PROPOSAL FOR URBAN RENEWAL

: A CASE STUDY OF INDORE

A Project Submitted

in Partial Fulfillment of the Requirements

for the Degree of

MASTER

In

Urban And Regional Planning

by

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2021-22

CERTIFICATE

Certified that **SHRESTH SHAIGAL** (1200106017) has carried out the research work presented in this Project entitled **"Proposal for Urban Renewal: A Case Study of Indore"** for the award of **master's in urban and regional planning** from Babu Banarasi Das University, Lucknow under my supervision. The Project embodies results of original work, and studies are carried out by the student himself and the contents of the Project do not form the basis for the award of any other degree to the candidate or to anybody else from this or any other University/Institution.

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Date: June 2022

Place: Lucknow

CANDIDATE'S DECLARATION

I hereby declare that the work, which is represented by me in this dissertation, entitled "**Proposal for Urban Renewal: A Case Study of Indore",** in partial fulfillment of the requirements for the award of the degree of **Master In Urban And Regional Planning** submitted to the **Department of Architecture and planning, Babu Banarasi Das University Lucknow,** is an authentic record of my own work carried out during the period from July 2021 to June 2022 under the supervision of **Ar. Versha Verma & Dr. Mohit Agarwal**, Department of Architecture and planning B.B.D. University Lucknow Uttar Pradesh ,India.

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

Date: 20 June 2022

Place: Lucknow

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

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ABSTRACT

Urban renewal refers to theories and practices employed by public planners to encourage city redevelopment. Exemplified by US slum clearance policies of the mid_twentieth century, urban renewal is part of a broader – and much debated – history of government_led urban change in the name of modernization.

Transformation is the single most consistent factor in the life of a city. How to control or direct transformations to get the best combination of benefits from renewal and redevelopment is perpetual issue for the planners, as how to decide for the spatial sustainability as per its available potentials, they are also dynamic in nature and inevitable for change. The prevailing planning system emphasizes mostly on the future planning and development of urban areas by acquisition of land and does not address distinctly the problems of existing cities. Because, planning in India has followed the western role models of technocratic planning. Technocratic planning is now obsolete, and that planning tools have not been able to contain growth in sustainable ways. In India there is an amazing amalgamation of infrastructure from several centuries in the form of haphazardly built layers of urban fabric under which the common urbanite of India feels suffocated and crushed. Unlike their western counterparts the Indian urban settlements never had the fortune (or the misfortune) of being reduced as ruins of war and thereby necessitating the need for fresh development and renewal.

This paper refers to better understanding of how to deal with the situation with the need of urban renewal for housing purpose. Here we will mainly focus on densification rather than sustainable approach.

KEYWORDS: Urban renewal, Urban transformation, Need of urban renewal for housing purpose.

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Shresth Shaigal

TABLE OF CONTENTS

LIST OF FIGURES

CHAPTER 1: INTRODUCTION

1.1 Overview

WHAT IS URBAN RENEWAL?

Urban renewal or urban regeneration is a process of land redevelopment in areas of prior, moderately to high, dense urban land use (Bapat, 1996). It has a mammoth impact on the urban panorama and morphology of different cities. On the other side, the urban redevelopment process is envisioned as a way to redevelop or rebuilt urban zones and it also incorporates sewerage treatment and disposal, solid waste management, building and maintenance of roads, streets and flyovers, creation of parks and open spaces, street lighting along with street cleanliness, conservation and remodeling of heritage sites, water purification and supply etc. all of which ultimately lead to a healthy renewal project in urban areas (Banerjee, 1981). So renewal is an all-round process that encompasses mainly redevelopment and also some other specific planning strategies within its spectrum.

"Urban renewal constitutes one of the seven pillars for urban growth and development in different metropolitan cities of India".

1.2 Background Study

At the beginning of 21st century, renewal resulted in the creation of urban sprawl also and huge areas of cities were demolished and replaced by fairways and expressways, sky-touching housing projects and vacant lots, some of which (though minor portions) still remain vacant.

1.3 A Brief Conceptual Framework on Urban Renewal.

The modem incarnation of Urban Renewal began in the late 19th century in developed nations and experienced a rigorous phase in the late 1940s - under the rubric of recontacting. The process has had a major impact on many urban landscapes, and has played an important role in the histogenesis and demographics of cities around the world. Urban renewal involves the relocation of businesses, the demolition of structures, the rehabilitation of people and the use of eminent domain (Government purchase of property for public purpose) as a legal instrument to take private property for city-initiated development projects. This process is also carried out in marl areas, referred to as village renewal, though may not be exactly the same in practice. Urban renewal has been envisioned by proponents as an economic engine and a reform mechanism in the context of Urban Development. It has also been envisaged as a successful way of revenue earning of Government. It may enhance existing volume of communities and in some cases result in the demolition of neighborhoods also. Many cities link the revitalization of the central business district and gentrification of residential neighborhoods to earlier urban renewal programs. Over time, urban renewal has evolved

into a policy based structured process throwing light less on destruction and more on renovation and investment and today Urban renewal is an intrinsic part of many local Governments, often combined with small and big business incentives.

1.4 Beginning of Urban Renewal

The concept of urban renewal can be traced back to the earliest days of urban development and often stems from an expensive style of governance. Its potential value as a process was noted by those Regional Planners and Geographers who witnessed the overcrowded conditions of 19th century London, New York, Paris and other major cities of the developed world affected by the boon or bane of industrial revolution. From this, a reform agenda sprouted up, using a progressive doctrine of that renewal that would reform its residents. Such reform could be argued on moral, economic and many other grounds.

1.5 Reasons behind Urban Renewal

Urban Renewal allows an absolute city to modernize itself so that it can compete successfully with other cities of a similar hierarchical size for major economic and cultural activities. Various reasons behind urban renewal are as follows:

- **Economic Reasons:** In Central areas, it alters low revenue property to high value property that yields higher tax revenue to the municipality. In conservation, it maintains the properties from declining. The cost of maintenance becomes less. Private developers are given adequate incentives to extend business and it provides more employment in commercial and institutional activities (Chatteijee and Roy, 1978). Urban renewal project can repay the loan for investment within a few years. It provides employment opportunities and helps construction related activities. The relocated people and business also get economic benefits and blessings.

- **Social Reasons:** It provides housing to the poor people and thus dilapidated housings and unhealthy, shady as well as shabby environmental ambience get eliminated through this type of projects. Juvenile delinquency, prostitution, anti-social elements and other social pathological symptoms are also removed or eradicated to some extent by the aura of this type of reformations (Cotton, 1980).

- **Public Improvement Reasons:** Traffic improvements and parking facilities, disappearance of illegal and unauthorized usage of public space, provision of adequate community facilities including interward and intraward municipal services can be provided over a wider urbanpursuit after the occurrence of a holistic urban renewal programme.

- **Aesthetic Reasons:** Changing cityscapes with better or improved residential areas are generated due to renewal where all sorts of urban-ugliness can be removed.

1.6 Pitfalls of Urban Renewal

Urban renewal programmers are afterwards turned into a luxury-scheme in many
countries. In India, it is very often termed as "Urban Bulldozer" by some regional planners and social geographers as it tends to obliterate the stable neighborhood patterns and character of some authentic urban core areas and buffer areas. Many traditional and old-fashioned buildings are wiped out to make avenues for the fresh buildings and sky-scrappers. Some renewal projects do not help the city's development and in many cases it enhances some unique problems. As slums get cleaned, poor residents turn-up to other shanty-towns locally known as *iJhopris*\ Otherwise, they are uprooted without proper rehabilitation or forced to rush to a place with higher rent. Economically, the 'Patricians' become richer and 'Plebeians' get poorer. Some private investors and developers become extra-ordinarily pampered or puffed-up in such public projects.

1.7Aim of the study

To work out a proposal for Urban renewal of an existing area in Indore.

1.8 Objectives of the study

- To study various urban renewal tools and methods.
- To study various codes and bye laws to achieve the urban renewal.
- To delineate the study area.
- Proposal for urban renewal.

1.9 Need Of Study

Under the Area-Based Development model , some 742 acres, centred around the erstwhile Holkar palace Rajwada , will undergo retrofit-cum-redevelopment . The Rajwada area is home to 1.2 lakh people, including 29,000 slum-dwellers. There are plans for development of roads and junction, multi-level parking, multi-modal transportation, pedestrianisation and non-motorisation of roads by creating novehicle zones, heritage conservation and promotion of tourism, environmental upgradation and green open spaces, redevelopment of public roads, employment generation centres, upgraded water supply and management, said Hitendra Mehta, Partner, Mehta & Associates, whose firm drafted the Smart City Proposal for Indore (as well as for Jabalpur).

Indore is situated on the banks of two tributaries of the Kshipra River — Saraswati and Kanh which will be redeveloped as a riverfront tourist attraction. The city is famous for its mouth-watering delicacies, and food hubs like Sarafa Bazar will undergo a total transformation. The proposed redevelopment hub, the dilapidated government employees' residential

colony, known as the Majesty's Official Guards' Lines (MOG Lines), will be the new upscale business-cum-residential district.

For implementation of this ambitious plan, IMC, whose budget estimates for the 2016-17 fiscal are ₹2,131 crore, will shortly set up a special purpose vehicle. (PANDIT, 2016)

1.10 Housing Shortage

Indore suffers from housing Shortage particularly for low and economically weaker sections of the society. It has 16.25% of its population staying in Slums and Squatters and about 15% of the population staying in the un-authorized settlements reasons being unavailability of vacant land near work areas, lack of land for LIG, EWS, high prices of land, lesser affordability and housing shortage which has led to squatting. Lack of coordination & disputes among policies of various developments Agencies and also the complexities in developmental procedure for colonizers have together resulted in increase in squatting and unauthorized developments.

Housing Need Stock and Shortage during different Period

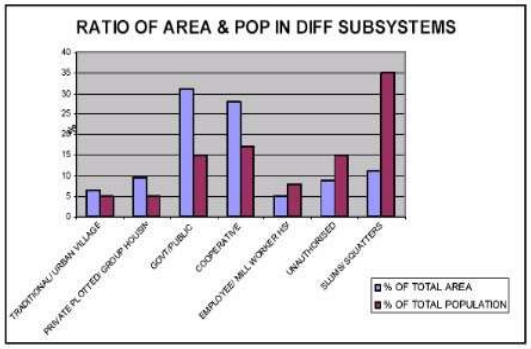
Year	Total popln.	Avg. H.H. Size	No. of H.H's	Add. H.H	Total No. of H.H's	Housing Stock	Req.	Units req. Replacement	Total Housing Shortage
1971	560936	5.5	112000		112000	92000	20000		**20000**
1981	827070	4.7	191000	79000	270000	162000	108000	9000	**117000**
1991	1250000	4.5	277000	86000	363000	175000	188000	18000	**206000**
2001	1759532	4.73	371995	94995	466990	271000	195990	54200	**250190**
2005	2219609	5.23	424400	52405	476805	297258	179547	118900	**298447**

Source; Various Development Plans of Indore

Decadal Increase in Housing Shortage

Source; Various Development Plans of Indore

Area V/s Population in Different Subsystems



Source; Perspective Plan 2025 for Indore

According to the GOI official definition of income groups, Indore has 9.3% HIG households, 20.8% MIG households, 40.3% LIG households and 29.5% EWS

households; it has 17.6% BPL households. In Indore, the average households size has been recorded to be at 6.3 as per the household survey. The HIG households recorded the highest average households size at 8 and the MIG households 7.4 LIG 6.3 and the EWS households the lowest at 5. The average household size of the BPL households has been 7.9, among the poor households; the core poor had the highest household size at 8.5 with the intermediate poor at 7.8 and the transitional poor at 6.6.

1.11 Housing ownership status of Indore.

In Indore, nearly than 60% of the all households surveyed stated that they have been living in the same neighborhood for the last 10 years. Nearly 21% reported they have been living there for about 6 – 10 years while 16% stated they lived there for a period of 1 – 5 years. The remaining households 3% lived in the same neighborhood for less than a year. A similar pattern has also been observed across the different income groups wherein 70% of the HIG, 62% of MIG, 60% of LIG and 59% of EWS stated that they have not moved out from their present neighbourhood in the last 10 years. Nearly 60% of BPL households 60% of TP and 58% of IP households reported to be residing in the same area for the last 10 years.

In Indore, only 13.5% of the households surveyed stated that they had moved from another part of the city in the last 5 years. Only 4% of the households reported to have moved from another city and only 2% of them moved in from a rural area in the last 5 years. Of all the households surveyed in Indore 77% stated that they owned their plot of land. Across the different income groups, 87% of HIG, 79% of MIG, 77% of LIG and 80% of the EWS households owned their plot of land. Nearly 87% of the BPL households reported the same. Of all the households surveyed 58% had a freehold title, 25% did not have any legal right, 9.7% had received pattas from the Government, while the rest had it on lease or had other legal rights. It is evident that 71% of the HIG households and 62% of MIG, 58% of LIG and 48% of EWS households had a freehold title. It was observed that nearly 14% of EWS households had been given pattas by the government, which was recorded to be highest among all income groups. Proportion of households without any legal right was also observed to be highest among the EWS 33.6% and lowest among the HIG households at 12%.Of all the households surveyed only 20.2% households lived in rented accommodation. Nearly 88% of the HIG, 79% of MIG, 77% of LIG and 81% of EWS households had their own accommodation. Significantly, nearly 87% of the BPL households owned their houses.

1.12 Scope of the Study

Scopes for the Community.

1. Creates new local jobs – temporary and permanent – and keeps earnings local.
2. Establishes an environment that fosters growth in new businesses.
3. Promotes the introduction of new housing products, and offers resources for reinvestment in established neighborhoods.
4. Eliminates hazards and conditions that undermine the integrity and safety of the community.
5. Stems the decline of property values and correspondingly the revenues of the municipality and other taxing entities.
6. Provides upgraded and needed infrastructure for future growth.
7. Supports local historic preservation efforts.

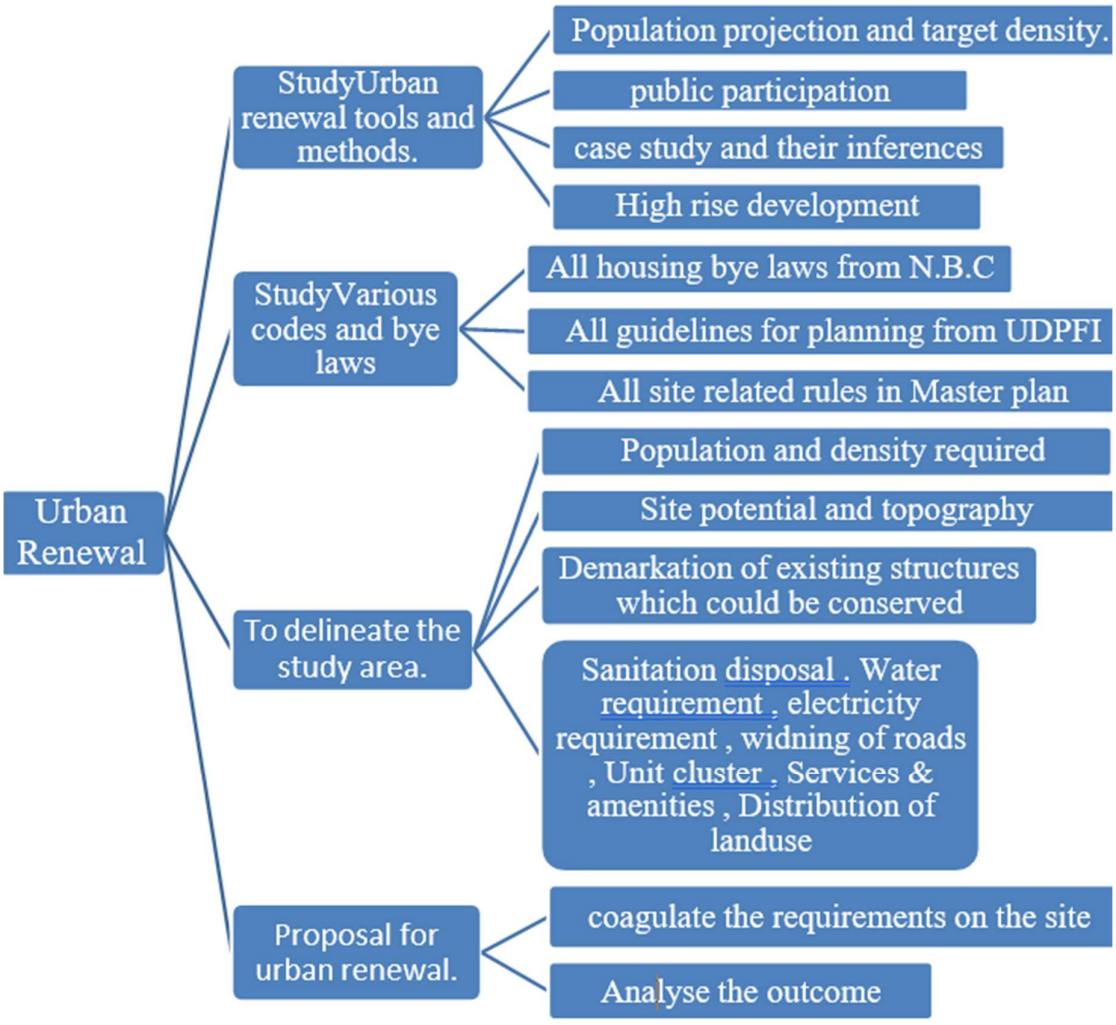
Scopes for local government.

1. Increases tax revenues from new businesses, consumer purchases and property taxes.
2. Keeps sales tax dollars local for use within the urban renewal area or community atlarge.
3. Only method of financing capital improvements that does not require an increase in taxes.
4. . Contains costs associated with the provision of government services by using existing infrastructure in a more fiscally-responsible way.
5. Encourages in-fill rather than fringe development, resulting in a more efficient use of land and lower municipal capital costs.
6. More effectively leverages transit improvements, correspondingly lowers regional infrastructure cost.
7. Identifies capital improvements needed to stabilize existing areas and encourage reinvestment.
8. Makes development within municipalities more cost-effective than sprawl development outside.

1.13 Limitation of study

- Urban renewal do not deals with Affordability.
- In Urban renewal Densification and conservation is vice versa.
- Do not encourage social diversification.
- Land and building acquisition is mandatory.

1.14 Methodology



The methodology for a sustainable urban regeneration, based on urban cell as dissemination unit considering an incremental long-term process.
The methodology developed in this paper combines several aspects of the aforementioned urban regeneration approaches, adding the sustainable component. The latter is achieved by considering the local features (social, economic and environmental) as primary aspects. The research framework addresses three complementary categories:

1). Physical-geographical approach to urban form and land use analysis;
2). Recent data from the public entities and fieldwork and local surveys developed between 2014 and 2015;
3). Relationship between urban planning and housing deployment.
Therefore, the methodology follows four steps that interrelate policies and physical scale through an integrated process

CHAPTER 2: LITERATURE REVIEW

2.1.1 Bhindi bazaar urban renewal project.

Modernizing Mumbai While Upholding Tradition

The Bhendi Bazaar neighborhood of Mumbai started as one of the integrated residential, commercial, social, and religious hubs at the heart of Mumbai. Mosques, bazaars, apartments, and organic street patterns all coalesced to create a tight knit vibrant urban fabric.

Overcrowding, lack of maintenance, negligible investment in the infrastructure have led to a steady erosion of the fabric of Bhendi Bazaar. Today, residents and shoppers inhabit dilapidated buildings and conduct their daily lives on streets that lack even the most basic urban amenities such as sidewalks, drainage, benches, trees and lighting.

TVS design was selected via an international competition to design a master plan to redevelop the neighborhood, providing modern residential units and shops for all existing residents and businesses as close as possible to their current location; and utilizing 20% of the neighborhood's developable land for income generating residential and commercial properties that would subsidize the redevelopment effort.

With stewardship of the people, place and planet as its central theme, the tvs design team translated the vision into a sustainable new neighborhood composed of "people places" that maintain the spirit of the original.

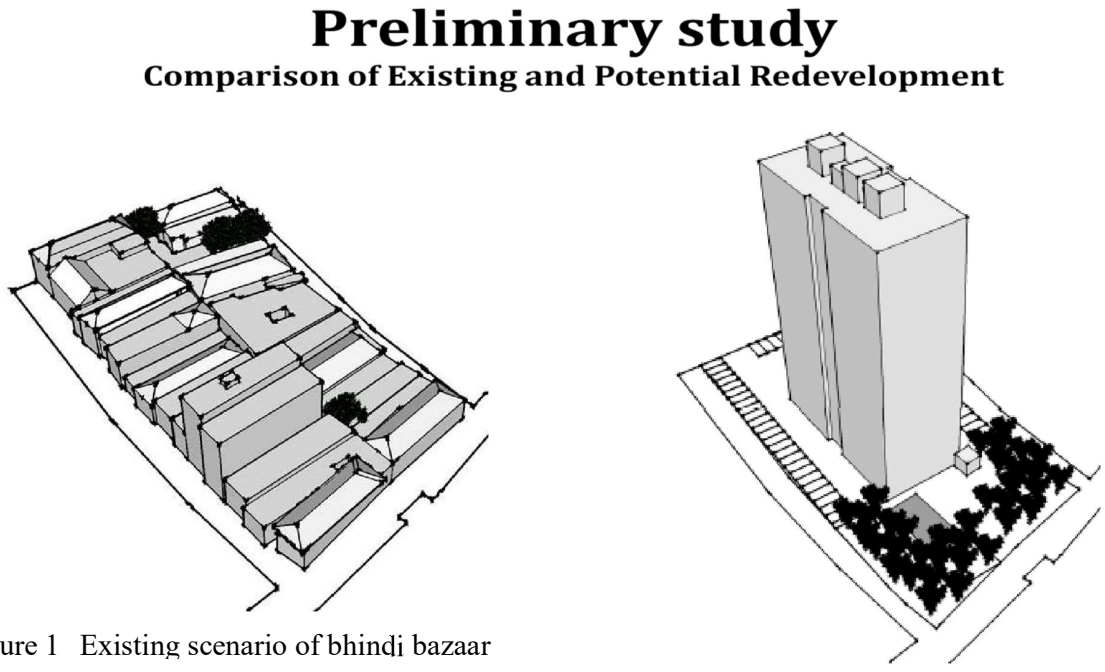


Figure 1 Existing scenario of bhindi bazaar

Figure 2 Proposed bhindi bazaar

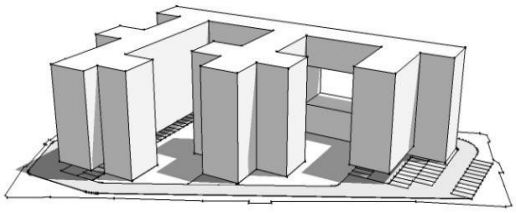


Figure 3medium rise development

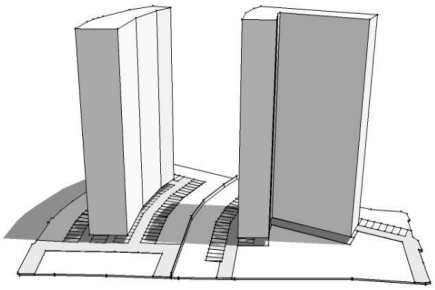


Figure 4 high rise development

	Existing	Potential
Land Area	3725 sq. m	3725 sq. m
FSI	1.705	4.34
Built-up Area	6349.365 sq. m	16181.88 sq. m
	-	155% increase
Avg. Tenement Size	13 sq. m (140 sq.ft.)	27.8 sq. m (300 sq.ft.)
		47 sq. m (500 sq.ft.)
		75 sq. m (750 sq.ft.)
Population (approx.)	1030 people	1305 people
	-	27% increase
Density (population)	276,510 ppl/sq. km	350,335 ppl/sq. km
No. Of Storeys	2-6	30
Car Parking	< 10	35 - 80 (approx.)
Estimated CO_2 produced by Cars	>2340 Kg/year	8190 – 18720 Kg/year
	-	71% - 88% increase
Amenity Open Space	None	930 sq. m
Roof Area	3375 sq. m	385 sq. m (88.5% reduction)
Energy Consumption	-	50% increase
Water Use	-	80% increase
RWH potential	5811.2 m3	664.2 m3 (90% decrease)
No. of Trees	3-5	47
CO_2 Sequestering Potential	69–115 Kg/year	1081 Kg/year
	5-3 %	13-6%

Land Area	**10,000 sq. m**
Proposed Built-up Area	29750 sq. m

Open Space Required		1733 sq. m (20%)	
Population (approx.)		3814 persons	
Density (approx.)		381,400	
Estimated Water Requirement		125,289 – 320,185 m^3	
Car Parking		76 - 267	
Estimated CO_2 produced by Cars		17,962 – 63,103Kg/year	
No. of Trees (min. required)		87	
CO_2 Sequestering Potential		1993 Kg/year	
		11 – 0.5 %	
Type of development		**Medium Rise**	**High Rise**
No. Of Storeys		10	25
Roof Area		3264 sq. m (32.64%)	1311 sq. m (13.11%)
Total Rain Water Harvested		5,587.6 m^3	1,845.6 m^3
RWH potential		4.45 – 1.75%	1.47 – 0.58%
Open Space	paved	2884 sq. m (28.84%)	3208 sq. m (32.08%)
	unpaved	3852 sq. m (38.52%)	5460 sq. m (54.60%)

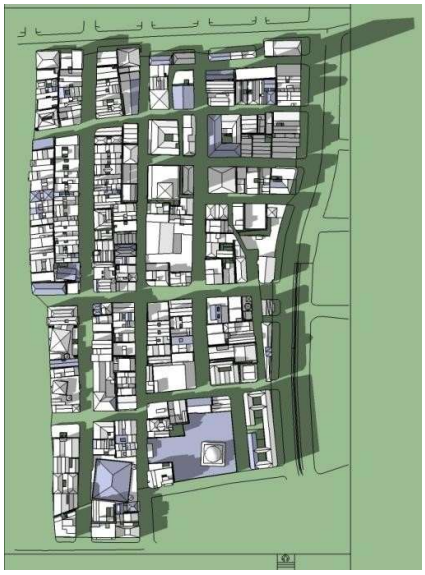


Figure 6 Existing layout bhindi bazaar

Figure 5 proposed layout bhindi bazaar

Bhendi Bazar - consisting of 16.5 acres (6.677 hectares) area and 4450 existing tenements/unit.

	Existing layout	Proposed
Land Area	66,773 sq m	
Floor Space Index	2.67	4.84
Built up area	177,247 sq m	320,683 sq m
No. of buildings	250	22 towers (in 9 clusters)
No. of floors	4-6	Upto 40
Avg. Tenement Size	14-18.5 sq m (150-200 sq ft)	32.5 – above 70 sq m (350 – 750 sq ft)
No. of residential units	3,200	4,042
No. of commercial units	1261	1709
Total number of units	4869	5751
Total population	21,910	25,880
Approx. Population density	328,126 per sq km	387,581 per sq km
Car Parking	Almost nil (few on-street parking, mostly 2-wheelers)	60,000 sq m (underground & podium level car park for about 1400 vehicles)

2.1.2 The Aya Nagar Development Project.

The spread of unauthorised construction in our cities has assumed significant proportions. One such unauthorised colony is Aya Nagar, situated on the south-western edge of Delhi. The original Aya Nagar settlement was a village populated largely by 'gujjjars'. The recent extension of the village is settled by migrants from all parts of the country, and the population is now over a hundred thousand persons, mostly from a low-income background. The settlement now represents a microcosm of urbanizing India, and it could serve as a model for understanding the morphology of such 'spontaneous' urban development taking place in most cities of the country.

The Aya Nagar Development Project is designed to demonstrate that citizen action combined with expert technical advice can drive the local authorities to provide appropriate infrastructure and improve the urban habitat. The project is being seen as applied research for devising an appropriate methodology to demonstrate a new urban paradigm which places the concerns of the marginalized majority at the forefront and seeks to devise techniques for making urban systems responsive to the imperatives of social justice and ecological viability.

Consultation with the local community regarding development priorities led to a clear consensus on first solving the problem of drainage.The project has, therefore in its first phase, concentrated creative energy and technical expertise on finding a solution to this problem which is financially viable and environmentally sustainable.

Urbanization in the Indian sub-continent has a very long history. Since ancient times, cities have been distinguished in their design by the efficacy of their public health provisions. It is only in the twentieth century that urban planners/thinkers proposed that city design would be driven by transportation systems rather than public health provisions. Thus, in the twentieth century urban development was dominated by the configuration of vehicular roads rather than considerations of public health, civic norms, and conviviality.

Figure 7Urban development in Gurgaon of the last decade and along the Delhi- Jaipur highway.

By the end of the twentieth century, there was a widespread realization that contemporary urban development is contributing in a most significant manner to adverse climate change which is threatening the sustenance of life on planet earth.

Growth of spontaneous settlements

After 1947, with the political independence of India, and consequent to the partition of Punjab, the population of Delhi increased manifold. To house the migrants the city started to undergo a significant transformation. Much of the migration was accommodated in planned settlements (colonies) interspersed with the organically evolved villages surrounding Delhi.

The provision of urban infrastructure by the State for the development of the new 'colonies' attracted an increasing number of migrants from all over the country: people who wanted a share of the economic prospects generated by the new urban expansion. The planned development could not contain this new influx, and a number of colonies emerged on the margins of Delhi without the sanction of the government authorities. These 'spontaneous' settlements housed such a large number that the State could not ignore them and they began to be seen as a significant political constituency.

From time to time and coincident with the federal or state government elections many of these settlements were 'regularized', resulting in political advantage to the party in power. However the process of regularization did not result in planned development of these settlements for various reasons. The morphology and the urban structure of these colonies is different from the 'greenfield' planned development guided by the Delhi Master Plan. The urban typology of these spontaneous settlements is an eclectic mix of the elements of the organically evolved villages and the planned settlements (colonies). The distinguishing feature is the lack of municipal services and utilities, and the fact that these spontaneous developments have been generated largely by the efforts of common people with hardly any access to the machinery of the State. A new paradigm was required to address and resolve the complex set of environmental, cultural, and legal issues arising from this 'spontaneous' development, and this was not available. Over the last several decades the number of such 'unauthorized colonies' (as they were labeled by government planners) continued to increase.

In the year 2008, a few months before the state government elections, about 1600 of such colonies were given the status of 'provisional regularization' by the government, and in the following year was started the process of redevelopment/renewal to bring these colonies into the urban mainstream. Official statistics now indicate that over 4 million people are living in unauthorized colonies.

Aya Nagar

One such provisionally regularized unauthorised colony is Aya Nagar, situated in South-West Delhi, on the Mehrauli-Gurgaon Road, adjacent to the Delhi-Haryana border.

Figure 8Satellite image showing location of Aya Nagar and its surroundings

The colony has grown in the last three decades on the agricultural lands of an organically evolved village, originally populated by 'gujjars.' Most of the agricultural lands of the village were acquired by the Government of India to establish defense and security related establishments in planned and secure compounds. Between these compounds the unauthorised development has spread on the remaining village agricultural lands situated on the undulating and rocky portions of the Aravali hills on the state border. Aya Nagar extension is settled by migrants from all parts of the country. The population of the village and the extension is over one hundred thousand persons. The settlement now represents a microcosm of urbanising India, and it could serve as a model for understanding the morphology of such 'spontaneous' urban development taking place in several cities of the country.

Figure 10The extended Aya Nagar settlement

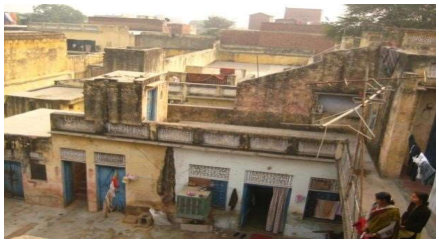


Figure 9Village Homestead

The physical picture presented by Aya Nagar is one which is not easy to classify according to normative criteria. A visitor to this settlement will find, loosely speaking, a mix of slum and provincial style buildings set in a somewhat picturesque undulating landscape; but the overriding impression will be one of squalor and unsanitary physical conditions. This is a powerful disincentive to making an investigation into the character and nature of this settlement. If, however, we try and penetrate the everyday reality of this home to over a hundred thousand people, we begin to discover a story with many layers. The most remarkable part of the story is the fact of ordinary people organizing their own urban habitat by joining together in a collective, liaising with government authorities, often through the offices of elected political representatives like MLAs and MLCs, forming a 'coalition' with the original village residents, and in a relatively short period of time persuading local authorities to provide/upgrade the urban infrastructure. This being achieved even while the civic status of the 'colony' was illegal.

Impressive as this fact of infrastructure upgradation may be, a close look at the infrastructural improvements reveals a pattern of technically flawed and unsustainable solutions to the problems of high density living in the urban habitat. It becomes clear that the vital ingredient missing from the collective of residents, political representatives, and government agencies, is the expertise of professional architects and urban planners. It is also clear that in the dynamic situation of highly motivated and economically mobile migrant settlers in the city, the normal working time table of the urban development authority's town planners is completely outpaced by the reality on the ground. Furthermore the lack of fit between official planning action and the day-to-day requirements of ordinary people has contributed significantly to the housing shortage, and to the creation of a real estate boom fuelled by manipulation of official urban development master plans by moneyed speculators. In this process of converting land to money, all sections of society have lost something valuable – a city fit to live in and to be enjoyed by old and young, rich and poor, local as well as international residents.

We can dismiss Aya Nagar and other such spontaneous settlements as being illegal and therefore not deserving of the benefits of normal civic amenities.

The fact remains that the residents of such settlements are also citizens of the Indian Republic and as a consequence have the right to partake of the opportunities inherent in urban living.

Aya Nagar Development Project

The Aya Nagar Development Project (ANDP) is designed to demonstrate that citizen action combined with expert technical advice can drive the local authorities to provide appropriate infrastructure and improve the urban habitat.

In 1999, the Chief Minister of Delhi visited Aya Nagar and declared it to be a model village where effective planning methods are required with the combined effort of government agencies and local residents. To achieve this goal, the Aya Nagar Vikas Samiti was registered in 2001 to be the voice of local people and a task force which will implement the plans proposed for development by the government.

In 2008, the Government of Delhi, under a scheme of the Delhi Kalyan Samiti, granted research aid to GREHA, an NGO primarily consisting of environmental design and planning experts based in Aya Nagar, to propose options and possibilities that can be initiated to make Aya Nagar a real model. The project report submitted to Delhi Kalyan Samiti identified 3 phases of the programme, to be delivered in five years.

The first phase of 6–9 months duration was of research and development of an appropriate methodology, with the design of an ecologically viable and sustainable water cycle for one neighbourhood adjoining the village Johar (the central rain water harvesting structure). The second phase of 18-24 months was of detailed engineering and implementation, including training of local residents for development tasks. In the third phase of 24-36 months the improvement schemes initiated in the second phase would be monitored by experts and residents, with the eventual aim of the residents taking over the long term maintenance.

The proposal is being seen as applied research for devising an appropriate methodology to demonstrate a new urban paradigm which places the concerns of the marginalised majority at the forefront, and seeks to devise techniques for making urban systems responsive to the imperatives of social justice and ecological viability.

THE VARIOUS PROJECT TASKS TO BE UNDERTAKEN ARE: -

- **Community Mobilisation:** The population of Aya Nagar is a microcosm of the diversity which is representative of India as a nation. The diversity is ethnic, occupational, economic and cultural. To harness the rich human

potential of the settlement it is proposed to forge a partnership between several non-government organizations which will work with the people of Aya Nagar to raise awareness and mobilise the community to work harmoniously towards a common purpose of social and physical development.

- **Habitat Design:** The task of providing appropriate urban infrastructure, which is ecologically viable and sustainable, is a great challenge in all Indian cities. In Aya Nagar it is proposed to start with those components of the infrastructure requirement which all sections of the community agree as being essential for the promotion of civilized urban existence. These components are sewerage and surface drainage, as well as provision of water supply for different usages. Within this set it is probable that the problem of drainage is the one around which the entire community can be united for a common purpose.
- **Raising Human and Financial Resources:** The requirement of both human and financial resources is crucial for the project. A working team consisting of experts and the local people is required such that the variety of skill sets of the people living in Aya Nagar can be effectively organized to implement the proposal along with a technical team of experts like planners, architects, engineers, social scientists, and community work specialists who can assist and guide the local working team. Financial resources are required for research and development and to prepare an appropriate methodology for the project.
- **Documentation for Learning:** The design and implementation of the project will need to integrate "out of the box" thinking with established formulae and practices. The components outlined above – community action and habitat design – require innovative approaches to bridge the usual divide between norms and practices. Critically recording the process of development here becomes an opportunity to learn at first hand about restructuring urban space for benefit of the majority.

The Aya Nagar Development Project proposes that the inhabitants alongwith technical experts create, document, and partner with local authorities for implementing a proto-typical model for urban development, to serve as a guide for similar settlements in the whole country.

GREHA along with the Aya Nagar Vikas Samiti has put together a list of priority areas required for development. The priority areas for development initiatives in Aya Nagar are; Public health – Proper functioning drainage and water supply systems.

- Safety in Mobility – better roads, decongestion of traffic, and increased bus service with a proper terminal.
- Community facilities like a Baraat Ghar / Community Centre.
- Government health care facilities like clinics / hospitals and veterinary services.
- College/s, especially for women, improvements in the condition of existing schools, and better sports facilities for the youth.
- Places for public functions and community celebrations

Further consultation with the local community (local leaders, community-based organizations, and concerned individuals) regarding developmental priorities led to a clear consensus on first solving the problem of drainage.

There is no system for sewage treatment/disposal in Aya Nagar, hence the storm water which flows in open channels along roads is mixed with sewage. Furthermore, the open channels become extended garbage bins which are regularly choked with plastic bags and other forms of solid waste. The open channels overflow onto roads, especially when it rains. This is a serious health hazard.

The ANDP has therefore, concentrated creative energy and technical expertise on finding a solution to this problem, which is financially viable and environmentally sustainable. It was agreed that any solution to be convincing should be demonstrable. It was also agreed that for a solution to be sustainable it should be maintainable largely by the local residents. Given that the population of Aya Nagar is now over a hundred thousand persons, and seeing the very diverse cross-section of the residents (who have come from all parts of the country), it was felt that a cohesive unit of community would be a neighborhood of about 200 families. Hence one neighborhood was chosen for making an experimental demonstration of the proposed solution.

Available expertise on the problem indicated that one of the most significant design issues was the availability of water required to flush the long lengths of pipes conveying sewerage from source to a sewage treatment plant. Generally, this distance is measured in kilometers. The availability of water in urban areas is not only problematic today, but is likely to get much worse in the foreseeable future. Hence the solution proposed for demonstration in one neighborhood of Aya Nagar (Ghoda Mohalla) hinges on a specially designed sewage treatment plant (digester) which serves about 70 persons and is small enough to be installed in the street outside any house cluster.

This design approach of extreme decentralization would also allow for a greater sense of ownership and control of each digester by the users, being a group small enough to manage their own conflicts and disputes. The technology employed in the design of the digester is commonplace and easily manageable by ordinary people with occasional monitoring by technical persons.

As topographical mapping was done of the neighborhood and the digesters located in a calculated matrix it became evident that the effluent from the digesters could be piped subsurface to a nearby water harvesting structure, and after a second stage treatment by a reed bed on the banks of the water body, the water could be recycled for uses other than drinking or cooking. A large quantity of this recycled water will be available to become a community asset.

Thus, the scheme shows a way of creating a closed-loop water supply system, which if carefully engineered to extend across the urban area could also play a major role in controlling the pollution of the river Yamuna.

The next step

The first phase research showed a direction for conserving water and also uncovered other areas of enquiry which point towards a better understanding of sustainability of urban systems in the Indian context. These are being listed below, to be taken up for detailed enquiry in the second phase:

A. ISSUES OF URBAN INFRASTRUCTURE

Urban living can be distinguished from rural in many ways, but the most tangible differences arise because of the provision of infrastructure. As habitation becomes more dense, there are more demands made on life support systems, the organization and maintenance of which constitutes the infrastructure, and this needs very careful engineering to make cities livable.

The design of a decentralized sewage treatment system as part of a drainage scheme which conserves water has been engineered conceptually for one neighbourhood of about 250 families. This system is to be extended to cover the whole of Aya Nagar, the colony as well as the village, and will require further surveys, community mobilization, and schematic design. As the number of neighborhoods increase from one to eleven, the complexity of the exercise is also likely to increase, and the resources required will probably increase by a factor of ten.

B. ISSUES OF URBAN FORM

In the twentieth century we have created in India two new planned cities, New (Imperial) Delhi and Chandigarh, which have had a powerful impact on

contemporary urban development policy. We have had the opportunity to study the development of New Delhi for nearly a hundred years and of Chandigarh for over fifty years. And although the designer of Chandigarh was the most influential thinker and practitioner of architecture and urbanism in the twentieth century, it is now fairly clear that neither of these cities offer an inclusive and sustainable model for urbanization in the subcontinent. It is, however, remarkable that almost all contemporary urban development in independent India, until very recently, is theoretically based on the Chandigarh model.

With the opening of the Indian economy to global trade, a new model of urban morphology starts to dominate the thinking of our urban planners and architects. An example of this is the new development of Gurgaon. This may be the pattern preferred by the most affluent sections of the metropolitan cities, but there can be no doubt in most people's minds that this pattern cannot be extended to provide an environmentally viable or inclusive solution for the huge urbanizing population of our country.

A somewhat different urban scenario is emerging where the 'other half' is building 'spontaneous' settlements which are extensions of the existing 'planned' or 'organically evolved' parts of our cities. Spontaneous urban settlements do not have a visually cohesive pattern, but they borrow ideas from the other 'types' to provide a radically eclectic mix of built form. To the casual observer this pattern may be described at best as 'chaotic' and at worst as' wretched and slummy'. However first hand experience of living in one such settlement for a decade has shown that there are many hidden benefits, such as greater autonomy in building and maintenance, enhanced conviviality, improved social and individual security, and reduced dominance of vehicular transport on the roads.

These are the most obvious advantages of such an urban environment. The most glaring disadvantage is the lack of public sanitation provisions, and the incompetently engineered electricity distribution.

Compared with the patterns preferred by official urban planners and the social elite, we believe that the urban pattern found in such spontaneous settlements is more sustainable in terms of environmental structure, a vastly reduced carbon footprint, and is more inclusive of social and economic diversity. However this belief is yet to be confirmed by empirical testing/verification in the second phase of the Aya Nagar Development Project.

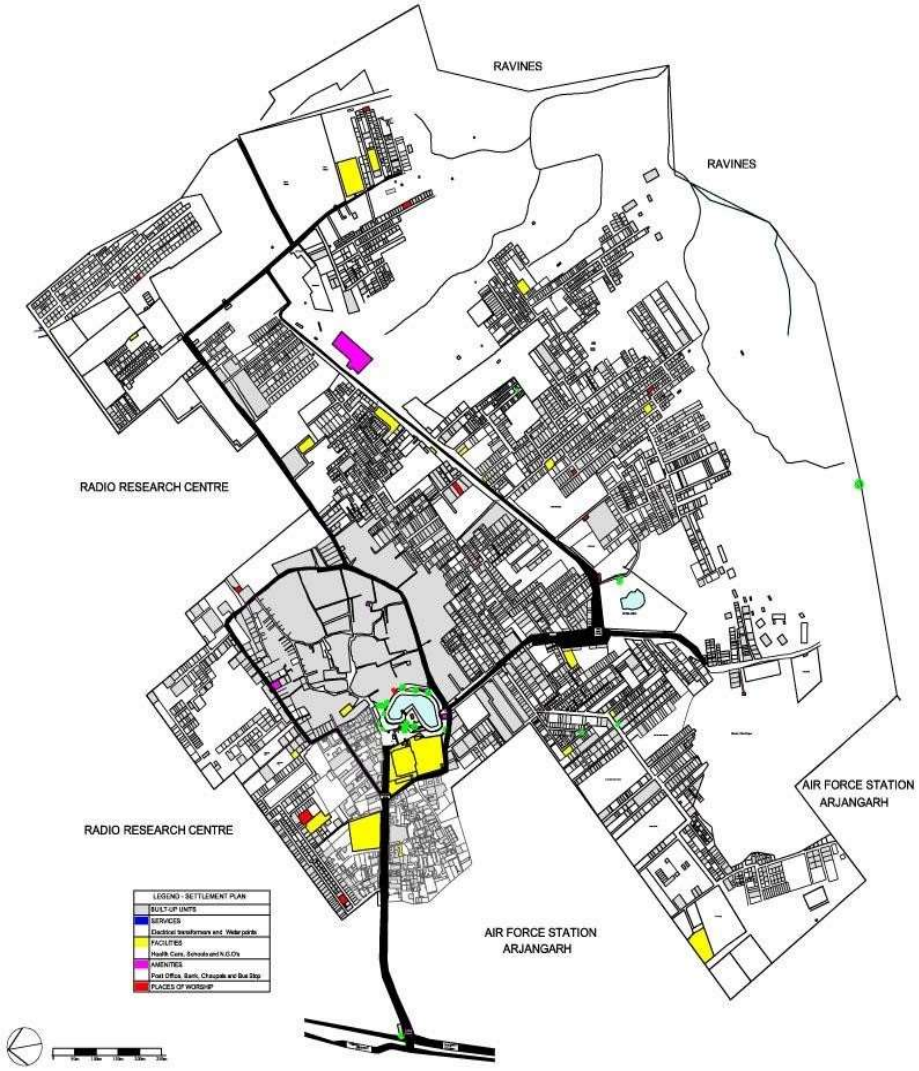
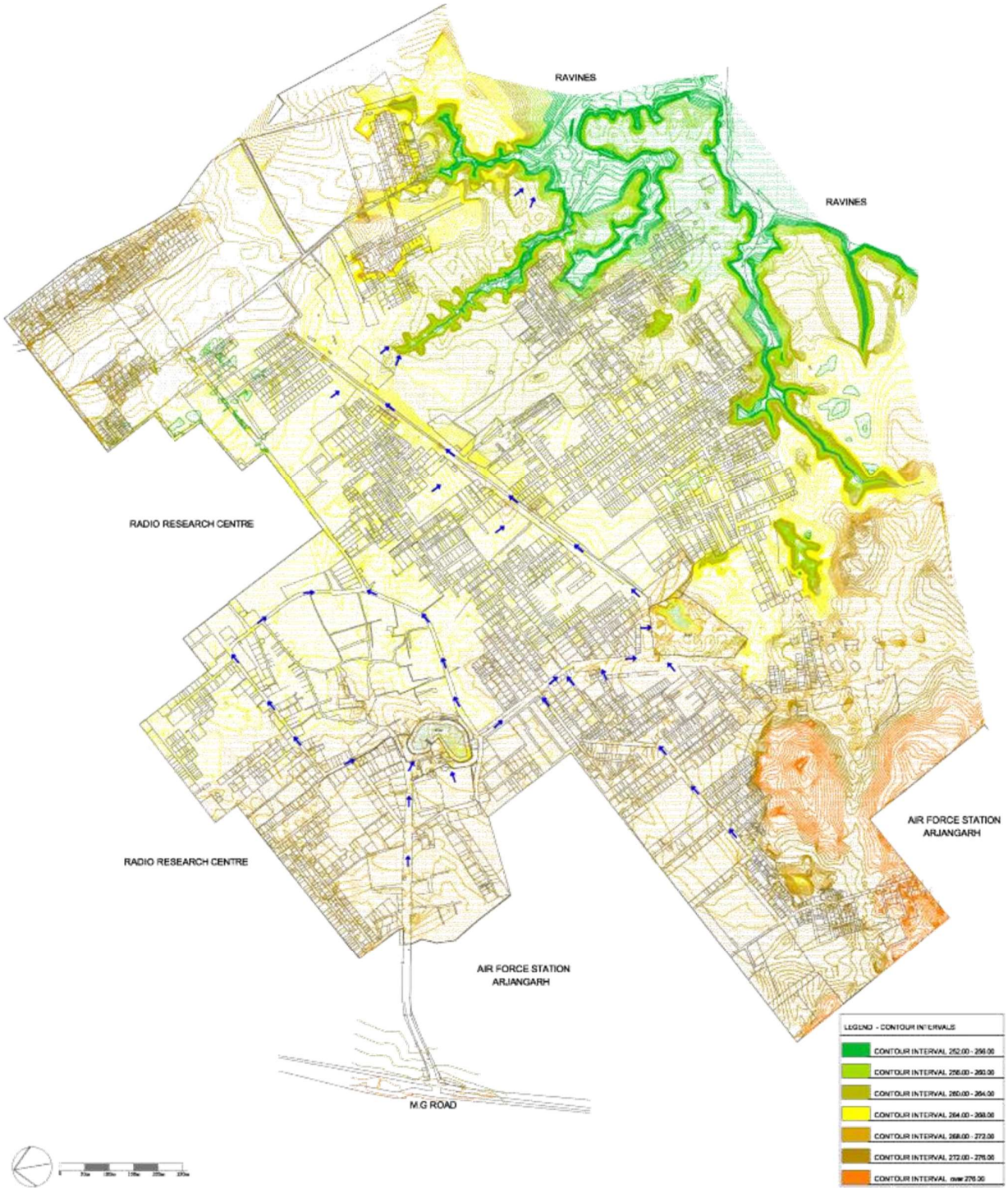


Figure 11 Site Plan - Aya Nagar Development Scheme


RAVINES
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AIR FORCE STATION
ARJANGARH
M.G ROAD
LEGEND - CONTOUR INTERVALS
CONTOUR INTERVAL 252.00 - 256.00
CONTOUR INTERVAL 256.00 - 260.00
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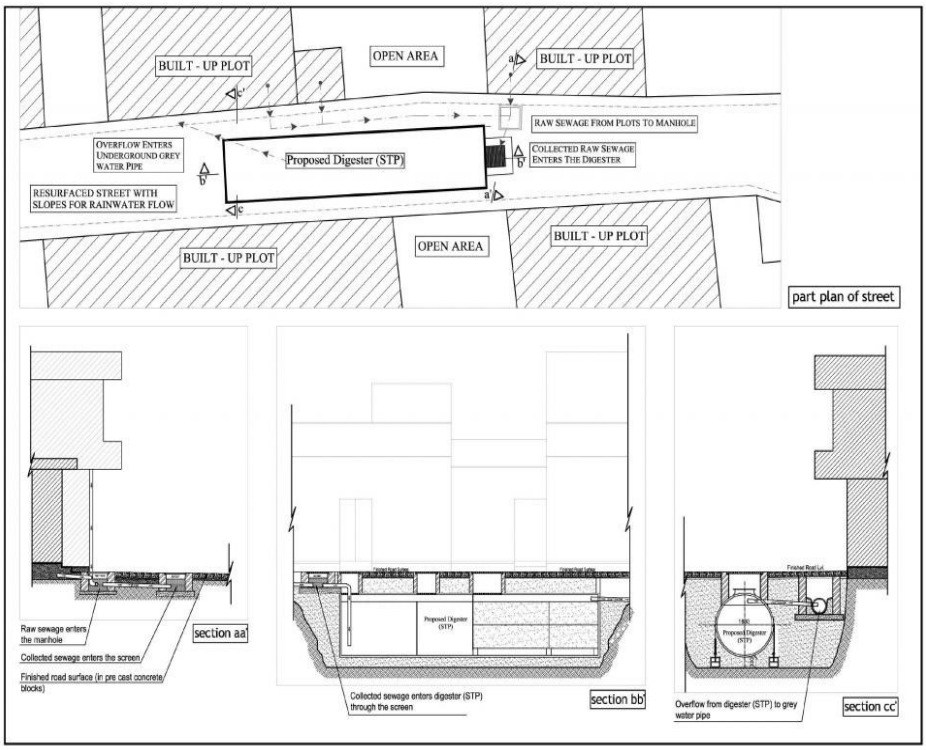


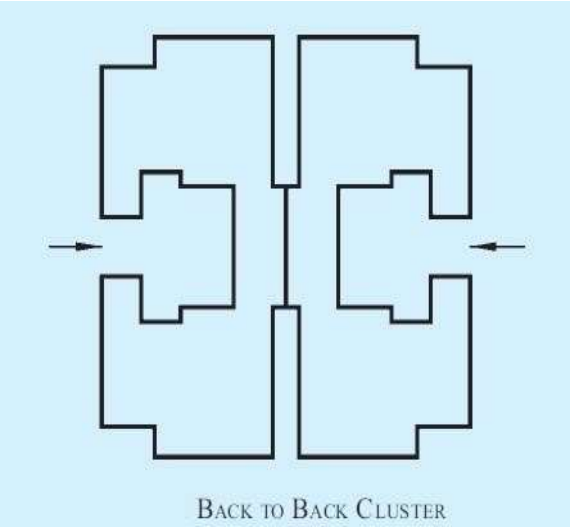
Figure 12 Sewage Treatment, digestor

CHAPTER 3: TOOLS AND TECHINIQUES

BUILDING BYE LAWS & REGULATIONS

3.1 TERMINOLOGY

1. **Back-to-Back Cluster** - . Clusters when joined back to back and/or on sides.
2. **Closed Clusters.** Clusters with only one common entry into cluster open space



BACK TO BACK CLUSTER

3. **Cluster** -. Plots or dwelling units or housing grouped around an open space Ideallyhousing cluster should not be very large. In ground andone storeyed structures not more than 20 houses shouldbe grouped in a cluster. Clusters with more dwelling units will create problems in identity, encroachments and of maintenance.

4 **Cluster Court Town** -House . A dwelling in a cluster plot having100 percent or nearly 100 percent ground coverage with vertical expansion, generally limited to one floor only and meant for self use.

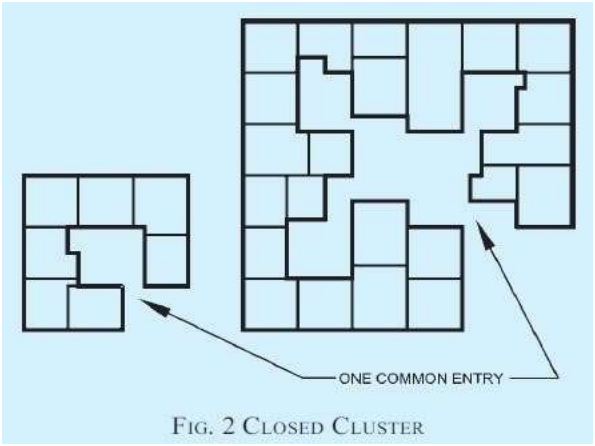


FIG. 2 CLOSED CLUSTER

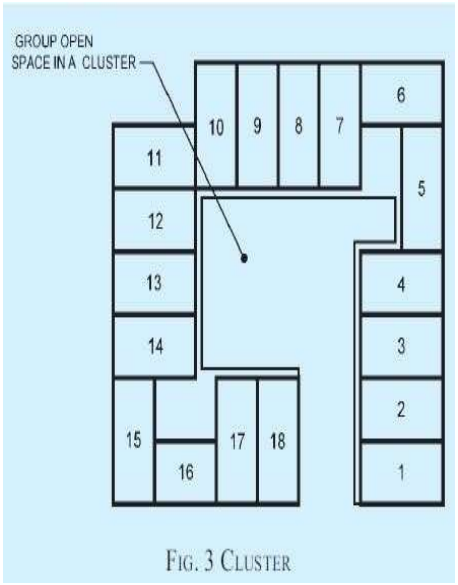


FIG. 3 CLUSTER

5

5 **Density** . The residential density expressed in terms of the number of dwelling units per hectare. Incidental open spaces are mainly open spaces required to be left around and in between two buildings to provide lighting and ventilation.

6 **Floor Area Ratio (FAR) .** The quotient obtained by dividing the total covered area (plinth area) on all floors by the area of the plot.

7 **Group Housing** . Housing for more than one dwelling unit, where land is owned jointly (as in the case of cooperative societies or the public agencies, such as local authorities or housing boards, etc) and the construction is undertaken by one Agency.

8 **Group Open Space** . Open space within a cluster. Group open space is neither public open space nor private open space. Each dwelling unit around the cluster open space have a share and right of use in it. The responsibility for maintenance of the same is to be collectively shared by all the dwelling units around.

9 **Independent Cluster** . Clusters surrounded from all sides by vehicular access roads and/or pedestrian paths.

10 **Interlocking Cluster** . Clusters when joined at back and on sides with at least one side of a cluster common and having some dwelling units opening onto or having access from the adjacent clusters. Dwelling units in such clusters should have at least two sides open to external open space. Houses in an interlocking cluster may have access, ventilation and light from the adjacent cluster and should also cater for future growth.

11 **Occupancy or Use** Group . The principal occupancy for which a building or a part of a building is used or intended to be used; for the purposes of classification of a building according to occupancy; an occupancy shall be deemed to include subsidiary occupancies which are contingent upon it.

12 **Open Clusters** . Clusters where cluster open spaces are linked to form a continuous open space.

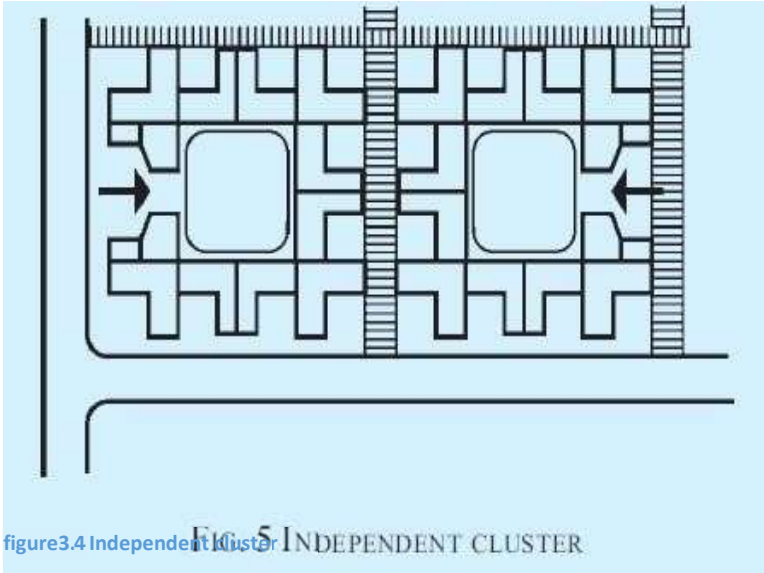


figure3.4 Independent cluster FIG. 5 INDEPENDENT CLUSTER

13 **Volume to Plot Area Ratio** (VPR) . The ratio of volume of building measured in cubic metre to the area of the plot measured in square metre, and expressed in metre.

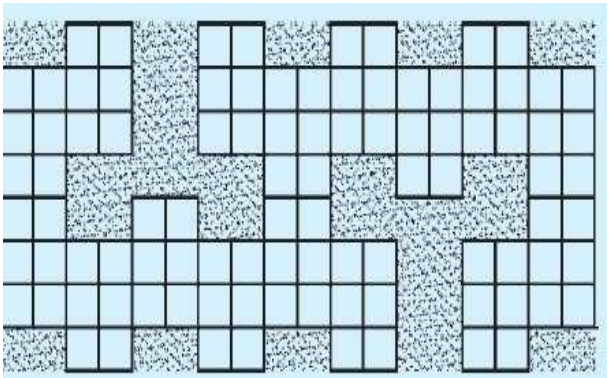


FIG. 7 OPEN CLUSTER

3.2 LAND USE CLASSIFICATION AND USES PERMITTED.

3.2.1 Transferable Development Rights (TDR)

Transferable development rights (TDR) is a compensation, in the form of floor area ratio (FAR) or development right, which shall entitle the owner for construction of built-up area, as per applicable regulations, on designated sites. The FAR credit shall be issued, in a certificate called as development right certificate (DRC). The DRC is transferrable in full or part thereof.

Development Right Certificate

The development right certificate (DRC) shall be issued by the local body or the competent authority as per regulations and shall contain the following information:

A. Built-up area or FAR credit to which the owner is entitled;
B. Place and usage zone from which the DRC is generated (originating plot);
C. Place where the FAR credit shall be used (receiving plot); and
D. Details of development rights transferred and remaining.

TDR Eligibility

TDR may be granted for,

A. Lands earmarked for various public purposes including road widening, which are subjected to acquisition, and are proposed in the plan or regulations prepared under the applicable town planning/municipal or any other legislation;
B. Development or construction of the amenity on the reserved land;
C. Heritage structure or precinct under the provision of development control regulations or any other applicable regulations;
D. In-lieu of constructing housing for slum dwellers, slum redevelopment, disused mill sites, etc; and

E. Purposes as may be notified by the Government as per notification.

3.2.2 Accommodation Reservation (AR)

Accommodation reservation (AR) is a planning tool for development of public amenities reserved in a redevelopment plan wherein local authority is not required to acquire the land by incurring expenditure on payment of compensation. In case of AR, the owner of land earmarked as public amenity, in the redevelopment plan, shall be permitted to develop his land, using full permissible FAR on the plot, subject to handing over the built-up area for the proposed use to the local body/Authority, free of all encumbrances, in lieu of full permissible FAR granted to him. The area utilized for the amenity shall not form part of FAR calculation.

3.3 MEANS OF ACCESS.

1. 1 Every building/plot shall abut on a public/private means of access like streets/roads duly formed.
2. Every person who erects a building shall not at any time erect or cause or permit to erect any building which in any way encroaches upon or diminishes the area set apart as means of access required in the Code. No buildings shall be erected so as to deprive any other building of the means of access.
3. **Width of Means of Access** The residential plots shall abut on a public means of access like street/road. Plots which do not abut on a street/road shall abut/front on a means of access, the width and other requirements of which shall be as given in Table. In no case, development on plots shall be permitted unless it is accessible by a public street of width no less than 6 m.

Other Buildings

For all assembly buildings like, theatres, cinema houses, assembly halls, stadia; educational buildings; markets, hospitals; industrial buildings and other buildings which attract large crowd, the means of access shall not be less than the following:

Width and Length of Means of Access

(*Clause* 4.3)

Sl No.	Width of Means of Access	Length of Means of Access *Max*
	m	m
(1)	(2)	(3)
i)	6.0	75
ii)	7.5	150
iii)	9.0	250
iv)	12.0	400
v)	18.0	1 000
vi)	24.0	above 1 000

NOTE — If the development is only on one side of the means of access, the prescribed widths may be reduced by 1m in each case.

figure3. 6 width and length ratios of means of access

Footpath should be normally designed for a pedestrian Level of Service (LOS) B, thereby providing wide pedestrian facilities for safe, pleasant and comfortable walking. Under resource constraint, LOS C may be adopted for deciding the width of footpath mentioned in Table 2. The width of footpaths depends upon the expected pedestrian traffic and may be fixed with the help of the following norms subject to not being less than 1.8 m. generation of pedestrian traffic. Recommended width of footpath along various land uses are given in figure.

Capacity of Footpath and Design

(*Clause* 4.3.2.1.1)

Sl No.	Width of Foothpath	Design Flow in Number of Persons Per Hour			
		In Both Directions		All in One Direction	
	m	LOS B	LOS C	LOS B	LOS C
(1)	(2)	(3)	(4)	(5)	(6)
i)	1.8	1 350	1 890	2 025	2 835
ii)	2.0	1 800	2 520	2 700	3 780
iii)	2.5	2 250	3 150	3 375	4 725
iv)	3.0	2 700	3 780	4 050	5 670
v)	3.5	3 150	4 410	4 725	6 615
vi)	4.0	3 600	5 040	5 400	7 560

table3. 1 capacity of footpath

Required Width of Footpath as per Adjacent Land Use

(*Clause* 4.3.2.1.1)

Sl No.	Description	Width m
(1)	(2)	(3)
i)	Minimum free walkway width and residential/mixed use areas	1.8
ii)	Commercial/Mixed use areas	2.5
iii)	Shopping frontages	3.5 to 4.5
iv)	Bus stops	3
v)	High intensity commercial areas	4

table3. 2 required width of footpath as per adjacent land use

3.3 For high rise buildings and special buildings.

A. The width of the main street on which the building abuts shall not be less than 12 m and one end of this street shall join another street not less than 12 m in width.
B. The road shall not terminate in a dead end; except in the case of residential building, up to a height of 30 m.
C. The approach to the building and open spaces on all its sides shall be not less than 6 m in width, and a turning radius of minimum 9 m shall be provided for fire tender movement of fire tenders weighing up to 45 t. The same shall be hard surface capable of taking the mass of fire tender, weighing up to 45 t minimum. For heavier fire tenders, the minimum width, turning radius and the hard surface capable of taking the fire tender loads shall be as per the requirement laid down by
D. the Fire Department. The layout for the open space for fire tender movement shall be done in consultation with the Chief Fire Officer of the city, which shall be kept free of obstructions and shall be motorable. The compulsory open spaces around the building shall not be used for parking.
E. The main entrance to the plot shall be of adequate width to allow easy access to the fire engine and in no case shall it measure less than 6 m. The entrance gate shall fold back against the compound wall of the

premises, thus leaving the exterior accessway within the plot free for movement of fire tender. If the main entrance at the boundary wall is built over, the minimum clearance shall be 4.5 m.

3.3.1 Buildings on Podium

Podium is a horizontal projection (platform) extending beyond the building footprint on one or more sides, and may consist of one or more levels

Uses permitted

Podium may be used for the following purposes:

A. Parking of vehicles . When used for parking, one WC, two urinals and two washbasins for every 500 cars or part thereof, shall be provided on each podium floor. At least one accessible toilet complying with the requirements given in B-9 shall be provided preferably near the accessible parking. Provision for driver.s rest room for non- residential building shall be made.
B. Fire and building services/utilities in accordance with the provisions of other Parts/ Sections of the Code.
C. Topmost podium slab which is open to sky maybe landscaped and/or be used as recreational open space; subject to provision of 1.6 m high parapet wall.
D. Other habitable uses may be allowed by counting it in FAR subject to light, ventilation and fire safety requirements.

Requirements

Following requirements shall be satisfied for buildings

constructed on podium:

A. A podium may be permitted in a plot of area 1 500 m2

   or more.

B. A podium, if provided with ramp, may be permitted in one or more levels, however the total height shall not exceed 30.0 m above ground level.
C. In case a podium is not provided with ramp, but provided with car lift only, the same may also be permitted in one or more levels, however, the total height shall not exceed 9.0 m above ground level.

1. One way ramp of clear width of minimum 3.0 m and two way ramp with clear width of minimum 6.0 m shall be provided for LMV.
2. One way ramp of clear width of minimum 4.5 m and two way ramp with clear width of minimum 9.0 m shall be provided for LCV.
3. One way ramp of clear width of minimum 6.0 m and two way ramp with clear width of minimum 12.0 m shall be provided for HMV.
4. Ramp slope shall be maximum 1 in 8.
5. After a 40 m length of continuous ramp, a flat surface of minimum 6.0 m length shall preferably be provided

6. If podium is accessible to fire tender, minimum 7.5 m wide ramp shall be required for fire engine access with maximum slope of 1 in 10.
7. Podium shall not be permitted in required minimum front open space.
8. Podium, if accessible to fire tender, shall be so designed so as to take the load of fire tender weighing up to 45 t minimum or as per the requirement laid down by the Fire Department. g) Requirement of accessibility for elders and persons with disabilities shall be ensured in compliance with the provisions of Annex B which may require providing ramps with specified gradient or accessible lifts for access to different levels.

3.4 COMMUNITY OPEN SPACES AND AMENITIES.

Residential and Commercial Zones

In any layout or sub-division of land measuring 0.3 ha or more in residential and commercial zones, the community open spaces shall be reserved for recreational purposes which shall as far as possiblebe provided in one place or planned out for the use of the community in clusters or pockets.

1. The community open spaces shall be provided catering to the needs of area of layout, population for which the layout is planned and the category of dwelling units. The following minimum provision shall be made:

A. percent of the area of the layout, or

0.3 to 0.4 ha/1 000 persons; for low income housing, the open spaces shall be 0.3 ha/1 000 persons. No recreational space shall generally be less than 450 m2.

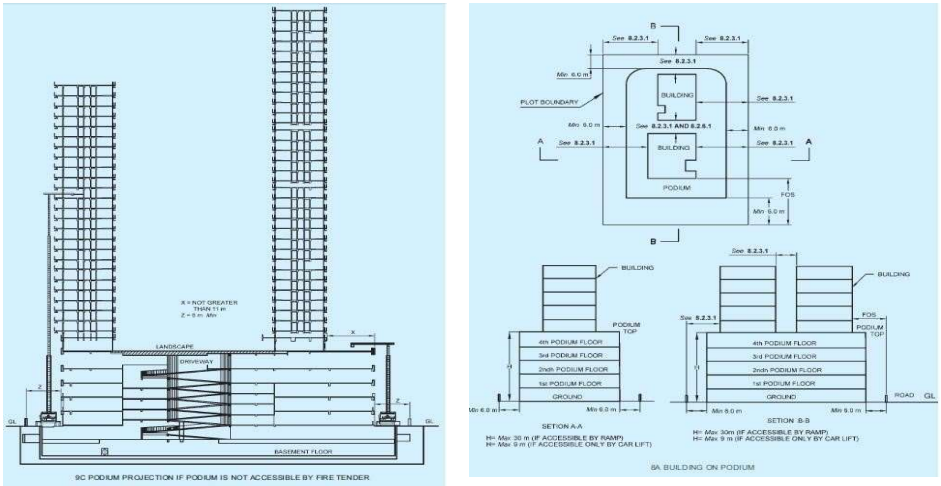


figure3. 7 special cases of podium.

1. The minimum average dimension of such recreational space shall be not less than 7.5 m; if the average width of such recreational space is less than 24 m, the length thereof shall not exceed 2.5 times the average width. However, depending on the configuration of the site, commonly open spaces of different shapes may be permitted by the Authority, as long as the open spaces provided serve the needs of the immediate community contiguous to the open spaces.
2. In such recreational spaces, a single storeyed structure as pavilion or gymnasia up to 25 m2 in area may be permitted; such area may be excluded from FAR calculations.
3. Each recreational area and the structure on it shall have an independent means of access. Independent means of access may not be insisted upon if recreational space is approachable directly from every building in the layout. Further, the building line shall be at least 3 m away from the boundary of recreational open space.

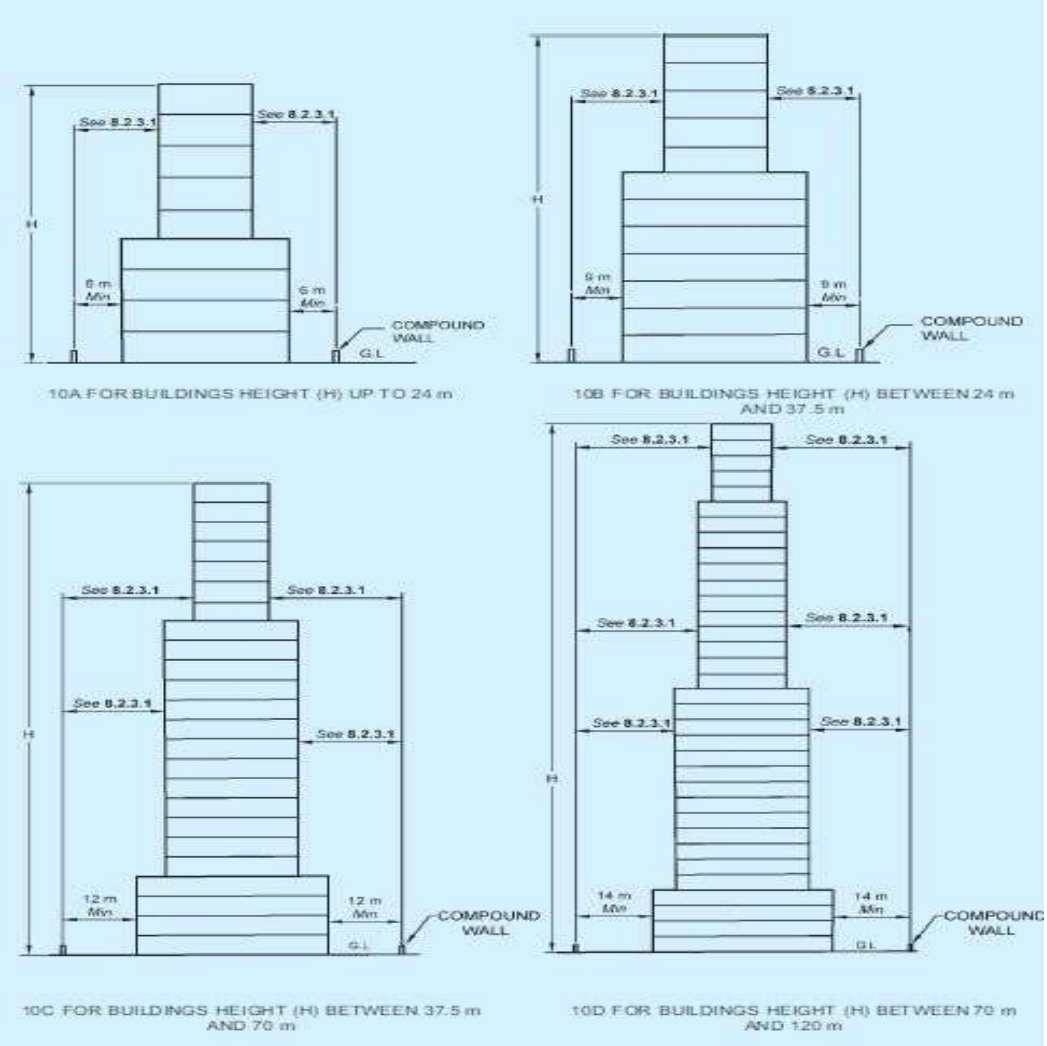
Other Amenities

In addition to community open spaces, the layouts shall provide for the amenities These provisions may be modified based on specific requirements, as decided by the Authority.

- Educational Facilities.
- Health Care Facilities.
- Socio-Cultural Facilities.
- Distribution Services.
- Police, Civil Defence and Home Guards.
- Safety Management.
- Telephone, Postal and Banking Facilities.
- Sports Facilities.
- Commercial Centres.
- Electrical Sub-Station.
- Transport.
- Cremation/Burial Ground.

3.6 OPEN SPACES (WITHIN A PLOT).

A. For buildings of height above 10 m, the open spaces (side and rear) shall be as given in Table . The front open spaces for increasing heights of buildings shall be governed
B. For tower-like structures, as an alternative to open spaces shall be as given below:
C. Up to a height of 24 m, with one set-back, theopen spaces at the ground level, shall be not less than 6 m
D. For heights between 24 m and 37.5 m with one set-back, the open spaces at the ground level, shall be not less than 9 m



For heights between37.5 m and 70 m with two set-backs, the open spaces at the ground level, shall be not less than 12 m

For heights between 70 m and 120 m with two set-backs, the open spaces at the ground level,shall be not less than 14 m [see Fig. 10D];e) For heights above 120 m and above with two set-backs, the open spaces at the ground level, shall be not less than 16 m [see Fig. 10E]; anf) The deficiency in the open spaces shall be made good to satisfy 8.2.3.1 through the set- backs at the upper levels; these set-backs shall not be accessible from individual rooms/flats at these levels.

Outer courtyard . The minimum width of the outer courtyard (as distinguished from its depth) shall be not less than 2.4 m. If the width of the outer courtyard is less than 2.4 m, it shall be treated as a notch and the provisions of outer courtyard shall not apply. However, if the depth of the outer courtyard is more than the width, the provisions of 8.1.2 shall apply for the open spaces to be left between the wings when any habitable room depends on light and ventilation from such outer courtyard.

Sunken courtyard . Sunken courtyard up to 3 m in depth from the ground level as .light well. within building envelope shall be permitted for light and ventilation for basement area, provided all concerns relating to drainage are taken care of.

3.6.2 Exemption to Open Spaces

Projections into Open Spaces

Every open space provided either interior or exterior shall be kept free from any erection thereon and shall be open to the sky, except as given below:

A. Cornice, roof or weather shade not more than 0.75 m wide;
B. Sunshades over windows/ventilators or other openings not more than 0.75 m wide;
C. Canopy not to be used as a sit out with clearance of 1.5 m between the plot boundary and the canopy;
D. Projected balcony at higher floors of width not more than 1.2 m; and
E. Projecting rooms/balconies [see 8.4.1(d)] at alternate floors such that rooms of the lower two floors get light and air and the projection being not more than the height of the storey immediately below. However, these projections into open spaces shall not reduce the minimum required open spaces.

Accessory building

The following accessory buildings may be permitted in the open spaces:

A. In an existing building, sanitary block of 2.4 m in height subject to a maximum of 4 m2 in the rear open space at a distance of 1.5 m from the rear boundary may be permitted, where facilities are not adequate.
B. Parking lock up garages not exceeding 2.4 m in height shall be permitted in the side or rear open spaces at a distance of 7.5 m from any road line or the front boundary of the plot; and
C. Suction tank and pump room each up to 2.5 m2 in area.

Projection into Street

In existing built-up or congested areas, no projection of any sort whatsoever, except sunshades extending more than 230 mm below a height of 4.3 m, shall project over the road or over any drain or over any portion outside the boundaries of the site, provided the projection arising out of the vertical part of the rain-water spouts projecting at the road level or the water pipe may be permitted in accordance with the drainage plan.

Porticos in existing developed area

Porticos in bazaar areas of existing developed areas may be permitted to project on road land subject to the following limitations:

A. Porticos may be allowed on such roads leaving a minimum clear space of 18 m between kerbs;
B. The porticos shall not be less than 3 m wide;
C. Nothing shall be allowed to be constructed on the portico which shall be used as an open terrace;
D. Nothing shall be allowed to project beyond the line of arcades; and
E. The space under the portico shall be paved and channeled according to the directions of the Authority.

3.7 AREA AND HEIGHT LIMITATIONS

The limitation of area and height of buildings of different occupancy classes and types of construction shall be achieved by specifying it in terms of FAR, which shall take into account the various aspects that govern in specifying FAR as given below:

A. Occupancy class;
B. Types of construction;
C. Width of street fronting the building and thetraffic load;
D. Locality where the building is proposed andthe density;
E. Parking facilities;
F. Local fire fighting facilities; and
G. Water supply, drainage and sanitationfacilities.

The comparative FARs for different occupanciesand types of construction are as given in Table 5 and the Authority shall select a basic FAR for one occupancy and a type of construction and arrive at the FAR values for other combinations taking into account the other local factors Height limits**.**

A. The maximum height of building shall not exceed 1.5 times the width of road abutting plus the front open space, subject to the requirement of front open space of a maximum of 16 m;
B. If a building abuts on two or more streets of different widths, the building shall be deemed to face upon the street that has the greater width and the height of the building shall be regulated by the width of that street and may be continued to this height to a depth of 24 m along the narrower street.

3.7.1 Group housing development

May be in low rise house clusters or high rise multistoried apartments for high density development.

Table 6 Floor Area Ratio and Coverage for Group Housing

(Clause 9.6.2)

Sl No.	Net Residential Density Dwelling Units/Hectare	Maximum Coverage Percent	Floor Area Ratio
(1)	(2)	(3)	(4)
i)	25	25	0.50
ii)	50	30	0.75
iii)	75	33	0.90
iv)	100	35	1.00
v)	125	35	1.25
vi)	150	35	1.50
vii)	175	35	1.75
viii)	200	35	2.00
ix)	225	35	2.25
x)	250	35	2.50
xi)	275	35	2.75
xii)	300	35	3.00
xiii)	325	35	3.25
xiv)	350	35	3.50
xv)	375	35	3.75
xvi)	400	35	4.00

NOTE — The coverage shall be calculated on the basis of the whole area reserved for group housing.

figure3. 9 table for FAR for group housing

- No limit to floors and height shall be applicable, but the coverage and floor area ratio for various densities may be as given in Table 6 unless provided otherwise in the Master Plan and local development control rules.
- The minimum size of the site for group housing multi-storeyed apartment shall be 3 000 m2.
- The number of dwelling units are calculated on the basis of the density pattern given in the Development Plan taking into consideration a population of 4.5 persons per dwelling unit.
- The basement may vary between 33.33 and 50 percent of the plot area and is to be used for parking, servicing and for essential household storage without counting in FAR.
- Parking space shall be provided in accordance.

CHAPTER 4: BRIEF PROFILE OF STUDY AREA – HAZRATGANJ WARD NO.17, LUCKNOW

4.1 STUDY AREA.

The existing Central Jail Indore (105 year old building)is located in the Central Business District (CBD) of Indore. It is within one kilometer radius of the Indore Railway station and around six kilometers from the Airport. The Re-densification project entails to shift the central jail outside the city limits and redevelop this central land parcel with the said functional suitability by building residential and some mixed commercial.

The footprint of the Existing jail could be preserved in the Master plan in the form of Radial & circular connecting internal Neighborhood Roads & Quadrant Development Around it. It was recommended that the Watch Tower & some existing structures of the old jail be preserved as part of 10% open space/ Public plaza and the Green space of the project be treated like a Urban Renewal / Public Heritage project owing to the jail being 105 years old & existing in the context. This may work a Master plan USP similar to such Urban Renewal projects in the west.

Figure 13 location of site and area around it.

In the figure13 of site the yellow boundary has an area of 49.17 acres and the green region inside that is vacant land or land occupied by central jail in current use which constitutes 28.04 acres approx 57% of total area of site .

Figure 15 shows the obstruction of the radial development from Rajwada area because of industrial & public and semi public land use.

Figure 16 shows the density of wards no. 56 as 737 people per hactare in 2001 and as compared to the whole list it is 7 th largest .

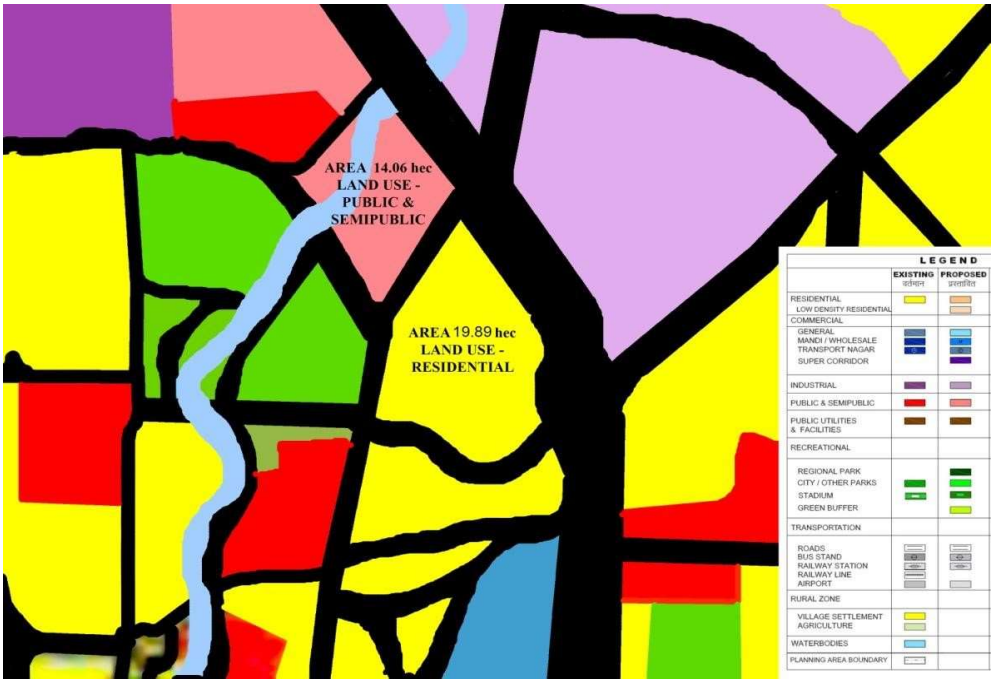


Figure 14 land use near site

4.2 City scenario

Indore is the business and trading capital of the state. The city holds a dominant position and is a vibrant center for trade and commerce.

It has a firm industrial base too. The textile industry is presently on the decline and is being replaced by a variety of new manufacturing industries. Still it is the one of the largest textile industry in India.

The Work Force Participation Rate in Indore City is 30%, while 63.4% of the Work Force is employed in Tertiary Sector.

There are proposals for Special Economic Zone and Agricultural Export Zone proposed near Indore which will provide incentives regarding Taxation finances and promotion in respective zones.

39% of the income earners are engaged in the informal sector, which is a sizable amount at the same time 38% of the households, have its main income earner in informal sector.

Ward No	Area Ha	Pop. (2001)	Pop. Den. (P/Ha)
25	22.55	17192	762
26	29.68	15517	523
27	99.88	12165	122
28	91.48	12968	142
29	116.67	19934	171
30	57.75	12737	221
31	31.31	18235	582
32	42	19671	468
33	37.92	17428	460
34	104.7	16913	162
35	186.47	10978	59
36	365.24	25579	70
37	139.13	20599	148
38	22.12	13541	612
39	35.72	14865	416
40	170.91	17961	105
41	338.8	20018	59
42	87.99	14414	164
43	14.67	8076	551
44	18.17	13864	763
45	29.6	10531	356
46	330.73	8319	25
47	11.41	6940	608
48	26.87	9411	350
49	11.23	11309	1007
50	40.79	16259	399
51	90.81	14353	158
52	526.01	56760	108
53	55.9	23766	425
54	146.28	11997	82
55	115.69	26431	228
56	75.08	55355	737
57	33.47	21223	634
58	20.1	17350	863
59	102.07	38424	376
60	68.94	15336	222
61	361.77	22025	61
62	205.55	37335	182
63	479.96	16539	34
64	594.13	31104	52
65	122.04	26335	216
66	129.35	24444	189
67	437.25	33509	77
68	1006.63	12656	13
69	377.42	38920	103
Total	**13016.98**	**1542618**	**119**

Source; Census of India, and IDP 2011 Draft

The Average Household income in the all income groups of the city is Rs. 5272 per month while in case of BPL families it is Rs. 2119 per month.

The average monthly expenditure of the Poor category households is more than Household Income (118% in Core Poor) while it is lowest in case of HIG with 65% of the Income.

The average monthly expenditure of the Poor category households is more than Household Income (116% in Core Poor) while it is lowest in case of HIG with 63% of the Income.

It is a noticeable fact that the expenditure on water was highest between the LIG and Core poor households (1.6%) with a citywide average of 1.0% across all income groups.

4.3 Land use classification.

The planning area was revised and notified under subsection (2) of section 13 of the Act, which came in to effect from 28/6/2001. Total area covered within the planning area is 504.87 sq. km. (This includes Municipal Corporation area also). In the development plan 1974-1991 various landuse classification categories were industries, commerce, residences, schools, roads etc. in order to comprehend the quantum of land utilization for various uses, their functional Interrelationship, environmental problems etc.

4.4 Residential

In the development plan (1974-1991), 5060ha of land was proposed for residential purpose out of which 4660 Ha has been utilized up to the year 2001. Even after achieving the population 1.5 times more than the Plan it has covered the proposed Residential Area under 1991 IDP. It can be said that the growth of Indore during the period has been below the proposed Density in IDP1991. due to such under utilization of land laying of infrastructure has become expensive

4.5 Commercial

The Commercial use, which was, envisaged in the Development Plan 1974-1991, was of the order of 648HA but only 463ha has been developed. By the same logic there is over densification of commercial establishments in the core.

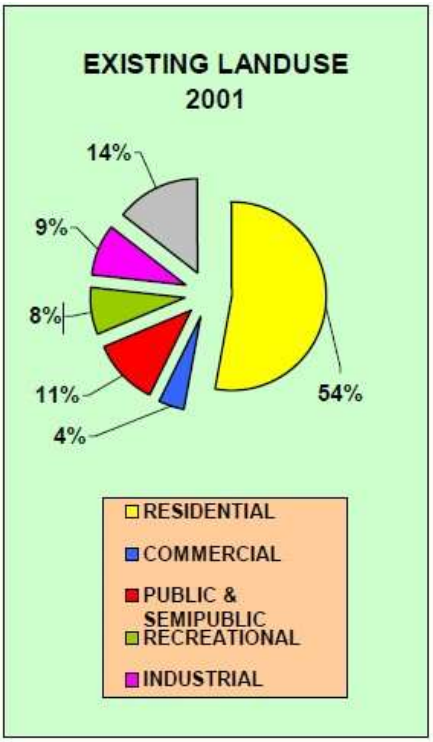


figure 4. 1 Land Use Break Up Indore

4.6 Conclusion

Under Utilisation of Land leading to make infrastructure provision an expensive affair.

Lacks of Integrated development have made the City devoid of Social and Physical infrastructures.

Indore city lack in terms of recreational spaces as many of the regional and city parks proposed under the master plan are not developed.

There is **lack of coordination** between different agencies related to the land development.

CHAPTER 5: DATA ANALYSIS

5.1 Transport System

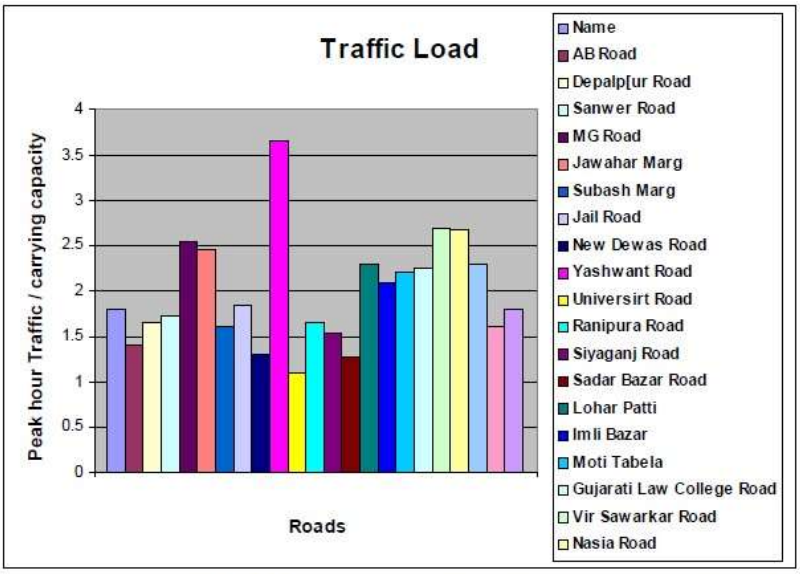


Figure 15 traffic carrying capacity

Source; Comprehensive Traffic and Transportation Study of Indore Urban Area by CES

Traffic carrying capacity of jail road is currently 1.75 according to bar chart.

5.2 Housing situation indore.

Traditionally, lndore has the privilege of housing the best residential areas available in any city of the state but in higher and upper middle-income groups only.

Year	Total popln.	Avg. H.H. Size	No. of H.H's	Add. H.H	Total No. of H.H's	Housing Stock	Req.	Units req. Replacement	Total Housing Shortage
1971	560936	5.5	112000		112000	92000	20000		**20000**
1981	827070	4.7	191000	79000	270000	162000	108000	9000	**117000**
1991	1250000	4.5	277000	86000	363000	175000	188000	18000	**206000**
2001	1759532	4.73	371995	94995	466990	271000	195990	54200	**250190**
2005	2219609	5.23	424400	52405	476805	297258	179547	118900	**298447**

Figure 16 Housing Need Stock and Shortage during different Period

The city has worst slums and jhuggi areas, thriving within the best residential and commercial localities of the city. The city also has the problems of unauthorized colonies, these colonies lack in infrastructure facilities forcing

the inhabitants to live in un-hygienic conditions. Lack of development particularly to suit the requirement and economic means of squatters have created conditions, which motivate unauthorized jhuggis. In the Development Plan (1974-1991), 5060 ha of land was proposed for residential purpose but only 4660 ha have been utilised up to the year 2002, which is 92.0% of the proposed area. The population of Indore has crossed the projected population (12,50,000) for the Indore Development Plan (1974-1991) much before 1991 The population has increased 2.5 times during 1974-2002, but the housing stock could not be developed **to cater the need especially for the poor sector**, which has created pressure on the existing housing facility causing substandard living conditions. From the studies, it is found that more than 5.00 lakhs population is living in Jhuggi-Jhopadi areas.

5.3 Housing Shortage

Indore suffers from housing Shortage particularly for low and economically weaker sections of the society. It has 16.25% of its population staying in Slums and Squatters and about 15% of the population staying in the un-authorized settlements reasons being unavailability of vacant land near work areas, lack of land for LIG, EWS, high prices of land, lesser affordability and housing shortage which has led to squatting. Lack of coordination & disputes among policies of various developments.

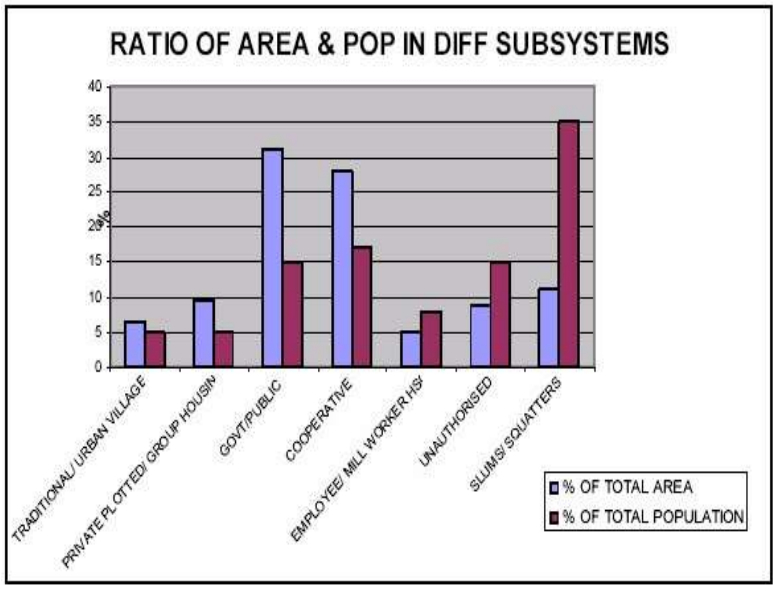


Figure 17 Area V/s Population in diff substation

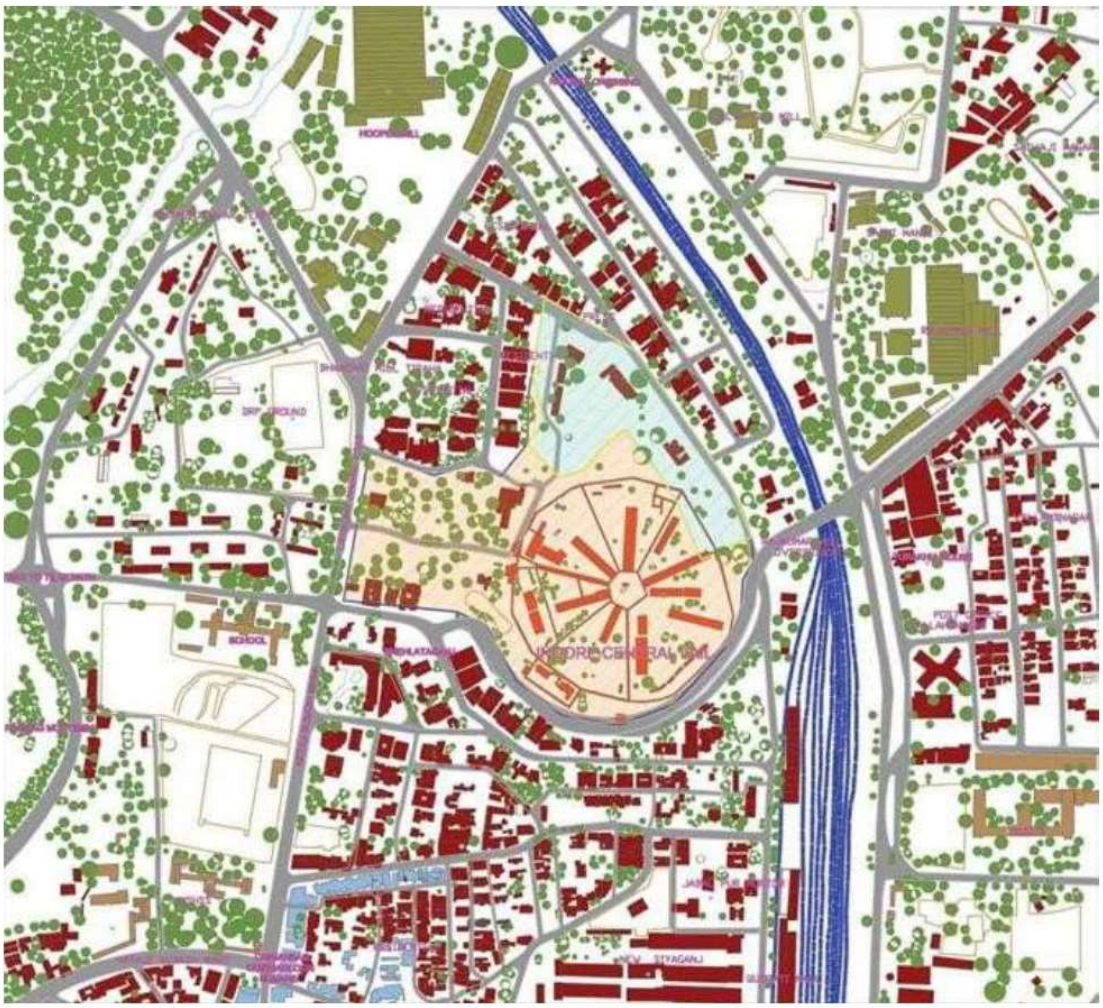


Figure 19 vegetation and buildings de markation map

Figure 18 actual layout of jail

Figure 21 inner view of jail

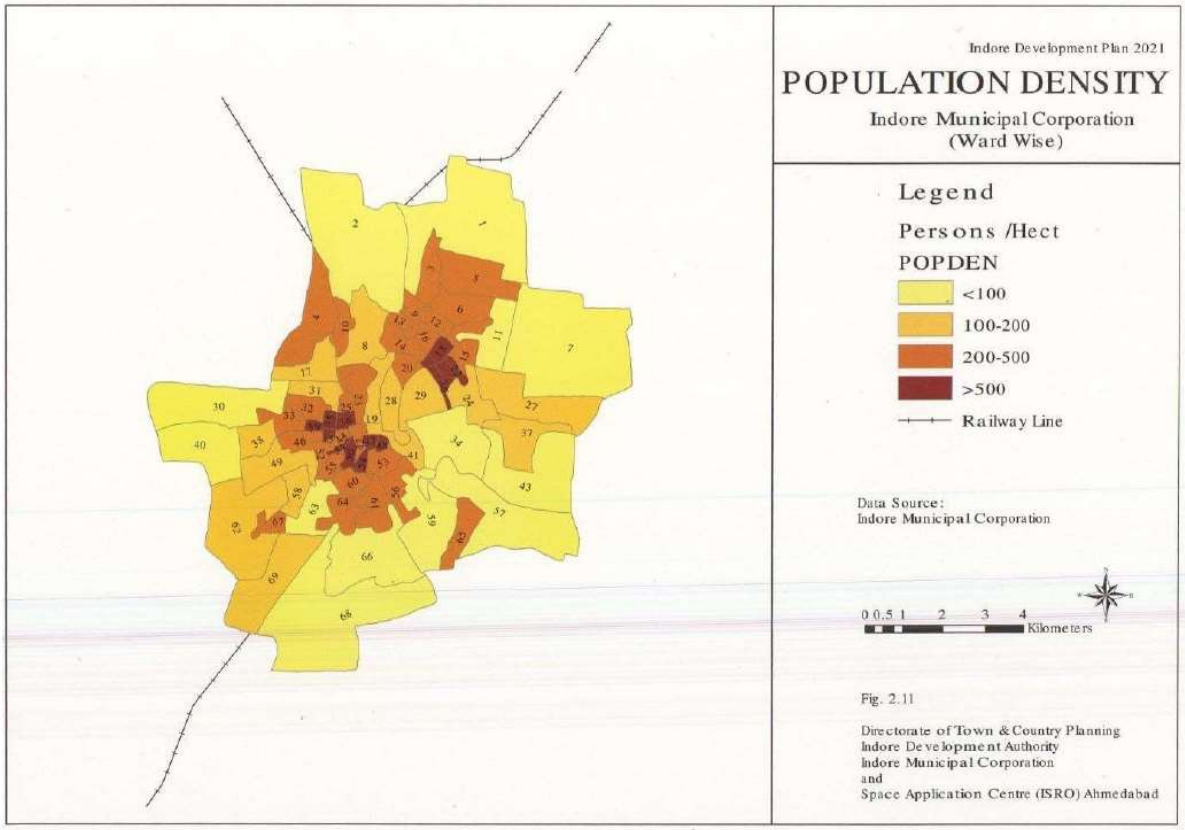


Figure 20 in 2001 ward 56 density was around 200-500

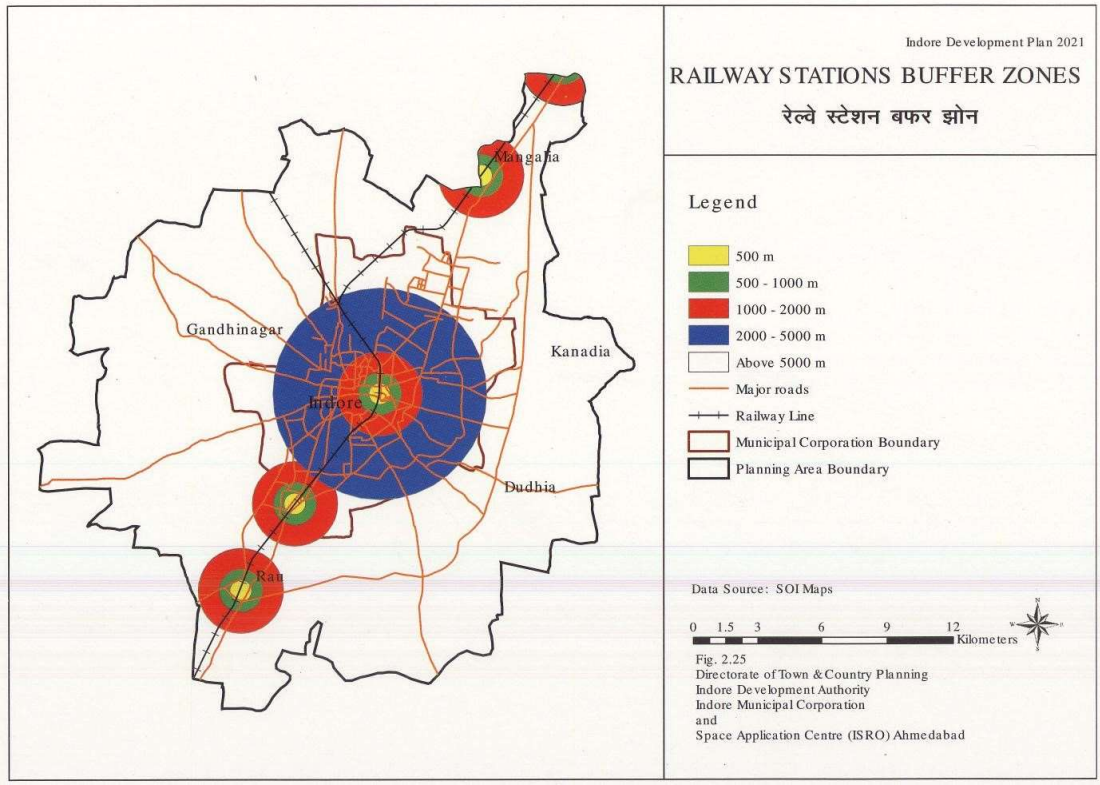


Figure 22 Site is just 1 km away from railway station

Indore Ward No 56 Snehlata Ganj area 88.40 acre

Indore Ward No 56, with population of about 34 thousand is Indore city's the 17th most populous ward, located in Indore sub district of Indore district in the state Madhya Pradesh in India.

Demographics

The ward is home to about 34 thousand people, among them about 17 thousand (51%) are male and about 16 thousand (49%) are female. 82% of the whole population are from general caste, 14% are from schedule caste and 3% are schedule tribes. Child (aged under 6 years) population of Indore Ward No 56 is 11%, among them 52% are boys and 48% are girls. There are 7079 households in the ward and an average 5 persons live in every family.

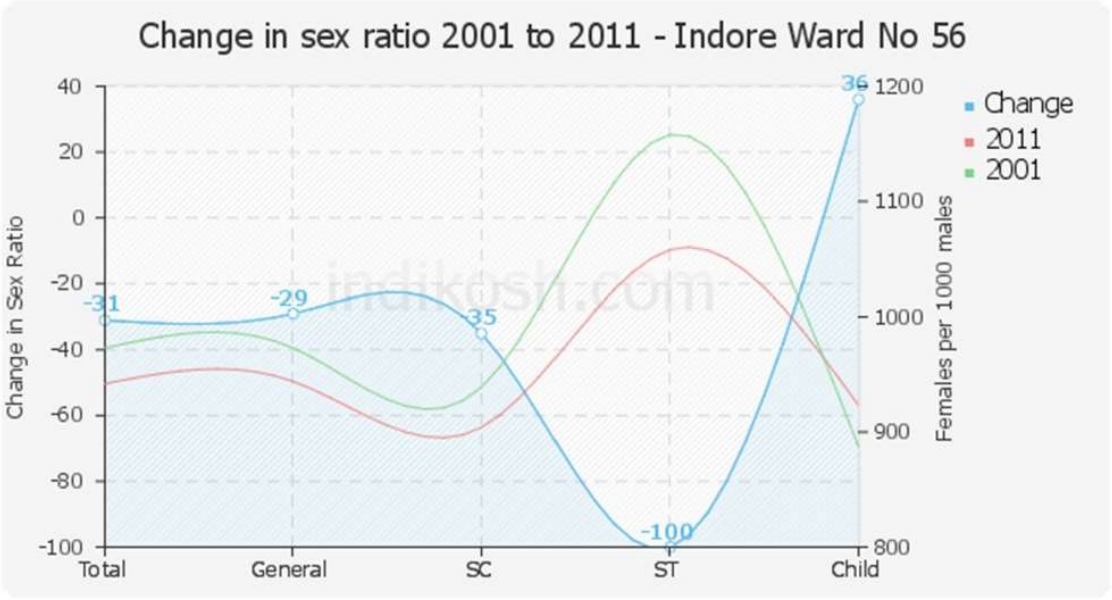
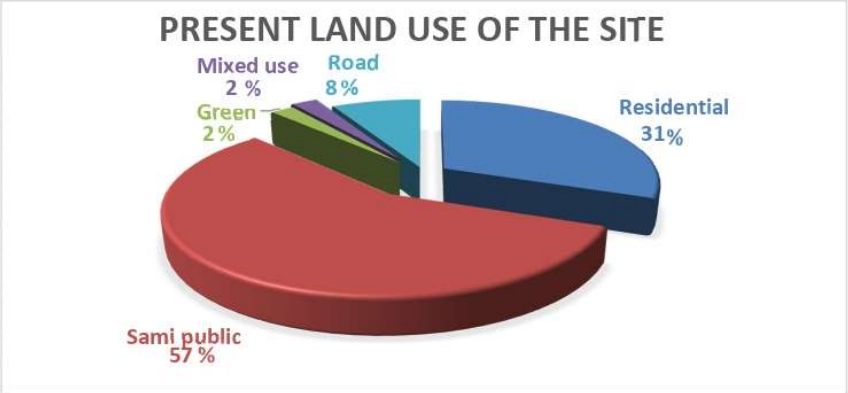


Figure 25 Change in sex ratio 2001 to 2011 - Indore Ward No 56

	Total	General	SC	ST	Child
Change	-31	-29	-35	-100	36
2011	942	944	904	1,058	923
2001	973	973	939	1,158	887

Site is located at the center of Indore (North Latitude 23°43' 45.42" and East longitude 85°54' 56.67") which is currently a city financial capital of Madhya Pradesh. Having natural slop of south east to North West. And site is covering 55.68 % of municipal ward no 56 and having 4586 house hold within the site in a city which is having house hold size of 5. Having area of 49 acre.



Ward 56 Population Projection For 2031

- Arithmetic increase method

Year	Population	House holed size	No of household
2001	14000	6.3	2222
2011	34000	4.9	6938
2021	54000	5.58	9677
2031	74000	5.25	14095

Table 9 Demographic Projection

Population forecast for 2021

- P2021 = Po + nx { n = 2011-2001/10, x = 14000 – 34000 }
- P2021 = P + 1 x 20000
- P2021 = 34000 + 20000
- P2021 = 54000

Population forecast for 2031

- P2021 = Po + nx { n = 2011-2021/10, x = 34000- 54000}
- P2021 = P + 1 x 20000
- P2021 = 54000 + 20000 P2021 = 74000.

Hence the required density of the ward for 2021 is 54000/88.40 = 610 .85 persons per acre. site projected population = 49.14 * 610.85 = 30,017 persons = 5379 families.

S. No.	Category	Number of units	Area per unit
1.			
	Residential unit play area	7	5000 sq.m
2.	Neighborhood play area	3	2.20 Ha
5.	Police Post	1	0.16 Ha
6.	Convenience shopping center	8	1500 sq.m
7.	Community shopping service center	2	5 Ha
8.	Post office	1	80 sq.m
9.	Banquet hall	2	0.10 Ha
10.	Bank	4	0.10 Ha

Table 10 No. of Units and Area per Unit of Different sectors

z	Category	Number of units	Area per unit
1.			
	Nursery school	8	0.08 Ha
2.	H.S School	5	2.20 Ha
3.	Primary school	3	0.70 Ha
4.	Dispensary	3	0.08 Ha
5.	Maternity Center	1	0.20 Ha
6.	Diagnostic Center	1	500 sq.m
8.	Community hall	2	2000 sq.m
9.	Housing Area park	8	.050 Ha
10.	Neighborhood park	2	1.2 Ha

Table 11 No. of Units and Area per Unit of Different sectors

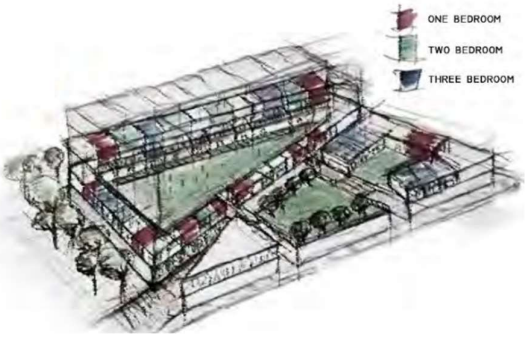
CHAPTER 6: PROPOSAL

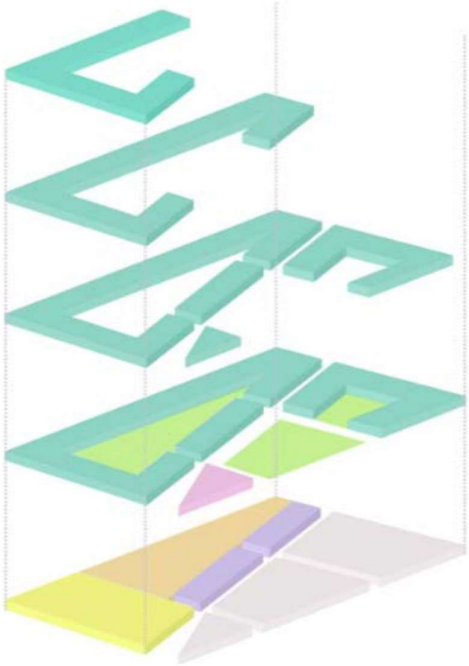
6.1 Background

It has been established that urban growth in any particular society, especially in the developing world is not just due to the natural increase in population hut also due to the immigration from the rural environment to the urban centers. Due to unequal distribution of facilities, job opportunities and glowing glamour cities there is constant influx of people from rural areas into the urban centers.

6.2 Proposal 1

Development of an effective housing policy framework for sustainable urban development.





6.4 Proposal 2

The proposal to use of green roofs as community space, helping to reduce reliance on mechanical heating and cooling, as well as a reduction in the urban head island effect.

6.5 Proposal 3

Proposal provides the neighborhood with an ideal urban framework to help create a vibrant, healthy, and inclusive community.

6.6 Proposal 4

Proposal to include provision of space on the ground floor of the building dedicated to creative activities that not only fit in with and pay homage to the creative community in ward 57, but also the broader creative industries within the precinct, which include furniture makers, a music school, screen printing.

Existing Scenario

Proposed Scenario

6.7 Proposal 4

Proposal provides the neighborhood with an ideal urban framework to help create a vibrant, healthy, and inclusive community.

6.7 Proposal 6

Proposal for an elevator building has to be abandoned, it does serve as a warning that special efforts must be made to stimulate interest in such housing and renovate the plaza located on the commercial areas of the site, “re-naturalizing” the city center and introducing green spaces to improve the urban microclimate.

6.8 Conclusions

High quality and well-managed housing is a cornerstone of sustainable communities. The location, planning, layout and design of housing make an important contribution to sustainable development. The quality and condition of housing has a major impact on health and well-being. Recommendations of various transport agencies and studying the guidelines followed internationally will greatly contribute to the promotion of this green concept in many cities and towns.

These goals among others are in consonance with the principle of sustainable development, which according to The World Commission on Environment and Development, also known as ―Our Common Future‖ refers to as development that meets the need of the present without compromising the ability of the future generations to meet their own needs. Sustainable housing provision is thus the gradual, continual and replicable process of meeting the housing needs of the populace, the vast majority of who are poor and are incapable of providing adequately for themselves. It ensures housing strategies that are stable and are not subject to vagaries in the political circumstances of the country. Providing adequate housing therefore constitutes one of the major constituents of sustainable urban development.

REFERENCES

The Analytic Hierarchy Process (AHP) Approach for Assessment of Urban Renewal Proposals

Methodology for a Sustainable Urban Regeneration: Urban Cell as Dissemination Unit

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BIBLIOGRAPHY

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