

**REVIEW OF PLANNING GUIDELINES FOR  
THE FRINGE DEVELOPMENT OF  
"FARIDABAD CITY"**

**A DISSERTATION**

*Submitted in partial fulfillment of the  
requirements for the award of the degree*

*of*

**MASTER OF URBAN AND RURAL PLANNING**

By

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JUNE, 2009**

## CANDIDATE'S DECLARATION

I hereby certify that this report entitled **“REVIEW OF PLANNING GUIDELINES FOR THE FRINGE DEVELOPMENT OF FARIDABAD CITY”**, which has been submitted in partial fulfillment of the requirements for the award of the degree of **MASTER OF URBAN AND RURAL PLANNING**, in the Department of Architecture and Planning, Indian Institute of Technology Roorkee, Roorkee is an authentic record of my own work carried out during the period from July 2008 to June 2009, under the supervision and guidance of **Prof R Chandra**, Department of Architecture and Planning, Indian Institute of Technology Roorkee, Roorkee, India.

The matter embodied in this dissertation has not been submitted by me for the award of any other degree of this or any other institute.

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This is to certify that above statement made by the candidate is correct to the best of my knowledge.

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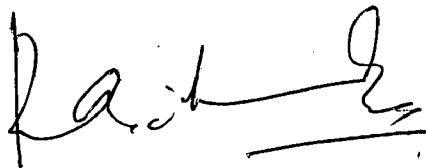
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## CERTIFICATE

Certified that this report entitled “**REVIEW OF PLANNING GUIDELINES FOR THE FRINGE DEVELOPMENT OF FARIDABAD CITY**”, which has been submitted by MS.NEHA GOEL, in partial fulfillment of the requirements for the award of the degree of MASTER OF URBAN AND RURAL PLANNING, submitted in the Department of Architecture and Planning, Indian Institute of Technology Roorkee, is the student's own work carried out by her under our supervision and guidance. The matter embodied in this dissertation has not been submitted by her for the award of any other degree of this or any other institute.

Date: 29<sup>th</sup> JUNE '09

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## ABSTRACT

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*This thesis examines recent trends in land use transformation taking place in the peri-urban areas of Faridabad city being one of the fastest growing cities and part of NCR. It demonstrates that urbanization is key factor for catalyzing changes in land use, land transactions, increased rural-urban immigration and the overall transformation of land use in the peri-urban areas. Unregulated peri-urban land development has given rise to complex organic urban structures which predominantly expanding horizontally. The emerging land use pattern, by and large, indicates a mismatch with the widely cherished planning norms and standards and land value theories which, underpin urban land use planning instruments such as zoning and density distribution and principles like equitable provision of basic services and complementarily in urban land development.. Therefore, planners and policy makers have little choice but to consolidate the emerging form. Decentralized land management anchored on the subsisting local government administrative structures.*

*So the main objective to analyze all the development pattern planned and unplanned and look for the planning of area which is lack attention and which guides the further growth of city.*

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## **CHAPTER 1**

### **Introduction**

---

#### **1.1 Background**

The growth of any City, Village or Settlement is totally depend on, the opportunities it gives to the people in terms of the economic development and accommodation. Apart from these internal factors; there are certain external factors like the locational advantages, which is unique in each case.

Urban sprawl promotes the spread of urban land use into the Urban fringe Villages draws a larger number of people into the rural-urban interface, mostly because of these internal and external factors. In most of the cases of Metropolitan Cities, particularly in the country like India, where the urban population is gradually increases, because of the concentration of the economical activities within the urban area, rural-urban migration, for the job opportunities, access to the basic need and better quality of life.

In such Situation, the pressure increases in the urban area, the demand of land increases, the land prices goes up, even the sharing of basic infrastructure like road network, water supply, sewerage; and natural resources like land, ground water increases. Apart form that the local authority also tries to imply the planning framework for the guided development with the control regulations.

The land market located immediate surrounding the urban area becomes more lucrative for the investors and developers as a hub of the development.

The rural-urban fringe in general is frequently ignored as a specific area within the study of urbanization

#### **1.2 The context of the study**

Rural settlements absorb in urban limits during the process of development, and also those located in the fringe areas of large cities, can be termed as urban villages.

These settlements area rural because they have been so in the past and they are urban because of they are now located in the intense influence area of a large city or within the urban limits and have a majority of their workforce engaged in non-agricultural

pursuits. The process of transformation of these villages is not sudden. In fact, the level of transformation of and urban village is function of the stage in the development of a city, in general and the immediate surroundings where the rural center is located, in particular. The level keeps changing with time.

At the outskirts, in the fringe areas of the city, especially along major roads, the village's area under pressure to sell off their agricultural land for speculation and development of unauthorized residential colonies and industries which area eventually regularized. The process of transformation of these villages is similar to that of those located within the urban limits. . The level of services in such areas is generally poor, streets are narrow and the growth is haphazard. Open spaces area practically nil and social services are inadequate.

Especially attention should be given to the villages located in the fringe areas, particularly those located along the highways entering the city and if need be, and the area of control should be extended up to such identified limits.

### **1.3 Identification of problem**

The rapid and random expansion of urban centers along their peripheries is a typical phenomenon of urban landscape in developing countries. All human settlements sustain on land and it is the land which constitutes the single most important component of the total environment. Any environmentally compatible urban planning must begin with a comprehensive look on the use of land. The emergence of fringe zone with its complex problems of adjustments in between rural and urban ways of life has led to serious land use problems-loss of agricultural land, unauthorized urban sprawl, high land values, speculation in land and related problems and has assumed great topical importance but sadly remained a neglected area in urban research.

#### **1.3.1 Main issues of urban fringe areas**

- ❖ Land use problems
- ❖ Loss of agricultural land
- ❖ Unauthorized urban sprawl
- ❖ High land values, land speculation
- ❖ Inadequate infrastructure



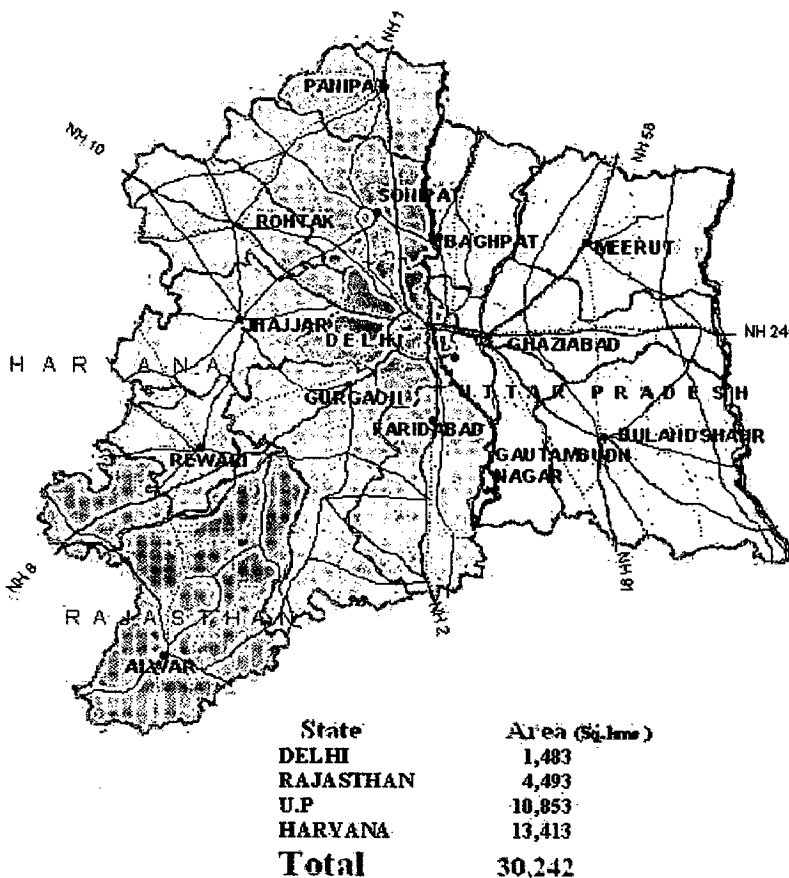
- ❖ Jurisdictional, legal and financial limitations
- ❖ Degradation of environmental quality.

### 1.4 Brief area specific study - Faridabad

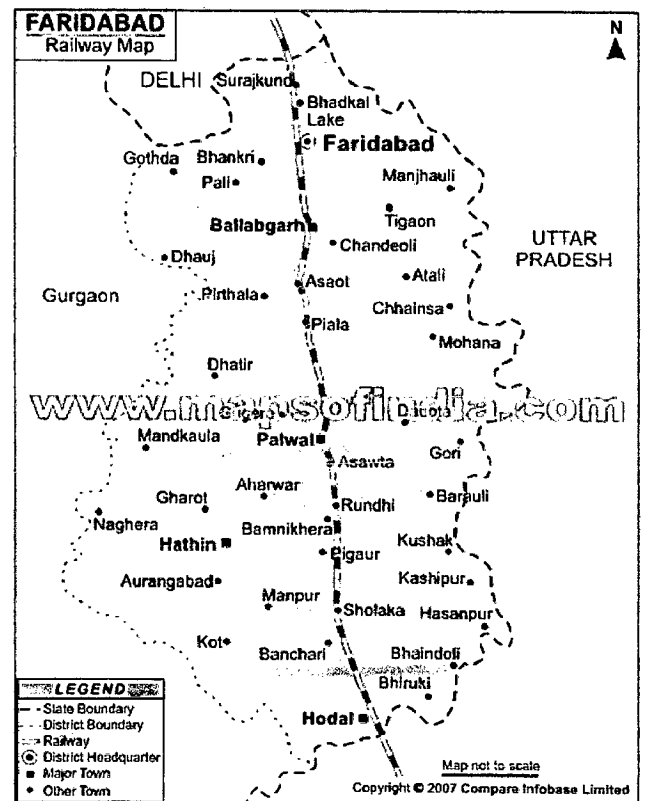
Faridabad is situated on the Delhi – Mathura National Highway No. 2 at a distance of 32 km. from Delhi. The town is bounded on the north by Delhi State, on the east by Agra and the Gurgaon canals and on the west by the Aravali Hills. The Yamuna flows very near to the city. As of 2001 India census, Faridabad had a population of 1,054,981. Males constitute 55% of the population and females 45%. Faridabad has an average literacy rate of 69%, higher than the national average of 59.5%: male literacy is 75%, and female literacy is 60%. In Faridabad, 15% of the population is under 6 years of age.

#### NATIONAL CAPITAL REGION

Area: 208 sq.km.  
Population: 13.5 lakhs

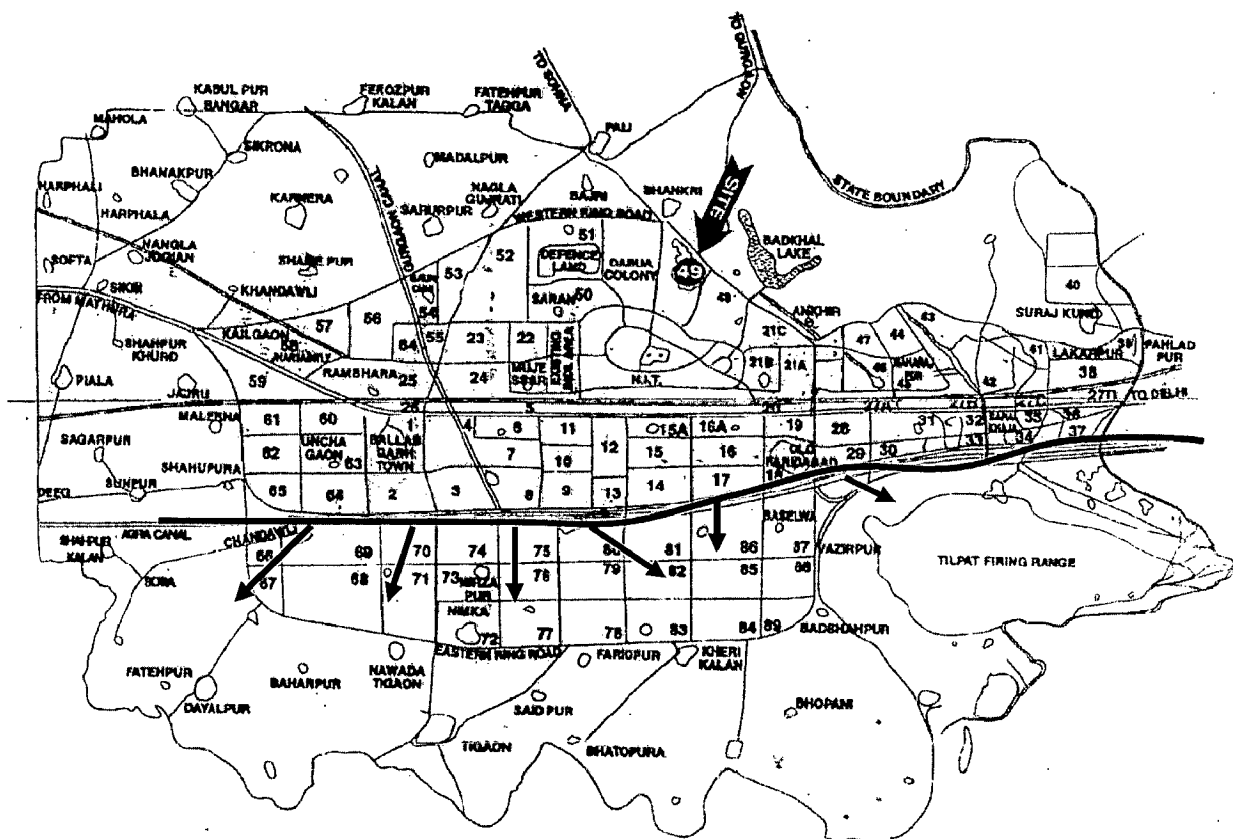


Map1.1; Faridabad as part of NCR



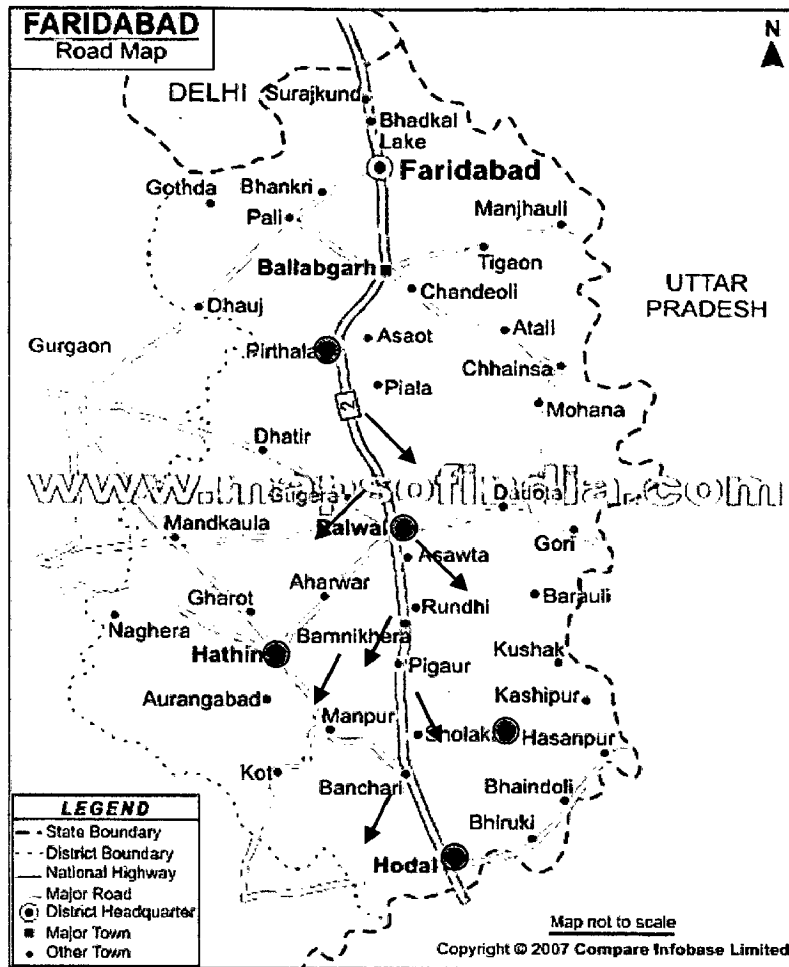
Map 1.2; Faridabad district map

FARIDABAD, is declared as one part of national capital region, so massive growth, migration is taking place because of adequate infrastructural facilities and proper connectivity to near by growth centers like Delhi, Gurgaon, Noida. People because of higher taxes and livelihood in main core area, they prefer to move to suburban areas of main city, and because of this process it became one of the most attractive centers. So due to all these factors Faridabad is growing at higher rates in last ten years which is resulting in city expansions and giving rise to fringe area development with various projects and land uses. Below the growth direction and major development axis are mentioned.



Map 1.3; Fringe development on East of Agra canal proposed in master plan of Faridabad

The major acquisition of land has come in two directions one on along the Agra canal and other along the NH-2 from Palwal to Hodal. The nature of periphery development of both is quite different as one is recently planned and being implemented and other is just demarcated as control area boundary. So the analysis of both the kind of development can lead us to major conclusions and inferences.



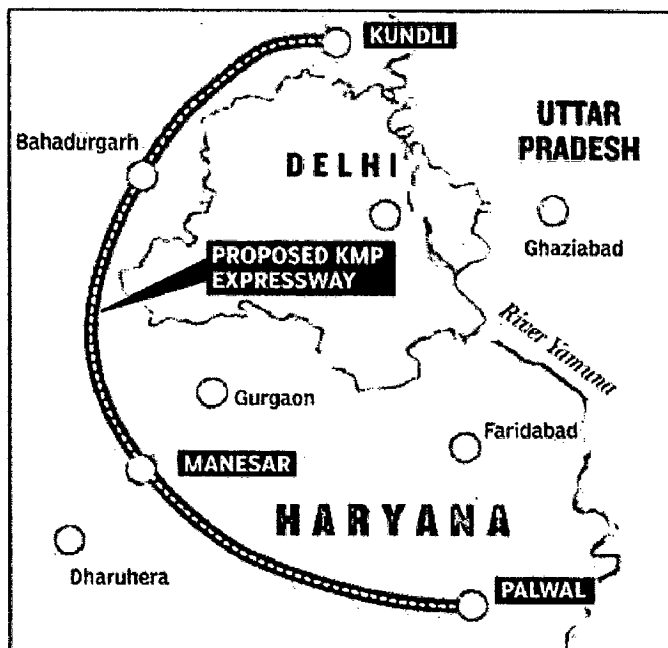
**Map 1.4;** *Fringe development along the NH-2 with 5 major sub urban centers lying on both sides*

This is another direction of growth along the major transport corridor and having different reasons and impact of growth with other urban centers lying on it having their own pattern of development either planned or unplanned. The stretches between them are most effected and unorganized.

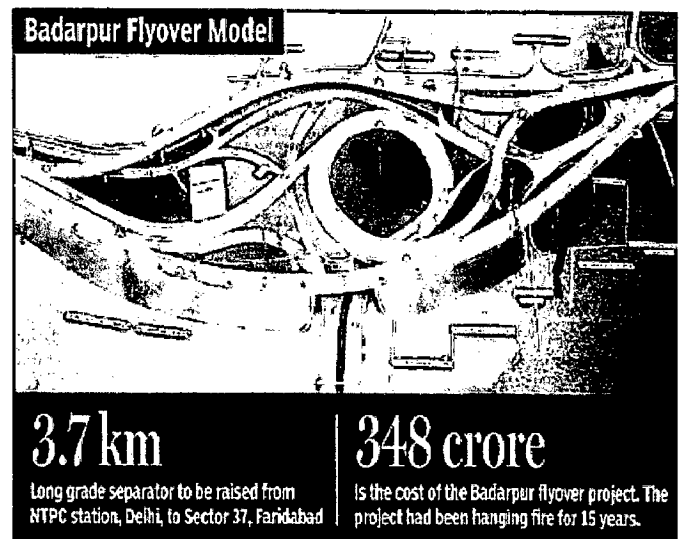
#### 1.4.1 Major reasons for the growth of city

- ❖ Faridabad is identified as one of the Delhi Metropolitan Area (DMA)/ Central National Capital Region cities of National Capital Region (NCR) which is one reason to act as counter magnet and attract lot of development and growth to meet the demands of Delhi.

- ❖ It has strong linkages with Delhi. NH 2 from Delhi-Mathura passes through the length of the city and is the central axis of the city of Faridabad which is one of the reasons for growth.
- ❖ NH 3 and NH 4 also pass through the city.
- ❖ As part of NCR proposals, connectivity is proposed for improvement through the western peripheral expressway (Kundli-Manesar-Palwal-“KMP”) and eastern peripheral expressway Kundli-Ghaziabad-Palwal “KGP”).
- ❖ Proposed metro connectivity which is under construction.
- ❖ Proposed flyover to release the traffic congestion and smooth traffic flow to attract more development around Faridabad.

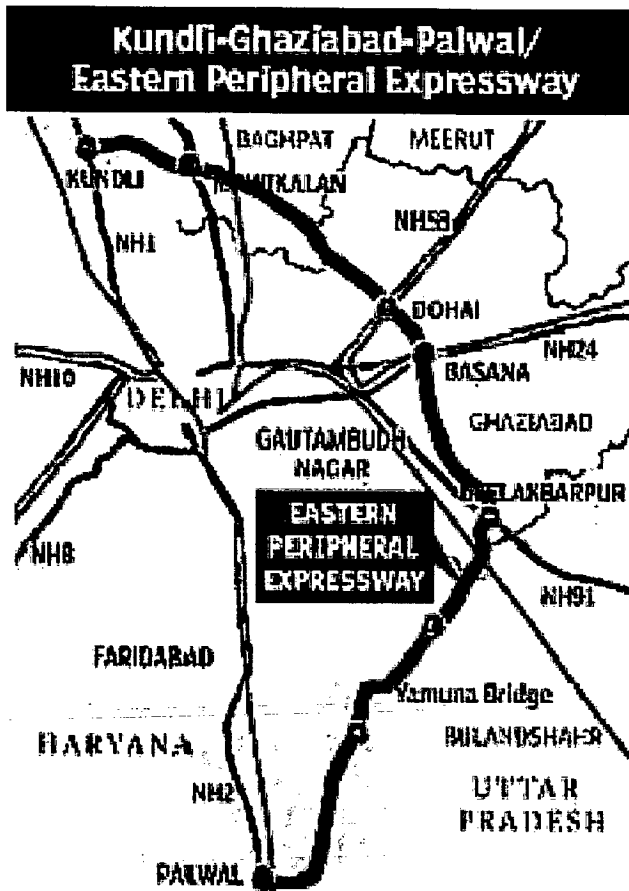


**Map 1.5;** *Western peripheral expressway from Kundli to Palwal connecting Gurgaon as one of the future reason for growth and development in city*

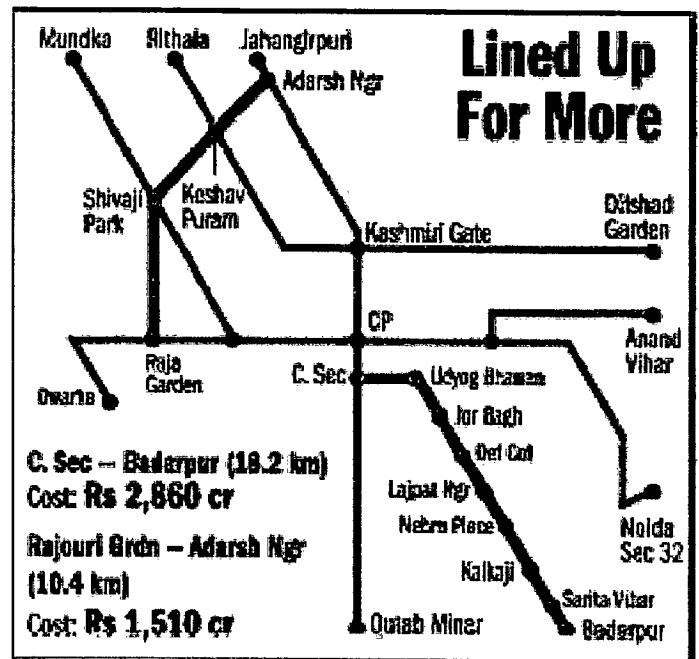


**Map 1.6;** *Badarpur Flyover construction to have smooth traffic flow*

These developments which are coming in one of the fastest growing city as its being part of NCR and which will affect the expansion of city at higher rate. So the analysis of developments is important to reach a particular growth pattern and form of city. The perspective of city growth has to be looked for coming years where these all developments will play the major role for the city expansion and peri urban areas.



**Map 1.7;** Eastern peripheral expressway from Kundli to Palwal connecting Noida Ghaziabad to Faridabad



**Map 1.8;** Metro connectivity from Delhi to Badarpur border to Faridabad

So, Faridabad being one of the major growing city in NCR and lot of activity dynamics the development and planning of Peri urban areas in one the major issue and challenge. With present expansion of city on along main transportation corridors and other opportunity areas for further expansion and lot of growth churning developments, the planning guidelines for fringe areas are important as it the most neglected area in planning and never thought of that's why I want to take this project to analyze the existing and upcoming developments for the further organized growth of city.

## 1.5 Aim

TO REVIEW AND FORMULATE THE PLANNING GUIDELINES FOR THE FRINGE DEVELOPMENT OF ONE OF THE FASTEST GROWING CITY, FARIDABD TO HAVE ORGANISED AND REGULATED CITY GROWTH AND FORM.

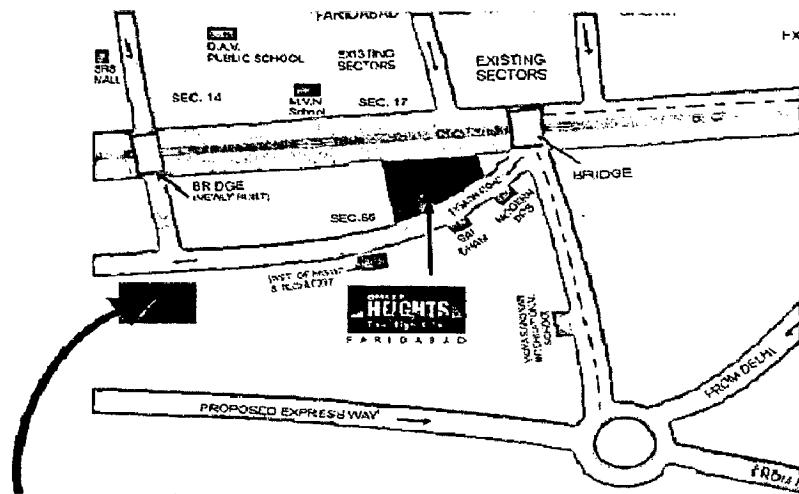
## 1.6 Objectives

- ❖ TO STUDY AND ANALYSE THE PRESENT SCENARIO OF CITY WITH RESPECT TO ;
  - Physical,
  - Occupational
  - Demographic Characteristics And
  - Various Factors Responsible for the City Growth and form.
  
- ❖ TO STUDY AND ANAYLYSE THE NATURE OF PERIPHERY DEVELOPMENTS AND ASSESEMENT OF VARIOUS FACTORS GOVERNING THE DEVELOPMENT SUCH AS;
  - Physical
  - Social
  - Economical
  
- ❖ TO SET-UP AND STUDY THE RELATIONSHIP AND DEPENDENCY OF FRINGE AREA ON CITY CORE.
  - Infrastructure
  - Form of city
  - City expansion direction and analyzing its pros and cons
  
- ❖ TO COMPARE THE PLANNED AND UNPLANNED FRINGE DEVELOPMENT AND LAYING THE INFERENCES TO REACH THE SUITABLE SOLUTIONS.

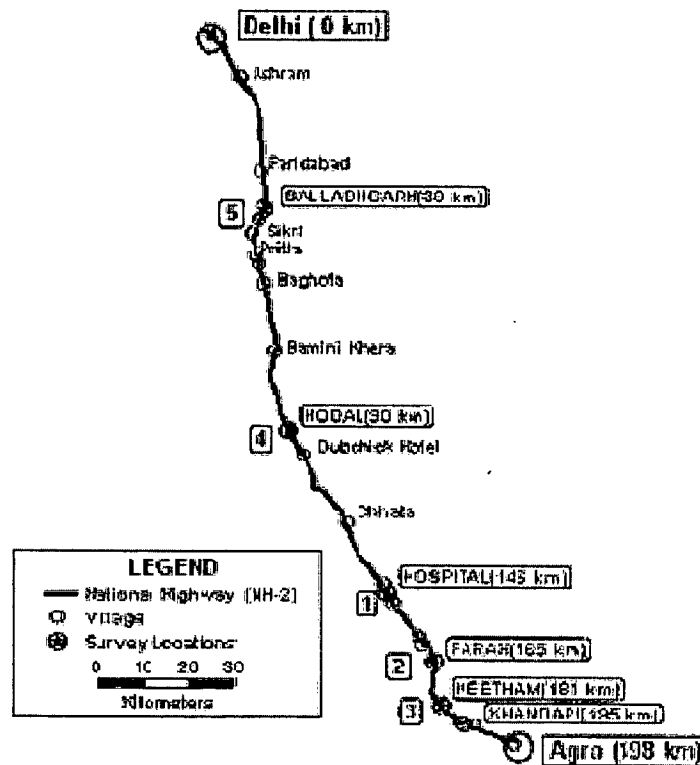
- Population distribution
  - Land use
  - Density
  - Infrastructure
  - Form of development.
- ❖ AFTER ANALYSING AND STUDYING ALL THE ASPECTS, EVOLVING THE PLANNING GUIDELINES FOR THE FRINGE DEVELOPMENT RESPONDING TO CONTEXT AND STUDIES DONE.

### **1.7 Scope and Limitations**

- ❖ THE STUDY WILL RESTRICT TO PERIPHERY DEVELOPMENTS ALONG;
- Along NH-2 stretch from Palwal to Hodal and their individual developments.
  - East of Agra canal which is recently proposed in Master plan of Faridabad.
- ❖ THE MAJOR EMPHASIS OF THE STUDY WILL BE;
- Physical development
  - Land use structure
  - Population distribution
  - Density
  - Development pattern of individual
  - Analysis of planned and unplanned development
  - Comparison of both nature of developments
  - Laying of inferences
  - Recommendations and solutions to my best of knowledge



Map 1.9; Periphery development area along east of Agra canal major concern area



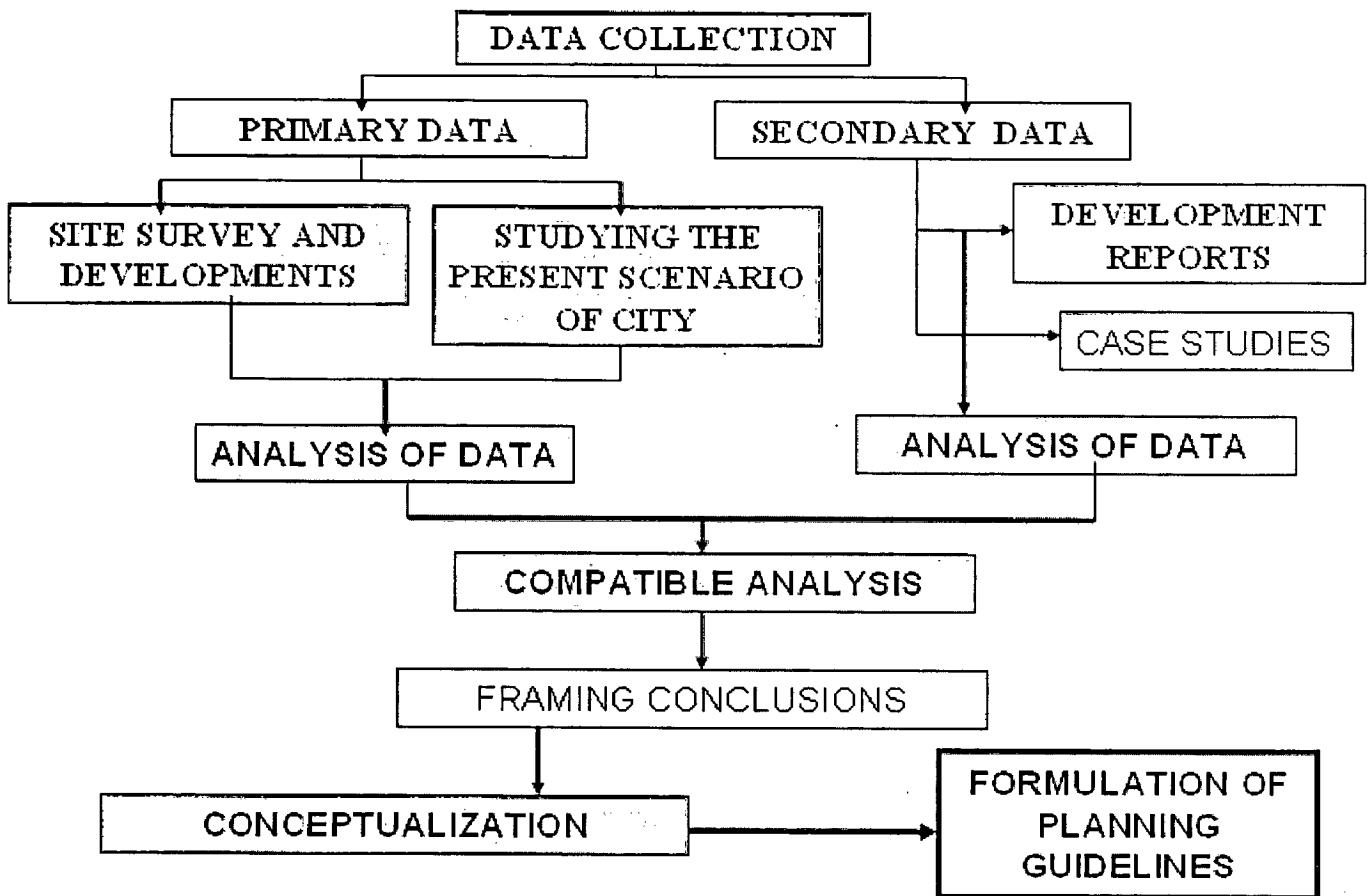
Map 1.10; Periphery development along NH-2 stretch from Palwal to Hodal

The scope of study confines toward major dominant expansion axes.

- These both areas have planned and unplanned development which can be compared and different inferences can be laid.
- The analytical study of both the areas will give different solutions to check the growth of city and to further restrict the expansion of city.



## 1.8 Methodology



### Step 1; Selection of topic

- Studying the feasibility of project
- Scope of work
- Opportunities to contribute at the end

Framing Aims and Objectives

- On the basis of brief study of project
- Possibilities of collection of data
- Main crust to reach he solutions

Literature survey

### Step 2; Collection of data from primary sources

Collection of data from secondary sources

Analysis of data

### Step 3; Identification of issues and challenges

Formulating solution and recommendations

## **CHAPTER 2**

### **LITERATURE REVIEW**

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#### **2.1 Introduction to Urban Fringe**

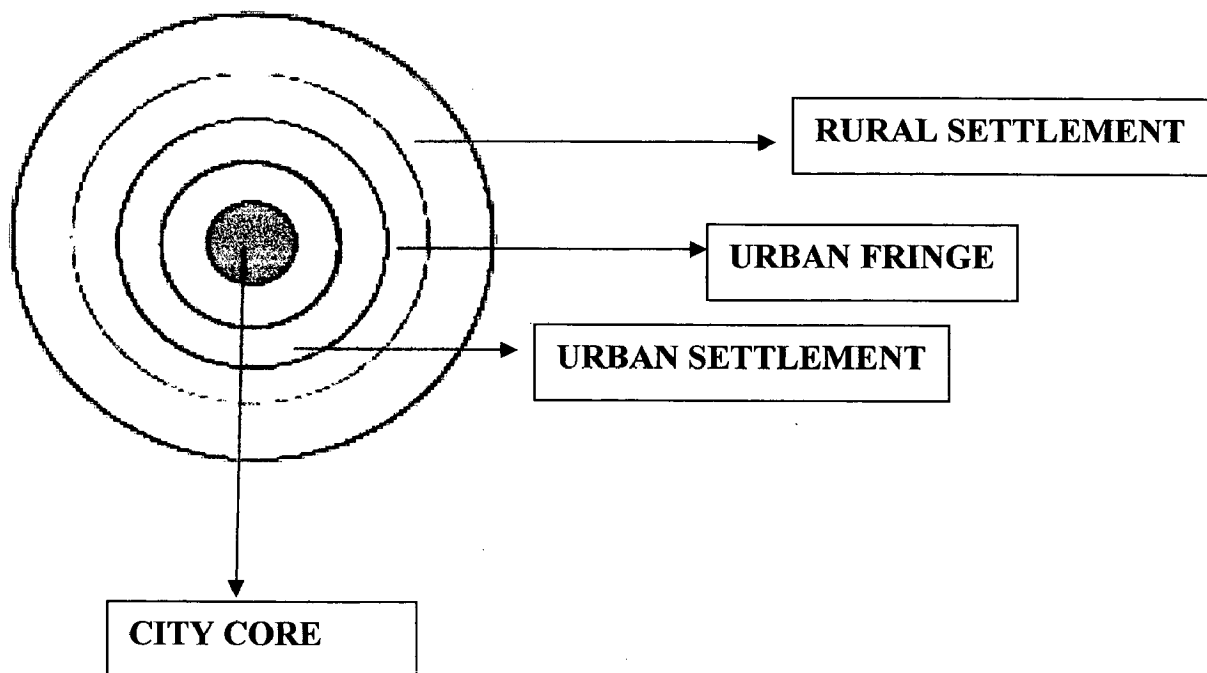
The rapid and random expansion of urban centers along their peripheries is a typical phenomenon of urban landscape in developing countries in general and in India in particular. The emergence of fringe zone with its complex problems of adjustments in between rural and urban ways of life has led to serious land use problems-loss of agricultural land, unauthorized urban sprawl, high land values, speculation in land and related problems and has assumed great topical importance but sadly remained a neglected area in urban research.

Many terms synonymous to fringe such as urban fringe, rural urban fringe, sub-urban areas, suburbs, urban periphery and more recently extended metropolitan regions (EMRs) have been used in planning literature. Whatever may be the designations, conceptually, fringe is related to the growth of cities which lies immediately outside the designated urbanizable limits and has strong interaction with present city and bears an urban reflection on the physical, occupational and demographic characteristics. By and large, the residents of the fringe enjoy the urban services and facilities but usually do not pay for them.

The rural-urban fringe, also known as the outskirts or the urban hinterland, can be described as the "landscape interface between town and country, or alternatively as the transition zone where urban and rural uses mix and often clash. Alternatively, it can be viewed as a landscape type in its own right, one forged from an interaction of urban and rural land uses.

Despite these 'urban' uses, the fringe remains largely open with the majority of the land agricultural, woodland or other rural use. However the quality of the countryside around urban areas tends to be low with severance between areas of open land and badly maintained.

- ❖ Fringe is related to the growth of cities which lies immediately outside the designated urbanizable limits and has strong interaction with present city and bears an urban reflection on the physical, occupational and demographic characteristics.
  
- ❖ By and large, the residents of the fringe enjoy the urban services and facilities but usually do not pay for them.
  
- ❖ Urban and rural uses mix and often clash.



**Fig 2.1;** *the location of Fringe area respect to City Core*

## **2.2 Characteristics of Urban Fringe**

- ❖ Neither purely rural nor purely urban
- ❖ Lack of services and facilities
- ❖ The density of population is considerably lower
- ❖ The distance between towns is greater
- ❖ More settlement is in the form of villages and hamlets

- ❖ Agriculture is by far the most dominant land use
- ❖ The density of major roads decreases
- ❖ The level of commuting decreases
- ❖ Environmental quality is generally higher.

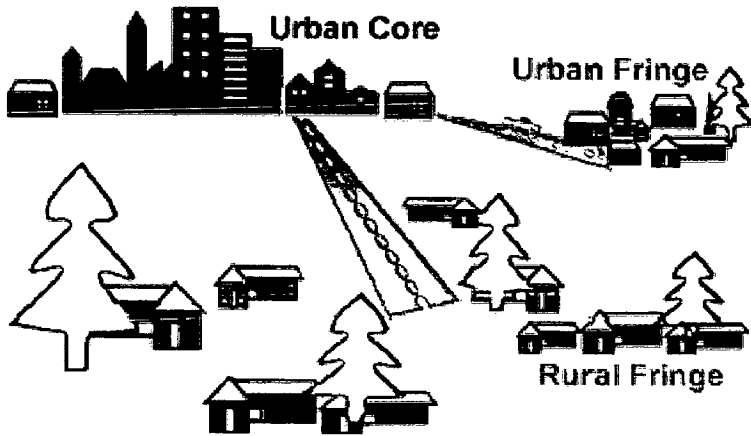


Fig 2.2; 3d depiction of Fringe and city

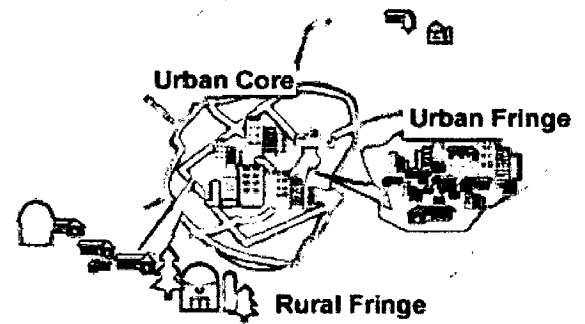


Fig 2.3; Location of Core, Urban Fringe, Rural Fringe

### 2.3 Fringe and City Core area relation and their Interdependency

DIFFERENCE BETWEEN RURAL AND URBAN AREAS LIES IN OCCUPATIONAL PRACTICE, LANDUSE, RESOURCES AND SOCIO-CULTURAL FEATURES OF SOCIETY.

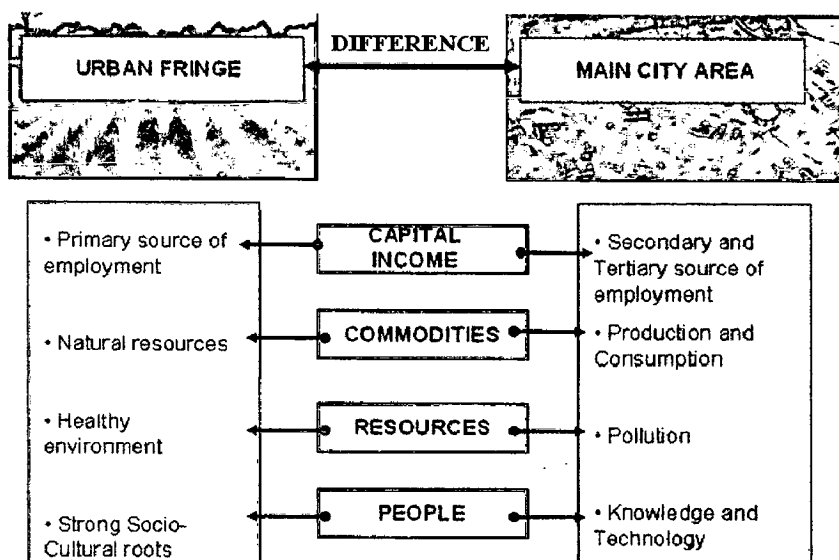


Fig 2.4; Major difference between city core area and fringe area in different aspects

There is interdependency of rural activities on urban areas, and the same of urban areas dependency on rural areas, which stimulates the growth and attraction the people and activities leading to growth and finally resulting into new developments and requirement of planning the strong integration and also the individual areas and also in whole part planning

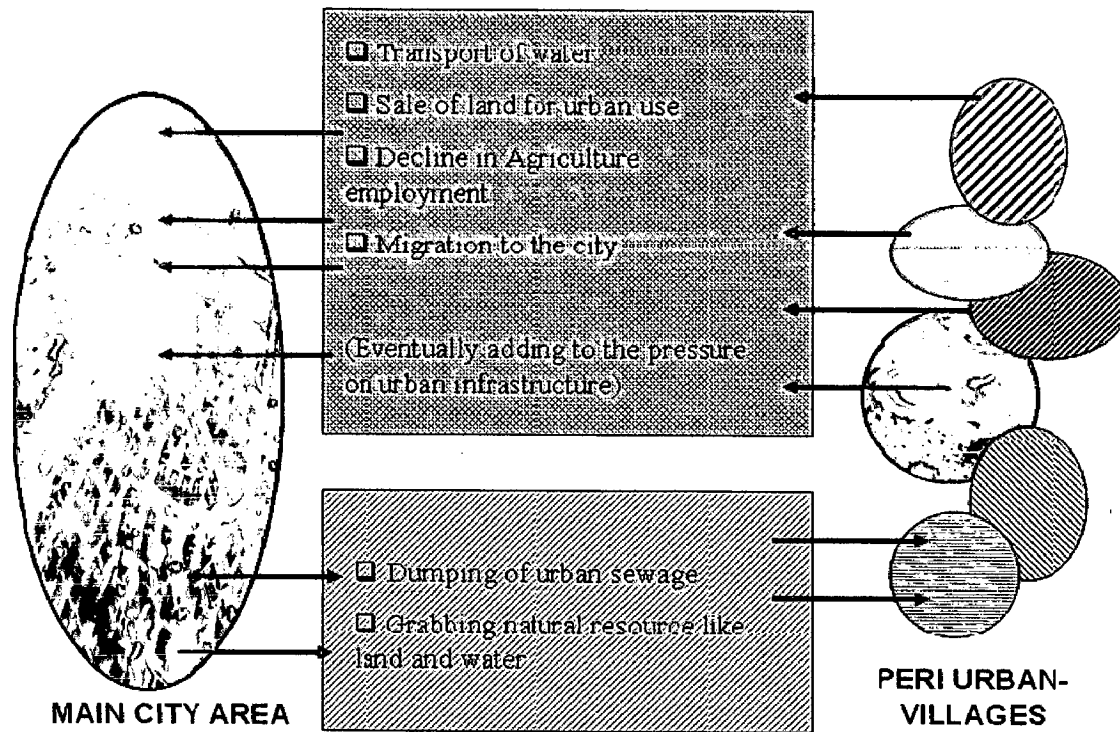


Fig 2.5; Dependency of core on fringe area and vice-versa

THE modern relationship between a city and its region is summarized in the diagram where there is an exchange of public and private services in return for produce and labor.

Rural and urban communities are thought to be interdependent in their broader regions. People in rural communities commute to urban centres for jobs and services while people in urban communities commute to the rural countryside for recreation and environmental amenities. Rural communities depend on urban centres for employment, and the dependence of urban centres on the rural labour force. It seems likely that rural people commuting in for employment are also accessing private and public services at the same place and often at the same time. Although the dependence

of the urban population on its rural surroundings may extend well beyond the rural commuting fringe, the dependence will be most intensive there.

Because of the close ties between urban centres and their rural fringes, it is important that infrastructure development initiatives be based on the inclusion and participation of both the urban core and the rural and exurban fringes. Rather than competitive, complementary strategies between urban cores and their surrounding rural areas will benefit both.

## **2.4 The Present Scenario of Urbanization**

The process of urbanization operating in the fringe has given rise to typical land use associations where the contemporary and dynamic land use pattern is developing side by side in the contemporary context, the various land uses, Old villages, new residential extensions, commerce, industry, city service and farming are not nearly sorted out into homogenous areas but are intermingled in a random fashion which gives a distinctive quality to the land use pattern of rural urban fringe.

The haphazard development of slums, unauthorized colonies, piecemeal commercial development, intermixes of conforming and non-conforming uses of land coupled with inadequate services and facilities have become a common features in the fringe. The dynamic change from rural to urban land use is so fast that the resultant need and complex uses coupled with shortage of land have led to speculation and increase in land values.

The fringe areas are generally within the jurisdiction of panchayat which has neither the financial resources nor the technical expertise to plan and manage the rapidly developing fringe.

The urban authorities also ignore the problems of fringe as it falls outside their limit. Thus the city and fringe, although, administratively fall in different areas, for the residents of the fringe there is hardly any difference between the two and their movement is unrestricted and they use the municipal services without paying for it.

The property and service taxes are relatively higher in the city than in the fringe area and therefore attract industries which intensifies development. Like municipal areas, panchayats have no town planning rules, sub-division regulations and rules for provision of services suited to the dynamic situation of the fringe and haphazard development takes place. Since land in the city is beyond the reach of middle/low income group people, they look for land outside the city limit.

The speculator who holds the land for quick profit starts selling it by parceling it unauthorized without any services. The buyers who are in urgent need for housing build houses on unserviced plot whereas others hold the plot without use in anticipation of infrastructure development.

Unplanned development of fringe areas leads to the lack of public facilities- public open spaces, health centers and schools and degradation of environment as the required sanitary and water disposal services are not provided.

The agricultural land around the city is eaten away and the agriculturists and workers are forced to change their occupation. In brief, it may be concluded that in order to offset and contain urban sprawl, green belt has been statutorily provided in the plan which however has presented several difficulties.

The extent of the area is so vast that it virtually impossible to prevent non-conforming uses in the green belts. The local panchayats lack the men, material and the will to look after enforcement whereas the local authority has its own priorities within the conurbation to develop housing and services.

Thus there is always a variety of pressures by vested interest groups for conversion of land use in the green belts. Industrialists press for large and cheap sites with less controls. Cooperative housing societies, which have purchased land for housing from farmers prior to notification of the green belts press for exemptions.

Established industries have pressed for expansion and housing. Speculators have entered into deals with farmers for sale of their lands even after notification of green belt. Failure to prevent unauthorized development in the green belt has created

political pressures to regularize them subsequently and change the land use from agricultural to industrial development and finally unwanted extension of conurbation.

## 2.5 Definitions of urbanization terminology

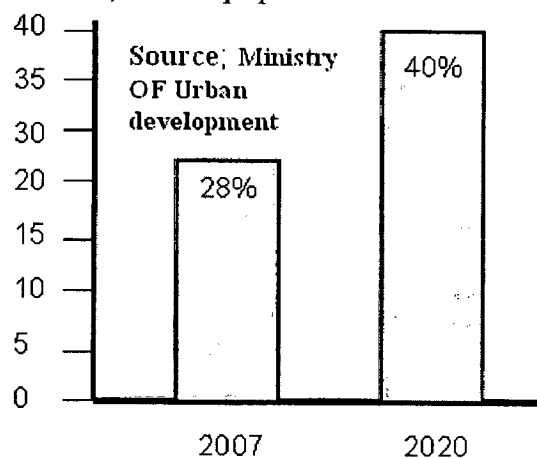
Urbanization is the process of rendering urban, the process of removal of the rural character of an area or place. A careful distinction needs to be made here between the absolute growth of cities (Civilisation) and the process of Urbanisation. In an urbanising society, the proportion of city dwellers to the total population increases steadily. In countries or places which have already been urbanised it can continue to grow in absolute size along with overall population growth, however, the population not be economic proportionately more urban.

### 2.5.1 Urbanization Statistics

According to Ministry of Urban development in next 13 years there will be increase in urban population by 12% which is a remarkable increase.

According to present scenario of the cities this population is expected to settle in urban fringe areas with the;

**Table 2.1; Urban population statistics**



- ❖ **Substantial increase in the urban population will be absorbed in fringe areas of metropolitan cities.**
- ❖ **The stress on infrastructure is rising.**
- ❖ **The trend of urbanization will lead to haphazard growth.**

“SO TO HAVE ORGANISED GROWTH AND REGULATED CITY FORM THE PLANNING GUIDELINES FOR FRINGES ARE IMPORTANT.



SO IT IS NECESSARY TO PLAN THE FRINGE AREAS OF CITY FOR THE EXISTING AS WELL AS THE FUTURE REQUIREMENTS AND PLANNED GROWTH, AND AS FRINGES ARE THE MOST NEGLECTED AREAS, SO THEY HAVE TO BE CAREFULLY THOUGHT OF.....

## **2.6 Urbanization Pattern**

Urbanisation is a very broad term. Generally it refers to a society In which the trend is for a higher share of the population to be living in towns and cities. Sometimes it is used in the narrower sense of the morphological aspects of the process. In this research, a more concrete operationalisation was necessary in view of the manifestation of urbanization on the micro level.

The following aspects were found to be directly or indirectly caused by urbanisation:

- Land-use changes in favors of urban types of land use
- Location of urban-related activities in or near the village
- Better access from the village to urban areas and vice-versa
- Expansion of urban types of amenities and infrastructure.

All these process have far reaching consequences for the quality of life of the village population.

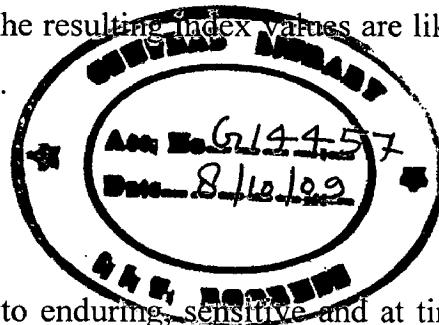
## **2.7 Impact of Urbanization**

The present study is an attempt at understanding the process of change in a village, which has been open to urban influences.

The rapid sprawl of the modern city outside its political boundaries and beyond its real physical-cultural domain possesses several attendant problems. Many research workers in social sciences such as urban geographers, sociologists, land economists, local urban government, and regional planners to talk about the rural-urban fringe but none has attempted to solve its real problems.

The fringe zone has been neglected by everyone mainly because it is transitional as well as controversial in nature.

As the fringe is a bridge between the rural area on the one side and urban center on the other, all the characteristics of urbanity and ruralism are medium in the fringe area. These characteristics are travel time, urban habits, land-values, public utility services, commuting population, non-agricultural activities, population density, primary activities, built up area and sex ratio, literacy and agricultural activities, etc. The characteristics may vary from town to town on the basis of the physical and cultural status of the town. But if all factors are considered together with suitable weightage according to their relative importance, the resulting index values are likely to be a reasonable guideline for fringe demarcation.



## 2.8 Main Issues

The rapid growth and development of fringe rise to enduring, sensitive and at times controversial land use issues. Urbanization operating in the fringe brings a number of problems of housing, infrastructure, services and loss of agricultural land. These problems require immediate attention of the planners and administrators. Broadly, land use issues in the fringe may be categorized as follows:

1. Protection of prime agricultural land.
2. Control of sub-urban sprawl.
3. Control of growth.
4. Provision of adequate services.
5. Maintenance of life style in the face of growth.
6. Jurisdictional, legal and financial limitations.
7. Maintenance of environmental quality.

In the context of urban land, one of the land use issue which has become of prime concern in recent times, is the concern about the loss of prime agricultural land due to urbanization. An estimated 75,000, hectares of land are being used each year which by and large mainly come from agriculture. In the fringe, there are tendencies for spot developments. Such spot growth is wasteful and is often of a sub-standard nature. The

scattering of small settlements necessitates the residents to commute for a longer distance besides stretching of public utility services. Obviously such a state of affairs is neither in the interest of public authorities nor in the interest of individual. It is, therefore, suggested that the spot development should be discouraged and compact development encouraged which is one of the major issues which needs to be considered. Decisions made today will either ensure future generations a choice of how they use the land or effectively limit their actions. Because many land use activities, especially in urban areas, result in irreversible changes, it is essential that the needs of future generations are considered. The dilemma in the regulations lies in balancing present versus future needs. Preservation of prime agricultural lands on the periphery of expanding cities and towns are necessary for maintaining open space and environmental quality. Land use control and regulation are important tools and instruments for planning of the cities and towns and to regulate growth and associated sprawl. Various development and legislative measures are to be adopted.

## 2.9 Why do cities grow?

- ❖ Urban population explosion
- ❖ Benefit for economic development
- ❖ Existing economic criteria of city
- ❖ Easy availability of resources in fringe areas
- ❖ Taxes are relatively higher in city than fringe so people get attracted.

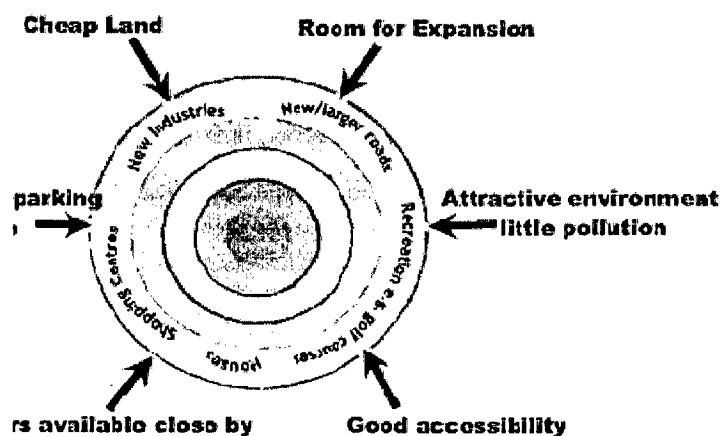


Fig 2.6; Figure showing the reasons for expansion of cities outward in the fringes

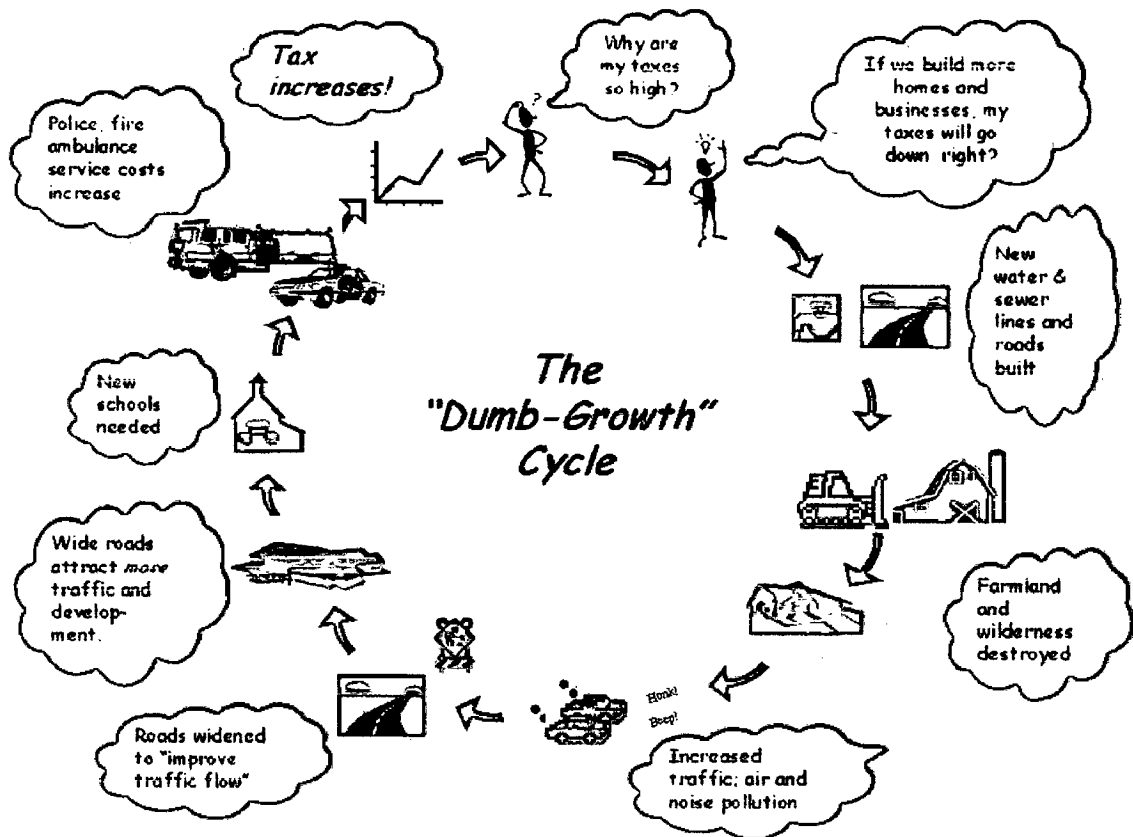


Fig 2.7; The Dumb growth cycle

## 2.10 How do cities grow?

FRINGE AREA HAS TENDENCY TO GROW ALONG;

- ❖ Transport corridor
- ❖ Near by religious spots
- ❖ Scenic and natural beauty sites.

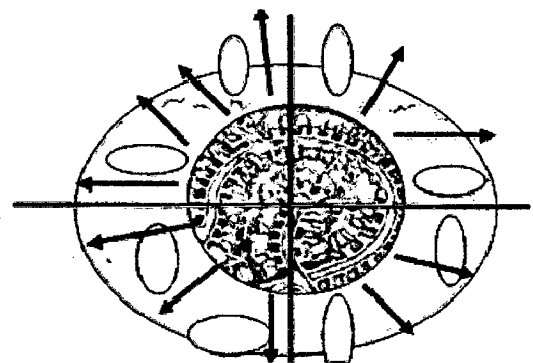


Fig 2.8; Haphazard growth of city

The growth can take place in two patterns one with Dispersed form around any settlement or the other is linear form which takes place along any transport Routes. So these are some of the ways and they have to be tackled in their own way of planning

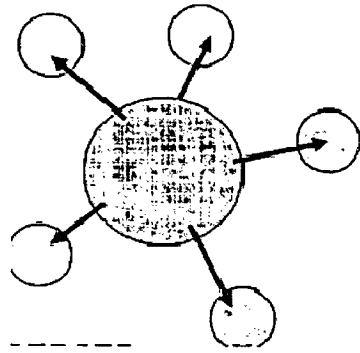


Fig 2.9; Dispersed growth of city in all directions



Fig 2.10; linear development of city along major transport corridor

## 2.11 How transformation does take place?

- ❖ Initial stage starts from village stage which slowly goes on second stage of Agri-Land Use change in the agriculture land use is transformed into the other land use.
- ❖ In second stage the moderately fast change takes place to occupational change of that area, more people change their occupation from primary to secondary sector.
- ❖ In the third stage fast urban land use growth take place with more developments and land use changes turning to active center of growth and economic development.
- ❖ And in the last change very fast it changes to city area with all that characteristics of city.

### 2.11.1 Relation between core, suburbs, fringe area

<b>Urban core</b>	Main employment and resource Generating activity place
<b>Suburbs</b>	Residential areas around the core, supported by core with all infrastructural requirements lies in urbanizable limit of city.

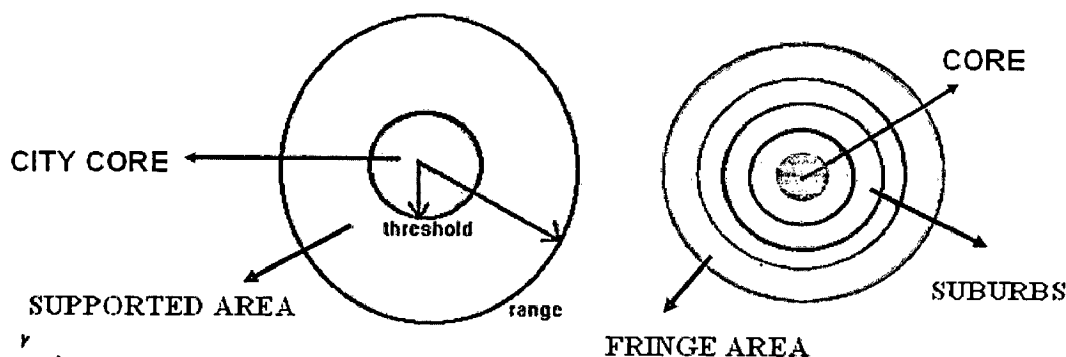
**Fringe areas**

outer periphery, peri-urban area, developing due to population explosion and service requirements as burden on the city, lies outside the urbanizable limit of city.

**2.12 What is core?**

**Central City:** The central city or core city is the municipality in an urban area or metropolitan area that emerged historically as the most prominent in the urban area. Almost without exception, the name of the core city is also shared with the urban area and the metropolitan area.

**The Urban Core:** Generally the urban core or the inner city is in the central city. Sometimes the urban core includes adjacent municipalities that developed during the same period as the core city.



**Fig 2.11;** Description of city core

**2.12.1 Types of core**

- Industrial
- Commercial
- Heritage
- Institutional / administrative
- Educational

THE FUNCTION OF CORE DECIDES THE CHARACTER OF CITY AND FURTHER GROWTH PATTERN AND EXPANSION PATTERN, THAT'S WHY THE CORE EXPLANATION IS NECESSARY.

### 2.13 Suburbs and Fringe areas

Suburbs are commonly defined as residential areas on the outskirts of a city or large town. Fringe is related to the growth of cities which lies immediately outside the designated urbanizable limits and has strong interaction with present city and bears an urban reflection on the physical, occupational and demographic characteristics.

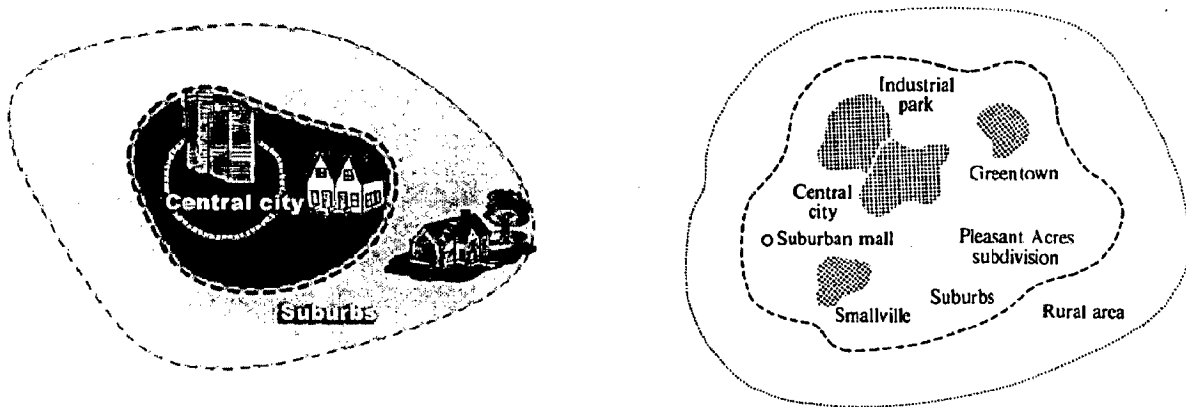


Fig 2.12; Relation between suburbs and fringe area

### 2.14 Different forms of the city

- This form will depend on the city core growth and the pattern of the city core.
- This will further regulate the city growth pattern and will guide its form.
- So the study of different forms of city will help us to recognize the growth pattern and in the formulation of typical guidelines for that particular city.
- City form much depends on the character of city core which we have already discussed because the series of activities and development will take place in that fashion.
- So there are different forms which also depend on street and transport corridor pattern as usually development take place on that desired lines.

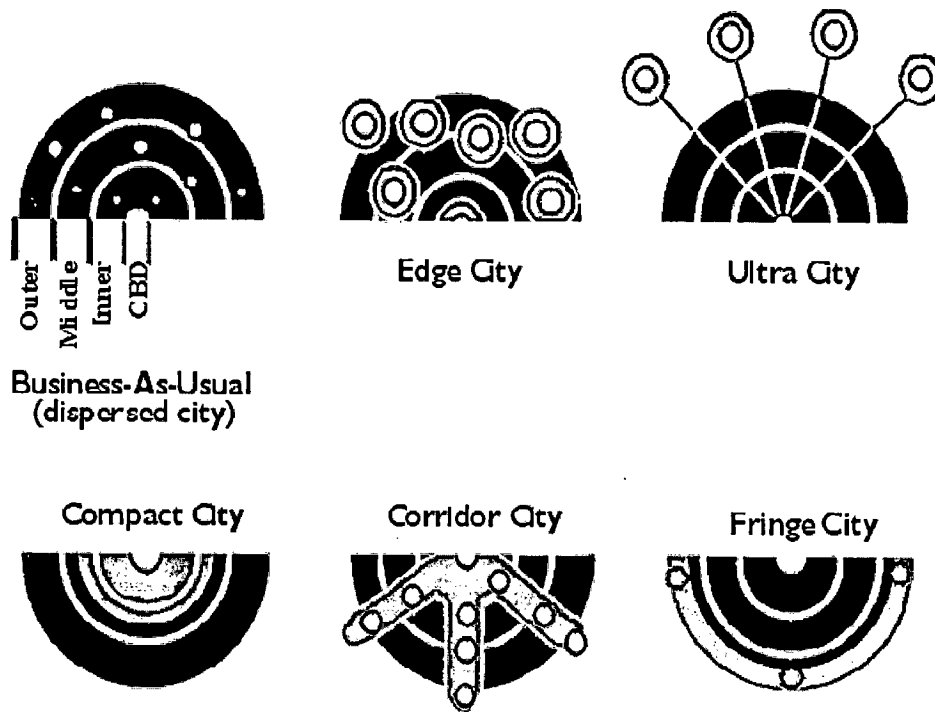


Fig 2.13; Different forms of city development and growth pattern

- GRID IRON
- REGULAR AND DIAGONAL
- RADIAL
- RADIO CENTRIC
- ORGANIC

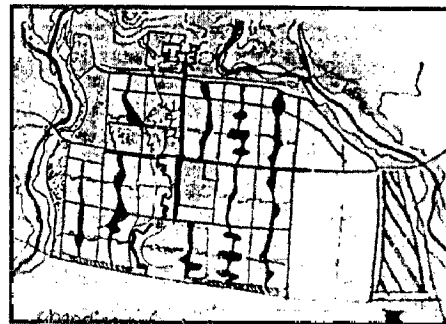


Fig 2.14; Grid iron form of city (Chandigarh)

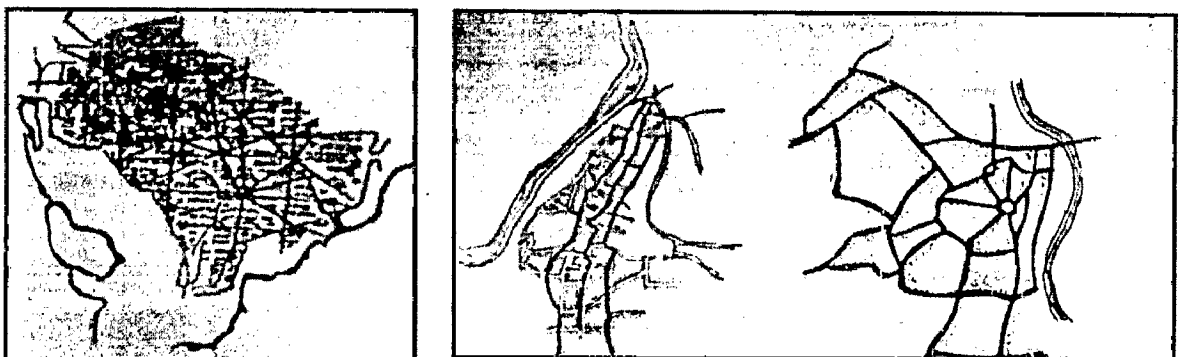


Fig 2.15; Regular, diagonal forms of city (Washington DC)



## 2.15 Different concepts to check urban sprawl

### 2.15.1 Green belt

The purpose of green belt is:

- To preserve neighboring town from merging into one another.
- To preserve the spatial character of town
- To check the further growth of a large built up area beyond the urbanizable limit.
- To encourage compact development of city for optimum utilisation of land and services and reduce the community distance for home to work.
- To preserve area of scenic beauty and recreation.
- To preserve and improve environmental conditions of the city.

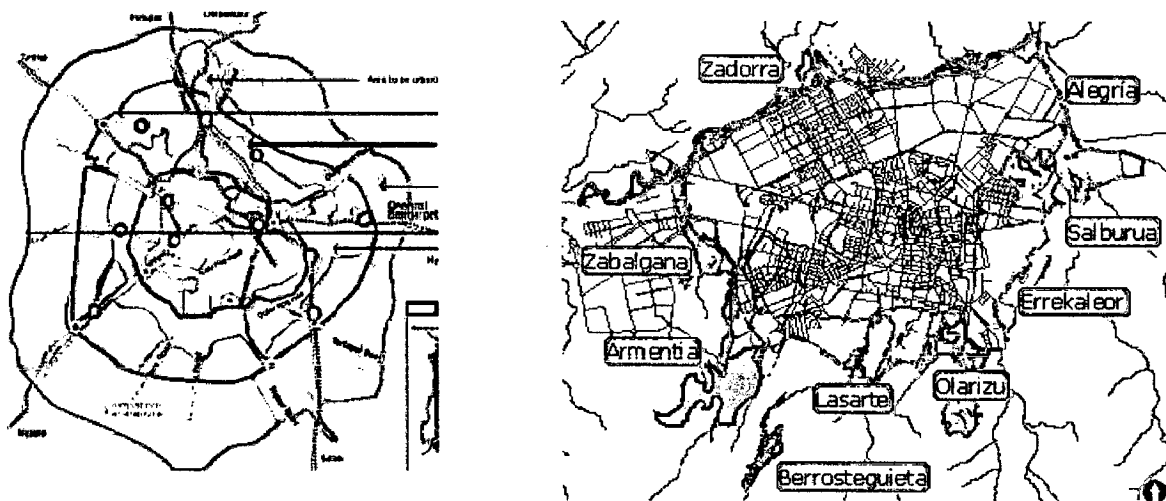


Fig 2.16; Concept of green belt to check urban sprawl

The following principles or criteria support the vision and help define the actual extent of the Outer Green Belt concept. The resource information upon which these criteria are based;

- Landscape and landform: To recognize and protect natural landscape and landform characteristics of the ridge system on the western side of the city.
- Indigenous ecosystems and important ecological features: To recognize and protect indigenous ecosystems and important ecological features, and in Particular the streams and significant areas of indigenous vegetation from which a more continuous band of vegetation will grow.
- Recreational places and linkages: To identify and protect important existing or potential recreational sites and linkages (entrance points, tracks, routes and Destinations).
- Cultural and historic places: To recognize and protect important cultural and historic places and features identified within the Outer Green Belt.
- Urban environment edge: To provide a western edge to the urban environment and a buffer of mainly open lands between the city's urban areas and the rural areas.
- Continuity and integrity: To achieve continuity and integrity in the definition and management of the Outer Green Belt.

The following statements indicate how these objectives were interpreted in defining the proposed concept area boundary.

### **2.15.2 Garden city moment**

GREEN SPACE;

Green space in the context of garden city concept will be referring to the green belt Provision of sufficient green space to urban population is the major criteria of Garden City planning and design concept.

COMMUNITY;

Garden city concept will also consider the importance of community building whereby the community should be able to interact. This is an important principle of sustainable development. Self-contained community is an important factor for community building. The town should be prepared of the amenities and jobs.

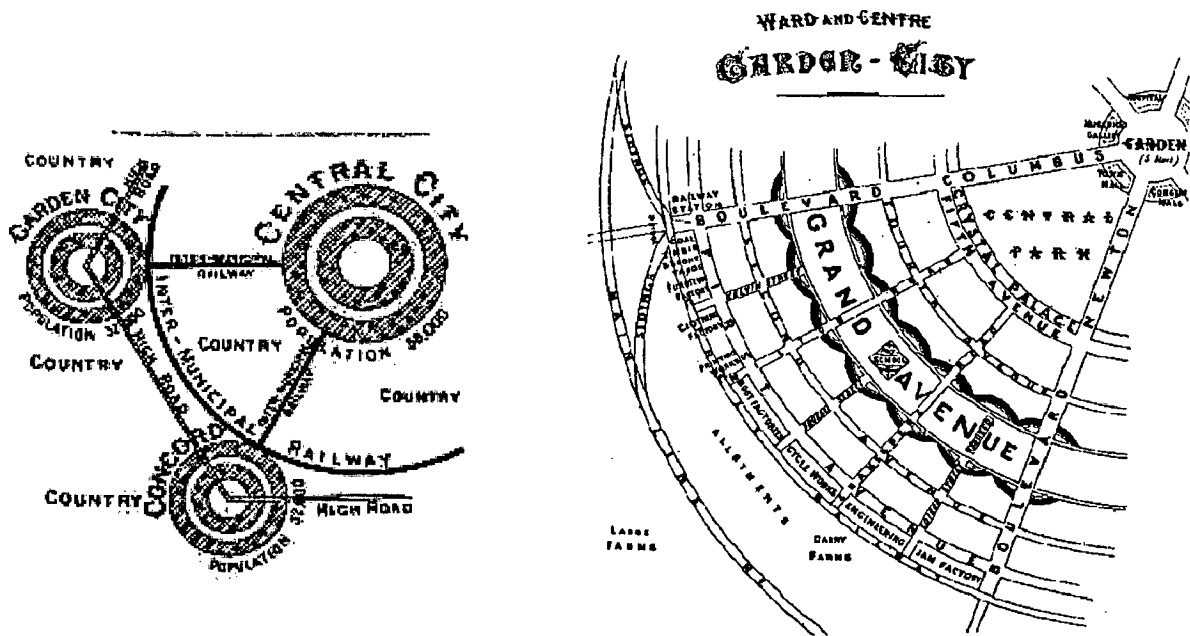


Fig 2.17; Garden city moment

The original idea of Garden City emphasizes the allocation and function of greenbelt as a major component in land use planning. Green space has played an important role in the environmental health of urban dwellers. By implementing garden city planning will emphasizes the allocation and function of green spaces for cities and towns to achieve the environment health in urban setting. The garden city planning provides sufficient open space in a network system that link residential areas to other land uses including institution, commercial and recreation. The planning will ease people to interact through circulation system including roads, pedestrian ways and waterways. The arrangement or layout of land uses and their features are legible enough for residents and visitors to recognize each setting, either housing, commercial or institution. In general, garden city concept will ensure a safe, comfort place to urban residents.

To ensure a safe, comfort, and friendly environment for people, the concept of Garden City may be applied. The concept emphasizes the allocation and functions of green space in urban

### **2.15.3 Ideal city model; Central Place Theory;**

**Zone I:** Central Business District (CBD) where most of the tertiary employment is located and where the urban transport infrastructure is converging, making this zone the most accessible.

**Zone II:** Immediately adjacent to the CBD a zone where many industrial activities locate to take advantage of nearby labor and markets. Further, most transport terminals, namely port sites and railyards, are located adjacent to the central area.

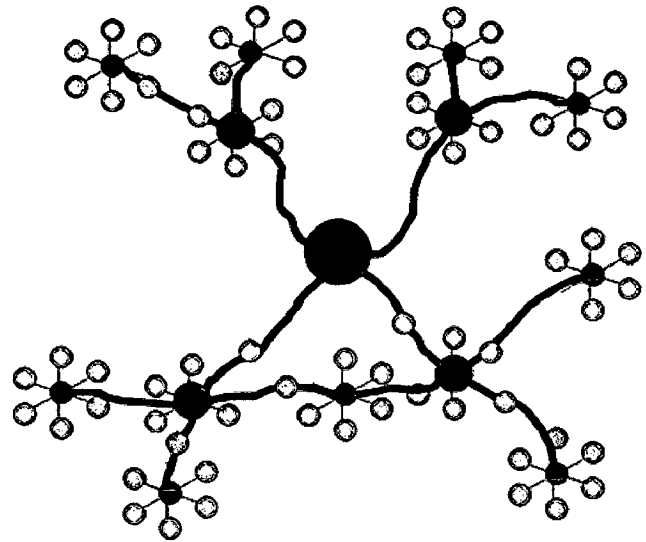
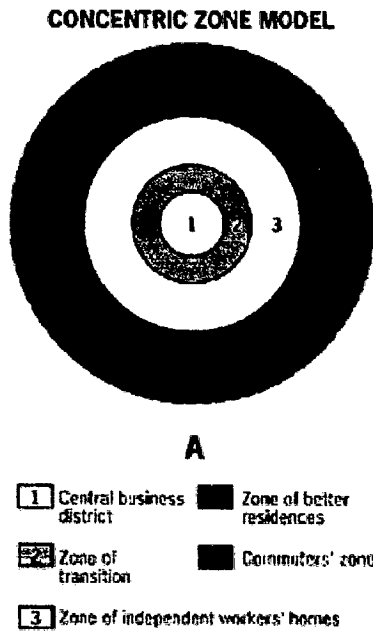
**Zone III:** This zone is gradually been reconverted to other uses by expanding manufacturing / industrial activities. It contains the poorest segment of the urban population, notably first generation immigrants living, in the lowest housing conditions.

**Zone IV:** Residential zone dominated by the working class and those who were able to move away from the previous zone (often second generation immigrants). This zone has the advantage of being located near the major zones of employment (I and II) and thus represents a low cost location for the working class.

**Zone V:** Represents higher quality housing linked with longer commuting costs.

**Zone VI:** Mainly high class and expensive housing in a rural, suburbanized, setting. The commuting costs are the highest. Prior to mass diffusion of the automobile (1930s), most of these settlements were located next to rail stations.

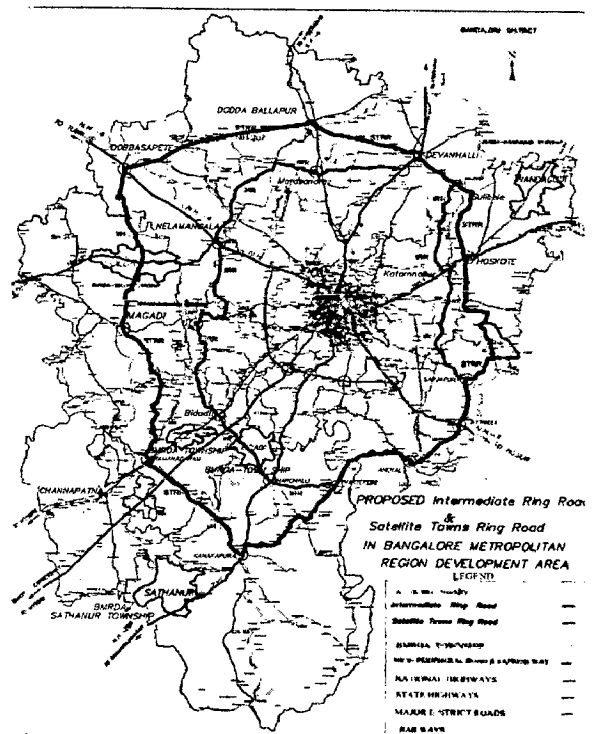
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**Fig 2.18; Central place theory concept to check urban sprawl**

**2.15.4 Satellite town;**

- Satellite towns are mostly residential
- There would be no industries
- People will go to parental city for employment
- Public transport necessary
- There will be one arterial road.
- No concept of fixed density



**Fig 2.19; Satellite town concept**

They would create viable alternatives for people to enjoy environmentally enriched communities with close proximity to an active center. These autonomous centers would also protect natural resources through conscientious development

The development of Satellite Cities has been a solution to over- crowded urban centers in the past.

Infrastructure is one of the most important aspects of the Satellite Cities concept. This concept requires that all proposed cities should be connected to each other, in a way that eases the aimed socioeconomic integration. For this goal to be reached, all cities should have direct transportation and communications systems with the core city, and, when viable, between themselves.

## **2.16 Conclusion**

After studying the literature survey we are aware of the entire concept behind fringe areas, their issue, challenges and the ways to tackle them.

It covered all the basic aspects of growth pattern forms and the factors responsible for it.

It also talked about the different historical concepts to check urban sprawl.

Now the next step will to talk about the cases which are actually experimented and laying the inferences from them.

Then using both primary and secondary data we can move to the next stage of analysis and solutions.

## CHAPTER 3

### CASE STUDIES

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#### 3.1 Peripheral study of Chandigarh

##### 3.1.1 Introduction

**Area :** 114sq.km

**Capital :** Chandigarh

**District :** 1

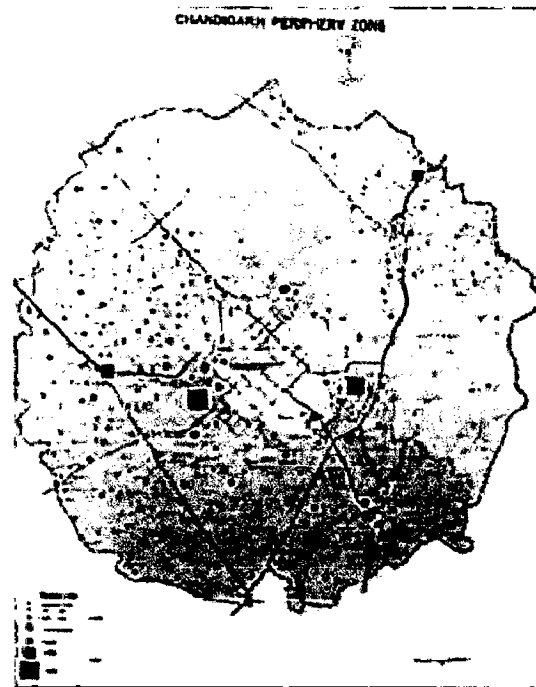
**Population :** 9,00,914

**Density;** 314/acre

**Fringe area;** 1400 sqkm

**Core;** Educational urban core with lot of universities and colleges with sound institutional setup.

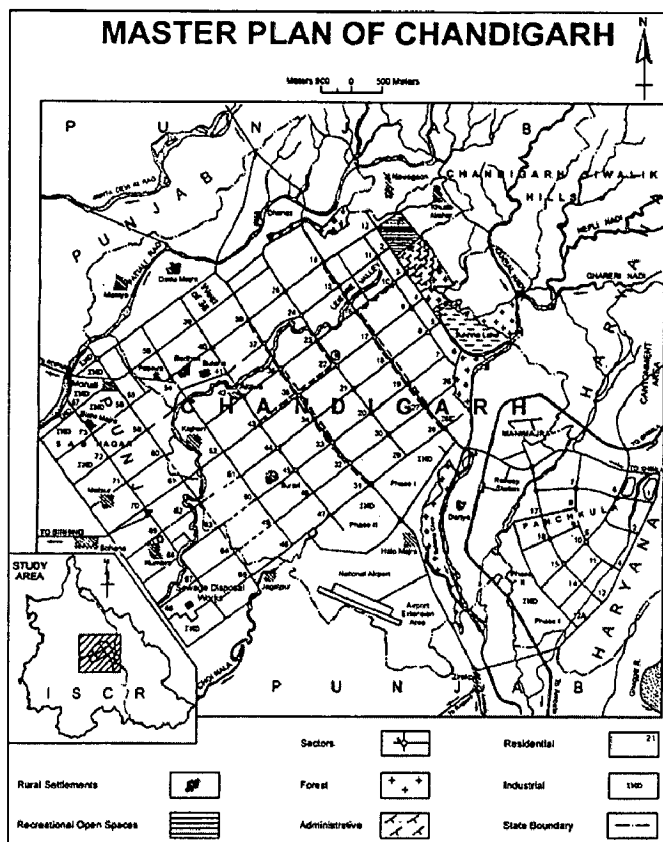
**City Form;** Grid iron



Map 3.1.1; Union territory Chandigarh

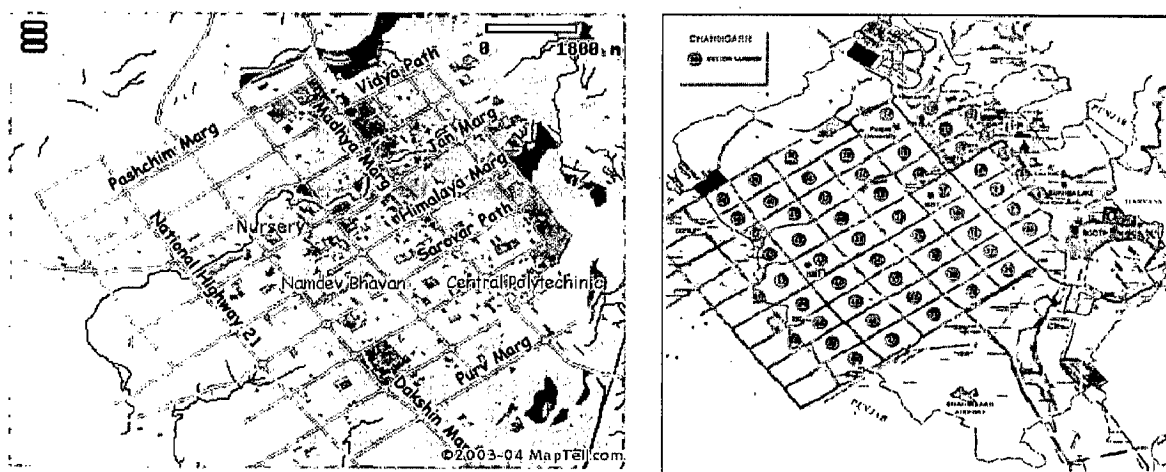
##### 3.1.2 Planning concept

- Rectangular grid based on the metaphor of a human body, the Capitol Complex at the top resembling the head, the intellectual base.
- The industrial and educational belts on either side of the city symbolized the limbs.
- The city center with commercial buildings, shopping, and offices represented the heart.
- Inward-looking sectors of 2600 by 4000 feet (800 by 1200 meters) considered to be a self-sufficient neighborhood.
- A hierarchy of roads separated pedestrian and vehicular traffic into seven different road types, from V1 for the fast-moving inter-city traffic to V7 for pedestrians within the sectors.



Map 3.1.2; Master plan of Chandigarh

- Every city has an influence area that supports the city in terms of basic needs and in turn is benefited from the mother city. This area is called periphery.
- City and its periphery thus have close relationship that is physical, economic, social and cultural linkages and for effective development they must be considered.



Map 3.1.3; Grid iron planning and fringe of Chandigarh



### 3.1.3 Fringe development

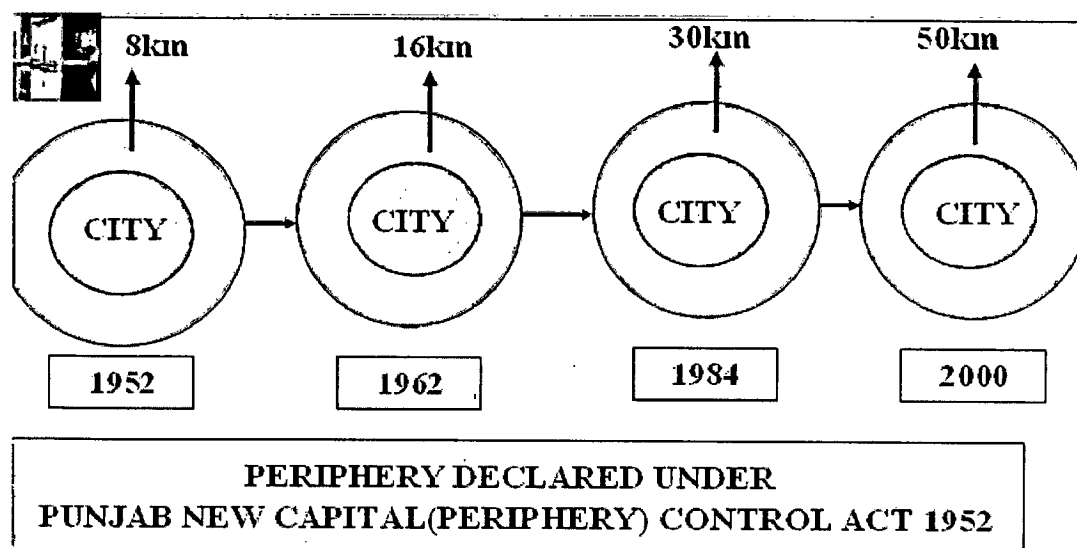


Fig 3.1.1; Declaration of periphery of Chandigarh with the period of time

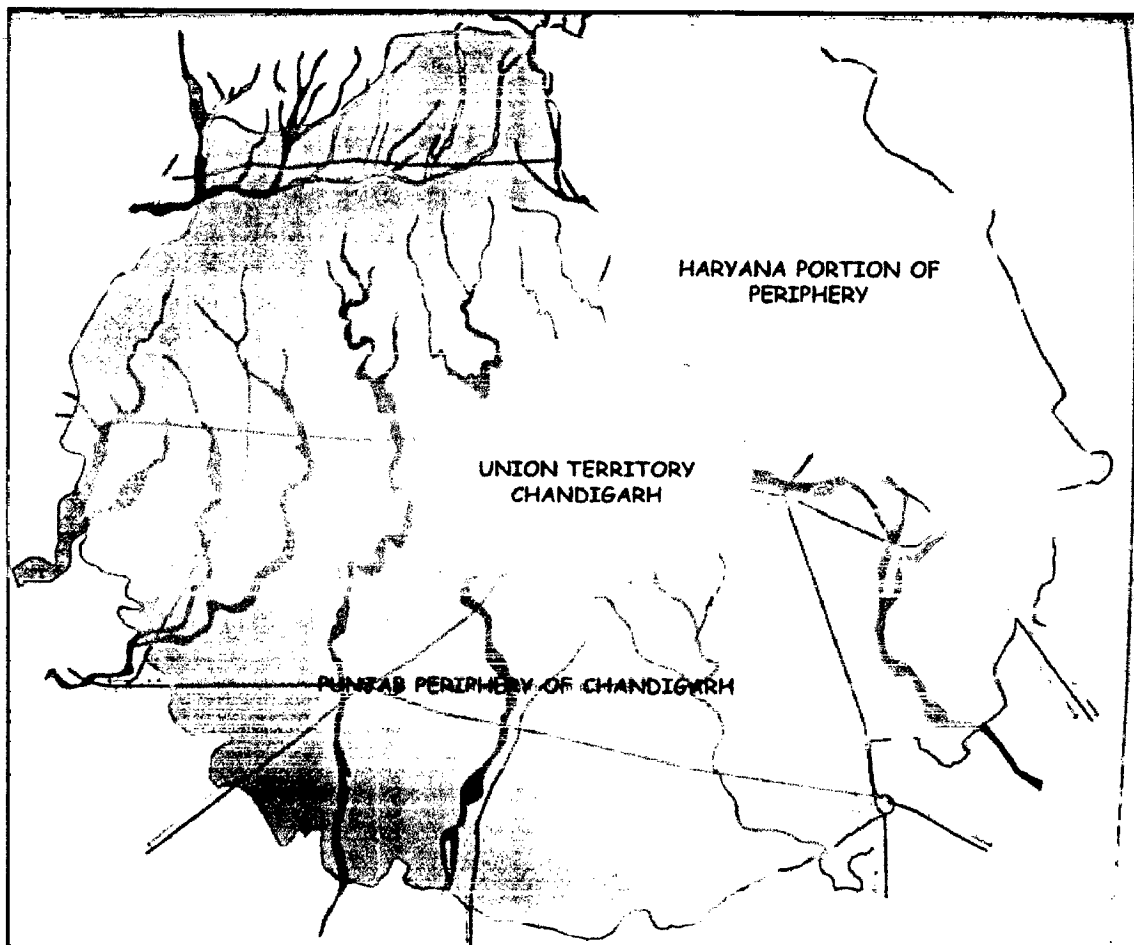
#### Objectives of periphery;

- ❖ check the expansion of the city beyond its planned site
- ❖ control land speculation
- ❖ provide green environs for the city

The periphery of Chandigarh is declared by Punjab Control act and it kept on expanding with time covering the area from every state around and forming the integrated space. It also tried to make other counter magnets to reduce the congestion in the core and making it work as one comprehensive lan.

The Chandigarh Periphery Controlled area was created with the twin objectives of ensuring a planned future expansion of the New Capital City and to prevent mushrooming of unplanned construction around it. The Punjab New Capital (Periphery) Control act, 1952 accordingly aimed at regulating the use of land and preventing unauthorized and unplanned urbanization in a 16 kilometre periphery.

Notwithstanding the regulatory framework, enforcement has been patchy. Appreciating the emerging ground realities, the Punjab Government had in 1998 decided to permit an across-the-board regularization of all unauthorized constructions, which had already come up within the Periphery up to and including 7.12.1998. Simultaneously, it was also decided to evolve a policy framework which would permit the setting up of institutions related to education, health etc., with low density of built-up area, within the Periphery, apart from permitting activities related to leisure and tourism.



**Map 3.1.4;** *Depiction of periphery of Chandigarh*

### 3.1.5 Factors responsible for the growth in the periphery

#### ❖ Growth rate of Chandigarh

- The tremendous growth rate of Chandigarh describes the pace at which the city is developing.
- The growth rate of Chandigarh has come down drastically from 394.13% to 40.3%.
- Due to the fact Chandigarh developed in that decade so immediate growth.
- But the present decadal growth rate is very high, which speaks for the present haphazard growth of the city and its periphery.

### 3.1.6 Density trend in Chandigarh

Table 3.1.1; Density trend of Chandigarh

Year	Residential area (In acres)	Population	Density person/acre
1971	2260	217443	97
1981	2486	379600	153
1991	2486	642015	258
2001	2940	808796	275

- The residential density in the city has increased from 97 persons to 275 persons/acre increasing nearly three times.
- This is much higher than what actually the different sectors were designed for.
- The city infrastructure is under considerable stress, even because of expansion and population increment.

### 3.1.7 Housing shortage in Chandigarh

Table 3.1.2; Housing shortage in Chandigarh

Year	1991	1997	1998	1999	2000	2001
(In million)	0.03	0.03	0.03	0.03	0.02	0.02

- There is shortage of approximately 0.02 million houses in the Chandigarh.
- This shortage of housing in the core is facing the direction of development towards the periphery.
- The periphery offers land in abundance and at cheaper rates.
- Therefore, the development especially residential is occurring in the periphery.

### 3.1.8 Land values

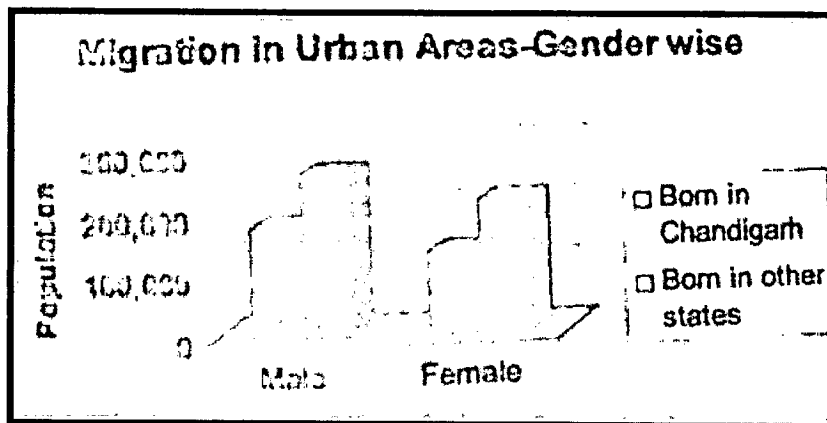
Table 3.1.3; Land values of Chandigarh

S.No	Area	Area	Land Value(approx.)
1.	Chandigarh	2250 Sq. ft	Rs 1.5 crore to 2 crore in phase I&II sec Rs. 1 crore in Phase III sectors
2.	Mohali	2250 Sq. ft	Rs 90 lakhs to 1 crore
3.	Panchkula	2250 Sq. ft	Rs. 1.5 crore
4.	Zirakpur/ Dera-Bassi	2250 Sq. ft	Rs. 6-8 lakhs depending upon distance from highway
5.	UT Area of Periphery	2250 Sq. ft	Rs. 5 lakh
6.	Punjab Portion	2250 Sq. ft	Rs. 3-4.5 lakh
7.	Haryana Portion	2250 Sq. ft	Rs. 4-5 lakh

- There is great difference in the land prices between the core areas and the peripheral areas.
- The core city has high level of infrastructure whereas the peripheral areas are devoid of any well organized planning.

### 3.1.9 Migration to Chandigarh

Table 3.1.4; Migration in urban area of Chandigarh

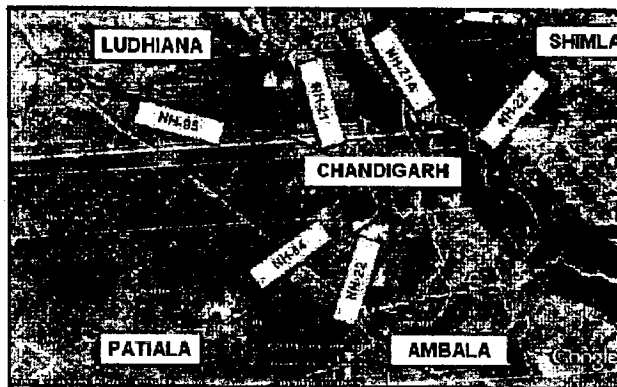


- After Chandigarh became a union territory, the government offices duplicated, led to the rise in the number of employees.
- With the opening of its park in the core, people from different states migrated in the search of employment.

Chandigarh: Haryana has the highest urban population growth of 4.11 per cent (average annual exponential growth rate) among major states. The doubling time for this segment of population is 16.8 years. The proportion of urban population is highest in Delhi, with 93.01 per cent and Chandigarh comes next with 89.78 per cent

### 3.1.10 Nature of developments taking place in the periphery

- Major development along NH-22 towards Delhi,
- Continuous development merging the cities of Chandigarh, Panchkula, Zirakpur and Dera Bassi.



Map 3.1.5; Direction of growth around Chandigarh

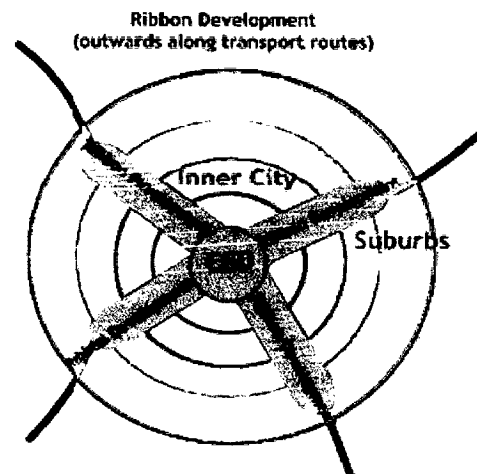


Fig 3.1.3, Ribbon development

#### Lal Lakir/Abadi Deh areas

- In 1902, the first consolidation was done and a “lal dora” was made around the villages.
- The “abadi deh” is defines in the revenue record are very old and presently with the increase in population they expand beyond the defined limits.
- Any building constructed outside “abadi deh” will be considered as illegal.

#### UT portion of the periphery

Geographical area of U.T.Chandigarh is 114 sq. kms. and another 25.42 sq. km. of hilly area which has been declared as 'Sukhna Wildlife Sanctuary' was acquired for soil conservation works. The forest cover in U.T. (as per S.F.R. 2003) is 41.42 sq. kms. which forms 29.6% of its total landmass. Another 8 sq. kms. Area is under tree cover. Thus, the total green cover (forest cover + tree cover) of Chandigarh as per F.S.I. report 'SFR-2003' is 49.42 sq. kms. which form 35.3% of its total geographical area. As per SFR-2001, the total green

cover of U.T. Chandigarh was 36 sq. kms. Thus, there is net increase of 13.42 sq. kms. In the green cover of Chandigarh.

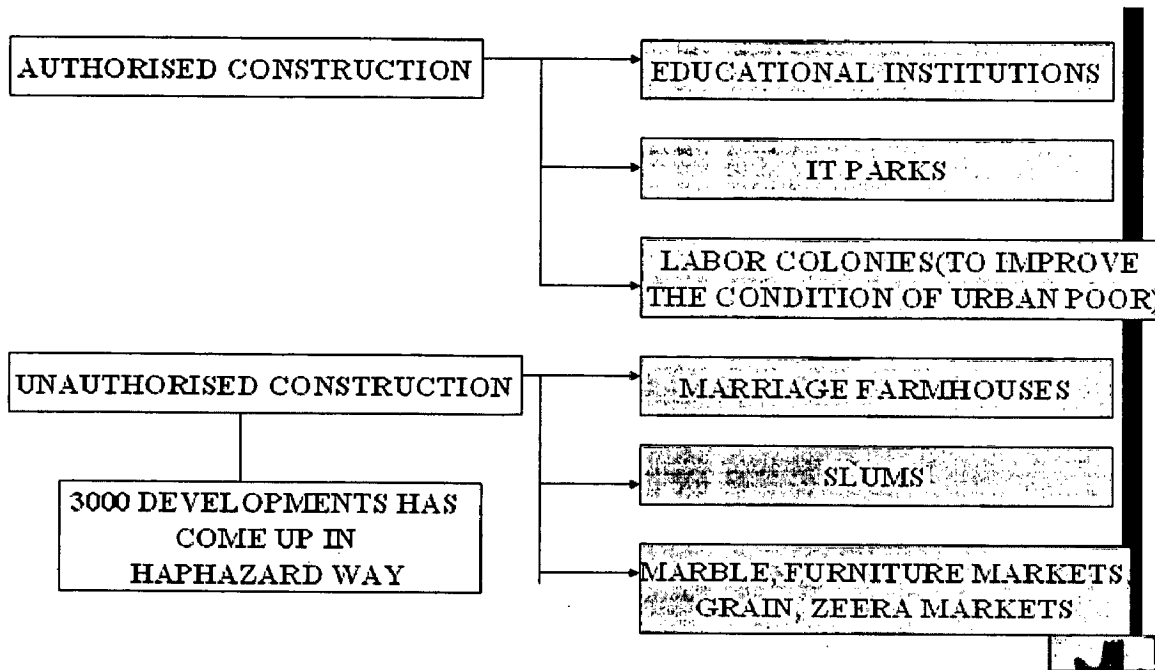


Fig 3.1.4; Category of construction in the UT portion of periphery

**Punjab portion of the periphery**

The number of unauthorized colonies out numbers the authorized colonies in the periphery region. There are only 25 authorized colonies as compared to 216 unauthorized colonies in the Punjab portion of Chandigarh periphery. This is due to cumbersome and lengthy procedure which compels the colonizer to go for unauthorized colonies.

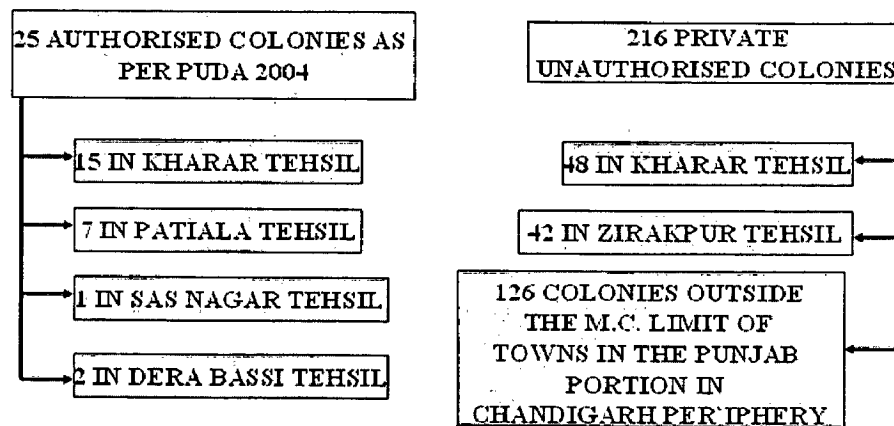
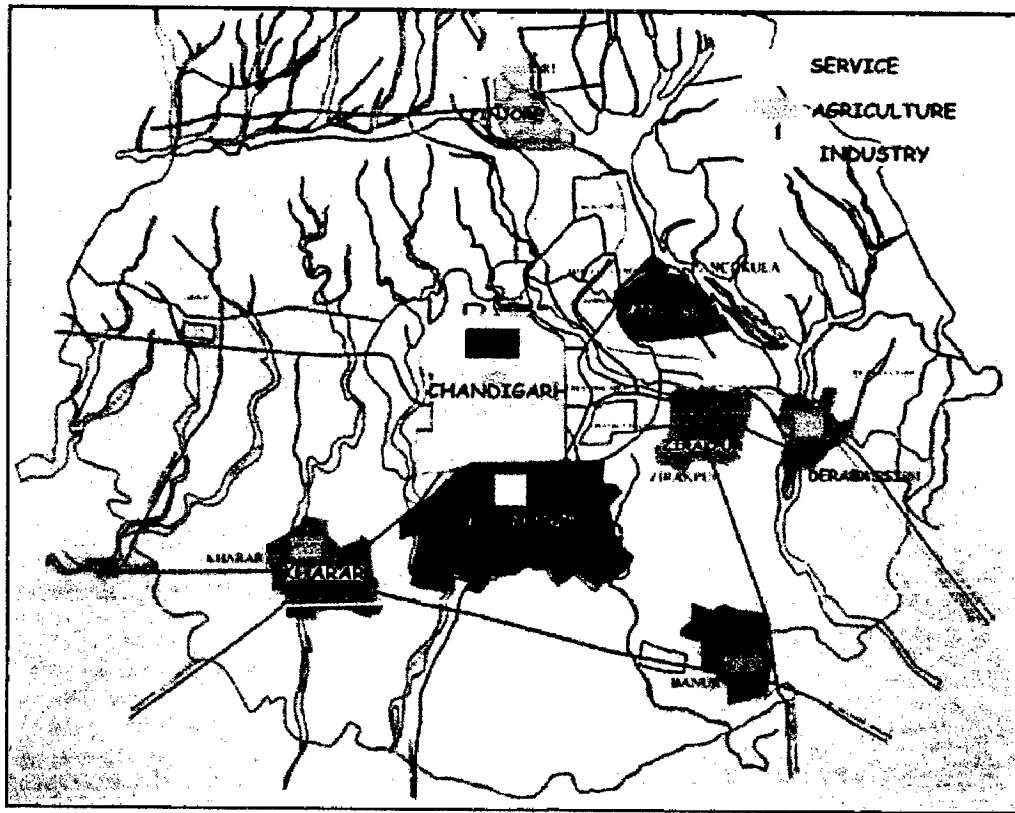
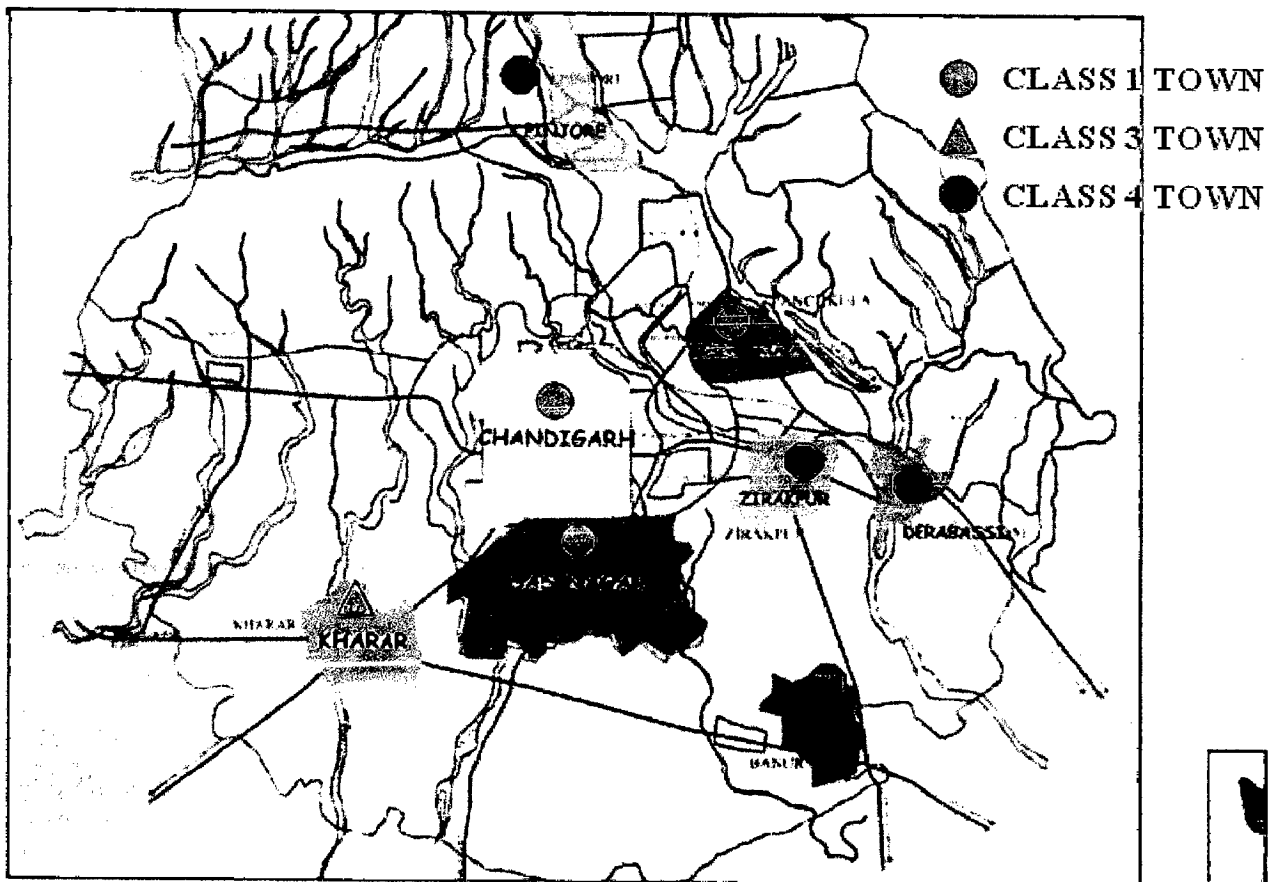


Fig 3.1.5; Category of construction in the Punjab portion of periphery



Map 3.1.6; Functional status of urban settlements in periphery of Chandigarh



Map 3.1.7; Classification of urban settlements periphery of Chandigarh



**Haryana portion of the periphery**

**Table 3.1.5; Category of construction in the Haryana portion of periphery**

Unauthorized construction detected (from 1972 to Dec 2005):	8155
Construction exempted being inside M.C limits (where periphery Act not applicable)	3111
Kalka / Pinjore MC	2674
Panchkula	437
Panchkula Extension	310
Mansa devi Complex: 230	230
Construction on encroached government land (Forest deptt. In Bir Ghaggar Area to be removed by forest department):	800
Construction under litigation/stay in 49 cases	521
Within TBRL restricted belt	236
Within 30m national highway	336
Action to be taken by Town & Country planning department	2292

**3.1.11 Survey analysis about the impact of development**

- Since periphery observes both authorized and unauthorized development taking place in the form of planned townships and colonies and unauthorized colonies.
- Detailed analysis of following developments.

**New garden colony western side of Kharar**

**Silver city extension 1 western side of Zirakpur**

**Panchkula, 10km from Chandigarh**

**Bapu dham resettlement colony, Chandigarh Kalka highway**

New Garden Colony

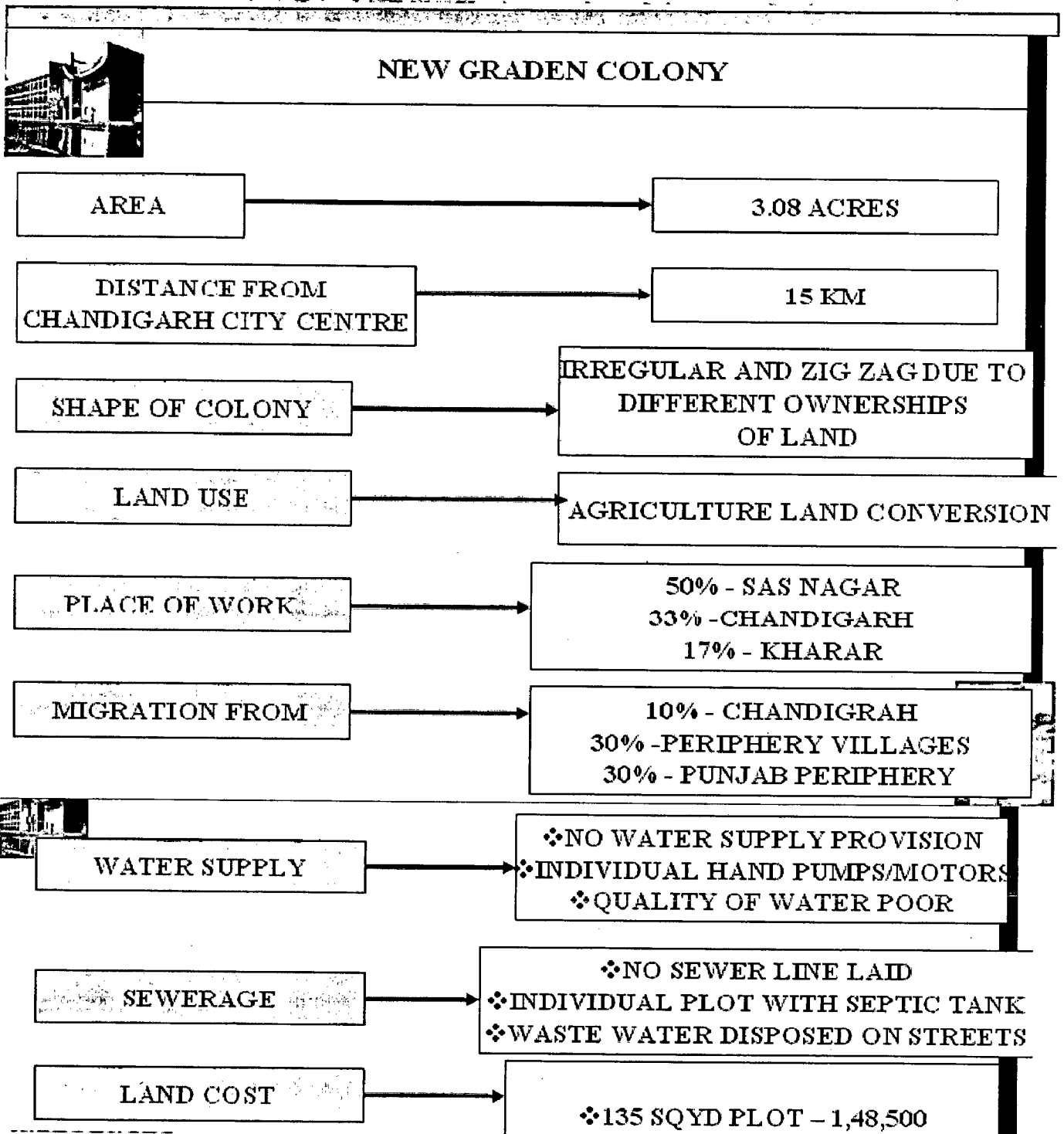


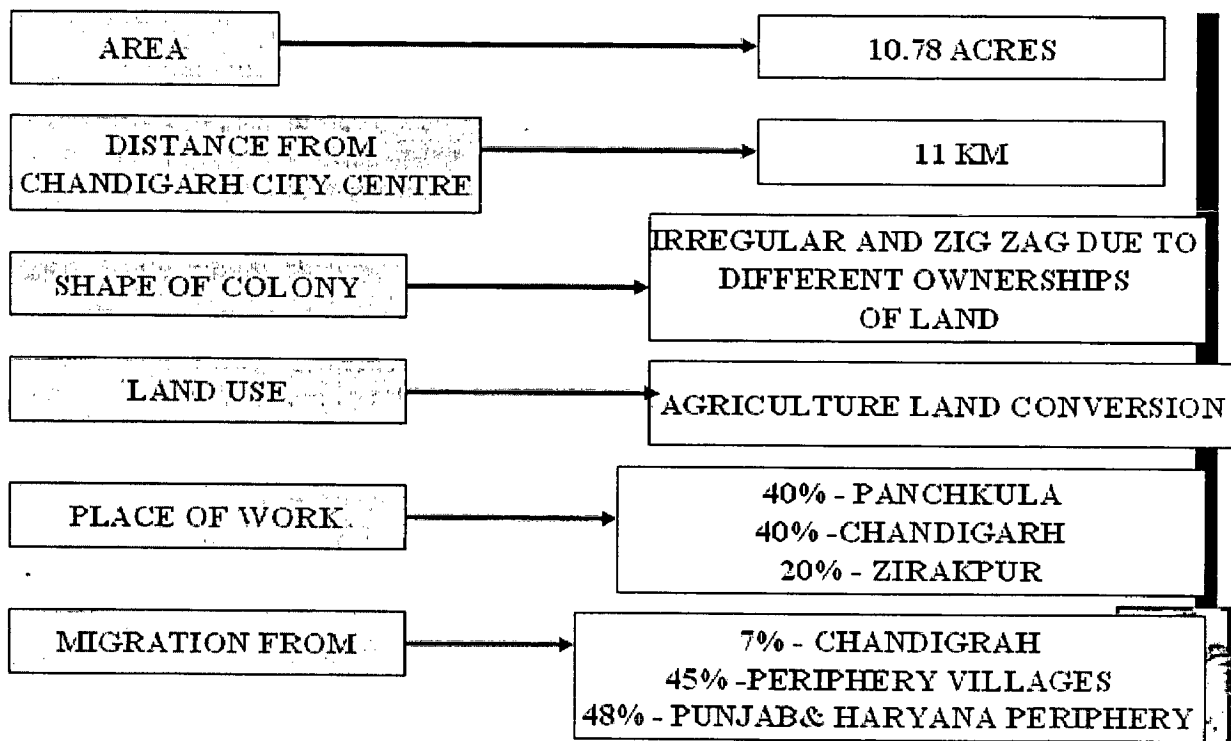
Fig 3.1.6; Description of new garden colony

## INFERENCES

- ❖ Haphazard development creating more chaotic situation, leading to huge migration from villages to fringe areas and creating more pressure on urban core.
- ❖ Unorganized infrastructural facilities leading to depletion of natural resources and degradation of environment leading to traffic congestion problems because of huge mobility and influx of people.

### Silver City Extension

Silver City Extension is another real estate project of repute Silver City Construction Limited, a company vested with vast experience in construction and development projects. The Silver City Extension is the outcome of years of experience and thought process, aimed at fulfilling the requirements for practically and aesthetically developed housing projects. Silver City Extension is the result of the increasing need for luxurious housing needs



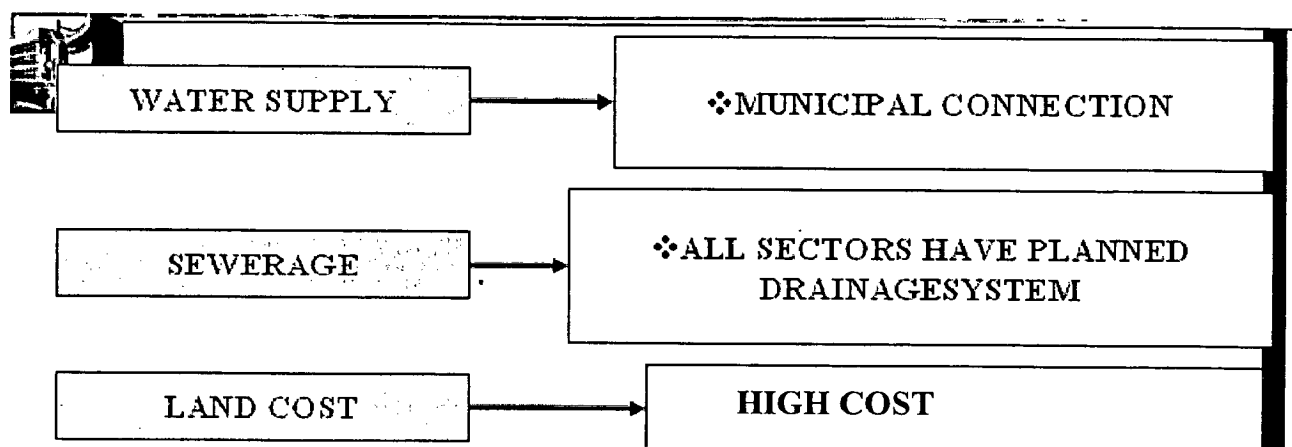


Fig 3.1.7; Description of Silver city Extension

## INFERENCES

- ❖ Planned townships itself becomes an identical urban area with all basic amenities.
- ❖ But the same problem of high land cost and taxes discourages people to get settled in these settlements and they get attracted towards other peri urban areas.
- ❖ These kinds of development leads to increasing the problem, the concept of counter magnets are not served since the employment opportunities are not provided which keep continuing the mobility and further problems.

## Bapu Dham Resettlement colony

It is planned colony with residential sectors in the vicinity of Chandigarh.

Land use is converted from agricultural to residential land use. remodeling the Bapu Dham Colony and to transform it as a pilot project. He told them to take a leadership role in checking unauthorized structures and encroachment in the colony, as these are the major hindrances in the process of development.

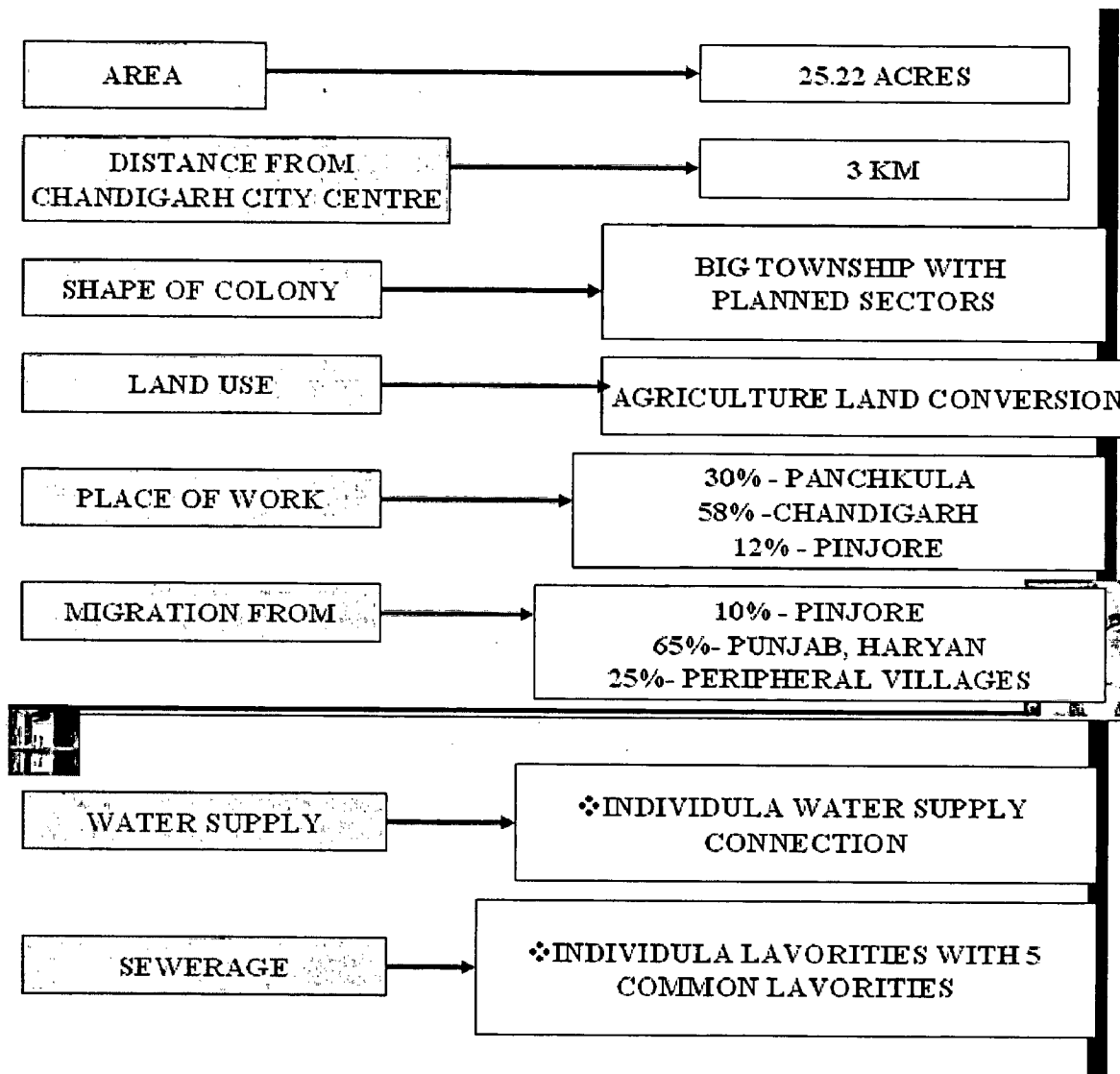


Fig 3.1.8; Description of Bapu Dham Resettlement colony

### 3.1.12 Conclusions

- ❖ In all four development analysis panchkula score highest score in all amenities but undesirable because of high land cost.
- ❖ Authorized colony is better than unauthorised colonies.
- ❖ Resettlement colony has better infrastructural facilities.

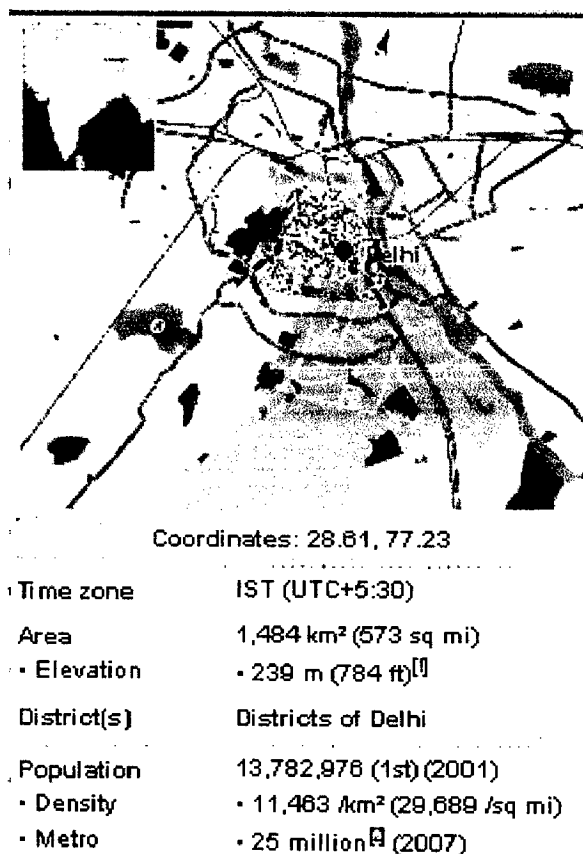
### **3.1.13 Recommendations**

- ❖ All the unauthorized construction that has taken place should be regularized. Compensation charges should be levied.
- ❖ Considering the existing and future requirement of rural settlements lying in the periphery should be provided with compact and contiguous belt of land around the villages ‘phirni’ to cater the infrastructure needs.
- ❖ Private housing schemes to be allowed with on site infrastructure facilities.
- ❖ Master plan of the city should detail out the periphery zone with development rules and controls and should plan it as integral part of the main city area.
- ❖ The concept of free economic zone (FEZ) should be scrapped to save larger area from further unplanned growth.
- ❖ Up gradation of available infrastructure in the periphery including road network, water supply, sanitation, in order to promote better quality of life within rural settlements to minimize out migration and to reduce the burden on mother city.
- ❖ Integration of all three state governments to have a comprehensive plan for the periphery without any discrepancies.

### 3.2 NEW DELHI

#### 3.2.1 Introduction

- NCTD AREA; 1484 SQKM
- RURAL; 783 SQKM
- URBAN; 700 SQKM
- MAX. LENGTH; 51.9 KM
- MAXIMUM WIDTH; 48.48 KM
- DUAL CORE; HERITAGE AND ADMINSTRATIVE SET UP
- FORM; RING AND RADIAL PATTERN
- TOTAL NO. OF VILLAGES; 1951 – 304  
1971 – 243,  
2001 – 209
- SATTELITE TOWNS; FARIDABAD AND GURGAON



Fig; 3.2.1; Statistics of Delhi

Table 3.2.1; Constituents of NCT of Delhi

Components of Delhi Urban Area	Description
PLANNED AREAS	The planned area of Delhi include (i) Influence area along MRTS and Major Transport Corridor; (ii) Lutyens Bunglow Zone; (iii) Chanakyapuri area; (iv) DIZ area; (v) Mata Sundari Area; (vi) Civil Lines Bunglow area; (vii) Other part of NDMC area; (viii) Planned built-up housing; (ix) Planned (Hierarchical) Commercial Area; (xii) Planned Industrial Area
SPECIAL AREAS	Special areas as defined on the plan cover about 2600 ha and have been divided into three separate parts (i) Walled City; (ii) Walled City Extension and (iii) Karol Bagh. These are characterized by a mix of different land uses and have similarities in built form.
UNPLANNED	The unplanned areas are distributed homogenously across the urban

Components of Delhi Urban Area	Description
AREAS	form. These areas are (i) Slum & JJ Clusters; (ii) Resettlement Colonies; (iii) Urban Villages; (iv) Unauthorized Colonies; (v) Informal Shopping Areas; (vi) non conforming Industrial areas. These areas provide substantial housing stock; commercial and industrial development.
URBAN EXTENSIONS	The urban extensions are peripheral areas which experience pressure of development. These areas comprise of villages, unauthorized colonies and JJ clusters. As per MPD-2021, 29 lakh population already exists in these areas. The urban extensions where development processes have been initiated are Dwarka, Rohini Phase III, IV and V and Harela.

	1991	1981	2001
MCD AREA	1397.3	6899	11244
Walled City Area	11.6	582	570
Walled City Extension	23.0	568	624
Rest of MCD Area (including Urban Extn. and Rural areas)	1362.7	3768	8049
NDMC AREA	42.7	496	587
DELHI CANTONMENT BOARD	43.0	NA	NA
NCTD AREA	1483	-	-

Source: (i) Master Plan of Delhi-2001 & 2021; (ii) Status Report for Delhi-21, De Environment and Infrastructure Improvement Project (DUEIIP), January 2001

Table 5.2: Delhi Area Statistics

S. No.	Item	Area (Sq. kms)
1.	Total Area	1483
2.	Urban Area*	701.62 (47.3%)
3.	Natural Features to be Conserved**	195.09
4.	Balance Area Available for Urbanisation	586.29
5.	Addl. Area Proposed for Urbanisation (2021)***	276.29
6.	Proposed Urban Area (2021)	977.91 (66%)

As per IRS-IC LISS 3 Satellite Data

Including forests, ridge, rivers, wildlife sanctuaries, other water bodies and dra

\* Preliminary estimate, MPD 2021

Fig 3.2.2 Components of Delhi urban area



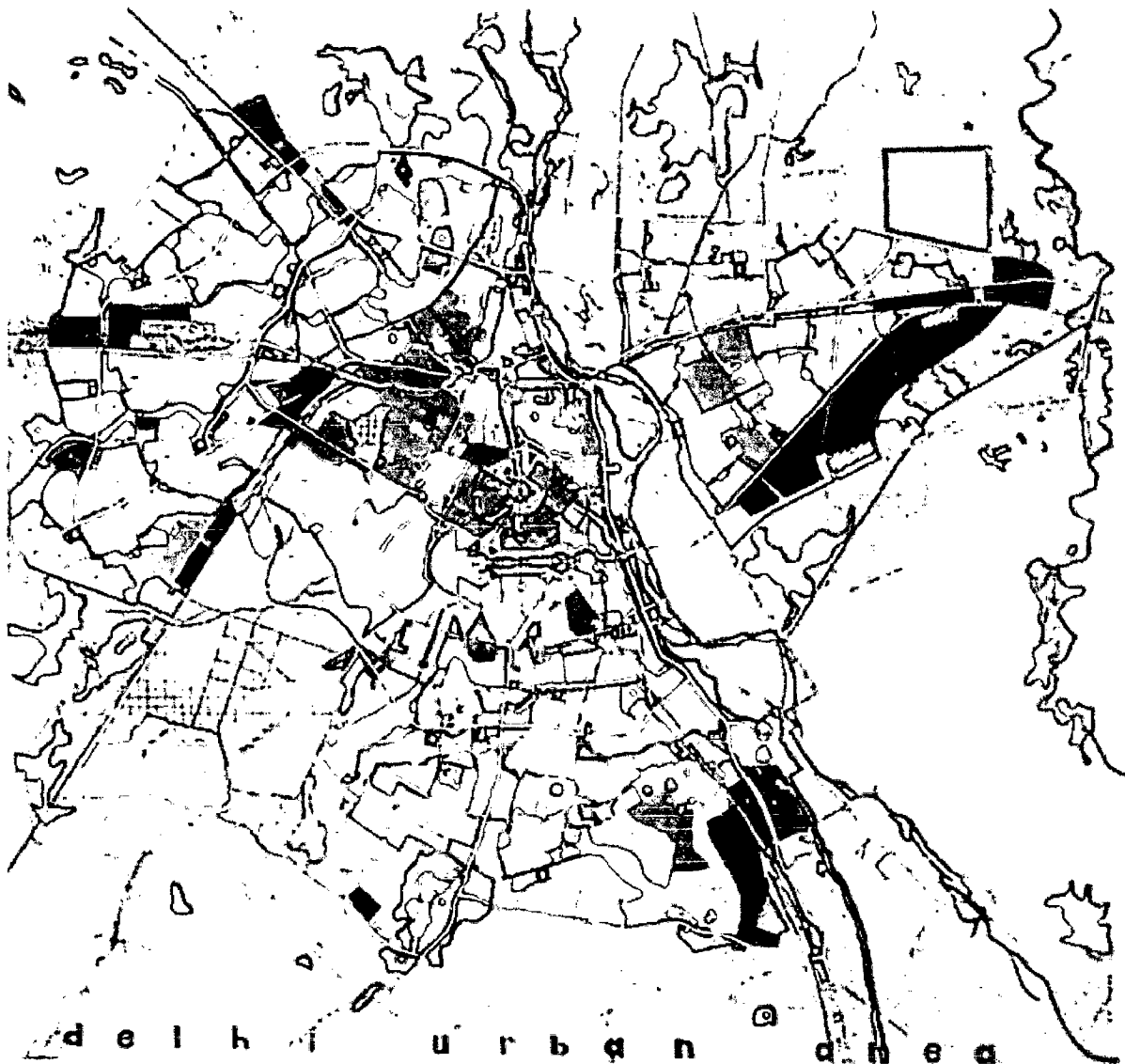
### **3.2.2 Recommendations for green belt, MPD-1961**

- ❖ For the development of rural areas outside the urbanisable limits of 1981, MPD 1962 recommended 8 large divisions referred to as rural district centres;
  - Ujwa
  - Najafgradh
  - Palam
  - Nangoli jat
  - Bawana
  - Narela
  - Shahdra
  - Mehrauli
  
- ❖ Expected that each rural district centers will be developed into a small rural township by 1981 with a population from 7000 to 10,000.

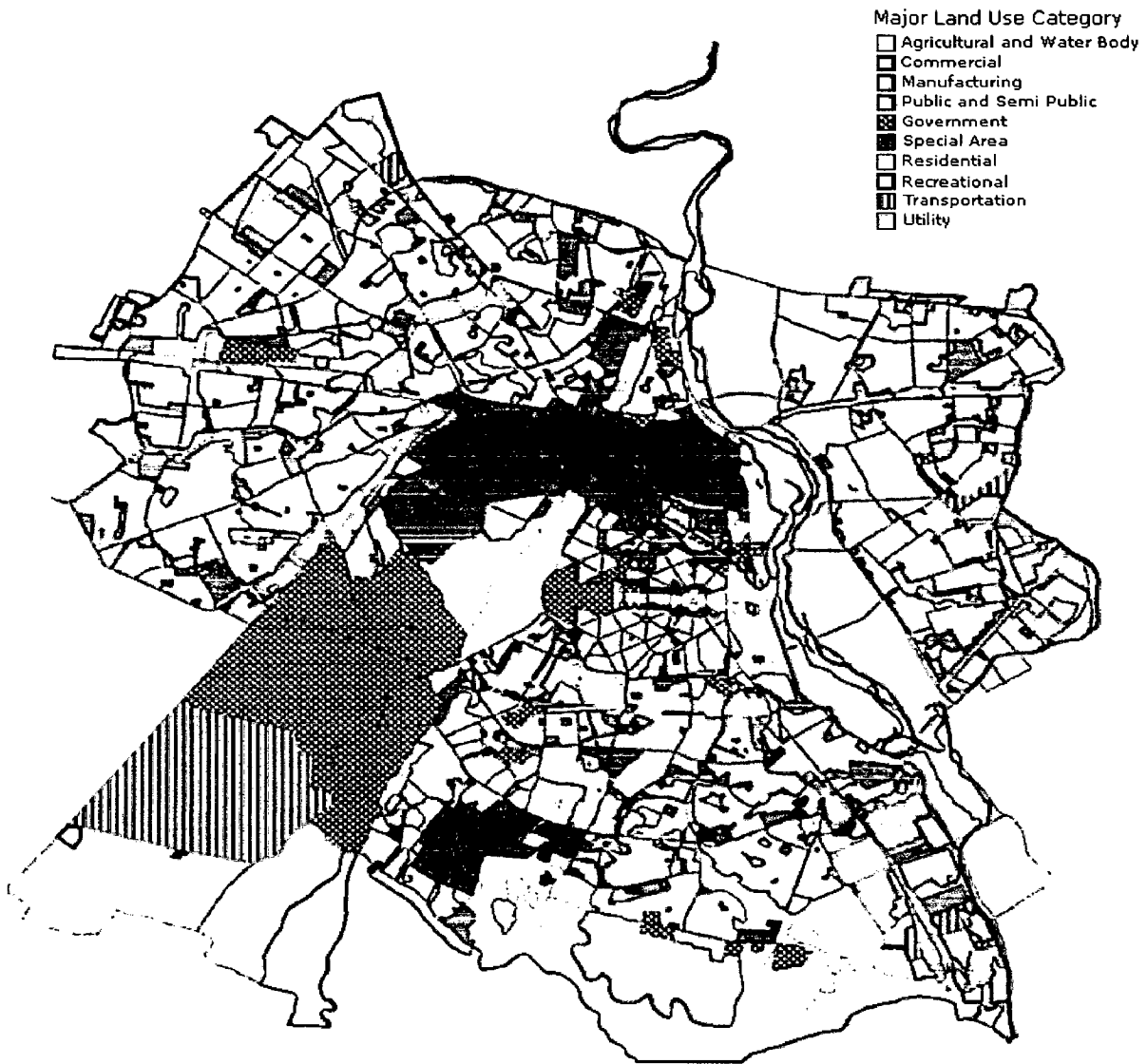
### **3.2.3 Recommendations for green belt, MPD- 2001**

- ❖ Considerable part of green belt proposed in first master plan was utilised for urban extension both for planned and unplanned development, the concept was modified to meet the new situation.
  
- ❖ Green belt of 2km wide all along the union territory proposed.
  
- ❖ Lot of development took place along eastern, western and southern corridor.
  
- ❖ Proposal of two growth centers with community facilities and rural industrial facilities in Bhaktawarpur, Bhawana, Jharoda Kalan, Dhama, Chawla, Jagatpur, Ghoga, Qutub garh mitaron and Ghumanhera.

- ❖ Road linkages between these growth centers were also proposed to be improved.
  
- ❖ MPD 2001 Population (2001) – 121 lakhs  
DUA (2001) – 81 lakhs  
Rest 40 lakhs for urban extension



**Map 3.2.1; Delhi urban area**



Map 3.2.2; Master plan 2001 New Delhi

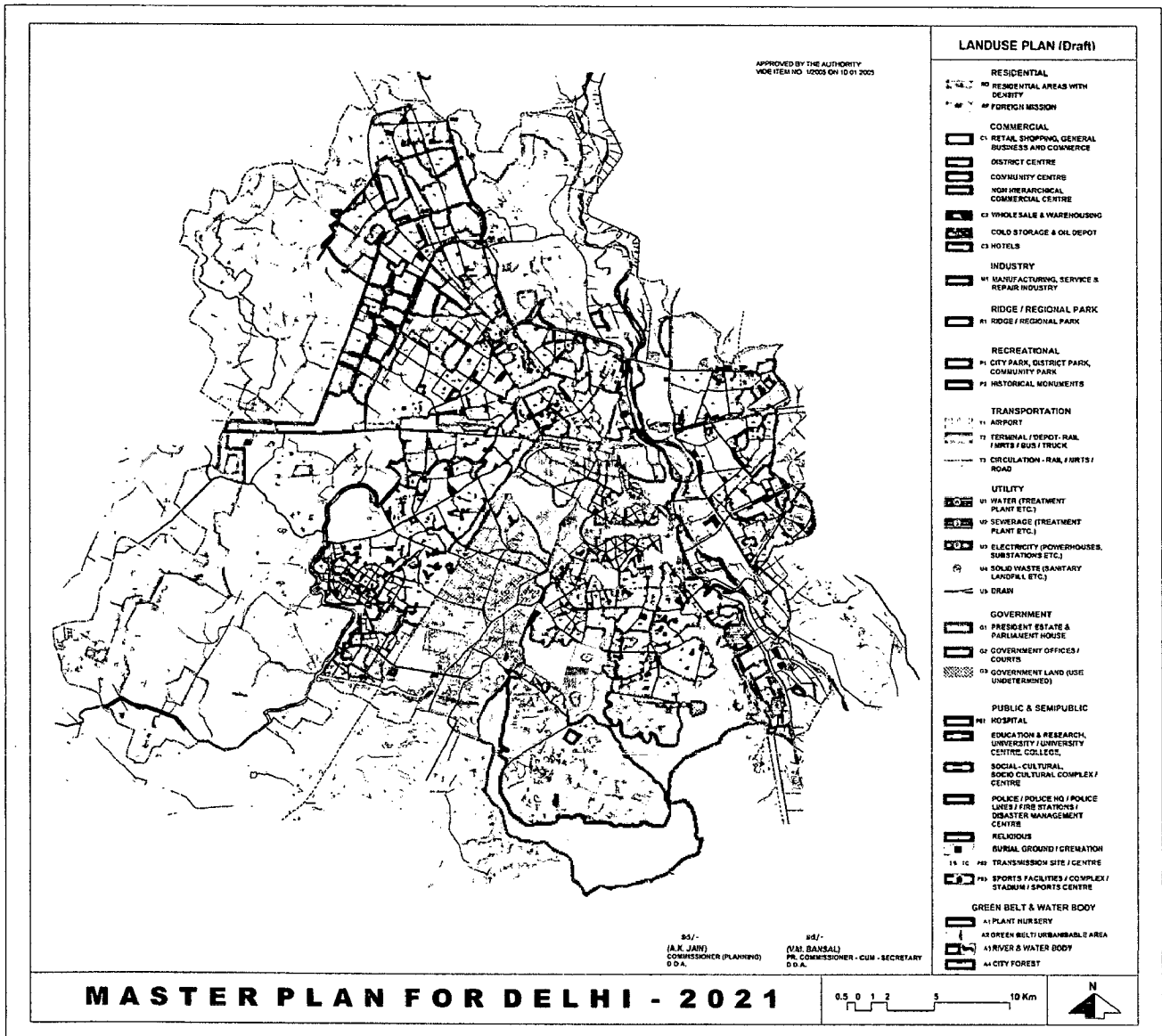
### 3.2.4 Recommendations for green belt, MPD - 2021

- ❖ A green belt of the depth of one village according to the land revenue records to be developed all around the Capital. This was an independent proposal that was later incorporated in the draft and then in the final Master plan
- ❖ The Delhi Master Plan (National Capital Region Planning Board 1986) envisages a new layer of planning that would cover these ‘satellite towns’ in the Delhi Metropolitan Area (DMA). The DMA consists of the present NCT with Gurgaon, Faridabad, Ghaziabad, Bahadurgarh, and Kundli.

### **3.2.5 Impact of fringe development**

- ❖ This leads to a mixed land-use pattern characterized by a rather haphazard pattern of the following types of built-up land in recently urbanized areas of Delhi:
  - Formal housing ‘colonies’<sup>38</sup>
  - Unauthorized settlements
  - Squatter settlements or slums
  - Planned industrial/commercial/institutional areas
  - Unplanned or unauthorized industrial and commercial areas
  - Urban villages
  
- ❖ **Haphazard growth** of the city due to lack of provision of developed land and infrastructure. Areas include urban villages; resettlement colonies and unauthorized Colonies.
  
- ❖ **Rate of Unauthorized developments** and illegal land subdivisions are increasing in urban periphery and village settlements.
  
- ❖ **Lack of parks and open spaces.**
  
- ❖ **Violation of rules, byelaws** by the public and residents of walled city- leading to the loss of heritage in the walled city.
  
- ❖ **Overcrowding of businesses** and people in the walled city.
  
- ❖ Increasing gap between demand and supply of appropriate housing and infrastructure.
  
- ❖ Encroachments in urban villages.
  
- ❖ Exploitation of agricultural land for unauthorized development.

- ❖ Inadequate supply of appropriate commercial and industrial space, resulting in non-conforming land uses.
- ❖ Lack of Linkage between Physical Planning Strategy and Financial Planning



Map 3.2.3; Delhi Master Plan 2021

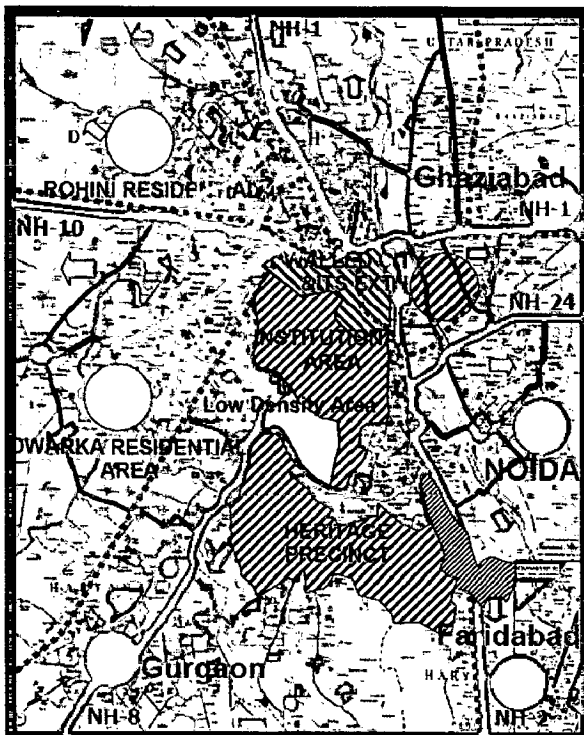
3.2.6 Recommendations for planned fringe development

Sectors	Recommendations
Development of New Townships	<ul style="list-style-type: none"> <li>DMA Towns: Faridbad, NOIDA, Ghaziabad, Kundli, Bahadurgarh and Gurgaon</li> <li>Priority Towns (Regional Centres): Palwal, Khurja, Hapur, Meerut, Bulandshar, Panipat, Rohtak, Dharuhera, Bhiwadi, Rewari, Alwar</li> <li>Counter Magnet Towns; Patiala (Punjab); Bareilly (Uttar Pradesh); Gwalior (Madhya Pradesh), Kota (Rajasthan), Hissar (Haryana)</li> <li>Sub- Regional Centre: Shikarpur; Philhua; Tijara; Khairthal; Bahrer; Bawal; Hathin; Hodal; Jhajjar and Sonipat</li> </ul>

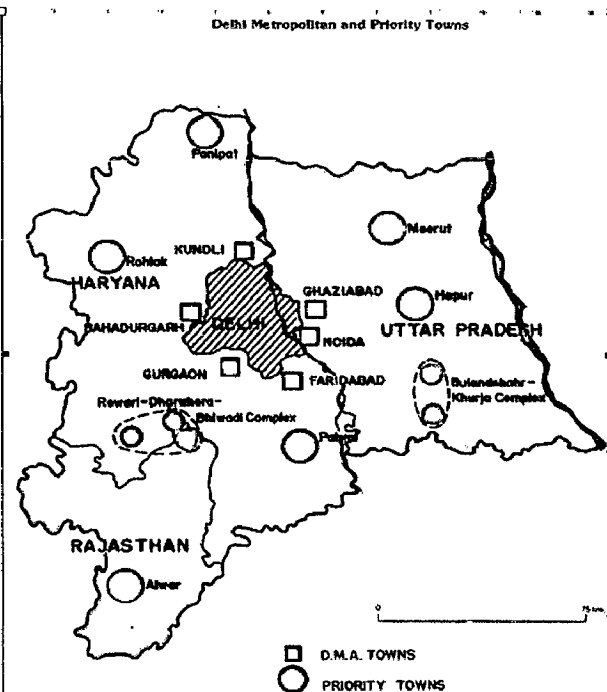
  

UPGRADATION OF UNAUTHORISED COLONIES		
Facilities	Charges (Rs per m <sup>2</sup> )	
Power	Rs 6600 Per KV	The cost for regularization of 100 sqm of plot is Rs 1lakh. Delhi Government had invited application from residents associations for all unauthorized colonies in October 2004, through a public notice. The applicants were asked to submit their area plans. 1153 applications were received out of 1432 unauthorized colonies.
Water	Rs 220 per m <sup>2</sup>	
Sewerage	Rs 355 per m <sup>2</sup>	
Roads and Drains	Rs 400 per m <sup>2</sup>	
Total Fixed Charge	Rs 1060 per m <sup>2</sup>	

Fig 3.2.3 Recommendations for fringe area of fringe area of Delhi



Map 3.2.4; DMA towns of Delhi



Map 3.2.5; Priority towns of NCT Delhi

### **3.2.7 Inferences lay after development analysis**

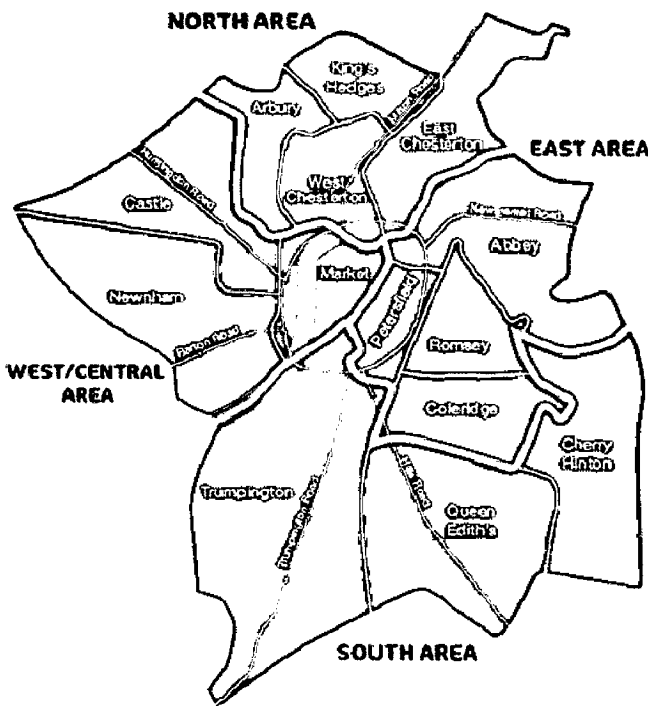
- ❖ The growth of potential along 5 major national highways is not tapped.
- ❖ A lot of population pressure on green belt
- ❖ The permanent agriculture belt was used for extension
- ❖ The belt was shifted not retained.
- ❖ 6 green centers, 9 growth points and 24 basic villages in the belt.
- ❖ New towns act provided for creation of development corporations to plan, build and manage the new towns.

### 3.3 CAMBRIDGE CITY

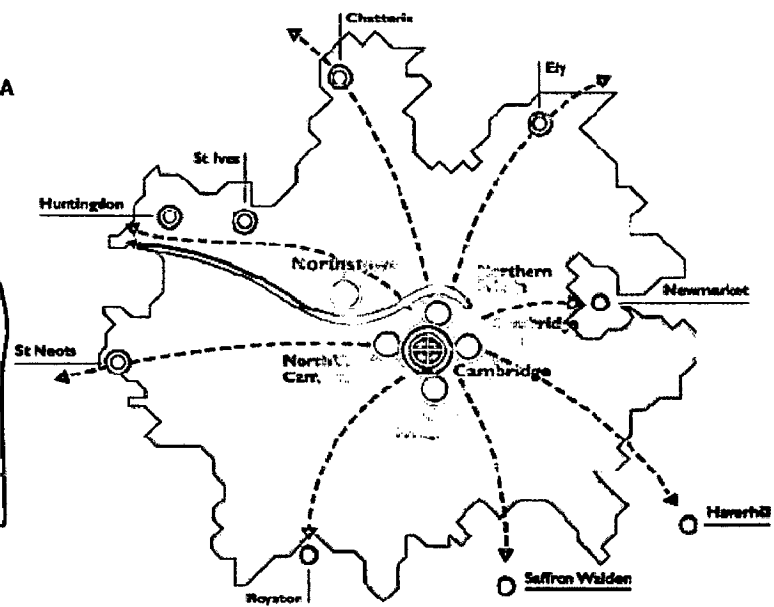
#### 3.3.1 Introduction

Cambridge City is a town in Jackson Township, Wayne County, Indiana, United States. The population was 2,121 at the 2000 census.

As of the census of 2000, there were 2,121 people, 904 households, and 602 families residing in the town. The population density was 2,030.6 people per square mile (787.4/km<sup>2</sup>). There were 956 housing units at an average density of 915.3/sq mi (354.9/km<sup>2</sup>). The racial makeup of the town was 99.34% White, 0.33% African American, 0.09% Asian, 0.05% Pacific Islander, 0.14% from other races, and 0.05% from two or more races. Hispanic or Latino of any race were 1.04% of the population. There are 904 households



Map 3.3.1; Location of Cambridge city



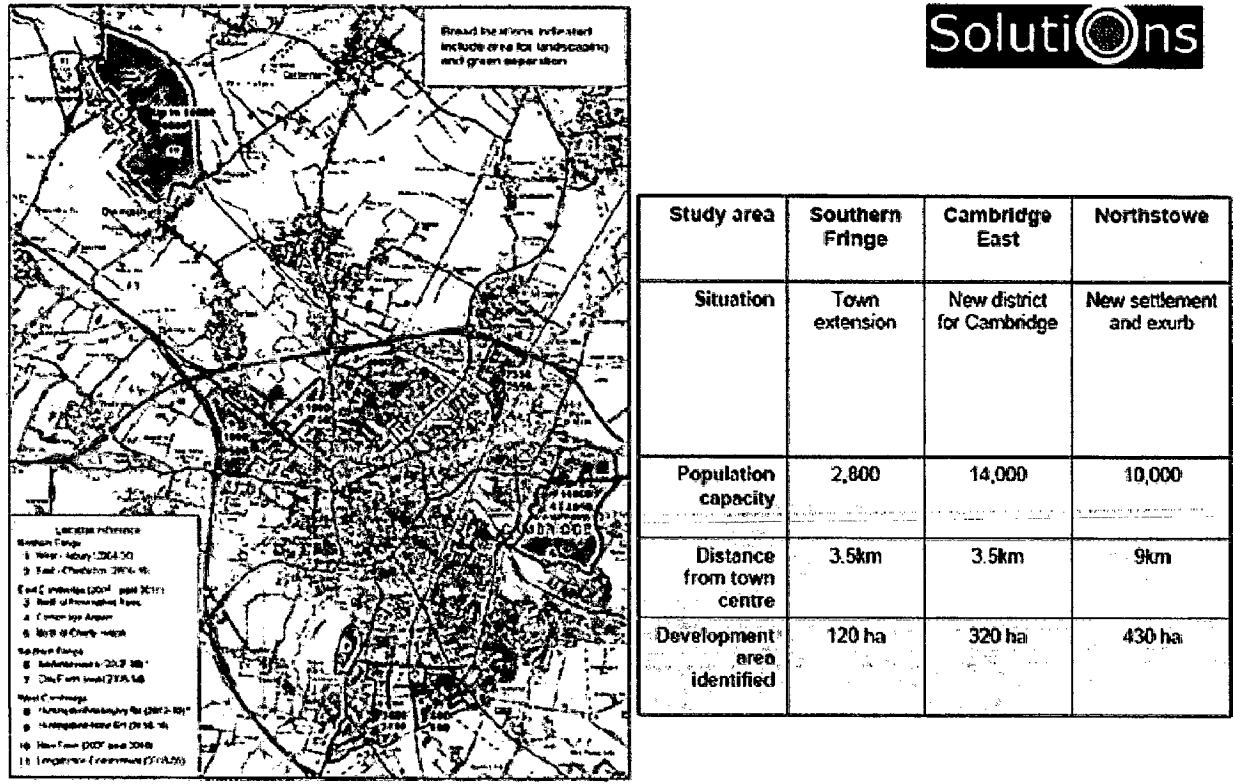
Map 3.3.2; detail map of Cambridge city

<b>Total population</b>	<b>113,800</b>
<b>Core</b>	<b>Educational city</b>
<b>Form;</b>	<b>Radio centric</b>



Development in the city is restricted by the green belt around the city.

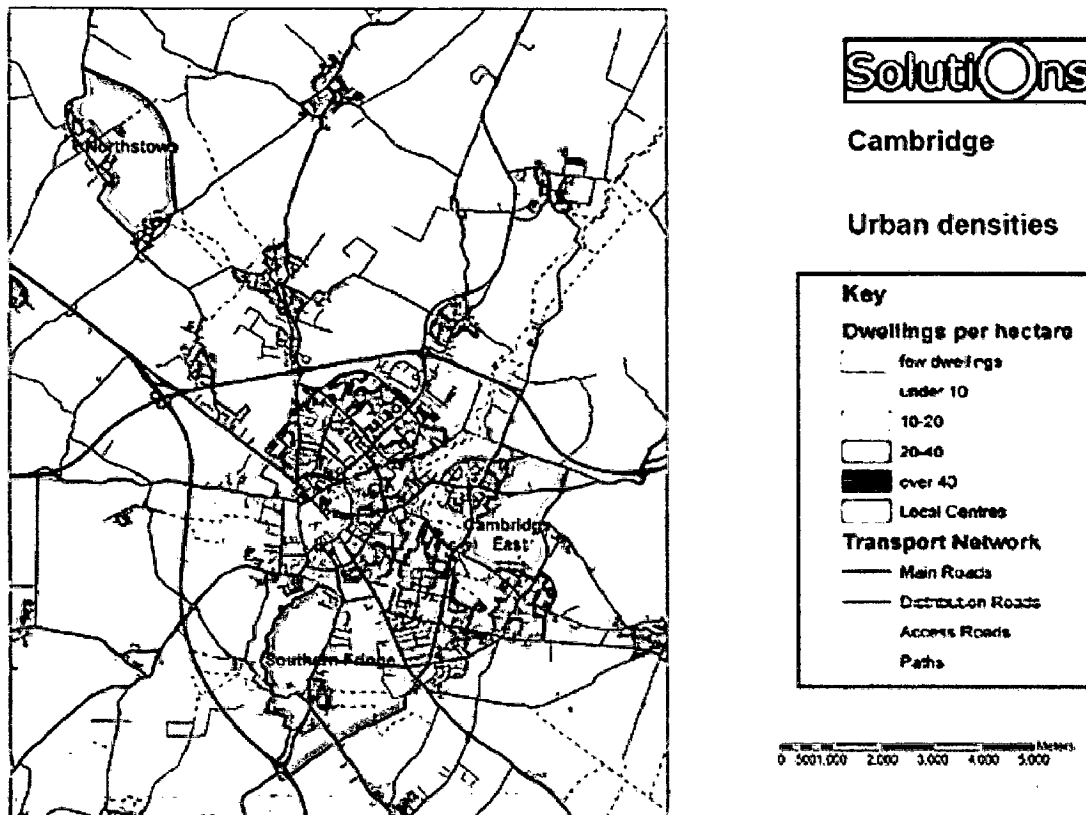
### 3.3.2 Fringe area statistics



Map 3.3.3; Cambridge fringe area statistics

This has outlined the broad and specific planning and design approaches to the development of the Southern Fringe.

The planning of the five principal sites is both complex and lengthy and will be done over several years. The ADF should act as a strong guide for future planning and negotiation and will support the detailed review of outline and detailed planning applications once submitted in 2006 and beyond.



Map 3.3.4; Cambridge fringe density distribution

### 3.3.4 Factors responsible for growth of city

#### EXPANSION OF EMPLOYMENT;

- Trinity Science Park and other employment clusters were established, this led to so called Cambridge phenomenon.
- The surges of high –tech firms have with 30,000 employees in and around the city, making it Europe’s prime area of growth.

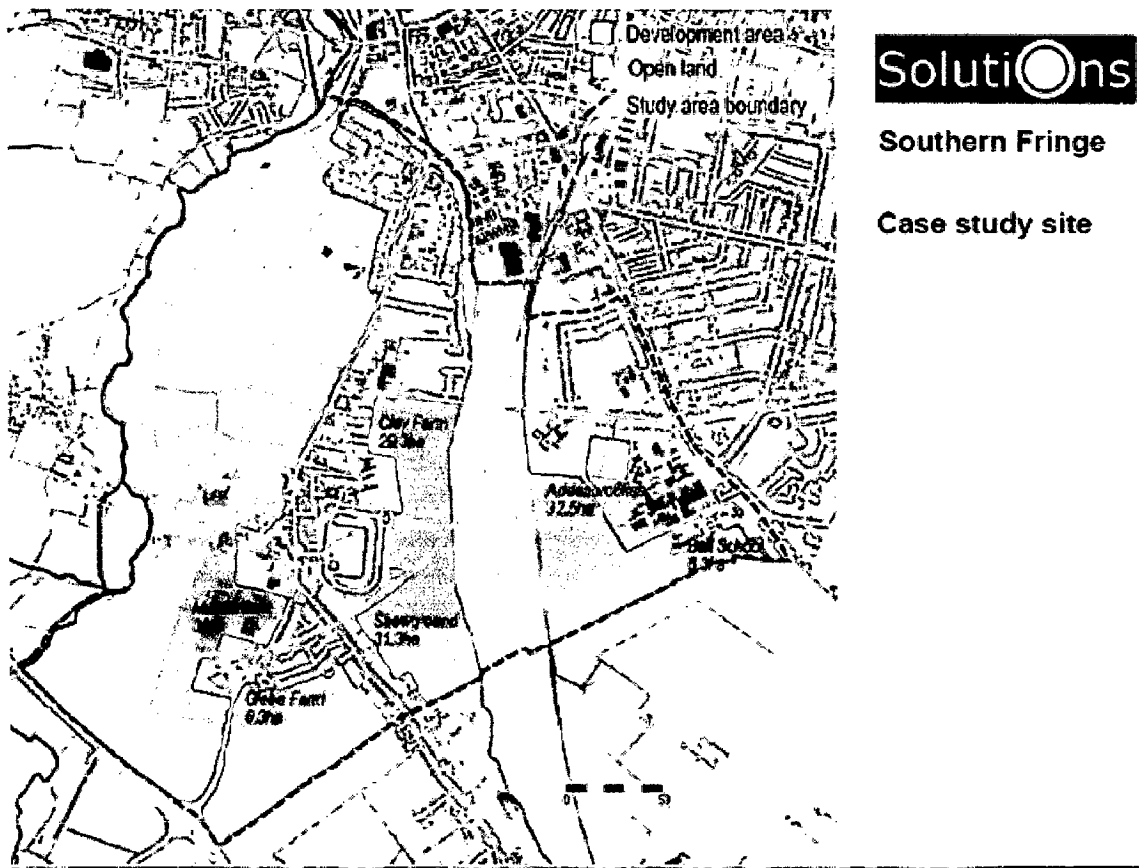
#### INCREASE IN PROPERTY PRICES;

- The increase in the number of jobs and households within a restricted land supply has led to rising property prices.
- People employed in the city and their fringes have been forced to live beyond the green belt where cheaper accommodations are available.

## POPULATION GROWTH

- Population growth in surrounding villages and markets town has been amongst the highest in the country

### 3.3.5 Study area; Southern Fringe



Map 3.3.5; *Southern fringe Cambridge map*

The vision for the Southern Fringe is to create a distinctive new urban extension to the City to meet a range of needs for the Cambridge area, including additional housing close to an existing employment area, new employment opportunities, the expansion of clinical facilities and biomedical and biotechnology activities, related higher education and research institutes, and improved access to the countryside. The extension will incorporate open space to serve the residents of the new development,

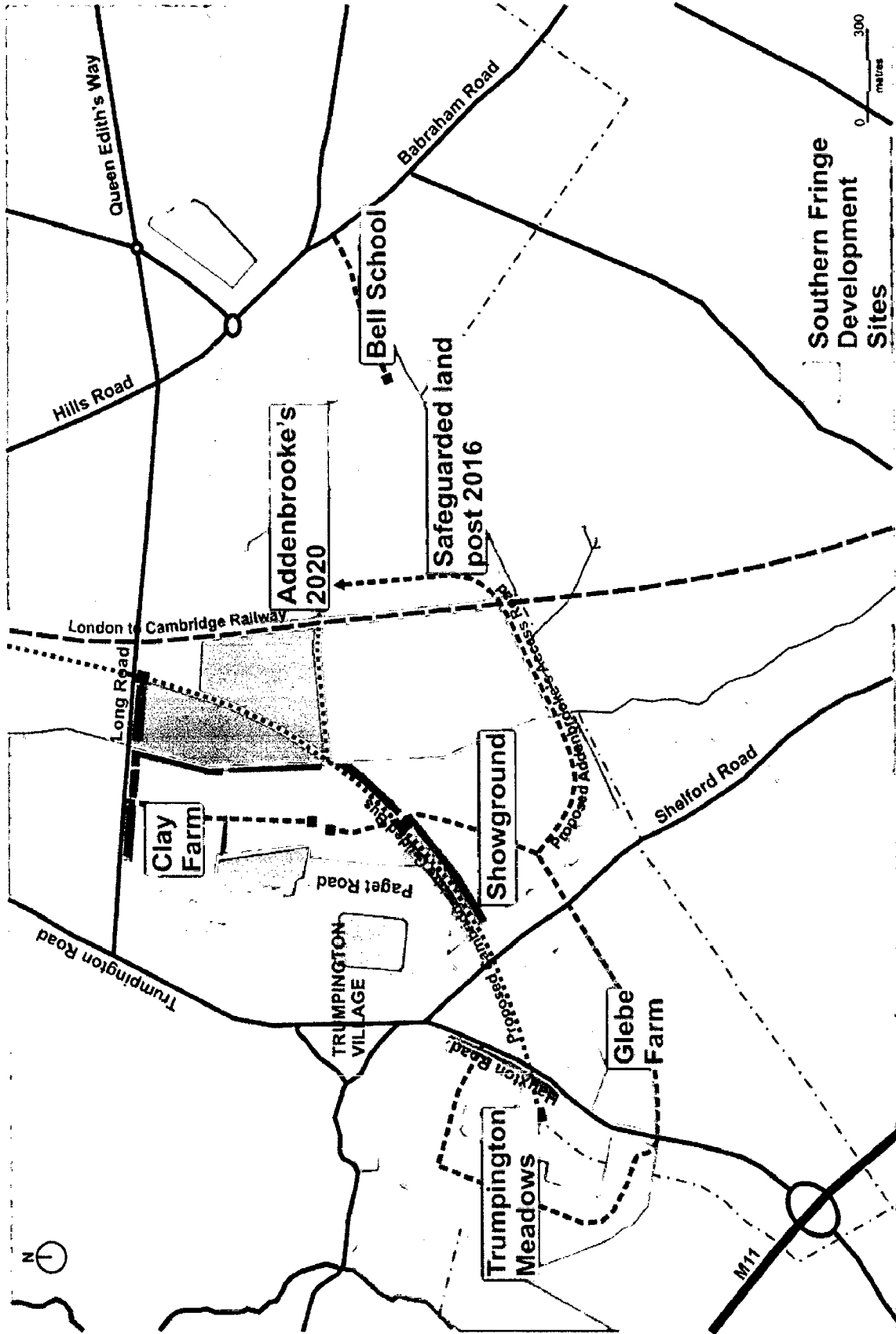
Cambridge City and South Cambridgeshire and opportunities will be taken to enhance amenity, biodiversity and access to the Green Belt.’



**Fig 3.3.1;** *Pictures giving the view of southern fringe Cambridge*

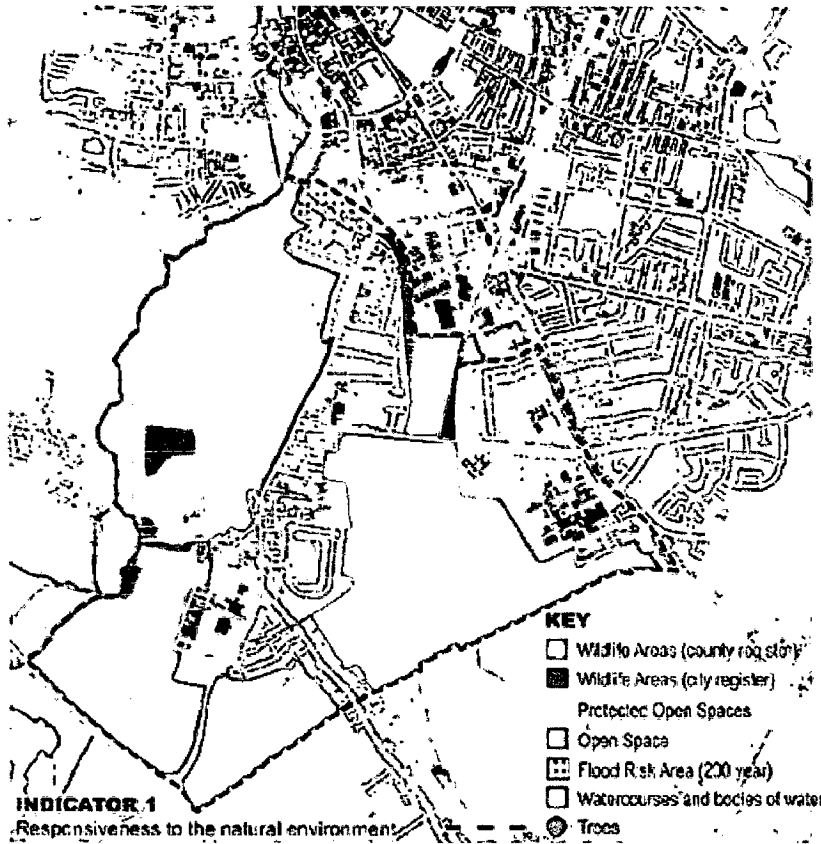
**The Southern Fringe is provided with;**

- Around 65 hectares of housing, indicative capacity of 3,320 dwellings
- Leisure and recreation facilities
- Education including a up to 4.5 hectares for primary schools, and a site for a secondary school
- Up to 10.3 hectares for NHS and private clinical development. 2.2 hectares of this area is reserved for the possible relocation of Papworth hospital.
- Up to 10.8 hectares of land will be safeguarded until after 2016 for future clinical development and research uses, the respective proportions being determined at Plan Review.
- Up to 14.4 hectares of employment land for commercial development, comprising biomedical and biotechnology research and development activities



Map 3.3.6; Southern fringe development sites

**Land use of southern fringe**



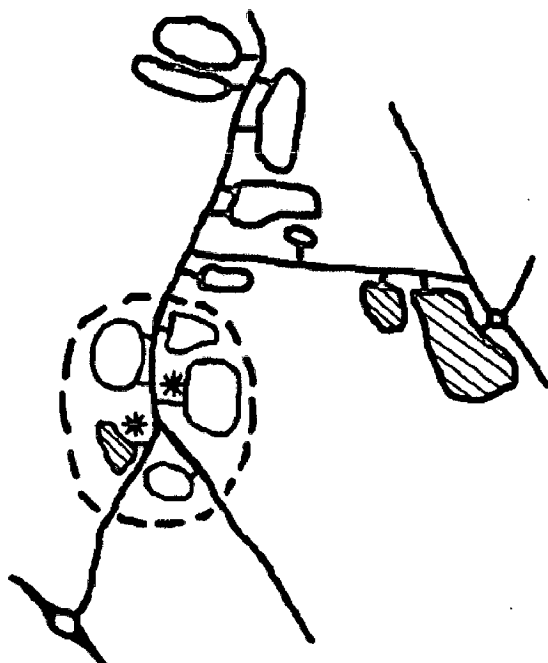
**SolutiOns**

Southern Fringe

Screening criteria

Map 3.3.7; land use structure of southern fringe area

**Existing growth patterns in southern fringe**



**SolutiOns**

Southern Fringe

Existing patterns

Key

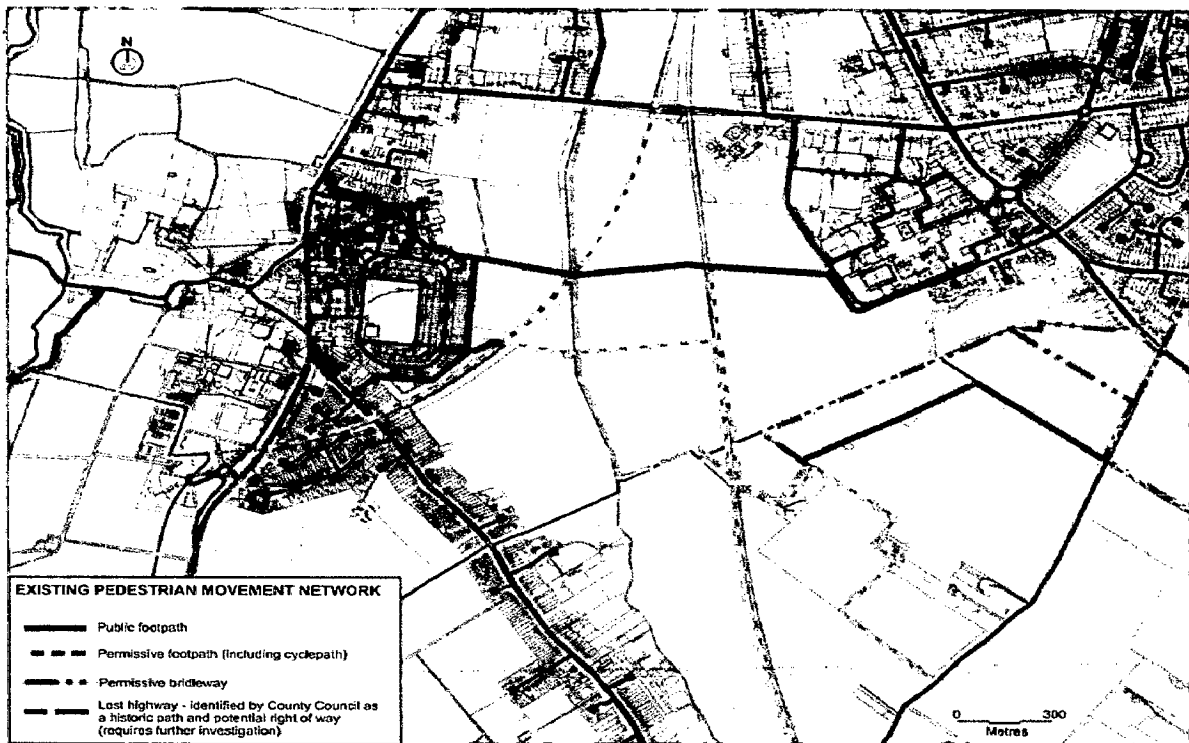
Single use pods  
(Hatched where non-residential)

Closed cell neighbourhood

Open cell neighbourhood with some pods internally

Map 3.3.8; Growth pattern in southern fringe

### Existing transport network of southern fringe

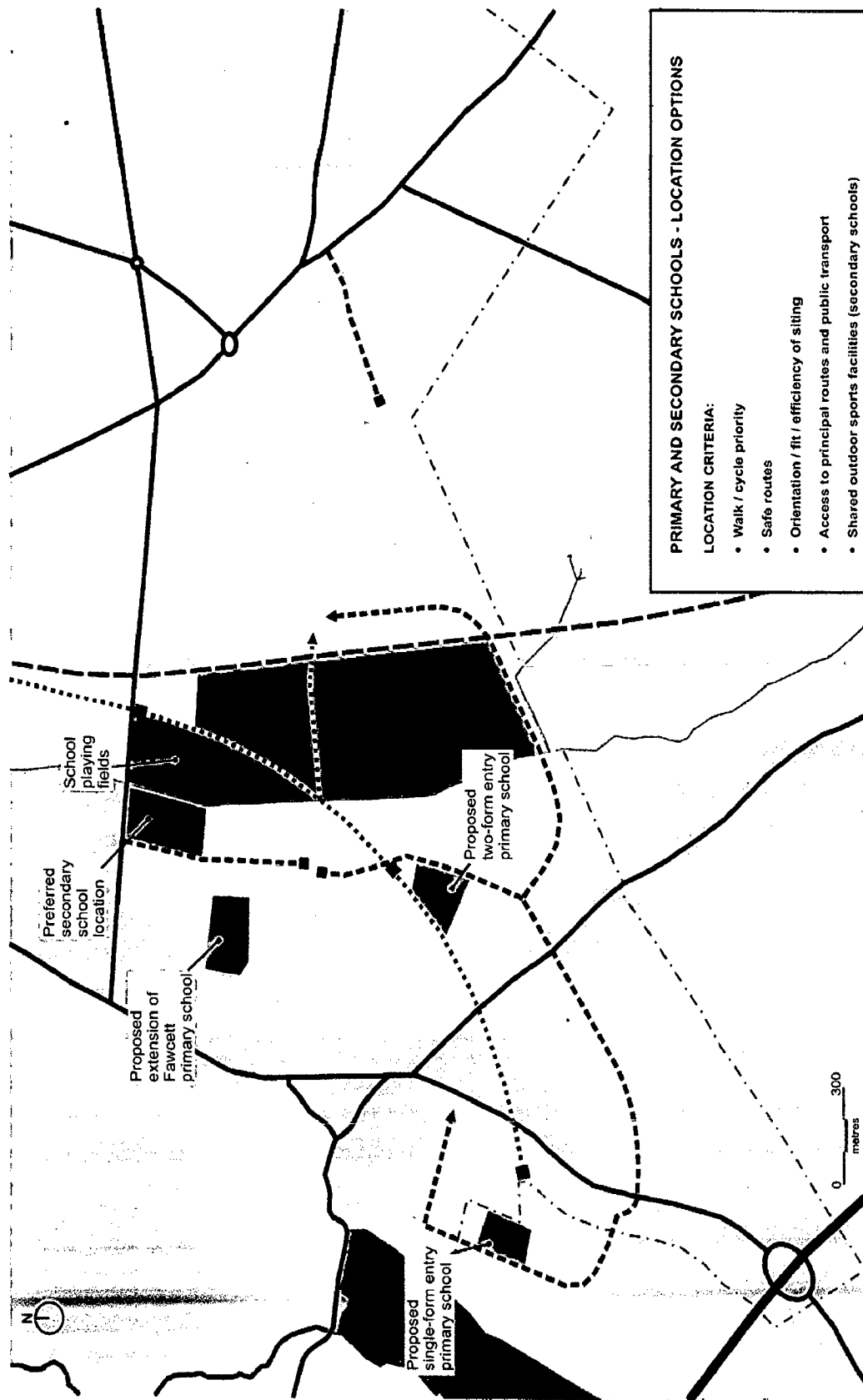


**Map 3.3.9;** *Existing transport network*

The Southern Fringe is currently served by three principal vehicle routes. These include Trumpington High Street and the two routes southward i.e. Shelford Road and Hauxton Road, Long road on the northerly edge and Hills Road/Babraham Road which comprise routes to the south east.

Cycle routes currently follow the principal vehicle routes, as well as following more informal paths outside of the developed areas. Additional routes are being proposed Within the Southern Fringe.

Current pedestrian routes within the Southern Fringe include public footpaths and permissive footpaths, cycleways and bridleways. One of the key public rights of way is the path connecting the Foster Road estate and Addenbrooke's Hospital.



Map 3.3.10; Existing community facilities network



### 3.3.6 Recommendations

#### Option 1 – Minimum Growth

This option exercises the idea that Cambridge should do nothing to encourage further growth of the city.

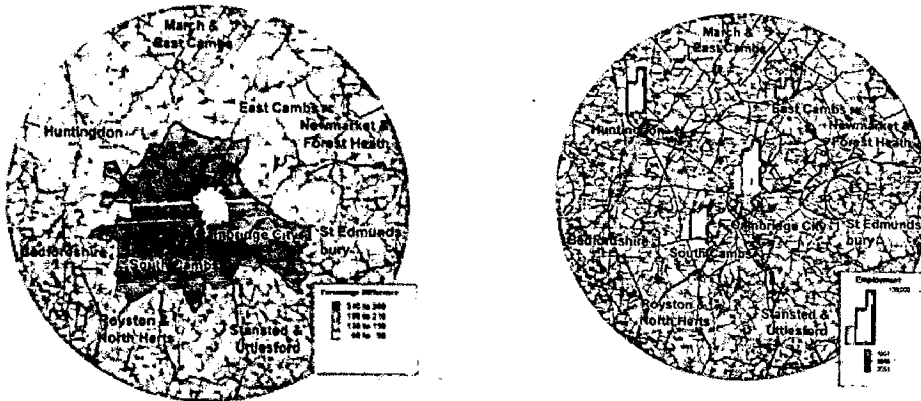


Fig 3.3.2; Minimum growth concept followed in southern fringe of Cambridge city

#### Option 2 – Densification

The option considers the impact of concentrating as much development as possible in the city of Cambridge.

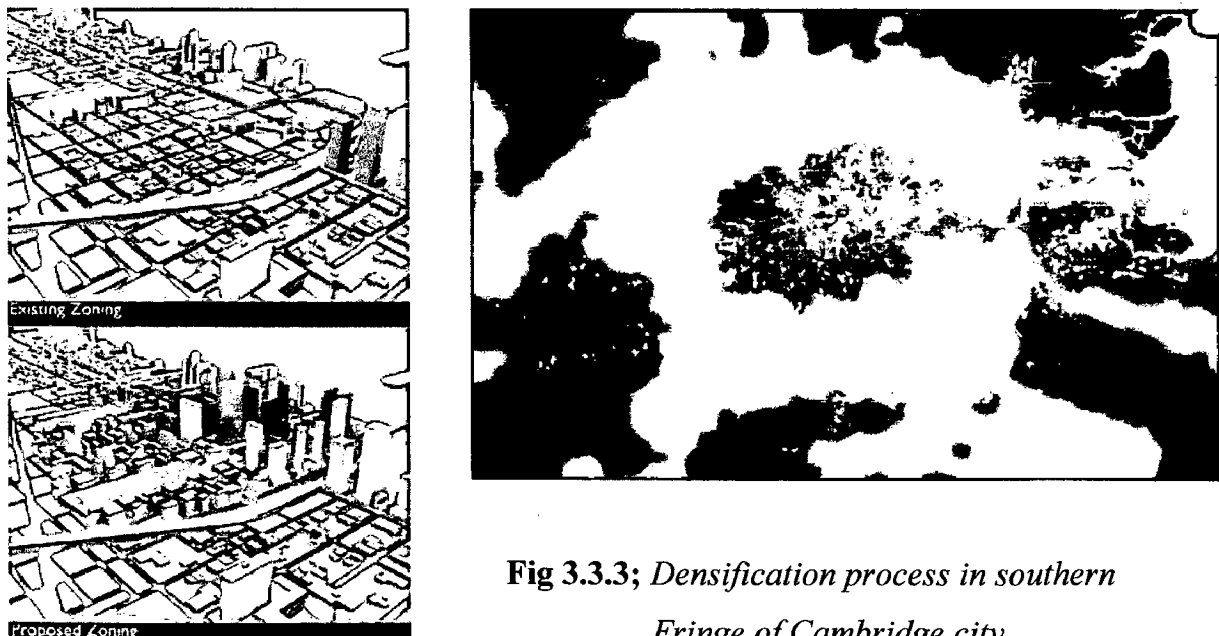


Fig 3.3.3; Densification process in southern Fringe of Cambridge city

**Option 3 – Necklace**

The option looks at concentrating development in the villages

**Option 4 - New Towns**

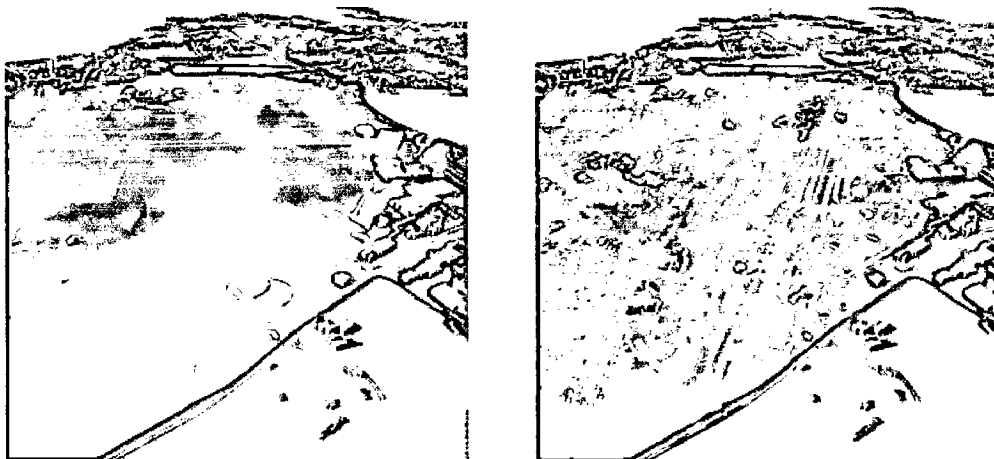
Development would be concentrated in a single location beyond the green belt



*Fig 3.3.4; New Towns process in southern Fringe of Cambridge city*

**Option 5 - green swap**

Development would be allowed in selected areas of the green belt which are of less scenic value and are not available for public use.



*Fig 3.3.4; Green Swap process in southern Fringe of Cambridge city*

## Option 6 – Transport Links

Development would be allowed in areas within easy access of public transport corridor.



**Fig 3.3.5;** *Transport Links process in southern Fringe of Cambridge city*

### 3.3.7 Guidelines formulated area Action plan

Maintain physical separation from surrounding villages

- Connect the development to green spaces
- Be an attractive feature in the landscape
- Respect and reinforce the local landscape
- Increase public access by walking, cycling and horse riding to the wider countryside
- Link to the urban fabric of Trumpington
- Be of distinctive urban character, providing a strong sense of local identity and well developed sense of community spirit
- Provide high quality housing

- Be an exemplar of sustainable living

### **3.3.8 Conclusion**

- It is interesting to point out that those options which involved big changes in the physical fabric of the region were not rejected outright because it became clear that they could improve the environment.
- A general consensus emerged on the direction of future development: the encouragement of knowledge based firms but within carefully considered.

## CHAPTER 4

### THE CONTEXT STUDY – FARIDABAD PROFILE

---

#### 4.1 Brief description of Faridabad city

It was founded in 1607 by Shaikh Farīd, treasurer for the Mughal emperor Jahāngīr, to protect the Delhi-Agra high road. It was constituted a municipality in 1867. A project for Pakistani refugee resettlement and light industrial development was initiated in the city in 1950. Faridabad is a local market for wheat, sugarcane, and cotton.

Now Faridabad is the most populated and industrialized city in the whole of Haryana. Faridabad alone generates about 60 percent of the revenues of Haryana with its large number of industrial units.

On agriculture front, Faridabad is famous for gears, refrigerators, shoes and tyres are other well-known industrial products of the city.

For ease of civil administration, Faridabad district is divided into five sub-divisions viz. Faridabad, Ballabgarh, Palwal, Hodal & Hathin. The Faridabad Municipal Corporation consists of Old Faridabad, Ballabgarh and NIT (New Industrial Township).

**Table 4.1; Faridabad statistics**

<b>Country</b>	India
<b>State</b>	<u>Haryana</u>
<b>District(s)</b>	<u>Faridabad</u>
<b>Population</b>	2,193,276 (2001) /km <sup>2</sup> (2,642 /sq mi)
<b>Area</b>	2,151.00 km <sup>2</sup> (831 sq mi)



**Map 4.1;** Map of Haryana locating Faridabad

#### **4.2 Historical growth of settlement**

Faridabad remained a small town until in 1947 it was developed as a planned city primarily to rehabilitate the refugees from the N.W.F.P. Pakistan. The main factors that encouraged the refugees to settle in Faridabad (until then a small, undeveloped town) and not in the nearby National Capital, Delhi can be analyzed as:

**Affordability:** Faridabad developed as a resettlement project through self-help groups and labor cooperatives for generating employment. Thus the high real estate values in the National Capital were a deterrent for the refugees to settle in Delhi.

**Desire for own community:** There was a lot of insecurity felt by the people as a result of the violent division of India into two separate countries of India and Pakistan. It generated, among the refugees, a desire of having their own closely knit community with the least amount of intermingling with the natives. Faridabad was a small town where the refugees could live in such a community among themselves.

**Nature of township intended:** The idea was to develop an industrial town to provide employment to the people. The highly populated National Capital would not have been a suitable place for setting up of an industrial town.

The New Industrial Township (NIT) was set up in 1950. The city gained much of its present status in the industry oriented 2nd Five Year Plan (from 1956 to 1961). The Faridabad Development Board was set up in 1966 to provide employment to all the new settlers. The city comprises of 3 towns namely: Old Faridabad, Ballabgarh and NIT Faridabad. Till 1971, all the 3 towns were having their own Municipalities. Faridabad Complex was constituted on January 15<sup>th</sup> 1972 under the Faridabad Complex Act 1971, which included these 3 towns along with 36 surrounding villages. The Municipal Corporation was constituted in 1994 under the Haryana Municipal Corporation Act, 1994. It became the only million plus city in the state of Haryana as per the 2001 Census.

### 4.3 Demography background

**Area** = 178 square kms.

**Population** (2001 CENSUS) = 10, 54981

**Projected population** (2011) = 15, 7,208

**Growth rate of population:** The growth rate of population in the city is 70% out of which only 2.5% is the natural growth rate, the rest being contributed by the migrating class. Presently 45% of the population is living in slums and squatters.

The growth of Faridabad has been a continuous process since independence. Faridabad city is a result of the decision taken after the Partition of the country to establish an industrial-cum-housing estate at Faridabad to relieve the pressure of population growth in Delhi and also to decentralize the location of industries.

**Table 4.2; Population growth of Faridabad**

YEAR	AREA (sq. km)	POPULATION	SLUM POPULATION		DENSITY (persons/sq. km)
			VALUE	%	
1961	178.24	56,000	--	--	314
1971	178.24	1,22,000	22,926	18.8	670
1981	178.24	3,27,000	68,157	20.6	1856
1991	178.24	6,17,717	1,76,667	28.6	3466
2001	178.24	10,54,981	4,91,131	46.5	5944

Source:  
Census  
Handbook of  
Faridabad,  
Statistical  
abstract of  
Haryana.

**Table 4.3; Population projections for Faridabad**

Method	Population projections			
	2001	2011	2021	2031
Polynomial 2 <sup>nd</sup> order method	1055938	15,96,403	22,54,233	30,28,501
Polynomial 3 <sup>rd</sup> order method		15,87,680	22,20,861	29,72,461
Arithmetic increase method		13,05,923	15,55,907	18,05,892
Incremental increase method		14,27,540	19,20,760	25,35,598
Geometrical progression method		21,69,481	44,57,313	91,57,787
Assumed projection		15,37,208	21,34,351	28,45,505

Source: Analysis

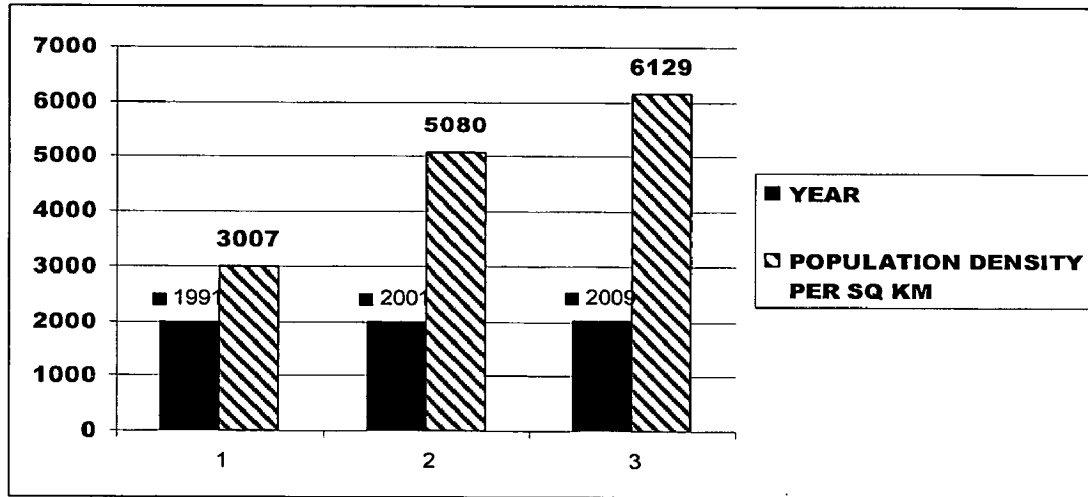
### Municipal area and population density

MCF was referred to as Faridabad Complex Administration (FCA) comprising the municipalities of Faridabad Township, Old Faridabad, Ballabgarh and 38 revenue villages. The present geographical area of Faridabad is 207.88 sq.km. and has remained thus since its inception as a Municipal Corporation. The density of the Corporation in 2001 was 5080 persons per sq.km.; in 1991, the density was 3007



persons per sq.km. As on date, the density of population in Faridabad city is estimated to be about 6129 persons per sq.km.

**Table 4.4; Population density of Faridabad**



Source; census 2001

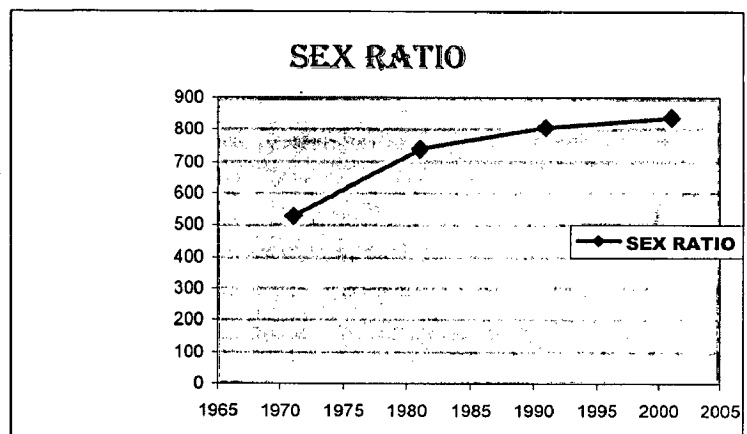
### Sex ratio

Due to selective in-migration of males in search of industrial employment the number of females with respect to the number of males decreased drastically. The state of Haryana as a whole has a sex ratio worse than the National average. Within Haryana, Faridabad has a sex ratio less than the state average. An adverse sex ratio further increases the male dominance in an already male dominated society. This male dominance is responsible for the increasing crime against women.

**Table 4.5; Sex Ratio of Faridabad**

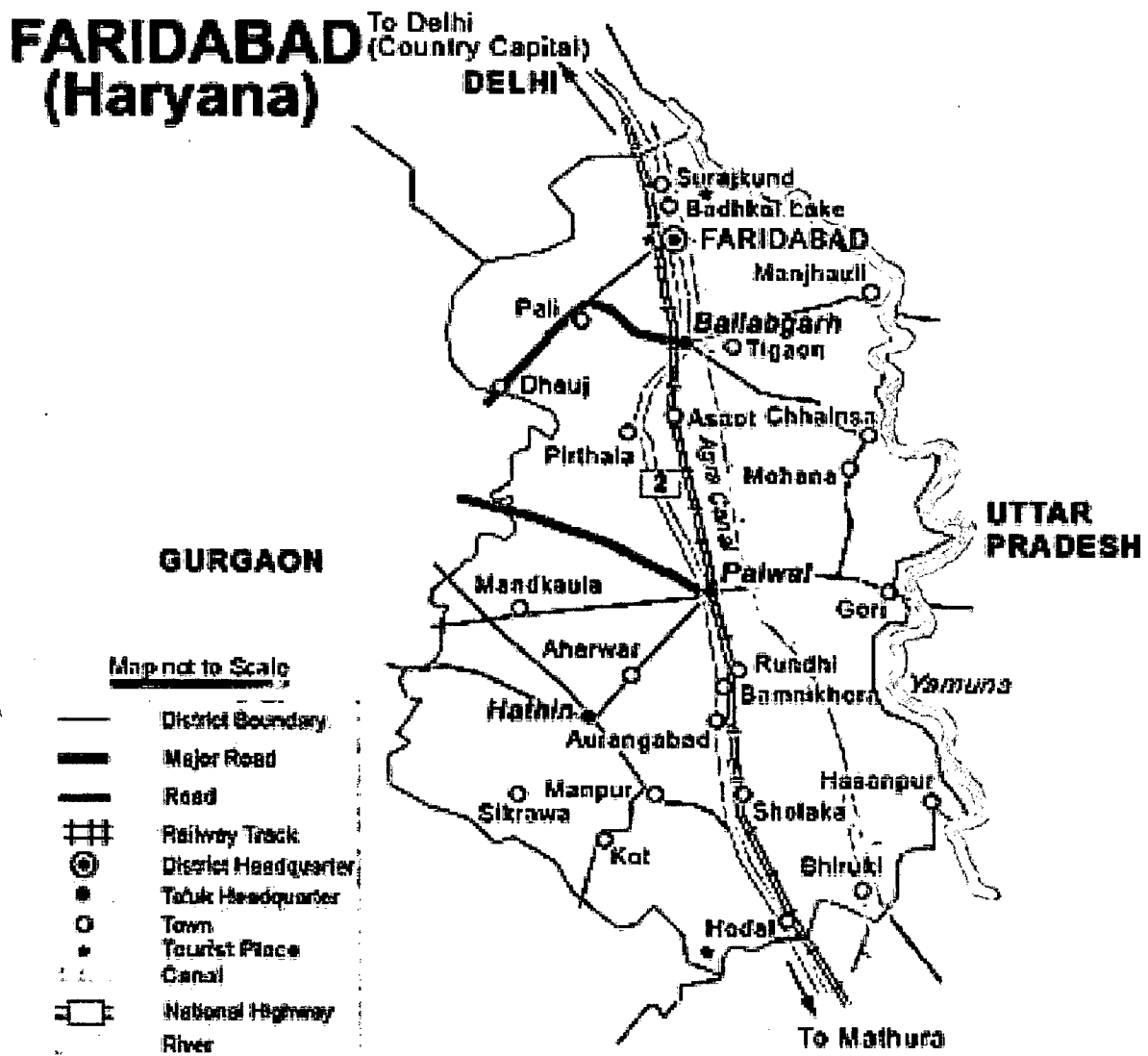
YEAR	SEX RATIO
1971	530
1981	740
1991	804
2001	839

Source; census 2001

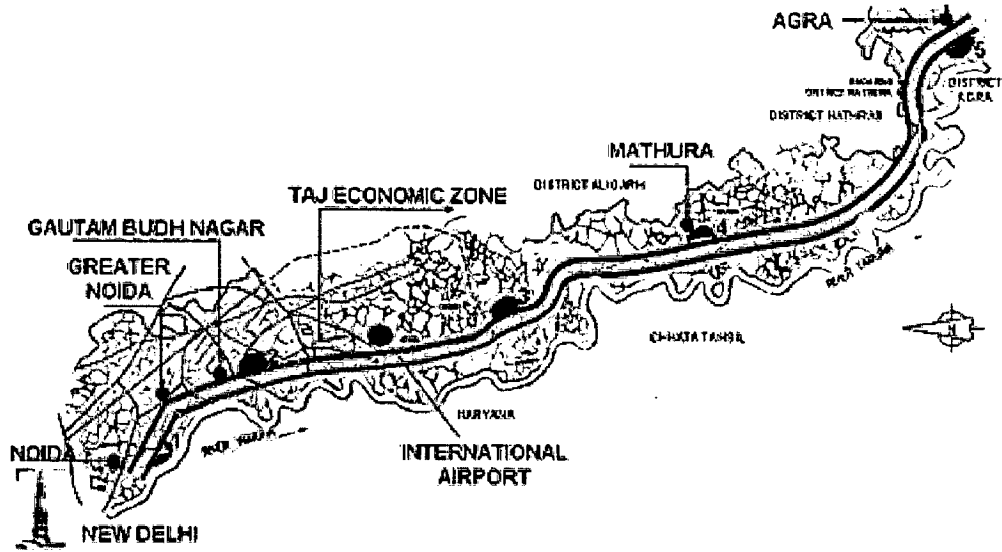


#### 4.4 Geography and Geology;

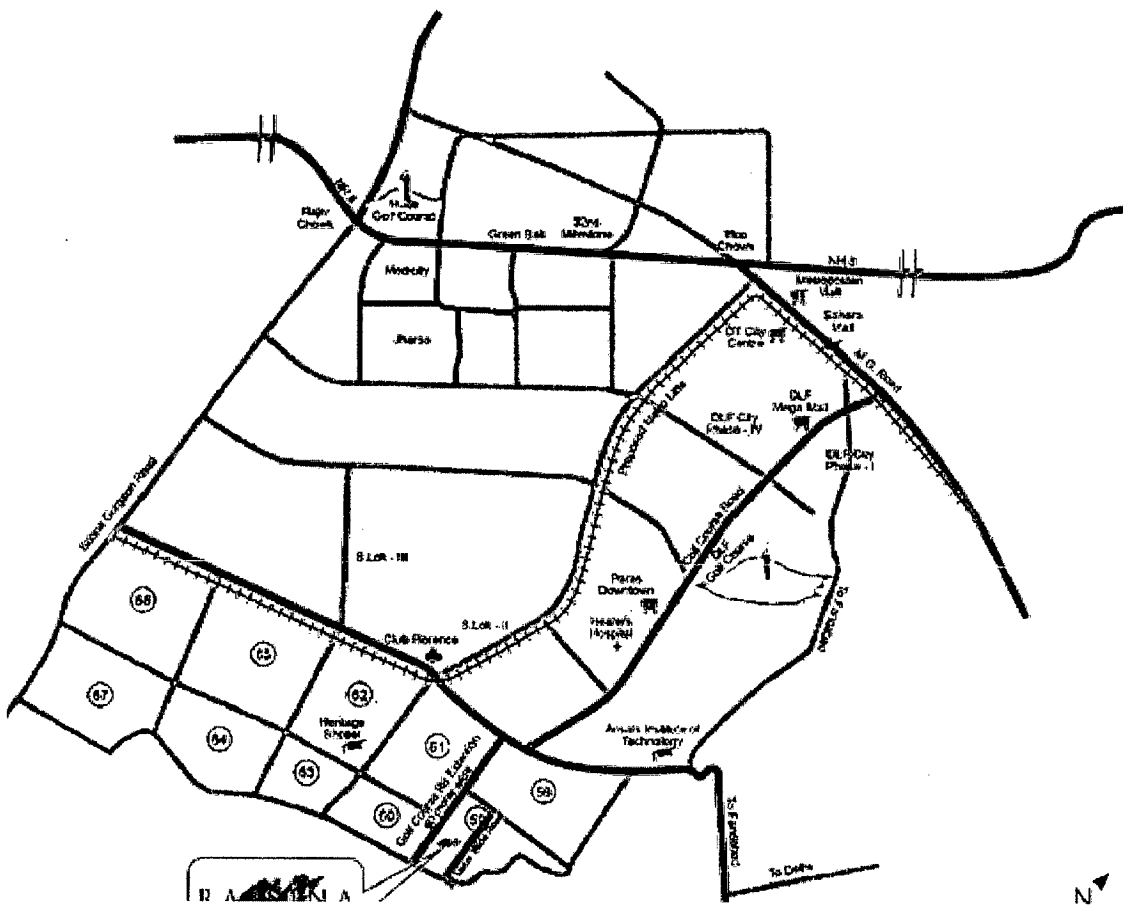
Faridabad is situated on the Delhi – Mathura National Highway No. 2 at a distance of 32 km. from Delhi, at 28° 25' 16" north latitude and 77° 18' 28" east longitude. The town is bounded on the north by Delhi State, on the east by Agra and the Gurgaon canals and on the west by the Aravali Hills. The Yamuna flows very near to the city at its northern side and moves away as it goes south.



Map 4.2; Faridabad district map

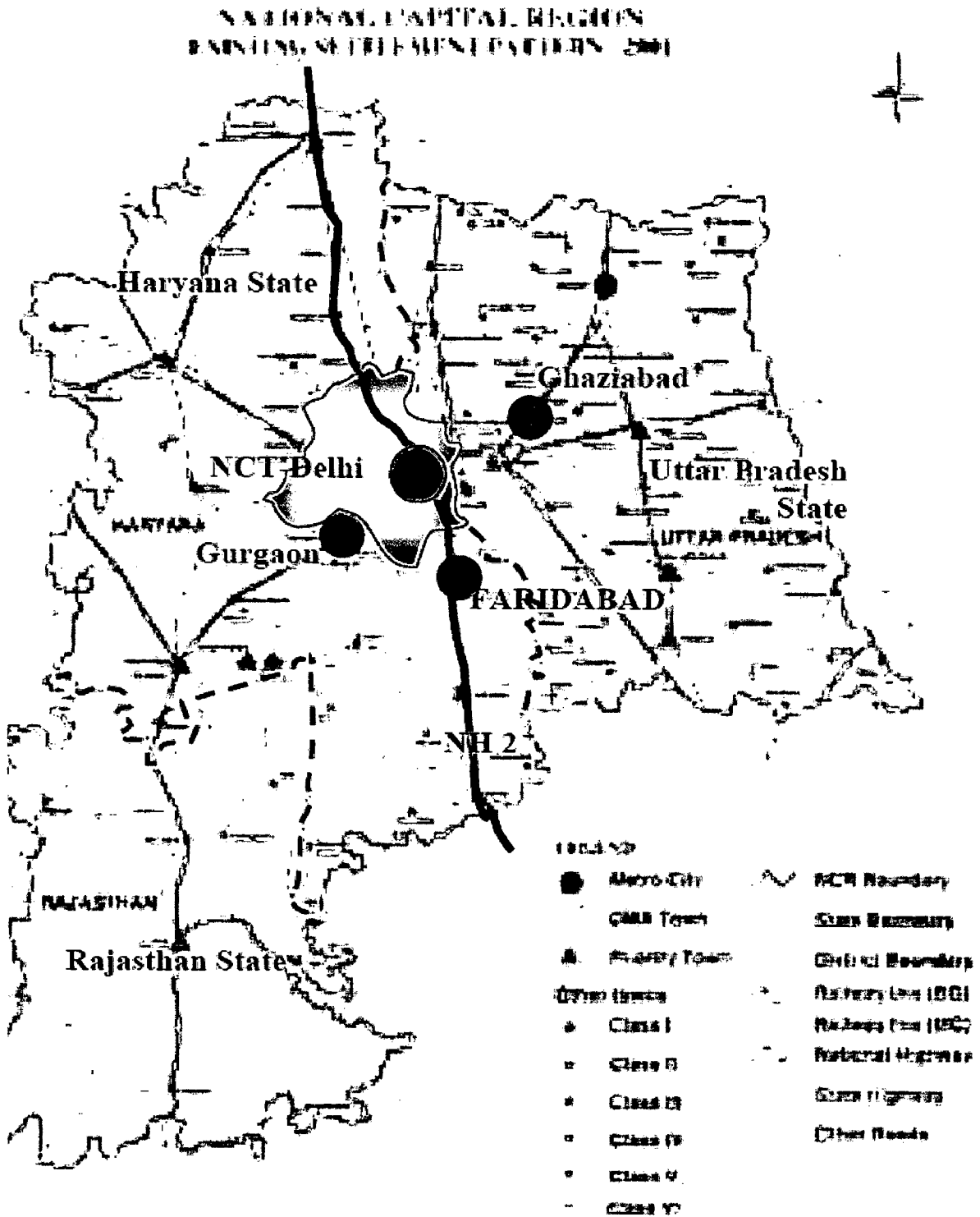


Map 4.3; Location of Agra canal which restrict the growth in Faridabad



Map 4.4; Location of Aravali hills which restrict the growth in Faridabad

4.5 Linkages and Connectivity



Map 4.5; Location of Faridabad in respect to NCT Delhi

Travel pattern can be divided into two hierarchies of Inter-city (from one city to another) and Intra-city (within one city).

### **Inter city travel**

**N.H.2:** Though the city is connected by road to Delhi, the quality of connectivity which the highway offers is highly unsatisfactory. The highway, originally meant solely for intercity travel, has lost its character and function due to the presence of a large informal market on both sides of the highway at Badarpur. Originally meant for through traffic, now 2-wheelers, Tongas, tractors and other slow moving modes are impeding the level of service being offered by the highway. Adding to the problem is the truck terminal at the Tughlakabad dry dock, due to which a large number of trucks are found parked along the stretch immediately neighboring the Badarpur border. These parked trucks cause hindrance to the smooth flow of traffic. This adverse condition of the principal access road to Faridabad is one of the causes for its stagnation at present.

### **Delhi - Ballabgarh railway line**

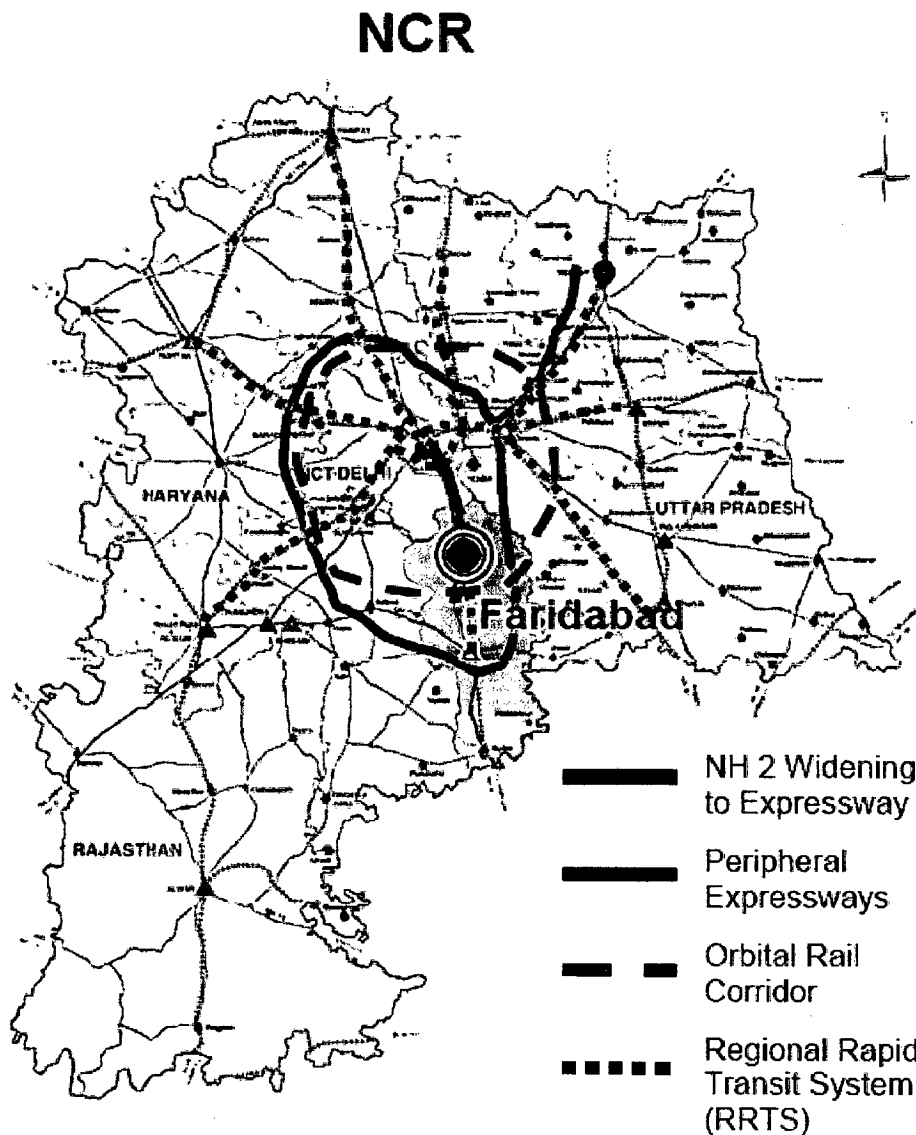
However, the Delhi-Ballabgarh railway line forms an important link with Delhi and is heavily used by workers employed in Delhi and living in Faridabad and vice versa to commute daily to their workplace. It is also the lifeline for the heavy metal and electronics industry for the transportation of goods all over North India.

### **Intra city travel**

It seems as if a broad policy is followed, though unintentionally, in the location of the residential and industrial land uses guided by the linear and parallel nature of the major transport corridors. However, this has resulted in the formation of a good work-home relationship. To move from one part of the city to another linearly, one can conveniently use the national highway and the hierarchy of the local network. However, the especially towards the old town area, the local road network is ill maintained and has narrow roads.

### 4.5.1 Road linkage

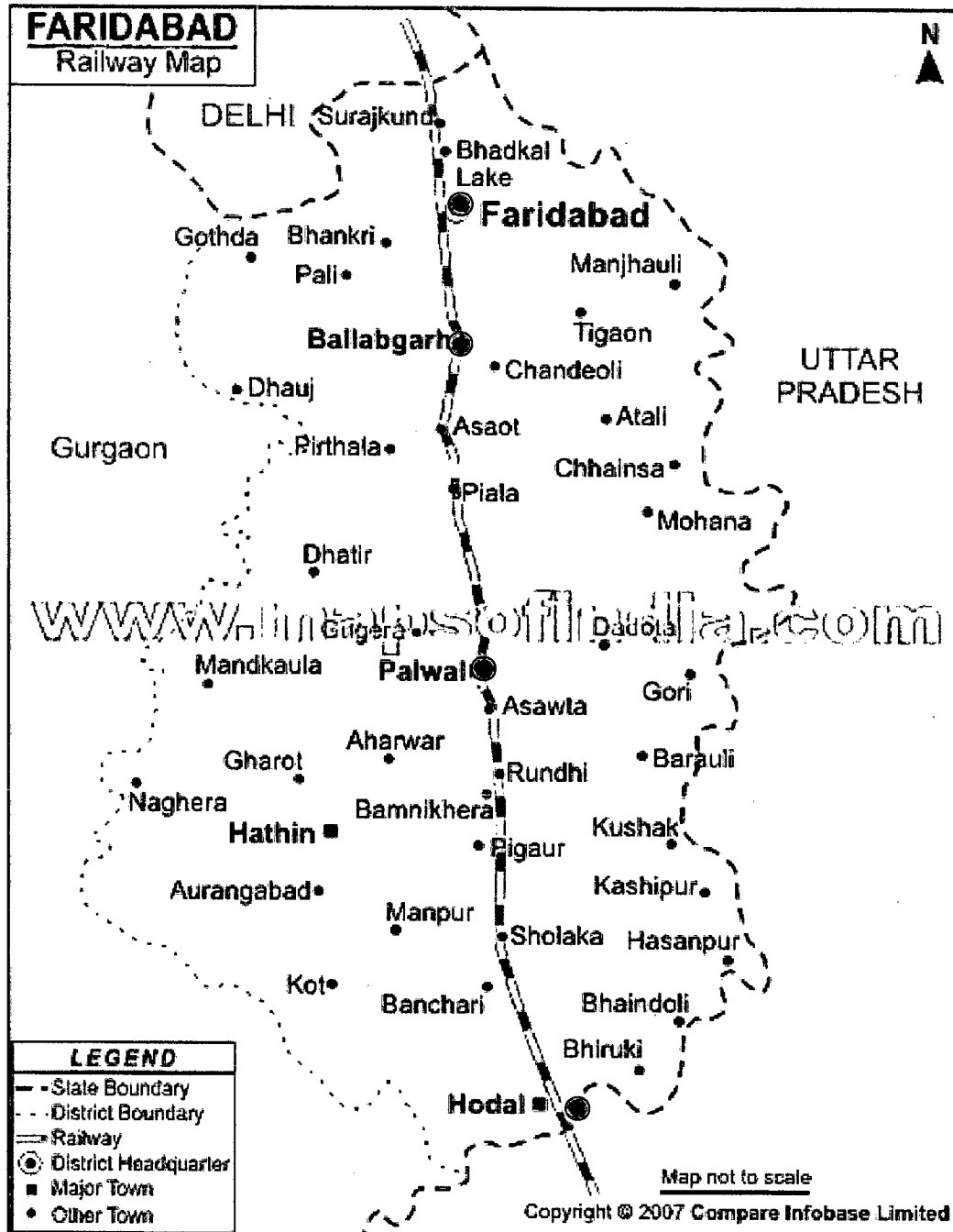
Faridabad is identified as one of the Delhi Metropolitan Area (DMA)/ Central National Capital Region cities of National Capital Region (NCR) and accordingly it has strong linkages with Delhi. NH 2 from Delhi-Mathura passes through the length of the city and is the central axis of the city of Faridabad. Further, NH 3 and NH 4 also pass through the city. It is connected with Gurgaon by the Gurgaon-Faridabad road. As part of NCR proposals, connectivity is proposed for improvement through the western peripheral expressway (Kundli-Manesar-Palwal-“KMP”) and eastern peripheral expressway (Kundli-Ghaziabad-Palwal “KGP”).



**Map 4.6;** Major transport corridors running in and around Faridabad

### 4.5.2 Rail linkage

Faridabad is on the broad gauge line from Delhi to Mathura of the Northern Railway and is an important Rail Junction in this sector as most train reaching Delhi pass through Faridabad. Hence Faridabad is well connected with the rest of the country by rail. Apart from the Main Faridabad Station, it also has two minor stations, Old Faridabad and Ballabgarh stations.



● - Railway station

Map 4.7; Faridabad Rail map

### 4.5.3 New upcoming connectivity linkages

The new planned projects like Delhi - Badarpur flyover and metro connectivity will improve the connectivity better which will be one more major reason for city expansion.

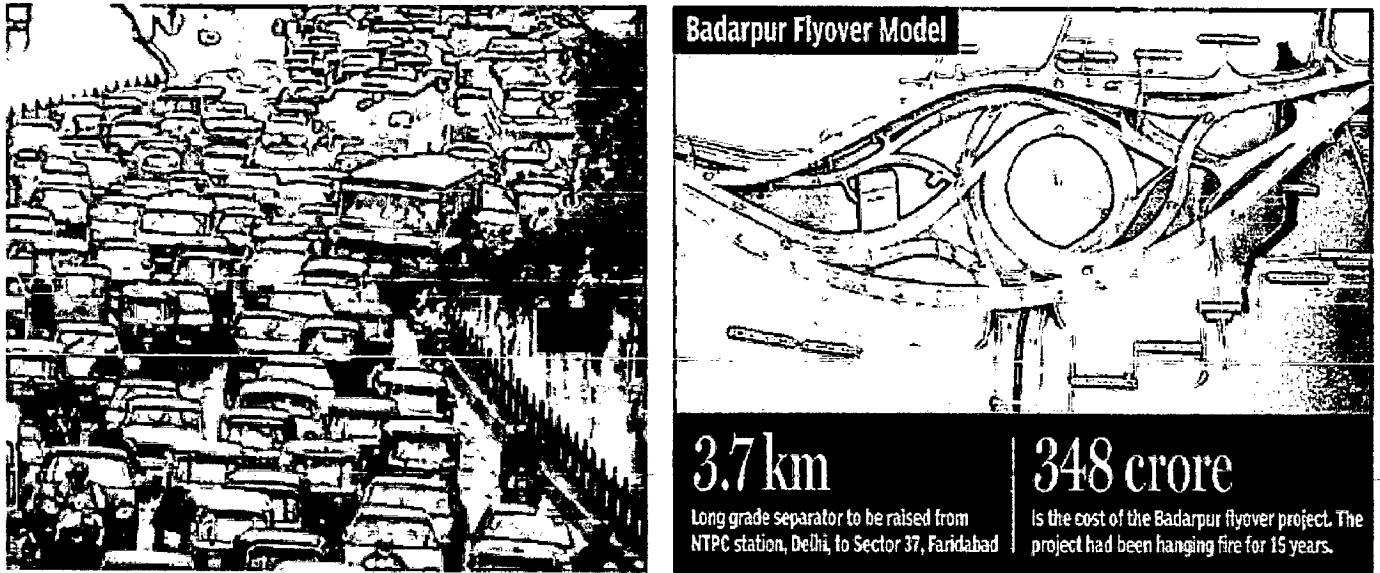
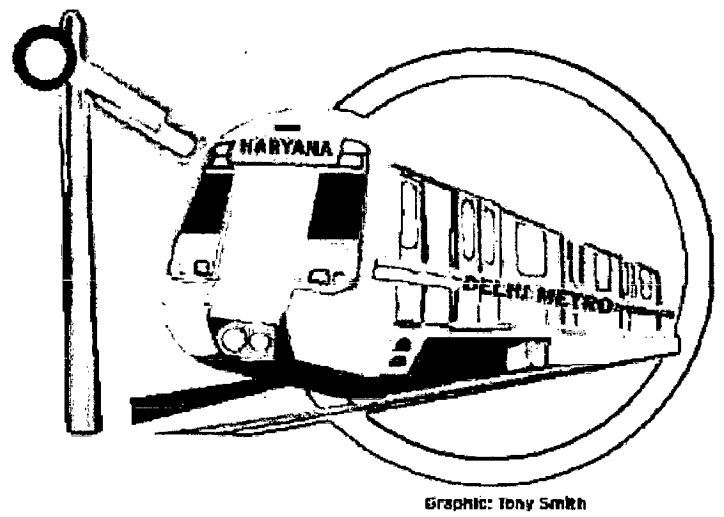
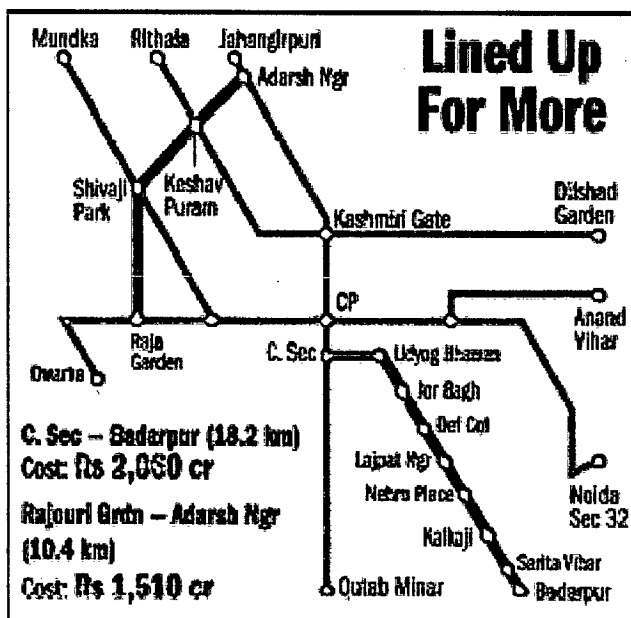


Fig 4.1; Proposed Badrapur flyover to reduce traffic congestion



Graphic: Tony Smith

Fig 4.2; Metro connectivity from Delhi to Faridabad which will support the further growth of city



- Badarpur Flyover
- Six lanning of NH-2
- Extension of Metro Rail up to Faridabad
- Western Express Highway linking Kundli to Palwal via Manesar Kalindi Kunj bypass providing easy access to NOIDA (U.P.)
- Eastern Express Highway from Kundli to Palwal via NOIDA.

## 4.6 Faridabad in NCR

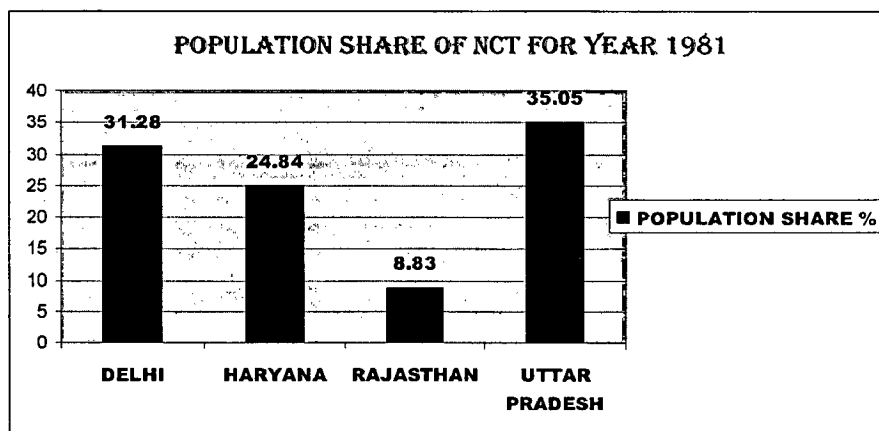
### 4.6.1 Region wise distribution of population in NCR

The NCR comprises of the entire NCT of Delhi, eight districts of Haryana, one district of Rajasthan and five districts of Uttar Pradesh with a population of over 371 lakhs in 2001. The following table provides the sub-region-wise distribution of population in NCR.

**Table 4.6;** *Sub region wise distribution of population in NCR*

Sub-region/ Year	Population (persons)			Decadal growth rate (%)		Share of population (%)		
	1981	1991	2001	1981-91	1991-2001	1981	1991	2001
NCT-Delhi	62,20,406	94,20,644	1,38,50,507	51.45	47.02	31.28	34.43	37.33
Haryana	49,38,541	66,43,604	86,87,050	34.53	30.76	24.84	24.28	23.42
Rajasthan	17,55,575	22,96,580	29,92,592	30.82	30.31	8.83	8.39	8.06
Uttar Pradesh	69,68,646	90,01,704	1,15,70,117	29.17	28.53	35.05	32.90	31.19
<b>Total</b>	<b>1,98,83,168</b>	<b>2,73,62,532</b>	<b>3,71,00,266</b>	<b>37.62</b>	<b>35.59</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

(Source: Census of India)



**Fig 4.3;** *Population of NCT for year 1981*

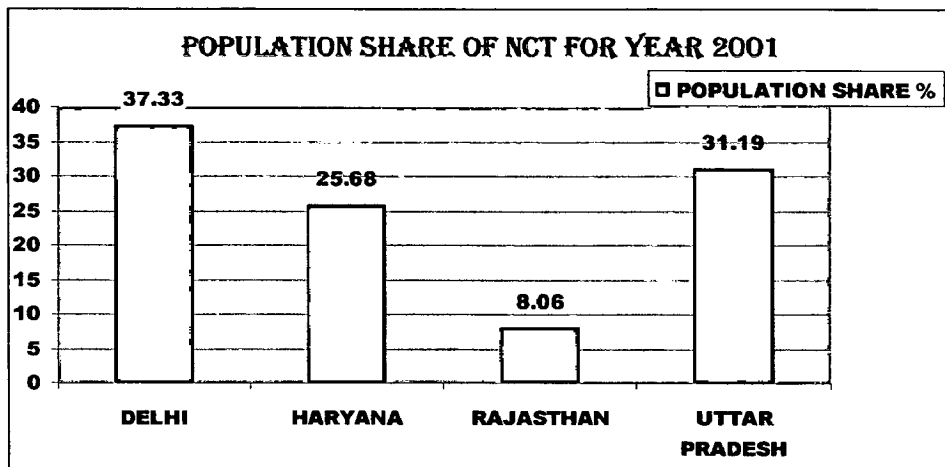


Fig 4.4; Population of NCT for year 2001

#### 4.6.2 Population Density

The population density of the NCT region has also increased steadily over the years. Within two decades from 1981 to 2001, the population density measured in persons per sq. km has almost doubled in NCT. In all the other sub-regions of NCR, the population density has increased by 50% to 75%. This trend is expected to become even more predominant in the coming years

Table 4.7; Population density in NCR

Sub-region/ Year	Density (Person/sq km)	
	1981	2001
NCT-Delhi	4,192	9,340
Haryana	368	648
Rajasthan	238	382
Uttar Pradesh	642	1,066

(Source: Census of India)

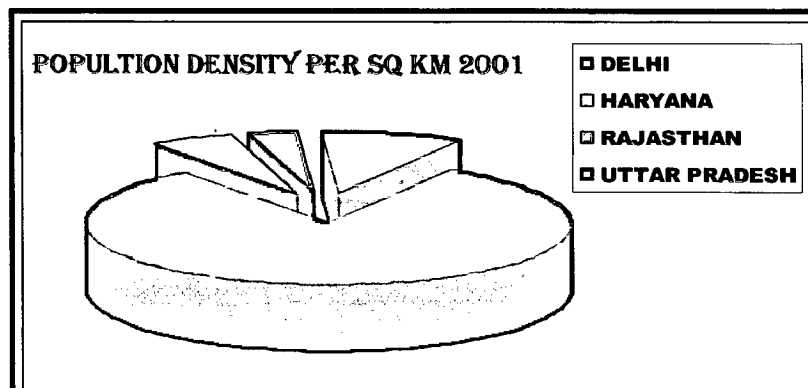


Fig 4.5; Population Density of NCT for year 2001

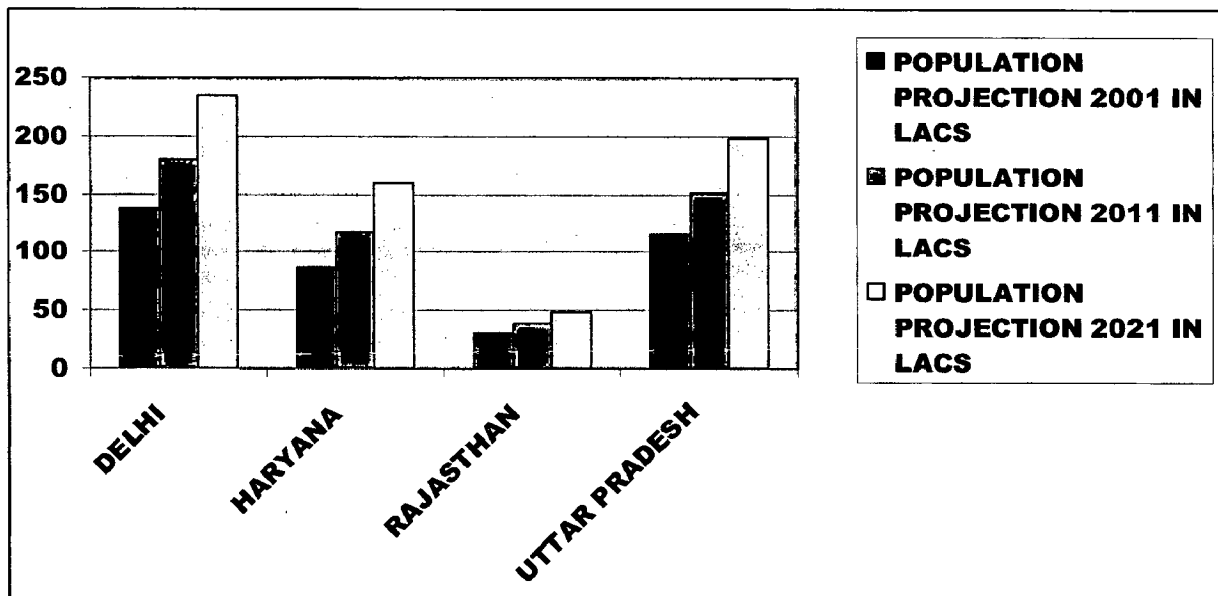
### 4.6.3 Population projection for 2021

The population projection for NCR for the year 2011 and 2021 is given in the table below. The population of NCR is projected to be 641.38 lakhs by 2021. The share of NCT-Delhi is projected to decrease over time as new urban settlements and infrastructure will get created in the other parts of the NCR region. The share of Haryana is expected to increase considerably over the next two decades.

**Table 4.8; Population Projections of NCR and sub regions**

Year	NCR Total	NCT-Delhi		Haryana		Rajasthan		Uttar Pradesh	
		Population	% to total	Population	% to total	Population	% to total	Population	% to total
2001	371.00	138.50	37.33	86.87	23.42	29.92	8.06	115.70	31.19
2011	486.19	179.90	37.00	117.55	24.18	37.91	7.80	150.83	31.02
2021	641.38	234.87	36.62	160.16	24.97	48.06	7.49	198.29	30.92

(Source: Study Group Report on Policy zones)



**Fig 4.6; Population projection of NCT**

#### 4.6.4 Proposed hierarchy of settlements

The NCR Regional Plan – 2001 had proposed a four tier settlement system i.e. regional centers, sub-regional centers, service centers and basic villages. Keeping in view the changing demographic scenario of the region, additional categories of settlements have been added and a six-tier hierarchy of settlements has been proposed in the Regional Plan – 2021. This hierarchy is as follow;

**Table 4.9; Hierarchy of town class in regional plan of NCT**

S. No.	Hierarchical level	Population range	Description
1.	Metro centre	10 lakhs and above	Powerful growth nodes to attract capital functions and help in population dispersal from NCR. Proposed to have efficient intra-urban mass transportation system and linkages with Delhi and other metro centres. Will have a high level of physical, social and economic infrastructure
2.	Regional centres	3 to 10 lakhs	Will have advanced industrial & economic activities and concentration of administrative and higher order service functions
3.	Sub-regional centers	0.5 to 3 lakhs	Help promote and support rural development and link between higher and lower order towns
4.	Service centres	10,000 to 50,000	Link with immediate rural hinterlands for collection and distribution of agricultural goods & services with processing, marketing, warehousing and storage facilities
5.	Central village	5,000 to 10,000	Village having potential for development and having good sanitary, education, health, communication and accessibility
6.	Basic village	Below 5000	Villages having basic facilities like link roads, water supply, electricity, paved streets and low-cost common sanitary facilities

(Source: Regional plan – 2021)

**Table 4.10; Population of metro and regional centers within NCR**

Name of town	Population (in lakhs)		
	Census	As finalized by Planning Committee	
	2001	2011	2021
<b>NCT Delhi</b>	138.50	193.00	220.00 – 230.00
<b>Metro &amp; Regional Centers within CNCR</b>			
Bahadurgarh	1.32	2.00	3.00
Faridabad – Ballabhgarh complex	10.56	16.00	25.00
Gurgaon – Manesar complex	2.29	4.50	16.50
Ghaziabad – Loni complex	10.89	19.00	30.19
NOIDA	3.05	6.00	12.00
Sonepat – Kundli complex	2.34	3.50	10.00
<b>Sub-total (excluding NCT-Delhi)</b>	<b>30.45</b>	<b>51.00</b>	<b>96.69</b>

Source; Regional plan NCT

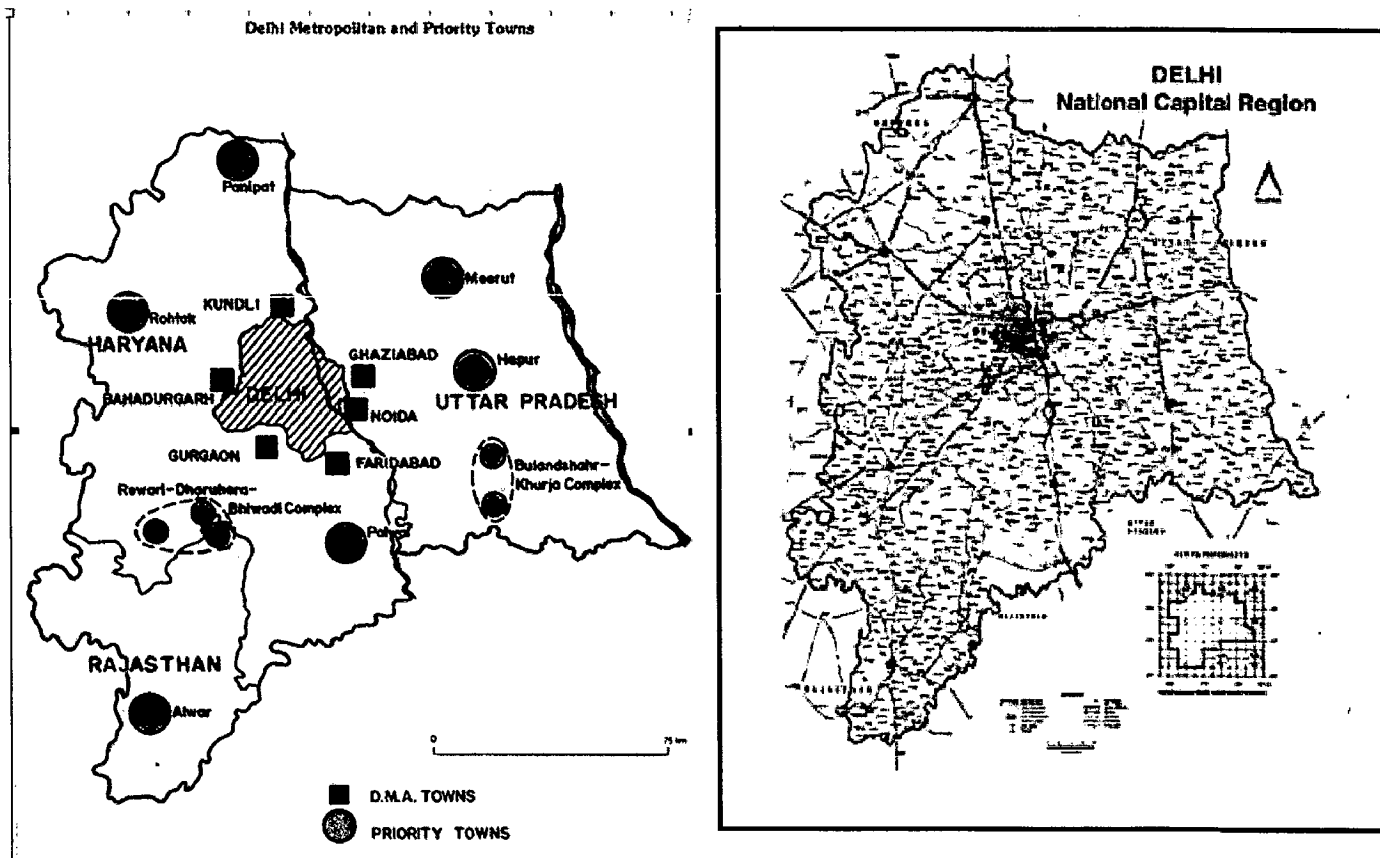
Faridabad is an important constituent of NCR and is identified as a Central National Capital Region (CNCR) city earlier referred to as Delhi Metropolitan Area (DMA) city. Also it is the only other Metro city in NCR other than Meerut. NCR Regional 2021 has listed out a large number of projects involving Faridabad with suggested policy changes, strategies and implementation plan. The proposals are in the sectors of:

- Economy & fiscal policy
- Transport
- Power
- Water
- Sewerage, Solid waste management & drainage
- Communications and social infrastructure
- Environment and disaster management

#### 4.6.5 Concept of Delhi Metropolitan Area and its impact;

While being part of NCR gives a high priority status to the city, the ground situation with respect to infrastructure reflects poorly upon this emerging metropolis of the capital region. While being part of NCR should convert into a strong opportunity for

Faridabad to transform, on the contrary this status appears to have become a bane on the functioning of the city. The eastern and western peripheral expressways, public transportation systems in the form of RRTS/ MRTS, Orbital Rail Corridor etc, all are nearing completion of their planned implementation period but are yet to be put into formal actions on ground.



Map 4.8; Delhi Metropolitan Area

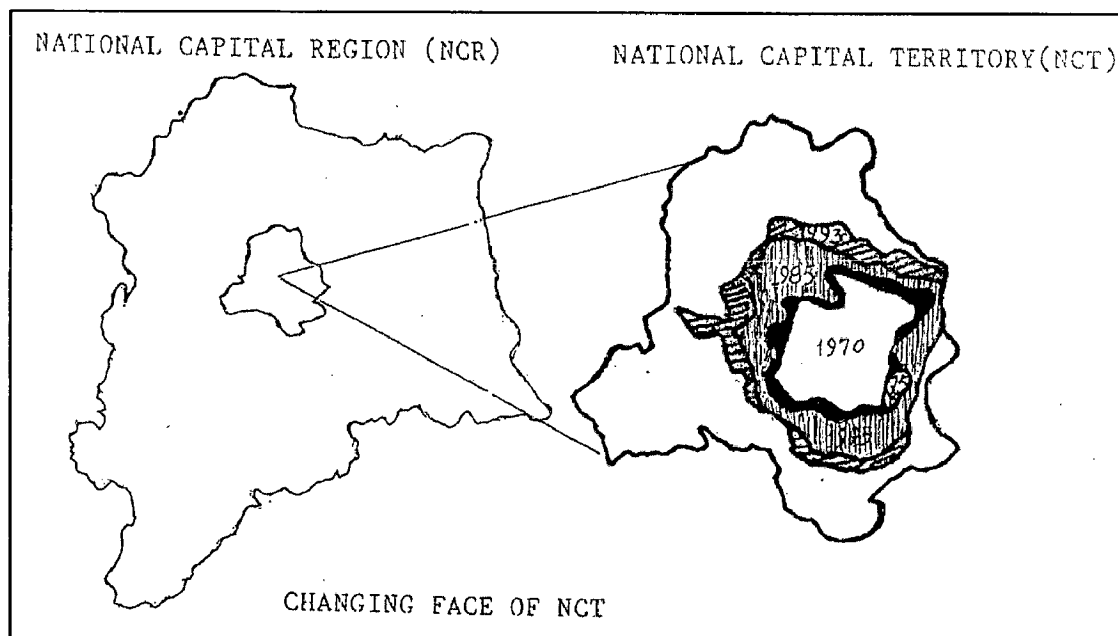
- The concept of *Delhi Metropolitan Area* was well recognized in the first Master Plan of Delhi (MPD-1962), which had defined DMA as an **area of 800 sq km** comprising the entire Union Territory of Delhi and the Ring Towns of Loni and Ghaziabad in Uttar Pradesh, Faridabad, Ballabhgarh and Gurgaon of erstwhile State of Punjab and Narela in Delhi.
- The MPD - 1962 duly recognized the fact that to achieve a rational growth of Delhi, which was expanding in a most haphazard, way, it was necessary to

plan the whole area as a composite unit and have an integrated and balanced overall programme of development.

- It was also stated that the Ring Towns. must be developed not only to deflect some of the population that would otherwise come into Delhi and jeopardize the planned growth of Delhi but also to help these towns to grow in a planned manner.
- The MPD-1962 visualized a compact orderly growth of urban Delhi, with **six ring towns**, self-contained in matters of work and residential places but with strong economic, social and cultural ties with the central city. The plan also mentioned that the development of the ring towns can be ensured by strengthening their economic base which was to be done by planning industrial development and locating government offices in these towns.
- The first NCR Plan (NCR-2001) defined Delhi Metropolitan Area as the area comprising of controlled area of contiguous towns of Ghaziabad including Loni and NOIDA in UP, Faridabad. Ballabgarh Complex, Gurgaon, Bahadurgarh, Kundli and the extension of Delhi ridge in Haryana.
- The NCR Plan 2001 stated that .ring towns. Identified in MPD- 1962 subsequently known as .Delhi Metropolitan Area with Delhi as the core. They have become more and more attractive for development of industries mainly due to proximity to Delhi with marketing and other support facilities and policies of the State Governments.
- The development has become intensive particularly among the major transport corridors, which led to a form of ribbon development all along transport routes, lacking in adequate infrastructure / facilities and also shelter.
- It was also recognized that Delhi being limited in its territorial extent and opposed to it, the ring towns having relatively extensive areas for expansion,

the unabated pouring migrants into Delhi, brought in manifold problems in the form congestion and inadequacy of the basic services.

- The NCR Plan 2021 notified recently aims .to promote growth and balanced development of the National Capital Region. The plan has a used different nomenclature for Delhi Metropolitan Area i.e. .Central National Capital Region. (CNCR)\* which comprises the notified controlled/development / regulated areas of contiguous towns of Ghaziabad- Loni, NOIDA, Gurgaon-Manesar, Faridabad-Ballabhagarh, Bahadurgarh, Sonapat-Kundli and the extension ridge in Haryana.
- The controlled / development areas measuring **1696 sq. km** have undergone vast changes in the recent past. In many cases new areas have been added. The total area of the CNCR would be **about 2000 sq. km** As mentioned in NCR Plan 2021 the opportunities offered by CNCR need to be maximized to enable it to compete effectively by offering economic activities, comprehensive transport system, housing, social infrastructure and quality of environment at par with the NCT Delhi.



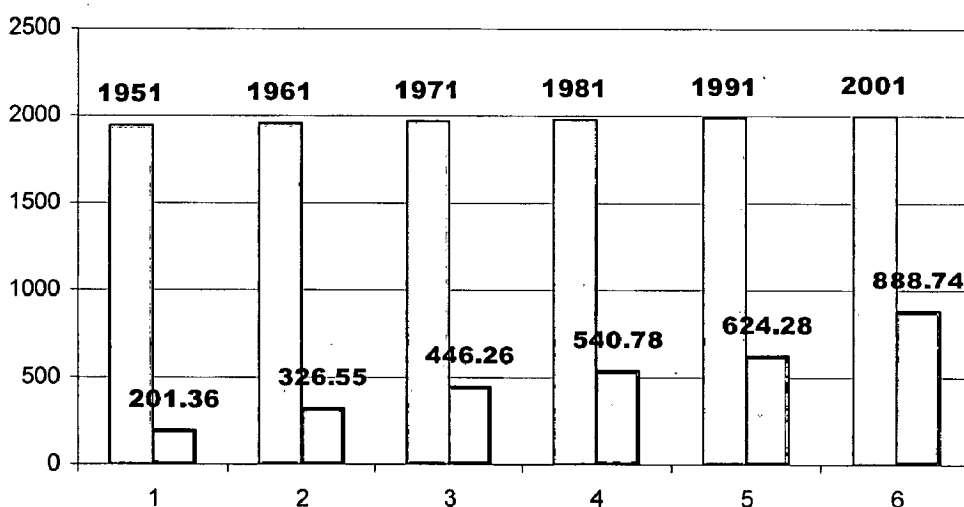
Map 4.9; National Capital Region and NCT



**Table 4.11; Population, Area and density of NCT Delhi (2001)**

Year	Population	Growth Rate (%)	Population (Urban)	Growth Rate (%)	Area (Sq.Km)	Density (P.P. Sq.Km)
1901	405819	-	214115	-		
1911	413851	1.98	237944	11.13	43.25	5501
1921	488452	18.03	304420	27.94	168.09	1811
1931	636246	30.26	447442	46.98	169.44	2640
1941	917939	44.27	695686	55.48	174.31	3991
1951	1744072	90.00	1437134	106.58	201.36	7137
1961	26586122	52.44	2359408	64.17	326.55	7225
1971	4065698	52.93	3647023	54.57	446.26	8172
1981	6220406	53.00	5768200	58.16	540.78	10666
1991	9420644	51.45	8471625	46.87	624.28	13570
2001	13850507	47.02	12905780	52.34	888.74	14521

Source: Census of India, 2001 and other Census Reports



**Fig 4.7; Variation in NCT area in sq km**

- As also observed from the above table, it can be stated that NCT Delhi has witnessed intense urbanization. The urban agglomeration area has increased from a mere 43.25 sq km in 1901 to 888.74 sq km in 2001 whereas during the same period density increased from 5501 persons per sq km to 14521 persons per sq km. However, as per MPD-2001, the urban area was 447 sq km i.e., area included in the urbanizable limits which has increased to 702 sq km as per MPD-2021. The spatial expanse of urban area and population growth has

been concurrent in all the directions including sub-cities of Rohini, Dwarka, Narela and also in Trans- Yamuna Area.

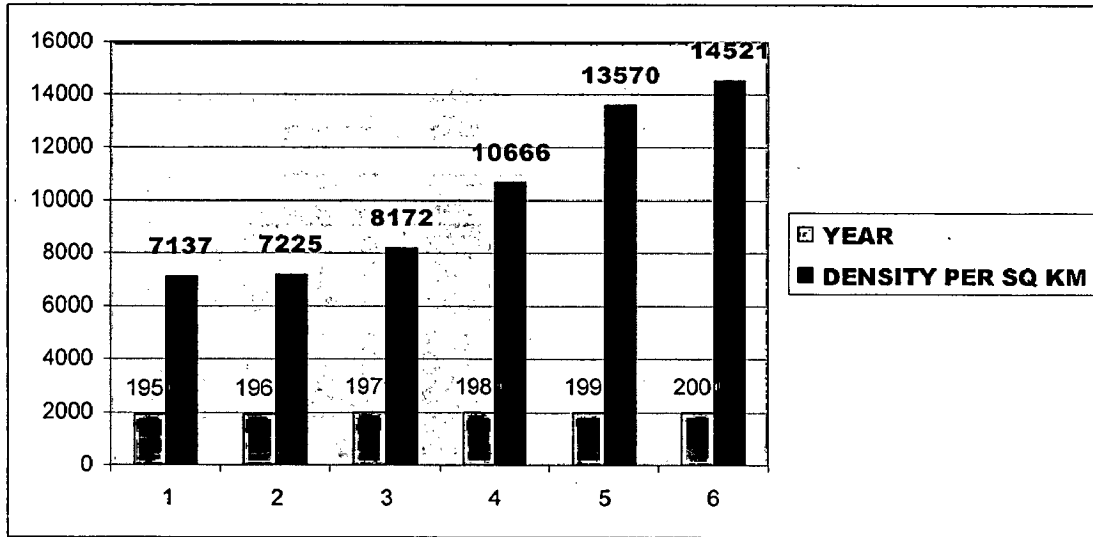


Fig 4.8; Population density of NCT person per sq km

- The total area of NCT Delhi is 1, 48,300 hectares (1483 sq. km). The Delhi Urban area 1981 was 44,777 hectares. By 2001, about 24,000 hectares of land was added to the Delhi Urban area, 1981. Out of 12.8 million of urban population, about 11.25 million resides within MPD-2001 urban area.
- The projected population for 2021 is 22.50 million. In order to accommodate this additional population of 9 million by 2021, urban extensions are proposed to be developed. Considering the overall density @ 167 people per hectare (MPD-2001), the additional land required for 2021 would be about 43,000 hectares.
- The national capital has started to reach saturation point wherein perhaps housing is becoming an unaffordable proposition and people (second and third generation population) have started to look for housing in the DMA towns.

#### 4.7 Land use structure

- The city has a clearly defined linear shape due to its evolution along the linear and parallel transit corridors.
- There are large industrial plots lined up along both sides of these corridors. The area west of the railway line is primarily industrial. When industrialization began, first the least productive lands under agriculture were lost to the industries.
- The area surrounding the Agra Canal was agriculturally more productive and survived initially.
- As the need for housing increased, the land between the canal and the railway line was developed as residential as it was unsafe for the cattle of the farmers that met with many accidents on the transit corridors.
- Thus now, the only agricultural lands left are the ones to the east of the Agra Canal. The area east to the Agra Canal is presently being developed as industrial sectors.

**Table 4.12;** Land Use Structure of Faridabad Over Years

CATEGORY	1981		1991		2001		2011*	
	VALUE	%	VALUE	%	VALUE	%	VALUE	%
RESIDENTIAL	5500	52.9	14703	55.2	16450	51.0	19262	49.7
INDUSTRIAL	1530	14.7	5118	19.2	6335	19.7	7749	20.0
COMMERCIAL	440	4.2	1088	4.1	1536	4.7	1910	4.9
PUBLIC/ SEMI PUBLIC	380	3.6	388	1.4	1100	3.4	1310	3.4
UTILITIES	110	1.0	120	.5	323	1.0	382	1.0
RECREATION/ GREEN SPACE	675	6.6	1859	7.0	2250	7.0	3199	8.2
TRANSPORT	755	7.3	2271	8.5	3150	9.8	3840	10.0
SPECIAL ZONE	1000	9.7	1091	4.1	1091	3.4	1091	2.8
<b>TOTAL (in acre)</b>	<b>10390</b>	<b>100.0</b>	<b>26638</b>	<b>100.0</b>	<b>32235</b>	<b>100.0</b>	<b>38743</b>	<b>100.0</b>

Source: Revised Master Plan, 1991 and Town Planning Department, Faridabad.  
2011\* values are proposed land use (MP)

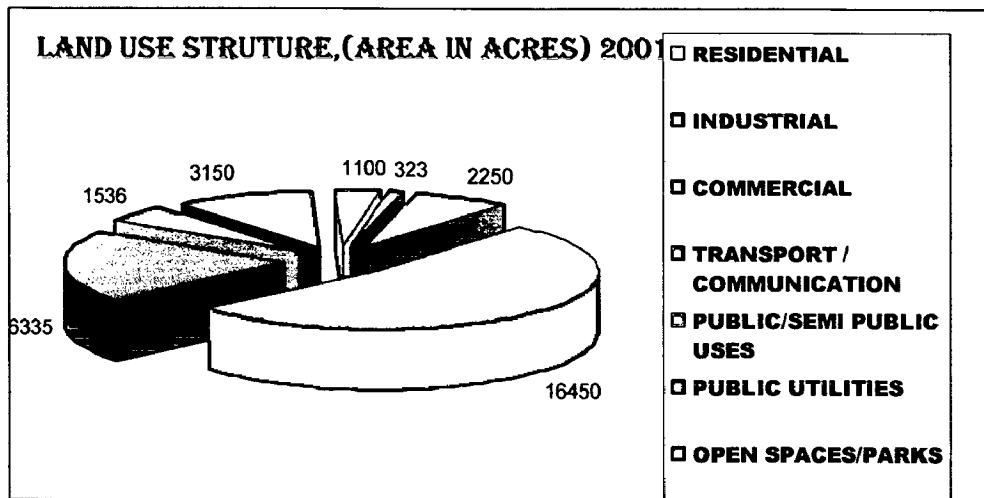


Fig 4.9; land use structure in 2001 of Faridabad

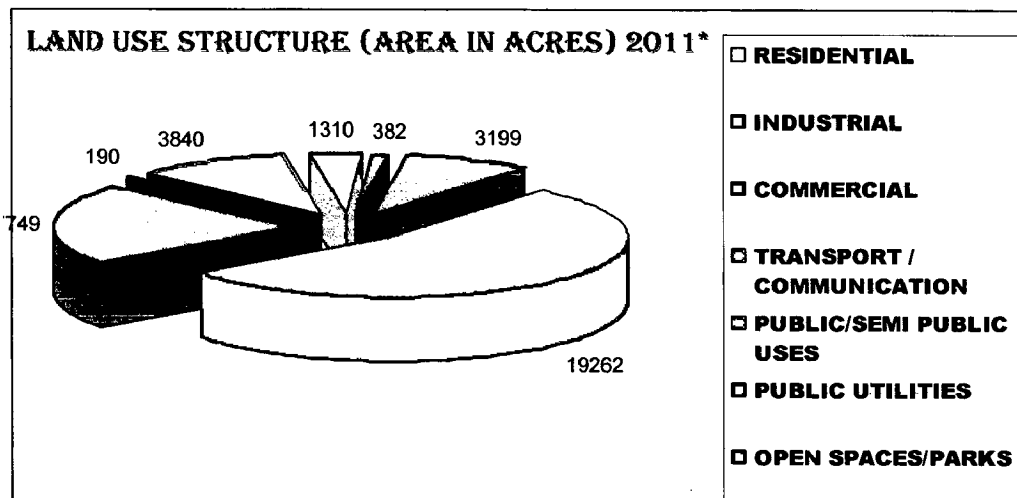


Fig 4.10; land use structure in 2011 of Faridabad

- The percentage of land under industrial use has almost stagnated at 19% from 1991. This is due to the stiff competition from the twin cities of Gurgaon and NOIDA.
- There is an increase proposed in the land under transportation, but at 10% it is still less than the ideal 12-15%.
- An increase is proposed in the land under green and recreation to 8.2% from the existing 7%. This aim is realistic and is the need of the hour with the pollution levels at an all time high in the industrial city.

- A massive increase in industrial land is seen for the decade 1981 – 1991, also this period witnesses a sharp decrease in the percentage of land under utilities and Public/semipublic uses. This suggests that importance was given to only industrial development. This resulted in unbalanced growth and can be accounted as one of the factors responsible for its present stagnation.

**Table 4.13; Land cover of Faridabad 1981-2001**

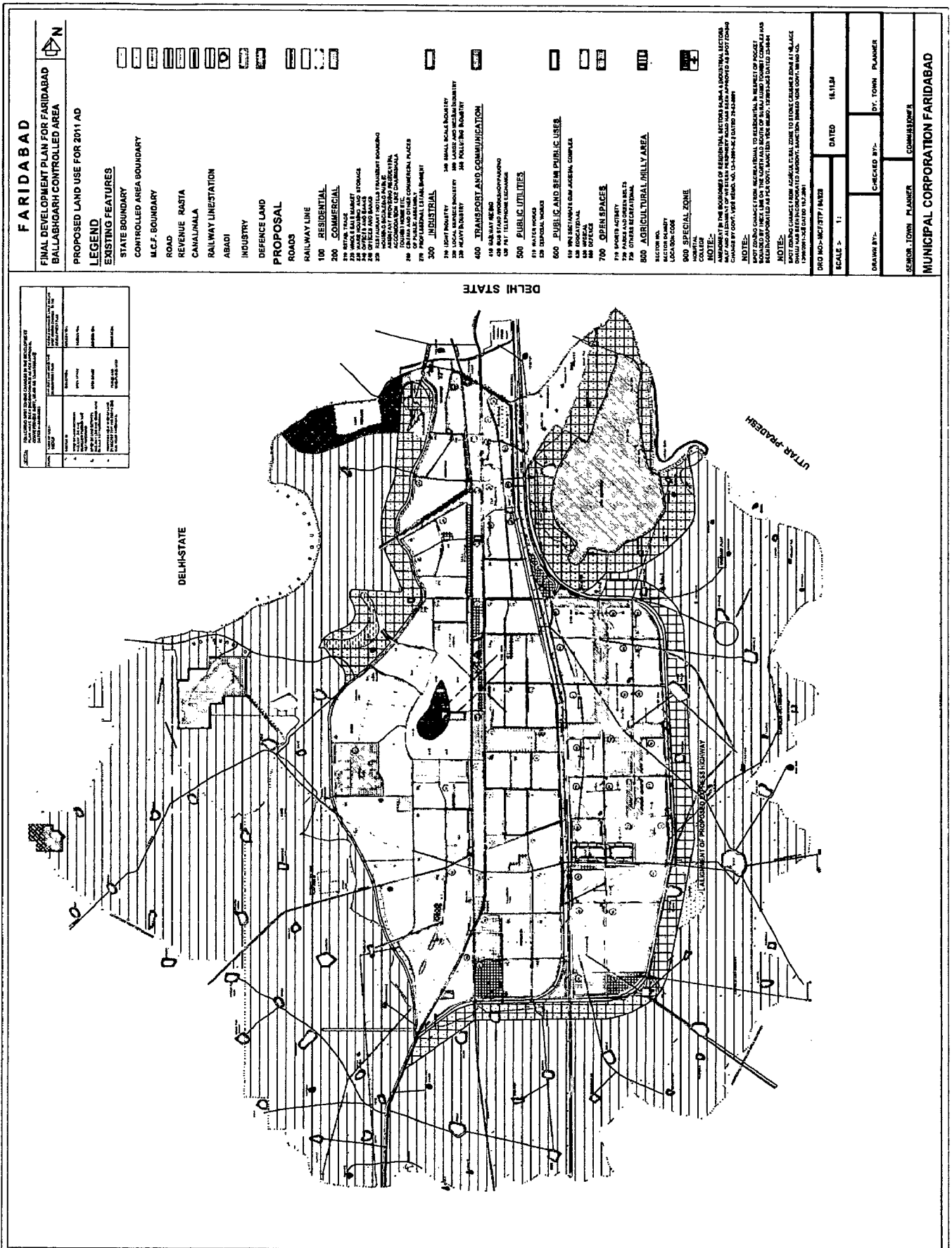
Classification	1980-81	1990-91	2000-01	1980-81	1990-91	2000-01
	Area (in '000 hectares)			% to Total Geographical Area		
1. Land Not Available for Cultivation:	38	42	39	17.84	20.19	18.40
i.Land put to non-agricultural uses	29	34	30	13.62	16.35	14.15
ii.Barren and unculturable land	9	8	9	4.22	3.85	4.25
2. Other Uncultivated Land:	3	2	3	1.41	0.96	1.41
i.Permanent pasture & other grazing lands	3	2	3	1.41	0.96	1.41
ii.Land under misc. tree and groves	-	-	-	-	-	-
iii.Culturable waste	-	-	-	-	-	-
3. Fallow land	1	1	1	0.47	0.48	0.47
4. Net Sown Area	167	157	163	78.40	75.48	76.89
5. Forests	4	6	6	1.88	2.89	2.83
<i>Total Geographical Area</i>	<i>213</i>	<i>208</i>	<i>212</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>

Source: Statistical Abstract of Haryana: 1980-81 to 2000-01.

**Table 4.14; Forest Land cover of Faridabad 1981-2001**

Classification	Forest Area					
	(in sq.kms.)			(in per cent)		
	1980-81	1990-91	2000-01	1980-81	1990-91	2000-01
1. State forests:	32	32	33	53.33	56.14	55.93
i. Reserved	3	3	3	5.00	5.26	5.08
ii. Protected	27	28	28	45.00	49.13	47.46
iii. Others	2	1	2	3.33	1.75	3.39
2. Private Forests:	28	25	26	46.67	43.86	44.07
i. Closed under Indian forest Act.	-	-	-	-	-	-
ii. Closed under landPreservationAct	28	25	26	46.67	43.86	44.07
<i>Total Forest Area</i>	<i>60</i>	<i>57</i>	<i>59</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>

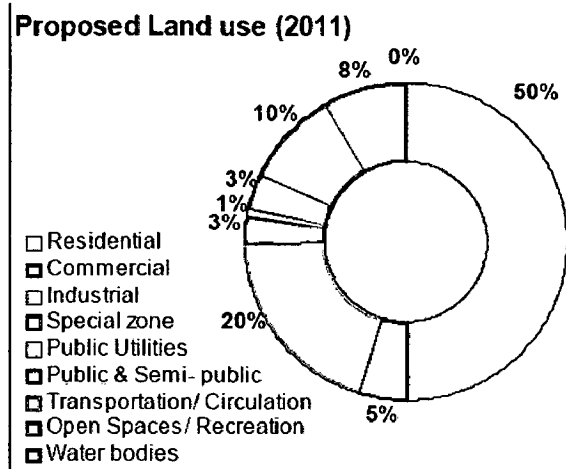
Source: Statistical Abstracts of Haryana: 1980-81 to 2000-01.



Map 4.10; Development plan for 2011, Faridabad

**Table 4.15; Proposed land Use of Faridabad - 2011**

Head	Proposed Land Use (2011)	
	Area (Sq.Km)	% area
1 Residential	77.95	49.7
2 Commercial	7.73	4.9
3 Industrial	31.36	20.0
4 Special zone	4.42	2.8
5 Public utilities	1.55	1.0
6 Public & semi-public	5.30	3.4
7 Transportation/ circulation	15.54	9.9
8 Open spaces/ recreation	12.95	8.3
<b>Total</b>	<b>156.79</b>	<b>100.0</b>



Note:

- (i) Residential areas outside of ring road have not been included in the above areas.
- (ii) The above areas include areas under existing land uses within the towns of old Faridabad, NIT and Ballabgarh.

439 villages in which 414 are inhabited villages and the rest 35 villages merged in towns in 1991. There were 474 villages out of which 25 are uninhabited and 40 villages have been urbanized in 2001. All these villages fall within the boundary of the Faridabad Municipal Administration (FMA). The Faridabad district has 6 towns of different size class of population which altogether constituted 55.63 per cent of the total population in 2001. In January, 1972 the towns of Ballabgarh, Faridabad Old and Faridabad Township were included in the Faridabad Complex Administration (FCA).

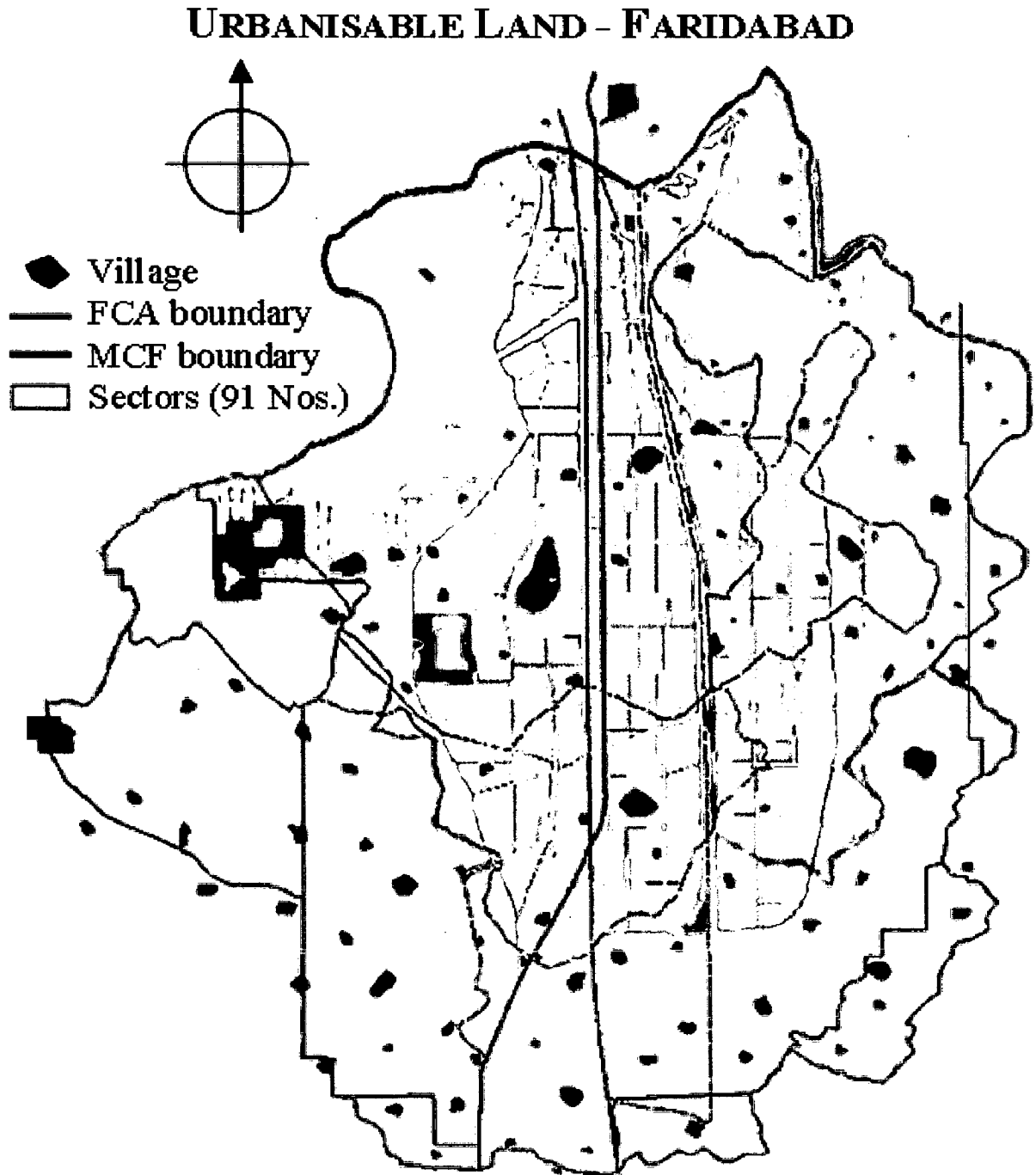
#### 4.7.1 Development plan 2006-2012

The Development Plan (DP) for Faridabad was prepared for the period 1991- 2011, for the erstwhile municipalities of Faridabad Township/ NIT, Old Faridabad, Ballabgarh and 38 revenue villages, altogether referred to as the Faridabad Controlled Area. The DP was prepared comprising 91 sectors to accommodate an estimated population of 17.5 lakhs by 2011.

#### 4.7.2 Urbanisable land – proposed land use

The DP proposals have been prepared in 1991 for a total urbanizable area of 38743 acres/ 156.79 sq.km. In FCA area. The present municipal area of MCF is 207.88 sq.km and it is understood that approximately 75 percent of the MCF area is already

developed. While 50 percent of the urbanizable area is proposed for residential purposes, a significant 20 percent of the area is proposed for industrial uses.

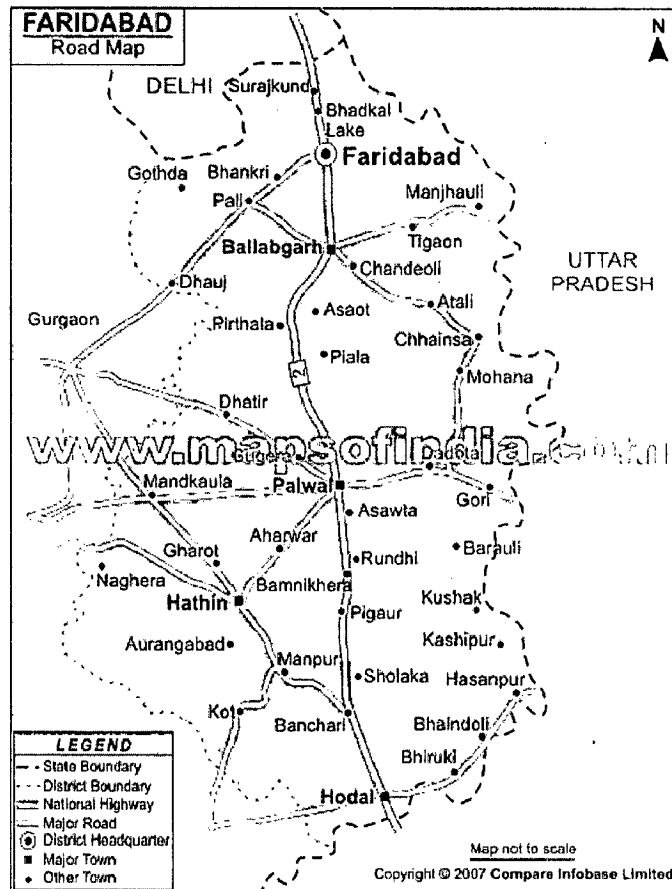


Map 4.11; *Urbanisable land, Faridabad*



### 4.8 Faridabad as district

There are six urban centers which are located all over the Faridabad district. They are playing a counter-productive role in the economic progress since the inception Faridabad as a separate district. It is important to mention that the Faridabad and other six urban centers which are effecting the city expansion pattern and form of city. So it is important to analyze the demographics and statistics of them.



Map 4.10, Faridabad as district

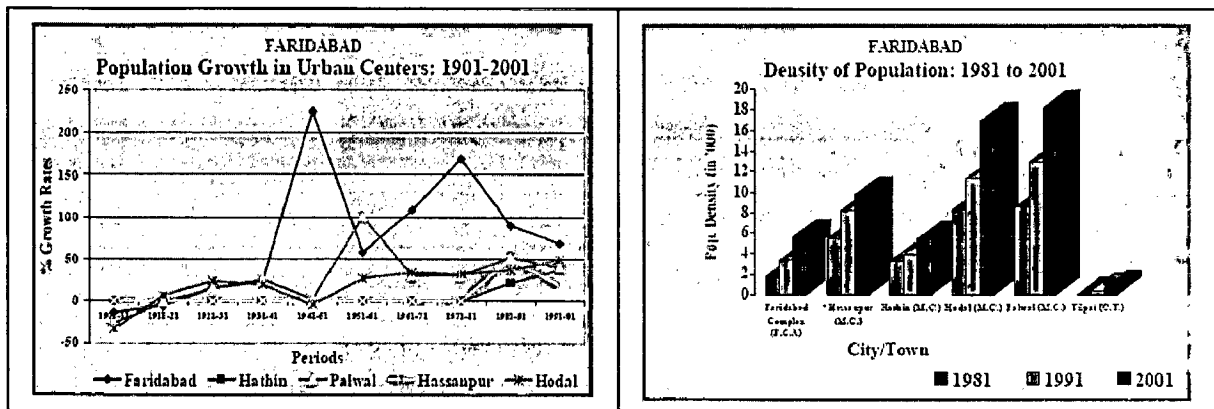


Fig 4.11; Population growth and density of Faridabad urban centers in 2001

### 8.1 Palwal town

The Palwal town is located about 25 kms. away from Faridabad on the Delhi-Mathura National Highway-2 (NH-2). It is about 61 kms. away from Delhi. It has railway station on the Delhi- Mathura broad-gauge line of the central railways. The Palwal town stretches over an area of 5.52 sq. kms. It is a class II category town with a population of 71,637 persons in 1991 which was grown to 1,00,528 persons in 2001. However, it is estimated the Palwal town population will grow to 124.008 lakhs in 2021.

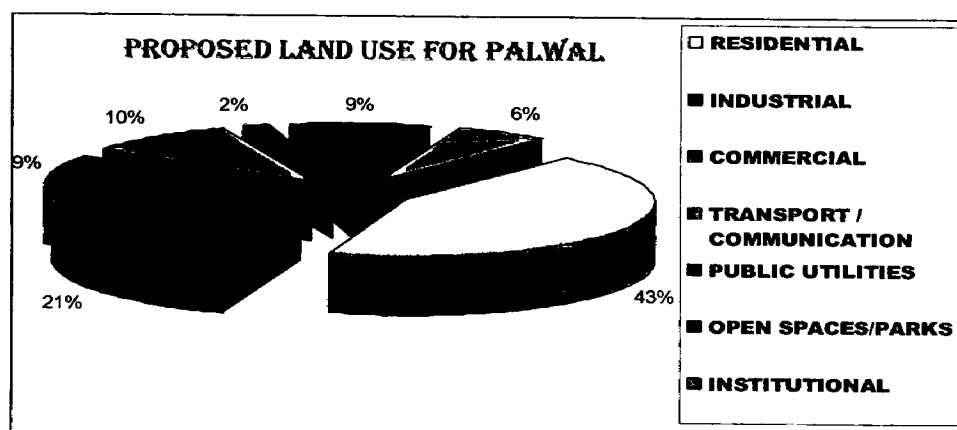
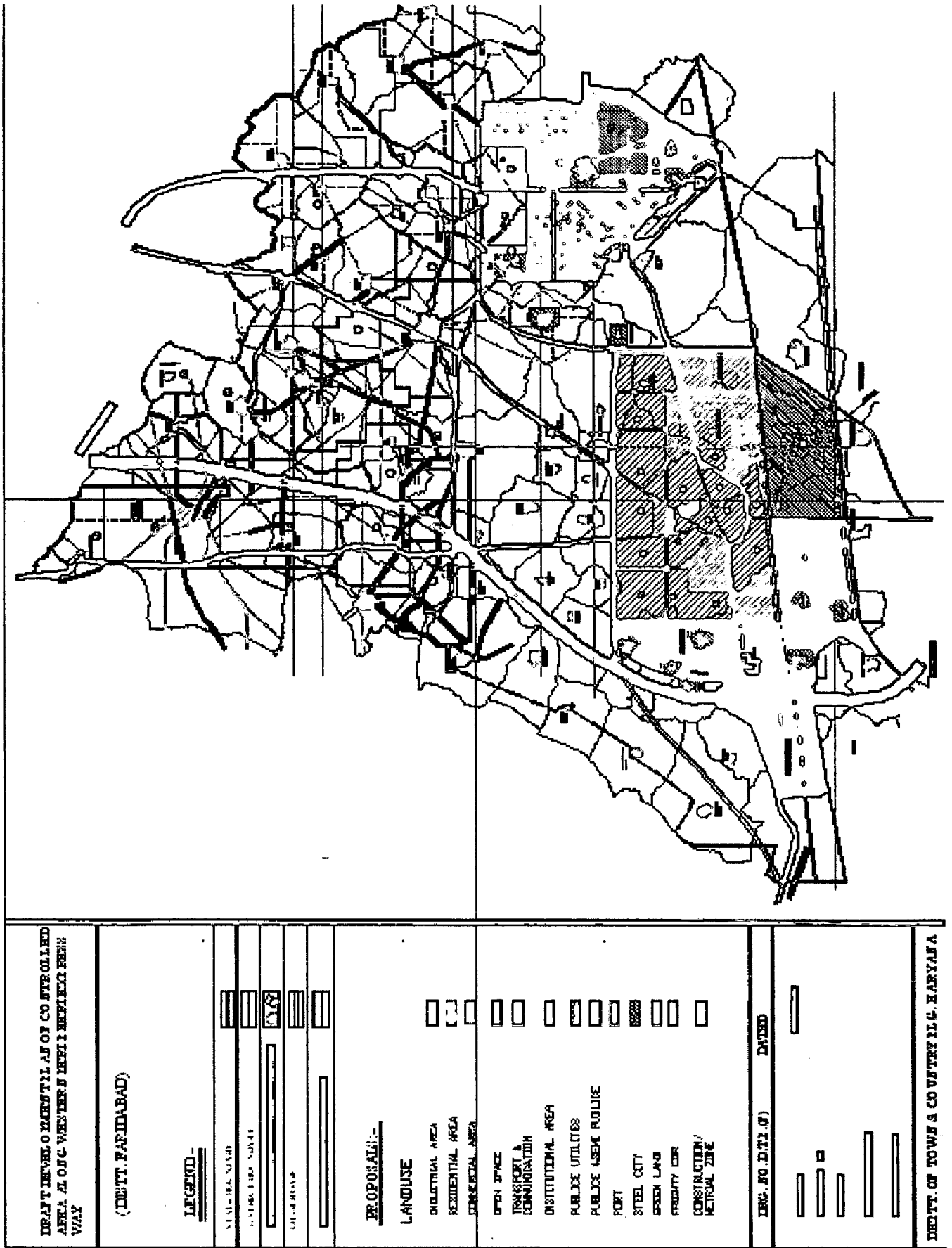


Fig 4.11; land use structure of Palwal 2011

Table 4.16; Proposed land Use for Faridabad and Palwal town- 2011

Category	Faridabad		Palwal	
	Area (km <sup>2</sup> )	% to Total	Area (km <sup>2</sup> )	% to Total
Residential	77.95	49.72	12.06	43.80
Commercial	7.73	4.93	2.37	8.60
Industrial	31.36	20.00	5.71	20.73
Institutional	5.30	3.38	1.72	6.25
Transport & Communication	15.54	9.91	2.74	9.95
Open Space & Parks	4.42	2.82	2.49	9.04
Public Utilities	1.55	0.99	0.45	1.63
Others	12.95	8.26	-	-
Total	156.79	100.00	27.53	100.00

Source: Master Plans of Faridabad and Palwal.



Map 4.11; Master plan of Palwal town in Faridabad district

#### **4.8.2 Hassanpur**

The Hassanpur town is situated in the Palwal tahsil. It is 52 kms. away from the Faridabad city. The Hassanpur town is spread over an area of about one or 0.93 sq. km. It is a class V category town and has a population of 9,089 persons in 2001. The population growth of 49.83 per cent was recorded during 1981-91 in the Hassanpur town. It was comparatively low to 18.93 per cent during 1991-2001 as is evidenced by the Figure 4. The density of population was 5,494 in 1981 which increased to 8,231 persons per sq. km. in 1991. Furthermore, it was increase to 9,773 persons per sq. km. in 2001.

#### **4.8.3 Hathin**

The Hathin town is situated about 16 kms. west-south of Palwal on the Palwal-Hathin road. The Hathin town is spread over an area of 1.99 sq. kms. It is a class V category town with the population of 7,863 persons in 1991. It was increased to 10,913 persons in 2001. The population growth of 21.10 per cent was recorded during 1981-91 in the Hathin town. It was comparatively low to 37.51 per cent during 1991-2001 as is evidenced by the Figure 4. The density of population was 3,293 in 1981 which increased to 3,988 persons per sq. km. in 1991. Furthermore, it was increased to 5,484 persons per sq. km in 2001. Under the Mawat Development Scheme an industrial estate of 350 acres is being developed in the Hathin tahsil.

#### **4.8.4 Hodal**

The Hodal town is a small town on the Delhi-Mathura National Highway-2 (NH-2) and lies at a distance of about 87 kms. from Delhi. Hodal town is a class III category town covering an area of 2.25 sq. kms. It has a population of 25,626 persons in 1991 which was increased to 38,306 persons in 2001. The population growth was increased over the periods. For instance, the population growth of 36.74 per cent was recorded by the Hodal town during 1981-91. It was increased to 49.48 per cent during 1991-2001. The density of population was 8,329 in 1981 which increased to 11,389 persons

per sq. km. in 1991. Furthermore, it was Increase to 17,025 persons per sq. km. in 2001.

#### 4.8.5 Tilpat

The Tilpat as a census town came into existence in 2001. It is a class V category town with the population of 6,377 persons in 2001. It spreads over an area of around 9.92 sq. kms. It has recorded the density of population of 643 persons per sq. km. in 2001

### 4.9 Economy

Faridabad, a constituent part of NCR is home to one of the largest industrial estates of Asia which houses a large number of manufacturing industries. Economy of Faridabad is more or less dependent on Industry.

Faridabad-Ballabgarh-Palwal Industrial Complex occupies a significantly important place on the Industrial map of India with its own individuality and personality. Faridabad is the 9 th biggest industrial town of India . It has various type of industries which are manufacturing products ranging from hypodermic syringes to huge mechanized Loaders, Tractors, Motorcycles, Air-conditioners, Tyres, Footwears etc. Significant enough are its products like special alloy steel casting, forgings, vacuum glass flasks, refrigerators, LPG stoves etc. It is also noteworthy that during the last few years, about 100 units of textiles, dyeing and printing have come up in this Industrial Complex; as a result a large number of garments exporters switched over to Faridabad from other parts of the country.

**Table 4.16;** Total work force of Faridabad town- 2001

YEAR	TOTAL WORKE RS	PRIMARY SECTOR		SECONDARY & TERTIARY SECTORS	
		NUMBER	%	NUMBER	%
1971	38335	12130	31.6	23978	62.5
1981	100932	15302	15.2	73147	72.5
1991	242176	25910	10.7	155172	64.0

Source: Census Handbook Faridabad 1971 – 1991

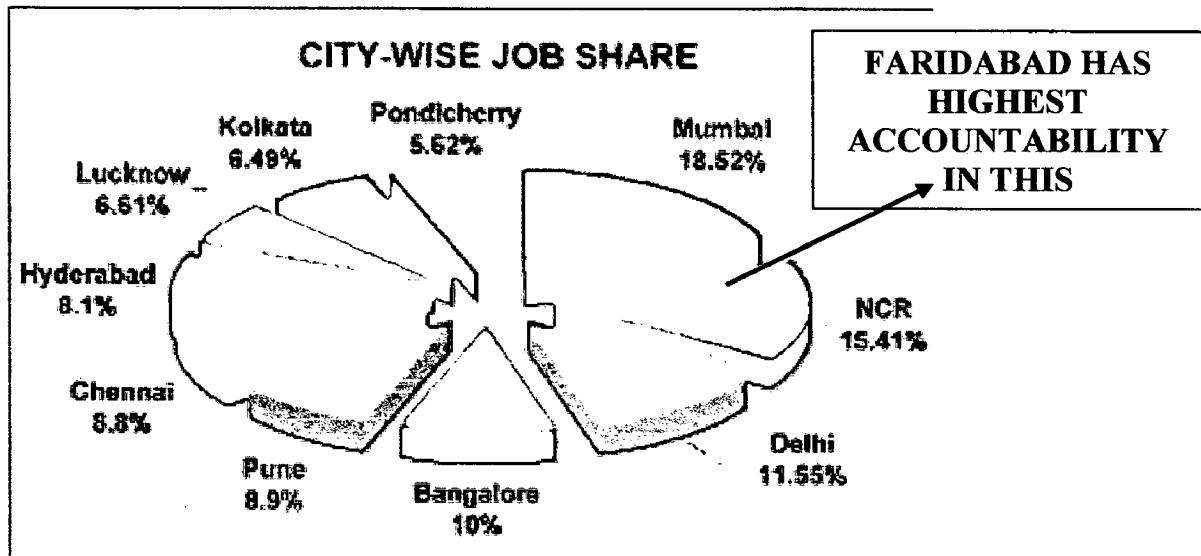


Fig 4.12; City wise job share all over India

#### 4.9.1 Industry employment and economic structure

The industrial estate of Faridabad is understood to be providing direct and indirect employment to nearly half a million people. The work force participation rate (WFPR) of Faridabad city as per Census 2001 is 31 percent that is about 3.3 lakhs implying another equal number of employees of Faridabad industries travel daily from other NCR areas to Faridabad. The employment in the industries of Faridabad is both skilled and unskilled in nature. The majority of the workforce today is in the tertiary/ services sector. This also indicates the quantum of migration that had and has happened within and outside NCR. While migration within NCR is low, migration into NCR from other regions of Northern India is high. This causes a larger impact on Faridabad due to its industrial character.

It may also be noted that the WFPR of Faridabad city was 30 percent in 1991 and 34 percent in 1981. Sectors, which indicated maximum diversification and growth over the decades, are industries other than household and services. The decline in WFPR over the decades is due to the change in the economic character of Faridabad- from being predominantly primary/ secondary it is now tertiary/ service oriented. The trend is similar to that in NCR with industries other than household registering the maximum growth.

#### **4.9.2 Impact on work force**

Before industrialization, the agricultural production forms the backbone of the economy of an area. The workforce is almost completely comprised out of the indigenous population there is no in-migration of workers. The majority of which are engaged in the primary sector. In Faridabad a clear shift of the workforce is seen from the primary to the secondary and tertiary sectors.

#### **4.9.3 Economic base**

The industrial base of Faridabad is not just the economic base of Faridabad, but again a constituent part of the overall economy of the NCR, implying that the economies are interdependent. As on date there are 16 multinational companies (MNC), 809 ISO-based industries, 205 medium and large-scale industries and 399 small-scale units as per the records of the District Industrial Centre, Faridabad. However, there are also a large number of other smaller industrial units, functioning from various locations including residential areas in the city.

On the whole, the total number of small, medium and large industries in the Faridabad-Ballabgarh Complex stands at about 15,000. The Complex provides direct and indirect employment to nearly half a million people and ranks as the 9<sup>th</sup> largest industrial estate in Asia. Its combined turnover is estimated to be about Rs.1,500 billion.

This industrial estate in Faridabad is spread over an approximate area of 6,948 hectares and is home to a variety of engineering products from forgings to tractors, clutch assembly to leaf springs.

#### **4.9.4 NCR proposals for economic development**

- As an overall strategy, the regional Plan, 2021 of NCR identifies the need to have a Common Economic Zone for the entire area of NCR.

- The Common Economic Zone is proposed to have rationalized tax structure; uniformity of incentives; uniformity of financial/ banking services; removing restrictions on inter-state traffic movements; uniform power supply, telecommunications, infrastructure like water, sewerage, waste management, pollution control, uniform law & order machinery etc.
- As area-specific strategies, the Central National Capital Region (CNCR) cities like Faridabad shall have induced industrial development taking advantage of the location within NCR and the thrust will be on promoting model/ integrated industrial townships with adequate provision for residential, commercial, institutional, and recreational facilities.
- These townships can also be Special Economic Zones (SEZ) with uninterrupted power supply, efficient telecommunication facilities, integrated transport networks and freight corridors, warehousing and effluent treatment facilities, etc. Further,
- Faridabad has also been identified as the location for the wholesale trade of auto parts. There is also plan for the development of the Alternative Wholesale Market for auto parts by the concerned state level agency as a joint venture project and proposal to declare auto parts as a

#### **4.10 Slums in Faridabad**

The booming industry in the city during the 70s and the 80s and the growth of its economy has also contributed to the growth of slums. Large numbers of labourers from different parts of the country have migrated in groups to the city in lieu of opportunities and settled on available vacant lands, largely belonging to the Central and State Govts, MCF, HUDA.

In all, there are 67 identified slum clusters in the city. The survey conducted during 2001 identified the total population living in these slums as 132424. It is estimated that as on date, the population living in the slums would be about 1.47 lakhs. That accounts for about 12 percent of the total city population.



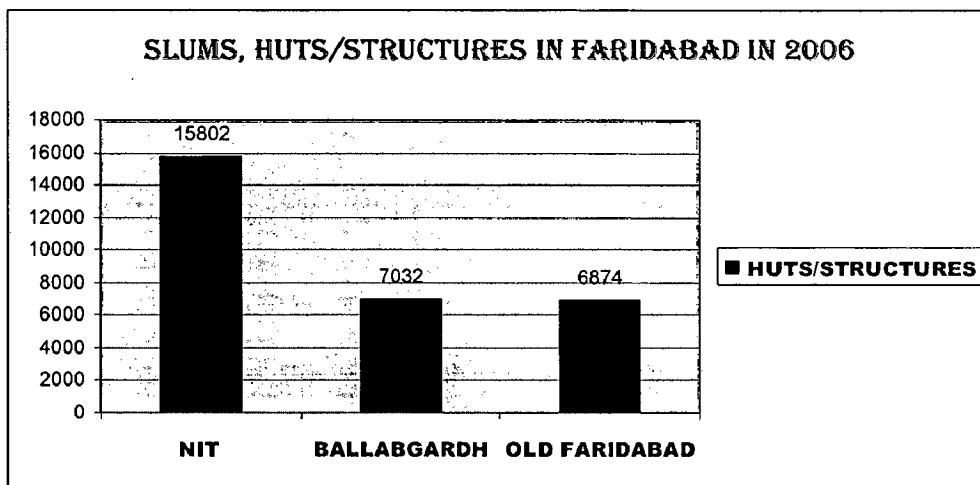
The majority of the slums are concentrated at critical locations like along the alignment of the Badarpur bypass, the entire area between Old Faridabad and G.T. Road, and several lands acquired by HUDA for residential and industrial purposes.

**Table 4.17; Slums in Faridabad town**

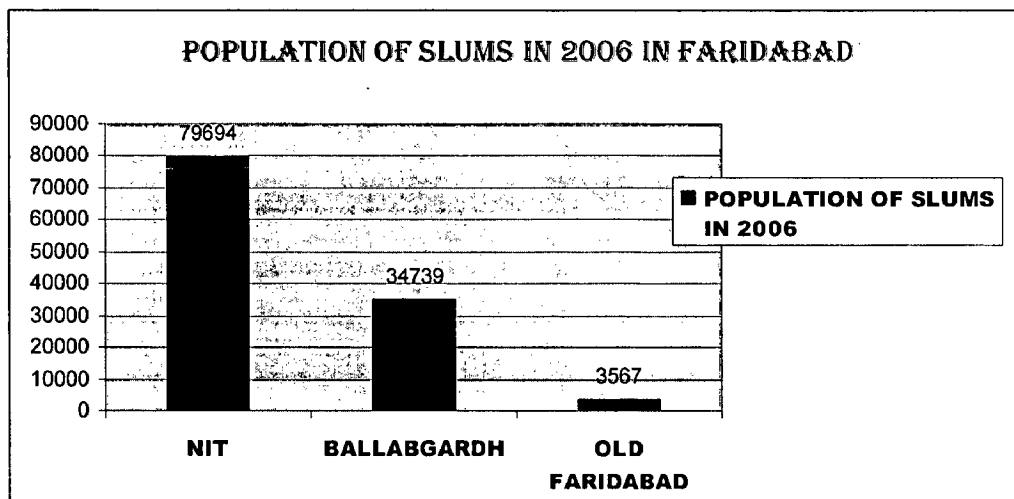
**Table 12. Slums in Faridabad**

Zone	Huts/ Structures	Population (2001)	Population (2006)
1 NIT zone	15802	71792	79694
2 Ballabgarh zone	7032	31294	34739
3 Old Faridabad zone	6874	29338	32567
<b>Total</b>	<b>29708</b>	<b>132424</b>	<b>147000</b>

*Slum Survey, 2001 & Estimates*



**Fig 4.13; Slums, Hut structures in Faridabad town 2006**



**Fig 4.14; Slums population in Faridabad town 2006**

### 4.11 Housing shortage

The rapid industrialization led to the requirement of a large number of industrial workers in a very short time. This demand for additional workers could not be met locally. Thus, it led to a high amount of in-migration of workers for employment in industries. As no additional provisions were made for housing them, it created a housing shortage.

### 4.12 Land values in the city;

The land values as that of two major types, Industrial and residential

**Industrial land values**-The maximum value is of the plots along the N.H.2 which are priced around 12,000 to 18,000 per square yard. The second category is the land under NIT Faridabad, with prices ranging from 8,000 to 11,000 per square yard. The cheapest industrial lands are the new industrial lands which are selling at 2,000 to 7,000 per square yard.

**Residential land values**-The maximum observed values are between Rs.25,000 to Rs.30,000 per square yard which is observed in the centrally located sectors 12, 14, 15, 16 etc. These are close to the administrative seat of the city in sector 12, have a major market close by, wide roads and large plots. Another area being developed as a high potential area is near Surajkund.. Some multistoried buildings like Charmwood village have already come up. The prices in the old area are about Rs.15,000. The old area, even though it enjoys the proximity to Delhi has lesser real estate values because of narrow streets and small plot sizes. The new sectors are selling at Rs.7,000 to 11,000 per square yard.

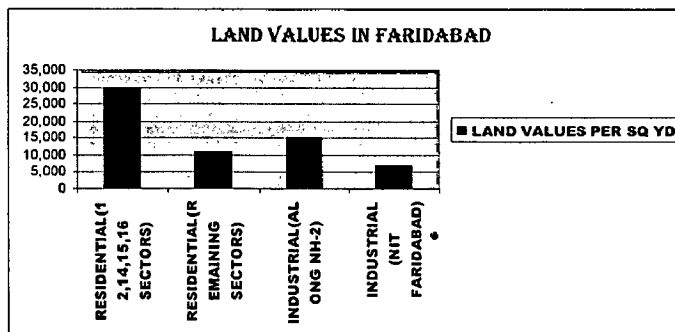


Fig 4.15; Land Values in Faridabad town

**CHAPTER 5**

**THE CITY STUDY – DATA ANALYSIS & INFERENCES**

**5.1 Data analysis**

Before studying the fringe development study it is really necessary to lay inferences from the growth pattern and other aspects of the core and existing city. As it will provide the direction of growth to other related areas such as fringe and most of the solutions could be laid from the city core itself.

The city is being studied on few physical aspects which will help in studying the further fringe development.

**5.1.1 Density pattern of the city**

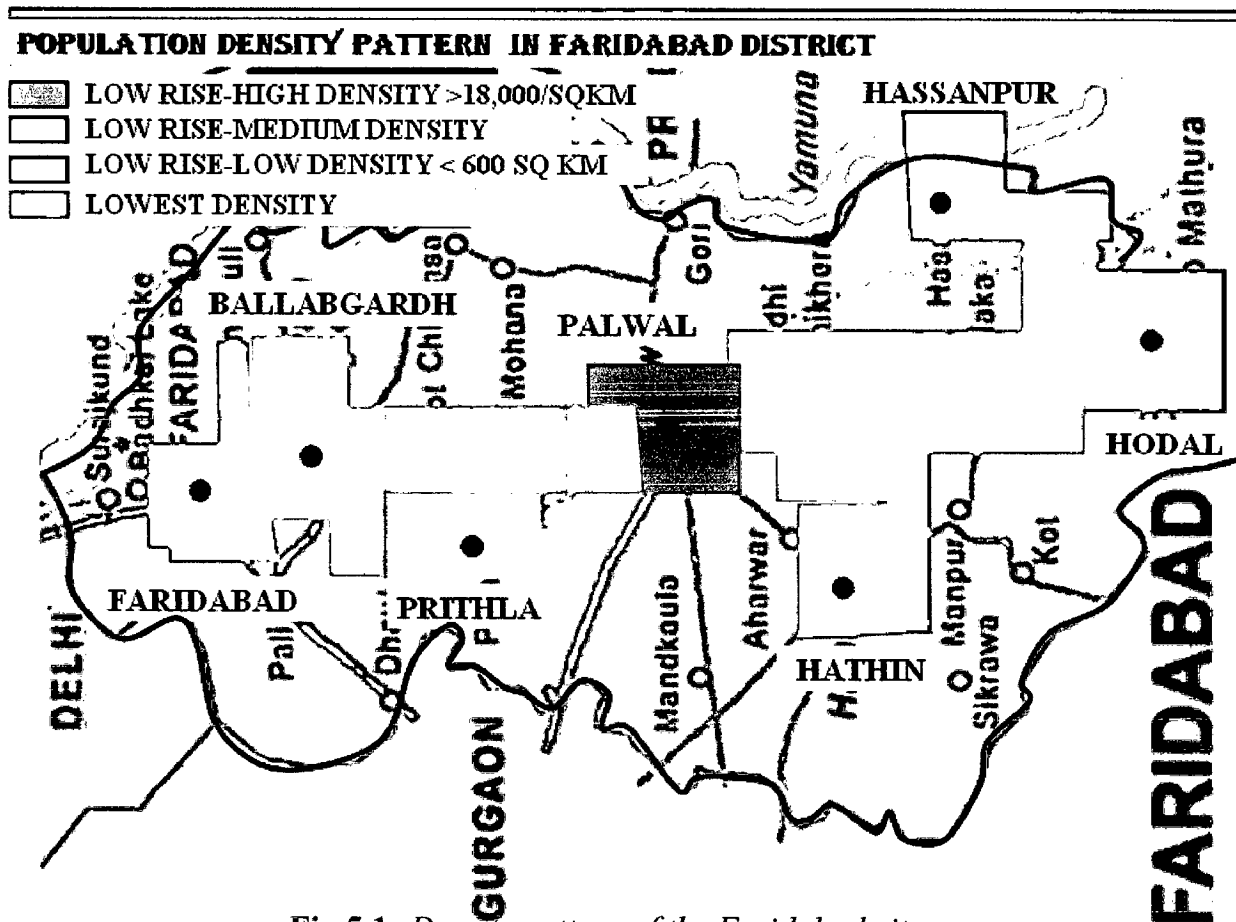


Fig 5.1; Density pattern of the Faridabad city

### 5.1.2 Migration

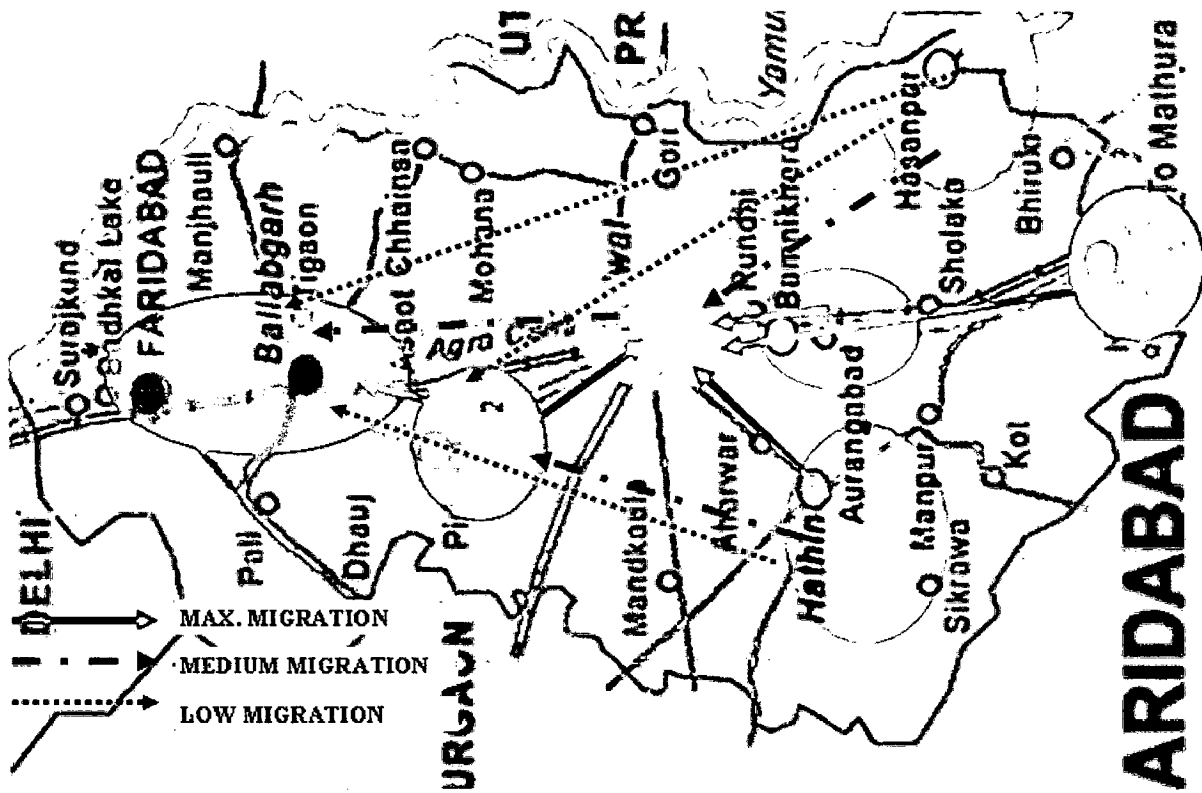


Fig 5.2; Migration pattern of the Faridabad city

Migration to the city is the major reason for the population growth of the city and it has to be guided and managed by looking the pattern and direction of migration and creating a viable solution when we plan the fringe area of the city.

As we can see they are other major urban centers which have lot of migration we can develop them stronger counter magnets such that the burden on the city core could be released a bit.

This all will depend on the land use distribution of the area considering all the factors.

### 5.1.3 Faridabad development plan growth pattern

After studying and analyzing the development plan of Faridabad we could observe the future direction growth of the city and its expansion. As it could clearly mark the opportunity areas and problem creating aspects.

So this guides the further planning of fringe area of the city.

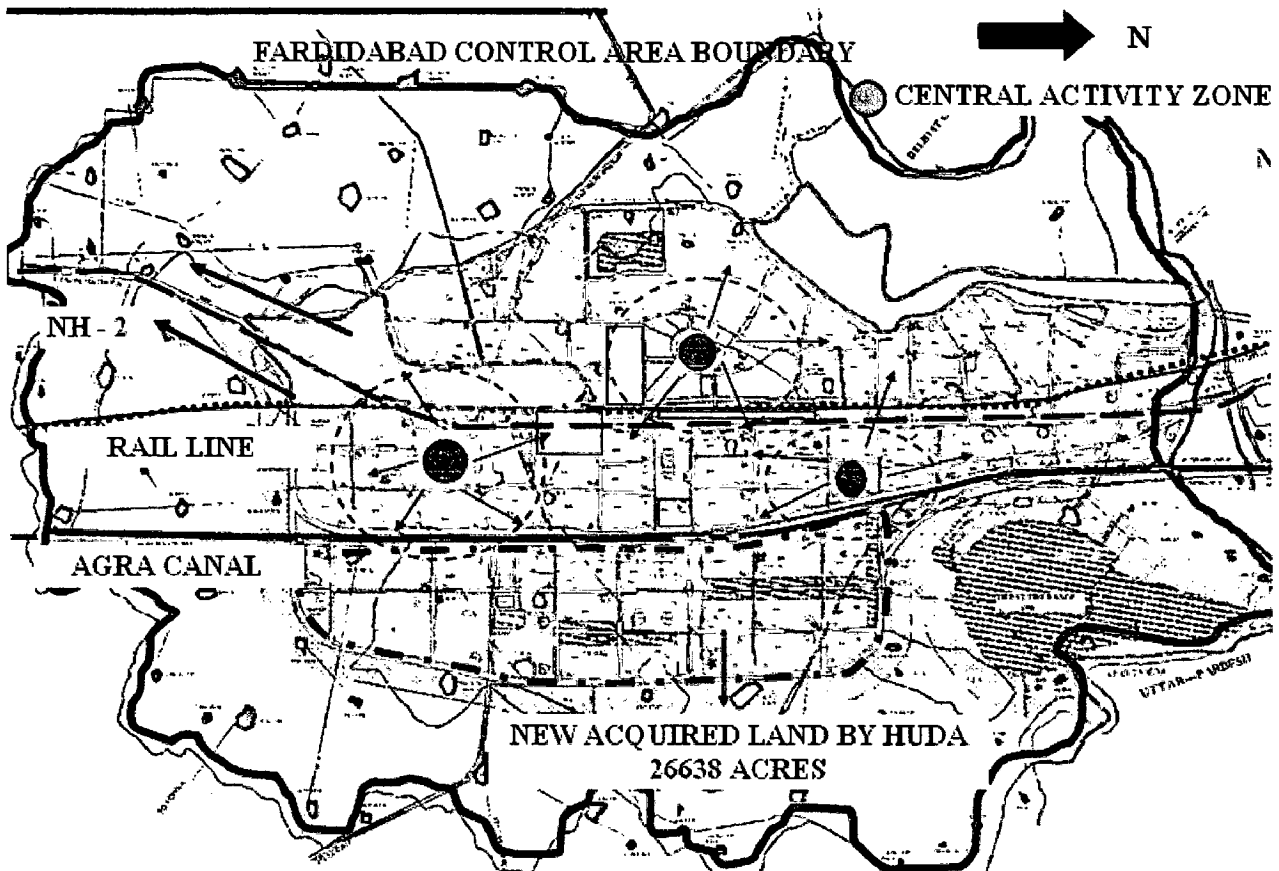


Fig 5.3; Development pattern of the Faridabad city

## 5.2 Inferences lay from city profile study;

- **LINEAR CITY GROWTH**
- **HUGE MIGRATION TO THE INDUSTRIAL CITY**
- **UNAUTHORISED CONSTRUCTION – 30,000 SLUMS BECAUSE OF MANUFACTURING INDUSTRIAL CENTRE**
- **LOW RISE – LOW DENSITY**
- **LAND SPECULATION IN THE CITY, EVEN NEW ACQUIRED AREA FOR NEW SECTOR DEVELOPMENT.**

- **DEVELOPING MORE INDUSTRIAL CORE FRINGES MORE PRONE TO UNAUTHORISED OR WORKING FORCE POPULATION ACCOMODATION.**
  
- **NCR PROPOSALS FOR DEVELOPMENT IN THE CITY WILL PROPOGATE FUTURE GROWTH MORE DRASTICALLY.**
  
- **INADEQUATE INFRASTRUCTURE, EVEN NEW UPCOMING DEVELOPMENT WITHOUT PROVISION OF BASIC AMENITIES.**
  
- **LACK OF GREEN AND OPEN AREAS, DISTURBED ENVIRONMENTAL QUALITY.**
  
- **UPCOMING OTHER URBAN CENTRES IN VICINTY WHICH IS EFFECTING CITY DYNAMISM.**
  
- **HUGE PRESSURE ON GREEN BELT AND LOT OF FOREST LAND HAS BEEN ACQUIRED AND EXPLOITED.**

## CHAPTER 6

### PERIPHERY DEVELOPMENT

#### 6.1 Nature of periphery development

##### 6.1.1 Acquired and planned by HUDA.

HUDA has acquired 22638 acres of land on west of Agra canal as that area lies in the dominant expansion direction. 20 sectors are planned with the min. density of 45 people per acre and maximum to 120 people per acre specially sectors ling next to commercial zone.

Industrial sectors are planned to serve the purpose of employment.

It is bounded by western expressway from Ghaziabad-Noida – Palwal on one side leading to further growth and expansion.

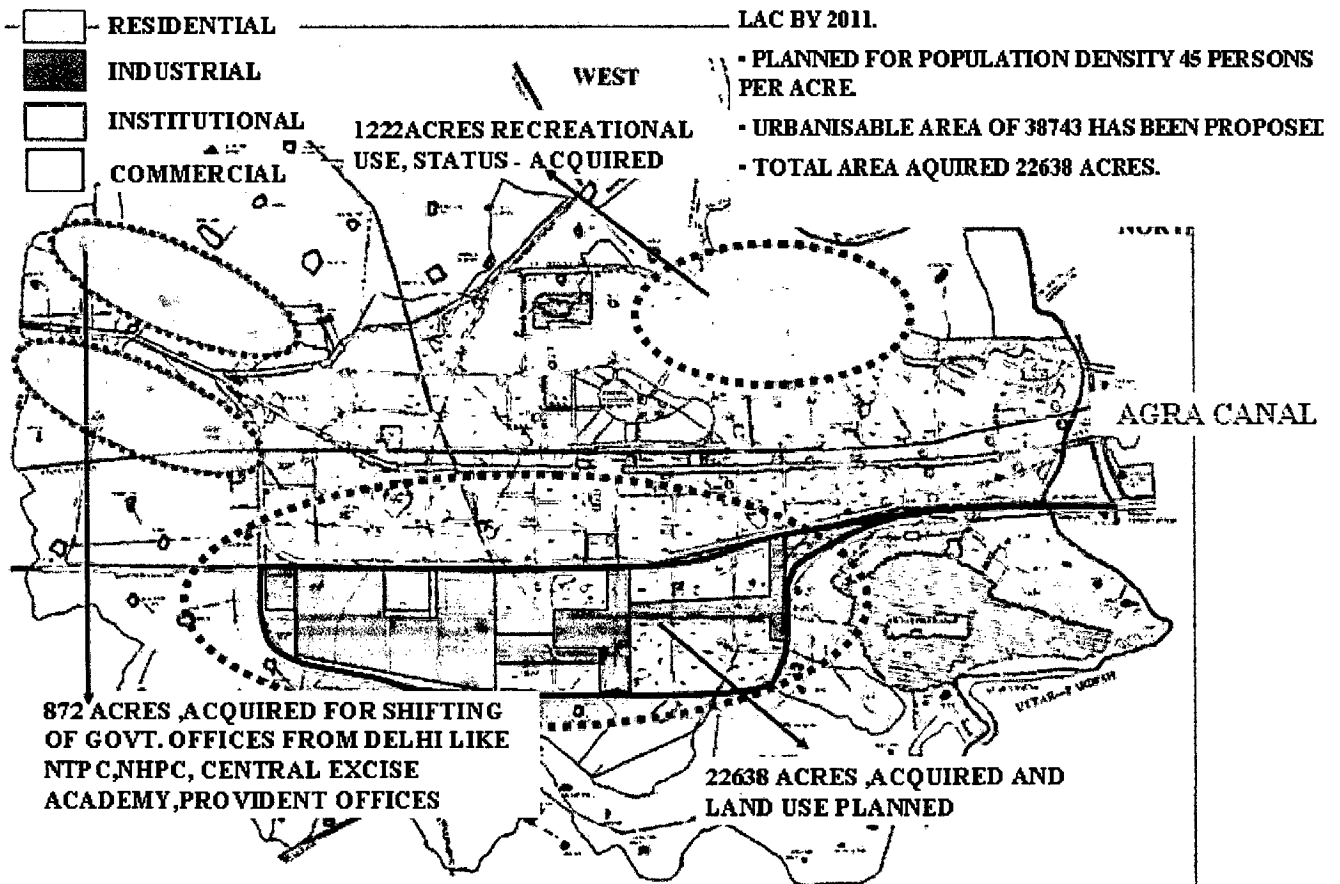


Fig 6.1; Proposed new land acquisition of Faridabad city

6.1.2 Land use structure

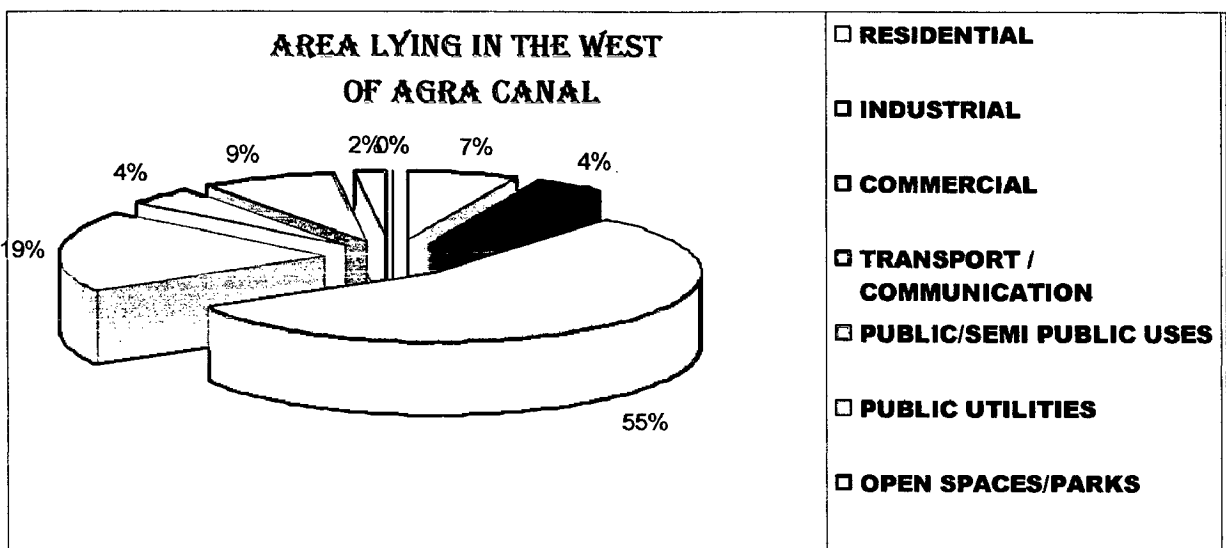


Fig 6.2; Area detail lying on the west of Agra Canal

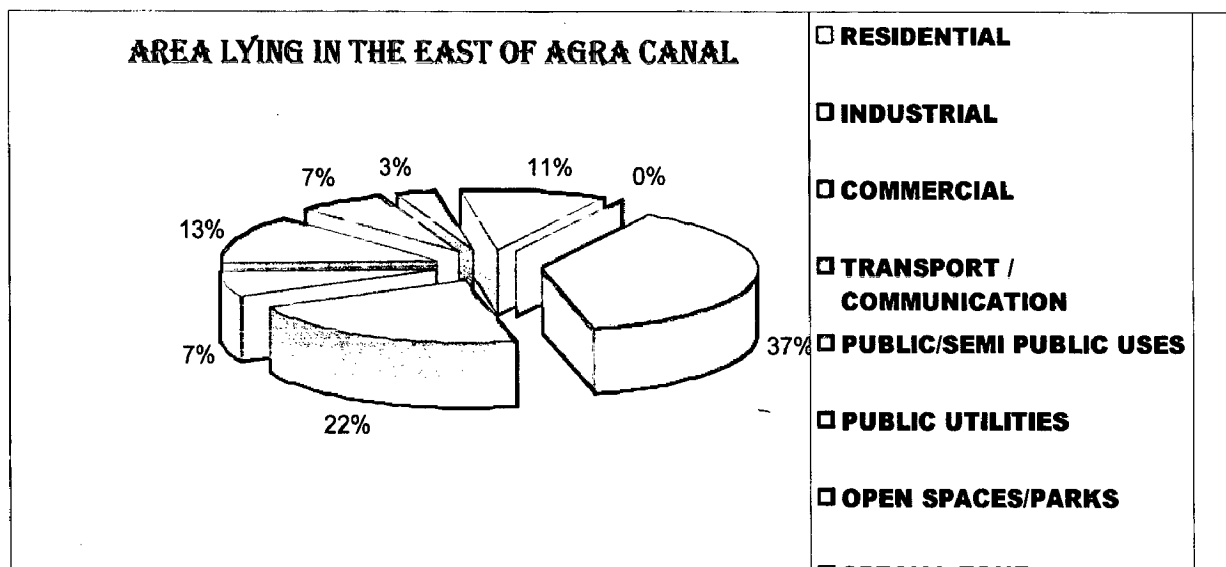
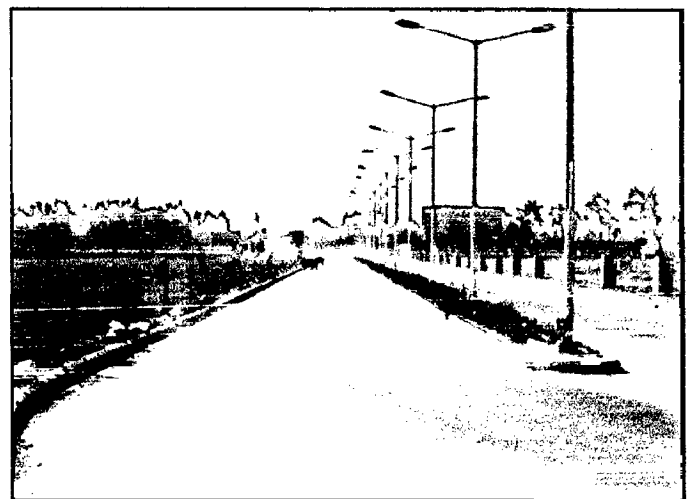
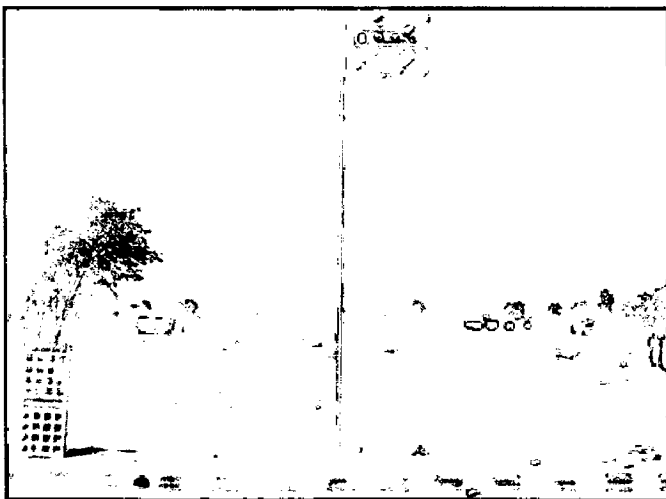
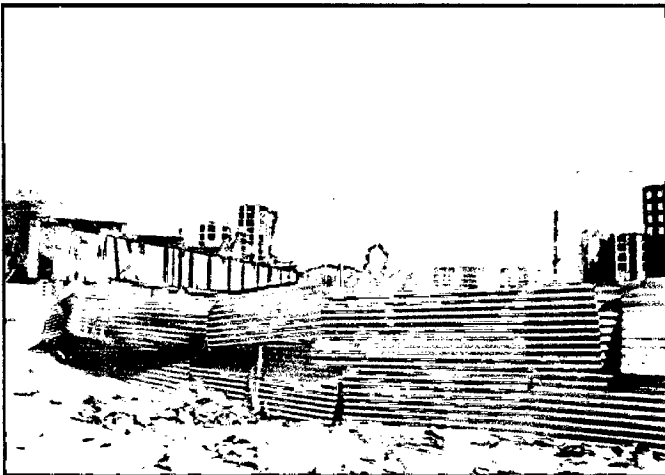
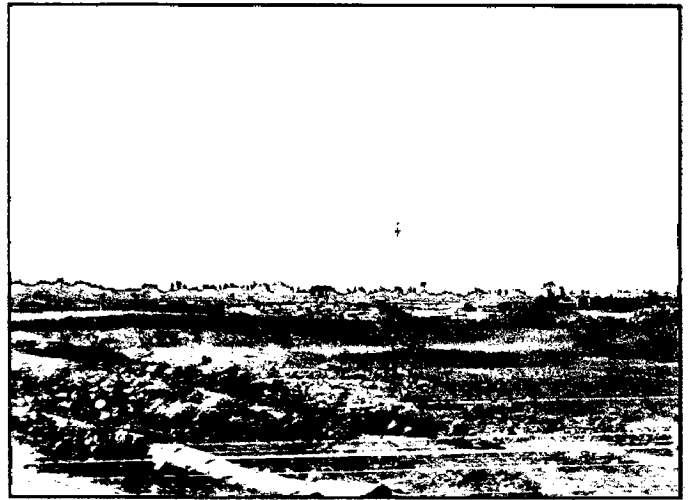
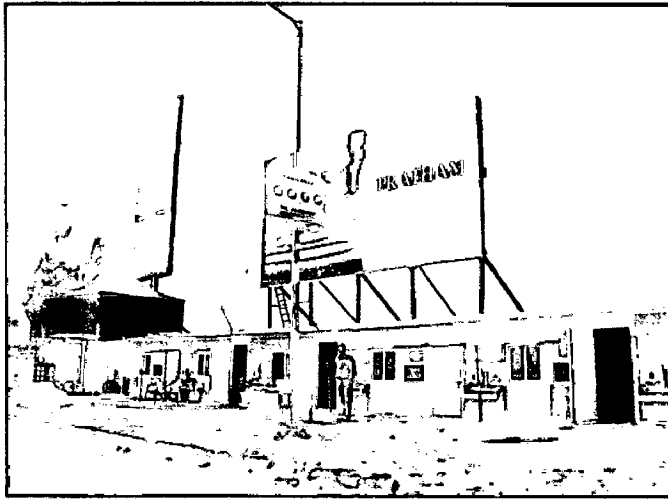


Fig 6.3; Area detail lying on the east of Agra Canal

- 66-89 SECTORS PLANNED (20 SECTORS)
- 12 RESIDENTIAL SECTORS ARE PLANNED TOTAL AREA – 19262 ACRES
- 6 SECTORS INDUSTRIAL – 7749 ACRES



### 6.1.3 Overview of the acquired land



**Fig 6.4;** Private developers like BPTP, OMAXE, PRATHAM, PURI developing their residential sectors. Max. Land is being developed by BPTP 1500 ACRES. IT IS CONNECTED WITH OVERBRIDGE TO CENTRALLY LOCATED SECTORS 14, 15, 16.

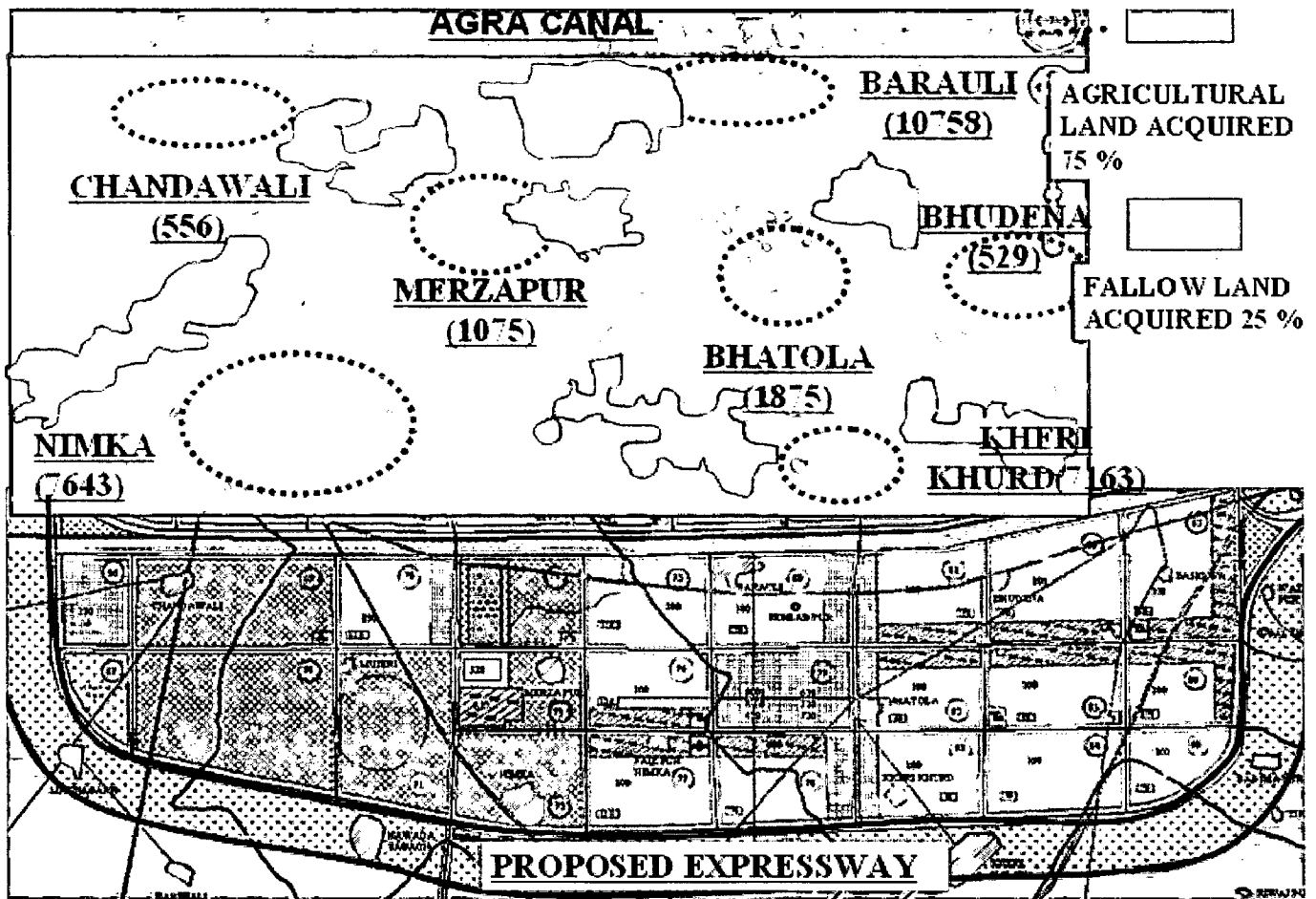


Fig 6.5; Detail of villages Acquired on Agra Canal

- 7 villages have been rehabilitated, named as Barauli, Chandawali, Bhudena, Merzapur, Bhatola, Kheri Khurd, Nimka.
- The total population which has been moved from there is around 20,000 approx.
- 75% of agricultural land has been taken under acquisition for the further development.
- Mostly the sectors are given to private developers to develop in their own way with their provision of infrastructure.
- The proposed expressway will be one of the great growth churning development in the area making the land cost higher giving no relief to the lower section of society.

6.1.3 Development analysis

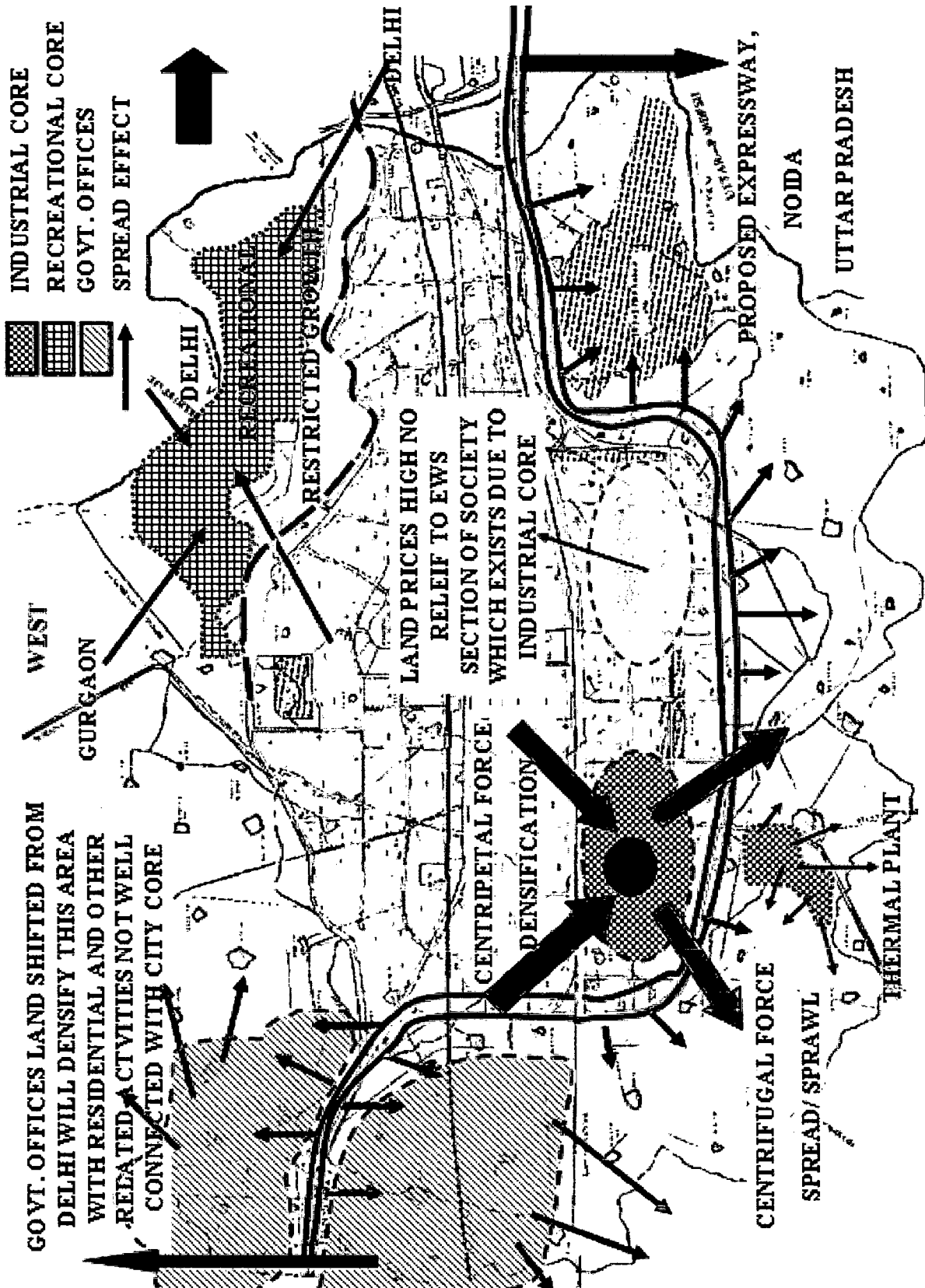


Fig 6.6; Development Analysis of planned acquired land

- Provision of industrial sectors without self sustaining township will give rise to centripetal and centrifugal force leading to densification and slum development and spread effect around.
- Residential sectors planning will not give relaxation or buffer to any section of society except high income group.
- Lack of open spaces and greens loosing the visual quality of space.
- Recreational area acquired near Aravili hill range will restrict the growth in the direction forming the green belt around. The stretch is proposed with Appu Ghar, Amusement parks etc. this belt will be developed as the leisure belt catching the population from Delhi, Gurgaon and Faridabad etc.

## **6.2 Area under Control Boundary but not planned**

### **6.2.1 Stretch along National Highway – 2 from Ballabgarh to Prithla.**

Ballabgardh is industrial core of the city; it is developing in its own pace with the migration of lot of working population. Development pattern is different along the National Highway is its own pace and pattern. Huge agricultural land has been transformed into another mixed land uses.

#### **Land use structure**

- Stretch is not planned it just comes under the Faridabad control area boundary. But the development plan has come up for growing urban centers that too of small portion.
- As Prithla is developed as Dry port of NCR so planning was required as it comes under central government jurisdiction.

RECENT UPCOMING DEVELOPMENT AROUND OTHER NODES WHICH IS EFFECTING THE GROWTH PATTERN

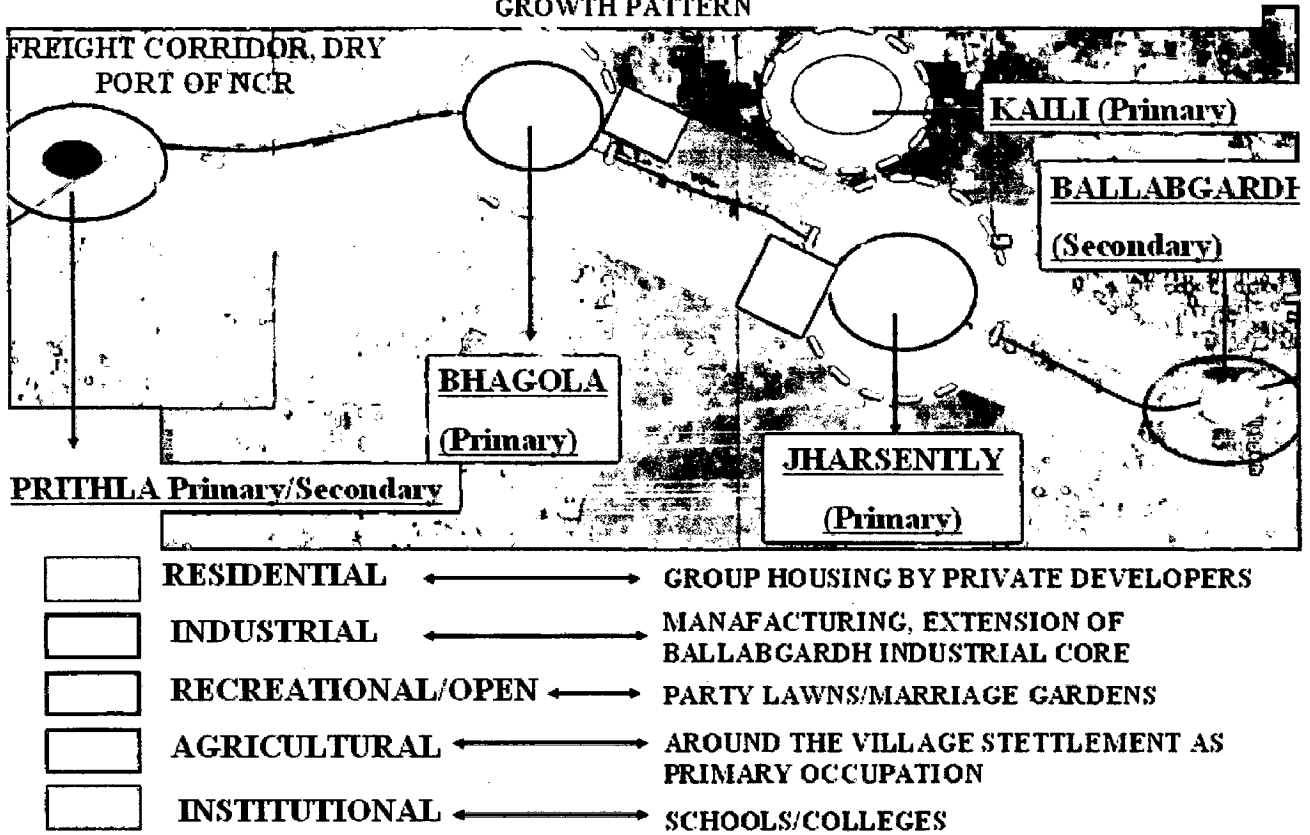


Fig 6.7; Development pattern between the stretch of Ballabgarh to Prithla

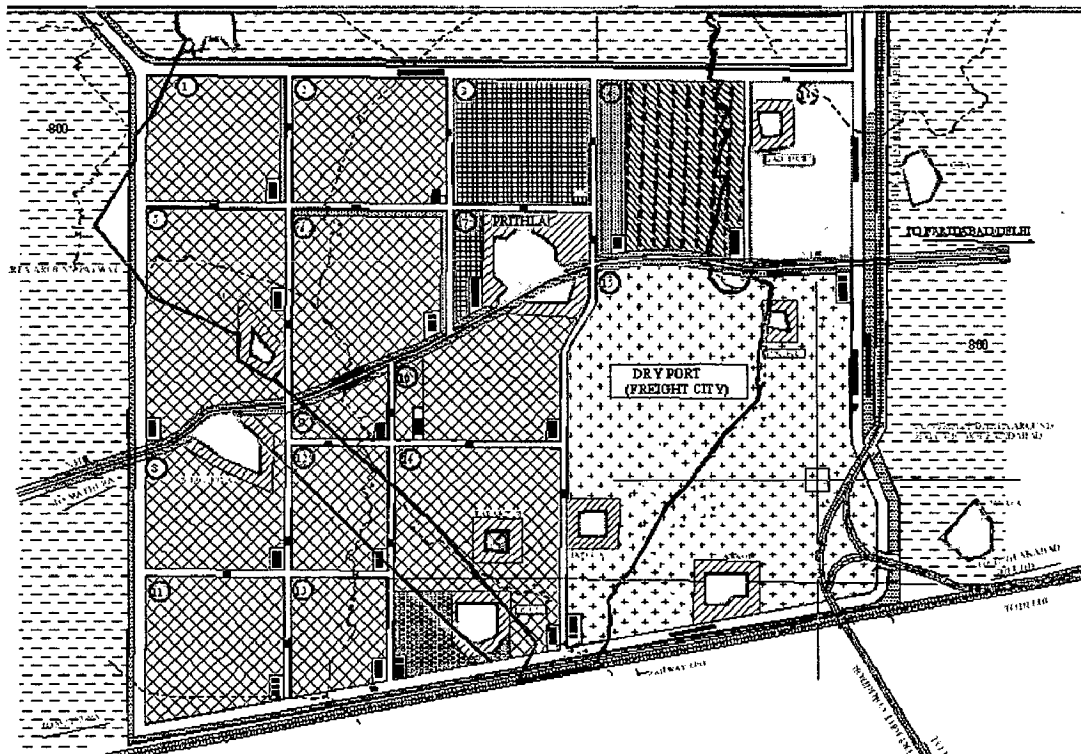
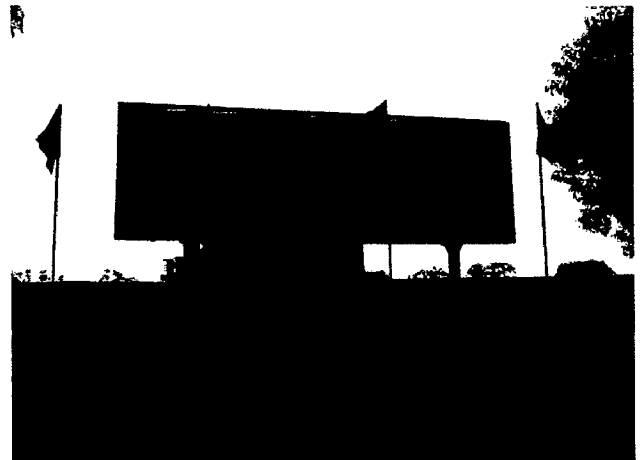
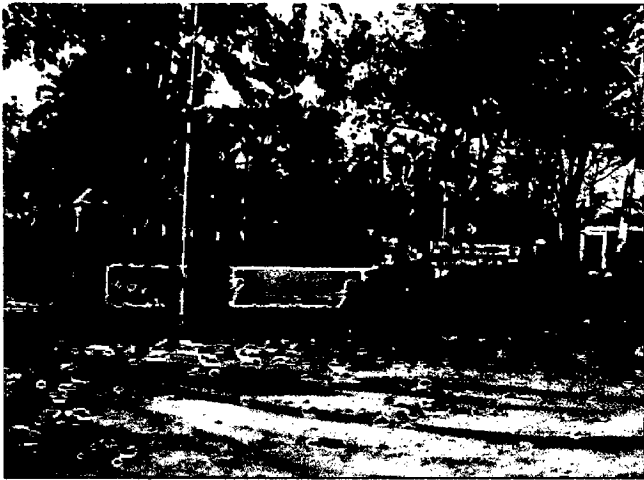


Fig 6.8; Master plan prepare for dry port in Prithla

**6.2.2 Overview of the stretch from Ballabgarh to Prithla**



**Fig 6.9;** *party lawns/ marriage gardens, hard core industries, schools like DPS, GD GOENKA, housing by private developers, settlements*

6.2.3 Land use distribution and transformation of land uses.

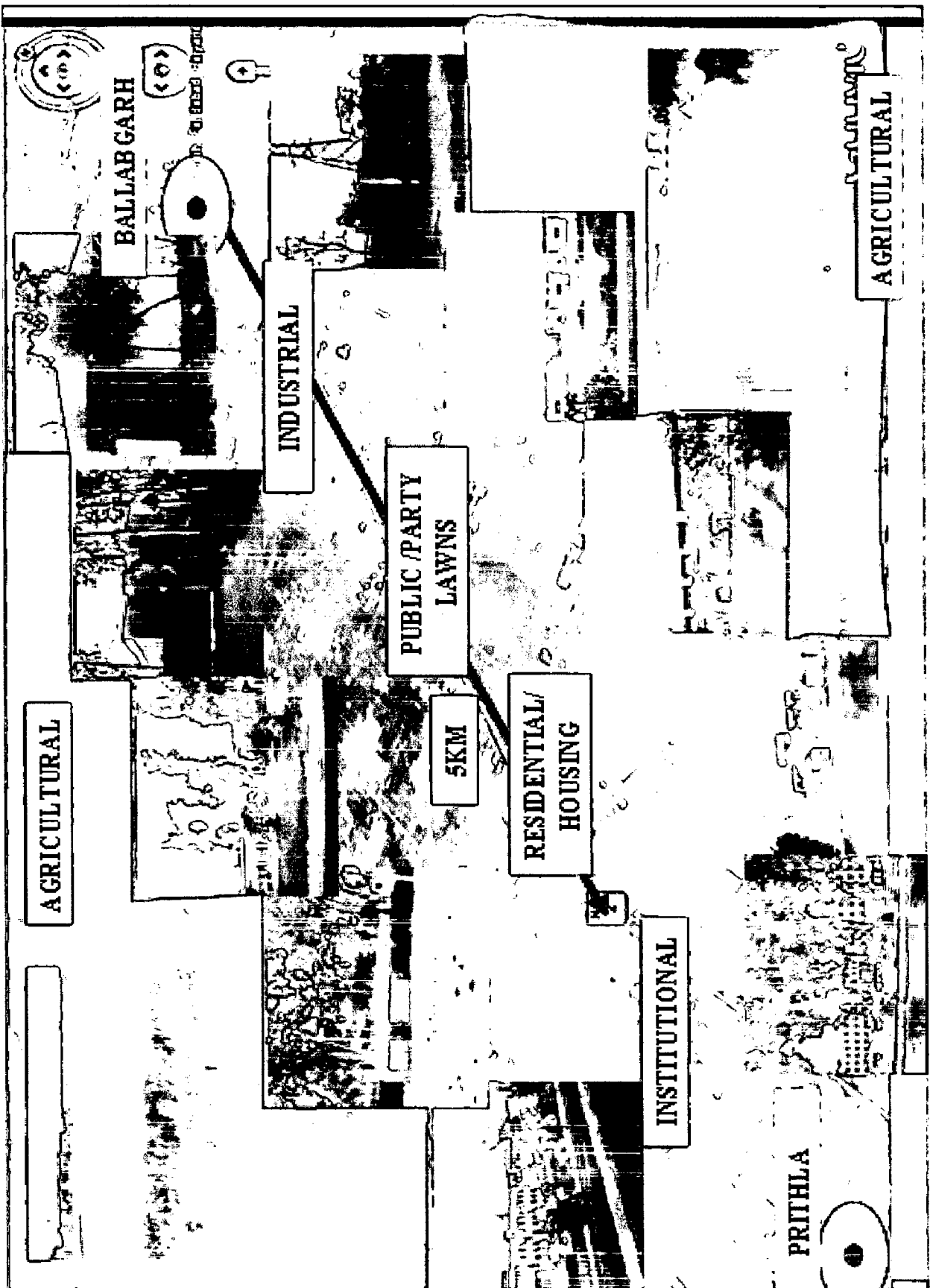


Fig 6.10; Land use distribution and transformation of land uses from Ballabgarh to Prithla.

### 6.3 Stretch along National Highway – 2 from PRITHLA to PALWAL.

This stretch experiences mixed land use growth.

Land use transformation from agricultural to other commercial uses.

National highway has different guidelines but it is also not followed.

Huge different kind of uses is banking on both the sides of highway

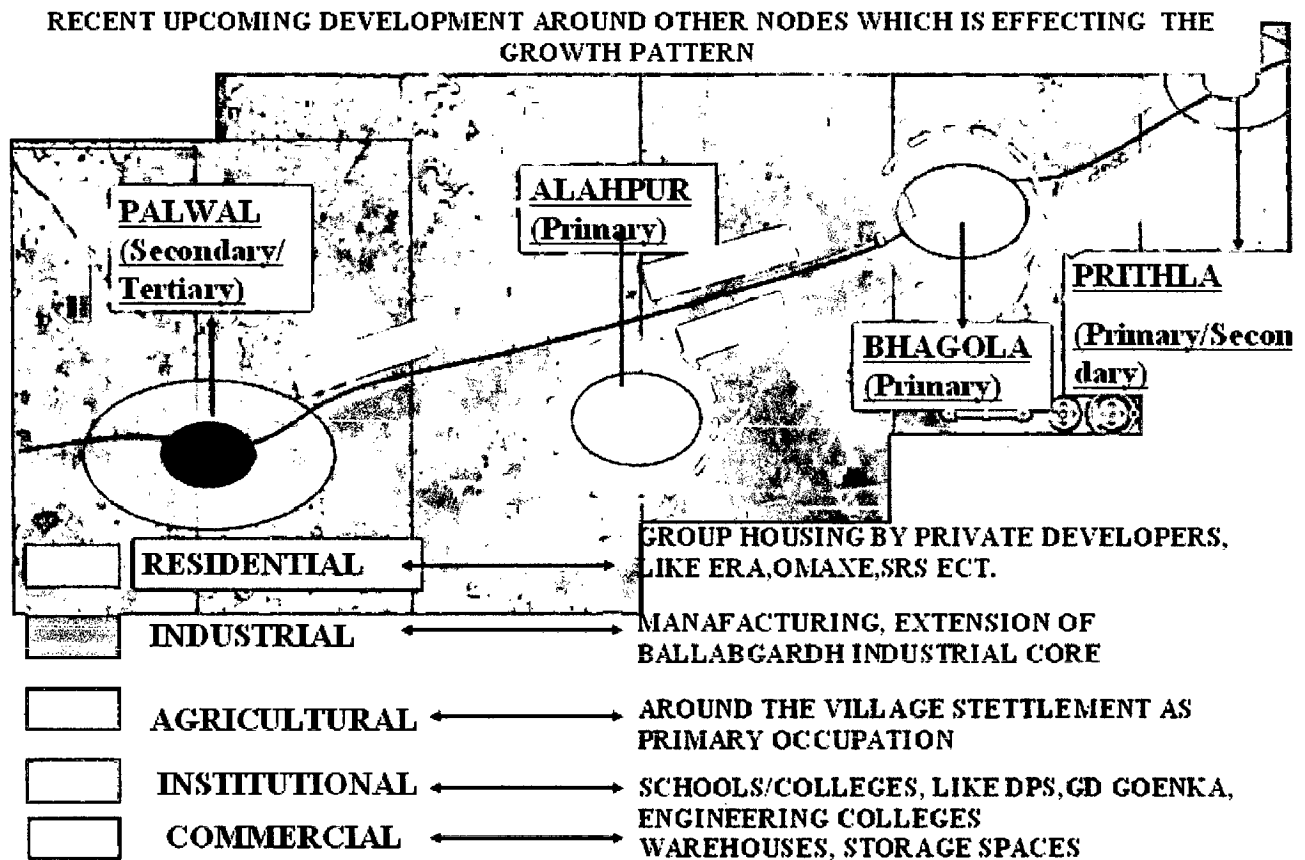


Fig 6.11; Development pattern between the stretch from Prithla to Palwal

#### 6.3.1 Land use structure

Being Palwal declared as district the development of sectors have taken place.



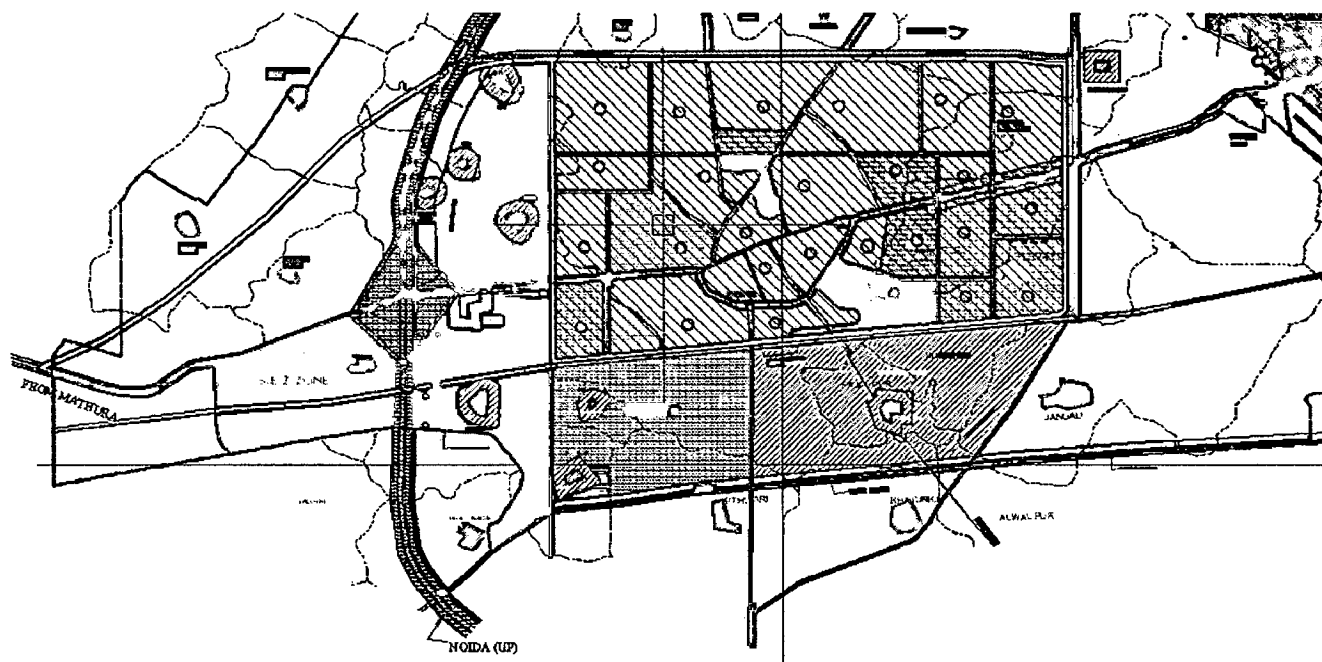


Fig 6.12; Master plan for Palwal

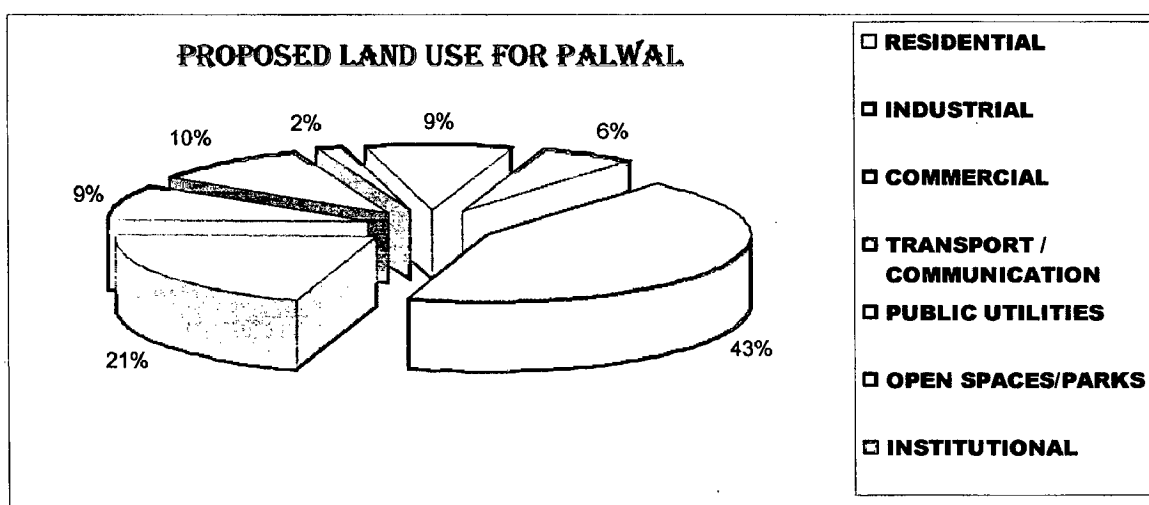
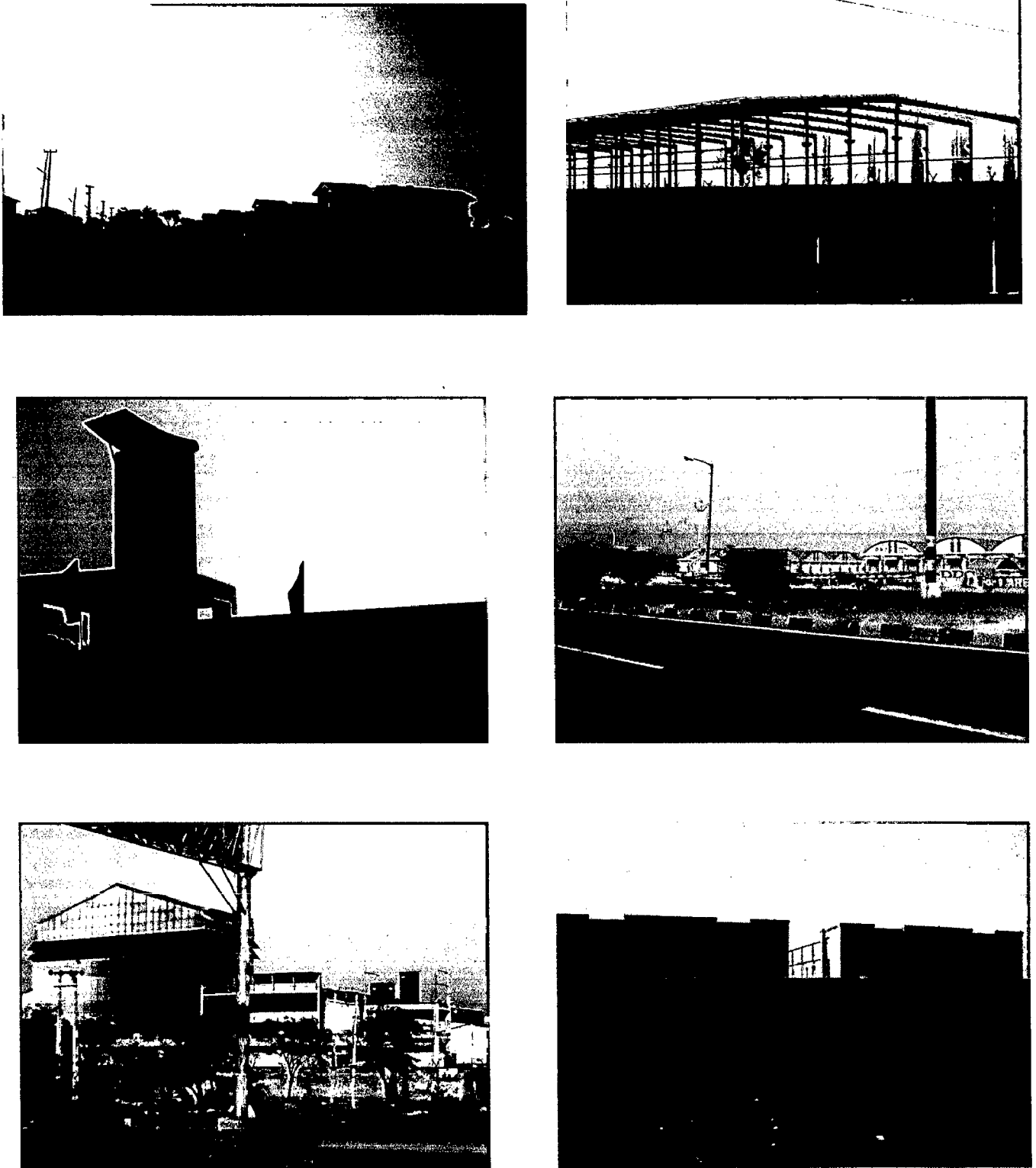


Fig 6.13; Proposed Land use for Palwal

These developments in the stretch from Ballabgarh to Hodal is unplanned lot of mixed land use has come up with unorganized and linear growth pattern. In this stretch some part is planned and some part is not so we don't get an integrated plan which leads to variety of activity pattern and a harmonic solution pattern achievement gets difficult.

It is dispersed development where land is not developed as it is most precious resource it is coming in its own way and personal interests. Lot of change in land uses has occurred leading to different issues and problems.

6.3.2 Overview of the stretch



**Fig 6.14;** Omaxe villas, flats 135 acres, industrial shed, era group, flats 18 acres, warehouses, storage, manufacturing industry, engineering college

6.3.3 Land use distribution and transformation of land uses.

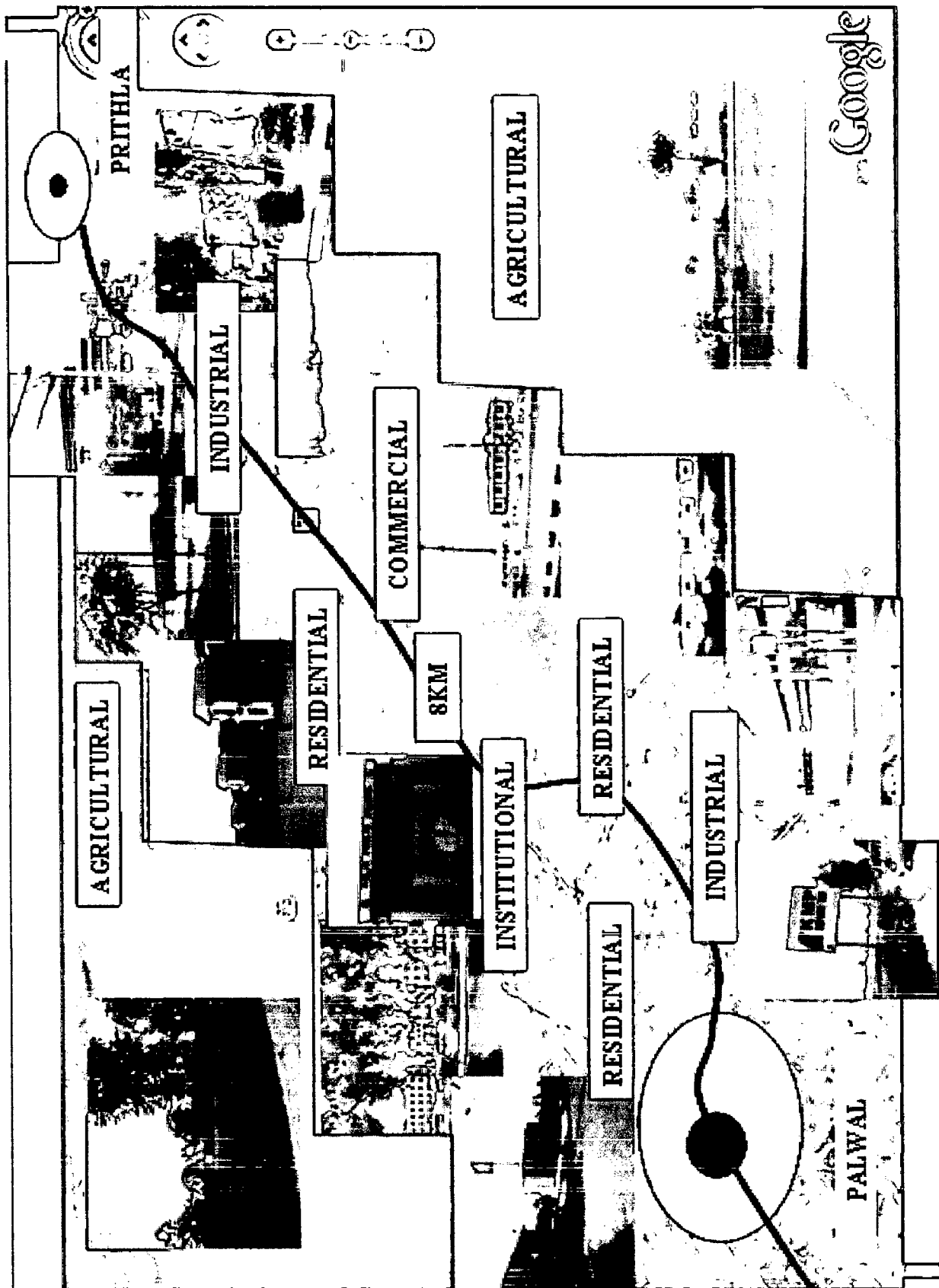


Fig 6.15; Land use distribution and transformation of land uses from Prithla to palwal

### 6.3.4 Data Analysis

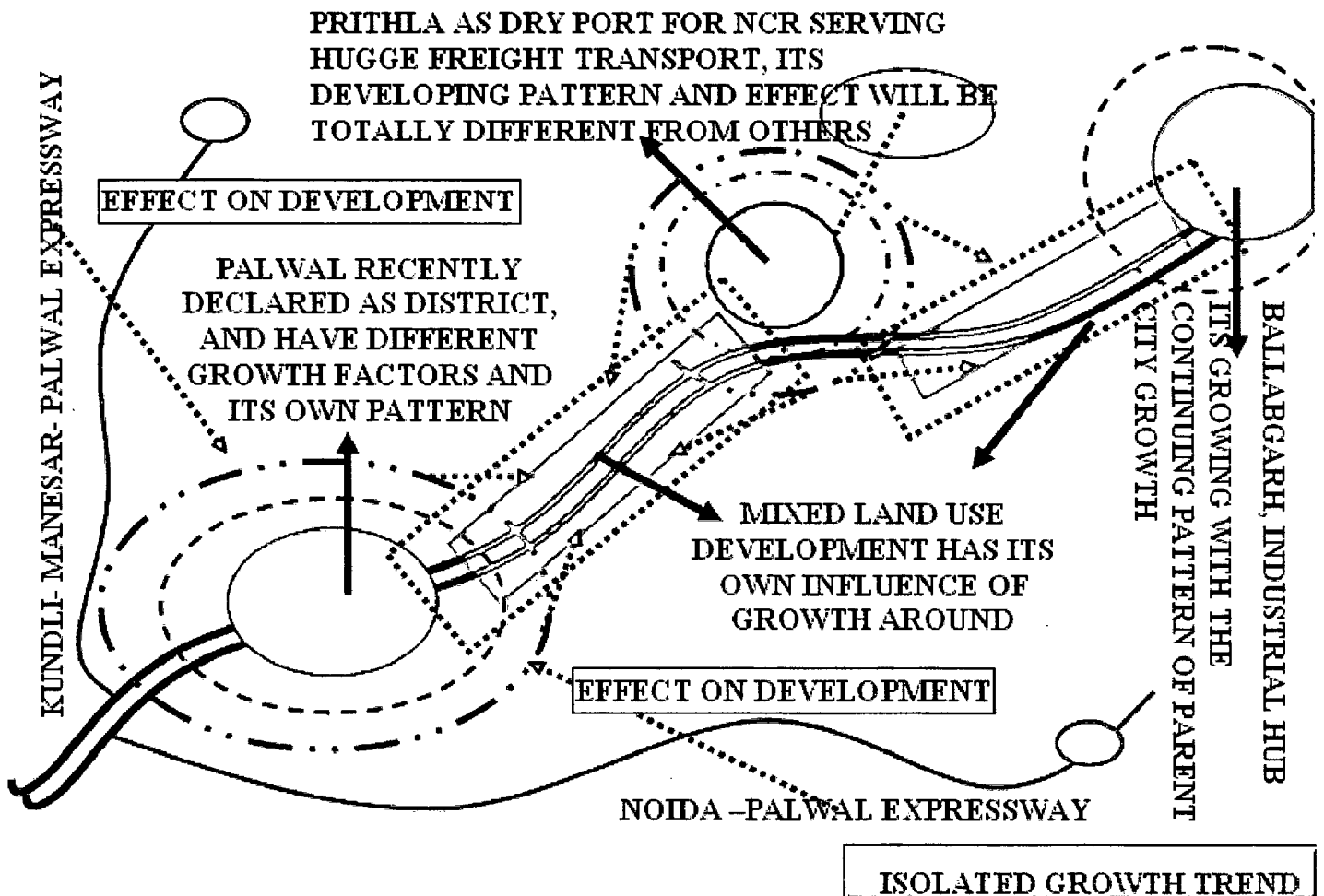


Fig 6.16; development analysis of unplanned fringe area along NH-2 of Faridabad city

- Developments around the nodal point guide their direction of growth and the have their own identical way of growth.

Ballabgarh – Industrial hub

Prithla – Dry port of NCR

Palwal – declared as district and eastern and western expressways are developing.

- So every centre is growing in isolation without integrating the growth with other near by centres,
- Mixed land use along NH-2 has its own direction and activity influence on the growth pattern.

## **CHAPTER 7**

### **INFERENCES**

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#### **7.1 Inferences from planned development by HUDA**

- PLANNED TOWNSHIPS ITSELF BECOMES AN IDENTICAL URBAN AREA WITH ALL BASIC AMENITIES.
- NEW ACQUIRED LAND OF HIGH LAND COST AND TAXES DISCOURAGES PEOPLE TO GET SETTLED IN THESE SETTLEMENTS AND THEY GET ATTRACTED TOWARDS OTHER PERI URBAN AREAS AS THEY ARE DEVELOPED BY PRIVATE DEVELOPERS AND BECAUSE OF LOCATION ADVANTAGE.
- THESE KINDS OF DEVELOPMENT LEADS TO INCREASING THE PROBLEM, THE CONCEPT OF COUNTER MAGNETS.
- DEVELOPING THE INSTITUTIONAL SECTORS WITHOUT THE PROVISION OF EWS HOUSING WILL LEAD TO FURTHER UNAUTHORISED URBAN SPRAWL.
- HIGH DENSITY DEVELOPMENT IS NOT PLANNED TO ACCOMMODATE THE MAXIMUM POPULATION.
- SECTORS DEVELOPMENT STARTS WITHOUT INFRASTRUCTRE LAYOUT.
- LACK OF VISUAL QUALITY AND GREEN SPACES IN THE PLANNING.

## **7.2 Inferences from unplanned development along NH-2**

- HAPHAZARD DEVELOPMENT CREATING MORE CHAOTIC SITUATION, LEADING TO HUGE MIGRATION FROM VILLAGES TO FRINGE AREAS AND CREATING MORE PRESSURE ON URBAN CORE.
- UNORGANIZED INFRASTRUCTURAL FACILITIES LEADING TO DEPLETION OF NATURAL RESOURCES AND DEGRADATION OF ENVIRONMENT.
- LEADING TO TRAFFIC CONGESTION PROBLEMS BECAUSE OF HUGE MOBILITY AND INFLUX OF PEOPLE.
- NO PROPER INTEGRATION OF PLANNING ACTIVITIES WITH THE MAIN CITY.
- DISPERSED DEVELOPEMNT NOT UTILISING THE LAND COMPLETELY.
- PRIVATE DEVELOPERS EXPLOITING THE SITUATION MOST FOR THEIR OWN INTEREST AND CREATING MULTINODES.
- THE NEAR BY URBAN CENTERS ALSO CREATING THEIR OWN GROWTH PATTERN CONFLICTING WITH THE PARENT CITY.
- HUGE LAND USE TRANSFORMATION IS TAKING PLACE WHICH IS SPOILING THE OCCUPATIONAL PATTERN OF MANY SETTLEMENTS.

- JUST TAKING AREA UNDER CONTROL AREA AFTER SO MUCH OF HAPAHAZARD DEVELOPMENT MAKES MORE COMPLICATED SITUATION.
- MIXD LAND USE ALONG THE TRANSPORT CORRIDOR NEVER RESTRICTS GROWTH AS EACH ACTIVITY HAS ITS OWN INFLUENCE AND GROWTH TREND WHICH CAN NEVER LEAD TO A HARMONIC DEVELOPMENT.
- LINEAR CITY GROWTH MAKES THE MANAGEMENT OF SERVICES MORE DIFFICULT AS DISTANCE FROM PARENT CITY KEEP ON INCREASING.
- NO PUBLIC TRANSPORT AND CONNECTIVITY FACILITIES AVAILABLE.
- THE GROWTH OF POTENTIAL ALONG MAJOR NATIONAL HIGHWAYS IS NOT TAPPED.
- 2 RURAL DISTRICT CENTERS WERE IDENTIFIED IN THE GREEN BELT.
- A LOT OF POPULATION PRESSURE ON GREEN BELT
- THE PERMANENT AGRICULTURE BELT WAS USED FOR EXTENSION
- THE BELT WAS SHIFTED NOT RETAINED.
- NEW TOWNS ACT PROVIDED FOR CREATION OF DEVELOPMENT CORPORATIONS TO PLAN, BUILD AND MANAGE THE NEW TOWNS.

## CHAPTER 8

### RECOMMENDATIONS

- Polycentric city growth rather linear city growth as distance increases from parent city for every service and management
- Multi node development will lead to compact development as the distances from parent city remains same it don't keep on increasing and journey rips could be saved.
- They would create viable alternatives for people to enjoy environmentally enriched communities with close proximity to an active center. These autonomous centers would also protect natural resources through conscientious development.

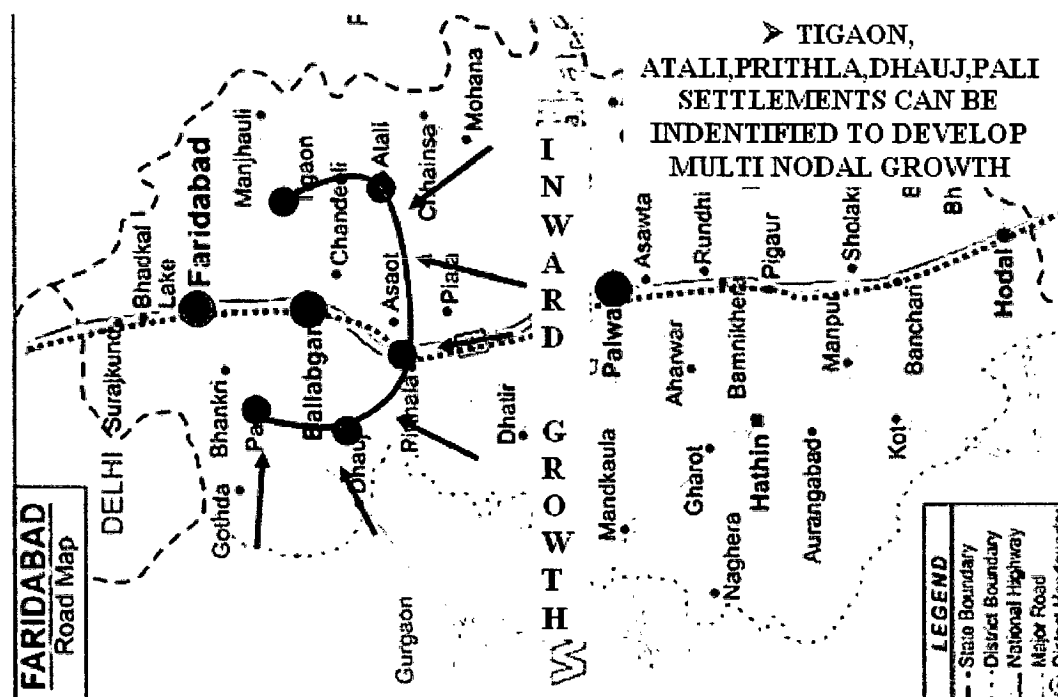
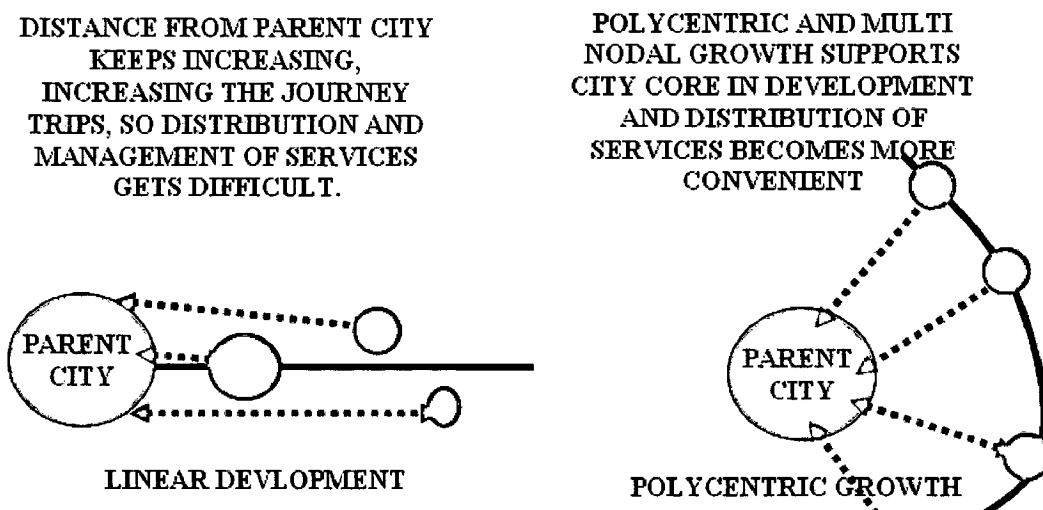


Fig 8.1; Identification of centers for poly centric growth.

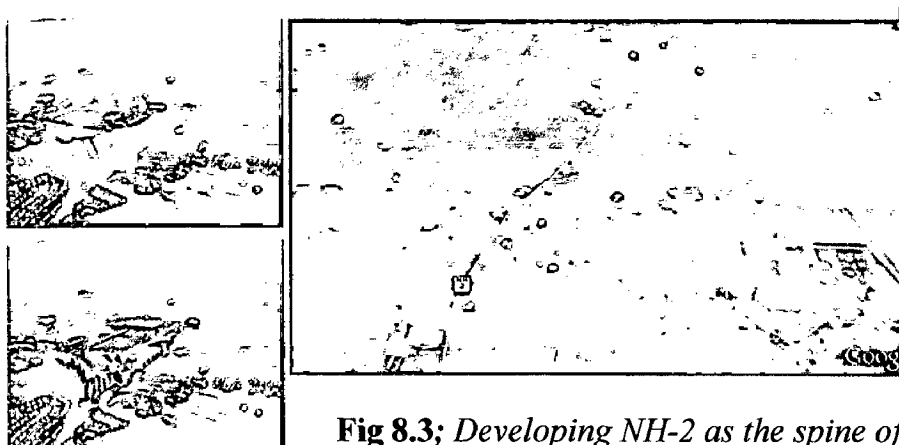


- The development of Satellite Cities has been a solution to over- crowded urban centers in the past.
- Infrastructure is one of the most important aspects of the Satellite Cities concept. This concept requires that all proposed cities should be connected to each other, in a way that eases the aimed socioeconomic integration. For this goal to be reached, all cities should have direct transportation and communications systems with the core city, and, when viable, between themselves.



**Fig 8.2;** *Poly centric growth*

- Developing transport corridor NH- 2 as the spine for the growth of city as major developments is coming near to it.



**Fig 8.3;** *Developing NH-2 as the spine of city*

➤ DENSIFICATION

The option considers the impact of concentrating as much development as possible in the city.

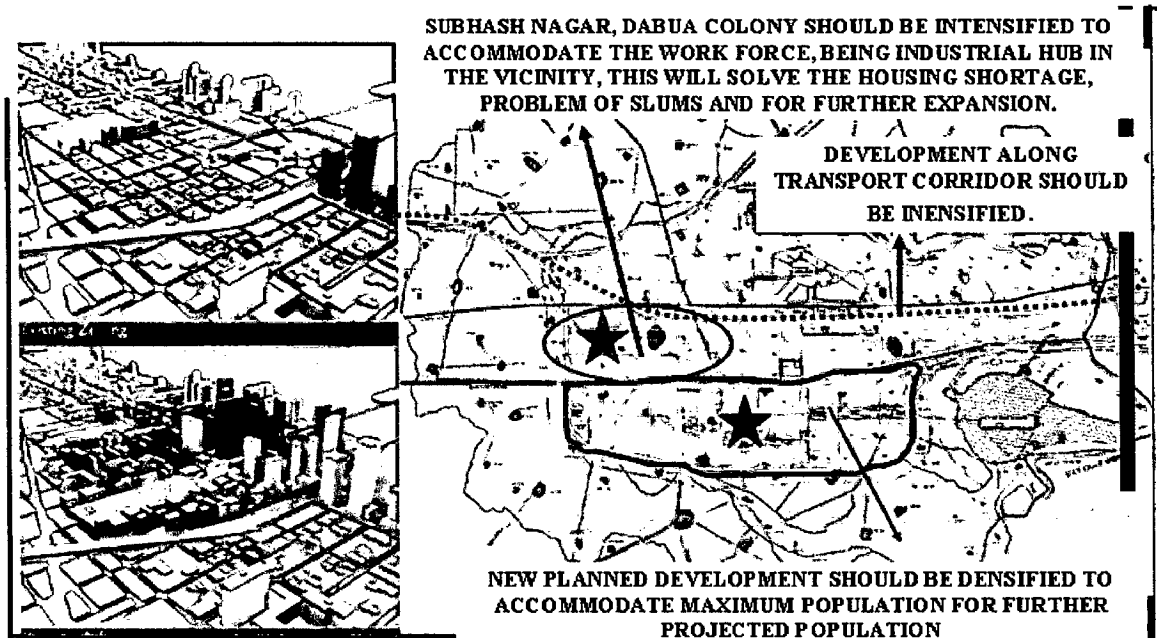


Fig 8.3; opportunity areas in the city for Densification

➤ NECKLACE

The option looks at concentrating development in the villages (existing or new) and market towns beyond the green belt.

➤ NEW TOWNS

Development would be concentrated in a single location beyond the green belt.

➤ GREEN SWAP

Development would be allowed in selected areas of the green belt which are of less scenic value and are not available for public use.

➤ TRANSPORT LINKS

Development would be allowed in areas within easy access of public transport corridor.

➤ Fusing urban and rural areas with planning and conserving both the interests

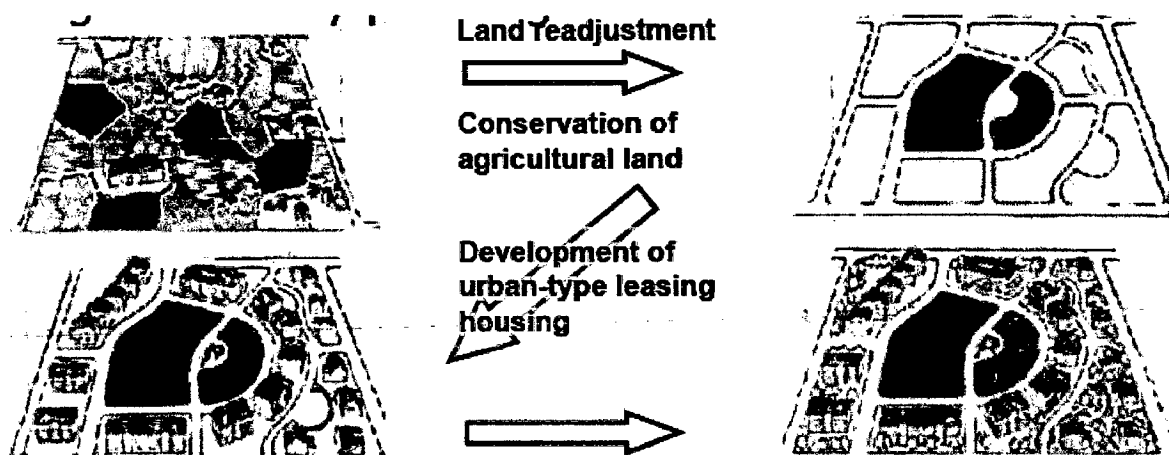


Fig 8.4; Fusion of urban and rural areas

- All the unauthorized construction that has taken place should be regularized. Compensation charges should be levied.
- Considering the existing and future requirement of rural settlements lying in the periphery should be provided with compact and contiguous belt of land around the villages ‘phirni’ to cater the infrastructure needs.
- Private housing schemes to be allowed with on site infrastructure facilities Master plan of the city, should detail out the periphery zone with development rules and controls and should plan it as integral part of the main city area.
- The concept of free economic zone (FEZ) should be scrapped to save larger area from further unplanned growth.

- Up gradation of available infrastructure in the periphery including road network, water supply, sanitation, in order to promote better quality of life within rural settlements to minimize out migration and to reduce the burden on mother city.
- Integration of all three state governments to have a comprehensive plan for the periphery without any discrepancies.
- maximize the potential of sites
- Promote high quality inclusive design and create or enhance the public realm
- Respect local context, history, built heritage, character and communities
- Mixed land use policy
- Fitting more people per unit area into existing types of development;
- Building higher
- Placing more development whether infrastructure, storage or other land uses, underground.
- Build up activity centers as a focus for high quality development, activity and living for the whole community.
- Locate a substantial proportion of new housing in or close to activity centers and other strategic redevelopment sites that offer good access to services and transport
- The development of higher density development along public transport corridors or the creation of high-density ‘nodes’ or sub-centers, which concentrate traffic flows sufficiently to encourage public transport provision’.\

- In these areas the city plans to develop mixed-use areas with attractive housing, business facilities etc. The idea with these urban development areas is to reuse and redevelop old partly abandoned industrial and harbour areas and also take advantage of already existing investments in infrastructure.
- The extended part of metropolis should be properly integrated with the metropolis and its surrounding areas.
- For the expansion of any metropolis, nearby ecological environment should not be disturbed.
- Decentralization of existing CBD should be encouraged.
- The provision of service facilities should be designed for more than the target population and land should be used judiciously.
- More EWS and low income group housing should be developed as they give rise to slums as Faridabad is industrial town so this should be taken care of.

## **CONCLUSION**

For planners, it is a question of ensuring that desired development can occur in the right place, at the right scale and at the right time and that it is properly co-ordinated with transport links and other necessary facilities. So this thesis study allowed me to explore about the fringe areas and to have an organized and regulated growth which is the most neglected area in planning.

## CHAPTER 9

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- ❖ **STUDY OF TECHNICAL PAPERS BY;**
- “Planning and Development of Peri Urban Areas” By; “S. Sreenivasulu Naidu & A.Srirami Reddy”
- “Development of Peri – Urban Areas: Problems and Prospects” By; “S.C.Jauhari”
  
- ❖ **REFERRED THE MURP THESIS;**
- Development Strategies for the development of urban fringe Pune city
- Planning strategies for the periphery of Chandigarh
  
- ❖ **REFERRED THE INTERNET SITES;**
- [www.ruralbenefits.com](http://www.ruralbenefits.com)
- [www.urbanfringe.com](http://www.urbanfringe.com)
- [www.fia.com](http://www.fia.com)
- [www.tribuneindia.com](http://www.tribuneindia.com)
- [www.compactcity.com](http://www.compactcity.com)
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