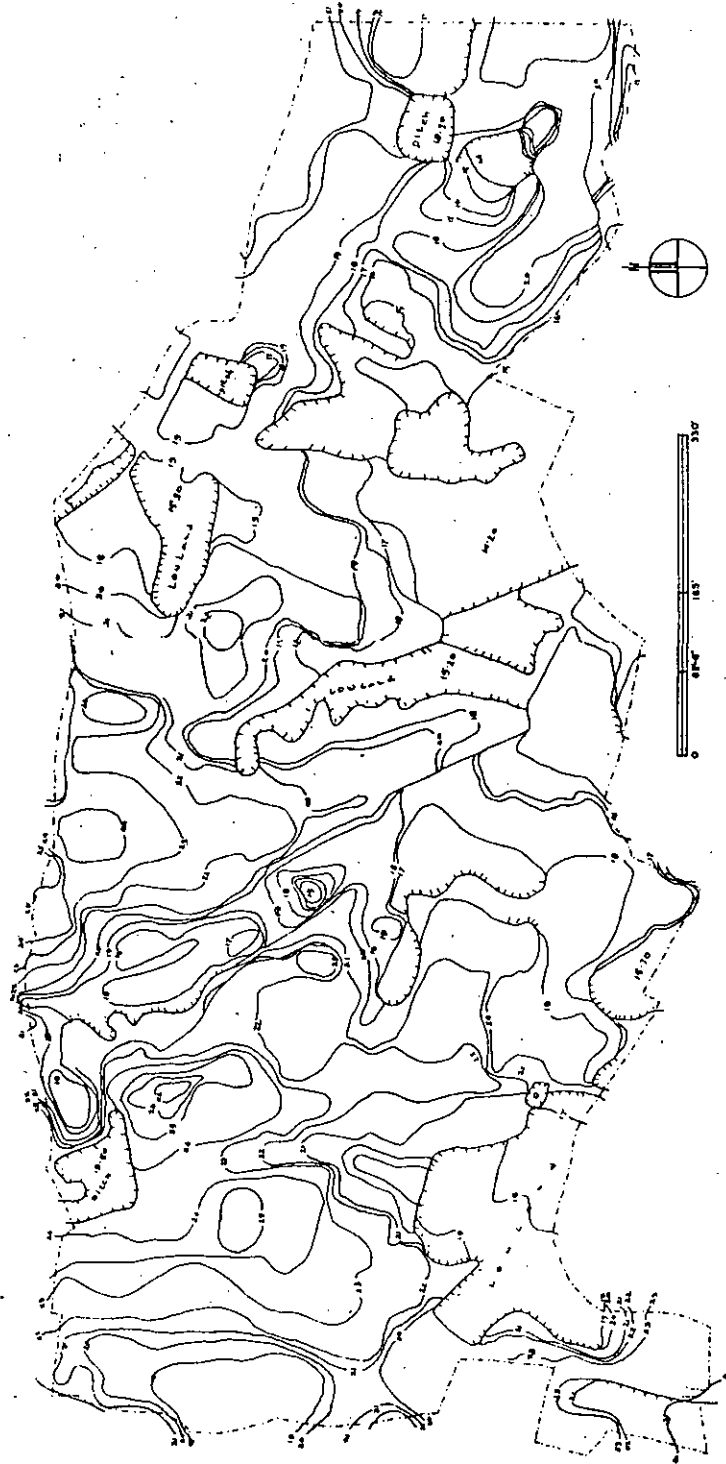


Fig.-4

body and by digging these land some other low land can be filled up. This level covers only 0.58 acres which is only 0.81 per cent of the total land.

Except some low-lying area included in the level four all other land are buildable subjected to earth filling. It will require 3-5 ft. earth filling for the level three (L_3) land which is only 22 per cent but the rest, about 80 per cent of the total land will require a minimum earth filling. Acreage of land in different levels are shown in Table 1 and the four types of land level defined for the purpose of this research are shown in a map (Fig. No. 5).

TABLE 1
ACREAGE OF LAND IN DIFFERENT LEVELS

Land Level	Area in Acres	Percentage of the Total Area
Level (L_1)	20.03	28.07
Level (L_2)	35.05	49.10
Level (L_3)	15.72	22.02
Level (L_4)	0.58	0.81
Total	71.38	100.00

Source: Land Use Survey' 1987.

3.1.2 Land use

A detailed survey of the land use of the study area revealed some important features (Fig - 6). Out of the total area of 71.38 acres only 11.78 acres are built up. The built up areas are mostly residential in use. There is a grave-yard covering an area of 0.30 acres. Roads and foot paths cover an area of 2.76 acres. The water bodies in the study area includes one big pond and two small ditches which cover an area of 0.58 acres. The remaining areas are either vacant or under agricultural use. The vacant land, which are mostly buildable land of "vity" or "chala" category, covers an area of 40.45 acres or 56.66 per cent of total land. The "nal" or low lands (level three, L₃) are mostly under agricultural use. The different types of land uses with their acreages are shown in Table 2.

TABLE 2

TYPES OF LAND USES IN THE SUTDY AREA (1987)

Land Use Classes	Area in Acres	Percentage of the Total Areas
Built up (Residential)	11.78	16.51
Vacant or Current Fallow	40.45	56.66
Agricultural Land	15.72	22.02
Pond/Ditch	0.58	0.81
Grave-yard	0.30	.42
Roads	2.76	3.86
Total	71.38	100.00

Source: Land Use Survey" 1987.

LAND USE, 1987 INDEX	
SETTLEMENT	[Cross-hatched pattern]
VACANT	[Vertical line pattern]
CROPPED	[Horizontal line pattern]
POND/DITCH	[Wavy line pattern]
GRAVE-YARD	[Stippled pattern]
ROAD	[Double line pattern]



Fig. - 6

3.1.3 Existing structure tyupes

Most of the dwelling units in the study area are temporary kutcha tin-shed. Permanent and pucca structures are very few. A considerable number of huts (small shelters) both pucca and kutcha were found. The absentee landowners built these huts on their land and engaged some one to live there just as a caretaker.

For the purpose of preparation of zonal plan for the area, the planning Authority, RAJUK imposes restrictions on the construction any parmanent buildings. So, the number of pucca structures in the study area are very few. From the survey it is found that out of the total of 298 structures in the study area, only 23 structures are pucca and the rest are either kucha or semi-pucca (Table 3) The distribution of structures in the study are is shown in Feg. 7.

TABLE 3

TYPE OF STRUCTURES AND THEIR PERCENTAGES

Types of Structure	Number	Percentage of the Total
Permanent structure	23	7.71
Semi-permanent structure	110	36.91
Tin-shed	123	41.27
Huts (pucca and kucha)	42	14.10
Total	29	100.00

Source: Field Survey, 1987.

7/230

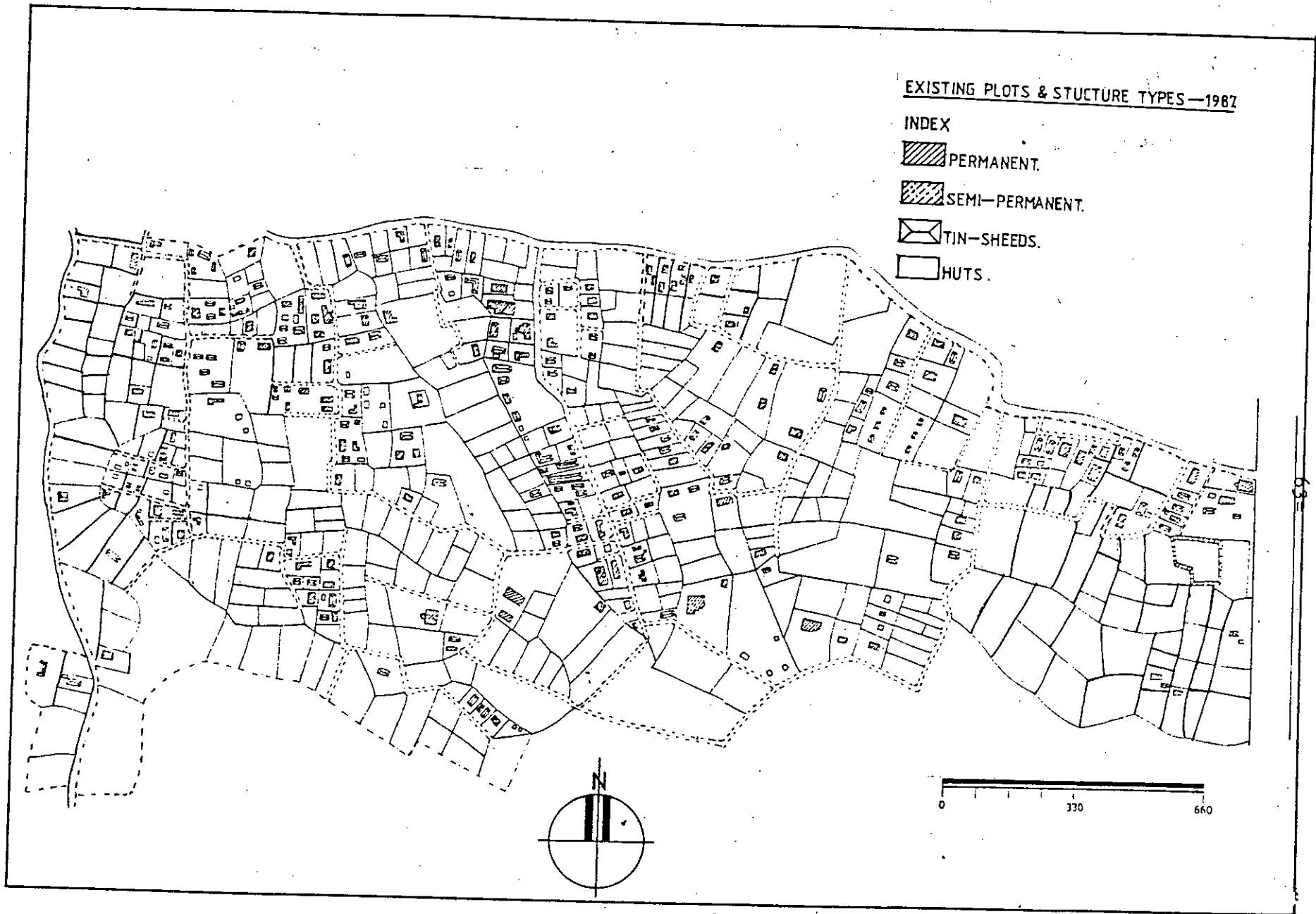


Fig. 7

3.1.4 Fragmentation of land and existing size of plots

- i) **Fragmentation:** According to the cadastral survey map prepared in the year 1913 the study area consisted of 68 plots. The average plot size was 105.88 decimal. But at present the land has become highly fragmented and subdivided into smaller plots. The information collected from the Directorate of Land Records and the verification from field survey shows that there are in total 504 plots, the average size of which is 14.16 decimal. The list of plots, their titles, sizes and types are given in Appendix - B, fragmentation as on C.S. map 1913 (Fig. 8) and the latest fragmentation of land are shown in Fig. 9.
- ii) **Sizes of the plots:** According to latest fragmentation the plots are divided into seven categories on the basis of their sizes, and these are shown in Table 4.

TABLE 4

**DIFFERENT SIZES OF PLOTS AND ACREAGE UNDER
DIFFERENT SIZES OF THE PLOTS**

Types of plots	Range of Plot Size (Area in Decimal)	Acreage of Land Under Different Sizes of Plots		No. of Plots and Percentage of the Total	
		Average	Percentage	No. of Plots	Percentage
A	1-5	2.86	4.01	79	15.67
B	6-10	12.19	17.07	168	33.34
D	11-15	9.80	13.72	84	16.67
D	16-20	6.21	8.70	45	8.93
E	21-25	4.33	6.07	29	5.75
F	26-30	8.08	11.32	38	7.54
G	31+	27.91	39.11	61	12.10
Total		71.38	100.00	504	100.00

Source: Field Survey, 1987.

C.S. PLOT DIVISION - 1913

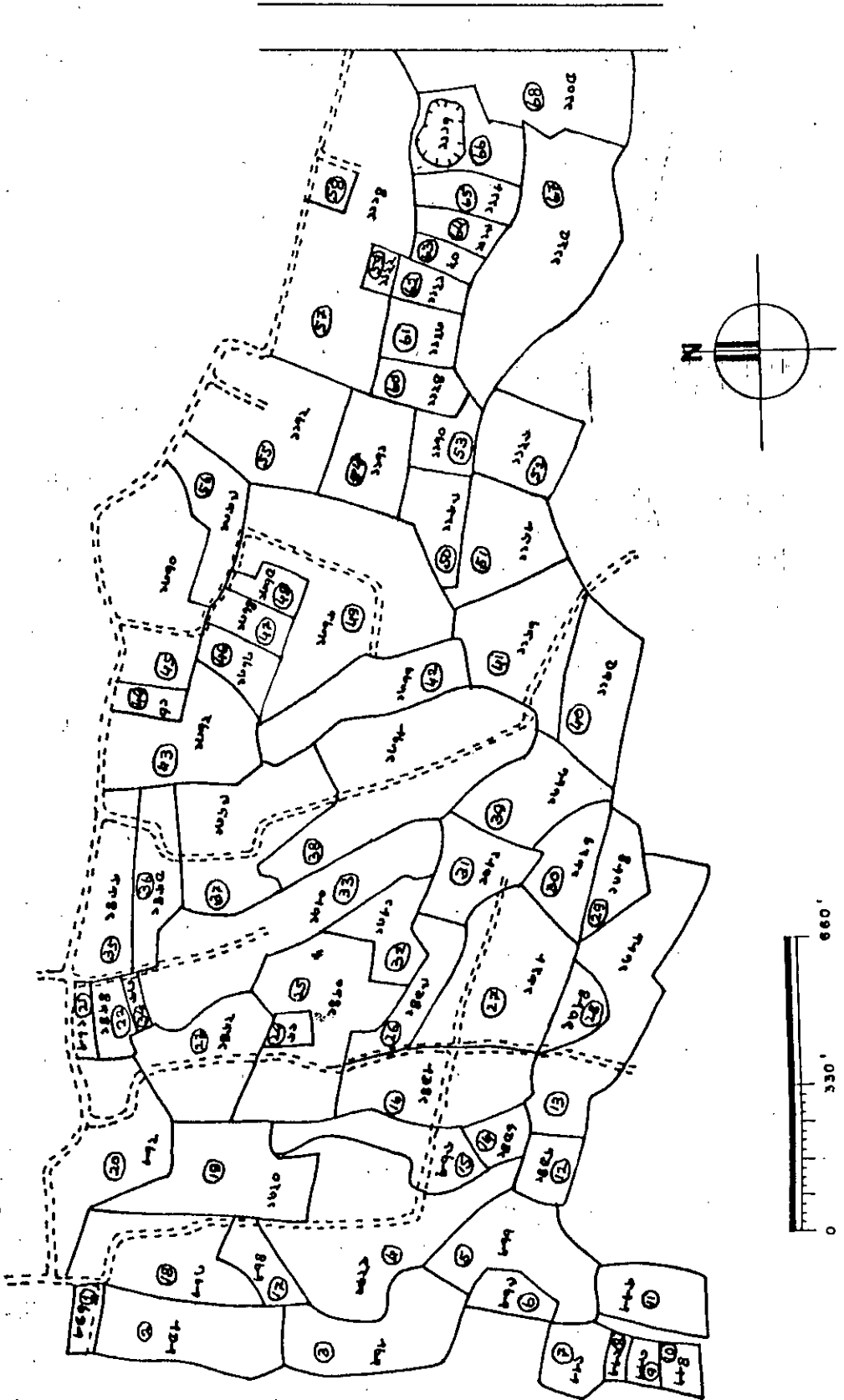


FIG. 8

FRAGMENTATION OF PLOTS
ACCORDING TO FIELD SURVEY 1987

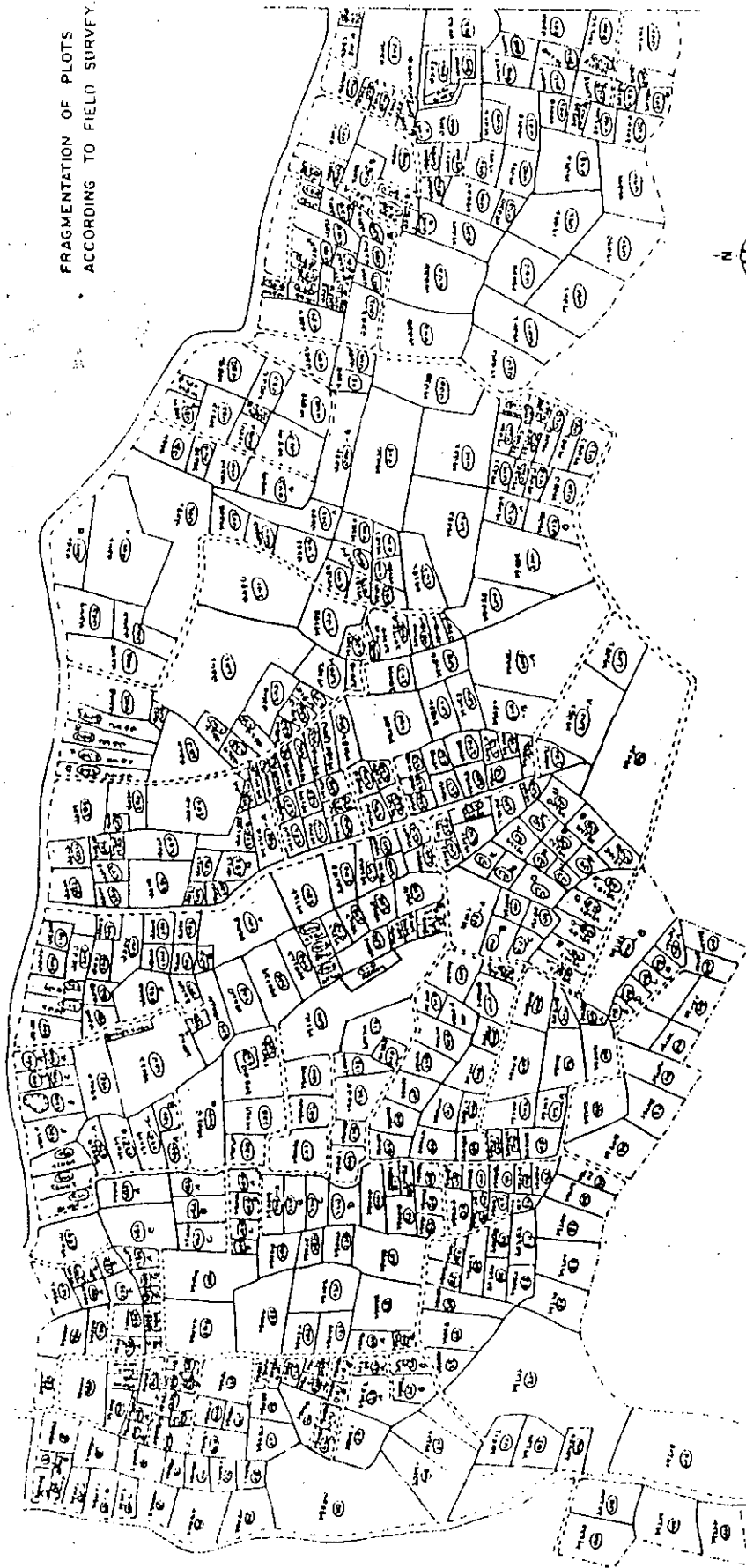


Fig. 9

It is found from the table that the type "B" plots with areas of 6 to 10 decimals are highest in number i.e., 158 or 36.15 per cent of the total plots. In the type "C" (plot area 11-15 decimal) the total number of plots are 74 or 16.93 per cent which is second highest number and type "A" plots (area 1-5 decimal) are 69 or 15.79 per cent. Out of the total number of plots (504 nos.), about 65.7 per cent (or 331 nos.) plots are of the size upto 15 decimals. Although the lands are highly fragmented but still the existing average size of the plots are 16.16 decimal which is quite satisfactory.

3.1.5 Shape of existing plots

The shape of the plots are important for proper utilization of a housing plot. Out of 504 plots 239 numbers (or 47.42 per cent) were found regular in shape. Most of the plots were irregular in shape. The number of irregular plots were 265 per cent of total plots. Table 5 shows the number of plots according to their shapes.

Different shapes of plots will provide different range of space utility. In case of deshaped plots efficient planning and land utilisation is very different. In an unplanned area, different owners purchased different parcels of land in different times which created vari-

TABLE 5
EXISTING SHAPES OF DIFFERENT PLOTS
IN THE STUDY AREA, 1987

Shape	No. of Plots	Percentage of the Total
Regular	239	47.42
Irregular	265	52.58
Total	504	100.00

Source: Field Survey, 1987.

ous sizes and shapes of the plots. The uniformity and regularities in terms of shapes of the plots are quite absent in the area. As a result, when people will plan a house according to setback rule of RAJUK, it will be found that even a big size of plots as because it is irregular in shape will provide a minimum space utilization and much of the land will be left unutilised. The space utilization characteristics of five irregular shaped plots, according to the setback rules (RAJUK), are given in Appendix - A (Fig. 10).

3.1.6 Orientation of plots

Climatic variation is prevalent in our country i.e., the cold wind blow from northern direction in the winter season and monsoon wind blow from southern direction in summer season. So, the orientation is an important factor to determine character of development which directly influences the design of a house, Fig. 10.

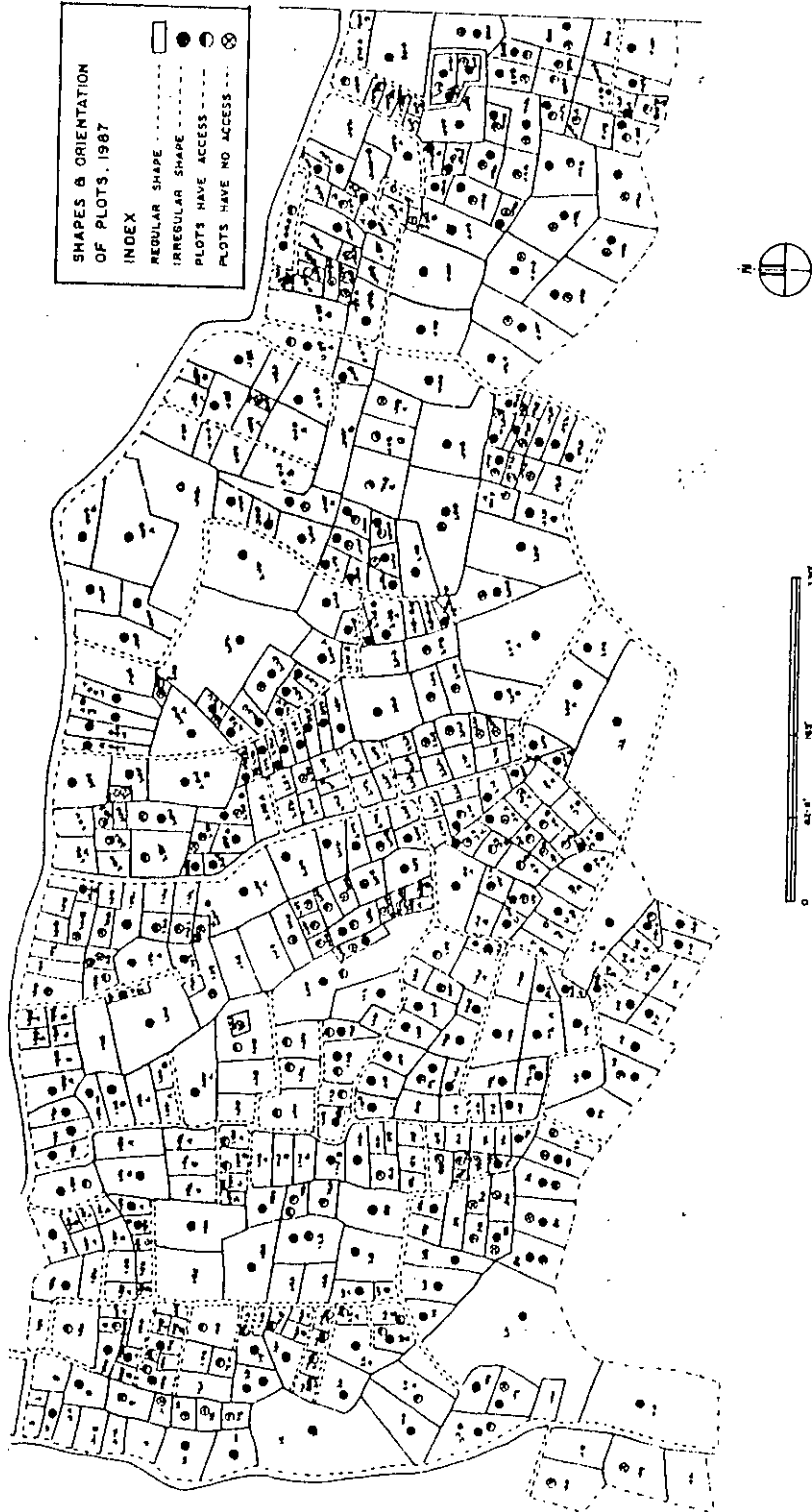


Fig. 10.

By considering the climatic factors the orientation of a building site is generally determined which include sun direction, temperature, humidity, rain and direction of wind in a region.

As the plots in the study area are divided in an unplanned way, it was observed that most of the plots were not in proper orientation in terms of climatic conditions prevailing in the country. (Fig. 10).

3.2 Physical Infrastructure (Utilities and service facilities)

i) Roads and access facilities

The internal road networks of the study area is very under developed. The road networks of the study area are shown in Fig. 11. There is no metalled road within the study area. The main road which passes through the northern part of the study area and other 4 short distributory roads are only brick paved. These brick paved roads are also broken in several points and one can not pass through these roads with vehicles. The brick paved roads i.e., the main road and road No. 10, 12, 15 & 16 (Fig. 11) are maintained by the municipal corporation and may be

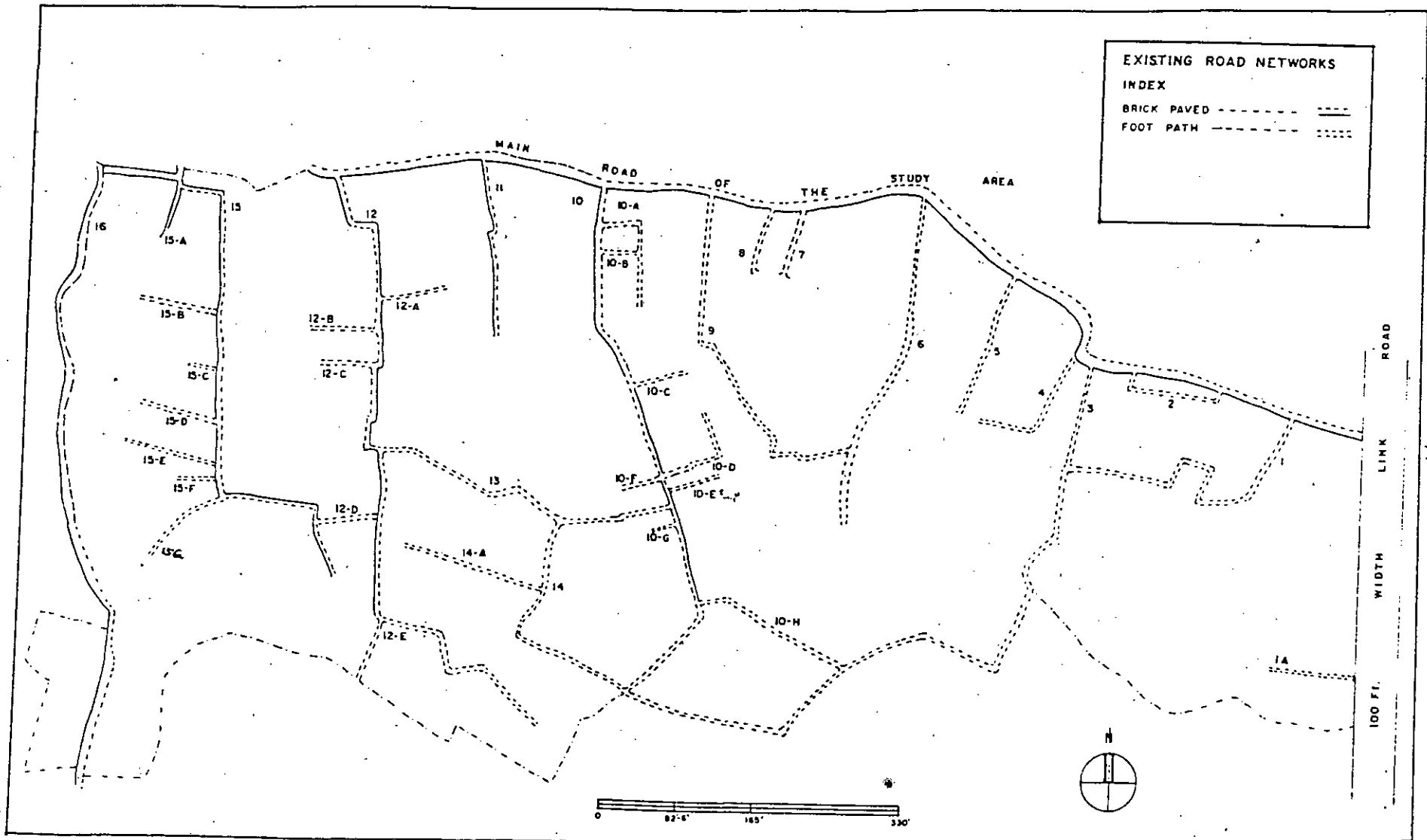


Fig. 11

treated as public roads. The total length of these roads are about 84,480 rft. The other roads are mainly foot paths, narrow and unmetalled, and still under private ownership having a total length of about 46,429 rft. The inventory of existing roads is shown in Table 6. During the rainy season it becomes difficult to move through these roads. Most of the roads and access ways is only 2.76 acres or 3.86 per cent of the total land. Although the internal road networks are quite insufficient but it should be mentioned that the study area is well connected with central city by bus route.

As regards access to individual plots, it is found that out of 504 plots, only 366 plots have access facilities from the approach roads and the rest 138 plots have no access at all. The narrow space used as demarcation of plot boundaries is inadequate even for pedestrian access not to speak of any vehicular entrance.

As it is an unplanned area it was found that access to the site from their approaches are not adequate to meet the demand and also not suffi-

TABLE 6
EXISTING ROADS AND ROADS CONDITIONS

Road No.	Nature		Types				Maintainance			Length in yrds	Width of road in ft.*
	Padis- traan	Vehi- cular	Brick paved	Con- crete	Betumi- nous	Katcha	Roads & Highway	Munici- pality	Local people		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Part of link road	-	X	-	-	x	-	X	-	-	500	100
1	X	-	-	-	-	X	-	-	-	500	6
1A	X	-	-	-	-	X	-	-	-	100	6
2	X	-	-	-	-	X	-	-	-	120	6
3	X	-	-	-	-	X	-	-	-	1000	6
4	X	-	-	-	-	X	-	-	-	150	6
5	X	-	-	-	-	X	-	-	-	150	6
6	X	-	-	-	-	X	-	-	-	320	6
7	X	-	-	-	-	X	-	-	-	50	6
8	X	-	-	-	-	X	-	-	-	50	6
9	X	-	-	-	-	X	-	-	-	400	6
10	-	X	X	-	-	-	-	X	-	600	8
10A	X	-	-	-	-	X	-	-	-	30	6
10B	X	-	-	-	-	X	-	-	-	30	6
10C	X	-	-	-	-	X	-	-	-	20	6
10D	X	-	-	-	-	X	-	-	-	40	6
10E	X	-	-	-	-	X	-	-	-	20	6
10F	X	-	-	-	-	X	-	-	-	10	6
10G	X	-	-	-	-	X	-	-	-	10	6
10H	X	-	-	-	-	X	-	-	-	10	6

(Table contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
11	X	-	-	-	-	X	-	-	-	150	6
12	-	X	X	-	-	-	-	X	-	600	8
12A	X	-	-	-	-	X	-	-	X	45	6
12B	X	-	-	-	-	X	-	-	X	40	6
12C	X	-	-	-	-	X	-	-	X	30	6
12D	X	-	-	-	-	X	-	-	X	30	6
12E	X	-	-	-	-	X	-	-	X	50	6
13	X	-	-	-	-	X	-	-	X	150	6
14	X	-	-	-	-	X	-	-	X	300	6
14A	X	-	-	-	-	X	-	-	X	100	6
15	-	X	X	-	-	-	-	X	-	600	8
15A	X	-	-	-	-	X	-	-	X	30	6
15B	X	-	-	-	-	X	-	-	X	40	6
15C	X	-	-	-	-	X	-	-	X	15	6
15D	X	-	-	-	-	X	-	-	X	40	6
15E	X	-	-	-	-	X	-	-	X	55	6
15F	X	-	-	-	-	X	-	-	X	20	6
15G	X	-	-	-	-	X	-	-	X	45	6
16	-	X	X	-	-	-	-	X	-	800	8
Main Road of the study area	-	X	X	-	-	-	-	X	-	1800	8

Source: Land use survey, 1987.

ent to serve the purposes. On the other hand some of the plots have paradoxically double access at both sides of the plots which were not essential, and this kind of double access provision are nothing but misuse of valuable urban land. The plots without access facilities are shown in Fig. 10.

11) Drainage

According to the survey report by a private firm named Survey Corporation, the study area lies between +5 and +20 of Bangladesh datum (SOB). So, except during high flood period, in all other normal flooding situation the study area remains flood free. But due to lack of proper drainage facilities rain water stands in comparatively low lying areas. When the whole area were under agricultural uses, the rain water flowed from homestead to agricultural field. But at present due to earth filling on individual initiatives most of the low land became high and the low land gets most rain water that stagnates there and creates and unhealthy condition.

Regarding drainages facilities it was observed that there is no surface drainage provision in the study area. In the rain season water logging in front of many houses was a common feature.

111) Water supply

Safe drinking water was not available in most of the houses in the study area. It was found that most of the houses were using kucha well or tubewell for the supply of water for drinking and other uses. Kucha well is cheaper to construct and serves well in the rainy season. But it may not be safe all the time. In this area very recently WASA has undertaken a scheme to distribute piped water and some main lines were laid down. But due to unplanned access facilities, it became difficult to provide pipe line to each and every house. At present only the houses situated along the main lines and having good access facilities are getting piped water. But WASA had their programme to distribute piped water in each and every house, which will take a long time to implement.

In the dry season, it was really difficult to get fresh drinking water because ground water level falls down and most of these tubewells become out of order. Sources of water and their ownership pattern are shown in Table 7.

TABLE 7
SOURCES OF WATER AND OWNERSHIP PATTERN, 1987

Source of Water	Ownership Pattern				Total	Per cent of the Total
	Self	%	Other	%		
Piped water	14	87.50	2	12.50	16	31.37
Tube-well	23	95.83	1	4.17	24	47.06
Kucha well	10	90.91	1	9.09	11	21.57
Pucca well	-	-	-	-	-	-
Pond/Ditch	-	-	-	-	-	-
Total	47		4		51	100.00

Source: Household questionnaire survey, 1987.

From the table it is found that out of 51 households surveyed, 24 households (47.06 per cent) used tube-well, 11 households (21.57 per cent) used kutchha well and 16 households (31.37 per cent) used piped supply as the source of water.

iv) Sanitation

Sanitation facilities are in a state of poor development and unhealthy condition. There is no sewerage provision in the area and most of the latrines are insanitary, "kucha well", Pit latrine" and 'tangha latrine'. Except a few households who have built permanent building have constructed septic latrines. In comparison to water supply, sanitation condition are in a more deplorable condition. Sanitation facilities in the study area is shown in Table 8.

TABLE 8

SANITATION IN THE STUDY AREA, 1987

Types	Number	Percentage
Sanitary	-	-
Septic tank	4	7.84
Kucha well	31	60.79
Pit latrine	11	21.57
Tangha latrine	5	9.80
Total	51	100.00

Source: Household questionnaire survey, 1987.

v) Solid waste

There is no provision to remove the solid waste in a hygienic method. Most of the households throw the waste in the low lands or on the side of the roads.

vi) Energy used

a. Electricity

There is power distribution lines (of Power Development Board) along the main roads and also among some subsidiary roads. Due to lack of planned

access facilities yet many houses are not enjoying electricity facilities. According to survey information, out of 51 households only 26 were enjoying the electricity facilities. That is only 50.98 per cent of the total households are getting electricity. There is street lighting provision only along four main roads. In other roads of the study area there is no street lighting provision.

b. Gas

Gas line passes under the main road of the study area and are distributed in the houses where access facilities are satisfactory. Due to unplanned distribution of houses most of the households are deprived of this facility. It is found from the survey that about 48% of the households has not yet received gas facilities. The houses which have good access facility are enjoying this facilities. The use of different kinds of energy is shown in the Table 9.

TABLE 9

USE OF ENERGY IN THE STUDY AREA, 1987

Types of Energy	Number of Household	Percentage
Gas	10	19.60
Electricity	4	7.85
Kerosine oil	6	11.77
Wood etc.	-	-
Gas + Electricity	26	50.98
Kerosine oil + Electricity	3	5.88
Wood + Kerosine oil	-	-
Wood + Electricity	2	3.92
Wood + Gas	-	-
Total	51	100.00

Source: Household questionnaire survey, 1987.

3.3 Community Facilities

The availability of community facilities within the study area is given in Table 10.

TABLE 10

AVAILABILITY OF COMMUNITY FACILITIES IN AND
AROUND THE STUDY AREA

Social/ Community Facilities Available	Distance in Miles					
	$\frac{1}{2}$ Mile	1 Mile	$1\frac{1}{2}$ Mile	2 Miles	$2\frac{1}{2}$ Mile	3 Miles
Primary School	1 No.	1 No.	2 No.	Not	Surveyed	-
High School	-	1 No.	2 No.	Not	Surveyed	-
Madrasha	1 No.	-	-	Not	Surveyed	-
College	-	-	1 No.	-	1 No.	-
Bazar	-	2 No.	1 No.	-	Not surveyed	-
Shopping Centre	-	-	-	1 No.	-	-
Mosque	-	2 No.	-	Not	Surveyed	-
Health	-	-	1 No.	-	-	-
Community Centre	-	-	Not	Surveyed	-	-
Play ground	-	1 No.	-	Not surveyed	-	-
Post office	-	1 No.	1 No.	1 No.	Not surveyed	-
Children	-	-	Not surveyed	-	-	-

Source: Field survey, 1987.

1) Educational facilities

There is no educational institution within the study area. There is one primary school within one mile of the study area and a high school about one and a half mile distance. The nearest college of two and a half mile. There is one girls' school within one mile and a good madrasha in the central Kazipara which is only half a mile distance from the area. By bus the study area is well connected within Dhaka central city. So, many students attend schools and college in central city areas.

11) Religious centres

There are two mosques in the study area. Of them one is of pucca construction and another is semi pucca. Both of them offers religious education of the children in the morning.

111) Shopping facilities

Most of the people of the study area generally go for marketing of daily necessities in the local market (Bazar) within a distance of 1-2 miles. Of these markets, Kazipara Bazar, Taltala Bazar, Mirpur Section No. 10 Bazar, Mirpur Section No. 1 Bazar are the main. The Kazipara and Taltala Bazars although nearer but temporary in nature.

The Mirpur Section 1 Bazar is a permanent one which is at a distance of 2 miles. For the purposes of occasional goods and services the people of the study area generally go to Farmgate, New Market etc.

iv) Recreational facilities

There is no facilities for recreation. Even for the children there is no play ground or any big open space where they can play.

3.4 Socio-Economic Condition

3.4.1 Demographic characteristics

a) Size and types of family

Most of the families in the study area are of nuclear type. For the study it was found that 44 families (86.3%) out of 51 families were of nuclear type (Table 11). Only 7 families (14 per cent) were joint families. The average size of the family is 4.27 person which is below the national average. The average size and types of families in the study are shown in the table no. 11.

TABLE 11

TYPES OF FAMILY IN THE STUDY AREA, 1987

Types of Family	No. of Family	Percentage of the total	Remarks
Nuclear family	44	86	Most of the family in the study area single in nature
Joint family	7	14	
Total	51	100	

Source: Household questionnaire survey, 1987.

b) Age-sex composition

Total number of population surveyed were 175 in 51 households. Of them 19 were male which constituted 62.28 per cent of the total population and 66 were female which constituted about 37.72 per cent only. The male-female ratio was 100:60 which is below the national figure. Number of population, age groups and age-sex ratio are shown in the following Table 12.

the non-productive group which covers (age between 1 to 15 years) are 28.56 per cent of the total population mainly schoolgoing student. The population are maximum in number of the age group of 16 to 45 years which covers 50.87 per cent of the total population. This age groups vital in the society and economically

productive. The age group 46 and above are also considered economically less productive which constitutes population over the age-group 45+ are treated less productive but many people in this group still are engaged in income generating works.

TABLE 12

POPULATION AGE GROUP AND AGE-SEX RATIO, 1987

Age Group	Sex				Total No.	Percentage of the Total
	Male	%	Female	%		
0-5	2	28.57	5	71.43	7	4.00
6-10	4	30.77	9	69.23	13	7.42
11-15	17	56.67	13	43.33	30	17.14
16-20	19	63.33	11	36.67	30	17.14
21-25	22	88.00	3	12.00	25	14.30
26-30	11	78.57	3	21.43	14	8.00
31-35	7	87.50	1	12.50	8	4.57
36-40	6	75.00	2	25.00	8	4.57
41-45	1	25.00	4	75.00	4	2.29
46+	20	55.56	16	44.44	36	20.58
Total	109	62.28	66	37.72	175	100.00

Source: Household questionnaire survey, 1987.

c) Education

As far as the general level of education is concerned, the situation is satisfactory. Among the fifty one households survey, 37 persons were found to have primary education and 11 had secondary education. There were two engineers, one of them was diploma and the other was degree holder, 4 of the respondents were post-graduate, 21 Higher Secondary and 13 were graduates.

TABLE 13

EDUCATIONAL LEVEL OF THE STUDY AREA, 1987

Level of Education	Number
Primary	37
Secondary	11
Higher Secondary	21
Degree	12
Post-graduate	4
Technical Diploma	1
Engineering (Degree)	1
Medical	-
Total	87

Source: Household questionnaire survey, 1987.

3.4.2 Occupation and income

Information on occupation and income of the plot owners in the study area were collected with the help of sample household questionnaire survey method. The information on income and occupation, presented in Table 13, Covers total employment by different types i.e. agriculture, service, business + agriculture, and range of monthly income.

The information about employment shows that majority of the people are engaged in formal activities i.e. services in governmental and non-governmental organisations. The original settlers still are engaged in agriculture with other activities like business and services as secondary occupation. Maximum of the people earned income ranging between 1600/- to 300/-. All of the families earned above 1500/-. The range of income that most of the people belongs to middle income groups.

Types of occupations and range of monthly income are shown in the table no. 14. Although, the original settlers still are engaged in part-time agriculture with other activities by gradually it is changing their types of occupations.

TABLE 14

TYPES OF OCCUPATIONS AND RANGE OF MONTHLY INCOME

Occupational Types	Range of Monthly Income (in Taka)					
	Upto 1500/-	1600/- to 2000/-	2100/- to 2500/-	2600/- to 3000/-	3100/- to 3500/-	3600/- to above
Agriculture	-	1	2	1	1	-
Service	-	5	5	2	4	9
Business	-	-	-	1	1	5
Agriculture + Service	-	-	1	3	-	-
Business + Service	-	-	-	-	-	-
Business + Agriculture	-	-	-	4	1	1
Total	-	6	9	11	7	18





Source: Household questionnaire survey, 1987.

3.4.3 Existing Land Value

Land value is an important economic consideration for the implementation of Guided Land Development schemes. The potential increment in the land value after improvement determines the amount of land contributions that can be obtained from individual plot owners for the provision of necessary services and community facilities in Guided Land Development project. The existing value of land in the study area ranges very widely between Tk. 25,000 per decimal to Tk. 1,20,000 per decimal depending on the character and location of land. The study finds that, after construction of 100 ft. wide link road, the value of land along road side jumped from Taka 5 lakh to Taka 15 lakh per bigha, but the land value did not increase equally everywhere. At present land value along 100 link road is about 2.0 lakh per decimal. The value increased at a high rate along the main road. Low lands and lands without access facilities have still very low land value. Existing land value of different types of land are given in Table 15.

3.4.4 Dwellers opinions from attitude survey

In case of conventional land development methods as in Sites and Services Schemes, there are many problems

INDEX	
EXISTING LAND VALUE	
TK. IN '000	
	TK. 100 - TK. 120
	TK. 85 - TK. 90
	TK. 60 - TK. 70
	TK. 55 - TK. 40

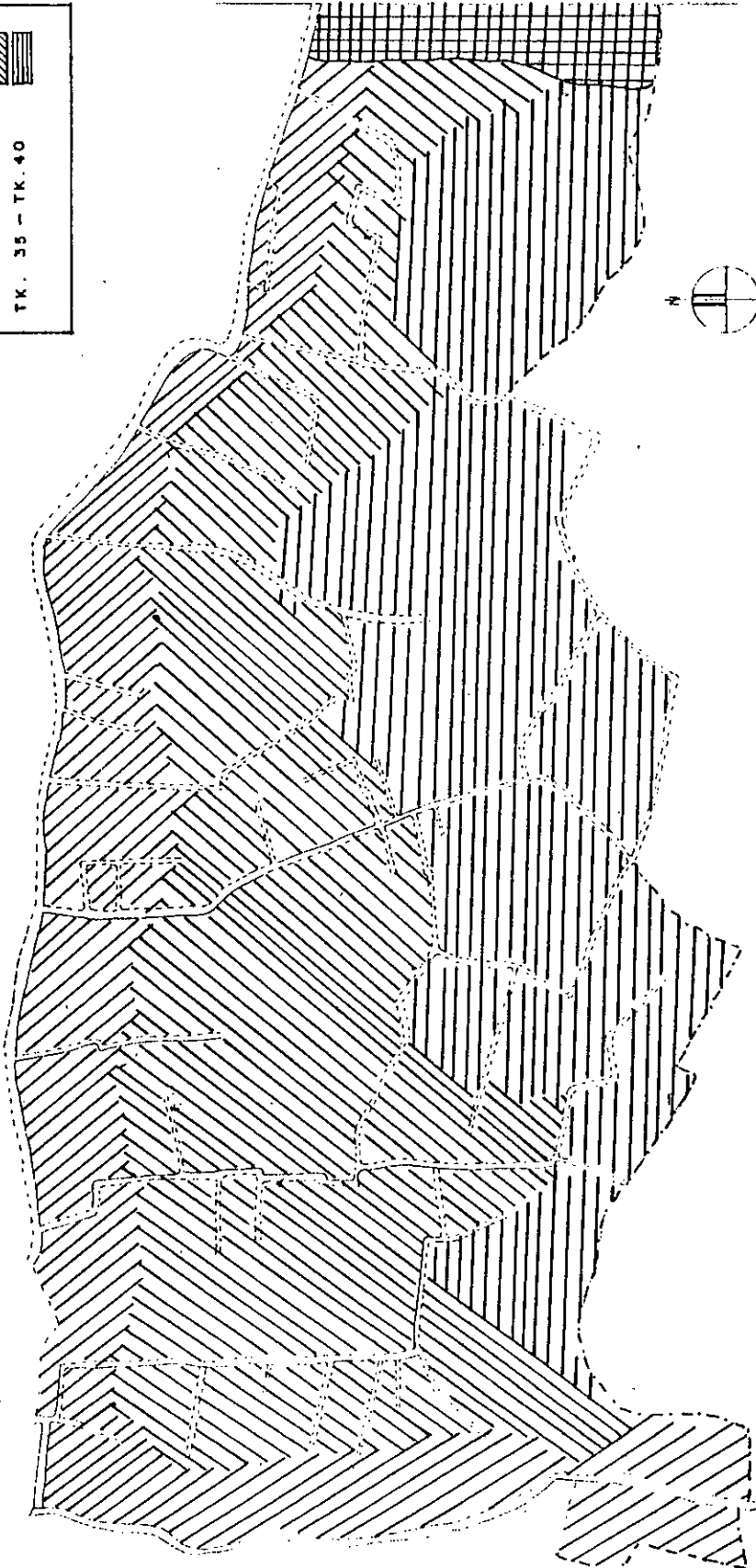


Fig. 12

TABLE 15

EXISTING LAND VALUES OF DIFFERENT CLASSES
IN THE STUDY AREA, 1987

Types of Land	Average Value of Land Per Decimal Tk in '000			
	Along Main Road	Along Secondary Access Road	Along Local Access Road	Without any Access
High Land (floor free)	100-120 (Max.200)	55-60	50-55	40-45
Medium high land	85-90	50-55	40-45	35-40
Low land, buildable	60-70	40-45	35-40	30-35
Ditch/Pond, not buildable	35-40	35-38	30-35	25-30

Source: Land value survey, 1987

like system of land acquisition where the land owners are generally compensated as per the provision of land Acquisition Act. In this system of compensation, owners are generally deprived from the actual value of their property. On the other hand, the original people are displaced from their settlements. They are deprived from the rights and there is no gurantee for rehabilitation of the affected persons. Under this conventional approach of urban development, it becomes difficult to implement a plan for various reasons.

Note: Land value is Tk. 2 lakh per decimal adjacent to 100' link road.

One of them is resource constraint which is one of the main problems for proper implementation of the plan. Acquisition of land and rehabilitation of affected persons involves heavy expenses. On the other hand large number of displaced families, sometimes form a pressure group and causes delay or dropping of the project. So, the possibility of Guided Land Development method was explored by conducting an attitude survey amongst the households of the study area. The results of the survey are discussed in the following paragraphs.

a) The Attitude of the people towards planned development

Out of 51 sample households surveyed in the study area, 43 plot owners are willing to participate with the public authority towards planned development of the area, and they think it will be favourable for repaid development if the settlers do it through cooperatives and takes participation in the development work directly. Some of the land owners (8 nos. or 15.7 per cent) are not willing to participate through contributions (land or money) on their part, since they think that it is the responsibility of the Government to provide all public facilities for the urban dwellers, table 16.

TABLE 16

ATTITUDE OF THE PEOPLE REGARDING METHOD OF DEVELOPMENT

Methods of Development	No. of Persons Supported	Percentage of the Total
By the Government	8	15.69
By the local people	-	-
By local people and government development authority jointly	43	84.31
Total	51	100.00

Source: Household questionnaire survey, 1987.

In the system of joint participation between the owners of land and the public authority, the land owners in the project area will surrender their rights on their land for the time-being to development authority with the understanding that after development each individual owner will be provided with serviced building site in exchange of his raw and unplanned land. After receiving the rights from the land owners the public development authority prepare a preliminary development plan.

The survey results shows the satisfactory response in favour of accepting this new approach of rapid land development method which is possible to be implemented without depriving any land owner and with minimum public expenditure.

b) Financial arrangement supported by the land owners for the recovery of the project cost

Regarding financial arrangement in this system of development, initial funds come from national subsidy and ultimately the total project cost is recovered either by selling the reserved land or collecting the levy from each of the land or collecting the levy from each of the land owners. Therefore, reserved land is an essential part of the project financing for recovery of the project.

In a sample survey of 51 land owners, it was found that 32 of them or 62.75 per cent are willing to contribute a portion of their land for financing the project cost. The owners who have small amount of land are not willing to share the project cost by contributing land, but willing to share the project cost by each contribution. The number of such participants are 11

or 21.68 per cent, 8 land owners or 15.68 per cent are not willing to contribute at all either by land or by money for the development cost. Regarding financial arrangement, the opinion of the land owners are shown in Table 17.

TABLE 17
RECOVERY OF PROJECT COST BY LAND AND CASH CONTRIBUTION

Financial Arrangement Suggested	Number of Persons	Percentage of the total
Agreed to land contribution	32	62.75
Agreed to cash contribution	11	21.56
Not agreed to any contribution (land & cash)	8	15.68
Total	51	100.00

Source: Household questionnaire survey, 1987.

CHAPTER - 4

PRINCIPLES, POLICIES AND STANDARDS
FOR GUIDED LAND DEVELOPMENT

CHAPTER - 4

PRINCIPLES, POLICIES AND STANDARDS
FOR GUIDED LAND DEVELOPMENT

From the findings of physical survey it has been revealed in the previous chapter that the physical and social infrastructure and service facilities are poorly provided in some areas and totally absent in other areas. Before going to plan for the provision of services and utilities, it is required to consider the economic feasibility of Guided Land Development which is discussed below.

4.1 Economic Feasibility of GLD Project

It is found from the results of land value survey that the flood-free high land in the project area has the maximum land value of Tk. 1,20,000/- per decimal along the existing main road (brick-soled) while the land value along 100' wide Mirpur link road is about Tk. 2,00,000/- per decimal. It is also found that the average land value of flood-free high land (considering all high land with or without access) is only Tk. 60,000/- per decimal which is expected to rise by at least 100 per cent after the implementation of the pro-

TABLE 18

ESTIMATION OF LAND CONTRIBUTION FOR GLD PROJECT

Type of Land	Area of Land in Acres	Existing Land Value in '000 Tk./Decimal		Expected Increase in av. land value (in per cent)	Maximum Land Contribution Available		
		Maximum (along main road)	Average		In Percent	In Acres	
A. High buildable land							
Private	17.23	120	60	100	50	8.61	
Public	2.80	-	-	-	100	2.80	
B. Medium high land (buildable with 1'-3' filling)							
Private	34.29	90	55	100	50	17.14	
Public	0.76	-	-	-	100	0.76	
C. Low land (buildable with 3'-5' filling)							
Private	15.72	70	40	100	50	7.86	
D. Very low land (not buildable)							
Private	0.53	-	-	-	-	-	
Total	71.38(100%)	-	-	-	52.0%	37.17	

Existing Public Lands:

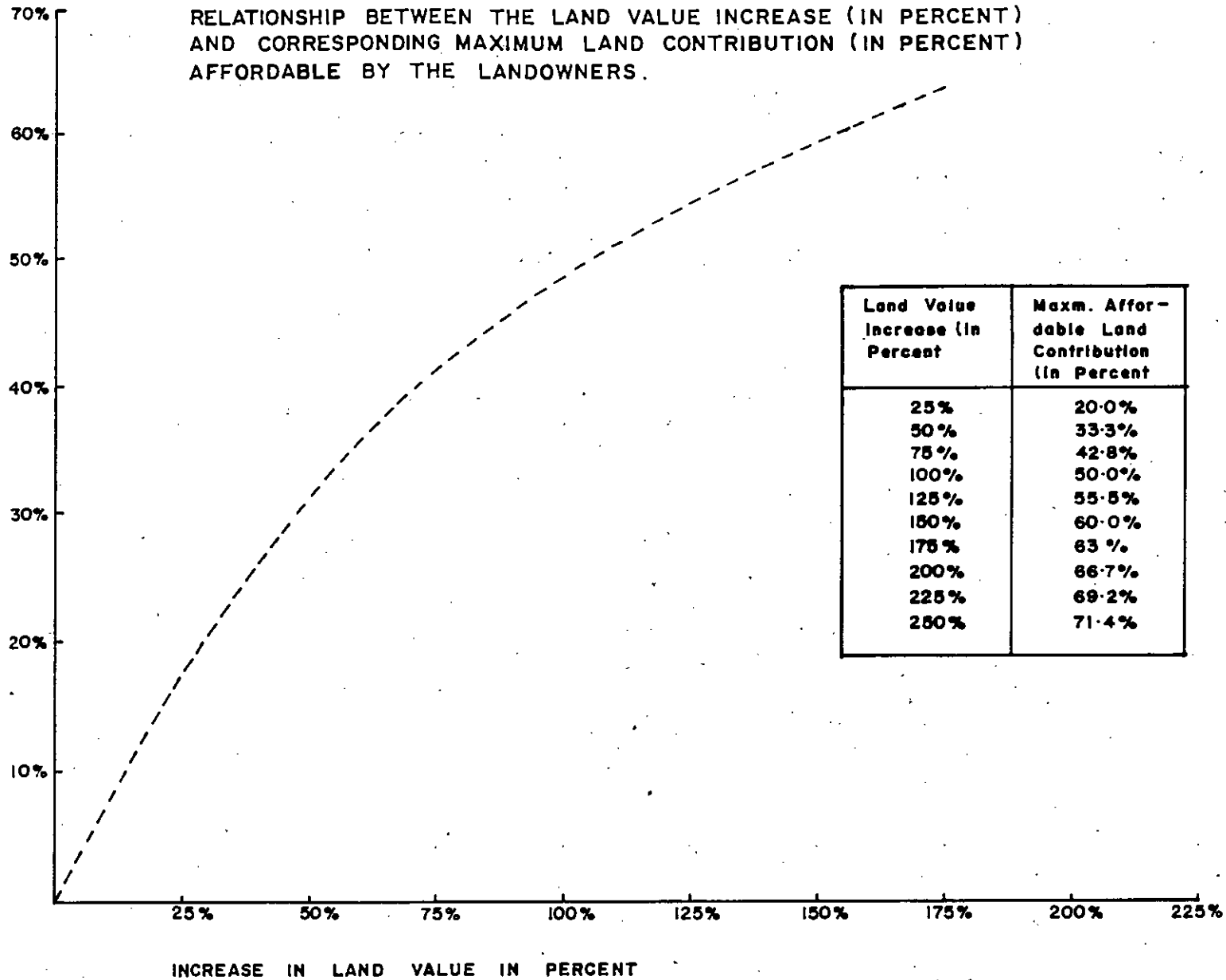
Roads	...	2.76 acres
Mosques	...	0.50 acres
Graveyard	...	0.30 acres
Total	...	3.56 acres

ject. Similarly, the value of medium high lands and low lands are also expected to rise by about 100 per cent with the implementation of the project (Table 18). The theoretical relationship of the land value increase (in per cent) and the corresponding maximum land contribution (in per cent) affordable by the landowners is shown in Fig. 13. With the help of this figure it can be estimated that the maximum contribution of land (including existing public lands) which will be available for the implementation of the project is 37.17 acres or 52 per cent of the total project land (Table 18). Since most of the GLD projects can be successfully implemented with a land contribution of 40 per cent so, the study project is found to be economically feasible.

4.2 Pre-condition for Successful Guided Land Development Project

Guided Land Development is one of the powerful tools for the development of unplanned land with minimum or no public expenditure. This method of land development is mostly self-financing and can be used for timely development of land in urban areas, specially the fringe areas which are potentially ripe for new urban expansion. But for a successful Guided Land Development project some necessary pre-requisite conditions

RELATIONSHIP BETWEEN THE LAND VALUE INCREASE (IN PERCENT)
AND CORRESPONDING MAXIMUM LAND CONTRIBUTION (IN PERCENT)
AFFORDABLE BY THE LANDOWNERS.



Land Value Increase (in Percent)	Maxm. Affor-dable Land Contribution (in Percent)
25%	20.0%
50%	33.3%
75%	42.8%
100%	50.0%
125%	55.5%
150%	60.0%
175%	63.0%
200%	66.7%
225%	69.2%
250%	71.4%

Figure No. 13

are required to be fulfilled. The following are the main pre-requisite conditions for a viable Guided Land Development Project.

- a) The government of the country and the respective land development authority should be genuinely interested in achieving the proper development of the urban fringe lands in its jurisdiction to a planned pattern of urban land use.
- b) There should be provision of laws which authorise the public agencies and approved landowner groups to undertake Guided Land Development Project.
- c) In order to formulate a Guided Land Development project it must be realised that the majority of the affected landowners (preferably two third), by both number and area, agree and support the development of their land in this method.
- d) The area selected for Guided Land Development project should have market demand for planned and serviced sites for building development. Premature development of urban fringe areas may increase the complexity for Guided Land Development project.

- e) The project area should have physical potentiality for development and the main utility networks i.e. the public roads, water, gas, electricity etc. are nearby, and these can be extended and connected to the project area. Moreover, the project area should be sufficiently free from building structures. Presence of large number of scattered building structures reduces the possibility of land development through this method.
- f) Urban fringe lands are fragmented into separate landholdings, and the individual landowners are required to contribute a certain percentage of their land for the provision of roads, community facilities and utilities, and for financing the cost of Guided Land Development project. So, the average size of existing landholdings should be such that after contribution the individual plot sizes remain sufficiently large to provide for potential building sites.
- g) Each Guided Land Development project has to generate sufficient increase in land value to recover the project costs (mainly the costs of local infrastructure works) and to give the landowners an attractive land value gain. The increase in

land values are generated by the consolidation of the separate landholdings, the servicing and subdivision of the land, and the provision of facilities and amenities for the future residents.

In this system the landowners included in the project area lose a small portion of their land, but in exchange, they receive greater benefits through the project by way of land value increase in their sites greatly as the shape, size and orientation of their present sites become more regular with implementation of the scheme. Now, after development, each plot becomes easier to use as equipped with necessary public facilities which increases the value of their sites greatly.

Guided Land Development projects become encouraging when these are implemented successfully, giving the landowners attractive land value gains, saving the local governments the cost of the infrastructure works and public facilities, and providing the residents with pleasant and well-equipped residential suburbs, and doing so within a reasonable time period.

However, the projects may be discouraging when the landowners receive little or no land value gain and when the projects are delayed for years due to poor project formulation and management.

This is to be remembered that the benefits are not automatic but have to be achieved by good management, that is, by the formulation of sound projects with the efficient implementation of the projects. This requires skilled, competent and efficient project managers and technical personnel i.e. planners, engineers, architects, surveyors to manage the preparation and implementation of Guided Land Development project.

4.3 Basic Principles and Policies for Guided Land Development

Each Guided Land Development (GLD) project can be seen as a form of compulsory participation and partnership agreement between the landowners and the local government (planning authority). Generally, the landowners contribute a portion of their land for financing the cost of the project. The amount of land contribution is proportional to the expected land value increase due to the implementation of the project. The planning authority provide the necessary technical expertise for the planning and implementation of the project.

Guided Land Development projects are initiated by the public authority (Sometimes by the landowners' association) with the consent from a qualified percentage (usually two-third) of the landowners in the project. The consultation with landowners is necessary to ensure

that they understand the proposed project and how it is likely to affect them, and then support the project. The consultation with other government agencies such as the public utility authorities, in preparing the scheme is also a key step because it promotes their co-operation in implementing the Guided Land Development project. This can be essential when public roads and utility mains have to be extended and connected to the project.

The public authority then prepare a site plan for the entire area, replotting the land to accommodate both private building sites and public uses such as streets, schools, markets etc. The authority also installs all the public infrastructure, such as roads, sewers, water supply and electricity.

The resulting market value of the newly plotted building sites is then estimated, and the authority retains a sufficient number of building sites for subsequent auction to pay for all the public costs incurred in the planning and installation of infrastructure. The land will be sold out to the potential buyers who do not have any land or house within Dhaka Metropolitan Area.

The remaining building sites are then returned to the original owners in proportion to the value of each owners' initial contribution of land to the total project areas, and if possible the building sites returned to the owner are within or near the original parcel of land that he contributed in the project. All the 'rights and interests' of the owners that have existed to the previous sites are transferred to the new replotted sites.

Each landowners' share of the costs and returns of the project is based on the official assessment of the market value of his land as at the time of the planning authority's decision to prepare the scheme. There should usually be provision for landowners' objections or appeals against these valuations, or the valuation placed on the new plots. The acceptance of the official valuations is greatly dependent on the professional competence of the valuers and the landowner's awareness of valuations.

In some cases, a part or whole of the contribution to and returns from the project may be allowed to make by money instead of land. This may be particularly necessary in case of owners of very small sized land. If the value of returned serviced plot is more than the originally contributed raw land, then the owner

will be required to contribute an amount of money which will balance the excess value. On the other hand if the value of serviced plot is lower, then the owner will be compensated by money return.

It is desirable to extend the partnership concept of GLD by giving landowners a formal role in the formulation and implementation of projects by establishing a management committee for each project with landowner membership.

The initial fund needed to start the project is required to be provided by the local authority or by some loan giving agency.

The larger projects should be divided into stages in order to limit the amount of loan finance needed and to minimise the risk of a possible loss due to a decline in the market demand for housing. This will require efficient professional management.

The local authorities should also participate in some of these projects on a partnership basis and take a share of the net gain in land value, in recognition of the substantial contribution they make by the use of their government status and powers to promote and advance the project to the benefit of the landowners.

The respective Ministry of Urban Planning could prepare a standard format and procedure to guide local authorities in the preparation and implementation of projects. This format should include a model scheme text and a standard costing and pricing policy.

4.4 Standards for the Project

The general standard of development in the GLD project area should be in conformity with the basic character of the area and the socio-economic condition of the landowners and the residents of the area. If the standard is set too high, it will create great burden for the low-income people. Again, if the standard is set too low, that will create dissatisfaction for the higher income group. So a compromise is needed to be sought through the adoption of varied and flexible standards.

a) General land use

To satisfy the varied requirements of land use for community facilities, services, utilities and roads, usually 20 to 40 per cent of total land in the project area is required. Also, 5 to 10 per cent of total land is required for the recovery of project cost.

For the implementation of the project under this study, a total of 40 per cent land has been allocated for the provision of services and utilities and for the recovery of project cost. The land allocations are shown below, (Table 19).

TABLE 19

LAND ALLOCATION FOR FUTURE DEVELOPMENT

Land Use Category	Land Required	
	In Per cent	In Acre
A) Land for the provision of facilities		
i) Roads and access ways	20	14.27
ii) Community facilities and utilities	10	7.14
B) Residential Plots		
i) Residential plots for recovery of project cost	10	7.14
ii) Residential plots for reallocation to the original owner	60	42.83
Total:	100	71.38

b) Plot sizes

In determining the plot sizes for the project area, size of existing landholdings in the study area were considered. If the plot size is too big, then it will burden the owners of small landholdings in compensating the additional value of serviced plot by cash money. On the other hand if the plot size is too small, then it may create dissatisfaction for the owners of big landholdings. Also, the socio-economic condition of the landowners and the future residents of the area would have great influence on the determination of plot size. However, considering various factors four types of plot sizes have been suggested for the study area and it is expected that it will not create any major dissatisfaction for the existing landowners. The proposed plot sizes are shown in Table No. 20, Fig. 13 & 14.

It is also suggested that 2.5 katha (4.12 decimal) plots will be allotted to the original owners of land upto 5 decimal, 3.5 katha (5.77 decimal) plots will be allotted to the owners of 6-10 decimal land, 5.0 katha (8.25 decimal) will be allotted to the owners of 11-25 decimal land and 7.5 katha (12.38 decimal) will be allotted to the owners

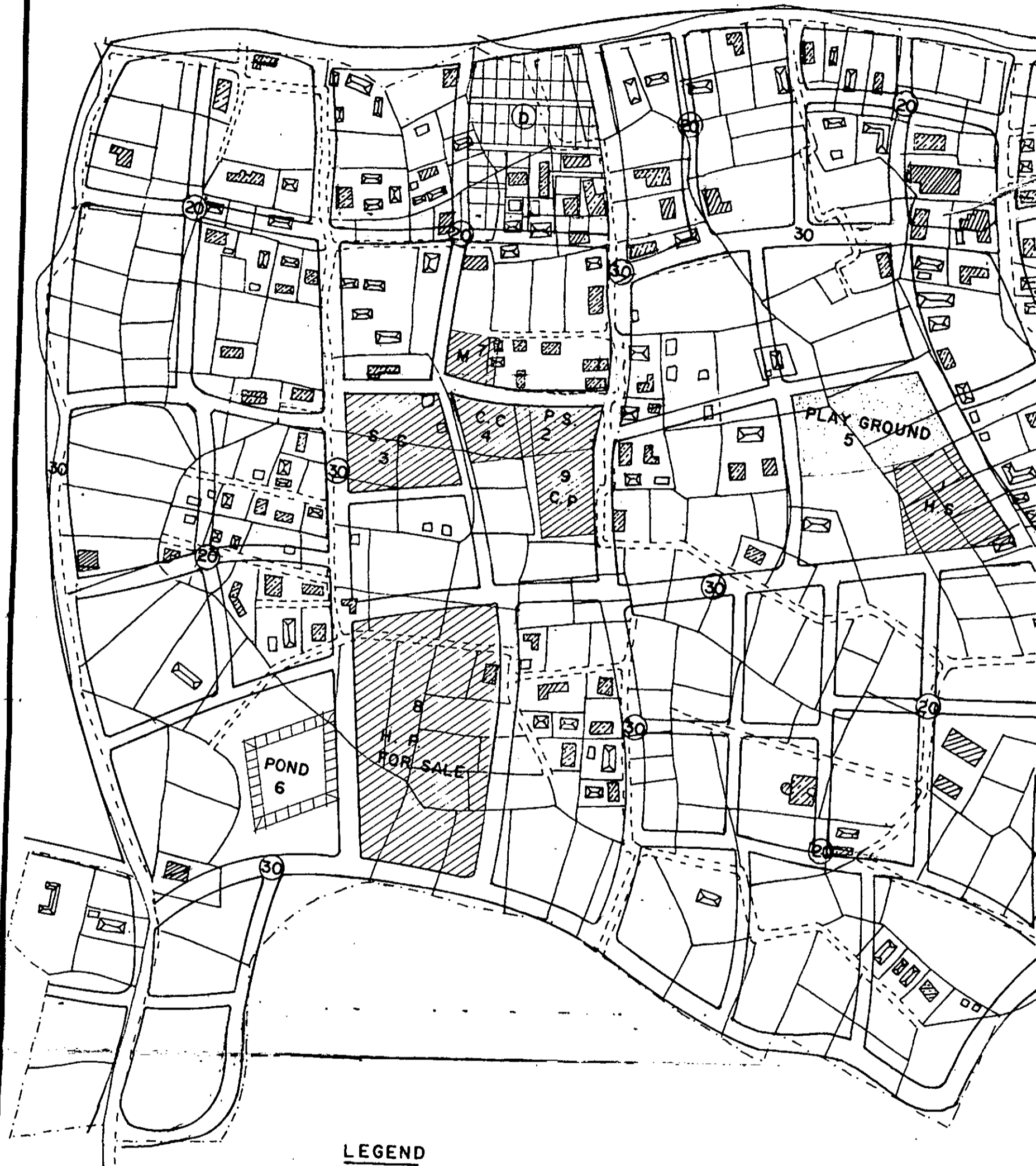
TABLE 20

THE DISTRIBUTION OF SIZES AND NUMBER OF PROPOSED PLOTS





Proposed Plot Sizes	To be Allotted to the original owners of land having	Percentage of landowners/plots
2.5 katha (4.12 decimal)	Upto 5 decimal	15.7
3.5 katha (5.77 decimal)	6 to 10 decimal	33.3
5.0 katha (8.25 decimal)	11 to 25 decimal	31.4
7.5 katha (12.38 decimal)	26 decima and above	19.6

of land having 26 decimal and above. The percentage of proposed sizes of plots are determined on the basis of the percentages of existing landholding sizes. These percentages are shown in Table 19. The amount of land for residential plots in 70% (60% land for reallocation and 10% land for cost recovery) of the total land which is about 50.0 acres. The estimated plot numbers are shown in Table no. 21 and Fig. 13.

DEVELOPMENT



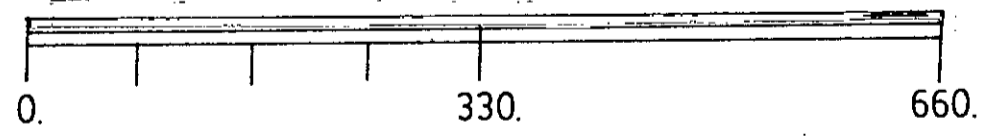
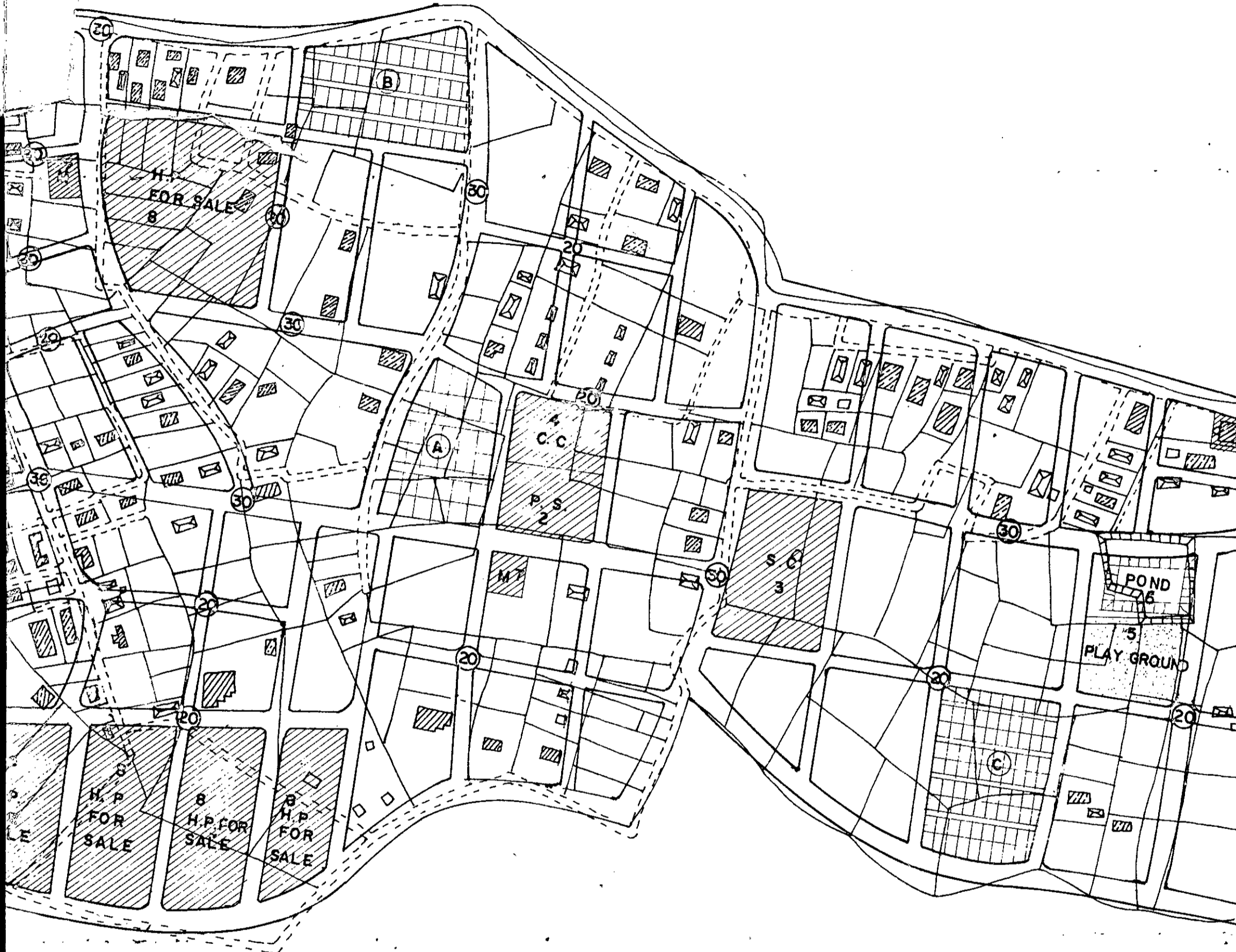
LEGEND EXISTING STRUCTURE TYPES

- 1. PERMANENT. 
- 2. SEMI-PERMANENT 
- 3. TIN-SHEEDS 
- 4. HUTS. 

PROPOSED FACILITIES

- 1. HIGH SCHOOL
- 2. PRIMARY SCHOOL
- 3. SHOPPING CENTRE
- 4. COMMUNITY CENTRE
- 5. PLAY GROUND
- 6. POND
- 7. MOSQUE
- 8. PLOT FOR SALE
- 9. CHILDREN PARK
- 10. GRAVE-YARD

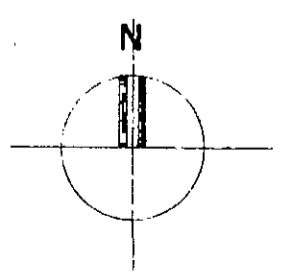
FOR THE STUDY AREA.



DIVISION OF 4 BLOCKS
IN TO REGULAR PLOT SIZE

- 1 NO. A = 5.50 Khata
- 2 NOS. B = 3.50 "
- 1 NOS. C = 2.50 "
- 1 NOS. D = Mixed
- 2 NOS.
- 2 NOS
- 4 - NOS.

- 1 NO.
- 1 NO.



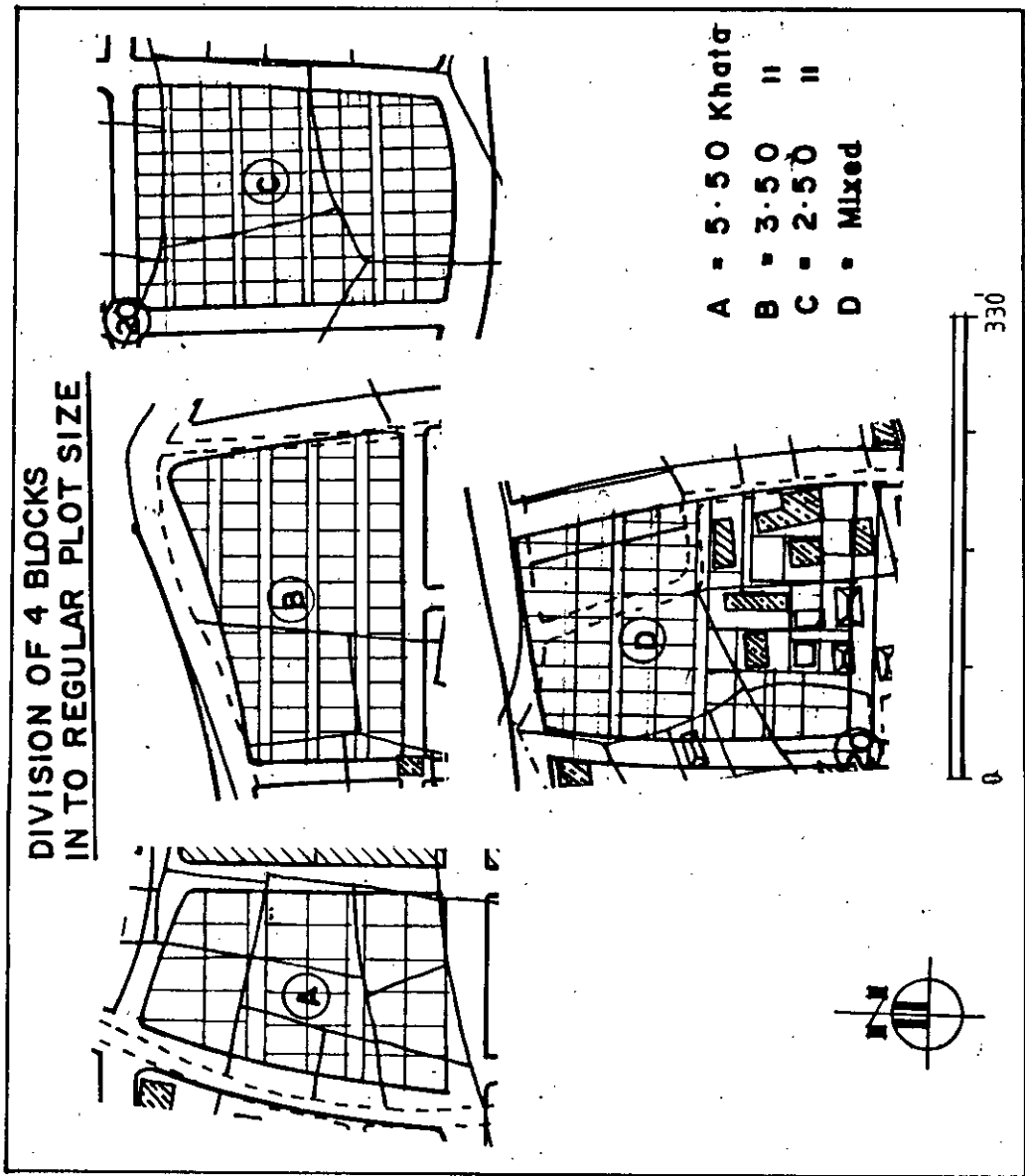


FIG-15

TABLE 21
ESTIMATED PLOT NUMBERS

Size of Plot	No. of Plots	Area of Land in acres
2.5 katha (4.12 decimal)	100	4.1 acres
3.5 katha (5.77 decimal)	200	11.7 acres
5.0 katha (8.25 decimal)	260	21.7 acres
7.5 katha (12.38 decimal)	100	12.5 acres
Total	660	50.0 acres

c) Access facilities

Each and every plot will be given road access and also the access for service facilities i.e. water supply, electricity, gas etc. Within the project two types of roads are proposed. The main roads would be of 30 ft. width which would carry vehicular traffic such as car, trucks etc. and also would be sufficient for single way traffic. The secondary roads would be of 20 ft. width for single way route for rickshaw, baby-taxi, etc. The footpath would directly serve the plots and would only be constructed along the main road.

d) Utilities and Service Facilities

Provision of water supply, electricity, gas supply, drainage and garbage disposal will be made in the project area.

Water supply: water supply in the project area shall be provided by piped water. The main distribution line of WASA already exists in this area. The water supply will be made available to individual plots.

Street lighting: Street light poles would be located along the main and subsidiary roads. These are considered necessary to provide the level of lighting consistent with the safety and security requirement of the inhabitants. Power Development Board (PDB) would provide necessary power supply for lighting.

Gas supply: Gas is economically for cooking purposes and gas line connections will be made available to each individual houses of the project area. Installation would be undertaken by the Titas Gas Authority.

Drainage and garbage disposal: Surface drainage facilities will be provided for the project area.

This will increase the efficiency of the rain water drainage and will reduce the cost of fill. The garbage disposal system for the project, as in other areas under Dhaka Municipal Corporation (DMC) would be the responsibility of Dhaka Municipal Corporation. Community garbage bins will be provided at regular intervals within the project area.

e) Community facilities

Community facilities of appropriate standard will be provided for the area. To provide these facilities, the present planning requirements of the project have been examined carefully and it was tried to strike a balance between what may be desirable and what may appear appropriate for the inhabitants for this area. The provision of community facilities is required to be considered in the context of whole neighbourhood or total environment. Hence, surveys were conducted to ascertain the availability of community facilities near the project area. On the basis of this survey and the estimated future population in the study area, the necessary community facilities are recommended for the project area.

The total number of residential plots that will be created in the project area is about 660. Considering an average of 1.5 families per plot and the average family size of 4.27 persons, the total population is estimated to be about 4230. This size of population is not sufficient to support the higher order community facilities like secondary school, shopping centre, health centre, community centre etc., and can only support the lowest order community facilities like primary school, playground, small children park, corner shops, mosque etc. From the survey it is found that secondary schools, shopping centre, health centre and other higher order community facilities are available for the area at convenient distances, but there is no community centre for the area. Of the lowest order community facilities, which the study area can support, only a graveyard and two mosques are available and no other facilities are available. Hence, it is suggested that one community centre, one primary school, a playground and a small children park having a combined area of 6.0 acres should be established in the study area. At present there are two mosques with a total area of 0.5

acre. It is suggested that two more mosques with 0.1 acre each should be established. It is also suggested that four groups of corner shops of convenience goods be established at convenient locations. The community facilities will cover a total area of 7.2 acres within the study area. The distribution of land areas for the community facilities are shown in table no. 22.

TABLE 22

DISTRIBUTION OF LAND FOR COMMUNITY FACILITIES

Type of facility	Existing Area	Proposed Area
a) Community centre (1 No.) Primary School (1 No.) Playground (1 No.) and Small children park (1 No.)	-	6.0 acre
b) Corner shops (4 grounds)	-	0.2 acre
c) Mosque (4 Nos.)	05 acre	0.2 acre
d) Graveyard (1 No.)	0.3 acre	-
Total	0.8 acre	6.4 acre

Grand Total = 7.2 acres

4.5 Economic Analysis of the Project

The economic analysis of the project includes the following aspects:

- a) Cost of contributed land before the project
 - b) Cost of reallocated land after the project
 - c) Land value gain for the landowner
 - d) Calculation of return for the landowners
- a) Cost of Contributed Private Land Before the Project

The total land area of the project is about 71.38 acres, out of which about 67.82 acres are private land and 3.56 acres are public land (roads etc.). All private lands (67.82 acres) will be contributed to the project from which the landowners will get a return proportional to the value of their land contribution. The total cost of contributed private land has been shown in Table 23 which is estimated to be about Tk. 35,48,55,000/-.

TABLE 23

COST OF CONTRIBUTED PRIVATE LAND

Type of land	Area of private land in acre	Existing av. land value in lakh Tk./ decimal	Existing total value of land in lakh Tk.
High land (flood free)	17.23	0.23	1033.80
Medium high land	34.29	0.55	1885.95
Low land (buildable with filling)	15.72	0.40	628.80
Very low land (not buildable)	0.58	-	(Excluded)
Total: Private land =	67.82	-	35.48
Public land =	3.56 acres		

Total cost of contributed private land = 35,48,55,000/-

b) Cost of Reallotted Land After Project

With the implementation of the project the land value will rise. For the implementation of the project 30% of the total land is required for the provision of roads, community facilities and services, 10% of the total land is required for the recovery of project cost and the rest 60% will be available for reallocation to the landowners. The total cost of the reallocated land has been shown in Table 24 which is estimated to be about Tk. 45,08,90,000/-.

TABLE 24
COST REALLOCATED LAND AFTER PROJECT

Type of Land	Area of Land for Reallocation in Acres	Expected Av. Land Value in Tk./Decimal	Expected Total Value of Land in Lakh Tk.
High land (flood free)	12.01	1.20	1441.20
Medium high land	21.03	1.10	2313.30
Low land (buildable with filling)	9.43	0.80	754.40
Very low land (not buildable)	0.36	-	(excluded)
Total (land for reallocation)	42.83	-	4508.90

Total cost of land for reallocation = Tk. 45,08,90,000/-

c) Land Value Gain for the Landowners

It is found from the previous analysis that the estimated total cost of contributed private land is about Tk. 35,48,55,000/- and the estimated total cost of land for reallocation is about Tk. 45,08,90,000/-. Now it can be calculated that the proportion of return (land/or money) to the landowners is 1.27 or 127 per cent by value of land. So, each landowner is expected to receive a land value gain of 27 per cent from the project.

Proportion of return (land/money) to the landowners (by value of land).

$$= \frac{\text{Total value of land for reallocation (after project)}}{\text{Total value of contributed land (existing)}}$$

$$= \frac{\text{Tk. } 45,08,90,000/-}{\text{Tk. } 35,48,55,000/-} = 1.27 \text{ or } 127 \text{ per cent by value of land}$$

d) Cost of Land Available for the Recovery of Project Cost

The amount of land available for the recovery of project cost is 10 per cent of total land. The expected value of the land is shown in Table 24. From the table it is found that an amount of Tk. 7,50,60,000/- will be available from the sale of land for the recovery of project cost.

The project cost mainly includes the cost of (a) land preparation and land development, (b) planning, surveying and other engineering works, (c) preparation of layout plan and plot subdivision, (d) construction of road pavements and road surfacing, (e) installation of service facilities like water supply, electricity and gas, (f) provision of drainage and garbage disposal, (g) the project establishment cost and other overhead expenses. The approximate amounts of cost items of the project have been shown in Table 25.

TABLE 26
PROJECT COST

I t e m s	Quantity with rate	Amount (in lakh Taka)
1. Construction of road pavement; total road area 14.27 acres; 75% of the road surface will be paved	10.7 acres = 4.66 lakh sft @ Tk. 80/- per sft.	372.80
2. Earth filling; average 3 ft. filling over public areas and roads; about 25.0 acres	25.0 acres = 25.0x4356x3 = 32.67 lakh cft @ Tk. 500/- per 100 cft	163.35
3. Installation of water supply pipes	15,000 rft @ Tk. 100/- per rft	15.00
4. Construction of water tank	L.S.	50.00
5. Street lighting	L.S.	50.00
6. Installation gas supply mains	L.S. L.S.	50.00 50.00
7. Drainage works; pucca surface drain	L.S.	5.00
8. Planning, surveying and other engineering works	L.S.	5.00
9. Overhead expenses and, mains	L.S.	50.00
Total Project cost =		726.15

N.B.: The rates and figures quoted here may not be accurate. These are only approximations to have a idea about the project cost.

TABLE 26
PROJECT COST

I t e m s	Quantity with rate	Amount (in lakh Taka)
1. Construction of road pavement; total road area 14.27 acres; 75% of the road surface will be paved	10.7 acres = 4.66 lakh sft @ Tk. 80/- per sft.	372.80
2. Earth filling; average 3 ft. filling over public areas and roads; about 25.0 acres	25.0 acres = 25.0x4356x3 = 32.67 lakh cft @ Tk. 500/- per 100 cft	163.35
3. Installation of water supply pipes	15,000 rft @ Tk. 100/- per rft	15.00
4. Construction of water tank	L.S	50.00
5. Street lighting	L.S.	50.00
6. Installation gas supply mains	L.S. L.S.	50.00 50.00
7. Drainage works; pucca surface drain	L.S.	5.00
8. Planning, surveying and other engineering works	L.S.	5.00
9. Overhead expenses and mains	L.S.	50.00
Total Project cost =		726.15

N.B.: The rates and figures quoted here may not be accurate. These are only approximations to have a idea about the project cost.

TABLE 27

CASE EXAMPLES SHOWING CALCULATION OF RETURN FOR THE LANDOWNERS

	Case - 1	Case - 2	Case - 3	Case - 4
1. Amount of land contribution	4.0 decimal	8.0 decimal	15.0 decimal	35.0 decimal
2. Type of land	Flood-free high land	Flood-free high land	Medium high land	Low land
3. Unit value of unserviced land (Tk per decimal) *	Tk. 60,000.00	Tk 60,000.00	Tk 55,000.00	Tk 40,000.00
4. Total value of unserviced land (contribution)	Tk 2,40,000.00	Tk 4,80,000.00	Tk 8,25,000.00	Tk 14,00,000.00
5. Total value of return payable to landowner (127% of contribution)	Tk 3,04,800.00	Tk 6,09,600.00	Tk 10,47,750.00	Tk 17,78,000.00
6. Entitlement of serviced plot (size)	4.12 decimal (2.5 katha)	5.77 decimal (3.5 katha)	8.25 decimal (5.0 katha)	12.38+8.25 decimal (7.5 + 5.0 katha)
7. Unit value of serviced plot (Tk per decimal)	Tk 1,20,000.00	Tk 1,20,000.00	Tk 1,10,000.00	Tk 80,000.00
8. Total value of serviced plot	Tk 4,94,400.00	Tk 6,92,400.00	Tk 9,07,500.00	(Tk 9,90,400.00 + Tk 6,60,000.00)
9. Extra value payable (5-8): (by the landowner -ve, to the landowner +ve)	-Tk 1,89,600.00	-Tk 82,800.00	+Tk 1,40,250.00	+Tk 1,27,600.00

Note: Extra value payable by the landowner is -ve (negative) and extra value payable to the landowner is +ve (positive).

land upto 5 decimal will get return of serviced plot of the size 4.12 decimal, landowners contributing 6 to 10 decimal land will get return of 5.77 decimal (3.5 katha) plot or less, landowner contributing 11 to 25 decimal land will get return of 5.77 decimal land will get return of 8.25 decimal (5.0 katha) plot or less; and the landowners contributing 26 decimal or more land will get return of 12.38 decimal (7.5 katha) plot or less. But, in order to make a balance between the land contribution and return it may also require some money contribution and return', which can be shown more clearly by some case examples, as follows in Table 27 (Fig. 15).

4.6 Suggested Organisation and Legal Framework for GLD Project

a) Suggested Organisation

During the early period of Pakistan some organisations were established for urban land development and management. Rajdhani Unnayan Kartiphakha or the then DIT is one of them. This organisation is engaged in planning and development of Dhaka Metropolitan Area including Narayanganj, Tongi, Saver towns and their adjoining areas. The main

functions of this organisation are preparation of master plans, structure plans and urban design; laying out of roads; provision of public open space; demolition of unauthorized construction or buildings; acquisition of land for development purposes; development control in accordance with the master plan; building inspection in accordance with the Bengal Building Construction Act, 1952; and research in urban planning and development. The organization also contributes to the provision of housing by land acquisition, site development, and sale of residential plots, preparation of land use plan and layout plans for areas largely in private ownership. So, we think it will be an appropriate organisation to take up and implement projects under Guided Land Development technique.

b) Legal Framework

The existing legislation controlling development and making provision for improvement so far as this relates to town planning, which is comprised in the Town Improvement Act, 1953 have been examined. This act sets up the Dhaka Improvement Trust and empowers it to make provision for the development, improvement and expansion of Dhaka, Narayan-

ganj and the surrounding areas, by opening up congested areas constructing buildings, acquiring land for these and other purposes, and for rehousing persons displaced by the execution of improvement schemes. Within these existing legislative frame work and power given to this organisation, Guided Land Development method can be adopted for large scale land management and development. Though this act contains many useful powers, particularly covering the preparation of detailed improvement schemes, it will be necessary to introduce a much more comprehensive code of regulations in order to cope with the problems of modern development facing the town, and to secure the standards of amenity and convenience now generally accepted as essential.

4.7 Working Procedure of Guided Land Development

Guided Land Development can be initiated and implemented by a group of individuals, land development association, a municipality, or a Town/-City Development Authority. The organization or group of individuals which initiate and implement the project may be designated "implementing authority".

WORKING METHEDODOLOGY OF GUIDED LAND DEVELOPMENT TECHNIQUE

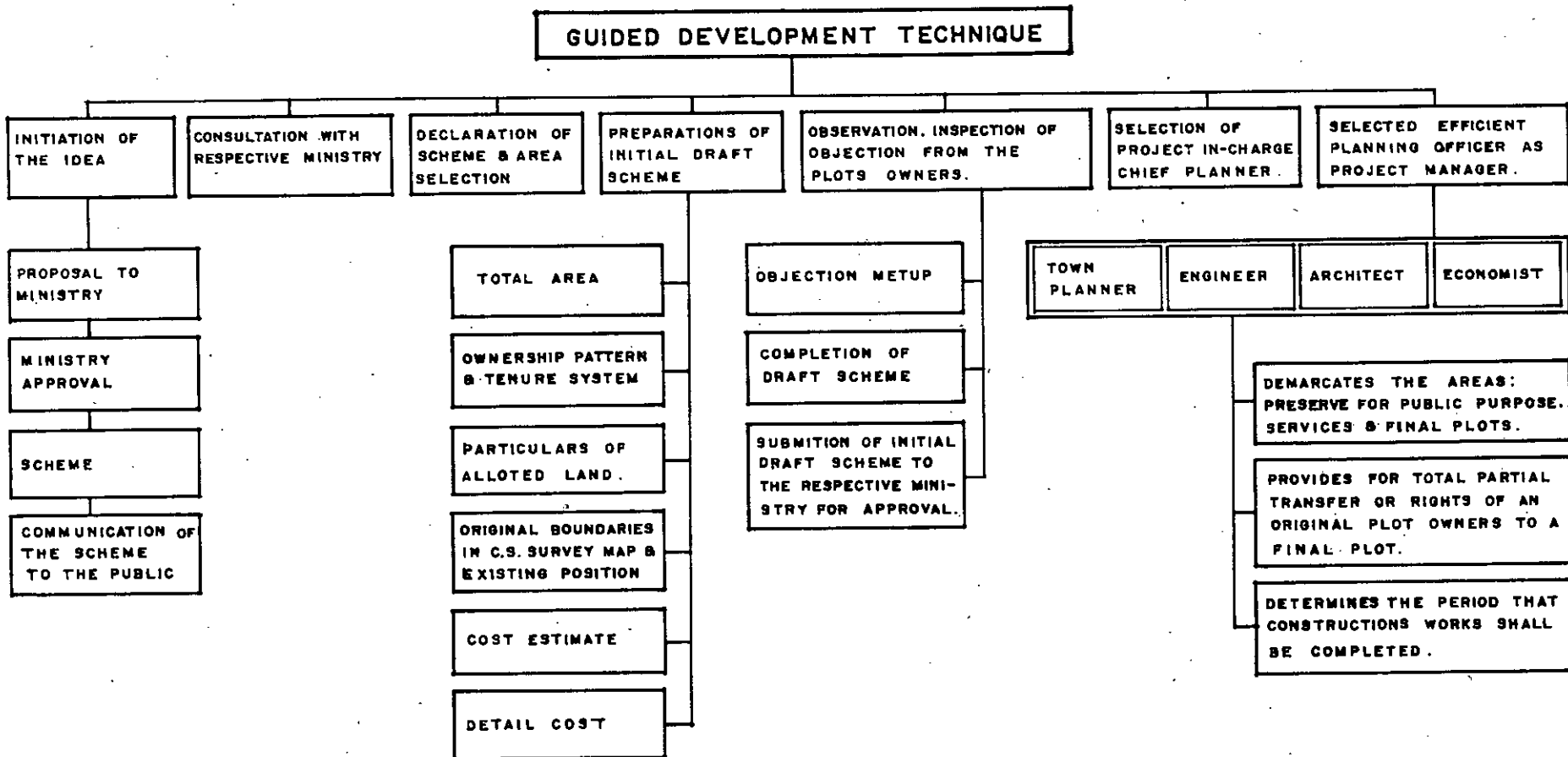


Fig. No. - 16

This project is first prepared as a draft scheme consisting of a plan and text with supporting financial and land budget. It is published, reviewed and amended and then approved by the respective ministry. This approved scheme authorises and regulates the implementation of the project. Therefore, the Guided Land Development scheme is a form of partnership agreement for the development project.

At the time of preparing a Guided Land Development project some of the steps would be identified as vital because they can determine the success or failure of the project. These vital steps includes, the selection of area & landholdings for the Guided Land Development, discussion with the the landowners, property valuation of the project lands, preparation of the project budget and establishment of coordination and liaison with agencies whose services are involved in urban land development, i.e., the agencies related with water supply, electricity, gas sewerage, education etc.

Among the steps discussed above, the selection of the area for Guided Land Development and consultation with the landowners are particularly important. The area selected for Guided Land Development should be physically and economically feasible for urban development so that the project can be carried out successfully, which includes providing a significant land value gain for the landowners. The consultation with landowners is necessary to ensure that they understand the proposed project and how it is likely to affect them, and then support the project.

Consultation with other government agencies, such as the public utility authorities, in preparing the scheme is also a key step because it promotes their cooperation in implementing the Guided Land Development project. This can be essential when public roads and utility mains have to be extended and connected to the project.

The outline procedure in the formulation and implementation of Guided Land Development project can be discussed under the following main headings.

- Step - 1: Selection of site and preparation of scheme text.
- Step - 2: Survey and design of planning works
- Step - 3: Preparation of draft proposal.

Step - 4: Preparation of final plan.

Step - 5: Implementation of the plan.

The working procedures in the formulation and implementation of Guided Land Development (GLD) project are shown in a flow diagram (Fig. 16). The major steps involving in the preparation and implementation of a GLD project are discussed in the following paragraphs:

Step-1: Selection of site and preparation of scheme text

Most of the Guided Land Development (GLD) projects are undertaken in the urban fringe areas that have been zoned for urban development and designated as "urban promotion areas". When the conversion of such rural fringe lands to urban use is imminent, the area is declared a Guided Land Development project. It is either initiated by the government or by petition from qualified percentage (two-third) of the landowners in the project area. In the selection of site for Guided Land Development care should be taken to see that;

— In the project area there is market demand for planned and serviced plots for building development. Premature development of urban fringe areas may increase the complexity for Guided Land Development project.

-- The project has economic potentiality to generate sufficient increase in land value to recover the project costs (mainly the cost of local infrastructure works) and to give the landowners an attractive land value gain.

-- The project area should be physically potential for development and the main utility networks i.e., the public roads, water, gas, electricity etc. are nearby, so that these can be extended and connected to the project area.

-- It must be realised that a majority, preferably two-third of the landowners in the proposed project area agree and support the development of their land in this method.

-- The project area should be sufficiently free from building structure. Presence of large number of scattered building structures reduces the possibility of land development through this method.

-- The average size of existing landholdings should be such that after contribution the individual plot sizes remain sufficiently large to provide for potential building site. If the existing plot sizes are very small, after land contribution the resulting plot sizes become so small that they are not suitable for building development.

With the initiation of the project after considering the necessary pre-requisite conditions a scheme text is prepared for the project in order to define it. The scheme text consists of generalised land use map, landholdings map, and a schedule of landholdings and valuations. The scheme text sets out the objectives of the project and the terms and conditions on which the project will be carried out. The planning authority usually prepares the scheme text in consultation with the landowners and after approval it becomes a form of partnership agreement between the landowners and the planning authority. After approval the scheme text becomes legal document to authorise and regulate the project.

Step-2: Survey and Design of Planning Works

After taking the final decision i.e. after approval of the scheme text, the planning authority would con-

duct a detail survey work in the project area. The survey works would include the following:

- 1) Demarcation of the project area (on a map) selected and designated for Guided Land Development (GLD).
- 2) Generalised survey of surrounding areas to identify the availability of public roads, community facilities, services and utilities near the project area.
- 3) Topographical survey of the project area to determine land levels, land slopes etc. and preparation of maps.
- 4) Land use survey (Plot to plot basis) and preparation of land use map.
- 5) Survey of existing road networks, their condition, lengths, width etc.
- 6) Survey of existing utilities and service facilities.
- 7) Survey and identification of existing community land uses and public lands.
- 8) Survey and identification of all built structure on individual plots and preparation of map.

- 9) Land value survey.
- 10) Landholding survey to prepare the schedule of landholdings showing land titles, ownership, shape, size, use, location, plot boundary, any built structure on land, valuation of all individual plots. (Schedule of landholdings and land titles may be collected from official records).
- 11) Survey on population distribution (if any).
- 12) Socio-economic survey to determine the socio-economic characteristics of landowners.

After completion of the survey work each landowner will be provided with a temporary land record card by the planning authority. The temporary land record card will show the following information.

- a) Land Title (name of landowner)
- b) Landholding (holding number/plot number)
- c) Plot boundary (shape)
- d) Plot size (area)
- e) Plot use
- f) Land character (land level etc.)

- g) Location, number, type and area of built structure, if any within the plot.
- h) Present value of land (Plot).

Step - 3: Preparation of Draft Proposal

After completion of survey work the planning authority prepares the draft proposal containing the project regulations and draft project program along with a draft outline design or preliminary design. The draft proposal includes the following:

- a) The draft outline design or the preliminary design demarcate the areas allotted or reserved for public purposes and services. It also shows the preliminary design of road networks and sets the standards for utilities, services and community facilities.
- b) The draft project program sets the standards for plot sizes (i.e. the maximum and minimum sizes of final plots).
- c) The program also determines the period within which the construction works shall be completed by the authority.

- d) It also gives the basis for estimating the land value increments and prepares the schedule of contributions and returns (land/money) of each individual landowner. The schedule of returns also shows the differences between total value of original and final plots.

The projects are usually prepared in consultation with the landowners and the various government bodies involved in its implementation. The draft scheme is then placed on exhibition for landowner and public information and for formal objections, if any. The resulting amendments are also exhibited for information and possible objections. The decision of chief, Planning and Development Authority, with regard to objections arising out of draft proposal is final. The final plan is prepared after review and possible amendment of the objections.

Step - 4: Preparation of Final Plan

The final program is prepared after review of the objections and their possible amendments. In the preparation of the final design some basic aspects are required to be considered which are as follows:

- a) Each Guided Land Development (GLD) project is required to conform to the official land use plan and zoning plan in that it is primarily a technique for implementation of city plan.
- b) The very nature of Guided Land Development procedure involves the consolidation or aggregation of a group of adjoining landholdings (in the project area) in the process of their design, servicing and subdivision as a single estate into a proper layout of streets, open space and building sites for planning urban use of the land.
- c) Bangladesh has limited stock of arable land with small landholdings where there is high priority for food production. Moreover, the need to finance the project cost out of the land contributions plus the pressures from the landowners for the maximum land return to them, means that the land should be planned in such a way that no waste in land use is created. The lot shapes and land conditions are altered so that there is no irregularly shaped lot and no excessively large or small lot is created as in some unplanned areas.
- d) The site plan for the entire area should be prepared by replotting the land to accommodate both

private building sites and public uses such as streets, schools and markets. All public facilities such as paved roads, sewers, water supply, electricity, parks, playgrounds, shopping centre, educational institutions should be created and/or improved and individual sites should be made easier to use.

- e) The standard for plot sizes also the standards for services and utilities are determined on the basis of the character of the area and the socio-economic condition of the landowners and residents.
- f) The resulting market values to the newly created building sites are then estimated. The amount of contribution and returns for each individual landowners is calculated. The final program is submitted to the ministry for approval. Objections and matters arising out of final program are referred to a "Board of Appeal" and its decision is final. The final program is approved by the ministry and the project regulations become a legal document to authorise and regulate the project.

Step - 5: Implementation of the Plan

After approval of the final plan the planning authority installs all the public infrastructure, such as paved roads, sewers, water supply and electricity, and also the necessary community facilities such as parks, playgrounds, shopping centres and educational institutions. The replotting plan divides the blocks of areas bounded by streets into plots to be reallocated to the original landowners.

The resulting market values to the newly created building sites are then estimated, and the planning authority retains a sufficient number of building sites for subsequent auction to pay for all the public costs incurred in the planning and installation of infrastructure. The remaining building sites are then returned to the original owners in proportion to the value of each's initial contribution of land to the total project area, and if possible, the building sites returned to the original owner are within or near the specific parcel of land that he contributed in the project.

However, the allocation of the new plots in some cases may not be based on the assessed market value of the

land but is determined by a 'land value index' or formula that gives weightages for land use, location, street frontage and other factors that influence land value. In this system no complete financial analysis with a statement of 'land values in and land values out' of each project is prepared and published, and is a source of great dissatisfaction for the landowners. Hence, it would be more realistic and equitable to adopt a market value approach to the land valuation.

The residents of the project area should be able to maintain their normal life and business activities with little interruption during the project period.

The size of GLD projects may cover a wide range from a few hectares to several hundred hectares and the project period through which they are designed and implemented ranges within two to three years.

The project procedures of GLD are complex and it takes time for the landowners to understand them. Many of the farmers involved in GLD projects sell their land to speculators because they cannot afford to wait for the completion of a large-scale project. Large scale project considerably increases the complexity of the project.

Many landowners prefer to retain a substantial portion of the urban plots they are allocated and hold them as an investment, so that in effect, they become land speculators.

4.8 Working Procedure of GLD project by Approved Landowners' Association

The Guided Land Development projects can be initiated and implemented by public authority and also by approved landowners association. The working procedure of GLD projects under public authority has been discussed in the previous section. Here, in this section the working procedure under landowners association will be discussed.

In the case of landowners association projects, they can be initiated by a group of persons who prepare a project program and articles of association, obtain the support of over two-third of the affected landowners and land lessees (by both number and area) and then obtain the approval of the planning authority after public exhibition of the project program. Once the association is established the project is implemented

by a board of directors which includes two or more elected landowner members to act as "auditors". The project program, project budget, replotting plan, plot allocation plan, plot selling procedures etc. are approved and amended by general meetings of all association members. Most proposals and issues are decided by majority vote but some matters required a two-thirds majority vote for their adoption. When the landowner association has over 100 members, it can form a forum of elected representatives of the members (in a ratio of 1 or more to 10) to replace the general meetings of all members.

In this case, the street layout plan for the project is prepared by the municipal planning department while the replotting plan is prepared by consultant experts for the landowners association.

The replotting plan divides the blocks of areas bounded by streets into the plots to be reallocated to the original landowners. Each reallocated plot should be at or close to the landowner's original landholding, and give him his fair share of the project land by value. However, this allocation of the new plot is not based on the assessed market value of the land but

is determined by a land value index or formula that gives weightage for land use, location, street frontage and other factors that influence land value. In this system no complete financial analysis with a statement of 'land value in and land value out' of each project is prepared or published. Therefore, the handsome land value gains usually going to the landowners do not become public information. Moreover, the reallocation and is not based on the market value of land which means that the replotting is conducted in secret and is a source of dispute.

In the implementation of Guided Land Development projects, different agencies have different development objectives. The landowner associations are primarily interested in subdividing their land for profit whereas, the local governments undertake many of their projects in order to install major infrastructure works. The differences in the objectives and priorities of the various agencies lead to differences in the size, cost structure, financing, and land outputs of their project. The types of projects undertaken by government agencies usually have a much larger public works content because much of their financing is from government subsidies and public works fund. But in the projects undertaken by landowners associations, the pressu-

re for maximum land return to them means that there is often an inadequate provision of land for roads, open spaces and public facilities. Hence, the GLD projects are usually discouraged to be undertaken under landowner associations.

CHAPTER - 5

SUMMARY, CONCLUSION AND RECOMMENDATIONS

CHAPTER - 5

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

The present study is aimed at possible use of the Guided Land Development technique to improve the process and pattern of land development in Dhaka city with a case study on the mauza Senpara Parbata. The whole work may broadly be divided into two divisions: the first part discussed the nature and potential advantages of Guided Land Development technique and examine the practical application in different countries of the world for the improvement of their land and planned development of fringe area. The second part discusses the possible application of Guided Land Development in Dhaka and in other cities and Town of Bangladesh.

A detail study and survey were conducted and information was collected to examine the existing condition of the study area and the suitability of application of the study area and the suitability of application of the technique of Guided Land Development. Accor-

dingly, every effort was made in this study to achieve these aims within the limitations of time and other facilities.

With this end in view investigation was directed to study the present condition of Sempara Parbata, its topographical features, landuse pattern, land fragmentation, plot size, plot shapes, access facilities and orientation of plots. In the course of investigations, it was found necessary to examine whether the present physical conditions were suitable to apply the Guided Land Development technique in the study area.

A socio-economic survey was also conducted to examine the occupational status of the dwellers which found that majority of the people were engaged in service and business. Some were engaged in part time business and agriculture but they were few in number.

In case of landuse pattern most of the plots are earmarked for residential use either low or high but at present most of the low lands are mainly under agricultural use. About 70 per cent of the land are above flood level. The natural flood water cannot entire into the area even in the low land because of haphazard

road construction. The low land are rapidly being earth filled for the development of residential use.

The road networks are insufficient and most of them are narrow and kutcha without foot path. Only a few roads are brick-paved which are also not in good condition. Most of the plots have no access facilities. There are few plots which have vehicular access facilities.

Regarding the shape of the plots most of them are irregular in shape and the orientations are not favourable in terms of prevailing climatic condition of our country. Misuse of land by creating unnecessary double access roads in some places is also observed.

Due to unplanned growth sanitation and surface drainage gives a hopeless situation. Most of the latrines are insanitary and kutcha well and there is no surface drainage provision, so water logging is a common feature in the rainy season.

Fragmentation of land is another important finding in the study area. From the survey it is found that there are 504 plots in the study area, only 69 or 15.79 per cent of the total plots are less than 5 decimal

in size and 435 plots or 84.21 per cent of the total plots are 6 decimais and above in area. The average plot size is 16.96 decimal.

Through the Guided Land Development technique the plots in the project area will be polled and divided into new plots where the original condition of the plots will be altered into regular shapes. In the survey of ownership rights it was found that latest transfer of rights of the plots are not well maintained in respective department. Records available in the registration office are rarely similar to facts. On the other-hand new ownership rights on land are also not clear and are not systematically maintained in respective offices.

In the study area it is found that the existing access facilities are very poor and inadequate. Out of 504 plots, 138 plots have no provision of access facilities, 366 plots have access facilities but of them only 56 plots (or 11.11 per cent of the total plots) have vehicular access facilities.

The study indicates that misuse of land due to unpanned access facilities can be avoided and savings in land is possible. It was found that in several areas access facilities are provided on both sides of some plots.

In the study area most of the plots are irregular in shape. Out of 504 plots, about 265 plots (or 52.58 per cent) were found to be irregular in shape. The orientation of most of the plots are not proper in the context of climatic conditions prevailing in the country. The orientation is one of the important factors which determines the suitability for development and influence the design of sub-division for the provision of sun-light and circulation of air in houses.

According to survey findings, value of buildable land in the study area varies widely between Taka 30 thousand to 2 lakhs per decimal depending on the character and location of land. The land value is maximum along the new 100 ft. wide link road where maximum land value is about Taka 2.00 lakh per decimal and the average is about 90 thousands per decimal. But the land value in inner area is considerably low due to lack of access facilities. Land value along main roads ranges between Tk. 60 thousands to Tk. 120 thousands, land value along minor roads ranges between Tk. 35 thousands to Tk. 60 thousands and value of land without access facilities ranges between Tk. 30 thousands to Tk. 45 thousands.

Utilities and service facilities are in a very poor condition in the study area. Safe drinking water facilities are inadequate to the requirement of the dwellers. Only 16 families (or 47.06 per cent) have facilities for use of tapped water. Most of the families were using tubewells which constituted 50 per cent of the total. But in the dry season most of these tube-well become out of order. Some of these families used "kucha" well which is quite unsafe.

In case of surface drainage facilities there is no designed provision for the area due to which rain water stagnates here and there and creates an unhealthy condition. Only those having "pucca" houses have "pucca" drainage provision for themselves. At the time of heavy rains most of the drains become blocked and rain water creates problems of drainage in the area.

The existing sanitary conditions are quite unsatisfactory and unhygienic in condition. The survey findings shows that only 7.84 per cent of the total households have sanitary latrines and 92.16 per cent use either "kucha" pit latrine or "tangha" latrine which are unsafe for sanitation.

There is no educational institution in the study area. At present the students go to nearby educational institutions. In case of energy use, only 52 per cent of the total households use gas for cooking and electricity for lighting, the rest uses kerosine oil for lighting and wood for cooking. Some of these families use electricity for cooking as well as for lighting purposes.

The total residential environment including sanitation, social and physical infrastructures are in a state of unsatisfactory condition. The unhygienic sanitation, unsatisfactory water supply and drainage facilities reflected the general economic condition of the area. On the other hand, social infrastructure like educational institution, shopping centre, etc. are also not well distributed and not within easy walking distance.

An analysis of dwellers' satisfaction in this area shows that almost all of the dwellers are not satisfied with the present situation. They gave opinion for immediate development. It is found from the survey that about 43 persons (or 84.4 per cent of the total owners) are willing to participate with the government in the development of the area through contribution by land

or in cash for financing the project. But 8 persons or 15.6 per cent of the sample households are unwilling to contribute anything and suggested that it is purely government duty to develop any urban area.

About 63 per cent of the respondents agreed to contribute land for development of the area according to Guided Land Development method. Eleven persons or 21.46 per cent agreed to share project cost by contributing money but not land. In the survey, out of 51 households, only 8 persons or 15.6 per cent do not agree to help either by contributing land or contributing money for the project.

From these analysis the following conclusion may be drawn regarding the possibility of application of Guided Land Development in the unplanned settlements. The positive findings of survey and study are as follows:

- i) There are market demands of residential plots in the study area
- ii) The physical and topographical conditions are favourable i.e. most of the land are flood free. So, land filling cost will be minimum.

- iii) Although land of this area became highly fragmented but the existing average plot size is quite suitable for Guided Land Development. So, after contribution of land from these plots recovery of the project cost is feasible.
- iv) The area is lying idle for a long time. So the dwellers of the area want a rapid development for which majority of them are willing to share development cost by cash or by land contribution.
- v) The facilities in terms of social and physical infrastructure available in the area, are not sufficient at all.
- iv) The area is close to main city area, and transportation linkages are good.

Finally, from the above analysis it may be suggested that the application of Guided Land Development techniques are feasible and suitable for development and management of private unplanned residential areas in the urban fringes.

5.2 Recommendations

Guided Land Development method provides government with a means of managing and financing the unified

subdivision of separate private holdings for planned urban development. In comparison with other land development methods it is a potentially important technique for improving urban development and also for timely land supply because it could be widely adopted in many-mixed-economy countries.

From the literature review it was found that Guided Land Development technique provides governments with a means of managing the planned development of private landholdings that is politically, financially and administratively feasible. Specially this land development technique is politically feasible because it is usually supported by most of the landowners. On the other hand it is also financially feasible because the amount of land sacrificed by the landowner, is recovered from the land value increases generated by Guided Land Development project. It is also administratively feasible because the housing development authority can learn this technique by starting with small-scale Guided Land Development project and ultimately it can be applied in a large-scale project for rapid housing development. For large-scale land development, this technique is quite applicable with minimum public expenditure.

Bangladesh can surely hope to adopt Guided Land Development in its cities especially its largest cities where population increases are very fast. The present thesis tried to find out the possibility of its application in a small area in its capital city, i.e. Dhaka. The result and calculations shows very clearly that it is both economically, socially and politically viable. The resident of the area gave their opinions in its favour. A calculation also shows that the price of land after development will be very high and it will be benefited for the landowners. Also, the total cost of the project can be recovered from the sale money of surplus land after providing road, electricity, water supply and gas.

Senpara Parbata is situated very close to the town and already certain service provisions are there. For this reason the price of land is already quite high in that area. But still after development the land price will rise substantially to make the project feasible. If the same project would be undertaken in some urban fringe area where the land is totally raw and cheap, the benefit after development would be much more higher. Price of land will rise very much and the owners will be greatly benefitted from

Guided Land Development project. Thus Guided Land Development project will be highly successful in urban areas of Bangladesh.

Finally it may be concluded with the following recommendations:

- a) Guided Land Development could be adopted to improve the development of Dhaka city because the urban-fringe land are usually fragmented into many small subdivisions.
- b) The technique of Guided Land Development could be best used for the development of Dhaka city and also suitable for the accelerated development of satellite city of Savar and Tongi.
- c) At present for expansion of Dhaka city the land has to be filled for road and building construction, specially the areas which are in the flood affected zone. The private landowners have to wait until the extension of the public road network provides access to this land. These landowners would have a strong incentive to join a Guided Land Development programme that would provide a public road connection for their underdeveloped land. With the provision of the road connection it will increase their land value and will help immediate development.

- d) The fringe areas of Dhaka city are developing very rapidly in an unplanned way and the pattern of land subdivision is constrained to long narrow streets. In this situation this problems can be solved through the use of Guided Land Development method.
- e) The public housing authority could be benefitted from the Guided Land Development technique to solve the housing problem. It could undertake Guided Land Development in partnership with the landowners of urban fringe area in order to increase the supply of housing land and also including the supply of land for low-income housing.
- f) The Rajdhani Unnayan Katripakhya (RAJUK) is experienced in land development through the process of sites and services method. So, they can easily adopt the Guided Land Development technique also for a quick and economical urban land management.
- g) In the initial stage of adoption of Guided Land Development technique for the proper development of Dhaka city it may be organized through the pilot and demonstration project based on the agreement and cooperation of a group of landowners in an

urban fringe area. The benefit derived by the private landowners from such demonstration projects will help to motivate the landowners in other similar areas so that the method become reapplicable in a wider context.

APPENDIX AND BIBLIOGRAPHY

APPENDIX - A

Space Utilization Characteristics of
Irregularly Shaped Plots

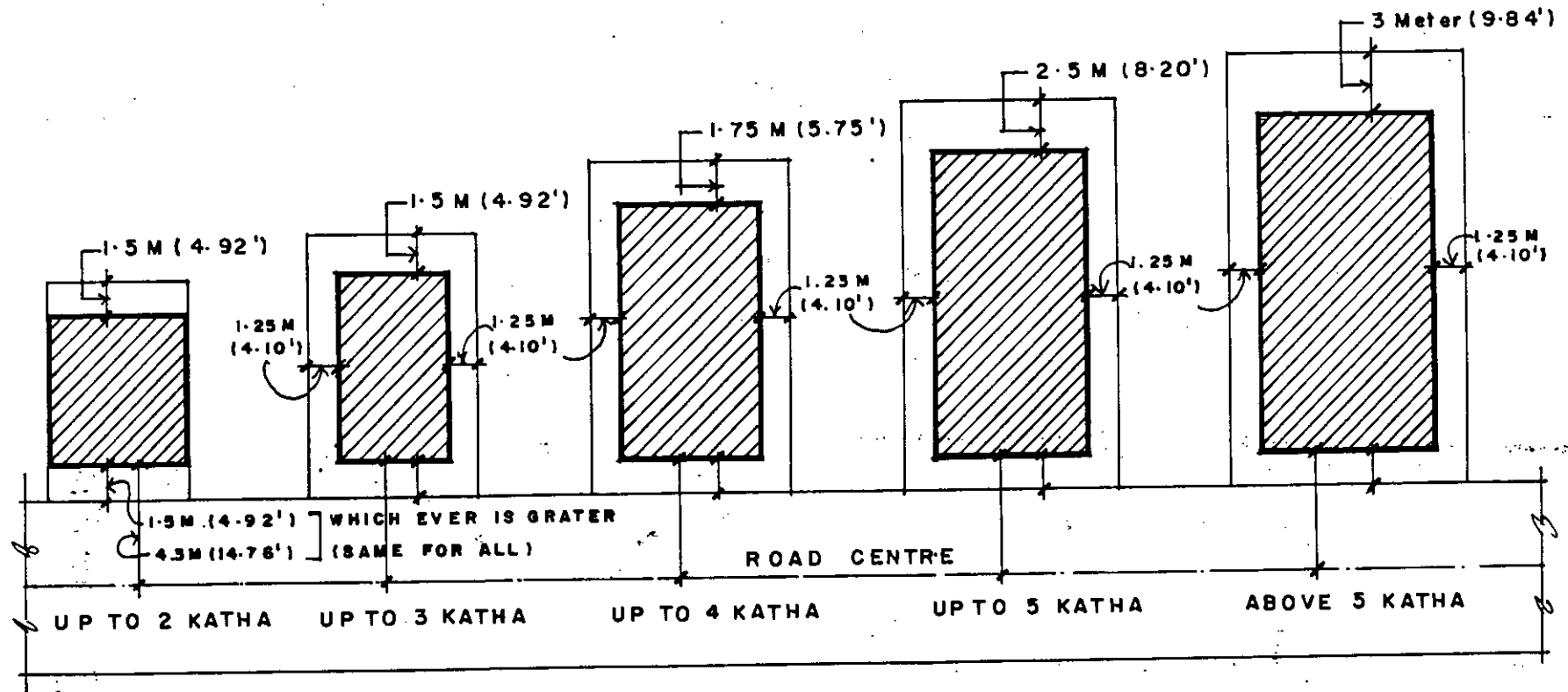
By setting some example effort was made to show the different percentage of utilisation obtainable from different shapes of the plots. According to the set-back rule of DIT, the optimum utilization of five typical plots are given in diagram as well as in the following:

Utilization of Space Different Plots

Example	Utilization in irregular form		Utilization in regular form	
	Area in decimal	%	Area in decimal	%
Case - 1	1.74	65	1.74	73.0
Case - 2	2.11	60	2.11	72.50
Case - 3	6.17	41	6.17	66.0
Case - 4	8.50	55	8.50	66.0
Case - 5	2.06	64	2.06	72.0

In the above table, in case of example-1, the area of the plot is 1.74 decimal from which 65% utilization is possible in its original irregular shape but the same area of plot can provide 73% of utilization in regular form.

SET BACK RULES FOR RESIDENTIAL PLOTS



(11)

Note: Road width must be 3.5 meter (11.48') for high density areas & 4.75 meter (15.58') for other areas.

SOURCE : HOUSING & BUILDING RESEARCH INSTITUTE

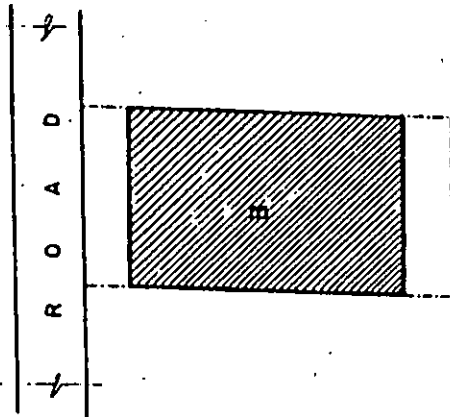
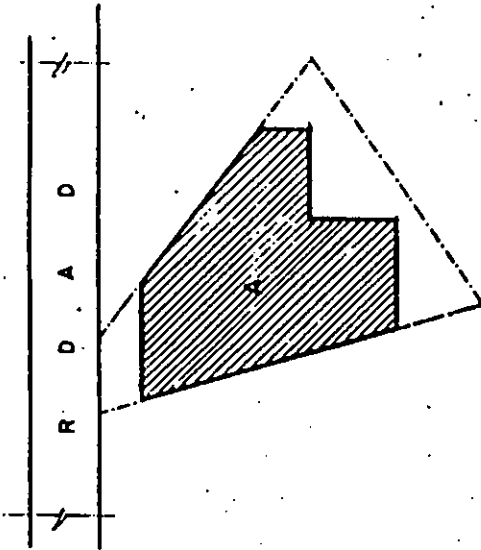
(iii)

In case of example-5, the area of the plot is 2.06 decimal which can provide only 64% of utilization but a same size plot in regular form can provide 72% of utilization. Similarly, in case of example-2, the area of the plot is 2.11 decimal which can provide maximum utilization of 60% in irregular form but the same plot can give 72.50% utilization in regular shape.

If the plot size is bigger, it will provide less utility than a small plot in irregular form. According to the set-back rule of DIT up to residential plot size of 3.3 decimal or 2 katha, there is no need for side space. Therefore, in case of example-3, the area of the plot is 6.17 decimal and in irregular form it may provide maximum utilization of 41%. But the same size plot can provide 66% utilization in regular form. Similarly in example-5, the area of the plot in irregular form is 8.50 decimal and provide maximum utilization of 55%, but a same size plot in regular shape can provide 66% of utilization.

Therefore, it may be concluded that the irregular form of land provide minimum utilization which was found in most of the plots with irregular shape in the study area. This is nothing but misuse of costly land resource due to unplanned subdivision of land.

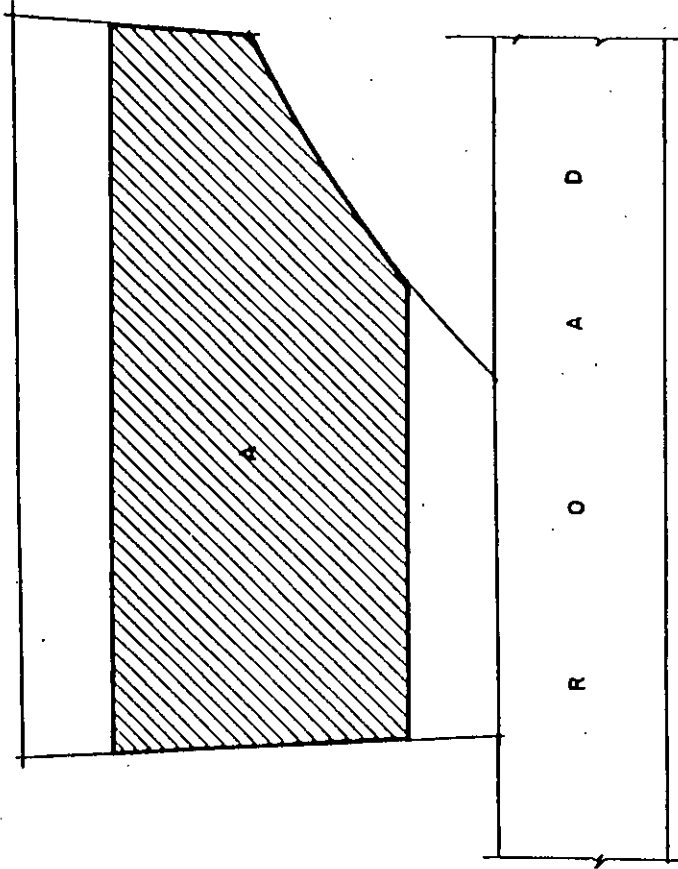
Example-1



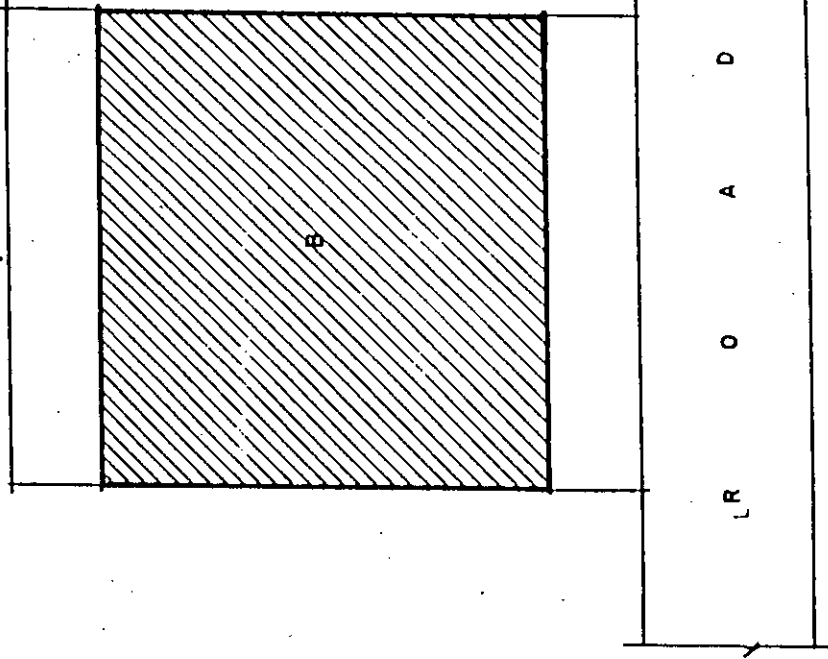
SCALE 0 2 4 8 IN FEET

UTILITY	A - 65 %	B - 73 %
	AREA - 1.74 ac	
PLOT NO. - 412 (20465)		

Example-2

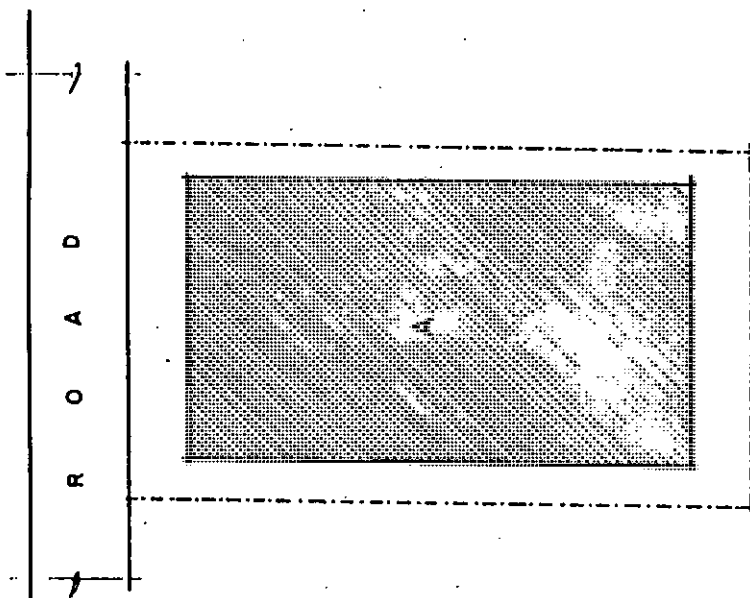
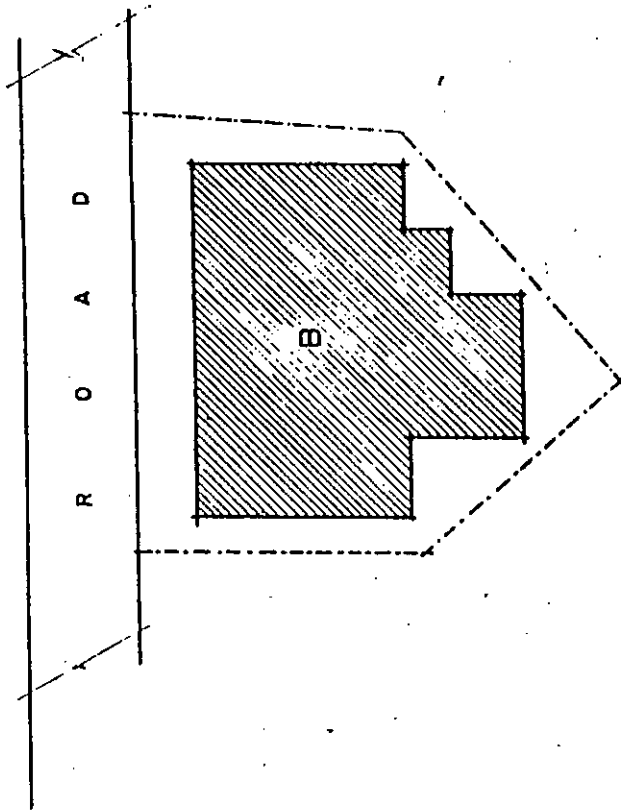


SCALE 0 2 4 IN FEET



UTILITY	
A - 60 %	B - 72.5 %
PLOT NO. - 93 C	AREA - 2.11 ac.

Example-3



SCALE 0 2 4 8 IN FEET

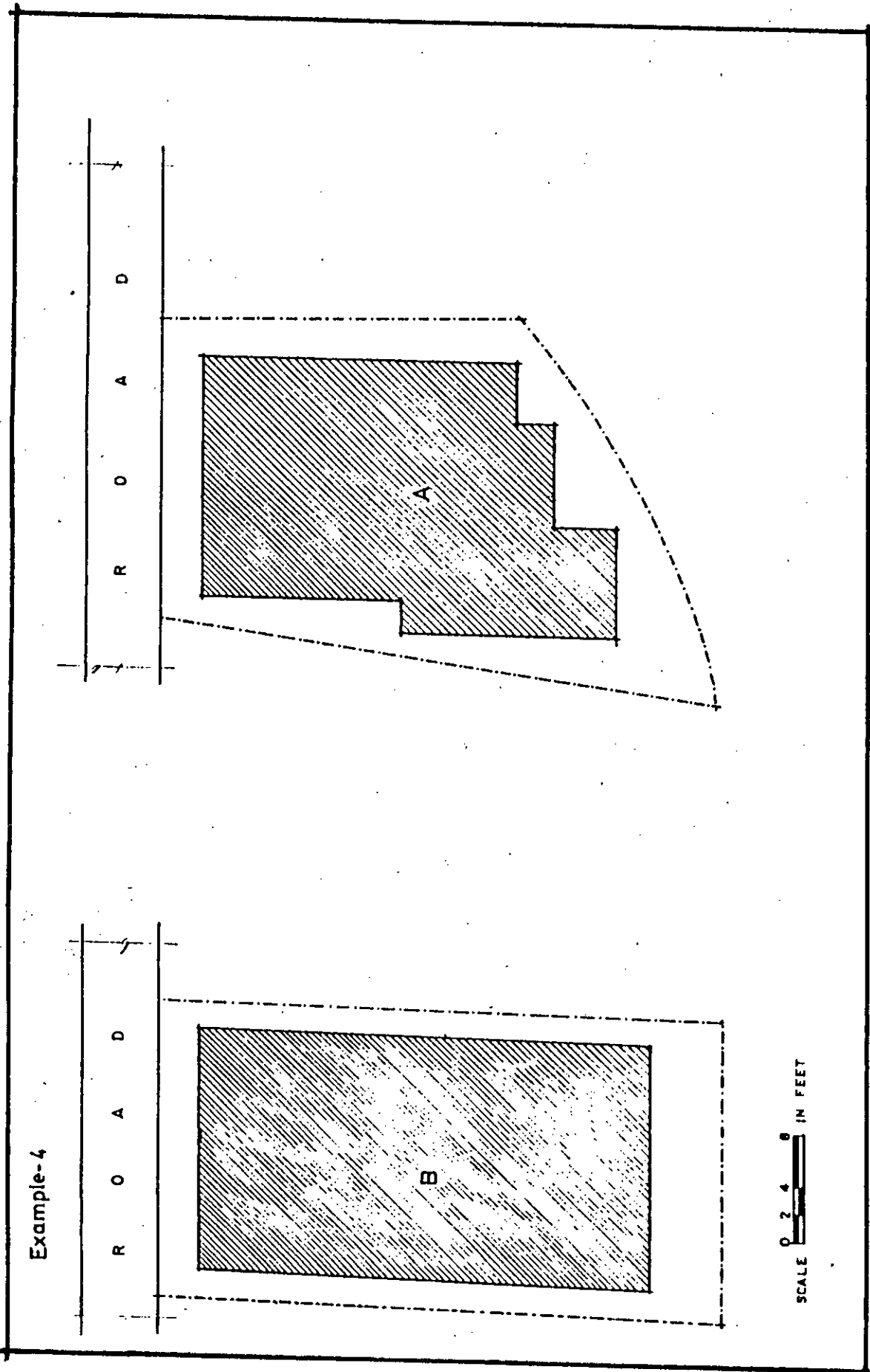
UTILITY

PLOT NO. - 9606 (172)

AREA - 6.17 dc.

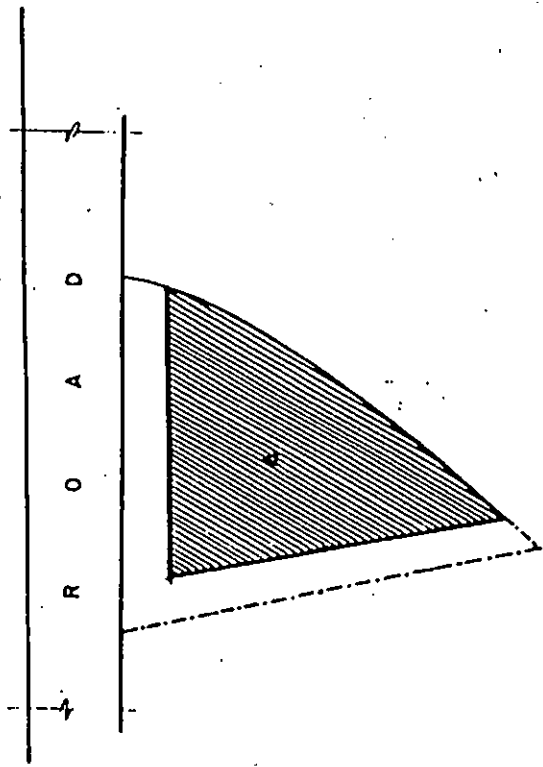
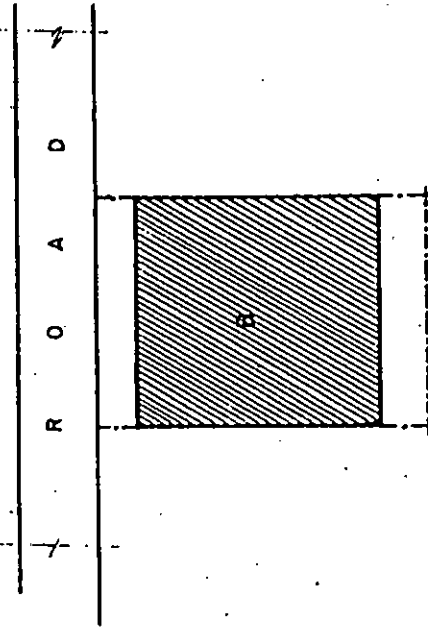
A - 66 %

B - 41 %



UTILITY	A- 55 %	AREA — 8.5 ac.	PLOT NO. — 17083 (155)
	B- 66 %		

Example-5



SCALE 0 2 4 8 IN FEET

UTILITY	A - 64 %	B - 72 %
	AREA - 2.06 dc	PLOT NO. - 213 (19072)

APPENDIX - B

List of Landowners and Types of Land with Area in Decimal

Sl. No.	Plot No.	Type of Land	Area in Decimal	Name of the owners
1.	20368	House	.03	Omar Faroque
2.	20345	Challa	.03	Id. Aman Ullah
3.	20364	Challa	.03	Abdul Gani
4.	17001	Hall	.13	Heher-un-Nessa
5.	19045	Hall	.13	Murul Hoque
6.A	17002	Hall	.08½	Id. Serajul Hoque
7.	19053	Hall	.13	Kabir Uddin
8.	19046	Hall	.08	Shaheb Ali
9.	19049	Hall	.13	Afia Khatun
10.	19050	Hall	.20	Habibur Rahman
11.	19047	Hall	.10	Julekha Begum
12.	19051	Hall	.13	Asia Khatun
13.	17048	Challa	.16	Sofina Begum
14.	19052	Hall	.13	Murjahan Begum
15.	17049	Challa	1.00	Kasem Uddin
16.	17046	Challa	.13	Id. Habibur Rahman
17.	17045	Challa	.07	Keramot Ali
18.	17022	House	.15	Murul Islam
19.	17050	Challa	.20	Abdus Samad
20.	17051	Hall	.26	Hamida Begum
21.A	17052	Challa	.18	Murul Islam
22.A	20247	Challa	.07½	Murun Miah
23.A	17076	Challa	.09	Hamidur Rahman
24.	17075	Hall	.26	Dr. Hasim Uddin
25.	17055	Challa	.16	Jebunnahar
26.	17054	Challa	.16	Begum Romeja Feroze
27.	17053	Challa	.12	Samsuddin Mullah

Sl. No.	Plot No.	Type of Land	Area in Decimal	Name of the owners
28.	17211	Hall	1.46	Id. Abdul Bari
29.	17212	Hall	.26	Abdul Aziz
30.	20272	Challa	.26	Kazi Amdadul Sharif
31.	20512	Challa	.10	Jahanara Khatun
32.	17213	Challa	.20	Abdul Barek
33.	20349	House	.08	Lila Pervin
34.	17014	Road	.03	Abdul Barek
35.	20260	Challa	.21	Abdul Barek
36.	17216	Challa	.30	Abdus Sattar
37.	17217	Challa	.32	Abdus Sattar
38.	17218	Hall	.22	Abdul Barek
39.	17214	Challa	.85	Abdul Barek
40.	17210	Hall	.20	Abdul Barek
41.	17209	Hall	.23	Abdus Sattar
42.	17208	Hall	.26	Abdul Barek
43.	20252	Hall	.11	Abu Tayeb
44.	17056	Challa	.11	Shamsuddin Mullah
45.	20253	Hall	.08	Humayun Kabir
46.	20254	Hall	.08	Morshed Jahan
47.	17057	Challa	.16	Shamsuddin Mullah
48.	17068	House	.05	Wazed Ali
49.	17067	Challa	.05	Osman Gani Mullah
50.	17069	Challa	.11	Hir Tyeb Ali
51.	17070	House	.07	Osman Gani
52.	17071	House	.07	Hasan Ali
53.	17072	House	.08	Jahanara Karim
54.	17073	Hall	.06	Fajes Uddin Ahmed
55.	17074	Hall	.28	Shamsuddin Mullah
56.	17089	Challa	.10	Mahabubur Rahman
57.	19044	Challa	.05	Musammat Sarwar Bhuiyan

Sl. No.	Plot No.	Type of Land	Area in Decimal	Name of the owners
58.	19043	Challa	.05	Jubed Ali
59.	17090	Hall	.10	Kolim Uddin Mullah
60.	17097	Hall	.12	Osim Uddin Mullah
61.	17098	Hall	.13	Abdul Berek Mullah
62.	17099	Challa	.12	Kolim Uddin Mullah
63.	20122	Challa	.14	Abdul Malek
64.	17062	House	.10	Khan Moslem Uddin Ahmed
65.	17063	Viti	.06	Isat Ali
66.	17064	Viti	.06	Kozaffor Hossain
67.	20145	Challa	.08	Khorshed Ali
68.	17061	Challa	.05	Osim Uddin Mullah
69.	20195	Challa	.04	Muinuddin
70.	17065	Viti	.07	A.K.M. Somiduddin Khan
71.	17066	House	.05	Jahanara Begum
72.	17058	Challa	.05	Osman Gani
73.	17060	House	.05	Md. Shamsul Hoque
74.	17059	House	.05	Hirza Md. Shamsul Hoque
75.	17207	Hall	.12	Md. Osim Uddin
76.	17206	Hall	.13	Md. Sahamsu
77.	17205	Challa	.26	Amaton Nessa Bibi
78.	17102	Challa	.27	osman Gani Mullah
79.	17204	Hall	.18	Osim Uddin Mullah
80.	17203	Hall	.22	Md. Nurul Nehar
81.	17103	Hall	.13	Somon Kazi
82.A	17104	Challa	.26	Ala-uddin Mullah
83.A	20120	Challa	.10	Shamsuddin
84.	17193	Hall	.05	Osim Uddin Mullah
85.	17201	Hall	.12	Musammam Rokeya Khatun
86.	17202	Hall	.11	Mir Golam Mustafa
87.	17199	Hall	.14	Begum Lutfur Nahar

Sl. No.	Plot No.	Type of Land	Area in Decimal	Name of the owners
88.	17200	Nall	.14	Mussammat Ifta Barunnessa
89.	17195	Challa	.09	Md. Mojibur Rahman
90.	17194	Challa	.11	Idris Hossain
91.	17940	Nall	1.04	Hazi Asrab Ali
92.	17185	Challa	.34	Najim Uddin
93.	17191	Challa	.57	Nojim Uddin Mullah
94.	17186	Challa	.21	Nosim Uddin
95.	17187	Challa	.54	Nosim Uddin
96.	17190	Nall	.07	Abdul Latif
97.	17189	House	.08	Ramjan Ali
98.	17188	Challa	.35	Shamsul Haque
99.	20464	Challa	.17	Khorshed Alam
100.	17105	Challa	.26	Nasor Uddin Mullah
101.	17100	Challa	.12	Mohi Uddin Ahmed
102.	20487	Challa	.10	Monir Uddin
103.	17111	Nall	.15	Kolim Uddin Mullah
104.	17106	Challa	.12	Kolim Uddin Mullah
105.A	19065	Challa	.16	Sohanodh Kumar Borue
106.	17107	Nall	.17	Md. Abu Hossain
107.	17109	Nall	.07	Jahanara Begum
108.	17110	Nall	.16	Nasor Uddin Mullah
109.	17112	Nall	.12	Abu Bakor Mullah
110.	17108	Nall	.08	Shefali Begum
111.	20110	Challa	.19	Md. Motiur Rahman
112.	20255	Challa	.08	Abdus Sattar
113.	20111	Challa	.12	Aftab Ali
114.	17095	Challa	.20	Abu Baker
115.	17096	Challa	.08	Rohimun Nessa
116.	17091	Challa	.08	Shamsul Islam
117.	17088	Challa	.13	Md. Janab Ali Miah

Sl. No.	Plot No.	Type of Land	Area in Decimal	Name of the owners
118.	17087	Challa	.48	Ala-uddin Mullah
119.	17086	Nall	.13	Shamsuddin Mullah
120.	17082	Nall	.26	Farhadul Haque
121.	17077	Challa	.13	Farhadul Haque
122.A	17078	Challa	.05	Abdul Malek
123.	17080	Challa	.05	Faizuddin Ahmed
124.	17043	House	.05	Hafiz Uddin Ahmed
125.	17042	House	.04	Hafiz Abu Abdulla
126.	17041	Challa	.26	Alhaz Abdul Jalil
127.	17040	Challa	.06	Abdus Sattar
128.	17047	Challa	.12	Md. Monsur Ali
129.	17039	Challa	.07	Atiqur Rahman
130.	17038	Challa	.03	Begum Rokeya Hoda
131.	17036	Challa	.08	Md. Idrish
132.	17037	Challa	.10	Shamsul Haque
133.	17035	House	.07	Azgar Mullah
134.	17034	House	.10	Bakatun Nessa
135.	19062	Challa	.09	Md. Eunos Khan
136.	17003	Challa	.08	Md. Chan Mia
137.	17004	Challa	.07	Marium Khatun
138.	17005	Challa	.09	Kabil Uddin
139.	17006	Challa	.30	Nurul Islam
140.	17007	House	.10	Asimuddin
141.	17008	Challa	.03	Hasan Ali
142.	17008	Challa	.15	Nurul Islam
143.	19086	Challa	.13	Jahanar Haque
144.	19009	Challa	.06	Hasan Ali
145.	19008	Challa	.07	Fazlu Mia
146.	20041	Challa	.06	Jonab Ali

Sl. No.	Plot No.	Type of Land	Area in Decimal	Name of the owners
147.	17010	House	.17	Saleha Khaton
148.	17011	Nall	.28	Kalim Uddin Mullah
149.	17012	Nall	.10	Osman Goni Mullah
150.	17013	Nall	.22	Owasim Uddin Mullah
151.	17016	House	.46	Abdul Barek Mullah
152.	17030	House	.40	Kolim Ullah
153.	17032	Challa	.39	Shamsuddin Mullah
154.	17033	House	.35	Shamsuddin Mullah
155.	17083	House	.33	Md. Shafiuddin
156.	17081	Nall	.13	Farhadul Hoque
157.	17084	Nall	.13	Shamsuddin Mullah
158.	17085	Nall	.04	Md. Muslim
159.	17031	House	.30	Nasir Uddin Mullah
160.	17028	House	.07	Owasim Uddin Mullah
161.	17092	House	.22	Alim Uddin Mullah
162.	17093	Challa	.14	Abu Bakar Mullah
163.	17094	House	.17	Abu Bakar Mullah
164.	17027	House	.19	Osman Gani
165.	17029	Viti	.53	Osim Uddin Mullah
166.	20495	House	.04	Amir Hossain
167.	17023	Nall	.17	Lutfur Rahman
168.	17029	Viti	.53	Osim Uddin
169.	17021	Nall	.57	Talub Ali Mullah
170.	20124	Nall	.04	Lutfar Rahman
171.	20123	Nall	.08	Shohid
172.A	9606	Nall	.24	Taleb Ali Mullah
173.	9605	House	.11	Kazi Md. Shamsul
174.	17020	Nall	.23	Hazi Abdul Aziz
175.	17017	Challa	.43	Abdul Barek Mullah

Sl. No.	Plot No.	Type of Land	Area in Decimal	Name of the owners
176.	17015	Nall	.10	Abu Jafar Mahabubul Ahmed
177.	20072	Nall	.10	Dalwar Hossain
178.	17018	Nall	.27	Begum Nurjahan Haque
179.	17019	Nall	.50	Shale Mohammad
180.	9595	Nall	.17	Abdul Jabbar
181.	9596	Nall	.11	Morshed Ali
182.	9597	Nall	.10	Unus Aktar
183.	9598	House	.07	Rajida Khatun
184.	9600	Viti	.06	Rokeya Khatun
185.	9599	House	.06	Jahanar Rashid
186.	9602	House	.09	Hatem Ali Fakir
187.	9601	House	.07	Abdul Karim
188.	9603	Viti	.03	Azaz Hossain
189.	9608	House	.08	Shamsul Islam Bhuiyan
190.	9609	Viti	.07	Abdul Bari
191.	9607	House	.10	Kafil Uddin Tarafdar
192.	9610	House	.08	Azizur Rahman
193.	17024	Challa	.52	Mohammad Khorshed
194.	17125	Nall	.06	Monwar Rahman
195.	17127	Nall	.21	Owali Hayder
196.	17126	Nall	.19	Abul Khayer
197.	17123	Nall	.06	Md. Owaresh Ali
198.	17124	Nall	.04	Abdul Jalil
199.	17125	Nall	.06	Sheikh Monwar Rahman
200.	17113	Nall	.74	Abu Bakar Mullah
201.	20043	Challa	.14	Abdul Hai
202.	17119	Nall	.17	Johorun Mehar
203.	17122	House	.06	Md. Akram Ali
204.	17121	Nall	.06	Joynal Abden

Sl. No.	Plot No.	Type of Land	Area in Decimal	Name of the owners
205.	17120	Nall	.14	Johurunnessa
206.A	17118	Nall	.04	Kazi Golam Mostafa
207.	17116	Nall	.13	Johurunnessa
208.	17170	Challa	.08	Tazu Uddin
209.	17171	House	.08	Abul Gafur Matabbar
210.	17178	House	.07	Razia Banu
211.	17179	Challa	.11	Naim Uddin
212.	17183	Challa	.08	Saiful Islam
213.	19072	Challa	.05	Saiful Islam
214.	17182	Challa	.02	Afas Uddin
215.	17181	Challa	.04	Teleb Ali
216.	20420	Challa	.04	Shamsun Nahar Khatun
217.	17180	Challa	.08	Harun-Aur-Rashid
218.	17176	Challa	.10	Taleb Ali
219.	17175	Challa	.09	Asim Ullah
220.	17174	Challa	.09	Md. Idris
221.	17173	House	.09	Sayed Moli Uddin
222.	17177	House	.07	Kazi Azizul Haque
223.	17172	House	.08	Habibur Rahman Khan
224.	17168	Challa	.07	Kazi Salla Uddin Ahmed
225.	17157	Challa	.07	Md. Arif
226.	17156	Challa	.08	Md. Rostam
227.	17158	Challa	.06	Mossammat Nuriton Nessa
228.	17167	Challa	.05	Mossammat Faizun Nessa
229.	17169	Challa	.07	Farhad Uddin Ahmed
230.	17164	House	.07	Mohammad Hassan
231.	17165	Challa	.08	Naim Uddin
232.	17166	Challa	.08	Tazul Islam
233.	17159	Challa	.08	Fagor Uddin
234.	17160	House	.10	Osim Uddin
235.	17161	Challa	.05	Abdul Matin
236.	17162	Challa	.08	Md. Siddiqur Rahman
237.	17163	Challa	.08	Tenu Hullah

Sl. No.	Plot No.	Type of Land	Area in Decimal	Name of the owners
238.	20144	Challa	.13	Tenu Mullah
239.	17136	Challa	.07	Rezaul Haque
240.	17137	House	.06	Rezaul Rahman
241.	20403	House	.08	Monir Uzzaman
242.	17129	Viti	.08	Abu Saleh Mohammed
243.	17128	Challa	.13	Burhan Uddin Ahmed
244.	9624	Challa	.08	Abdul Jabbar
245.	9623	Challa	.06	Azizur Rahman
246.	9621	Challa	.06	Amin Ullah
247.	9622	Challa	.06	Abu Sayed
248.	9615	House	.30	Taleb Ali
249.	9620	Challa	.18	Taleb Ali
250.	9013	House	.08	Danes Ali
251.	9614	House	.05	Ali Mohammad
252.	9612	House	.27	Shekandar Ali
253.	9616	Chala	.13	Taleb Ali
254.	10524	House	.05	Aklima Khatun
255.	10525	House	.04	Taleb Ali Mullah
256.	9619	Tomb	.03	Tanu Mullah
257.	9117	Viti	.12	Rezia Khatun
258.	9118	Viti	.10	Ayub Ali
259.	9626	Chala	.77	Tanu Mullah
260.	9633	House	.58	Tanu Mullah
261.	9632	House	.03	Mohammad Ali
262.	9631	House	.99	Ambar Ali
263.	9628	Challa	.05	Ambor Ali
264.	9627	Challa	.09	Sayed Najir Ahammed
265.	9629	Challa	.09	Md. Geta Mia
266.	9630	Challa	.17	Ambor Ali

Sl. No.	Plot No.	Type of Land	Area in Decimal	Name of the owners
267.	20415	House	.06	Motiour Rahman
268.	20416	House	.05	Alauddin Ahmed
269.	20417	Viti	.05	Hazi Ontor Ali
270.	17131	House	.05	Taleb Ali
271.	17132	Challa	.05	Taleb Ali
272.	17133	Nall	.05	Hazi Nurul Islam
273.	17134	Nall	.06	Afasuddin Ahamed
274.	17135	Nall	.06	Roisuddin Ahmed
275.	17138	Nall	.06	Md. Safi Uddin
276.	17139	Nall	.07	Sahina Begum
277.	17140	Nall	.10	Md. Mannan Miah
278.	17141	Nall	.15	Md. Isak Ullah
279.	17155	Challa	.39	Arhan Uddin
280.	17142	Nall	.19	Ambor Ali Mullah
281.	20147	Challa	.15	Reza Samad
282.	20448	Nall	.13	Rabeya Hossain
283.	17154	Challa	.13	Hamida Khanum
284.	17153	Challa	.16	Abdur Rezzak
285.	17943	Nall	1.19	Moron Ali
286.A	19041	Challa	.07	Sayeda Hamina
287.	17942	Nall	.26	Sultan Ahamed
288.	17945	Nall	.58	Roheel Quddus
289.	17944	Nall	.27	Osim Uddin
290.	17946	Nall	.62	Abdul Karim
291.	17152	Challa	.23	Harun-Ar-Rashid
292.	17147	Challa	.10	Kubbat Hossain
293.	17148	Challa	.08	Moskarraf Hossain
294.A	20178	Challa	.15	Suria Anam
295.	17143	Challa	.05	Ambor Ali
296.	17144	Challa	.26	Ambor Ali

Sl. No.	Plot No.	Type of Land	Area in Decimal	Name of the owners
297.	17145	Challa	.07	Joynal Abedin
298.	9643	Challa	.64	Ambor Ali
299.	9644	Challa	.19	Abdur Razzak
300.	10406	Challa	.09	Kubbat Hossain
301.	10405	Challa	.07	Mobarak Hossain
302.	9642	Nall	.89	Ambor Ali
303.	9636	Nall	.19	Nurul Islam
304.	9635	Nall	.26	Tanu Mullah
305.	9634	Nall	.26	Zoynal
306.	9637	Nall	.20	Tanu Mullah
307.A	9638	Challa	.12	Syedur Rahman
308.A	9645	Challa	.26	Ambor Ali
309.	17149	Challa	.10	M. Mominul Hoque
310.	17150	Challa	.10	Ambor Ali
311.	17146	Challa	.06	Shamsul Haque
312.	17151	Challa	.07	Abu Sayed Ahamedul Hoque
313.	17963	Nall	.15	Rezia Khatun
314.	17963	Nall	.17	Ashraful Islam
315.	17963	Nall	.38	Monuarul Islam
316.	17962	Nall	.54	Karimunnessa
317.A	17947	Nall	.13	Abdul Latif Kazi
318.	17961	Nall	.04	Azimon Bibi
319.	17960	Nall	.07	Abdul Quddus
320.	17959	Nall	.05	Rafiq Ullah
321.	17949	Nall	.13	Khandaker Ali Taher
322.	17950	Nall	.13	Roksana Pervin
323.	17952	Nall	.08	Hasmat Ullah
324.	17953	Nall	.08	Sofina Khatun
325.	17954	Nall	.04	Md. Mohsin
326.	17955	Nall	.05	Motahar Ali

(xx)

Sl. No.	Plot No.	Type of Land	Area in Decimal	Name of the owners
327.	17956	Nall	.08	Sirazul Islam
328.	17957	Nall	.04	Abu Hossain
329.	17958	Nall	.04	Johurul Islam
330.	17983	Nall	.33	Kazi Abdul Malek
331.	17964	Nall	.40	Hazi Yusof Ali
332.	17965	Nall	.41	Siraj Uddin
333.	9651	Nall	.21	Hazi Yusuf Ali
334.	9650	House	.09	Kamal Uddin
335.	9649	House	.05	Safia Khatun
336.	10474	Challa	.22	Azmul Khan
337.	10497	Nall	.58	Motiar Rahman
338.A	10532	Nall	.10	Amina Khatun
339.	10616	House	.80	Mohi Uddin
340.	10155	Challa	.08	Ayub Uddin
341.	9646	Nall	.87	Alamed Hossain
342.	10417	Nall	.13	Amjat Hossain
343.	10416	Nall	.13	Mohammad Ali
344.	10473	Challa	.33	Jafor Mohammad Saddeque
345.	10563	Challa	.11	Momtar Uddin
346.	9653	Challa	.50	Mahmoda Khatun
347.A	9652	Challa	.02	Aysa Khanom
348.	9664	House	.06	Farida Begum
349.	9661	House	.04	Abdul Malek Howlader
350.	9662	House	.03	Abdul Jabbar Howlader
351.	9663	House	.04	Fazlur Rahman
352.	9660	Nall	.04	Hazi Yousof Ali
353.	9659	Nall	.22	Dr. Mosharraf Hossain
354.	9665	House	.10	Abul Hashem
355.	9667	House	.05	Montaz Begum

Sl. No.	Plot No.	Type of Land	Area in Decimal	Name of the owners
356.	9668	House	.07	Shida Begum
357.	9669	Challa	.09	Mafuza Khatun
358.	9671	House	.13	Amir Hossain
359.A	9670	Challa	.10	Mofoja Begum
360.	9673	Nall	.06	Hazi Yousof Ali
361	9674	House	.04	Nur Mohammad
962.	10402	House	.20	Mina Begum
363.A	9676	House	.04	Mir Abdul Haque
364.A	9677	House	.09	Shaha Alam Bhyia
365.	17966	Nall	.50	Anwar Hossain
366.	17967	Nall	.20	Chowdhury Mobarak Ali
367.	17982	Challa	.33	Kazi Abdul Malek
368.	17980	Challa	.33	Md. Nasera Khanum
369.	17981	Challa	.33	Kazi Abdul Malek
370	17979	Challa	.33	Kazi Abdul Khaleque
371.	17978	Challa	.33	Rofikon Nessa
372.	17977	Challa	.33	Kazi Abdul Khaleque
373.	17976	Challa	.33	Kazi A. Khaleque
374.	17971	Nall	.17	Eakotar Nessa
375.	17960	Nall	.07	Sheek Abdul Quddus
376.	17969	Nall	.16	Sheek Jamiruddin
377.	17972	Nall	.16	Eakotar Nessa
378.A	9681	Nall	.16	Ali Imam
379.	17968	Nall	.08	Nazera Begum
380.	9680	House	.27	Md. Arif
381.	9689	Viti	.31	Amir Hossain
382.	9690	House	.12	Siraj Uddin
383.	9688	Viti	.04	Abdul Majed
384.	9687	Viti	.04	Tobir Ullah
385.	9686	House	.02	Joynal Abedin
386.A	9685	Viti	.03	Tobir Ullah

Sl. No.	Plot No.	Type of Land	Area in Decimal	Name of the owners
387.	9682	Nall	.29	Hazi Yousof Ali
388.	9683	Nall	.04	Hazi Yousof Ali
389.	17973	Nall	.09	Md. Ismail Khandaker
83.B	17192	Challa	.52	Osim Uddin Mullah
106.B	19066	Challa	.06	Ibrahim
123.B	17079	House	.06	Md. Abdur Rahim
172.B	17022	Nall	.03	Kazi Md. Shamsul Awal
01.	9604	House	.09	Abul Fajal Sarker
206.B	17117	Nall	.06	Kazi Golam Mostafa
286.B	17184	Challa	.06	Naim Uddin
294.B	20180	Challa	.04	Rowsan Akter
307.B	9641	Challa	1.04	Latif Sardar
308.B	9648	Nall	.25	Rokeya Begum
316.B	17948	Nall	.13	Osim Uddin
337.B	9647	Nall	.02	Ahamad Hossain
348.B	9666	House	.04	Johrun Nessa
360.B	9672	House	.09	Asia Khatun
364.B	9675	Viti	.13	Shamsul Haque Sekdar
365.B	9678	Duba	.02	Hazi Yousuf Ali
329.B	9681	Nall	.15	Abdul Hakim
387.B	9684	House	.03	Abdus Sobhan
393.B	20174	Challa	.07	Abdul Motin
397.B	20147	Challa	.10	Rafique Mia
410.B	9692	Mosque	.07	Hazi Yousuf Ali
82.B	17101	Nall	.13	Amzad Hossain
23-A	17076	Challa	.09	Hamidur Rahman
23-B	17076	House	.04	Dr. Badir Uddin
179-A	17019	Nall	.05	Professor Abul Hasem
179-B	17019	Nall	.05	Abdur Razzak

Sl. No.	Plot No.	Type of Land	Area in Decimal	Name of the owners
179-C	17019	Wall	.05	Abdul Barek
179-D	17019	Wall	.05	Abdul Aziz Sarker
179-E	17019	House	.15	Mulovi Sirajul Hoque
179-F	17019	House	.15	Md. Nuruzzaman
175-A	17017	Challa	.14	Dr. Hargis Akhtar
175-B	17017	House	.14	Md. Fazlul Hoque
175-C	17017	House	.15	Md. Hatem Ali
151-A	17016	House	.18	Abdul Mannan Mullah
151-B	17016	House	.28	Abdul Barek Mullah
152-A	1703	House	.14	Kalim Uddin Mullah
152-B	1703	House	.13	Ausir Uddin Mullah
152-C	1703	House	.13	Sohim Uddin Mullah
159-A	17031	House	.08	Nosor Uddin Mullah
159-B	17031	House	.08	Ausir Uddin Mullah
159-C	17031	House	.08	Abdur Rouf
159-D	17031	House	.06	Ambia Khatun
34-B-1	20179	Challa	.07½	Abdul Hai Miah
34-B-2	20179	Challa	.07½	M.A. Malek
34-B-3	20179	House	.03	Md. Momtaz Uddin
260-A	9633	House	.14½	Sabed Ali
260-B	9633	House	.14½	Abed Ali
260-C	9633	House	.14½	Samed Ali
269-D	9633	House	.14½	Abdul Barek
285-A	17943	Wall	.93	Morchan Ali
285-B	17943	House	.26	Siddiqur Rahman
342-A	10417	House	.09	Md. Ali Hossain
342-B	10417	House	.04	Md. Golam Sarwar
280-A	17142	Challa	.10½	Abdul Jabbar
280-B	17142	House	.6½	Md. Bazlur Rahman

Sl. No.	Plot No.	Type of Land	Area in Decimal	Name of the owners
84-A	17193	Vita	.05	Ausim Uddin Mullah
84-B	17193	House	.05	Nurul Islam
84-C	17193	House	.05	Abul Kashem Md. Ismail
84-D	17193	House	.05	Abdul Baki
84-E	17193	Challa	.05	Md. Kashem Ali
93-A	17185	Challa	.11 $\frac{1}{4}$	Md. Nurul Islam
93-B	17185	Challa	.11 $\frac{1}{4}$	Hakim
93-C	17185	challa	.11 $\frac{1}{2}$	Jill Hafiz
95-A	17186	Challa	.07	Haim Uddin
95-B	17186	Challa	.07	Amzad Hossain
95-C	17186	Challa	.07	Aman Ullah
96-A	17187	House	.15	Abdus Sabor
96-B	17187	Challa	.07	Halima Khatun
96-C	17187	Challa	.05	Fazlul Hoque
96-D	17187	Challa	.18	Khalilur Rahman
96-E	17187	Challa	.07	Hafizur Rahman
96-F	17187	Challa	.05	Mostafa
139-A	17005	House	.0 $\frac{1}{4}$	Kabil Uddin
139-B	17005	House	.0 $\frac{1}{4}$	Farid Miah
137-A	17003	House	.04	Md. Chan Miah
137-B	17003	House	.04	Saleha Begum
134-A	17035	House	.03 $\frac{1}{2}$	Asgar Mullah
134-B	17035	House	.03 $\frac{1}{2}$	Md. Latif Mullah
22-A	20247	House	.07 $\frac{1}{2}$	Nuru Miah
22-B	20247	House	.07 $\frac{1}{2}$	Karamat Ali
21-A	17052A	House	.18	Nurul Islam
21-B	17052B	House	.18	Afia Khatun
84-A	17193	viti	.05	Safiuddin Mullah
84-B	17193	House	.05	Nurul Islam

Sl. No.	Plot No.	Type of Land	Area in Decimal	Name of the owners
84-C	17193	House	.05	Abul Kashem
84-D	17193	House	.05	Id. Abdul Baki
84-E	17193	Mill	.05	Abul Fazal
94-A	17191	Challa	.011 $\frac{1}{4}$	1st daughter, Mr. Younus Khan
94-B	17191	Challa	.011 $\frac{1}{4}$	2nd daughter
94-C	17191	challa	.011 $\frac{1}{4}$	3rd daughter
94-D	17191	Challa	.011 $\frac{1}{4}$	4th daughter
94-E	17191	challa	.011 $\frac{1}{4}$	5th daughter
285-A	17943	Nall	.93	Horan Ali
285-B	17943	House	.26	Id. Siddiqur Rahman
99-A	17188	Challa	.85	Id. Shamsul Haque
99-B	17188	House	.08	Sayedur Rahman
99-C	17188	House	.06	Kazi Moktar Ali
35-A	20260	Challa	.07	Abdul Barek Mullah
35-B	20260	Challa	.07	Mannu Mullah
35-C	20260	Challa	.07	Lutfur Rahman
6-A	17002	Viti	.08 $\frac{1}{4}$	Sirazul Haque
6-B	17002	House	.08 $\frac{1}{4}$	Alya Begum
6-C	17002	Challa	.8 $\frac{1}{4}$	Murjahan Kabir
19-A	17050	House	.05	Abdus Samad
19-B	17050	House	.05	Wajed Ali
19-C	17050	House	.05	M.A. Khaleque
144-A	17009	House	.04	Hassan Ali
144-B	17009	Viti	.02	Kafil Uddin
6-A	17009	Viti	.06 $\frac{1}{2}$	Abdul Wahab
6-B	17009	House	.13	Mostaque Ali (dead)
6-C	17009	Viti	.6 $\frac{1}{2}$	Serajul Islam
148-A	17011	Viti	.07	Kalim Uddin Mullah

Sl. No.	Plot No.	Type of Land	Area in Decimal	Name of the owners
148-B	17011	House	.07	Md. Abdus Sobhan
148-C	17011	Viti	.06	Abdul Jalil Mullah
148-D	17011	House	.04	Siddiqur Rahman
148-E	17011	Viti	.05	Abu Daud Miah
147-A	17010	Viti	.08	Shahina Khatun
147-B	17010	Viti	.05	Abu Bakar
147-C	17010	Viti	.04	Setara Begum
168-A	17029	House	.08	Salima Begum
168-B	17029	House	.08	Hakikur Rahman
168-C	17029	Viti	.37	Owasimuddin Mullah
99-A	17188	Challa	.31	Shamsul Haque
99-B	17188	House	.10	Sayedur Rahman Howlader
99-C	17188	House	.08	Azizul Hoque
119-A	17087	Challa	.11	Alauddin Mullah
119-B	17087	Challa	.11	Shamsul Mullah
119-C	17087	challa	.11	Shaheb Ali Mullah
119-D	17087	House	.15	Shafi Uddin Mullah
193-A	17028	Challa	.49	Md. Khorshed
193-B	17028	Challa	.13	M.A. Haque
314-A	17963	Nall	.15	Rizia Khatun
314-B	17963	Nall	.17	Ashrafur Islam
314-C	17963	Nall	.38	Monuwarul Islam
390.	17974	Nall	.25	A.K.M. Shamsul Hoque
391.	17975	Doba	.09	Kazi Abdul Khaleque
392.A.	20264	Viti	.08	Abdul Khaleque
393.	20263	House	.13	Shamsul Hoque
394.	20089	Challa	.13	Hamida Khatun
395.	20141	House	.04	Younus Ali
396.A.	20146	Chala	.10	Abdul Khaleque

Sl. No.	Plot No.	Type of Land	Area in Decimal	Name of the owners
397.	18232	Challa	.33	Akram Uzzaman
398.	18234	Challa	.07	Abdul Matin
399.	18233	Challa	.13	Abu Taher
400.	18339	House	.18	Haji Ismail
401.	18235	Challa	.08	Foyzullah
402.	18236	Challa	.08	Abdus Quddus
403.	18237	Challa	.14	Abul Hasem
404.	18238	Challa	.08	Motiur Rahman
405.	9696	Nall	.24	Abdur Rahman
406.	9695	Viti	.11	Md. Anwarullah
407.	9694	Doba	.14	Hazi Yousuf Ali
408.	9693	House	.53	Hazi Yousuf Ali
409.A	9691	House	.12	Hazi Yousuf Ali
410.	20120	Challa	.10	Shamsuddin
411.	20171	House	.06	Abdul Majid

Appendix - C

Questionnaire prepared for the socio-economic survey of land owners, 1987 "Guided Land Development for Private Residential Areas in Dhaka City: A case study of Senpara Parbata at Mirpur", a Post Graduate Thesis, Deptt. of Urban and Regional Planning, Bangladesh University of Engineering & Technology.

Dear Sir,

I am a student of Bangladesh University of Engineering and Technology in the Deptt. of Urban and Regional Planning preparing a thesis in partial fulfilment of the degree of Master of Urban & Regional Planning (MURP). In this connection I have selected Senpara-Parbata Mauza as my study area for the thesis titled "Guided Land Development for private Residential Areas in Dhaka City". I seek your kind cooperation in responding to the questionnaire which will be very helpful in preparing my thesis. The informations you will give will only be used for this thesis and their secrecy will be maintained.

Your truly,

Md. Rafiul Karim

Questionnaire for socio-economic survey, 1987 Deptt. of Urban and Regional Planning, Bangladesh University of Engineering & Technology, Dhaka.

Instructions for filling up questionnaire:

- 0 Fillup with the help of a pencil.
- 0 Do not keep any space unfilled.
- 0 If there is nothing to write against a question place write "not applicable".
- 0 If the respondent do not agree to answer a question, write "respondent do not agree to answer".

Name and address of interviewer:

* Name:

* Address:

.....

.....

* Date:

* Time:

: Start

: End

First Part

1. General Description:

- 1.1 Name of Municipal Corporation
- 1.2 Ward No.
- 1.3 Name of Thana
- 1.4 Name of Mauza & J.L. No
- 1.5 Holding No. in Mauza Map
- 1.6 Name of Head of Household
- Age
- Occupation
- 1.7 Father/Husband's Name
- 1.8 Name of respondent
- Age
- Occupation
- 1.9 Relationship with Head of Household
- 1.10 Single or Combined Family
- 1.11 Total Member in the Household

2,0 Age, education and occupation of the members of family.

Relationship with the head of the household	Age	Male	Female	Education				Occupation			
				Lite-rate	SSC	HSC	Univer-sity	Agri.	Ser-vice	Busi-ness	Others
1	2	3	4	5	6	7	8	9	10	11	12

1.

2.

3.

2.1 Source of income and monthly income:

Relationship with the head of the household	Agriculture	Service	Business	Others	Total
1	2	1 3	4	5	6

1.

2.

3.

4.

5.

2.2 Source of Water:

Taped water		Kacha well		Pucca well		Tubewell		Pound/Ditch		Other
Self	Other	Self	Other	Self	Other	Self	Other	Self	Other	
1	2	3	4	5	6	7	8	9	10	

2.6 Informations regarding facilities

a) When did you construct the house:

_____ year _____ month

b) Distance from home to place of work _____ Miles

c) Present problems:

- i) Kutcha road problem in the rainy season.
- ii) Lack of drainage facilities.
- iii) Lack of education facilities.
- iv) No play ground.
- v) Unhealthy drainage system.
- vi) No garbage bins.
- vii) Lack of security.
- viii) Lack of shop and market.
- ix) Problem of installing gas, electricity and water pipe line due to lack of roads.
- x) Narrow road and no vehicular passage.
- xi) Others.

2.7 Information regarding land:

a) Ownership right:

- i) inheritance
- ii) Purchase

b) Type of ownership:

- i) single family
- ii) combined

2.10 Reasons for non-construction of house

- a) When purchased land; year _____
- b) Aims of purchased land
 - i) Construction of house
 - ii) Agriculture

2.11 If purchased for construction of house:

- a) When you like to be constructed your house
 - i) within 3 months
 - ii) within 6 months
 - iii) year end
 - iv) unwilling
 - b) What type of house you want to construct?
 - i) pacca house
 - ii) semi-pacca
 - iii) tin-shed.
 - c) If you like to construct a pacca building:
 - i) own fund
 - ii) loan
- If through loan:
- i) Bank loan
 - ii) HBFC loan
 - iii) Others.

d) If unwilling to construct a house give reasons:

- i) Lack of finance
- ii) Lack of HBFC loan
- iii) Lack of road facilities
- iv) Problems in going to work place
- v) Lack of educational institutions
- vi) Sparse development
- vii) Unwilling to construct house at present
- viii) Willing to sale land
- ix) Lacking of residential environment
- x) Lacking of security
- xi) Others.

3. Questions regarding value of land (only for distinguished persons like ward commissioner, head man, teachers etc.)

(Type of land and present market price)

Type of land	Price of land per decimal			
	Near main road	Near secondary road	Near internal & narrow road	No road
Homestead				
Vhita				
Challa				
Nall				
Ditch/Pond				

2nd Part

3.1 Advice regarding development

i) Are you satisfied at the present condition?

Yes

No

If not, give your suggestion regarding development of the area:

a) Through the help resident

b) Through Government

c) Through the cooperation between private and Government.

3.2 If the Government help to develop your area, plans and give technical help will you agree?

Yes

or

No

If yes, source of finance:

i) Collection of donation

ii) Bank loan

iii) Government expenditure initially and then sale of some plots from the planned area.

Yes _____ No _____

iv) If you have to sacrifice a portion of your land as development expenditure, will you agree?

Yes _____ No _____

v) If some one has a very small area and if he has to sacrifice a portion from it, can not be build a house according to RAJUK Rules in this situation what will be the solution you think?

a) to undertake development expenditure from his own funds.

b) As a member of the group, arrangement of Govt. loan which will be repayed in instalments.

c) Others.

BIBLIOGRAPHY

1. Abrams, Charless, and aoeniosberger, Otte. A Housing Problem for Pakistan with Special Reference to Rfugee Rehabilitation, Unitred Nations unpubli-
shed report, 1957.
2. Ahmed, Mahbub-uddin, Housing Demand Survey in Bangladesh, Dhaka: Institute of Statistical Research Training, University of Dhaka, 1974.
3. Ahmed, Nafis An Economic Geography of East Pakistan, London: Oxford University Press, 1968.
4. Ahmed, N.F.K. Khan; Landuse in Faydobad Area, E.P.C.S., Monogram No. 2.
5. Alamgir, Mohiuddin; "Urbanisation in Bangladesh", a paper presented at the Workshop on Research Methodology on Problems of Urbanisation held in Tehran, (Iran), 1973.
6. Angle: Shlomo et. al. (ed) Land for Housing the Poor, Bangkok: The Craftsman Press Ltd. 1983.
7. Angel S. at. el., Land for Housing the Poor, Division for Human Settlements Development (HSD) Studies on Human Settlements Development in Asia, Asian Institute of Technology, Bangkok, 1983.
8. Archer. R.W: The use of the Land Pooling/Readjustment Technique to Improve Land Development in Bangkok; Division of Human Settlement Development (HSD), Studies on Human Settlements Development in Asia, Asian Institute of Technology, 1985.
9. Archer. R.W.: Land Management for Adequate Land Supply and Planned Land use in Asian Cities, Division of Human Settlements Development (HSD), Studies on Human Settlements Development in Asia, Asian Institute of Technology, 1985.
10. Archer, R.W.: Land Pooling for Resubdivision and New Subdivision in Western Australia, Division of Human Settlements Development (HSD), Studies on Human Settlements Development in Asia, Asian Institute of Technology, 1986.

11. Archer, R.W.: The Use of Land Pooling/Readjustment to Improve Urban Development and Land Supply in Asian Countries, Division of Human Settlements Development (HSD), Studies on Human Settlements Development in Asia, Asian Institute of Technology, 1984 (Second Printing in 1986).
12. Archer, R.W.: The Use of Land Pooling/Readjustment Technique to Improve Land Development in Bangkok, Division of Human Settlements Development (HSD), Studies on Human Settlements Development in Asia, Asian Institute of Technology, 1983.
13. Asirwatham, S.R: "Low Income Housing Fiannce" a paper presentated at the International Conference on Low-Income Housing Technology and Policy, Organised by the AIT in Bangkok, 1977.
14. Berry B.J.L., Geography of Market Centers and Retail Distribution, Philadelphia, 1965.
15. Breese G: Urbanization in New Developing Countries, Englewood-Cliffs, N.J., 1966.
16. Choudhury, A.H.N.A. & A.C. Das: The role of settlement Planning in National Development Policies, National Report on Human Settlement, Bangladesh, U.N. Conference on Human Settlements, Voncouver, 1976, P. 119.
17. Davis, C.M. "Field Techniques" in James and Jones: (Editors) American Geography - Inventory and Prespects.
18. Dhar. V.K. Land Asembly and Development: An Innovative Approach; a paper presented at the International Seminar, Fifth Asian Planning and Housing Convention, Bangkok, January 22-25, 1986.
19. Dhaka Improvement Trust: Glimpses of DIT Activities on Housing and Development Ventures. An unpublished Office Docuemnt, 1977.
20. Gallion A.B. at. el., The Urban Pattern: City Planning and Design, New Delhi (Reprinted), 1965.
21. Gist N.P., Urban Society, New York, 1964.

22. G.V. Jacks, Land Classification, Harpenden (England): Imperial Bureau of Soil Science, 1946, pp. 47.
23. Government of Bangladesh, Dhaka District Statistics, 1983, Dhaka: Bangladesh Bureau of Statistics, 1984.
24. Government of Bangladesh, Statistical Year Book of Bangladesh, 1981, Dhaka: Bangladesh Bureau of Statistics, 1982.
25. Government of Bangladesh, The Second Five Year Plan 1980-85, Dhaka: Planning Commission, 1980.
26. Government of Bangladesh, The Land Development Tax Ordinance, 1976, Dhaka: Ministry of Law and Land Reforms, 1970.
27. Government of East Pakistan, Law (Legislative) Department, The Town Improvement Act, 1953, (E.B. Act XIII of 1953), Dhaka, 1967.
28. Government of Bangladesh: The Acquisition and Requisition of Immovable Property Ordinance, 1982, Dhaka, April 13, 1982.
29. Government of Bangladesh: A Bill further to amend the Building Construction Act, 1952, Bangladesh Parliament, Dhaka 1987.
30. Government of Bangladesh: The Paurashava Ordinance, 1977, Ordinance No. XXVI of 1977, Dhaka 1977.
31. Grimes, Orgille F.Jr: Housing for Low Income Urban Families Economics and Policy in the Developing World. Washington, The John Hopkins University Press, 1976.
32. Hai, M. Jalalul, "Housing Societies of Dhaka City: Their Role and Performance in Solcing the Housing Problem". Masters 'Thesis, Department of Urban and Regional Planning, BUET, Dhaka, Bangladesh, 1981.
33. Hudson, G.D., Unit Area Method of Land Classification, A.A.A. G., Vol. 26, 1936, pp. 99-112.

34. Home Builders Manual for Land Development' National Association of Home Builders, 1028 Connecticut Avenue, N.W., Washington 6 D.C., 1950.
35. Johnson, J.H., Urban Geography: An Introduction and Analysis, Great Britain (Reprinted), 1969.
36. Johnes, W.D. and Finch, I. Detailed Field Mapping in the Study of the Economic Geography of an Agricultural Area, AAAG, Vol. 15, 1925.
37. Kamaluddin, A.K.M. Choudhury: Land Use Planning in Bangladesh, National Institute of Local Government, 49, New Escaton Road, Dhaka-2, 1985.
38. Karim, M.R. Some aspects of rural-urban interaction: A Case Study of Mymensingh, Submitted to the Department of Geography, Jahangir Nagar University, Saver, Dhaka, 1977.
39. Land, Yearbook of Agriculture, U.S. Department of Agriculture, 1958.
40. Land Use in Rampal Union, East Pakistan Geographical Society, Monogram No. 1, 1961.
41. Nabi, Mohammad Nur, "Study on Urban Residential House Rent and Government Rent Policy: A Test Case of Dhaka City". Masters' Thesis, Dhaka" BUET, 1981.
42. Putnam, D.M. Soils and their Geographic Significance, Geography in 20th Century, Methuen and Co., London: 1960, pp. 221-247.
43. Quium, A.S.M., "Financing Urban Housing in Bangladesh". Masters' Thesis, Dhaka: BUET, 1978.
44. Shankland Cox, Partnership, Dacca (Dhaka) Metropolitan Area Integrated Urban Development Plan. Vol. 2, Dhaka: Planning Commission Government of the People Republic of Bangladesh, 1980.
45. Shamsuddin, S.D., Panchagar, A Report in Land Use and Land Classification Submitted to the Department of Geography, Dhaka University, 1965.

46. Smith, Wallace F; Housing: The Social and Economic Elements. Berkeley: University of California Press, 1971.
47. Stamp, L.D., Land of Britain, its Uses and Misuse, London: Longmans, Green and Co. Ltd.
48. Thoman, R.S. et. al., 'The Geography of Economic Activity', New York, 1968, pp. 162-154.
49. UNCHS, "Urban Housing Constructed by Government Agencies: Review of Past and Current Practices and Policy Implications", Urban Housing Policies and Programmes, Dhaka: Urban Development Directorate, Government of Bangladesh, 1980.
50. United Nations: Finance for Housing and Community Facilities in Developing Countries, Department of Economic and Social Affairs, Sales No. E. 68. IV. 4, New York, 1968.
51. Year Book of Agriculture United States, Department of Agriculture, 1954.

