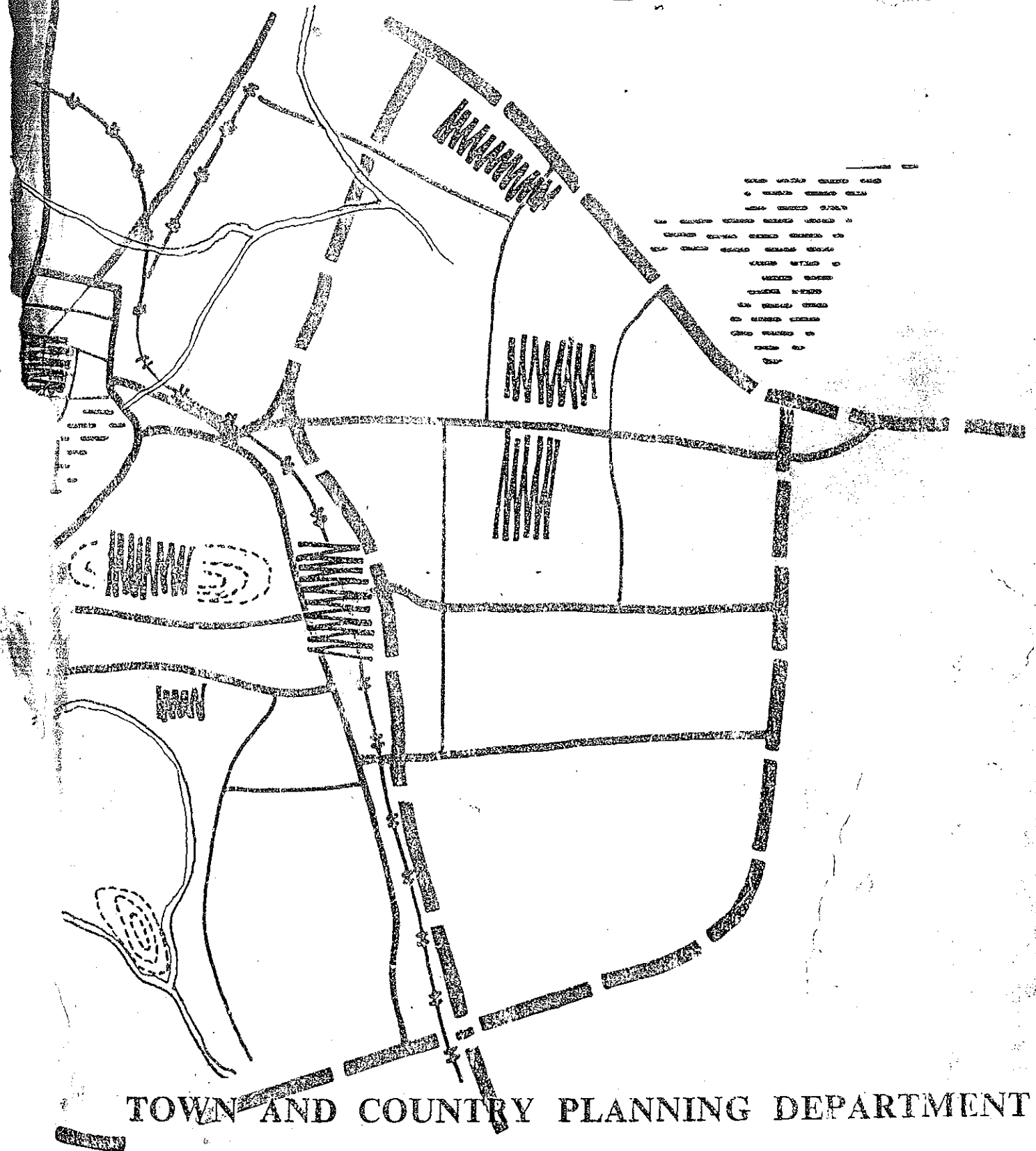


# BHOPAL--Development Plan



TOWN AND COUNTRY PLANNING DEPARTMENT

Madhya Pradesh--



## Foreword

A city is a living organism and has its own genius. A city planner's approach to city development, therefore, has to take into account the fact that he is not dealing with inanimate land only but with a living, breathing, growing and decaying structure. This is a fact which many city planners forget, with the result that the plans they make either remain dead letters or are implemented at the cost of human suffering.

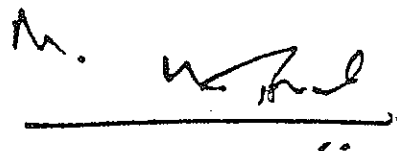
Bhopal has been endowed by nature with a magnificent topography. The builders of old Bhopal seemed to be attuned to nature because they built their fort and city on the periphery of the Upper Lake and made full use of the hills surrounding the lake. The original old city, while lacking in civic infrastructure, nevertheless had a charm of its own for it fitted in with its environment.

This city received an artificial stimulus for growth when the capital of Madhya Pradesh was located here in 1956. The location of a major industry. Heavy Electricals India Limited (now B.H.E.L.) and the shifting of a Cantonment to the city have further accelerated this growth. Much of the city expansion has been unplanned in the sense that each township has some degree of internal planning but at the macro level the townships do not knit into one whole city. The impact of accelerated growth on the old city has also been unhealthy, resulting in the deterioration of the civic services, overcrowding, deterioration in the structural condition of the housing stock and a psychological imbalance between the old city and the new townships.

The city planners have had the following tasks before them in preparing the development plan of Bhopal :—

- ( i ) To integrate the constituent units of Bhopal so as to make the city one united habitation.
- ( ii ) To correct the tendency for ignoring the natural environment of Bhopal and to fully develop the lakes and the hills surrounding them.
- ( iii ) To provide for an evolutionary restructuring of the old city.
- ( iv ) To provide for and yet properly direct the future expansion of this fast growing city so that growth is multi-directional and balanced.

In preparing the Development Plan the planning team has taken into account the existing realities. The plan proposals have tried to avoid radical changes in the existing city structure, while at the same time leaving scope for future redevelopment. An effort has also been made to develop the core city so that ultimately it becomes the living heart of the Bhopal Urban Complex. The general approach of the planning team has been sympathetic and I am sure that with the civic pride the people of Bhopal possess, this plan will become a living reality.



(M. N. Buch)  
Commissioner and Director,  
Town and Country Planning,  
M. P. Bhopal.

## Preface

Planning for human settlements is a continuous process, because the settlements are organic in nature, never static, always sensitive to socio-economic and political changes. Bhopal itself experienced rapid changes after the city was concurrently selected to function as capital of the State and for location of a large industrial unit of Heavy Electricals (now BHEL). Unfortunately the city suffered a great setback initially owing to lack of co-ordinated planning and thinking at all levels. The department is, however, striving hard to meet this deficiency and guide the growth of the city in an organised and planned manner.

A Development Plan for Capital Project township was finalised in 1959 on the basis of which the capital project township is being developed. An Interim Development Plan for the whole city was finalised in 1962-63. This was followed by detailed physical and land use surveys. Existing land use map (1: 500) and register was prepared and published in July, 1971, under the Madhya Pradesh Town Planning (Amendment) Act 1968. After hearing objections the land use map and register have been finally adopted. This map is now an authentic legal document for effective enforcement of the Development Plan and Zoning Plans.

Bhopal is one of the few cities in the country where implementation of even Interim Development Plan is taking place. The Municipal Corporation has undertaken development of Commercial Areas at Gurubux-ki-Tallaiya, Categorical Market, Timber Market and Dairy Project etc. to relieve congestion from the parent city. Even the Housing Board has undertaken large scale construction of houses and shopping centres on the basis of the plan.

The Development Plan now finalised is culmination of continued efforts of the department through its various technical cells; Development Plans, Regional Plans, Socio-Economic, Traffic and Transportation, Civic Design, Landscape and Central Cell and Regional Office, Bhopal. Aerial Photographs have been utilised for mapping which effected saving in time and money. These photographs formed basis of other surveys. The information contained in the report is only a tip of Ice-berg of material collected, compiled, and analysed for the preparation of the plan. Some material had to be excluded to keep the report concise and readable by the citizens. The narrative has, however, been supplemented by charts, graphs and maps to illustrate points as clearly as possible. The plan is for a population of 10 lakhs and covers a period of 17 years upto the year 1991. Some aspects such as services, road network, amenities have been planned even for a longer period, as the city has to function efficiently even beyond the plan period.

The report has been divided into two parts. Part I consisting of Chapters 1 to 7 covers the existing study and analysis of problems, and Part II covering Chapters 8 to 15 contains planning proposals. Chapter 14 contains detailed proposals in respect of 'Central Area' which is the main hub of activity of the city and requires urgent attention. The last chapter covers enforcement and implementation as in absence of these, the plan would



# BHOPAL DEVELOPMENT PLAN-1991

Published under  
MADHYA PRADESH NAGAR TATHA GRAM NIVESH ADHINIYAM, 1973

TOWN AND COUNTRY PLANNING DEPARTMENT  
MADHYA PRADESH



The Draft Development Plan for Bhopal was published on 11-11-74 under provisions of section 18 of the Madhya Pradesh Nagar Tatha Gram Nivesh Adhiniyam, 1973 for inviting objections and suggestions. An exhibition of the plan and study maps was held at Bhopal for a period of more than three months from 19-11-74 to 28-2-75 and the proposals were fully explained to the public. In all, 92 objections and 40 suggestions were received. The Director and the Additional Director, Town & Country Planning, heard the objections from the public, Institutions, Government Departments and other organisations.

After giving due considerations to all objections and suggestions, the modified plan was submitted to the State Government for approval.

The Bhopal Development Plan, presented here has been approved by the State Government under section 19 of the Madhya Pradesh Nagar Tatha Gram Nivesh Adhiniyam, 1973 vide notification No. 2476/33/75, dated 25-8-75 published in the M. P. Gazette Part-2, dated 14-11-75.

The Development Plan has come into operation from the date of publication of notification in the Gazette i. e. 14-11-75 and is binding on all including Development Authorities and Local Bodies functioning within the Planning Area of Bhopal under the Planning Area of Bhopal under the provisions of sub-section (5) of section (19) of the Adhiniyan.



remain on paper. The implementation of the entire plan will cost 86 crores. These funds will be generated by development of new areas with a seed capital of Rs. 2 crores. It is therefore, a financially self-supporting proposition.

The department will endeavour to explain the plan with clarity through detailed and large scale maps, models, charts and graphs. We hope that this will enable the citizens to understand the plan and express their views on the same fully and freely. Active public participation at this time will ensure successful implementation and enforcement which has to follow. The Department is indebted to Municipal Corporation, Bhopal for active participation in the process of planning and implementation. The department has also received considerable assistance from various Government, Semi-government Departments and other Organizations and citizens, and individuals. We are particularly thankful to the departments of Census, Public Health Engineering, Commerce and Industries, Labour Commissioner, Public Works, Commissioner and Collector, Bhopal, Education, Information and Publicity, Central Railways; Civil Aviation, Regional Transport Authority, State Road Transport Corporation, M. P. Electricity Board and M. P. Housing Board. The Police Department collaborated in organisation of traffic surveys. We are also grateful to the Government Central Printing Press, Bhopal for printing excellent coloured and other maps which form an important part of the Development Plan.

We look forward to continued co-operation particularly from the citizens of Bhopal for whom the plan has been prepared.



K. KAPLISH  
*Chief Town Planner*  
&  
*Additional Director*  
TOWN & COUNTRY PLANNING  
M. P. BHOPAL



# BHOPAL DEVELOPMENT PLAN

## PLANNING TEAM

*Chief Town Planner & Additional Director*

K. KAPLISH

*Joint Directors*

R. V. Bapat

R. S. Gattani

*Assistant Directors*

M. D. Nerkar

U. C. Shah

*Other Staff Members*

B. M. Joshi

N. S. Bahad

R. K. Choudhary

N. K. Sharma

M. A. A. Siddiqui

P. P. Bhatia

Bharatamma

A. K. Mukherjee

Syed Hasan Ali

V. T. Nipane

Nalini Bhole

Retnamma

Rauf Khan

Bansi Sahare

Renuka Mudaliar

The Planning team was also assisted from time to time by :

*Project Officer*

V. V. Thakar

*Joint Director*

P. R. Kanhere

*Deputy Directors*

M. N. Parchure

C. M. Zadgaonkar

*Assistant Directors*

M. Y. Khan

D. K. Pandharipande

G. V. Upadhyay

S. P. Majumdar

R. C. Saraf

Rekha Sharma

*Other Staff Members*

S. K. Gupta

M. D. Banwar

U. S. Tiwari

Priti Verma

T. D. Kumari

Sukumari

R. N. Chaturvedi

U. B. Patil

Biharilal

D. P. Verma

B. N. Zodey

A. E. Sapre

S. P. Kushwaha

A. S. Khan

Shaligram Nikhade

I. N. Chaurishi

A. K. Mitra

*Model Preparation*

M. S. Deshpande

W. R. Rajurkar

N. S. Chandrawat

Ram Ratan

Munnalal

Anis Mohammad

P. D. Saxena

R. K. Patel

Mohan Bagia

S. N. Shakbar

S. N. Sharma

Shah Bano

S. P. Hajela, Deputy Director and S. K. Khare, Assistant Director have also supervised the printing of Development Plan.



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# **PART I**

## **ANALYSIS OF PROBLEMS**



# Chapter I

## INTRODUCTION AND CITY GROWTH

### 1.1 LOCATION

Bhopal, the capital city of Madhya Pradesh, is the best example of man-made squalor thriving in most beautiful natural surroundings provided by low hills and expansive lakes.

The city is situated along 77°.35' E longitude and 23°.25' N latitude and has an altitude of 550/600 Metres above mean sea level. Vallabh Bhavan (new Secretariat building) is situated at an altitude of 565 Metres.

Bhopal has a great advantage of Rail communications being situated on main broad gauge line connecting Delhi with Nagpur, Madras and Bombay. Another broad gauge line of the Western Railway also connects it with Indore, a commercial centre and Ujjain, a religious centre of the State. This line connects the city with Baroda and Ahmedabad industrial and commercial centres of Gujarat. National Highway No. 12 connecting Jabalpur and Agra-Bombay Road (N. H. 3) at Biaora passes through the city. Regular long distance Bus service is available for Ahmedabad, Gwalior, Delhi, Jabalpur and Raipur. Bhopal is also on the Air Map of India, being connected with Delhi and Bombay. A service from Bhopal to Calcutta via Raipur has been functioning occasionally. There is a possibility of regular service on this route in near future.

## 1.2 PLANNING AREA

During rapid expansion of Bhopal particularly in last 20 years, many villages located on fringe of the city now form a part of the urban agglomeration. Many other villages located in close vicinity of Bhopal are also experiencing rapid developmental activities and are gaining semi-urban characteristics. It is, therefore, necessary that these villages should be within the purview of planning and control, so that these villages ultimately fit in the future development pattern of Bhopal. Moreover, it is necessary that these villages are properly developed so as to provide facilities and amenities for better life and develop more meaningful economic and social relationship with the city. Planning Area for Bhopal has, therefore, been prescribed to meet these objectives and provide for enough land for future growth of the city atleast up to the year 2000. The Planning Area contains 48 villages besides the municipal area. The schedule of the Planning Area as notified vide notification No. 1776/F 1-50, Bhopal dated 19th June, 1974 under sub-section (1) of section 13 of Madhya Pradesh Nagar Tatha Gram Nivesh Adhiniyam, 1973 (No. 23 of 1973) is given below :—

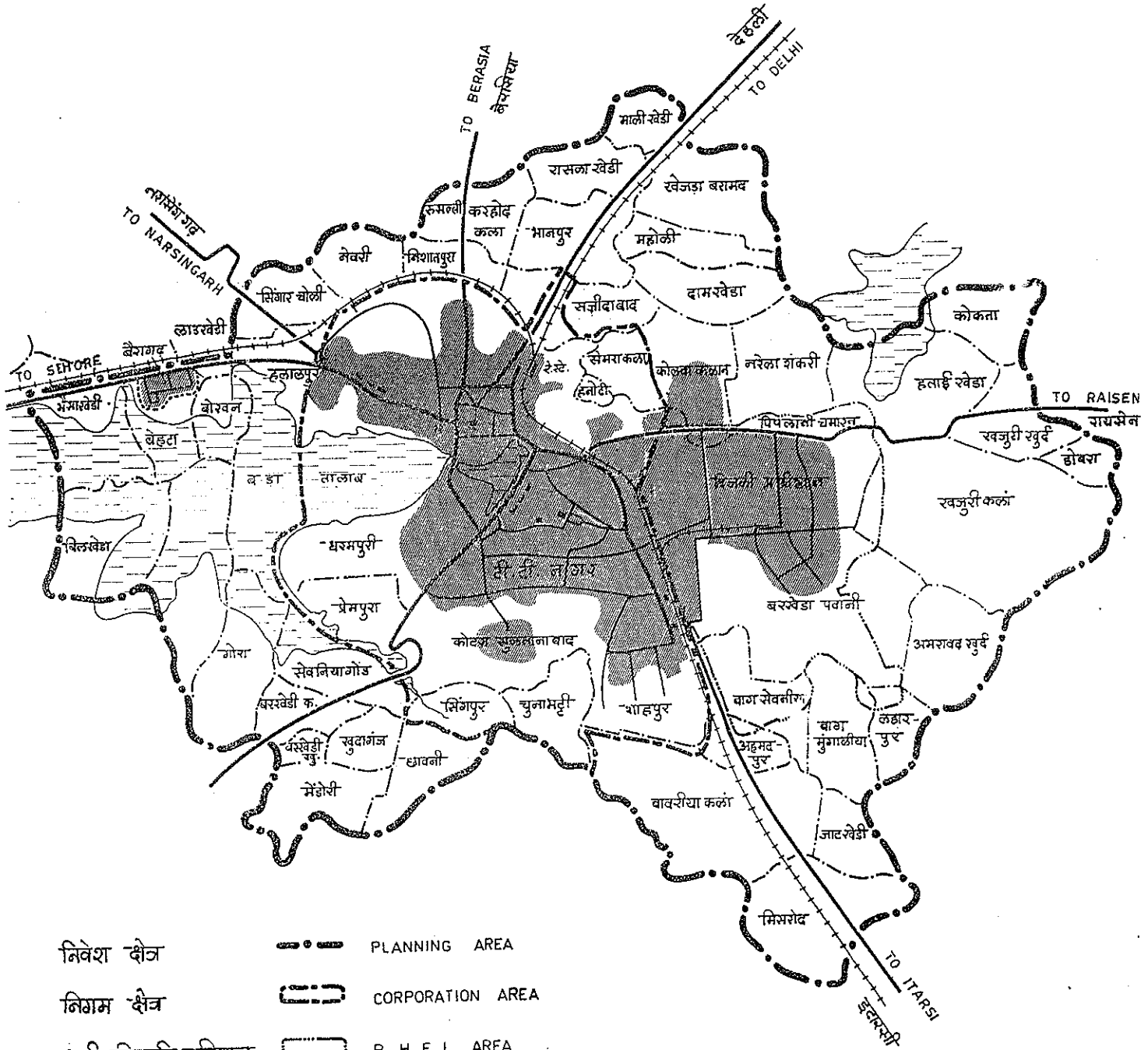
### SCHEDULE

#### Limits of Bhopal Planning Area

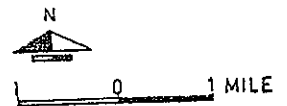
1. North :— Village Bhainsa Kheri (part), Bairagarh-Kalan (part), Behta, Nayapura, Singar Choli, Neori (part), Nishatpura, Rusalli, Karhod-Kalan, Railakhedi, Malikhedi, Khejra Baramad, Maholi, Damkheda, Narela Shankari, Hathaikheda (part) and up to the northern limit of village Kokta.
2. East :— Village Kokta, Khajuri-Khurd, Dabara, Khajuri-Kalan, Amravadi-Khurd, Laharpur (part), Bagh Mungelia, Jakhedi and upto the eastern limit of village Misrod.
3. South :— Village Misrod, Bawaria-Kalan, Chunabhatti, Singpur, Chhaoni Kaliasot, Mendori, Barkhedi-Khurd, Barkhedi-Kalan and upto the southern limit of village Gora.
4. West :— Village Gora, Bishankhedi, Bilkeda and upto the western limit of village Bhainsa Kheri (part).

भोपाल  
निवेश क्षेत्र

BHOPAL  
1-1 PLANNING AREA.



- |                       |                        |
|-----------------------|------------------------|
| निवेश क्षेत्र         | --- PLANNING AREA      |
| निगम क्षेत्र          | --- CORPORATION AREA   |
| भारी बिजली प्रतिष्ठान | --- B. H. E. L. AREA   |
| बैरागढ़ न.पा. क्षेत्र | --- BAIRAGARH NAC AREA |
| विकसित क्षेत्र        | ■ HABITATED AREA       |







## 1.21 Municipal Corporation Area

The limits of the Bhopal municipality were prescribed in 1916 at the time of establishment of a local body. These limits were revised in 1958 so as to include some more villages, vide notification No. 64/4/XVIII dt. 24th March, 1958 and No. 212/4/XVIII, dated 3rd October, 1958. The present Municipal limits contain an area of 17594 acres (7123 hectares Appendix-A). These limits do not include even important developments such as B.H.E.L. Township, Industrial Estate and Industrial Area along Raisen Road. Villages which have experienced rapid development such as Narela Shanskari, Koluwa Kalan are still outside the Municipal limits. As many as 18 approved colonies are situated outside Municipal area, even though some colonies enjoy the benefit of Municipal services but are not subjected to Municipal taxes or Municipal control on building construction. Revision of Municipal limit is, therefore, essential.

## 1.22 Habitated Area

All isolated as well as continuous patches of developed land situated within Planning Area which have been put to various urban uses are included in 'Habitated Area.' Water bodies, Agricultural and other vacant lands are excluded. The habitated area enables us to work out comparable "Town Density" and to compare the same with density of other cities and towns. It also forms an important measure for determining intensity of use of land for urban purposes.

Planning Area of Bhopal which includes urban areas of Bhopal (City and T. T. Nagar), Bairagarh and BHEL, urban outgrowth and other villages cover a total area of 59495 acres (24087 hectares). The break-up of this information is given in the table below :

BHOPAL : PLANNING AREA				1-T 1
S. No.	Name of Settlement	Area		
		Acres	Hectares	
1	2	3	4	
<b>A. Urban Areas</b>				
1.	Bhopal (M. C.)	17594	7123	
2.	Bairagarh	372	151	
3.	B. H. E. L.	4523	1831	
	<b>Total</b>	<b>22489</b>	<b>9105</b>	

1	2	3	4
<b>B. Villages</b>			
	Urban outgrowth		
1.	Bhanpur	905	336
2.	Bairagarh Kalan (Part)	145	60
3.	Cholla (Part)	260	105
4.	Hathaikheda	1476	597
5.	Halalpur (Part)	361	146
6.	Koluwa Kalan	1103	447
7.	Kararia (Sajidabad) (Part)	380	155
8.	Kohifiza (Part)	690	279
9.	Laukhedi (Part)	60	24
10.	Nayapura	208	84
11.	Neori	600	243
12.	Nishatpura (Part)	280	113
13.	Narela Shankari	1430	579
14.	Singharcholi	596	241
15.	Semra Kalan	120	49
16.	Sewaniya Gond	774	313
	Total	9388	3801
<b>C. Others</b>			
17.	Ahmadpur Kalan	420	170
18.	Amkheda (Part)	380	154
19.	Amravadkhurd	1094	443
20.	Bhensakhedi (Part)	925	374
21.	Behnta (Part)	463	187
22.	Barkheda Pathani (Part)	960	389
23.	Mungelia	851	344
24.	Bagsewaniya (Part)	260	105
25.	Bavaria Kalan	2563	1037
26.	Barkhedi Khurd	170	69
27.	Barkhedi Kalan	514	208
28.	Bisankhedi	1395	565
29.	Borban	450	182
30.	Beelkheda	1372	555
31.	Chhawani	704	285
32.	Dobra	307	124
33.	Damkheda	738	299
34.	Gora	1121	454
35.	Jatkhedhi	684	277
36.	Khudaganj	473	191
37.	Khajuri Kalan (Part)	3458	1400
38.	Khajuri Khurd	604	245
39.	Kokta	751	304

1	2	3	4
40.	Khejra Baramad	1350	548
41.	Karhad-Kalan	499	202
42.	Laharpur	412	167
43.	Malikhedi	876	355
44.	Maholi	637	258
45.	Misrod	1464	593
46.	Mendori	827	335
47.	Piplani Chamaran	—	—
48.	Rusali	264	107
49.	Raslakhedi	632	256
Total		27618	11182
Grand Total		59495	24088

Source : Census of India and Town & Country Planning Deptt.

### 1.3 REGIONAL LINKAGE AND IMPORTANCE

#### 1.31 Regional Linkage

No human settlement can function and thrive independently. A rural settlements depends on Agricultural land for subsistence, on a market town for sale of surplus produce and supply of necessities of life; and on a larger urban centre for specialised services, higher education, medical facilities, administration etc. Similarly an urban settlement is also dependant on its hinterland for supply of agricultural produce and on other settlements of higher and lower order for various other purposes. Each human settlement has to be regarded as complementary unit of human activity. It functions as a link of chain connecting it to activities at Regional, State and often at National level. Developmental activities in a Region are bound to have impact on the development at settlement level. Planning at Regional level has, therefore, to precede planning at local level. In order to achieve this objective the State has been divided into 10 'Planning Regions' under section 4 of Madhya Pradesh Nagar Tatha Gram Nivesh Adhiniyam, 1973. A notification to this effect was issued vide No. 62/2610 dated 22nd October, 1973. Work on preparation of Regional Development Plans is in progress.

### 1.32 Bhopal Capital Region

'Bhopal Capital Region', of which Bhopal is the principal city, comprises of districts of Sehore, Rajgarh, Shajapur, Guna, Bhopal, Raisen and Vidisha, is one of the 'Planning Regions'.

It is one of the most heterogeneous region of the State. Prior to integration of States in the year 1948, the region was comprised of as many as nine different areas under the rule of separate princely states.

#### BHOPAL : ADMINISTRATIVE POSITION BEFORE 1948

1-T.2

S. No.	Description of Area	Administrative State
1.	Raisen & Sehore districts	Bhopal State
2.	Kurwai tehsil	Kurwai State
3.	Sironj tehsil	Tonk State
4.	Rajgarh-Biora tehsils and part of Narsingarh tehsil	Rajgarh State
5.	Part of Khilchipur tehsil	Khilchipur State
6.	Narsingarh tehsil & part of Khilchipur tehsil	Narsingarh State
7.	Sarangpur tehsil	Dewas Jr./Sr. State
8.	Jirapur sub-tehsil	Indore State
9.	Guna-Shajapur districts and Vidisha & Basoda tehsils	Gwalior State

In those days political boundaries functioned more or less as physical barriers and restricted inter-state trade and flow of commodities. Even after integration of the states in 1948 the territory of former princely state of Bhopal was not integrated with its adjoining area, having common way of living, but was formed as a separate part 'C' state. It remained so till reorganisation of states in the year 1956, when this state was merged with Madhya Pradesh. Thus, emotional integration of the region started only after 1956. Some parts of the region have yet to develop economic inter-linkages, e.g. Shajapur and Rajgarh districts have developed linkages with Indore whereas Guna and part of Vidisha district continue to look to Gwalior for higher order services.

With the improvement of transport network in the region, there is every possibility that these areas will develop closer economic linkages with Bhopal and expect higher order services from this place than from Indore and Gwalior which will in turn relieve some pressure on these towns.

### 1.33 Relative Importance in the Region

In size and status, no other city in Bhopal Capital Region is equal to Bhopal. The nearest class I cities of Indore and Ujjain are situated at a distance of nearly 180 k. m. The city, therefore, plays dominant role in the Region both owing to its size as well as status. On all sides Bhopal is surrounded by primary market towns of Berasia, Vidisha, Raisen, Obeidullaganj and Sehore. All these towns are linked with Bhopal through radiating roads, but are not linked with each other properly. These towns are, therefore, dependent on Bhopal and their development will continue to be influenced by Bhopal.

The following important roads and rail links are, however, likely to be completed within next 20 years :

1. Dewas-Sehore-Bhopal-Vidisha and Sagar road link is likely to be improved. This will bring Vidisha on a National Highway connecting NH 3 & NH 2. The road distance between Vidisha and Bhopal will also be reduced which would result in developing closer economic linkages with Vidisha.

2. Bhopal-Jabalpur state highway passing through Bareilly and Udaipura of Raisen district is bound to give impetus to trade and commerce in Raisen district.

3. Guna-Maksi railway line will open Guna, Rajgarh and Shajapur districts. Thus, Bhopal will develop as an important commercial and trading centre for the entire region. The trading activity is likely to develop with the increase in agricultural produce, particularly as a result of completion of some important irrigation projects within 15/20 years such as :—

- (a) Barna :—This project is expected to provide irrigation for an area of 1.5 lakh acres in Raisen and Sehore districts. These are major wheat and sugarcane growing areas of the region.

- (b) Halali-Raisen and Vidisha :— This project is still under investigation. The extent of area likely to be benefitted is worked out to be nearly 1.09 lakh acres.

- (c) Kerwa :— This project is in Vidisha district. This is medium project and is likely to irrigate nearly 16,000 acres in Vidisha district.

(d) Kethar :— This project is also medium irrigation project in Vidisha district. The anticipated area likely to be irrigated works out to be nearly 15000 acres.

(e) Parbati :— This project on Parbati river will irrigate an area of nearly 3 lakh acres in Guna, Rajgarh and Vidisha district.

### 1.34 Environs

Bhopal is surrounded by forest and relatively poor agricultural land. Very few large villages are, therefore, situated within a radius of 15 to 20 k. m. from Bhopal. The city gets supply of perishable vegetables from major primary collecting centres like Sehore, Ashta, Shyampur, Berasia, Bilkisganj, Obeidullaganj and Sultanpur and even from Ratlam, Hoshangabad and Gwalior. A portion of hinterland of Bhopal is occupied by reserve forest and less land is, therefore, available for market gardening and vegetable produce. Good agricultural land around the city should, therefore, be preserved as far as possible.

## 1.4 PHYSICAL FEATURES

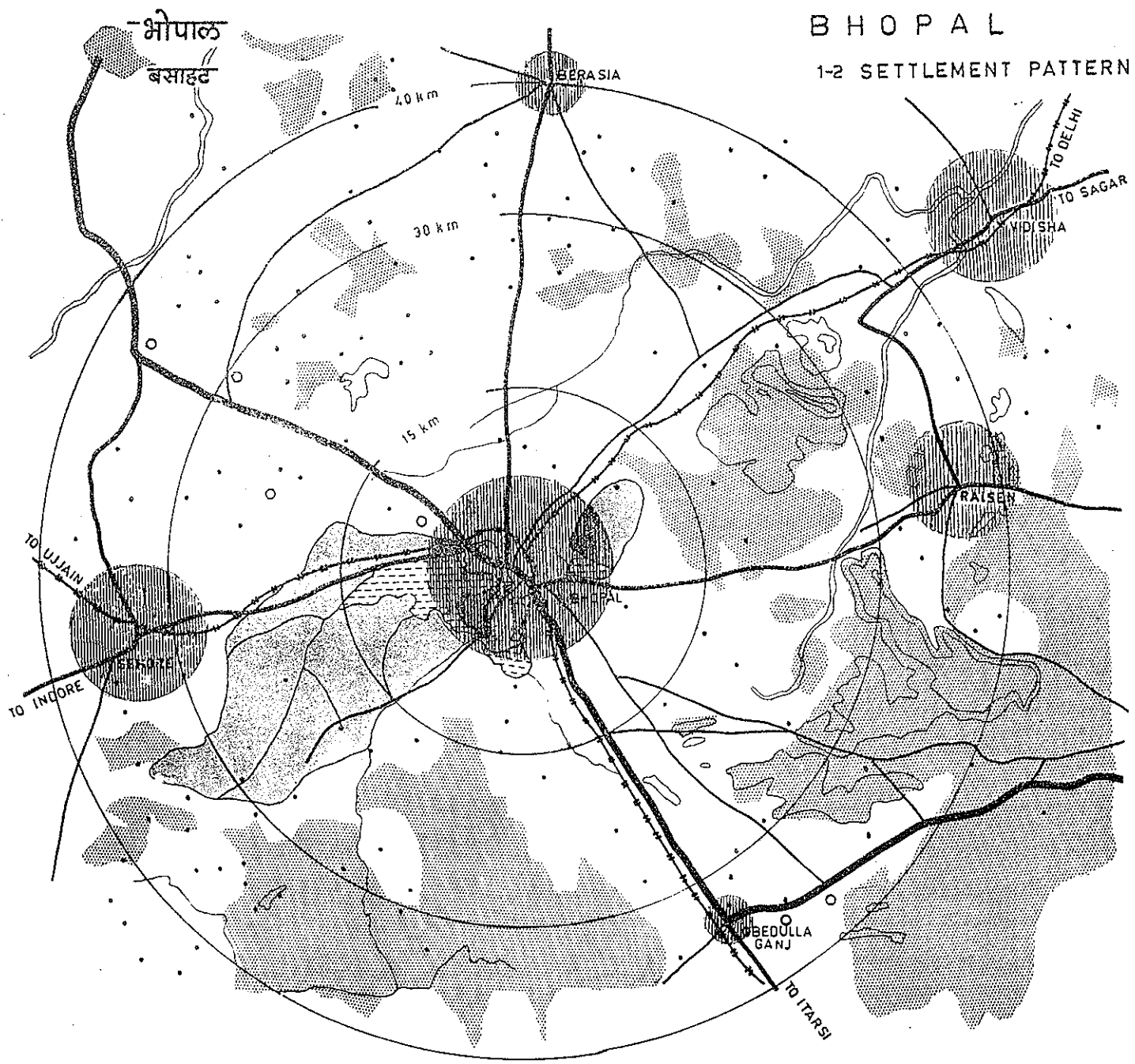
### 1.41 Topography

Bhopal city lies in a hilly terrain which slopes towards north and south-east. Hillocks of different altitudes are situated along the south-west and north-west portion of the city. These hillocks form a continuous belt from Singarcholi up to Vindhyachal range. The height of Singarcholi near Lalghati is 625 M. which is maximum in this area. The general ground level is, however, nearly 460 M. along the south-eastern and north-eastern portion of the city. The remarkable topography of the city provides enchanting and panoramic views of the city and of natural scenic beauty. There are immense possibilities for landscaping, and Water Front Development for recreation. However, hills and lakes are at present a great disadvantage in some respects.

(a) It is unsuitable for continuous Urban Development.

(b) It creates physical barriers owing to which interlinks between various parts of the city are often inconvenient and circuitous.

Large portion of city areas and new townships are separated by hillocks and lakes which at present act as barriers in social and cultural integration of these parts. The present city stands segregated distinctly in three parts. The new township being developed on the Southern side is separated from the old city by two lakes—Upper Lake and Lower Lake, B. H. E. L. township



# BHOPAL

## 1-2 SETTLEMENT PATTERN

- |                              |  |                                   |
|------------------------------|--|-----------------------------------|
| नगरीय केन्द्र .....          |  | URBAN CENTRES.                    |
| 2000 आबादी के ग्राम तथा अन्य |  | VILLAGES ABOVE 2000 POPU / OTHERS |
| वन क्षेत्र .....             |  | FOREST.                           |
| जल वसुंधा क्षेत्र .....      |  | CATCHMENT AREAS.                  |
| राष्ट्रीय मार्ग .....        |  | NATIONAL HIGHWAY.                 |
| राज्य मार्ग .....            |  | STATE HIGHWAY.                    |
| अन्य मार्ग .....             |  | OTHER ROADS.                      |







is separated from the new township as well as the old city by a Railway line. The future plans of the city must provide and improve physical links between these parts so as to encourage social and cultural integration of these townships. Some physical barriers can even be developed to function as meeting grounds for persons living in different parts of the city particularly in adjacent areas.

#### **1.42 Natural Drainage**

The natural drainage of the city is provided by three main streams, which are, of course, joined by small nullahs and Rivulets. On the north-eastern side, the drainage is provided by river Halali, and on the south-eastern side, it is provided by Kaliyasote river. Both these rivers drain out in Betwa, Halali near Vidisha and Kaliyasote near Bhojpur. On the south-western side, the drainage is provided by various small nullahs which drain out in Kolar river, which ultimately joins river Narmada.

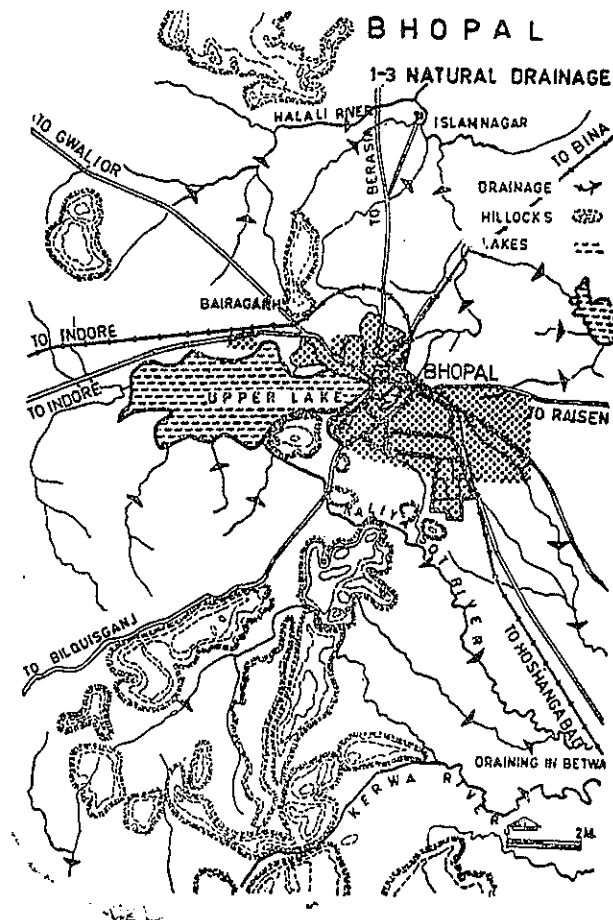
The drainage water of old city including waste water of Straw Products and Cotton Mills is carried away by a Nullah which joins river Halali, which is a perennial river. The water of this river is being used for irrigation purposes and very little discharge meets river Betwa near Vidisha. Moreover, the meeting point is on the down stream side of water works for Vidisha town. The waste water of Bhopal therefore, does not pollute water supply source of Vidisha town. In future, industries which are likely to cause water pollution can be located on the north-eastern side of the city so as to discharge water into river Halali. However, it will be necessary to treat industrial waste so as to keep it within the tolerance limits prescribed in IS-4764-1968 for sewage effluents discharging into inland surface waters.

River Halali is proposed to be utilised as source of water supply for the city, till Parvati Project comes up which is likely to take sometime. In that case, it will not be possible to discharge industrial waste in Halali river system. The nullah which at present joins Halali will have to be diverted so as to either meet Betwa directly or to utilise water for the purpose of irrigation so as to achieve 100% ground absorption of the effluent and the industrial waste.

River Kaliyasote which provides drainage on the south-eastern side joins Betwa near Bhojpur in Raisen District. There is hardly any possibility of utilisation of this water on the way for irrigation purposes as it passes through a hilly terrain. The water polluting industries located on this side

will discharge their wastes in Kaliyasote which will pollute source of water supply to Vidisha.

Industries proposed to be located on this side should be non-polluting type or it will have to be ensured that industrial water is fully treated before discharging the same in Kaliyasote, so that it does not cause pollution of Betwa, the source of water supply to Vidisha—a growing town in the Region.



#### 1.43 Climate

The city enjoys a moderate climate. Normally temperature ranges between 50° and 104° F although highest temperature occasionally rises to 110° F. In such moderate climate, residential areas can be developed at higher densities as three to four storeyed buildings can be constructed without causing discomfort to the occupants.

#### 1.44 Rainfall

The average rainfall varies from 50" to 60" which is mostly concentrated in

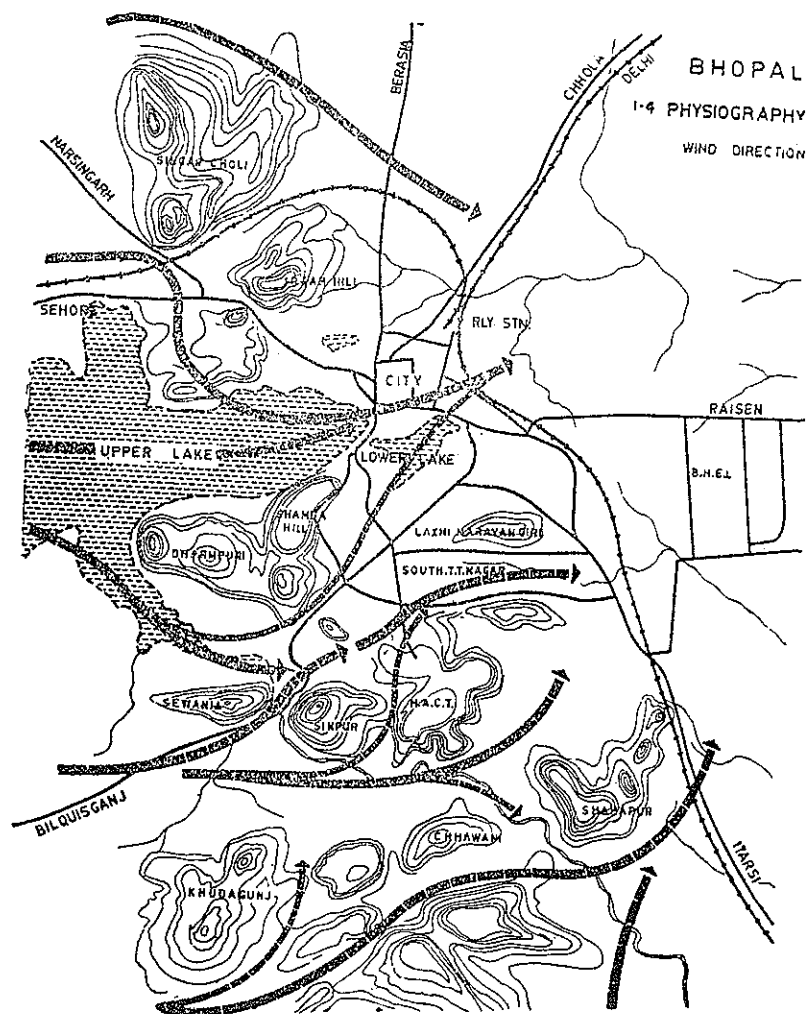
three months i.e. July, August and September. This necessitates special care for water proofing treatment of buildings constructed in this area. A large number of buildings in the old walled city area is in bad repair. Every year torrential and concentrated rain causes considerable damage in this area. During 1973, nearly 4000 houses had to be declared unfit for human habitation by the Municipal Corporation. This adds to the strain on the existing housing stock in the city. Moreover, sanitary conditions in congested areas which normally unsatisfactory, are further aggravated during the period of continuous and heavy rains.

#### 1.45 Wind Direction

Westerly and south-westerly winds are more predominant. Average velocity of wind varies from 4 k. m. to 9 k. m. per hour. However, numerous hills and vallies situated in and around the city produce considerable variations in direction and speed of wind. Micro-climate in this area, therefore, plays a very important role in orientation and design of buildings. According to the physiographic features, the city can be divided into following 4 zones :

No.	Description	Special Features
1.	Upper lake and adjoining areas.	Plain area with water-spread.
2.	T. T. Nagar—Southern area	Maximum intensity of physiographic features.
3.	Idgah—Northern area	Medium intensity of physiographic features.
4.	B. H. E. L. —Eastern area	Low intensity of physiographic features.

Wind direction in these areas is different on city level and even within the same zone because of wind flow (shown in the infra inset) :—

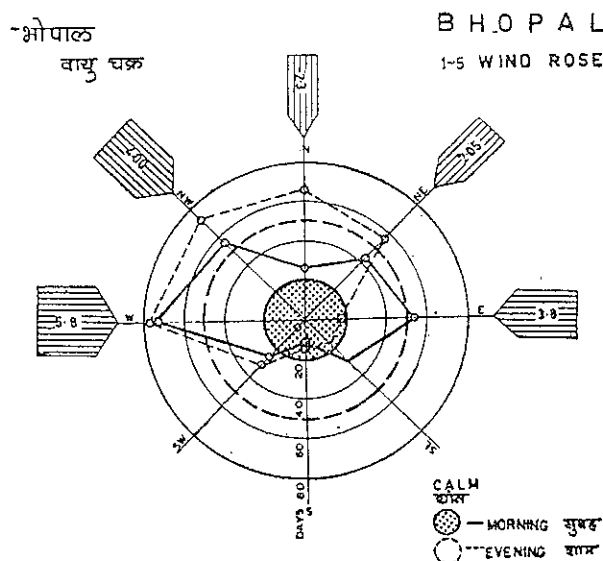


1. The main wind direction is western in zone No. 1.
2. Zone No. 2 is highly influenced by physiographic features in terms of direction as well as speed. Even within the zone, wind direction and speed is not the same.

Certain areas like 1250 Quarters (Tulsi Nagar), Arera Colony (Mahavir Nagar), areas south of M. A. C. T. receive wind from south-west, whereas area along main road No. 1 receives wind from western side. The area of S.A.F., Kotra Sultanabad, Bhadbada dairy farm receives from north-west direction. In view of the changes at micro-level in zone No. 2 planning for these areas will require due consideration of micro-climate.

B.H.E.L. and area north of Raisen Road having low intensity of physiography features, has normal wind direction which is westerly, as such, does not require micro-level study of wind channels.

According to prevailing wind direction coupled with velocity, the air polluting industries should be located on the north-east end of the city.



#### 1.46 Type of Soil

Bhopal stands on red sand stone strata on the Malwa Plateau with various hillocks in and around the city. The top portion of various hillocks and the slopes have mostly hard red soil mixed with boulders. Black cotton soil is however, observed in various depths from 1 to 2½ metres on the north-eastern and south-eastern side of the city. In fact, the Railway line running from north to south can be more or less taken as a dividing line between the two types of soil-red hard soil on the west and black cotton soil on the east. Although, certain valley portions situated in the western side of Railway line also contain black cotton soil in various depths, mostly from 1 to 2 metres. Comparatively better agricultural land is situated on the northern side along Berasia Road on north-eastern side.

#### 1.47 Mineral Resources and Building Materials

Bhopal and its hinterland have no known mineral deposits except sand, stone, black-basalt, and 'Morum' which can be used as building materials.

**Brick Manufacture**— The black cotton soil which is found on the north-eastern and south-eastern side of the city is not at all suitable for brick manufacturing as it contains calcium. The brick industry could, however,

be developed at some distance from Bhopal along Raisen Road near Khajuri-Kalan and along Obeidullagunj Road, where a better type of soil is available.

**Sand Stone and Black-Basalt**— The red sand stone suitable for building purposes is available almost along all the hillocks. However, stone of good quality in sufficient quantity, is available at Singarcholi, Newari, Char-imli, Shahpur, Laharpur and also around villages of Bawaria-Kalan and Laharpur. Restricted quarrying can be permitted at Char-imli and Shahpur. Rest of the hillocks can be earmarked for controlled quarrying. Black-Basalt stone which is mostly utilised for road construction is found in the nullah belt near Shahpur village, Kaliysote river Hataikheda. This stone is also available in Singarcholi and a hillock near Shahpur village. Both of these and bed of Kaliyasote river can be earmarked for quarrying. However, quarrying at Singarcholi on southern side and nullah belt near Hataikheda will have to be controlled for aesthetic reasons.

**Morum**— Red morum is available along all the hillocks in and around the city, but the best type is found in huge quantity on Singarcholi Hills near Lalghati. The important quarries are Singarcholi, Dharampuri, Laharpur, Kokta and near Bhadbada. Quarrying at Dharampuri Hill will not be advisable as this area is earmarked for landscaping and amenity.

**Sand**— The local sand available in the bed of various nullahs is not of good quality for building purposes. It is found mostly mixed with clay. Narmada sand is, therefore, commonly used for almost all the building purposes which is brought from Hoshangabad—a distance of 55/65 k.m.

## 1.5 HISTORICAL BACKGROUND

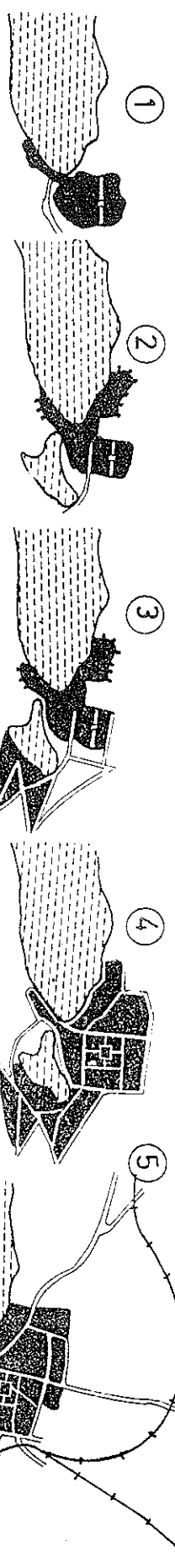
Bhopal is, one of those historic cities which have enjoyed splendour of a capital and have also suffered the onslaught and destruction of feudal wars. The present city stands on the site of a ruined town, the origin of which is lost in obscurity. It is said that this picturesque site was selected by Raja Bhoj, sometime in 1010-1015 A. D. He is also credited with the creation of upper lake by construction of an earthen dam along south-eastern side of the lake. No imprints of this settlement are, however, traceable.

After the death of Aurangzeb, Dost Mohammed Khan, a chieftain of his army, established himself at Berasia and Islamnagar (previously known as Jagdishpur). On invitation from Rani Kamalawati, ruler of Bhopal, he came to this place as a protector of her territory, but after her death annexed the territory to his kingdom and re-established Bhopal, a capital of a much

# भोपाल विकास क्रम

## BHOPAL

1-6 SEQUENCE OF GROWTH.



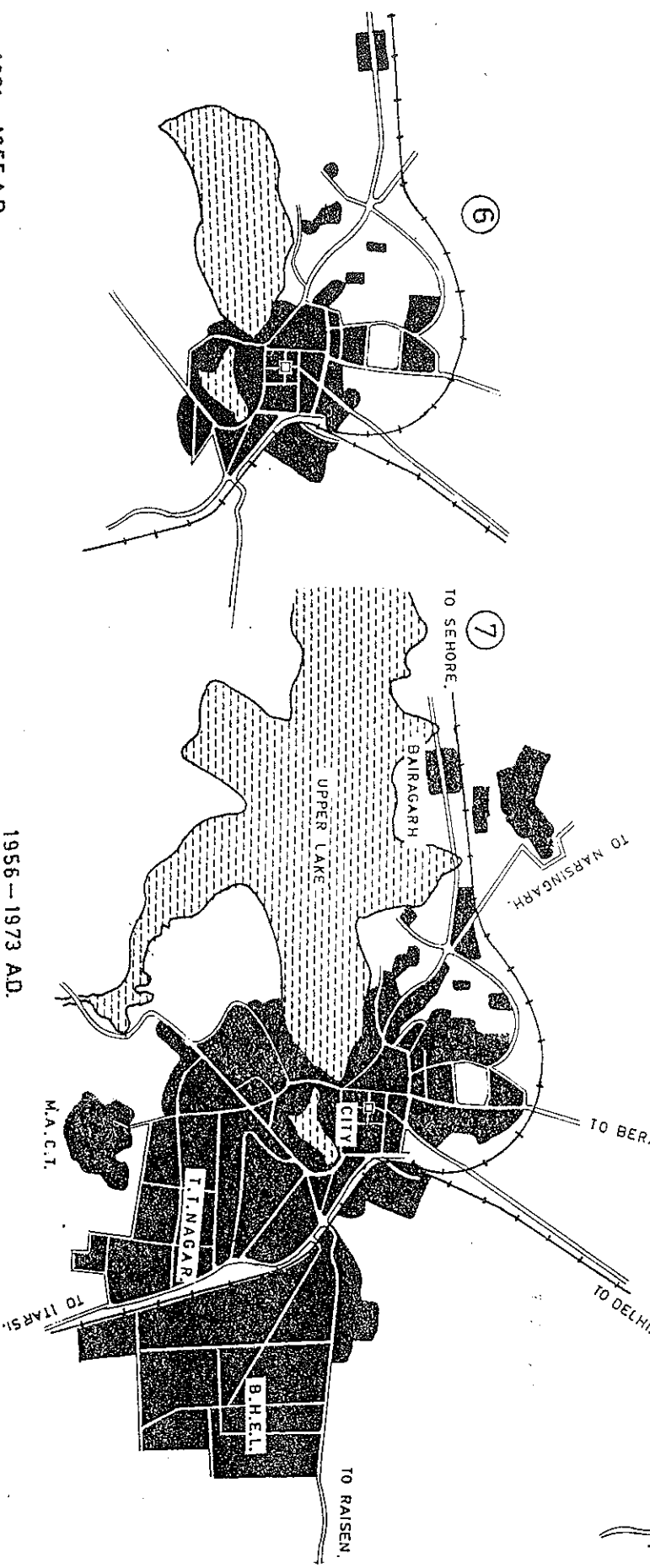
1010—1200 A.D.

1201—1800 A.D.

1801—1850 A.D.

1851—1880 A.D.

1881—1930 A.D.



6

7

1931—1955 A.D.

1956—1973 A.D.





larger territory. Between 1720 to 1726, Dost Mohammed Khan fortified the city with huge stone walls and constructed Fathegarh Fort. His successor, Yar Mohammed Khan shifted the capital to Islamnagar, but after his death his son Faiz Mohammed again established Bhopal as capital of his Kingdom. Since then, the city has enjoyed the status of a capital of a feudal state till the state was merged in the Indian union in 1948, then of a part-'C' state till 1956 when it became capital of new Madhya Pradesh.

In order to analyse urban growth the development of the city can be divided into three distinct periods (1) the period of unrest and feudal wars, (2) the period of peace after the treaty with East India Company and (3) the period after independence.

### 1.51 Period of Unrest and Feudal Wars

The city owed its origin and early life to strategic reasons rather than trade. It was, therefore, subjected to fury and destruction by feudal wars. Subha Mandal, a place of learning and worship constructed by Rani Salmali in 33 years, (1151 AD to 1184 AD) was also destroyed during this period<sup>1</sup>. The present Grid-Iron Plan of the central city with Jama Masjid (previously Subha Mandal) as a focal point bears imprints of 'Temple Planning'.

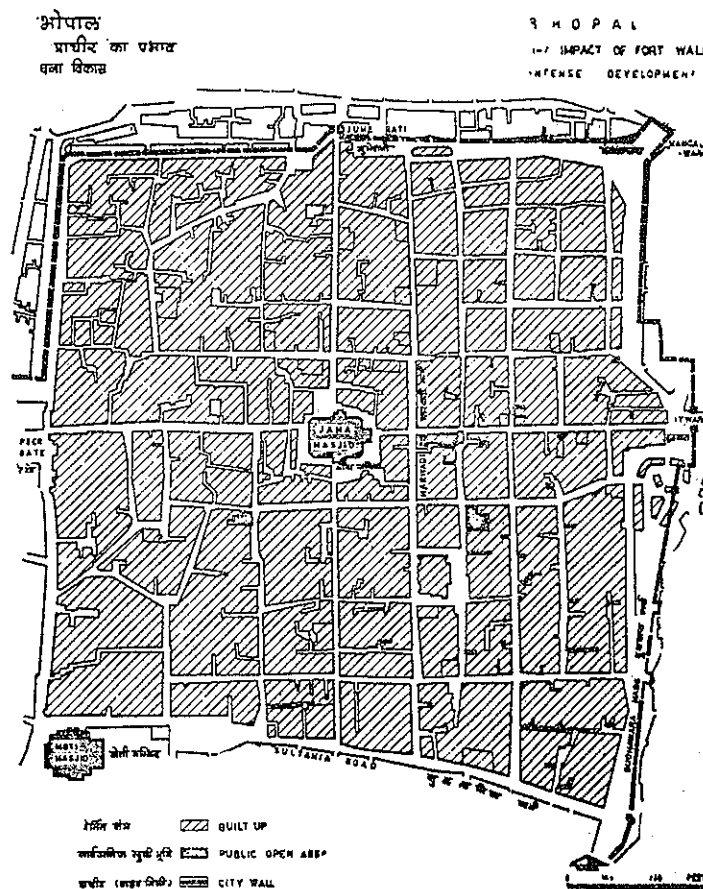
The city being capital of a principality was under constant danger of attacks by other rulers and chieftains. A stone wall with 6 major gates viz. Imami Gate, Peer Gate, Jumerati Gate, Itwara Gate, Budhwara Gate, Ginnori Gate was constructed for protection. Some of the work was carried out during the regime of Dost Mohammed Khan. The inhabitants lived under constant fear and insecurity particularly during and after the decline of mighty Moghul Empire, a period of struggle by various chieftains and rulers to establish independent kingdoms. The inhabitants, therefore, preferred to huddle together within the fort walls of the town. The poorer section of the society which could not afford to build houses within walls of the city lined just outside the fort walls. This led to division of society in various

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Note :—(1) Hayat-E-Qudsia by Nawab Sultan Jahan Begum-Pages 133 & 135. 'The old ruined Hindu Temple-Sabha Mandal, which it succeeded had an interesting inscription on it which gave the following particulars :—

'Rani Salmali, wife of Raja Vidia Dat built a great stone temple named Subha Mandal near the fort. It was commenced in the Sambat year, 1208 (1151 AD) and finished on Monday, the 3rd day of the month Kartik Badi 1241 Sambat (1184 AD). The Rani and Raja appointed 500 Brahmins to carry on worship in the temple and to teach the four Vedas, six shastras, eighteen pouranas and prosody and other branches of learning in the Sanskrit language.'

economic and social groups which is still evident even though these walls are no longer there.



### 1.52 Period of Peace

Peace and stability was established in the city after a pact was executed with the 'Company Government' in 1871 during the regime of Nazar Mohammed Khan. The city, however, flourished during the successive regime of benevolent begums (Jahangir Mohammed Khan being exception). The businessmen (Mahajans and Bohras) who had left Bhopal during the period of feudal wars returned and re-established their trade in the city. Qudsia Begum started construction of Jama Masjid over the ruins of Subha Mandal in 1828, also built shops around the Masjid and developed a road from Jumerati to Ibrahim-pura. A small unit of water-works was also built.

Jahangir Mohammed Khan built the first extension of Bhopal beyond Pulpukhta known as Jehangirabad. During this period, the city also sprawled beyond the fort walls towards Ginnori and Mangalwara side, of course, in an unplanned and haphazard manner.

Begum Shahjahan (1880-1901) built second planned extension of Shahjahanabad with Taj-ul-Masajid, Taj Mahal, Shopping Centre and residential areas etc. The most significant achievement during her period was linking of Bhopal with Itarsi and Jhansi with a broad gauge railway line. This brought the city on main Railway system of the country and provided a base for future industrial and economic development of the city.

Sultan Jahan Begum also added an extension known as Ahmedabad situated at Kohi-fiza to provide accommodation for palaces and officers of the State.

Hamidullah Khan also added another extension known as Professors Colony and Shamla Hill Colony. He also declared some incentives for location of industries at Bhopal and few industries like Straw Products and Flour Mills were established. It was during this period that demolition of fort walls and gates was undertaken which was continued during the part 'C' state also. Unfortunately, the site cleared by removal of fort walls was not utilised fully for improvement of transportation network. In some portions Sindhi Market and Azad Market were constructed. These have added to the congestion in the central area and have made accessibility to the area much more difficult.

### **1.53 Period after Independence**

In spite of the fact that Bhopal was selected as capital of the State, it was not planned as such particularly in the initial stages. It was perhaps thought that construction of some residential quarters, Secretariat and other office buildings will suffice and will meet the requirements of Government. Consequently 3000 quarters for the staff, 45 bungalows for the junior officials and 75 bungalows for senior officials, quarters for M. L. As. and temporary office buildings were constructed to meet the immediate needs. Even these residential areas seem to have been planned as piecemeal jobs. These areas, therefore, lack consistency, uniform distribution of amenities and are built on a very low density, particularly 2000 single storeyed quarters. It will be more economical to demolish these quarters and replan the area so as to fit in the overall plan, provide higher residential densities, improve circulation pattern and make up deficiencies in amenities. It will be cheaper to use this land for construction of houses for the Government staff and private individuals than to develop land far away from work centres.

It was only in 1959-60 that an overall Development Plan for Capital Project area was prepared. This plan superimposed on the earlier piecemeal plans illustrates the points that the development of the township according to earlier plans could have resulted in total chaos, particularly in circulation system, distribution of amenities etc. (Illustration No. 1.8).

The B. H. E. L. township which was located at a distance of 3 k. m. from the boundary of Municipal Corporation was planned as an independent township. The distance was too small for independent functioning of the township. The land between the city boundaries of the B. H. E. L. township was, therefore, inadvertently converted into an area of haphazard developments. Today it is a great impediment for proper and planned development of the area 'Banachatti'. It can be compared to developments in adjacent to Durgapur. The B. H. E. L. township has been planned at a low density with vast patches of unused land separating the residential development. This has increased distances between residences and work place and amenities. Recently the authorities have transferred back to State Government, nearly 1000 acres of land for their use.

The total impact of these to large development was not realised in the beginning and it was only in 1962-63 that an Interim Development Plan for the whole city was prepared and published. It is heartening to note that various projects proposed in the Interim Development Plan have been taken up by Municipal Corporation for implementation during last few years. Realisation of the Plan would have been faster, in case the Improvement Trust also could have taken implementation with greater vigour. The projects under implementation worth mentioning are : development of market at Gurubaksh-ki-Tallaiya for shifting vegetable and kirana market from the central area of the city; development of categorised market to shift kabadi market, saw mills, and workshops; development of a large timber yard and octroi free zone; construction of over bridge to connect the city and the Railway station; construction of lake drive road; removal of slums from Retghat and Govindpura, rehabilitation of slums at Char imli; development of dairy estate to shift cattle from the city.

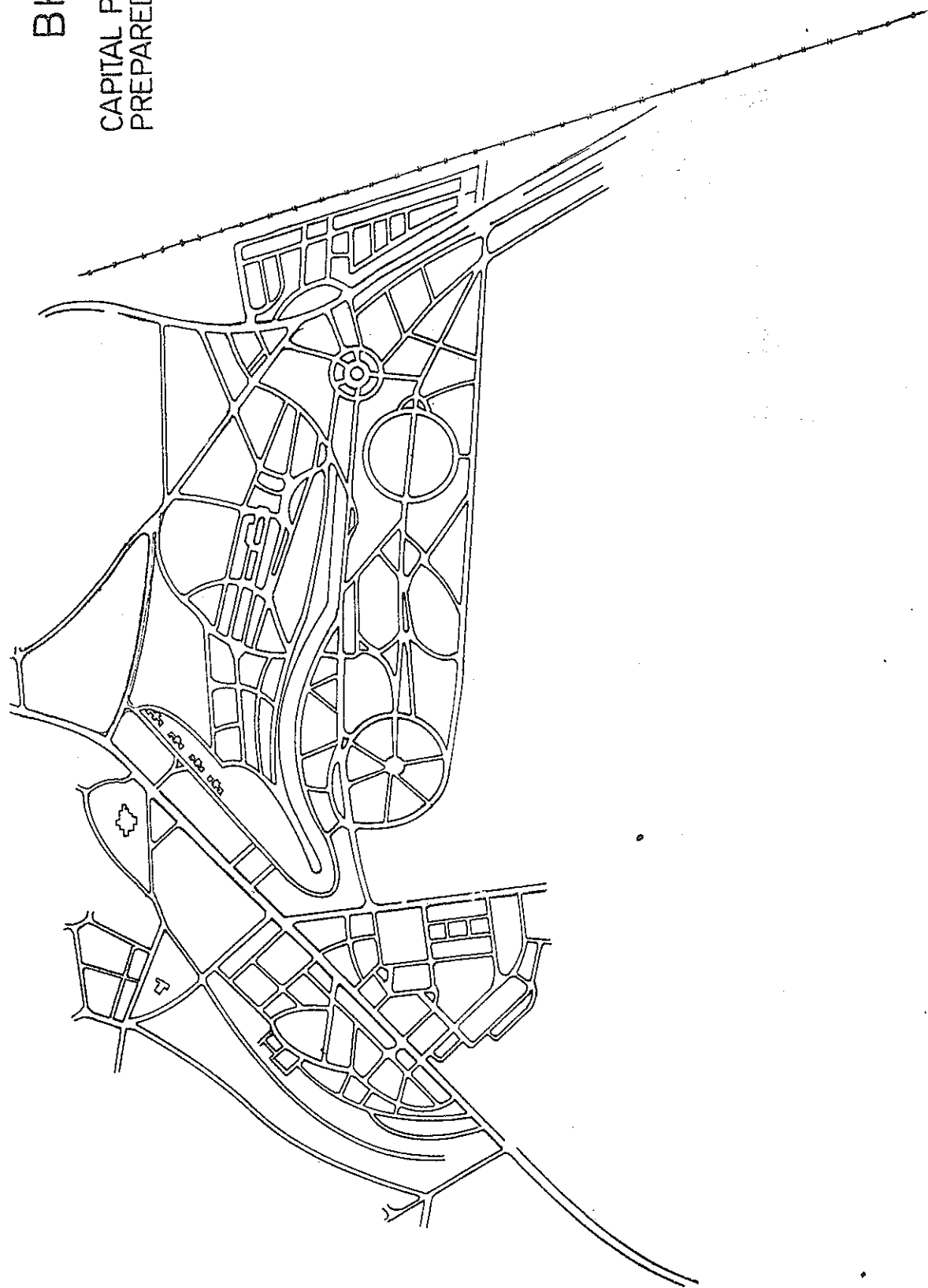
## **1.6 SPECIAL FEATURES**

Special features in the form of places of scenic beauty, buildings, monuments, attributed to the important events occurring in a city's socio-political life, distinguish the city from the rest. Because of historic past and natural setting, Bhopal is endowed with such special features which lend the city a place of pride. These need to be preserved and improved. Some of the features which need special attention are :—

### **1.61 Places of Archaeological Importance**

The natural rock-cut shelters of Bhopal hills are said to be the abodes of pre-historic men. Many of these rock-shelters bear paintings done in ochre or white, depicting animal figures, hunting scenes and human-groups. The hills bearing cave-shelters are, Manwa Bhand, Gufa Mandir, Dharampuri

BHOPAL  
CAPITAL PROJECT PLAN  
PREPARED IN 1958





and Shahad-Karad. Excepting Shahad-Karad, due to felling of trees, the shelters have been exposed to weather which has caused damages to the paintings. These 'Picture Galleries' of the 'Palaeolithic Bhopal' need to be preserved and properly developed which are the places of Archaeological importance of world repute.

#### **1.62 Upper Lake**

One of the most beautiful feature of Bhopal is its upper lake having a vast area of nearly 10 sq. miles. Bhopal is perhaps the only city of the world which can boast of such a feature right in the centre of the city. However, its view is restricted because its northern bank has been completely hidden by residential buildings and medical college complex. A part of the southern bank has also been occupied by most un-imaginative residential development, the remaining portion was till recently un-approachable by any form of transportation. This bank has now been opened up by construction of a 'Lake Drive' road. This bank needs to be developed for the purpose of amenities. Unfortunately the vast sheet of water cannot be used for water sport or for other active recreation, because the water is utilised for drinking purposes. Even with this restriction, the banks could be landscaped and developed for pleasure and joy of the citizens.

#### **1.63 Lower Lake**

This lake has immense possibilities for development of boating and other active recreation. Recently development of 'Kilol' park and 'Neelam' gardens have enhanced the scenic beauty of lake. At present, the lake carries sludge from the surrounding areas which is a great hindrance for utilisation of lake for the purpose of amenity. However, after implementation of underground drainage scheme, this lake could be devoted fully for the purpose of recreation.

#### **1.64 Rani Kamlapati Palace**

The six storeyed palace of historic importance is situated on the eastern side of the Earthen-Dam of upper lake. The palace of the Gond Rani, though not a well preserved monument, has well developed surrounding parks (Kamla park and Kilol park). The 'spot' has an extraordinary scenic value which is the 'view-window' of Bhopal.

#### **1.65 Religious Places / Buildings**

**Central Jama Masjid :—** The first important mosque built about 121 years ago (1853 AD) by Qudsia (Gohar) Begum. It has beautiful proportion and is a landmark in the shopping area in old city.

**Moti Masjid :** It was built by Sikandar Begum on a pattern similar to the one of Jama Masjid Delhi, completed in the year 1868-about 106 years back. It adds to the dramatic sky-line of the city when viewed from Kamla park. Unfortunately it is being spoiled by construction of ugly shops.

**Tajul Masjid :** The mosque is an incomplete dream of Begum Shahjahan, yet it is a good example of Indo-Islamic Architecture having 'Magnificence' and 'Grandure' in scale. The surrounding areas and tanks have remained neglected and uncared for. They need to be maintained and developed properly.

**Temples :** Gufa mandir, Jain temple, off Manwa-Bhand hill and Sammatgarh, all these buildings are of religious importance. But because of their location at commanding sites these places have scenic values. Areas around these places can be developed as picnic spots in a befitting manner.

**Sadar Manzil, Minto Hall, G. A. D. :** Though the buildings are contemporary, constructed only about 60 to 70 years back, are examples of different styles in Architecture namely, the India-Moghal and British Medieval which need to be preserved in their pure form without any additions or alterations.

#### **1.66 Places of Natural Landscape and Scenic Importance**

Besides the lakes, hills are the most important features of natural landscape and scenic beauty. It is these places which make Bhopal 'the beautiful' and create a lasting impression on the minds of the visitors. These low hills store immense opportunities for an inspiring and imaginative development, particularly those portions which afford a panoramic view. These are Arera hills behind M.L.A. Rest House, northern end of Kotra-Sultanabad hills, Dharampuri hills, top of Gufa Temple hills, Manubhandi Tekra, Idgah hills near convent school.

#### **1.67 Other Places**

Some places and buildings deeply connected with the history of Bhopal are : Bhojpur, Islamnagar and Sammatgarh. These have withstood the ravages of time. Islamnagar (Jagdishpur) Palaces : Relatively small but beautiful palace is a combination of Gond and Moghal Architecture. It could be a place of tourist attraction if developed by restoring the original fountains, bath, illumination and the gardens. Similarly, Bhojpur and Sammatgarh need to be properly developed.



## Chapter 2

### POPULATION AND CITY FUNCTIONS

Growth and decay of a human settlement are influenced by the character and magnitude of the functions discharged by the settlement ; and its economic and social relationship with the hinterland. The settlement performs a certain set of functions, some of which are of local nature, whereas others have regional and national dimensions. Leaving aside functions of national or State importance, the changes in the population of a city, unless some special stimuli are injected, are often correlated to the corresponding changes in the hinterland. A study of changes in the population and its composition for such an area, therefore, enables to foresee the growth of the city during the period for which Development Plan is envisaged.

It is also imperative to study age-sex structure, migration trend, occupational pattern etc. in relation to the city functions which would help to make an assessment of various city needs in respect of housing, commerce and industries, amenities and recreation. The Development Plan for Bhopal will have to cater for the various needs emerging from these studies in order to meet the aspirations of its residents for whom the Plan is prepared.

#### 2.1 POPULATION CHANGES IN STUDY AREA

##### 2.1.1 Identification of Area

The district of Bhopal is the most urbanised district of the State. Its urban

content, as per 1971 census, is 68.31 per cent of the total population. Most of its urban population is concentrated in the city of Bhopal. The district is in the shape of a strip elongated in north-south direction with an average width of 25 k. m. only and a length of approximately 94 k. m. In the east, it touches Vidisha and Raisen districts, whereas Sehore district stretches along western border. Although districts of Vidisha and Hoshangabad did not have social and economic affinity with Bhopal so far, yet owing to changes in administrative boundaries and communication ties with Bhopal interaction is growing. It will, therefore, be beneficial to include districts of Hoshangabad, Vidisha, Sehore, Raisen and Bhopal in the 'Study Area'.

## 2.12 Analysis of Changes

During the past seventy years, the total population of study area increased from 13.62 lakh persons in 1901 to 31.02 lakh persons in 1971, recording an increase of 127.9 per cent. During the same period, population of the State registered an increase of 187.28 per cent. Although overall increase of population in the study area had been significantly less than the average increase of the State, however, the growth rate in the past two decades (38 and 31%) has been consistently higher than the State average (29 and 24%). The trend was altered by large scale migration of population to Bhopal. Significantly the neighbouring districts also registered higher growth than the State average.

### BHOPAL : POPULATION GROWTH IN STUDY AREA

2-T.1

State/District	( Percentage Decade Variation )						1901-11
	1961-71	1951-61	1941-51	1931-41	1921-31	1911-21	
1	2	3	4	5	6	7	8
<b>Madhya Pradesh</b>							
Total	28.7	24.2	8.7	12.3	11.4	-1.4	15.3
Rural	25.7	20.9	6.0	10.5	10.4	-2.3	17.8
Urban	46.6	47.7	33.3	32.8	23.0	-10.9	-11.0
<b>Study Area</b>							
Total	38.1	31.3	3.4	5.9	5.3	0.7	10.3
Rural	30.9	23.4	1.4	3.6	2.7	0.9	15.3
Urban	57.0	73.4	20.5	23.4	30.8	1.4	-22.8

1	2	3	4	5	6	7	8
<b>Raisen</b>							
Total	34.4	30.5	1.6	4.7	-1.7	-5.9	8.6
Rural	34.0	26.2	3.5	3.2	-2.0	-6.1	8.0
Urban	40.9	230.0	-44.9	65.8	8.6	86.5	—
<b>Vidisha</b>							
Total	34.6	26.7	0.7	10.8	-0.6	17.2	30.2
Rural	33.1	23.9	-1.5	9.3	-2.8	18.4	31.9
Urban	44.5	48.9	22.5	28.3	39.6	0.2	14.6
<b>Sehore</b>							
Total	33.9	34.1	11.3	9.5	11.3	-6.8	8.6
Rural	34.0	31.7	11.4	2.8	7.7	-4.5	22.5
Urban	32.8	57.1	24.4	17.8	16.2	-7.4	-22.0
<b>Bhopal</b>							
Total	53.9	57.7	Included in Sehore District				
Rural	25.9	6.9					
Urban	71.3	124.0	28.9	25.5	33.8	-19.6	27.6
<b>Hoshangabad</b>							
Total	30.3	21.5	1.2	0.2	9.5	2.9	2.8
Rural	26.3	20.9	-3.5	-2.2	6.5	-5.9	7.9
Urban	47.1	24.2	27.6	16.1	35.9	+33.0	-34.7

Source : Compiled from Census Reports.

The disparity in growth rates of rural and urban areas is quite considerable in Bhopal district. Urban growth of 230 per cent in Raisen district during 1951-61 is owing to upgradation of two large villages to towns.

### 2.13 Urbanisation

The proportion of urban population in the study area is significantly higher than that of the State, but it is lower than the study area of Indore. (Districts of Indore, Ujjain, Dewas and Dhar). The urban population is

concentrated in few cities and large towns, and is not evenly spread over the whole study area. Largest concentration occurs in Bhopal, while Raisen which is situated at a distance of only 45 k.m. from Bhopal is a very poorly urbanised district of the area. Concessions being made available by the Government for industrialisation of backward districts are providing some impetus to towns of Vidisha, Sehore, Hoshangabad and Itarsi. But no impact has so far been felt in Raisen. Most of the industries are being located at Mandideep which is situated at a distance of 15 k.m. from Bhopal and is a part of district Raisen and hence provides the benefit of all concessions. This industrial complex is likely to grow which in turn will affect the growth of Bhopal city. Raisen is not likely to receive industries unless it can offer proper communications and other infrastructure, essential for industrial growth.

#### BHOPAL : URBAN CONTENT IN STUDY AREA

2-T.2

State/District	Percentage of Urban Population to Total Population							
	1971	1961	1951	1941	1931	1921	1911	1901
1	2	3	4	5	6	7	8	9
Madhya Pradesh	16.3	14.3	12.0	9.8	8.3	7.5	6.7	8.6
Study Area	24.1	21.0	15.9	13.7	11.8	9.5	9.3	13.3
Raisen	5.6	5.3	2.1	3.1	2.4	2.2	1.1	—
Vidisha	14.1	13.1	11.2	9.2	7.9	5.9	6.9	7.8
Sehore	11.0	11.1	9.5	10.0	9.1	8.4	8.7	13.0
Bhopal	68.6	61.6	43.4	39.1	35.2	30.4	34.2	46.8
Hoshangabad	21.7	19.2	18.8	18.8	12.8	10.3	0.7	11.9

Source : Compiled from Census Reports.

Out of total population of 31.02 lakhs in the study area, nearly 7.48 lakh persons live in urban centres of various sizes. Apart from Bhopal, there is no town having population of even more than 50 thousand. On an average, one town serves a population of 1,40,000 persons. This average for the State works out to be 1,79,543 persons. But the urban centres are not evenly distributed in the study area. Of the total 22 urban centres, 11 are located in Hoshangabad district. Hoshangabad, Itarsi, Vidisha and Sehore are the towns which can be said to be at the threshold of development and are likely to attract surplus labour force from rural areas during the period for which development plan for Bhopal is envisaged.

Since much stress is being given on labour intensive cultivation, considerable labour force may be anticipated to be absorbed in the Agricultural sector. However, even on the presumption, nearly two thirds of the additional labour force will be absorbed in agriculture, it is estimated that nearly 3.5 lakh workers will have to be provided employment in other sectors of economy. Migration pattern of this working force will obviously depend on the intensity of development in various urban centres in the study area. Government policy of encouraging industrialisation of backward area but backed by necessary investment on infrastructure can ensure proper distribution of economic activity and social services in the region.

BHOPAL : URBAN CONCENTRATION IN STUDY AREA

2-T.3

State/District	Classification	Number of Urban Centres							
		1971	1961	1951	1941	1931	1921	1911	1901
1	2	3	4	5	6	7	8	9	10
Madhya Pradesh	Total	232	210	203	178	150	124	120	127
	Class I	11	8	5	3	3	3	1	1
	Class II	11	5	5	7	3	—	3	3
	Others	210	197	193	168	144	121	116	123
Study Area	Total	23	20	16	19	17	15	13	13
	Class I	1	1	1	—	—	—	—	—
	Class II	—	—	—	1	1	1	1	1
	Others	22	19	15	18	16	14	12	12
Raisen	Total	3	3	1	3	2	2	1	—
	Class I	—	—	—	—	—	—	—	—
	Class II	—	—	—	—	—	—	—	—
	Others	3	3	1	3	2	2	1	—
Vidisha	Total	4	4	3	3	3	2	2	2
	Class I	—	—	—	—	—	—	—	—
	Class II	—	—	—	—	—	—	—	—
	Others	4	4	3	3	3	2	2	2
Sehore	Total	3	3	3	3	3	3	2	3
	Class I	—	—	—	—	—	—	—	—
	Class II	—	—	—	—	—	—	—	—
	Others	3	3	3	3	3	3	2	3
Bhopal	Total	2	2	1	2	2	2	2	2
	Class I	1	1	1	—	—	—	—	—
	Class II	—	—	—	1	1	1	1	1
	Others	1	1	—	1	1	1	1	1
Hoshangabad	Total	11	8	8	8	7	6	6	6
	Class I	—	—	—	—	—	—	—	—
	Class II	—	—	—	—	—	—	—	—
	Others	11	8	8	8	7	6	6	6

Source : Compiled from Census Reports.

## 2.2 POPULATION CHANGES IN THE CITY

### 2.21 Population Growth

Bhopal has been repeatedly subjected to stresses and strains of sudden increase in population and had also undergone the haunting experience of sudden decrease in population. No other city in the State has suffered owing to this phenomenon. Both the sudden decrease as well as increase had adverse effects on the city. The decrease left the properties in bad repair and ruins, and shattered the economy of the city. While sudden increase strained the existing inadequate and meagre services to their breaking point. Its population which stood at 37,539 in 1858 steadily increased to 77,023 in 1901. This was owing to the establishment of railway links with important cities of the country during this period. After 1901, the city received a great setback when its population decreased from 77 thousand to 56 thousand in 1911 owing to severe plague epidemic, the effects of which were mostly confined to the urban area. The other cities like Indore, Gwalior, and Ujjain also registered decrease during the said period. But it was only Bhopal, which experienced further decrease to the extent of 24 per cent between 1911 to 1921.

BHOPAL : POPULATION CHANGES

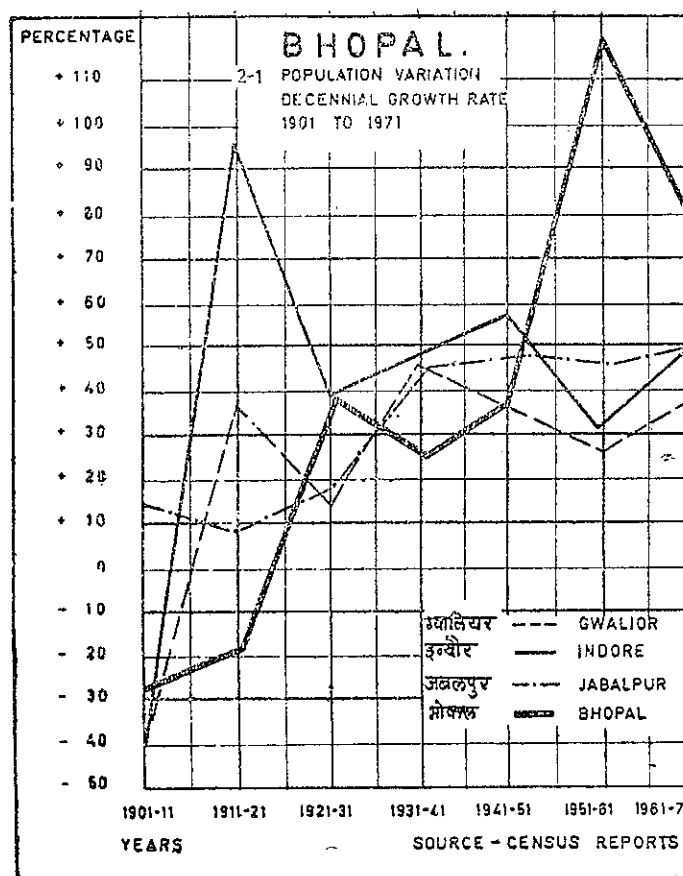
2-T.4

Year	Bhopal Urban Area Population (Lakhs)	Bhopal	Percentage Indore	Decade Variation Gwalior	Jabalpur
1	2	3	4	5	6
1901	0.77	—	—	—	—
1911	0.56	— 27.03	— 44.64	— 39.07	+ 11.44
1921	0.45	— 19.77	+ 94.52	+ 34.60	+ 8.09
1931	0.61	+ 35.36	+ 35.33	+ 11.67	+ 14.33
1941	0.75	+ 23.25	+ 42.92	+ 43.75	+ 43.38
1951	1.02	+ 36.03	+ 52.61	+ 32.38	+ 44.11
1961	2.23	+ 117.87	+ 27.05	+ 24.43	+ 42.81
1971	3.85	72.63	+ 42.03	+ 35.12	+ 45.73

Source : Census of India, 1961 and 1971.

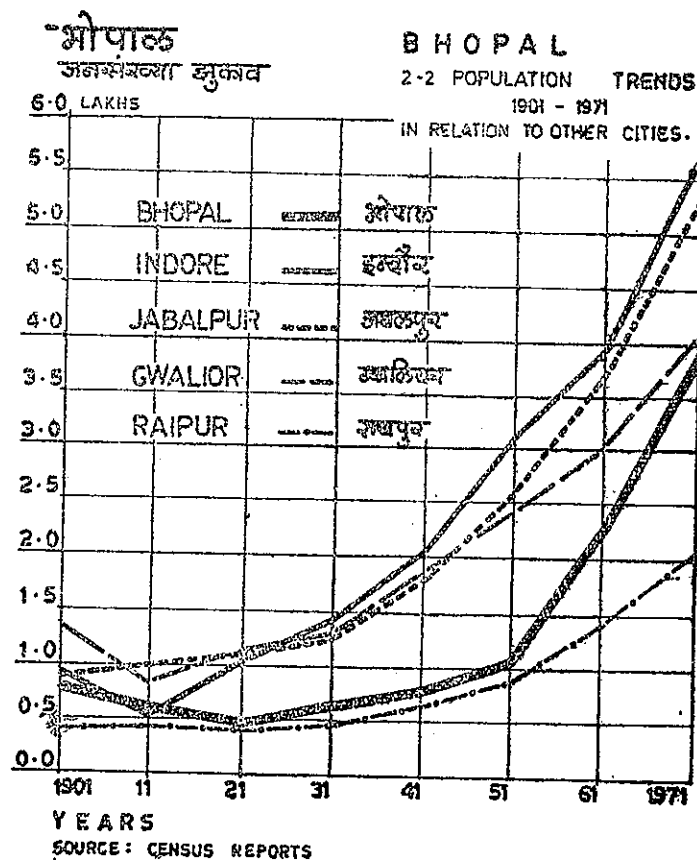
By 1931 the worst was over for Bhopal and its population steadily increased up to 1951.

During 1941-51, the population of Bairagarh (now included in Planning Area) increased from 400 to nearly 14 thousand. During partition of the country in 1947, most of the Muslim population, living in neighbouring States came to Bhopal and many settled in the city. Displaced persons were settled at Bairagarh which now is a flourishing market town and also serves as a dormitory for Bhopal.



In 1956, Bhopal was selected as capital of the State and concurrently Heavy Electricals Plant (now B.H.E.L.) was also located just on the fringe of city. Apart from immigration of Government servants and labour force to Bhopal, these two factors provided a great impetus for the growth of many subsidiary occupations. Consequently population of the city swelled from 1 lakh to 2 lakhs, an increase of 118% within a period of 5 years. The increase was too sudden for the city either to accommodate or provide urban services like water supply, proper sanitation, shopping, transportation, education and health. Slums and jhuggis sprang up particularly in B. H. E. L. and T. T. Nagar townships. Environmental conditions deteriorated beyond

control. The city is yet to recover from these effects because the growth rate is still nearly 7.5% per annum, which is highest among other cities of the State.



The infratable gives comparative population data for the major cities of the State since 1901 :—

BHOPAL : COMPARATIVE POPULATION DATA FOR MAJOR CITIES 2-T.5

S. No.	Year	Major Cities (Population in lakhs)				
		Bhopal	Indore	Gwalior	Jabalpur	Raipur
1.	1901	0.77	0.98	1.39	0.97	0.32
2.	1911	0.56	0.54	0.84	1.01	0.35
3.	1921	0.45	1.05	1.14	1.09	0.38
4.	1931	0.61	1.43	1.27	1.24	0.45390
5.	1941	0.75	2.04	1.82	1.78	0.63
6.	1951	1.02	10.1	2.42	2.57	0.97
7.	1961	2.23	3.95	3.01	3.67	1.40
8.	1971	3.85	5.61	4.06	5.35	2.06

Source:—Compiled from Census Reports.



## 2.22 Sex Ratio

Sex ratio of an urban settlement is often influenced by the migrational trends of working force and the housing situation obtaining in that settlement. The rural male has a tendency to move out alone in search of employment leaving his family behind. He tends to remain alone till he has acquired a regular employment and some accommodation to suit his requirement and pocket. Even the urban male moving out from his parent urban centre to another one is reluctant to carry his family along with him when uncertain housing situation exists in the new centre. The social life of Bhopal has suffered in the past on account of difficult housing situation in the city. The female population therefore did not keep pace with the increase of male population. By 1961, number of females per thousand males reduced to 772 only, lowest figure since known records. This naturally shattered the social fabric of the city. During 1961-71, the situation no doubt, improved and figure stood at 825 females per thousand males. This reveals that the social life of the city is moving towards stabilisation but still this figure is very much lower than the other cities of the State like Indore, Gwalior and Ujjain.

BHOPAL : SEX RATIO VARIATION					2-T.6
City/State	1971	1961	1951	1941	1931
M. P. Urban	868	856	907	882	872
Bhopal	822	772	894	859	866
Indore	862	851	854	766	731

Recently the M. P. Housing Board has undertaken a massive house building programme. If the tempo is maintained in the coming years also, it will help a great deal to restore social balance and cultural life of the city which is so essential for creative and productive life of its citizens.

## 2.23 Age-Sex Structure

The comparative study of age structure of the population during 1961 and 1971 again confirms that the city has, more or less, recovered from the impact of sudden immigration. In 1961, proportion of persons in age group 20-24 was comparatively much higher than the corresponding proportion in the State as a whole. The reason for this was obviously due to immigration of young working force. The age structure in 1971 compares favourable with the age structure for the urban population in the State.

# BHOPAL : POPULATION BY AGE GROUP

2-T.7

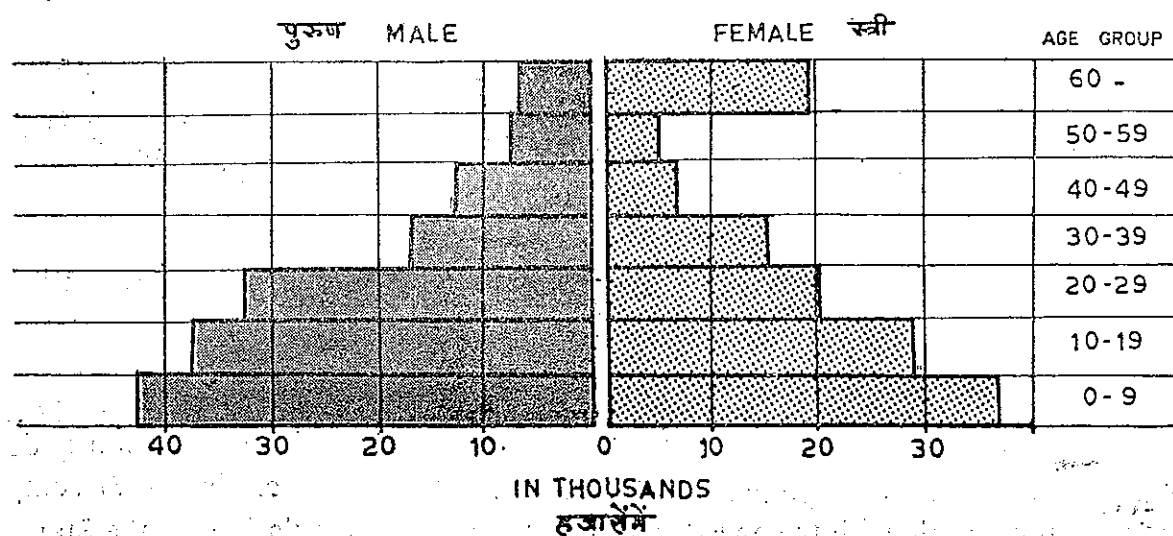
Age Group	1961		1971	
	Population	Percentage to Total	Population	Percentage to Total (Estimates)
0-14	84,202	37.80	160,879	41.79
15-19	19,541	8.80	33,026	8.58
20-24	28,883	12.90	38,909	10.11
25-29	22,633	10.20	33,719	8.76
30-39	29,832	13.40	47,198	12.26
40-49	18,048	8.10	24,744	6.44
50-59	10,471	4.70	16,966	4.41
60 and above	9,338	4.10	29,418	7.65
Total	2,22,948	100.00	3,84,859	100.00

Source : Census of India 1961 and Provisional Census data for 1971.

Two-fifth of the total population consists of infants and children falling in the age group of 0-14. One-fifth population constitutes of youths in the age group 15-24 which mainly comprises of pre-college and college going persons. Higher proportion of population with the age group 60 and above as compared to corresponding proportion of 5.03 for the State, reflects a tendency of retired persons to settle at Bhopal. This factor needs consideration while projecting the population and assessing housing requirement.

भोपाल  
लिंग तथा आयु संरचना  
1971

B H O P A L  
2-3 AGE SEX STRUCTURE  
1971



## 2.24 Migration

The data on migration for Bhopal district for 1971 Census is not yet available and even for 1961 Census, separate figures for Bhopal district are not available as it was earlier a part of Sehore district. However, a study of the migration trends based on figures for 1961 available in respect of place of birth indicates that out of total population of district Sehore, nearly 59% were residents of the district while 40% migrated from outside, 17% from the same district, 12.8% from other districts of M. P. and only 8.3% from outside the State.

### BHOPAL : MIGRATION

2-T.8

Migration from	(Percentage of Population by Place of Birth Sehore Distt.)	Bhopal City
Same District	17.1	3.7
Other District of M. P.	12.8	18.3
Outside the State	8.3	23.1
Outside India	2.5	7.6
Total	40.7	52.7

Source : Compiled from 1961 Census Report

The corresponding figures for Bhopal city are rather significant. Only 3.7% migrated to Bhopal city from district Sehore, while the city received as many as 23% of the total population from outside the State and even 7.6% from outside India. The total migration to Bhopal has been 52.7% nearly 12% more than the migration to nearest class I city of Indore, where it was 40.7%. Most of the migrants from other States are from Tamil Nadu, Andhra Pradesh, Kerala and Maharashtra, while from outside India are from England. This composition of population in the city has lent Bhopal a cosmopolitan character. Social and cultural integration of people from various States is of much greater importance in this city. Facilities for participation in collective activities will have to be provided to encourage frequent social 'get-together'.

## 2.3 OCCUPATION AND EMPLOYMENT PATTERN

### 2.31 Participation Rate

The capacity of a city to provide variety of jobs and absorb its working population in various sectors of economy is an indicator of the economic viability of the city. The participation rate also gives an idea of the share of gainfully occupied persons against the dependent and non-working popu-

lation. Normally in those cities where population is yet to stabilise after urban revolution, participation rate is generally high. In 1961, the proportion of economically active population in Bhopal town group was 36.5 per cent as compared to corresponding proportion of 29 per cent in other cities of the State. This obviously shows that the dependent population did not migrate by 1961. In 1971, this proportion has come down to 28 per cent partly due to change in definition of worker in 1971 and partly owing to migration of dependants. The present participation rate compares favourably with the proportion in other cities. During this decade, the number of economically active persons also registered an abnormal increase of 34.3 per cent as compared to an increase of nearly 19 per cent in other cities of the State. Thus during last decade, there was considerable increase in the economic activities of the city. The fact that the ratio of economically active population is more or less same as that of other cities of the State indicates that the city has absorbed the impact of urban revolution. The future growth of Bhopal may now be anticipated as a result of natural growth of economic activity.

## 2.32 Occupational Pattern

The distribution of workers in broad three sectors reveals that 64 per cent of total workers are engaged in tertiary sector, 32.8 per cent in the secondary sectors whereas only 3.2 per cent earn their livelihood from occupations in primary sector. The following table gives changes in occupational structure during 1961-71 decade.

BHOPAL : CHANGES IN OCCUPATIONAL STRUCTURE

2-T.9

Category	No. of Workers		Workers per		Distribution of	
	1961	1971	1000 Persons	1000 Persons	1000 Workers	1000 Workers
	1961	1971	1961	1971	1961	1971
1	2	3	4	5	6	7
<b>Primary Sector</b>						
I. Cultivator	851	1265	2.7	3.3	10	12
II. Agricultural	295	943	0.9	2.5	3	8
III. Mining, quarrying & live-stock etc.	1965	1355	6.1	3.5	24	12
Total	3111	3563	9.7	9.3	37	32
<b>Secondary Sector</b>						
IV. Household Industry	3016	2542	13.5	6.6	37	23
V. Manufacturing	19392	28870	87.0	75.0	236	262
VI. Construction	13793	4806	61.9	12.5	168	43
Total	36201	36218	162.4	94.1	441	328

1	2	3	4	5	6	7
<b>Tertiary Sector</b>						
VII. Trade & Commerce	10955	16301	49.1	42.2	133	148
VIII. Transport and Communication	6344	9256	28.5	24.1	77	84
IX. Services	25690	44978	115.3	117.0	312	408
<b>Total</b>	<b>42989</b>	<b>70535</b>	<b>192.9</b>	<b>183.3</b>	<b>522</b>	<b>640</b>
<b>Grand Total</b>	<b>82303</b>	<b>110316</b>	<b>364.8</b>	<b>286.7</b>	<b>1000</b>	<b>1000</b>

*Source :* Compiled from Census Report 1961 and provisional data for 1971.

It can be seen from the table that during 1961-71 the working force in tertiary sector registered an increase of 64.7 per cent, whereas the total number of workers in secondary sector remained almost same. The phenomenal increase in workers engaged in services may be attributed for shifting of some of the Government offices from Divisional headquarters to Bhopal and the increase in trade and commerce and transport activities. Even Indore, which is commercial capital of the State has 584 persons per 1000 workers engaged in tertiary sector, while at Bhopal, the corresponding figure is 640. This indicates administrative character and growing trade and commercial activity in the city.

In the secondary sector, on one hand there was drastic fall in number of workers engaged in construction activities whereas the number of workers in manufacturing industries registered an increase of 48.9 percent. This indicates that the city has entered into the second phase of economic development where industrial activity rather than the constructional activity will dominate the economic base of the city.

### 2.33 Employee Structure

According to the 1961 data available on the type of workers by profession, highest proportion (60%) is engaged in administration, clerical and safety services and 13% as craftsman and related workers. Corresponding figures for these categories at Indore are 19.4 per cent and 48.0 per cent respectively. However, figures for Bhopal must have changed considerably during

1961-71. Even then, these are the indication of distinct character of two important cities of the State.

## 2.4 MAJOR CITY FUNCTIONS

Cities are attached with the intangible values like status, character and function which are very much akin to human personality. Activities of the city dwellers which emerge from the 'city function' are manifested in the physical development of the city. A harmonious blending of the 'Function' and the 'Activity' leads to a healthy and orderly development of the city reflecting its true 'Personality' and 'Character'.

It is universally accepted tenet that 'form follows function'. The clarity of functions reveals a true form. If the functions are not well defined and harmoniously blended the 'Form' may get confused and result in clumsiness and chaos. Bhopal has assumed the various functions in the course of its growth.

### 2.41 Administrative

In examining the city functions the most important to which Bhopal is committed to, is administrative being the seat of State Government and a regional headquarter of various all India Semi-Public Organisations. A care, therefore, has to be taken that this function gets a predominance over the rest.

### 2.42 Industrial

Establishment of Bharat Heavy Electricals coupled with advantage of proper inter-city and inter-state transportation system, the city has attracted ancillary industrial units and other industries. Development of industries is likely to play an important role in building a sound economic base of the city.

### 2.43 Commercial

With the location of head offices and regional offices of various financial and business institutions and rapid increase in trade and commerce activity, the city is emerging as a commercial centre also. In years to come, the city is likely to compete with Indore--presently the commercial capital of the State. Bhopal is also likely to function as an important mandi centre of the region.

#### **2.44 Educational**

Besides a university, Bhopal has educational institutions like Regional Colleges of Education and Engineering, Medicine, Public Administrations, Industrial Research Centre which are of National and State importance. Thus, Bhopal which offers specialised educational services is attaining an important position in this field. Allied to above are cultural and sport activities, Bhopal is gradually gaining importance in this respect also and should be equipped with to serve them best.

#### **2.45 Tourism**

Bhopal itself has got immense potentialities to be a place of tourist attraction. Within short distance, there are a number of places of historical and archaeological importance like Sanchi, Udaigiri, Bhojpur, Udaypura, Islamnagar, Raisen, Samatgarh, Bhimbetka, Pachmarhi; natural forests and landscape areas like Narsing Garh, Chiklod, Samardha, Delabari, Ratapani. If developed, these could be excellent picnic spots and places of tourist attractions.

Besides above, a number of irrigation dams are being constructed with huge expanse of water sheets and interesting natural land forms which have potentials for development as places of scenic beauty. The city and its environs can be of great attraction with special emphasis on natural landscape.





## Chapter 3

### PHYSICAL GROWTH AND EXISTING LAND PATTERN

In order to conceive an integrated city structure for the capital city of Madhya Pradesh, it is imperative to understand land use patterns, or in other words the disposition of activities obtaining in the city in all its intent, growth trends, physical impediments etc. With successive town extensions in the past Bhopal has been converted into a group of townships belonging to different periods. The genesis of these townships has been different because they were developed to serve different purposes as the city has also been assuming changing role during its period of growth. The parent walled town has therefore, grown into a city of numerous urban and semi-urban agglomerations. The city life now thrives in the following townships, which lack physical and social linkages among them:

1. Walled city around chowk
2. Out growth, abutting walled city
3. Bairagarh
4. B. H. E. L. township
5. Capital Project townships (T. T. Nagar)
6. Military cantonment

It is a case of townships in search of a city. The major problem is that of integrating these townships which have come to stay, so as to make the capital city an integrated urban entity.\*

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\* None of these townships has been able to assume the role of central city core.

### 3.1 PHYSICAL GROWTH TRENDS

Urban spread of Bhopal has been greatly influenced by the extensive areas of water bodies particularly two lakes covering nearly 2600 hectares and the numerous hillocks situated on northern, south-western and southern side of the city. This peculiar topography not only influenced the direction of growth but also conditioned the shape of the city. A grid-iron plan which was possible within the fort walls because of relatively less undulating land, could not be followed in rest of the city. Even the shape of Capital Project township has been conditioned by the two hillocks—Arera and Char imli.

The initial settlement which was contained within the fort walls has now grown more on the southern and eastern side owing to location of Capital Project township and the B. H. E. L. township. Some extension took place on the northern side and north-western side when Shahjahanabad, Sultania lines and Ahmedabad were developed, but growth along this side was restricted owing to steep slopes of Lalghati and Kohifiza. No development could, however, take place on the western side owing to Upper Lake, except at Bairagarh which was revived as refugee township but later grew as an important market town.

### 3.2 LIMITING FACTORS

The chequered history of Bhopal has left many footprints in the city, some of which are now proving great impediments in the proper development and improvement of the city so as to suit the present requirements. Besides this, peculiar physical features and land forms in and around the city have been restricting and influencing its growth. These are discussed below :—

(i) Fort wall which enclosed the old town acted as physical as well as social barrier. The whole space available within the fort wall has been built upon. This area is now extremely crowded and contains only 0.3% open space. Even the narrow lanes have been further reduced in width by constant encroachments. Redevelopment Plan for this area will have to provide for some open space and other amenities.

The process of removal of fort wall and gates which began during 'Part C' State is still continuing. Fort wall and gate in front of Medical College are being removed. Some old buildings and Imami gate which were causing great obstruction to traffic and were danger to public life have been recently pulled down by the Municipal Corporation. Unfortunately space vacated by removal of wall in the past had been thoughtlessly utilised for construction of shops at Sindhi Market and Azad Market which have blocked the only vehicular access to otherwise almost inaccessible central business area.

Some of these spaces will have to be restored to improve accessibility. Utilisation of space vacated by removal of wall in future will require much greater care.

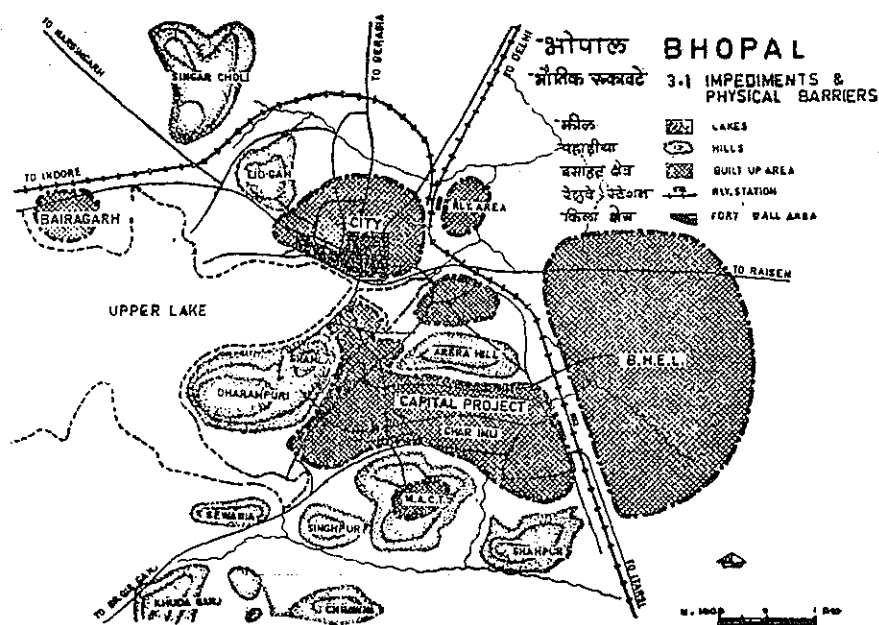
(ii) Grave yards came into existence just outside the fort wall which have now come within the city. If these spaces are properly landscaped and maintained, there could serve as lungs of the city and could enhance the quality of environment of the area. Even this space is being encroached upon continuously by Jhuggi-Jhopdi dwellers and squatters. These area need to be earmarked for landscaping and tree plantation. Some of the grave yards may have to be closed as these have been encircled by residential and other developments.

(iii) The old city area contains over 200 places of worships, 'durgas' and 'corner temples'. Some of them are situated along busy city roads. Lately shops have been constructed often encroaching on the narrow space of city roads which not only causes obstruction to traffic but also add to the confused street picture and even defeat the very purpose of places of worship, which should inspire rather than depress the onlooker. It is unfortunate that such things are done in the name of God and holy men who had sacrificed their lives for the denefit of the society. Surely they would not have approved it. Unless these are viewed with a little less emotion and more reason it will be no less than a miracle to improve the city and retain the places of worship in the present place. More suitable sites can be found to enhance their tranquility and their serene atmosphere.

(iv) Normally land ownership conditions are the development of a city. But in Bhopal, it has played a very important part because large places of urbanisable land were owned by ex-rulers of Bhopal which could neither be acquired nor the owners could be forced to develop this land. The land, therefore, remained largely vacant. This restricted the growth of the city in a continuous and compact manner. At some places land was sold without development and even without preparation and approval of a plan. These areas, such as Jawabit lines, Idgah hills and Shamla hills etc. will require proper planning and strict enforcement of plans for these areas.

(v) Shortages of drinking water and lack of proper distribution system restricted growth of the city along Raisen Road. Most of the colonies situated on this side and approved about 7/10 years back are yet to be developed. Moreover, this area is still outside the Municipal limits and is, therefore, devoid of Municipal services. This has proved to be a great deterrent for development of colonies.

(viii) Some of the hills in the city which have gradual slopes and have relatively flat land on the top have been put to urban use. However, some hills which have excessive slopes and height such as Manwaband-ki-Tekri, Singhpur hills, hills near Shahpur village on the southern side continue to act as, major limiting factors. In general, the development of the city will have to be guided in such a manner that it fits in the topography of the city and enhances the scenic beauty provided by the hillocks and the lakes. In fact, a separate landscape plan for the city needs to be worked out.



Quality of urban life and functional efficiency of a city is dependent on proper disposition of activities, the inter-relationship it offers between the work centres, living areas and recreational areas. In order to conduct a systematic analysis of the problems regarding disposition of various activities


expressed as land use the following method has been adopted. Land resource and uses of land have been studied broadly in respect of planning area, while detailed analysis has been done in respect of habitated area within the planning area.

### 3.31 Land Resource


The planning area covers 24702 hectares of land out of which 3198 hectares (12.9 per cent) is covered by water spread area in 2 lakes and major tanks. Habitated area comprising of main city and T. T. Nagar area within Municipal Corporation, townships namely B. H. E. L., Bairagarh and abadi areas outside Corporation cover an area of 3325 hectares which forms 13.5 per cent of the total area. Because of the peculiar topography of Bhopal, an area of 5024 hectares is unusable owing to excessive slopes and heights of the hills falling within the planning area. An area of only 16173 hectares is available for future urban use. A detailed information is given in the table No. 3-T.1 .

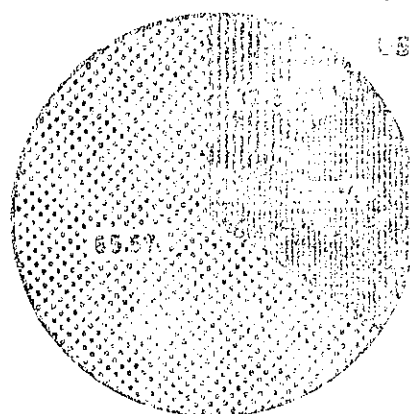
### B H O P A L

#### 3.2 LAND RESOURCES

HABITATED AREA 

UNUSABLE AREA 

USABLE AREA 



## BHOPAL : LAND RESOURCE

3-T.1

		Area in (hectares)	Percentage
<b>A. Habitated Area</b>			
I.	Main City	1078	4.3
II.	T. T. Nagar	1178	4.8
III.	B. H. E. L.	651	2.6
IV.	Bairagarh	89	0.4
V.	Outgrowth	238	1.0
VI.	Abadi	91	0.4
Total		3325	13.5
<b>B. Unusable Area</b>			
I.	Water bodies	1938	12.9
II.	Land liable to flooding	218	0.9
III.	Water spread under irrigation project	598	2.4
IV.	Excessive slopes and heights	1190	4.8
Total		5204	21.0
<b>C. Usable Land</b>		16173	65.5
Grand Total		24702	100.00

Source : Field surveys conducted by Town & Country Planning Department.

### 3.32 Land Use Classification

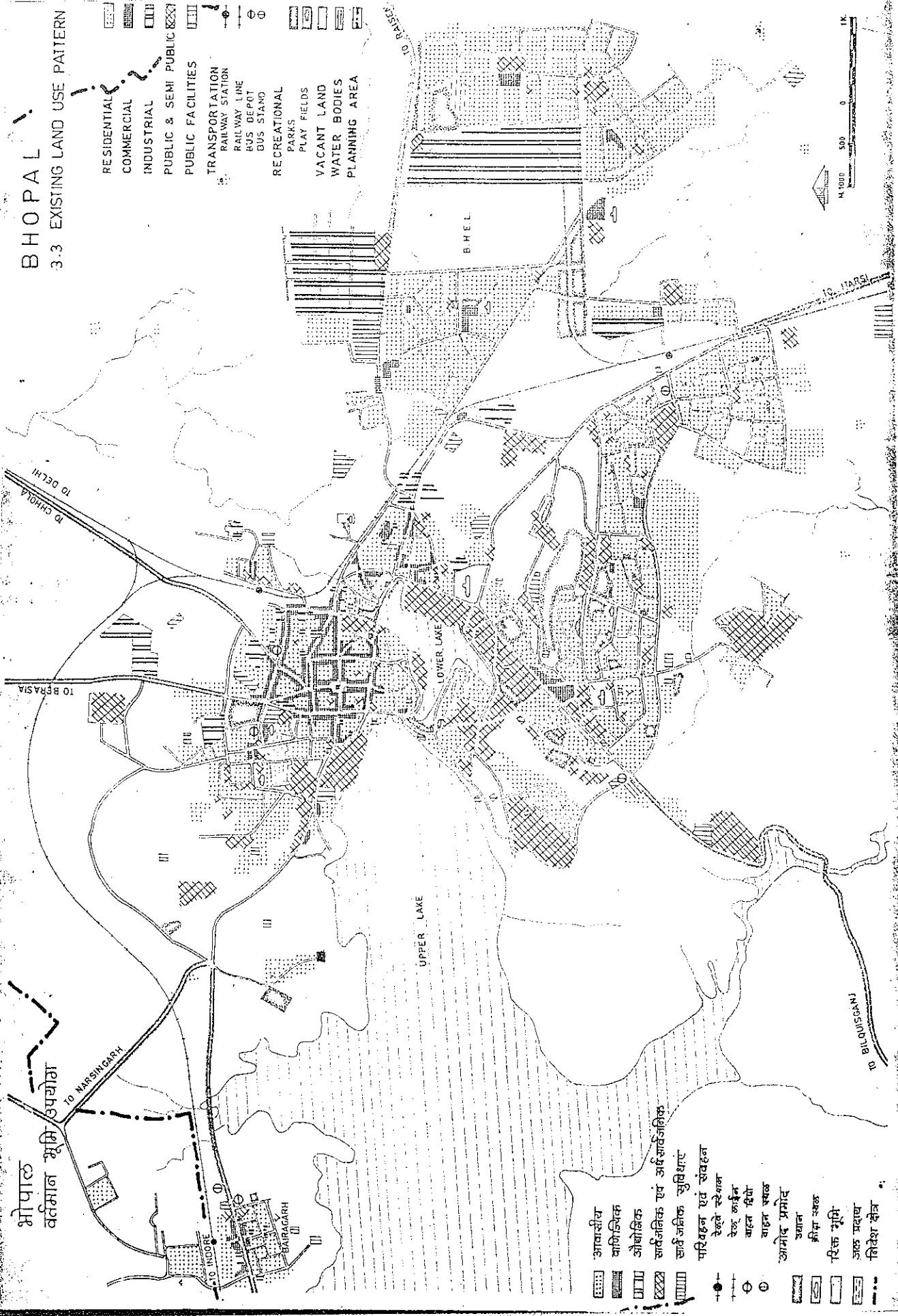
In order to understand problems of land use and to study quantum of land under various uses the land use has been classified into following 10 categories :

# भोपाल

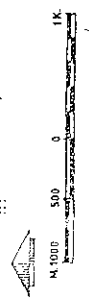
वर्तमान भूमि उपयोग

## BHOPAL 3.3 EXISTING LAND USE PATTERN

- RESIDENTIAL
- COMMERCIAL
- INDUSTRIAL
- PUBLIC & SEMI PUBLIC
- PUBLIC FACILITIES
- TRANSPORTATION
- RAILWAY STATION
- BUS DEPOT
- BUS STAND
- RECREATIONAL
- PARKS
- PLAY FIELDS
- VACANT LAND
- WATER BODIES
- PLANNING AREA



- आवासीय
- वाणिज्यिक
- औद्योगिक
- सार्वजनिक एवं अर्धसार्वजनिक
- सार्वजनिक सुविधाएं
- परिवहन एवं संचरण
- रेलवे स्टेशन
- रेलवे कार्गो
- बस स्टैंड
- बस स्टेशन
- आमोद प्रमोद
- उद्यान
- मिनि स्को
- पिक ग्रेडि
- जल संचरण
- निवेश क्षेत्र







- |                              |                                  |
|------------------------------|----------------------------------|
| 1. Vacant                    | 6. Public utilities & facilities |
| 2. Residential               | 7. Public & Semi-Public uses     |
| 3. Commercial                | 8. Open spaces                   |
| 4. Industrial                | 9. Agricultural land             |
| 5. Transport & Communication | 10. Water bodies                 |

This classification has also been adopted for the publication of existing land use maps under section 15 of Nagar Tatha Gram Nivesh Adhiniyam, 1973 which has been finally adopted vide notification No. 9881/T. & C. P. dated 18-8-1973. Same classification will be adopted for Development Plan also. It will facilitate a comparative study of existing land uses and proposed land uses in the Development Plan. The following table gives quantum of land under various uses within Municipal limits and within habitated area :

BHOPAL : EXISTING LAND USE PATTERN (1973) 3-T.2  
(Area in hectares)

S. No.	Land Use	Area Within City Limits Outgrowth			Habitated Area	
		Within city limits	Total including outgrowth	Total Area %	Area	%
1	2	3	4	5	6	7
1.	Residential	1032	1534	17.8	1534	47.5
2.	Commercial	51	65	0.7	65	1.9
3.	Industrial	105	348	4.0	348	10.8
4.	Public & Semi-Public	348	382	4.4	382	11.8
5.	Public Facility	154	160	1.9	160	4.9
6.	Recreation	182	203	2.4	203	6.3
7.	Transport	385	542	6.3	542	16.8
8.	Vacant	565	1100	12.8	—	—
9.	Agricultural	3323	3323	38.4	—	—
10.	Water Bodies	704	704	8.2	—	—
11.	Defence (City Units)	271	271	3.1	—	—
Total		7120	8632	100	3234	100

Source : Field surveys conducted by Town & Country Planning Department.

### 3.33 Existing Land Use Pattern

A close perusal of table 3-T.2 reflects the relative inadequacy of land for various uses. Area under residential use although appears to be high in

percentage but actually there is shortage of housing because :—

- (a) A large portion of existing housing area has very low density (discussed at length in chapter on Housing).
- (b) Large pieces of land lying within developed area are unusable owing to excessive slopes or undulations.

Land under commercial and industrial use is relatively low, as these functions are still in their formative stage. Looking to the needs of administrative buildings and allied institutions in the capital city, the land under public and semi-public use is also low. The city also suffers from inadequate developed recreational areas, although land form of the city and its suitability as a place of tourist attraction will justify a claim for higher proportion of land under recreation. Area under transportation is relatively satisfactory but its distribution among various townships and the main city of which the Bhopal city is comprised of is not balanced. Main settlement which has to cater for maximum traffic still suffers from inadequate movement space.

### 3.34 Land Use Variation

Land use survey undertaken by the department during two periods viz 1961 and 1973, enables assessment of land use variation which has taken place in the city during this period. The table below gives quantum of land used for various purposes during 1961 and 1973 :

BHOPAL : LAND USE VARIATION ( HABITATED AREA)

3-T.3

S. No.	Land Use Classification	1961		1973	
		Area (hectares)	Percentage	Area (hectares)	Percentage
1	2	3	4	5	6
1.	Residential	1056.0	58.0	1534	47.5
2.	Commercial	22.0	1.2	65	1.9
3.	Industrial	159.0	8.9	348	10.8
4.	Public & Semi-Public	96.0	5.3	382	11.8
5.	Public Facility	81.0	4.5	160	4.9
6.	Recreation	43.0	2.4	203	6.3
7.	Transportation	357.0	19.7	542	16.8
Total		1814.0	100.0	3234	100.0

The table reveals that pressure of growth of population has been higher on residential utilities and transportation during this period. City's institutional and commercial uses, grew from its formative stage to relatively balanced land use proportion. It is also easily seen that city is gradually approaching towards more balanced land use proportion.

### 3.35 Land Utilisation Rate

In order to understand the intensity of use of land for various purposes the proportion obtaining in other similar size cities, land utilisation rate has been computed and compiled in the table given below :—

BHOPAL : LAND UTILISATION RATE (HABITATED AREA)				3-T.4
S. No.	Land Uses	Comparative Land Utilisation (Hectare/1000 Persons)		
		Bhopal	Indore	
1	2	3	4	
1.	Residential	3.41	1.98	
2.	Commercial	0.14	0.24	
3.	Industrial	0.78	0.55	
4.	Public & Semi-Public	0.85	0.60	
5.	Public Facility	0.36	0.08	
6.	Recreational	0.45	0.20	
7.	Transportation & Communication	1.20	0.64	
	Total	7.19	4.29	

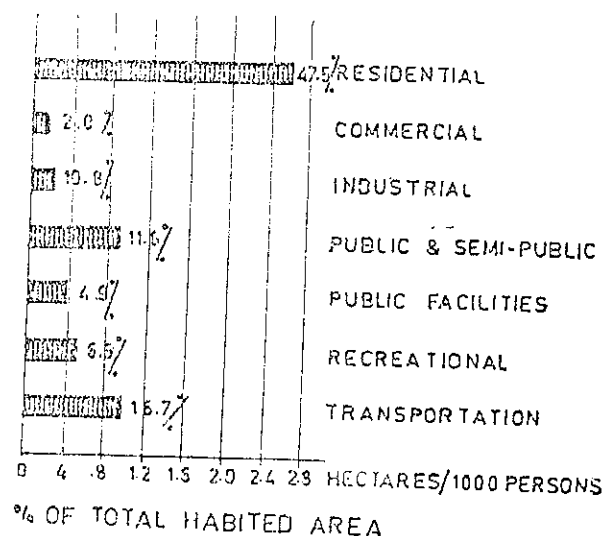
Source:—Field surveys conducted by Town & Country Planning Department.

Urban spread of Bhopal is at a rate of nearly 7.19 hectares per 1000 persons. The corresponding figure for Indore is 4.29 hectares. This shows that Bhopal is being developed comparatively at a lower density. In view of scarce urban land, cost of urban infrastructure, increase of distances between various activities and consequent cost of transportation, an intensive use of urban land should be encouraged to achieve compact urban growth. Comparative figures also reflect the inconsistency of distribution of quantum of land under various uses. Higher land utilisation rate can be achieved by vertical development, particularly for residential areas. Apart from these facts, the city suffers from disparities in terms of densities, amenities and services

between old city and new townships. These inconsistencies need to be reduced in the future development of city on the basis of Development Plan which should contain specific proposals in this respect.

## B H O P A L

### 3.4 LAND UTILISATION RATE



### 3.4 INTER-RELATIONSHIP OF LAND USES

The present city of Bhopal is a product of abnormal growth patterns because the city was subjected to sudden decay as well as sudden growth a number of times during its life. The developments during growth periods, no doubt, important in themselves have been mostly piecemeal and often unrelated to the existing pattern of the city. This phenomenon has resulted in breakdown of inter-relationship between various land uses. Although the industrial estate and industrial area which have come up along Raisen Road is functioning in full swing yet very little housing activity has taken place within a reasonable distance from these industries. Consequently, the workers have to travel long distance from the city and T. T. Nagar. Similarly Government offices near old secretariat do not have sufficient residential quarters to accommodate the office goers.

The wholesale and retail trade have mixed up in a very haphazard manner causing intermixing of goods and passenger traffic. The main city, which is built around Chowk (Jama Masjid) has relatively well laid out road pattern particularly within the walled portion. The road widths however, do not allow proper functioning of activities in this area. Sabji mandi, kirana,

fruit mandi and such other activities though situated on fringe also do not function properly. The haphazard outgrowth along Hamidia Road, Pulpatra Road, Jehangirabad, Shahjahanabad pose serious environmental problems. The inter-relationships pose serious environmental problems. The inter-relationship of commercial areas has been discussed in detail in Chapter 5.

### 3.5 INCOMPATIBLE LAND USES

A detailed land use survey together with studies in respect of traffic, living conditions etc. have reflected some land uses as incompatible uses. Basic considerations in identifying these uses have been performance characteristics of land uses nature of industries and workshops, traffic hazards and obstruction, harmony of uses with the surrounding areas. These considerations have returned following land uses as incompatible :

BHOPAL : INCOMPATIBLE LAND USES				3-T.5
Sr. No.	Description	Present Location	Nature of Nuisance	
1	2	3	4	
I. Residential				
1.	Res. Bldgs. within 200 pollution zone of upper lake.	Behind Hamidia Med. Hos. along upper lake.	Water Pollution	
2.	Res. Bldgs. within pollution zone of lower lake.	Along lower lake.	Water Pollution	
3.	Res. Buildings on Burial cremation ground	Northern part of city Hamidia Road.	Incongruous to surroundings.	
II. Commercial				
4.	Kabadi Market	Near Imami gate	Traffic Incongruous to surroundings.	
5.	Vegetable & Fruit Market.	Azad Market & on Road.	Traffic hazards Incongruous to surroundings.	
6.	Fish Market	Central Area Budhwara.	Incongruous surroundings.	
7.	Kirana Mandi	Central Area	Traffic hazards	
8.	Warehousing	Central Area	Traffic hazards	
9.	Godowns of printing stationary and Budhwara forwarding agencies.	Central Area	Traffic hazards	

1	2	3	4
III. Industrial			
10. Bone Mill	Pool Bogda	Incongruous Detrimen- tal to Public Health.	
11. Glue Factory	Pool Bogda	Air pollution and other environmental problems.	
12. Distillary Saw Mills	Central Area	Incongruous to surroun- dings.	
13. Scattered Repair and Workshops	Central Area	Incongruous to surroun- dings.	
14. Workshop on Retghat	Retghat	Incongruous to surroun- dings.	
15. Bhopal Oil Mill	Jehangirabad	Incongruous to surroun- dings.	
16. Printing Presses	Central Area	Incongruous to surroun- dings.	
17. Tennary Centre	Central Area	Environmental Problems.	
18. Dairies and Cattle Breeding	Central Area	Environmental Problems.	
19. Slaughter House	Pul Bogda, Central Area	Detrimental to surroun- dings.	
20. Earthen Wares	Central Area	Environmental Problems.	
IV. Public & Semi-Public			
21. Cremation Ground	Govindpura	Incongruous to surroun- dings.	
22. Grave Yards	In and around Central Area	Incongruous to surroun- dings.	

### 3.6 INEFFICIENT LAND USES

Some of the Government offices, educational institutions and other uses are functioning at places which are not suitable for these activities. Moreover, in some cases the land which is at present utilised by them can be utilised much more efficiently for other uses. The land use which comes under this category is as follows :—

# भूमि उपयोग समस्याएं

विसंगत भूमि उपयोग

अपर्याप्त भूमि उपयोग

पशु प्रजनन

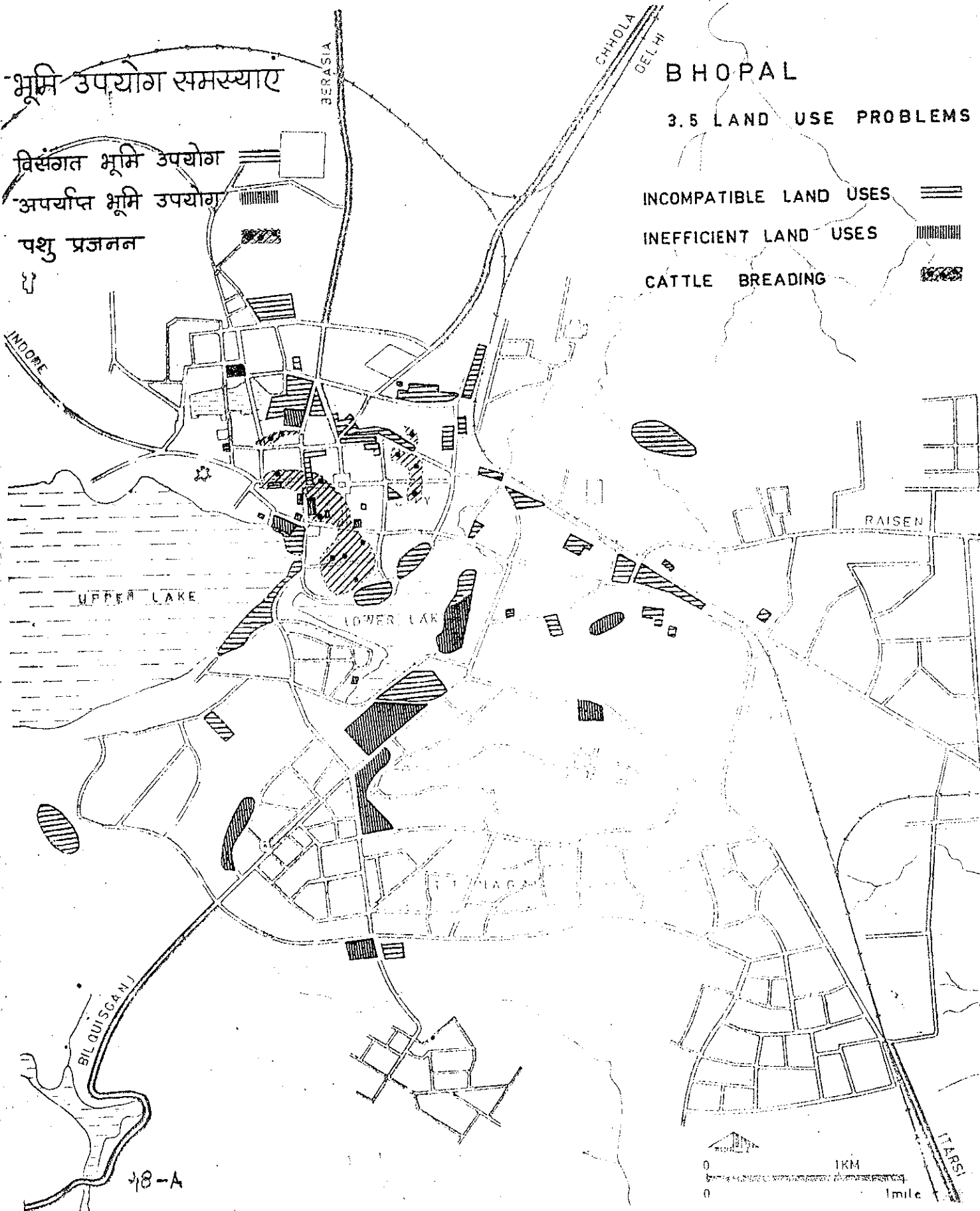
BHOPAL

## 3.5 LAND USE PROBLEMS

INCOMPATIBLE LAND USES

INEFFICIENT LAND USES

CATTLE BREADING







# BHOPAL : INEFFICIENT LAND USES

3-T.6

Sr. No.	Description	Present Location
1	2	3
<b>I. Commercial</b>		
1.	Res. Bldgs. Israni Banergi Market	Hamidia Road
2.	S. A. F. Qtrs.	P. H. Q.
3.	Building Materials	Near L. I. C., Shahjanabad
4.	Laxmibai Grain Mandi	Barkedi
5.	Loha Bazar	Bhopal Talkies
6.	Tin Goods and Furniture and Travel Wares	Sindhi Market
7.	Murgi Bazar, Dhor Bazar	Jehangirabad
<b>II. Industrial</b>		
8.	Poultry Farm	Near M. A. C. T.
9.	Oxidation Pond	South T. T. Nagar
10.	B. T. O.	Near Sindhi Colony
<b>III. Public &amp; Semi-Public</b>		
11.	Model School	Shahjhanabad
12.	Vidhan Sabha	Roshanpura Area
13.	Scattered Office	City & T. T. Nagar and Bairagrah
14.	Raj Bhavan	Near Parade Ground
<b>IV. Public Utilities</b>		
15.	Dhobi Ghat	Lower Lake
16.	Central Jail	Near Vallabh Bhavan
17.	Stud Farm	Jehangirabad near Pul Bogda
18.	Trenching Grounds	Near Chandbad Village



## Chapter 4

### HOUSING

Housing areas, which cover a large portion of an urban settlement at any point of time, influence the quality of urban life which in turn affects the efficiency of the settlement. In fact, the total urban form and character emerge from the quality of housing areas and the inter-relation of housing areas with work centres and other non-residential areas.

Normally the word housing and the problems related to it, are taken to mean dwelling units in terms of quality and quantity alone. It is often forgotten that the quality of life is even more dependent on other elements of housing areas such as disposition of various housing areas, lay-out, development of land, provision of roads, water supply, sewerage, drainage, and provision of basic amenities like shops, schools, parks etc. It is in this context that the problems of housing being experienced in Bhopal have been studied in its totality.

The problem of housing assumes special significance, when large number of workers which are required to be housed are mobile, requiring rental accommodation. The burden of providing housing accommodation in such cases falls on the employers, who in spite of their best intentions are not able to construct sufficient number of houses even to accommodate their own employees. The servicing population of the government and company townships, which is not provided any accommodation rental or otherwise, tends to build helter-skelter giving birth to shanty colonies amidst pucca housing

areas. Again these housing areas often tend to be monotonous both aesthetically as well as socially. Lack of variety of social interaction makes these areas dull and unexciting to live in. Bhopal, which today accommodates more than 60,000 employees of Government, semi-Government, and large Industrial undertakings in three large housing areas suffers from these problems. The private capital does not seem to have flown into housing activity which besides other reasons is also owing to non-availability of developed land within government and company townships. Only recently the M. P. Housing Board has taken up rental and ownership housing in Capital Project Area. It will be desirable to provide land in B. H. E. L. township also for construction of houses on rental as well as on ownership basis. The Development Plan should earmark such areas.

## 4.1 LIVING CONDITION

Living conditions of residential areas are inter-related with the environmental aspect of city life. In order to understand and identify the problems of these areas, it is essential to examine the living conditions of these areas both qualitatively as well as quantitatively. Qualitative aspect of living environment covers study of, housing areas in terms of structural condition, standard of services, relationship of housing areas and work centres, provision of amenities like education, health and recreation, provision of services like water supply drainage and transportation linkages. While quantitative aspect covers tenure status, housing shortage, residential density, occupancy rate etc.

### 4.11 Housing Areas

For the purpose of study of housing areas in the city can be grouped in four main entitles viz. Main city, T. T. Nagar, B. H. E. L. and Bairagarh. A township survey of these housing areas conducted by the department indicates that average 'housing spread' is around 4 hectares per 1000 persons, while at Indore, it was found to be 2 hectares per 1000 persons. Normally the rate of housing spread (for a city of the present size) should range between 4-5 hectare per 1000 persons. Although average rate of housing spread of Bhopal is fairly satisfactory, yet certain areas in the city are very congested. Character and the details for various constituents of the urban agglomeration is compiled in the next table :—

BHOPAL : HOUSING SPREAD

4-T.1

Sr. No.	Locality	Housing Area (hectare)	Population (1000)	Hect./1000 persons
1	2	3	4	5
1.	Main City	585.6	232.6	2.5
2.	T. T. Nagar	447.0	65.4	6.8
3.	B. H. E. L.	387.0	53.9	7.2
4.	Bairagarh	51.5	19.7	2.6
5.	Outgrowth	63.5	9.8	6.4
Total		1534.0	381.4	25.5

The table clearly reveals the wide disparity which exists between the rate of 'housing spread' in different constituents of the urban agglomeration. Incidentally this also reflects inadequacy of open space and amenities in some areas. Housing activities in Bhopal unlike other cities is dominated by Government and semi-Government organisations particularly in T. T. Nagar and B. H. E. L. township. Quantum of housing areas developed by Government and other agencies is reflected in the table given below :

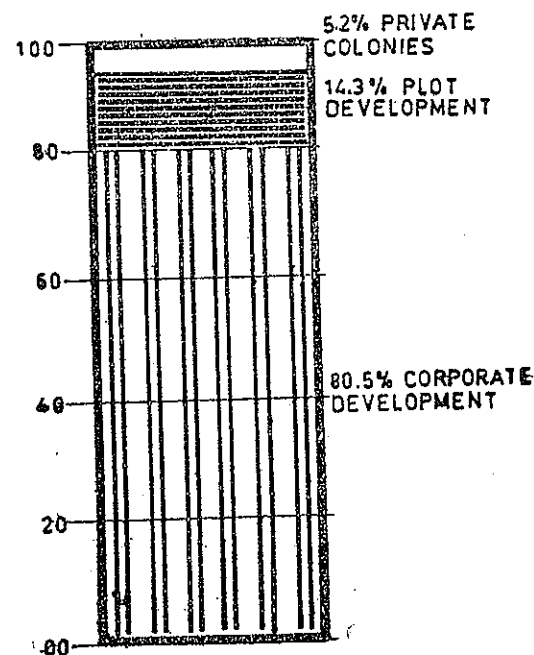
BHOPAL : CHARACTER OF HOUSING AREA

4-T.2

Agency	Description	Housing Area		
		Development after 1956		
		Area in hectares	Percentage	Percentage of total housing area
1	2	3	4	5
A. Corporate Development	T. T. Nagar, B. H. E. L. etc.	712.7	80.5	46.5
B. Plot-Wise Govt. Local Body	Arera Colony, Berasia Road, Malviya Nagar	126.1	14.3	8.2
C. Private Colonies	Raisen, Sehore and Berasia Road	46.0	5.2	3.0
Total		884.8	100.0	57.7
D. Main City/ Bairagarh/ Outgrowth	Old Development	649.2		42.3
Total		1534.0	100.0	100.0

## B H O P A L

### 4.1 HOUSING AREA DEVELOPMENT AFTER 1956



The table clearly reveals efforts of the Government in solving the housing problems arising out of heavy influx of population to the capital. A sizable proportion of the total housing activities comes under 'Corporate Development'. Corporate development has in built advantages of development by single agency which obviously ensures better development and scope for better lay-out and design of buildings. Out of nearly 848.8 hectares of housing area which was developed after the formation of capital nearly 713 hectares i. e. nearly 80.5% of the total housing area has been developed under corporate sector. Out of nearly 884.8 hectares of housing area nearly 838.8 i. e. nearly 95% have been developed and/or built by Government agencies, while only 46 hectares i. e. nearly 5% have been developed by private colonisers.

#### 4.12 Residential Density

A study of residential density enables us to understand various aspects, such as intensity of use of urban land, problems of overcrowding arising out of high occupancy rate, building bulk, provision of open space amenities etc.

Residential density has been computed by calculating residential area of each ward, which excludes non-residential uses such as parks, open spaces and

major roads from the housing areas. The area so computed forms the 'ward residential area'. The ratio of ward residential area and its population gives the ward residential density. The results are compiled in the table given below :

BHOPAL : RESIDENTIAL DENSITY (WARD-WISE)  
(Area in hectares)

4-T.3

Name of Locality	No.	Total Area	Ward		Residential Density Person/ Hectare
			Residential Area	Population	
1	2	3	4	5	6
Main City	1	736.8	58.7	9359	159
	2	28.8	17.8	6959	391
	3	161.9	27.5	9533	340
	4	42.6	12.5	7888	631
	5	48.6	16.6	4675	281
	6	64.7	22.6	7876	348
	7	7.3	7.2	6627	920
	8	12.9	12.9	7096	550
	9	9.4	8.9	5139	577
	10	10.5	9.7	6996	721
	11	11.3	10.5	6850	652
	12	11.8	11.4	6118	536
	13	9.7	7.6	6285	827
	14	12.2	6.6	6816	1136
	15	7.3	6.4	5777	902
	16	12.5	8.5	6714	790
	17	17.0	14.1	6800	482
	18	13.0	9.4	6506	692
	19	194.4	19.4	8706	448
	20	40.4	9.4	6170	656
	21	72.8	32.4	8283	255
	22	182.2	34.3	5657	164
	23	566.8	23.4	9865	421
	24	277.7	19.4	8506	443
	25	12.2	12.9	6463	501
	26	28.3	23.4	6140	262
	27	12.2	8.9	6259	703
	28	29.2	8.9	5634	633
	29	56.6	13.5	6948	507
	30 (part)	161.9	79.4	8461	106
	31	18.3	12.3	8151	715
	32	10.2	8.7	6153	691
	33	12.1	10.4	7203	692
Total		2893.1	585.0	2,32,613	397

Name of Locality	No.	Total Area	Ward		Residential Density Person/ Hectare
			Residential area	Population	
1	2	3	4	5	6
T. T. Nagar	30	56.7	10.1	225	22
	(remaining part)				
	34	1562.8	26.0	9667	371
	35	72.8	36.8	7404	201
	36	1153.8	67.2	10232	152
	37	60.8	43.7	10674	244
	38	327.9	48.6	7741	159
	39	947.8	214.6	19466	90
Total		4209.6	447.0	65409	146
Bairagarh	1	12.3	10.1	5427	537
	2	4.2	3.6	3239	899
	3	15.1	8.5	4180	491
	4	2.1	2.0	567	283
	5	7.1	2.7	544	201
	6	2.5	1.2	262	218
	7	11.3	4.4	373	84
	8	12.5	11.3	2482	219
	9	4.4	3.2	664	51
	10	6.4	4.5	1920	426
Total		77.9	51.5	19658	381
B.H. E. L.	Piplani	—	114.6	19349	142
	Berkheda	—	132.3	16631	125
	Govindpura	—	125.9	17409	138
	Habibganj	—	14.2	3529	248
Total		1831.1	387.3	53922	139
Outgrowth	—	—	63.5	9840	154
Bhopal Urban Agglomeration	—	—	1534.0	381442+	248

Source: Census of India 1971 and Town and Country Planning Department.

The table reveals that overall density of Bhopal urban agglomeration works out to be nearly 248 persons per hectare (i. e. 100 ppa. ). Highest residential density 397 pph. ( 161 ppa. ) corresponds to the parent city area followed by 381 pph. ( 158 ppa. ) 154 pph. ( 63 ppa. ) 146 pph. ( 59 ppa. ) and 139 pph. ( 56 ppa. ) in Bairagarh, outgrowth, T. T. Nagar and BHEL respectively. Thus Bhopal urban agglomeration has been built at varying residential densities ranging from 139-397 pph. density, low density development corresponding to certain areas of T.T. Nagar and BHEL and outgrowth localities.

+ Excluding EME population as it is not included within the planning area. •

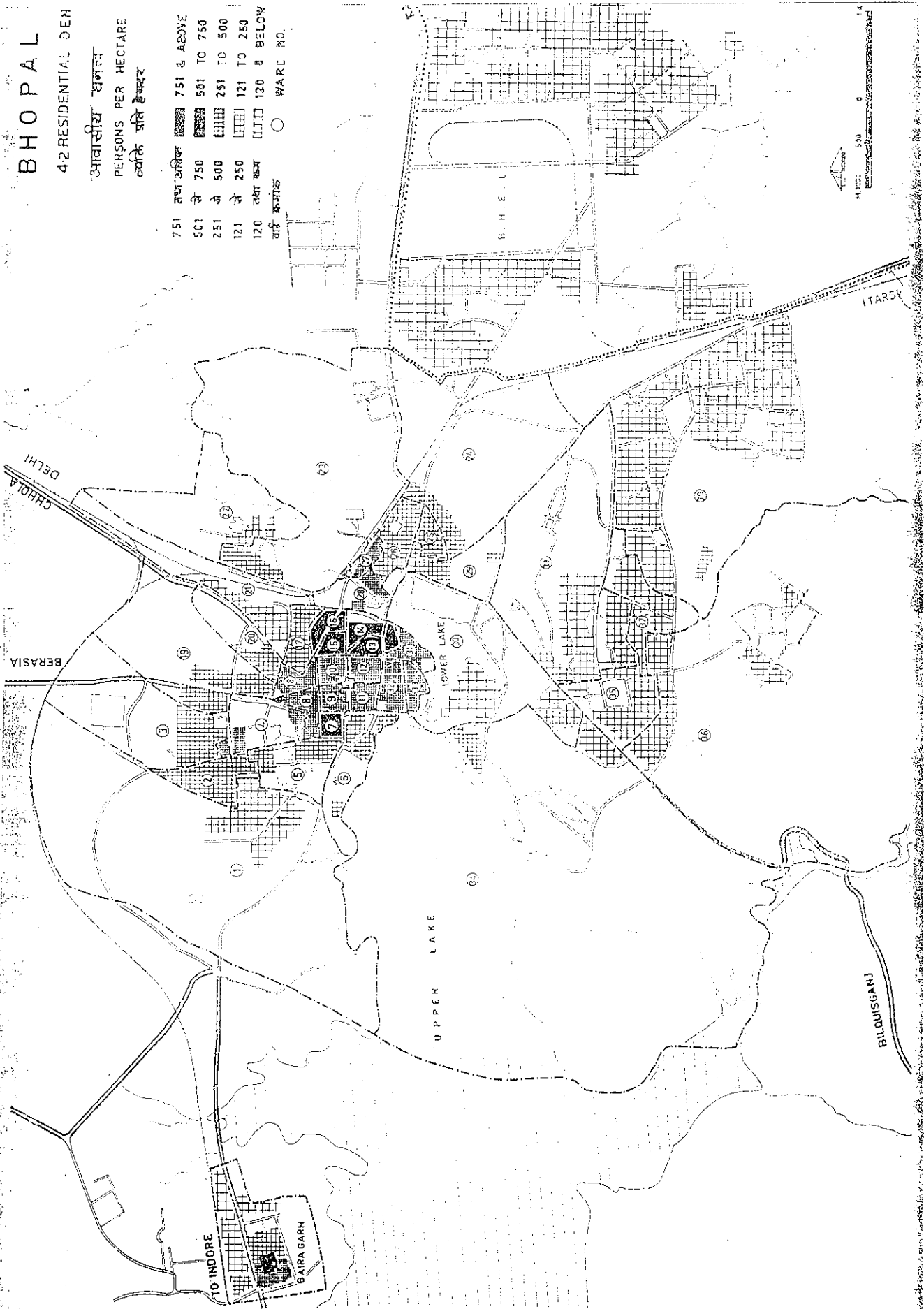


# BHOPAL

4-2 RESIDENTIAL DEN

आवासीय घनत्व  
PERSONS PER HECTARE  
व्यक्ति प्रति हेक्टर

751 तथा अधिक 751 & ABOVE  
501 से 750 501 TO 750  
251 से 500 251 TO 500  
121 से 250 121 TO 250  
120 तथा कम 120 & BELOW  
वार्ड क्रमांक ○ WARD NO.





A detailed residential pattern for the entire urban agglomeration has been analysed and compiled in the table which contains the residential density pattern for various localities of Bhopal urban agglomeration.

BHOPAL : DENSITY PATTERN

4-T.4

Density Range Persons/ Hectare	Wards	Description important localities	Population	Residential area in hectare	Popu- lation %	Area %
1	2	3	4	5	6	7
951 & above	14	Chawni, Ajayabghar	6816	6.0	1.7	0.3
851-950	7, 15 B-2	Somwara, Badaipura Itwara, Mangalwara, Bairagarh (part)	15643	17.2	4.1	1.2
751-850	13, 16	Fish Market, Kasai- pura, Mangalwara, Gurubax-ki-Tallaiya.	12999	16.1	3.4	1.0
651-750	10, 11, 18, 20, 27, 31, 32, 33,	Shahjahanabad, Ibra- himpura, Unani- Shafakhana, Loha- Bazar, Sabzi Mandi Azad Market, Jume- rati, Bal Vihar. Bhoipura, Jogipura, Budhwara, Motia Park Tallaiya, Retghat Ginnori.	54288	79.5	14.3	5.2
551-650	4, 9, 28	Bada Bagh, Kayast- pura, Lakherapura, Barkhedi, Chowki, Imambada, Gujar- pura.	18661	30.3	4.9	1.9
451-550	8, 12, 17, 25, 29, B-1, B-3.	Jawahar Chowk, Marwadi Road, Paiga, Lailaburj, Ghora Nakkas, Mandir Kamali, Hamidia Road, Kumharpura, Bairagarh (part), Jawabit line, Jehangirabad.	43032	83.4	11.2	5.4

1	2	3	4	5	6	7
401-450	19, 23, 24, B-10	Quazi Camp, Station Bajariya, Bairagarh (part)	28997	66.9	7.6	4.5
351-400	2, 3, 34	Civil lines, North T. T. Nagar.	26159	71.3	6.8	4.7
301-350	6	Fategarh, Karbala	7876	22.6	2.1	1.5
251-300	5, 21, 26, B-4	Noor Mahal, Babe- ali, Taj mahal, Pari bazar, Railway colony, Pulbogda.	19665	74.4	5.1	4.8
201-250	35, 37, B-5, B-6 B-8	South T. T. Nagar, 1250 Qrs., Habibganj, Bairagarh (part)	24895	109.9	6.6	7.2
151-200	1, 22, 36, 38, out- growth	Ahmedabad, Idgah hill, Chandbad. MACT. 1250 (part) Qrs. Roshanpura, Vijay Nagar, Anand Nagar.	42831	271.9	11.3	17.6
101-150	BHEL	Barkheda, Govindpura	50393	372.8	13.3	24.3
51-100	40, 39, B-7, B-9.	Four Bungalows, Pro- fessors colony, P. H. Q. 45 Bunglows, 75 Bungalows, 1464 qrs., Bairagarh (part)	29187	311.7	7.6	20.4
Total			381442	1534.0	100.0	100.0

B stands for Bairagarh.

Source :— Compiled from Census of India 1971 & Town & Country Planning Department.

Note :—(1) Density has been calculated with ward 'residential area.' and population as unit. Ward residential area (≡) ward area (—) area under non-residential uses major roads, major open spaces, water bodies.  
Residential density = ward population divided by ward residential area.

The density<sup>1</sup> pattern has been further analysed so as to find out quantum of land under high, medium or low density in various constituents of the city. The result is compiled in the table given below :—

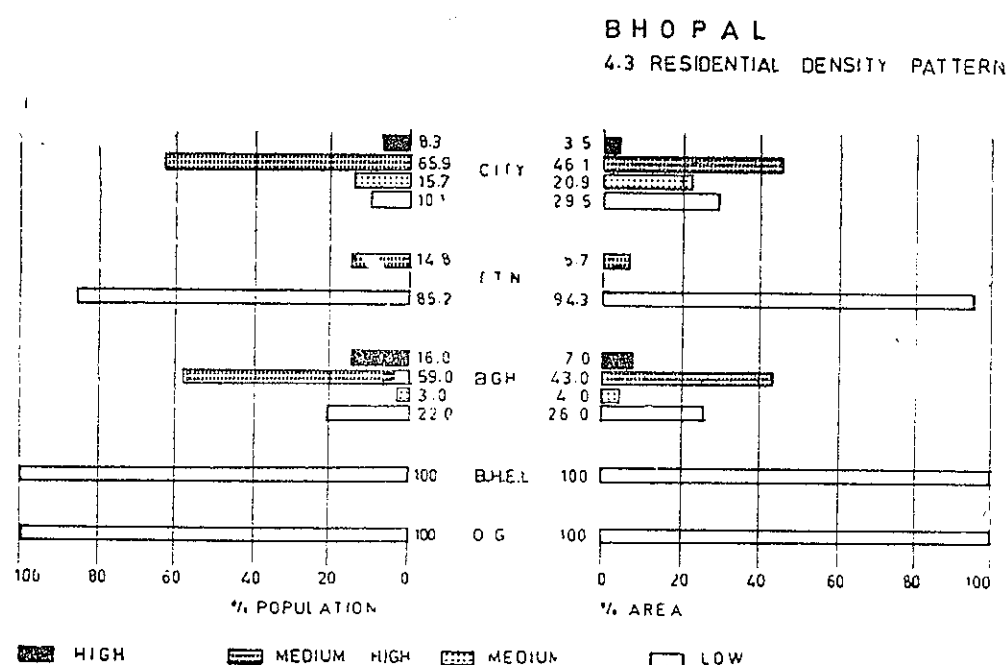
BHOPAL : BROAD RESIDENTIAL DENSITY RANGES

4-T.5

Density range/ Locality Persons/hect.	Population		Residential Area (Hectares)	
	Population of locality	Per cent to total	Area of locality	Per cent to total
1	2	3	4	5
<b>High (above 851)</b>				
pph				
Main city	19,220	5.0	19.6	1.3
T. T. Nagar	—	—	—	—
Bairagarh	3,239	0.8	3.6	0.2
BHEL	—	—	—	—
Outgrowth	—	—	—	—
Total	22,459	5.8	23.2	1.5
<b>Medium-High (401-850)</b>				
pph				
Main city	1,46,450	38.4	252.1	16.5
T. T. Nagar	—	—	—	—
Bairagarh	11,527	3.0	23.1	1.5
BHEL	—	—	—	—
Outgrowth	—	—	—	—
Total	1,57,977	41.4	275.2	18.0
<b>Medium (251-400)</b>				
Main city	434,66	11.4	140.3	9.2
T. T. Nagar	9,667	2.5	26.0	1.7
Bairagarh	567	0.1	2.0	0.1
BHEL	—	—	—	—
Outgrowth	—	—	—	—
Total	53,700	14.0	168.3	11.0

1	2	3	4	5
<b>Low (Below 250)</b>				
Main city	23,477	6.2	173.0	11.2
T. T. Nagar	55,742	14.7	421.0	27.5
Bairagarh	4,325	1.2	22.8	1.5
BHEL	53,922	14.2	387.0	25.2
Outgrowth	9,840	2.5	63.5	4.1
<b>Total</b>	<b>1,47,306</b>	<b>38.8</b>	<b>1067.3</b>	<b>69.5</b>
<b>Grand Total</b>	<b>3,81,442</b>	<b>100.0</b>	<b>1534.0</b>	<b>100.0</b>

Source : Field survey by Town & Country Planning Department and Census of India 1971.



The study reveals that a very small residential area, 1.5% is under high density range, while nearly 70% of the area is under low density range. This calls for a policy of redensification of low density residential area. A high content of low density area indicates inefficient use of urban land. The area under low density range at Indore was found to be only 31%. Even area

under high density range at Indore was around 18% as against 1.5% at Bhopal. High densities of over 850 pph. have to be read with note of caution, because higher densities do not necessarily mean higher bulk of buildings. In Indian cities, it is often because of high occupancy rate. Bhopal is no exception to it. Height of structures read with occupancy rate (person per room) clearly reveals that higher density in these areas accrues due to high occupancy rate. Higher density also results because of sub-standard road network and lack of open spaces and essential amenities. Such a situation is undesirable and unhealthy. It will be better to encourage higher building bulk i. e. low rise (four storey-not requiring lift) and high density together with workable road widths and necessary amenities. This will reduce occupancy rate and yet increase density.

#### 4.13 Tenure Status

Owing to mobility of workers employed in Government and BHEL, demand for rental houses is high. Nearly 70% houses were recorded as rented in 1971. Even in old city, owing to economic disparity the quantum of rented houses is more. There has been some marginal improvement in situation as the rented houses in 1971 decreased to 70% from 73% in 1961. The tendency of workers to settle down in the city is likely to create more demand for owned houses in future.

#### 4.14 Occupancy Rate

In spite of efforts of the Government and Housing Board in construction of more houses, the situation of overcrowding has not improved. Out of nearly 38400 Government employees, only 10800 employees are provided with Government accommodation, others are required to find accommodation on their own. BHEL has also constructed 12030 houses against 19400 workers. Housing activity in private sector has also not kept pace with the demand. These factors have led to increase in occupancy rate which is reflected in the 1971 Census compared with that of 1961 Census. The change observed during 1967 and 1971 Census is compiled in the table, given on the next page.

BHOPAL : COMPARATIVE OCCUPANCY RATE (PERFECT ROOMS) 4-T.6

Name of City	1961	1971	Rate of Increase in Occupancy Rate
1	2	3	4
1. Bhopal	2.89	2.87	—0.7
2. Indore	2.40	2.98	24.16
3. Gwalior	2.27	2.53	11.46
4. Bhilai	2.31	2.50	6.22
5. Raipur	2.41	2.42	0.41
6. Jabalpur	5.57	2.40	—6.60

*Source* :—Compiled from Census of India 1961, 1971.

Bhopal has reflected only marginal improvement in occupancy rate, although there has been large scale housing activities during 1961-71. City still ranks II highest next to Indore, in the occupancy rate as against other cities in the State.

#### 4.15 Dwelling Unit Size and Occupancy Rate

The change in situation in respect of overcrowding in various types of dwelling units is indicated by figures compiled from Census data for last two decades, 1961-1971. From these figures, it is possible to compose the proportion of households living in dwelling units of various sizes (by number of rooms per unit) and the rate of occupancy by size units. The data available have, however, two limitations :

- (a) Figures are based on 20 per cent sampling.
- (d) The data used here correspond to city limits only exclude Bairagarh, BHEL. The inferences drawn from this table will have to made use of with these limitations.



## BHOPAL : DWELLING UNIT SIZE &amp; OCCUPANCY RATE

4-T.7

Year	Households Total		Occu- pancy Rate	Dwelling Unit Size				
				1 Rm	2 Rm	3 Rm	4 Rm	5 Rm
1	2	3	4	5	6	7	8	9
1961	39947	Hhd % Occupa- ncy rate PPR	— 2.89	58.4 4.06	29.4 2.60	6.4 2.24	3.8 1.89	2.0 1.36
1971	58673	Hhd % Occupa- ncy rate PPR	2.87	50.7 4.48	28.7 2.83	13.3 2.08	4.4 1.79	2.9 1.68
1961-71	—	Rate of Change of Occupa- ncy rate %	—0.7	10.3	8.3	—7.1	—5.3	23.5

Source :—Compiled from Census Reports 1961, 1971.

A close perusal of the table reveals that the average occupancy rate (i. e. persons per room) has almost remained the same during 1961-71, although changes in various sizes of dwelling unit have taken place. The proportion of households living at an occupancy rate of more than 2 persons per room has reduced only insignificantly from 94.2% in 1961 to 92.7% in 1971. Even the large scale housing activity undertaken particularly in the Government sector has failed to make any impact. The rate of house construction will have to be intensified to reduce the overcrowding, as nearly 70.4% of the households are still living at an occupancy rate of more than\* 2.8 persons per room.

Overcrowding in one-room and two-room dwelling units have increased during 1961-71. The occupancy rate has increased by 10.3% and 8.8% in one-room and two-room units respectively. The proportion of households living in 1 & 2 room units had decreased but the room space available to inhabitants of this group is much less. This indicates deteriorating living condition among households living in such units.

\* In U. K. permissible rate of occupancy is 0.89 persons per room. A higher occupancy is liable for prosecution for overcrowding but in India a rate of 1.5 PPR is considered acceptable.

It is also revealed that only about 3 per cent households are enjoying adequate housing space. Thus the study reflects acute shortage of habitable dwelling units particularly of smaller size, which are within the rent paying capacity of the E. W. S.

#### 4.16 Structural Condition

The data collected by the department during land use survey indicated that a large number of structures particularly in the walled city and adjoining area are in bad repair and dilapidated. During heavy rains in last two years, nearly 3000 to 4000 houses have been declared unsafe for human habitation every year. Even the Census data for 1961 and 1971 indicate that quality of houses has deteriorated in general, however, some improvement in quality of roof has taken place owing to torrential and concentrated rain experienced in the city. Increase in the content of katcha units by 4.5% and decrease in the content of pucca houses by 13.6% indicates deterioration of housing stock. This also indicates formation of more slums in the city. Details of the data on structural conditions are compiled in the following table :

BHOPAL : STRUCTURAL CONDITION

4-T.8

Structural Condition	Year	Wall Material		Roof Material	
		Census Houses	per cent	Census Houses	per cent
1	2	3	4	5	6
Katcha	1961	4,666	9.8	3,285	6.9
	1971	9,485	14.3	1,915	2.9
Semi-Pucca	1961	1,666	3.5	31,469	66.1
	1971	8,335	12.6	33,975	51.4
Pucca	1961	41,276	86.7	12,854	27.0
	1971	48,340	73.1	30,270	45.8
Total	1961	47,608	100.00	47,608	100.00
	1971	66,160	100.00	66,160	100.00

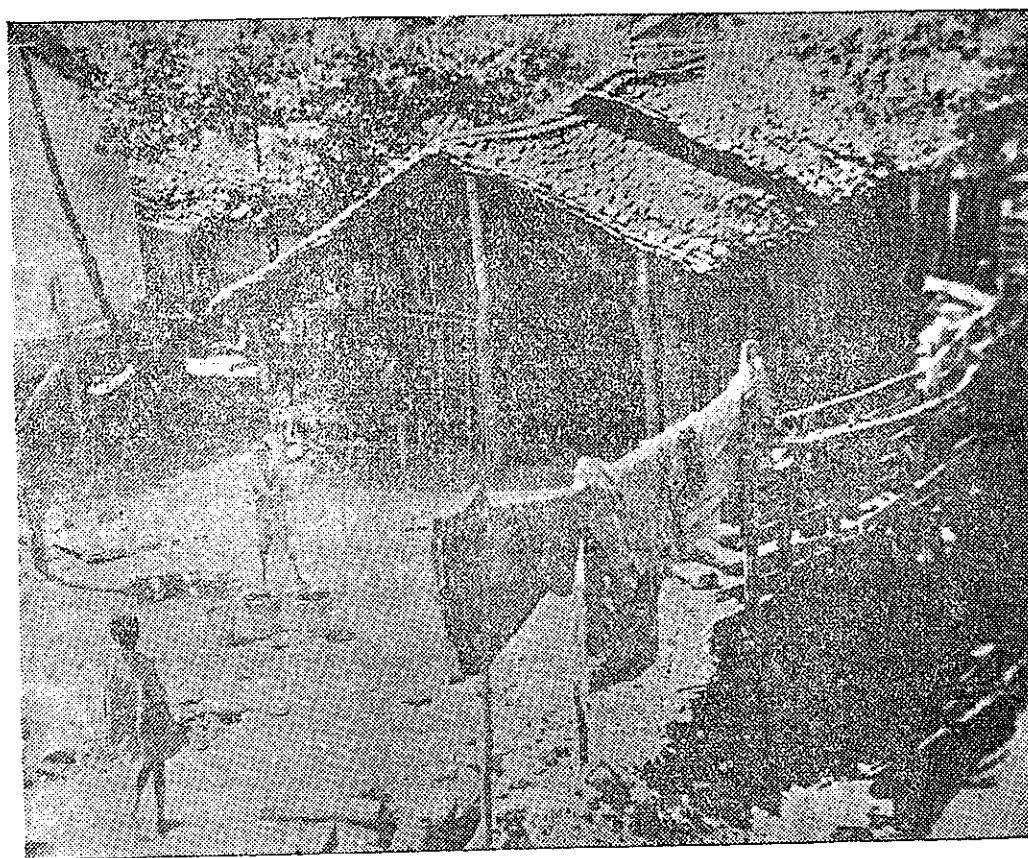
Source : Compiled from Census report 1961, 1971.

The increase in semi-pucca units tend to indicate that a large scale renovation is taking place in the existing housing stock, predominantly in the parent city area and Bairagarh. Generally houses along major roads and commercial

streets are being renovated more than those situated in interior lanes. It is, therefore, necessary to provide 'street lines' and 'Floor Area Ratio' in such areas so that proper setbacks and building content are achieved.

#### 4.17 Slum Areas

For the purpose of study, slums have been divided in two categories viz. 'Katcha-Pucca Areas' and 'Jhuggi-Jhopdi' settlements. Baring a few good localities most of the old residential areas in the city have slummy conditions. However, only 12 localities having environmental conditions almost unfit for human life have been identified as slums. The criteria adopted for identification are : haphazard lay-out pattern, extremely insanitary environmental conditions, lack of water supply and other services, ill-ventilated houses extremely poor structural conditions, overcrowding, lack of open spaces and amenities.



*A typical slum area.*

#### CHARACTERISTICS OF SLUM AREAS

The following physical and socio-economic characteristics were commonly

found in the slum areas during field surveys conducted by the department and studies conducted by the Directorate of Economics and Statistics.

#### A. Physical Characteristics

- (a) 60-70 per cent structures are in dilapidated condition.
- (b) Width of approach road is 2-3 meters.
- (c) Disposal of waste from these localities is extremely unsatisfactory worst conditions were found in Bajaria, Bhoipura, Ibrahim-ganj, Kazi camp, Mangalwara, Patra, Yaseen palace, Mangalwara, Kazi camp.
- (d) Conditions of streets are unsatisfactory in almost all the areas. Relatively the roads appear little better in Bhoipura, Nakhar-khana, Retghat I & II.
- (e) Almost complete absence of open space or educational or health amenities.
- (f) Nearly 90-95 per cent of households are living in a space less than 55 sq. meter (500 sq. ft.) per unit, and nearly 50 per cent households are living in single-room unit.

#### B. Socio-Economic Conditions

- (a) Nearly 70 per cent of migrants are from various parts of the State.
- (b) Average size of household is 5.3 persons. However, 29% of households have more than 7 persons each.
- (c) Sex ratio 882 females/1000 males, while net growth rate is of about 10%.
- (d) Nearly 55% are illiterates.
- (e) 29% are workers, which give workers/dependent ratio of 1:2.4
- (f) Nearly 23% households are earning below Rs. 100/ p. m. while 70% fall between income range of Rs. 101-300, only Rs. (4-7) per month are being spent on housing.
- (g) Nearly 28% are self employed in transport or selling activities. Nearly 10% run their own household industry, while others are service workers and casual labourers.
- (h) Nearly 50% have to travel less than 2 km. for their work place. While nearly 30% have to travel distance of (2-5) km
- (i) Nearly 39% live in their own houses and about 61% live in rented units.
- (j) Nearly 60% get drinking water from common taps.

An opinion survey revealed that about 65% households are willing to shift to an alternate place if plots or houses are provided to them.

Details in respect of slum areas are compiled in the table given below :—

BHOPAL : INVENTORY OF SLUM AREAS

4-T.9

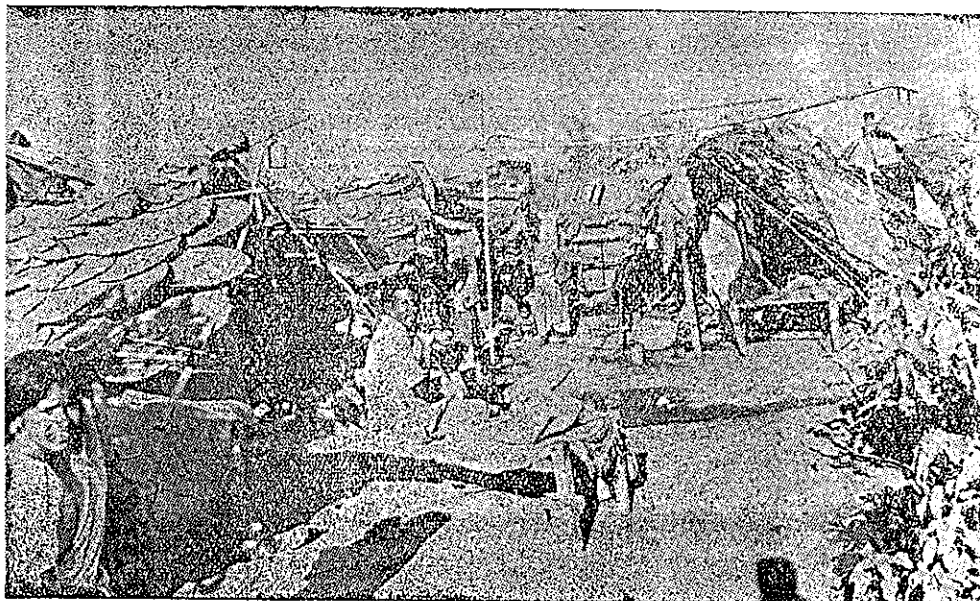
Location	House (Appx. Nos.)			Households (Nos.)	Resi- dential Area (Hect.)	Popu- lation persons	Residential Density Persons/ Hect.
	Katcha	Pucca	Total				
1	2	3	4	5	6	7	8
<b>A. Main City</b>							
1. Bhoipura I	490	160	650	1430	11.0	8915	810
II	420	180	600	1260	11.0	6380	580
2. Nakkarkhana	340	235	575	1390	13.2	7680	590
3. Jehangirabad	440	315	755	1210	11.1	6300	570
4. Mangalwara	210	640	850	1420	13.2	7320	560
5. Yaseen Palace	—	—	1	40	0.2	190	950
6. Ibrahimganj	295	95	390	960	4.0	3890	973
7. Barkhedi	385	185	570	1350	7.6	6565	864
8. Retghat I	110	160	270	470	1.6	2890	249
II	425	255	680	1610	8.5	8545	101
9. Patra	525	210	735	1510	10.0	7545	755
<b>B. Outlying Areas</b>							
10. Bajaria	320	105	425	945	7.2	4920	700
11. Kazi Camp	385	50	435	580	6.3	3160	525
12. Taj Mahal	...	...	1	200	2.0	1170	585
Total	4345	2590	6937	14375	116.9	75470	646

Source : Field surveys by Town & Country Planning Department and Socio-Economic survey report of Directorate of Economics and Statistics, M. P.

#### 4.18 Jhuggi-Jhopdi Settlements

A sudden spurt in constructional activities after 1956 gave impetus to sporadic Jhuggi-Jhopdi settlements in the city particularly in T.T. Nagar and BHEL township. The migrating labour squatted mostly on Government

lands. Survey of Jhuggi—Jhopdi settlements undertaken by the department indicated that nearly 33 such settlements which occupy nearly 39 hectares (97 acres) of Government land. Most of the persons living in these settlements can hardly pay house rent out of their wages and seasonal income. The total number of Jhopdi at the time of survey were nearly 3800. The table 4-T.10 gives an inventory of Jhuggi—Jhopdi settlements.



*Living Condition in Jhuggies, Panchsheel Nagar.*

Close perusal of the table clearly reveals that nearly 7.6% of residential area contains nearly 22% of the total households. The average residential density is 646 persons per hectare while the highest i.e. more than 850 pph. in Ibrahimganj, Barkhed. The Development Plans must contain sites for re-location of some slum areas earmarked for clearance and also provides for time-bound programme and plan for improvement and clearance of these slums.

**BHOPAL : JHUGGI--JHOPDI SETTLEMENTS**

4-T.10

Location	Work place/ Occupation	No.	Jhuggi settlement				Jhopdies	
			Popu- lation	%	Area (Hect.)	%	No.	%
1	2	3	4	5	6	7	8	9
<b>A. Main City</b>								
1. Kabitpura	1 Construc- tion work	2	1450	8.0	3.2	8.3	390	10.3
2. Berasia Road	2 Bidi works	3	1200	6.6	4.1	10.4	280	7.3
3. Karbala	3 Hhd. Indus- tries	2	550	3.0	2.4	6.2	135	3.5
4. Chandbad	4 Transport	1	1350	7.6	3.2	8.2	370	9.7
5. Chhola		1	450	2.5	1.2	3.0	75	2.0
Total		9	5000	27.7	14.1	36.1	1250	32.8
<b>B. T. T. Nagar</b>								
1. Roshanpura & Jawahar Chowk	1 Capital Project works	2	1625	9.0	2.2	5.6	350	9.2
2. M.A.C.T. Road & Main Road	2 P.W.D. construc- tion side	5	3560	19.6	4.1	10.4	280	7.3
3. M. R. Road & scattered	3 Service labour	8	1855	10.3	2.4	6.2	390	10.3
4. 1464 Habib- ganj Road	4 Quarries	1	95	0.5	0.2	0.5	20	0.5
5. Private sector		2	145	0.8	0.4	1.0	30	0.8
Total		18	7280	40.2	9.3	23.7	1070	28.1
<b>C. B.H.E.L.</b>								
1. Anand Nagar		2	3470	19.0	7.7	19.6	890	23.3
2. Piplani		1	1120	6.0	3.2	8.2	210	5.5
3. Gadia Gate	B.H.E.L. service workers	1	230	1.3	0.8	2.0	50	1.3
Total		4	4820	26.3	11.7	29.8	1150	30.1
<b>D. Bairagarh</b>								
	Casual labour Hhd. Industries							
1. Sehore Road		2	1050	5.8	4.1	10.4	350	9.0
Total		2	1950	5.8	4.1	10.4	350	9.0
Bhopal	Urban Agglomera- tion	33	18150	100	39.2	100	3820	100

Source : Field Surveys by Town & Country Planning Department.

Nearly 18 out of 33 Jhuggi settlements are located in T. T. Nagar, housing nearly 40% of the total Jhuggi population. Jhuggi settlements in BHEL township are, however, concentrated in only four sites which cover nearly 1/3rd of the total Jhuggi area and accommodates nearly 26% of Jhuggi population. In terms of Jhuggi-Jhopdi area, the maximum concentration is in main city (36%) followed by BHEL, T. T. Nagar and Bairagarh. In spite of the very poor living conditions, there is continuous inflow of migrants to these settlements, which are gradually taking the shape of permanent habitation areas. Some of these settlements have occupied sites which are required for more efficient uses. The Development Plan will have to spell out the process of resettlement of these Jhuggi settlements.

#### 4.19 Urban Villages

The following villages have become part and parcel of the urban area of Bhopal during the process of city expansion. These villages at present do not fit in the urban character and, therefore, need improvement and re-development or even clearance. The table below indicates that nearly 10,000 persons are living in 21 urban villages, covering nearly 39 hectares of abadi area and about 1450 houses.

BHOPAL : URBAN VILLAGES				4-T.11
Sr. No	Name of Villages	Abadi Area in Hectares	No. of Houses	Population
1	2	3	4	5
1.	Bhanpur	1.7	64	347
2.	Chandbad	3.2	120	750
3.	Chhola	1.8	66	530
4.	Chunabhatti	1.2	45	263
5.	Halalpur	2.0	71	531
6.	Hataikheda	4.1	163	610
7.	Hinotia	1.9	70	530
8.	Kaluakalan	1.3	50	273
9.	Kohifza	0.2	6	43
10.	Kotara Sultanabad	1.7	65	350
11.	Kararia (Sajjidabad)	2.3	85	384
12.	Laukhedi	3.6	133	610
13.	Nayapura	0.8	30	187
14.	Nurella	1.7	64	354
15.	Neori	1.6	57	415
16.	Nishatpura	1.3	47	350
17.	Prempura	0.8	30	182
18.	Semrakalan	0.6	23	172
19.	Sewania Gond	—	—	1745
20.	Shahpur	3.9	145	865
21.	Singarcholi	3.3	122	587
Total		39.0	1456	10078

Source : Census of India 1971 and Town & Country Planning Department.



## 4.2 CLASSIFICATION OF HOUSING AREA

Besides identification of slum areas and jhuggi settlements, the remaining housing areas in city have been grouped into 3 categories :

- (i) Good living area.
- (ii) Average living area.
- (iii) Sub-standard living area or problem areas.

The grouping has been based on the study of following factors :

- |                             |                                     |
|-----------------------------|-------------------------------------|
| (a) Residential density     | (b) Age of structure                |
| (c) Structural condition    | (d) Occupancy rate                  |
| (e) Environmental condition | (f) Quality of urban infrastructure |
| (g) Accessibility           | (h) Natural Drainage                |

Average housing areas will require conservation so that they do not fall into the category of sub-standard areas for want of proper maintenance. Details of classification of housing areas are given in the statement.

### GOOD AND AVERAGE LIVING AREAS

Description of Areas	Good living areas	Average living areas
A. Main City	Jama Masjid, P.G.B.T. Area, Rly. Colony, Idgah, Ahmedabad, Hamidia Hospital area, Jain Mandir area, Sindhi Colony, P & T Colony, T. B. Hospital area, Four Bungalows, Professors Colony, Ajayabghar, Karbala, Royal Market area.	Marwari Road, Phool Mahal Motia Park, Lakherapura, Loha Bazar, Kotwali road, Masjid Shakur, Jawahar Chowk, Noor Mahal, Golghar, Bab-e-ali, Pari Bazar, Jawabit line, Peer Gate, Ibrahim-pura road, Unani Safakhana, Jume-rati Road, P. H. Q,
B. T. T. Nagar	Shamla Hill, Housing Board Colony, T. T. Nagar area, Private Sector, Shastri Nagar, H. S. Board Colony, Vidhan Sabha, Malviya Nagar, S.A F. Qtrs.	Panchsheel Nagar.








Description of Areas	Good living areas	Average living areas
C. Bairagarh	Sehore Road (one depth along the road)	South portion of Bairagarh
D. B. H. E. L.	Piplani, Barkheda, Habibganj, Govind-pura, Bijli Nagar (outgrowth).	Tubular sheds, Labour Colony.

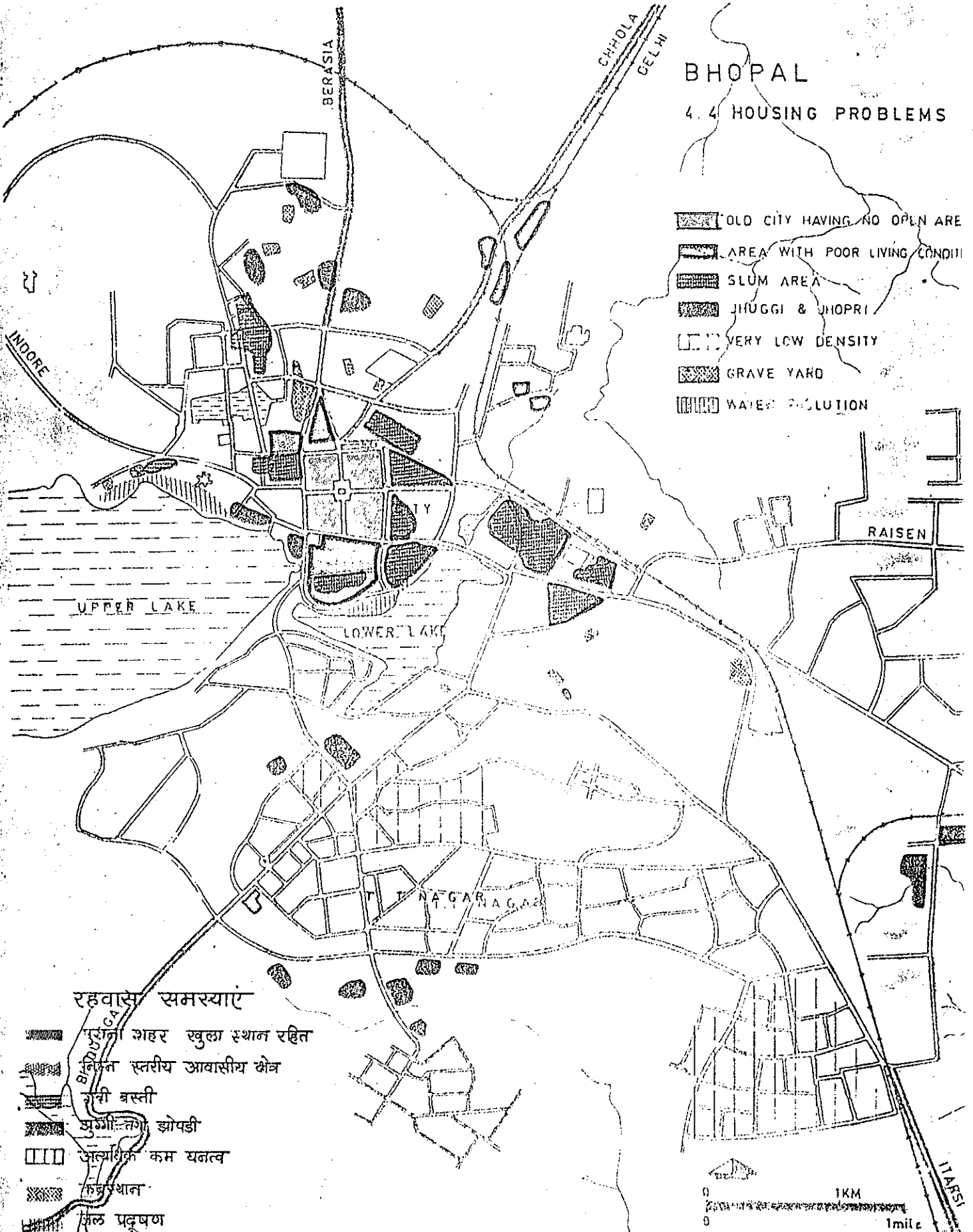
#### SUB-STANDARD AREAS

Description	Sub-standard Areas
(a) Main City	Chawni, Mangalwara, Kabitpura, Chandbad, Itwara, Kasaipura, Ginnori, Bhojpura, Fatehgarh, Bhajipura, Noor Mahal, Jumerati, Gurbux-ki-Tallaiya, Kumharpura, Laxmi Talkies area, Mandir Kamali, Ibrahimganj, Shahjahana-bad, behind Jehangirabad church area, Itwara Chowki, Imambada, Gujarpura, Kayastpura, Murgi Bazar.
(b) T. T. Nagar	Roshanpura area, Opp. to Raj Bhawan.
(c) B. H. E. L.	Anand Nagar.
(d) Bairagarh	North portion of Sehore Road and western end of the township.








# BHOPAL

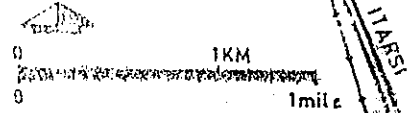
## 4.4 HOUSING PROBLEMS

-  OLD CITY HAVING NO OPEN AREA
-  AREA WITH POOR LIVING CONDITIONS
-  SLUM AREA
-  JHUGGI & JHOPRI
-  VERY LOW DENSITY
-  GRAVE YARD
-  WATER POLLUTION



### रहवासी समस्याएं

-  पुराना शहर खुला स्थान रहित
-  निम्न स्तरीय आवासीय क्षेत्र
-  गरीब बस्ती
-  झुग्गी तथा झोपड़ी
-  अत्यधिक कम घनत्व
-  कब्रिस्तान
-  जल प्रदूषण





The table below compiles the land area covered and population contained in these housing areas :

BHOPAL : CLASSIFICATION OF HOUSING AREA (AREA IN HECTARES) 4-T.12

	Conservation Areas			Sub-Standard Areas			Total	Grand Total
	Good	Average	Total	Poor	Slums	Jhuggies		
1	2	3	4	5	6	7	8	9
Main city	58.7	258.9	317.6	136.4	116.9	14.1	267.4	585.0
	10%	45%	55%	23%	20%	2%	45%	100%
T.T. Nagar Area	375.0	50.5	425.5	12.2	—	9.3	21.05	447
	84%	11%	95%	3%	—	2%	5%	100%
BHEL Area	348.6	26.7	375.3	—	—	11.7	11.7	387
	90%	7%	97%	—	—	3%	3%	100%
Bairagarh Area	4.6	20.2	24.8	22.6	—	4.1	26.7	51.5
	9%	39%	48%	44%	—	8%	52%	100%
Outgrowth Area	3.2	6.5	9.7	53.8	—	—	53.8	63.5
	5%	10%	15%	85%	—	—	85%	100%
Bhopal Urban Area	790.1	362.8	1152.9	225	116.9	39.2	381.10	1534.00
Agglomeration	50.5	23.6	75.1	15.0	7.4	2.5	24.9	100%

Source : Field Surveys, Town & Country Planning Department.

Out of the 62% housing area with satisfactory living conditions at least 23% area would require proper maintenance to conserve the environmental quality of the area. Nearly 16% area falls under sub-standard living conditions and nearly 12% falls under slums and jhuggi settlements. Maximum concentration of sub-standard area is seen in the main city followed by outgrowth housing areas of Bairagarh and T. T. Nagar. Good and average living areas are situated mostly in recently developed areas viz. T. T. Nagar and BHEL.

The development plan will have to spell out the measures for improvement of poor living areas and suggest measures to check further deterioration of other residential areas.

## 4.3 HOUSING ACTIVITIES AND LAND DEVELOPMENT TRENDS

### 4.31 Public Sector

Bhopal had large scale housing activities but during last two decades only. A large chunk of area under housing has been primarily developed and built by Government and semi-Government agencies viz.

1. Capital Project
2. B. H. E. L.
3. Housing Board
4. Improvement Trust
5. Municipal Corporation

All these agencies have developed nearly 840 hectares of land as housing areas and constructed nearly 24,500 dwelling units, and also made available nearly 5100 developed plots.

#### BHOPAL : HOUSING ACTIVITIES

4-T.13

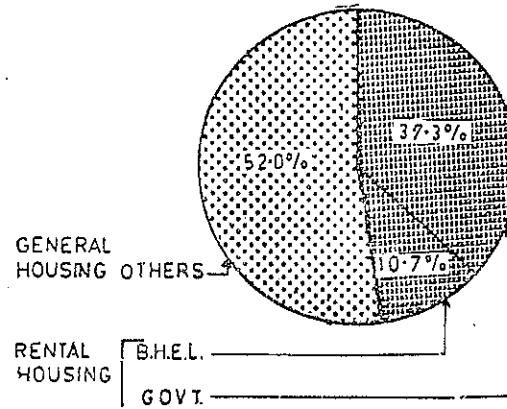
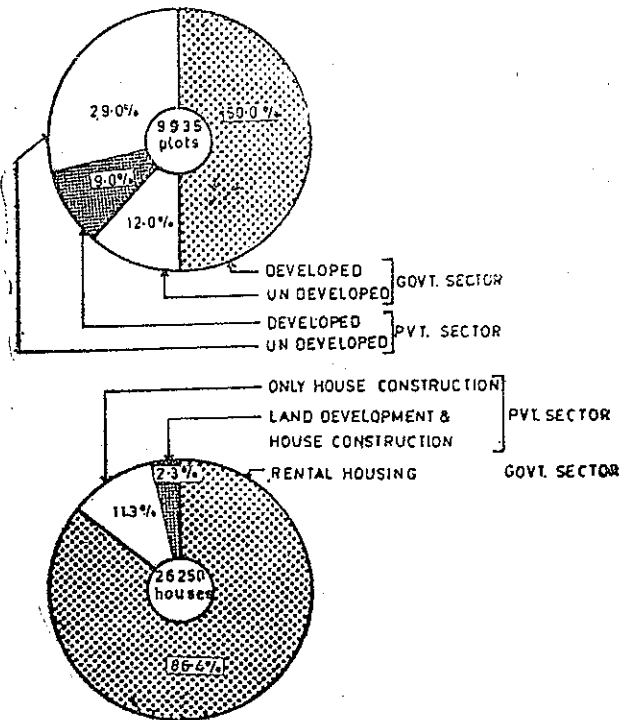
Agencies	Description of Area	Houses		Vacant Plots	
		Area in hectares	Units	No. 5	Area in hectares
1	2	3	4	5	6
<b>I. Government &amp; Semi-Government</b>					
<b>A. Housing</b>					
1. Government	P. W. D. Qtrs.	295.0	8104+	—	—
2. B. H. E. L.	Piplani, Barkheda, Habibganj, Govindpura.	387.0	12030	—	—
3. Municipal Corporation.	Berasia Road 1, 2, Sweepers Housing Colony.	3.5	220	—	—
4. Housing Board	R. S. S. Market Shastri Nagar, Subhash Nagar.	13.2	686	—	—
5. Education Board.	Ravishanker Shukla Nagar.	12.1	278	—	—
6. Improvement Trust	Jamalpura.	1.9	152	—	—
Total Area		712.7	21470	—	—
Percentage		84.0	86.6	—	—

1	2	3	4	5	6
<b>B. Land Development</b>					
1. Government	Arera Colony, Malviya Nagar	85.7	1400	550	25.5
2. Improvement Trust.	Berasia Road, Panchsheel Nagar, Jamalpura.	12.1	1000	1365	35.3
3. Housing Board	E-6 E-7, Pvt. Sector.	28.3	615	180	14.3
Total area		126.1	3015	2095	74.8
Percentage		14.9	12.1	30.2	23.1
<b>II. Private Land Development</b>					
Approved lay-out schemes.					
1. Developed Private Colonies.	Raisen & Sehore Roads	10.0	265	675	36.0
Total		10.0	265	675	36.0
Percentage		1.1	1.3	9.8	11.7
Undeveloped Approved Schemes					
1. Govt.	Capital Project area,	—	—	1200	60.0
2. Private	Raisen, Sehore, Berasia, Hoshangabad Road.	—	—	2950	152.8
Total.		—	—	150	212.8
Percentage		—	—	60.0	65.7
Grand Total		848.8	24750	6920	323.6
Percentage		100	100	100	100

Source : Field Surveys, Town & Country Planning Department.

+ Does not include 1500 houses almost ready for allotment.

BHOPAL.  
4.5 HOUSING ACTIVITIES



Large scale housing activities i.e. nearly 99% of housing area under dwelling units which have come up during the formative stage of the capital, and the industrial township, has been in the government sector. Nearly 87% of the houses constructed were for rental purpose. Housing on ownership basis has come up only in the shape of few colonies in private sector and co-operative sector. Ownership housing did not catch up initially. Even private sector and Malviya Nagar housing area as ownership housing came up only when incentives in terms of developed plots on no profit basis and grant of house loan by Government and Housing Board were extended. However, the situation has now changed. A demand survey conducted by the department in 1972-73 has revealed that nearly 70% persons prefer to purchase a constructed house through the Housing Board rather than construct house on their own.



# BHOPAL

## 4-6 DEVELOPMENT OF HOUSING AREAS

आवासीय विकास क्षेत्र

GOVERNMENT & SEMI GOVERNMENT

नासकिय तथा अर्धशासकिय

CORPORATE DEVELOPMENT

कारपोरेट आवासीय विकास

PLOT WISE DEVELOPMENT

भूखण्ड विकास

प्रायवेट

PRIVATE

DEVELOPED COLONIES विकसित कलोनीय

UNDEVELOPED COLONIES अविकसित -न-

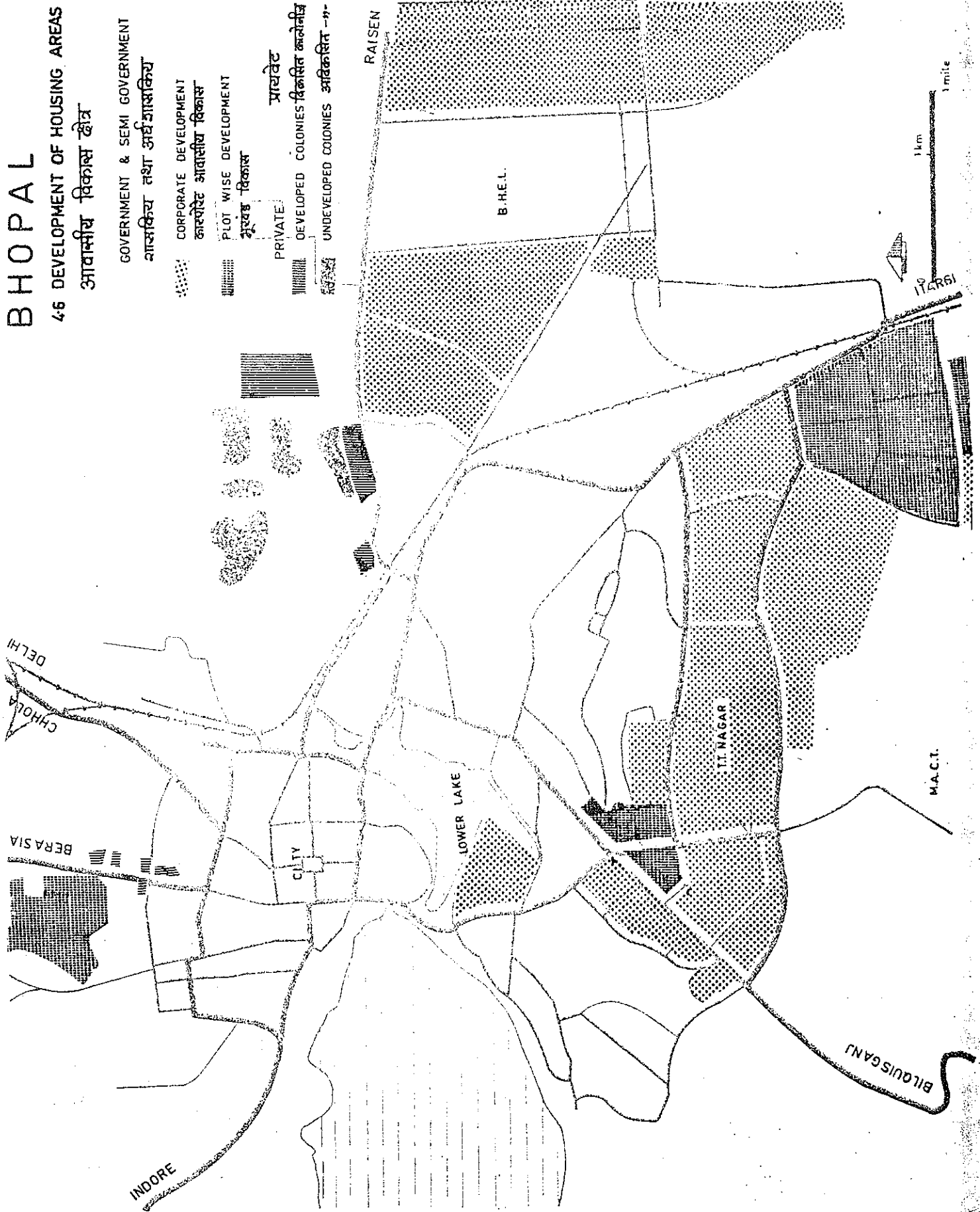




Table below gives the details in respect of housing schemes undertaken by Government/Semi-Government :

BHOPAL : HOUSING SCHEMES ( Government/Semi-Government Agencies )					4-T.14
Agency/Locality	Dwelling Units		Plots		
	Area (Hectares)	Houses	No.	Area (Hectares)	
1	2	3	4	5	
<b>1. Housing Board</b>					
R. S. S. Market, Shastri Nagar Road, Shahpur E6, E7 and Subhash Nagar.	41.5	1301	180	14.3	
<b>2. Improvement Trust</b>					
Jamalपुरa, Barkhedi Road, Char-Imli, Bage Mir Saman.	14.00	1152	1365	35.3	
<b>3. Municipal Corporation</b>					
Sweeper Housing Colony, T. T. Nagar, Berasia Road I & II.	3.5	220	...	...	
<b>4. Private Agency</b>					
Malviya Nagar (Pvt.) and Arera Colony (Pvt. Sector) Developed by Govt.	85.7	1400	550	25.5	
<b>Total</b>	<b>144.7</b>	<b>4073</b>	<b>2095</b>	<b>75.1</b>	

Source : Field Surveys, Town & Country Planning Department.

#### 4.32 Private Sector

As the demand for land for building increased various private individuals started selling land as house sites without any approval of lay-out plans or obtaining any sanction even for diversion of Agricultural land. No development whatsoever was provided. Haphazard development in the city resulted particularly at Idgah Hills, Zawabit lines etc. which were most important areas of the city. After enforcement of certain restrictions the colonizers who got their plans approved did not carry out proper development in spite of the fact that 20% of the total cost was required to be deposited with the Revenue Authorities as security for development. Nearly 76% of the area under approved lay-outs is still lying undeveloped (Table T-4.15). Apart

from their unwillingness to invest on development, there might be other reasons such as extension of essential urban infrastructure i. e. water supply, sewerage and accessibility by road etc. But the fact remains that it has retarded housing activities to a great extent and has also shifted the housing activity to only those areas where the Government provided developed plots. Consequently the development of the city has been lop-sided. This will need serious consideration in the interest of proper development of the city.

BHOPAL ; DEVELOPMENT OF LAND (PRIVATE AGENCIES) 4-T.15

Location	Plots Developed				Development Area in Hectares			
	With houses	Vacant	Un-developed	Total	With houses	Vacant	Un-developed	Total
1	2	3	4	5	6	7	8	9
Raisen Road	60	480	2045	2585	3.1	28.0	105.6	136.7
Sehore Road	30	170	175	375	1.5	7.0	8.6	17.1
Berasia Road	155	25	125	305	5.0	1.0	3.4	9.4
Idgah Hills Road	20	—	—	20	0.4	—	—	0.4
Shamla Hills Road	—	—	45	45	—	—	3.7	3.7
Hoshangabad Road	—	—	560	560	—	—	31.5	31.5
Total	265	675	2950	3890	10.0	36.0	152.8	198.8
Percentage	6.8	17.4	75.8	100.0	5.0	18.1	76.9	100.0

Source : Field surveys, Town and Country Planning Department.

#### 4.4 HOUSING SHORTAGE

Unprecedented influx of migrants eventually resulted in chronic housing shortage, particularly in the formative stage of capital city. The housing shortage, could not be wiped out, even after the large scale construction of rental housing. Nearly 21300 rental houses and 3400 ownership houses and nearly 3500 developed plots were made available during 15 years. As against this, the addition of families during the same period was nearly 45,000. In order to assess the housing shortage, it is necessary to ascertain the present acceptable housing stock. Basic consideration in ascertaining the acceptable housing stock has been as under :—

(a) Housing stock in respect of new location with average livability except Jhuggies, has been taken as 100% acceptable.

(b) Although as per general norms of habitability more than 30 per cent housing stocks in respect of main city area will come under the category of unacceptable houses, yet looking to the acute shortage of dwelling units and economic capacity of the citizens, it is considered necessary to treat most of the houses as acceptable for some more period. Accordingly, nearly 90 per cent of the housing stock of main city area excluding slums and jhuggies are considered acceptable houses.

(c) 50% of Katcha houses in slum areas, and 100% pucca houses are considered acceptable units, although on moderate norms of livability would render large bulk of these as unacceptable.

(d) 30% of jhuggi dwellers are considered acceptable units.

These considerations have returned liability D.U. houses as acceptable housing units, so as to give the housing shortage given in the table :—

BHOPAL : HOUSING SHORTAGE (IN DWELLING UNITS)						4-T.16
Elements	Townships					Urban Agglomeration (Total)
	Main City	T. T. Nagar	B.H.E.L.	Bairagarh	Out-growth	
1	2	3	4	5	6	7
A. Households	44100	14500	13300	2900	1500	76300
B. Occupied houses	20700	13200	12800	2400	1100	50200
C. Occupied houses Ex. Slums and Jhuggies.	12500	12100	12000	2000	600	39200
D. Acceptable Dwelling Units						
1. Other than a Slum & Jhuggi area	11250	12100	12000	1650	603	37600
2. Slum areas	4800	...	...	...	...	4800
3. Jhuggies	350	300	350	100	150	1250
Total D (1+2+3)	16400	12400	12350	1750	750	43650
C. Housing Shortage A(—)D	27700	2100	950	1150	750	32650

Source : Census of India and field survey—Town & Country Planning Department.

\* Figures A and B as per Census of India are rounded.

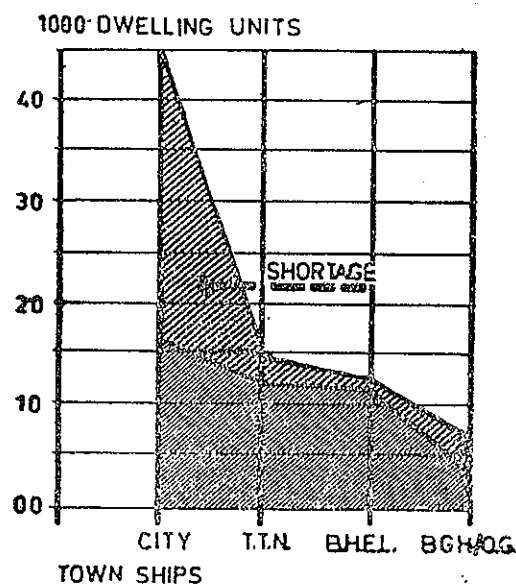
\* Figures C and D as per field surveys and assumptions mentioned in para 4.4

The total shortage includes, shortage of quarters required for employees of State Government, Central Government, B.H.E.L. and other semi-Government Housing, it is necessary to work out requirement for this sector. The basic considerations in working out the demand for employees are as under.

(a) 15% of the employees other than BHEL already live in their own houses, while 20% live with their relations such as wife/husband forming the same household. Thus only 65% employees require Government accommodation.

(b) 10% employees of B.H.E.L. live in their own houses while 10% live with their relations forming the same household. Thus nearly 80% of employees require company houses.

### BHOPAL 4.7 HOUSING SHORTAGE



Based on these considerations the total shortage is worked out as under :

BHOPAL : HOUSING SHORTAGE (SECTOR-WISE)

4-T.17

Employees	Employees/ Workers	D. Units needed	Available	Shortage D. Units
1	2	3	4	5
1. State Government Central Government Autonomous Bodies Ex S. A. F./Defence	36400	23700	11500	12200
2. B. H. E. L.	19400	15500	12000	3500
	—	39200	23500	15700
3. Shortage not covered by 1 & 2	—	37100	20150	16950
Dwelling Units		76300	43650	32650

Specific areas for public as well as private sector will have to be earmarked in the plan, keeping in view their relationship with work centres, particularly offices and industrial areas.





## Chapter 5

### COMMERCE & INDUSTRIES

Bhopal had attained the status of a principal city of the erstwhile State. But, it could not attain economic prosperity of an industrial and trade centre. Even after declaration of concessions by the erstwhile rulers, only a few industries like Central India Flour Mills, Straw Products, Glue Factory etc. were established. Its economic structure was activated only when it became capital city of the new state of Madhya Pradesh in 1956, and was concurrently selected for the location of B.H.E.L. plant. Since then, the economic and industrial activity in the city has been increasing at a very rapid pace. Main function of the city though happens to be administration, yet because of its strategic location within the region as well as in relation to the whole country, the city has been gradually attracting attention of the entrepreneurs both in commerce and industries. Problems arising out of sudden growth of commerce and industries have begun to emerge which are successively reducing the functional efficiency of the city which is likely to hamper economic progress of the city. Growth of commerce and industry in a planned manner needs to be provided for, and for this purpose an analysis of existing economic base of the city in terms of industries, wholesale, mandis, specialised markets, transport activities, retail market etc. is necessary, so that the Development Plan proposals could take cognizance of problems of this sector in a comprehensive manner.

## 5.1 COMMERCIAL-CUM-SHOPPING AREAS

### 5.11 Specialised Markets

A study of commercial areas of the city reveals commodity-wise specialisation of trade which is normal feature of a Regional city. The various specialised markets, which have emerged and come to stay within the city are summarised as under :—

BHOPAL : SPECIALISED MARKETS			5-T.-1
Township	Trade by type	Location	
1	2	3	
Main City Area :	1. Grain, Kirana, & Dry Fruits	Dhan Mandi	
	2. Hardware, Paints, Steel Goods	Marwari Road, Sindhi Market, Hamidia Road, (Opp. Bharat Talkies)	
	3. Auto parts, Cycle parts, Repair workshop	Hamidia Road, Chhola Road.	
	4. Cloth market	Ibrahimpura, Chowk area.	
	5. Kirana	Ibrahimpura, Jumerati, Jawahar Chowk (City)	
	6. Plastic, Glass and Crockery wares, General Merchandise.	Marwari Road, Loha Bazar.	
	7. Gold & Silver	Chowk (Sarafa)	
	8. Forwarding Agencies	Budhwara & Itwara	
	9. Vegetable	Azad Market	
	10. Kabadi Market	Behind Bal Vihar and Jumerati	
	11. Books & Stationery	Ibrahimpura	
	12. Banks	Marwari Road	
	13. Wooden Furniture	Mangalwara, Hamidia Road	
	14. Sawn Timber	Pulpatra Road	
T. T. Nagar :	1. Readymade wear	New Market	
	2. Cloth	New Market	
	3. General Merchandise	New Market	
	4. Business Offices/Govt. Offices	Malviya Nagar	
Bairagarh :	Cloth	Bairagarh Main City	

Source : Field surveys conducted by Town and Country Planning Department.

### 5.12 Wholesale Trade And Mandis

Wholesale trade in the city is functioning mostly in retail shopping areas, it is identifiable, as a separate activity only in certain pockets. In fact, no market in the city seems to have been planned to function as a wholesale

market. With the sudden increase of trade, these markets have sprung up in a haphazard manner and have infiltrated into retail shopping areas to such an extent that it has created serious problems of overcrowding, intermixing of goods traffic with movement of pedestrian and passenger traffic. Residential houses even those which are situated along narrow lanes are being converted into godowns. Specific problems of various wholesale markets are summarised as under :—

**(a) Wholesale Cloth Markets**

The wholesale trading in cloth is mostly concentrated around Jama Masjid area and in Bairagarh township. Cloth Market at Bairagarh which developed in the year 1949 or so gained importance because of the fact that till recently there was no octroi in this area. Even after levy of octroi the market is still flourishing, it extends over an area of 3 acres. This may suffice for sometime. However, cloth market in Jumerati is overcrowded and needs space for expansion.

**(b) Hardware**

The city has very limited number of shops dealing in wholesale trade of hardware and building materials. These shops are mostly located on Hamidia Road and Loha Mandi area of Chowk. Although Loha Mandi is situated along a wide road but the central space of the road is occupied by loaded and idle trucks and hand carts. Moreover, the roads which provide accessibility to this area are narrow and inconvenient. The city needs a separate Loha Mandi and building material yard where enough space for storage of building materials and movement is available.

**(c) Grain Market Hanuman Gunj Street**

The secondary wholesale business in grain cereals, food-stuffs etc. is conducted at Hanuman Gunj Street on the road space. Due to non-availability of space for loading and unloading, parking and storage, most of the trucks which bring goods, are parked on the road leading to Chowk area. Godowns and warehouses have been established along narrow streets in Mangalwara, Jumerati, Aliganj along Mandir Kamali Road and Road from Laxmi Talkies to Jumerati. Loading and unloading activities and transportation of goods through trucks, hand carts bullock carts create serious traffic jams in this part of the city.

**Mandis**

Mandis functioning in the city are :— Grain, Timber, Vegetable, Fruit and

Grass. These are located mostly in and around the Main City area. The problems of space and location of these mandis are given below :-

**(d) Grain Mandi**

The grain mandi is located in Laxmiganj area of the city. The total area under this mandi is nearly 3.6 hectares. This mandi is not able to cater for even to the present needs of the city. More space will obviously be required to expand the existing mandi. However, in view of the limited space available for expansion at the present location, it will be desirable to consider the possibility of shifting the existing Mandi so as to serve future needs of the city and to provide space for mandi and allied activities like agro-service centres, repair workshops for agriculture implements, truck and cart parking and if possible, agro-based industries also.

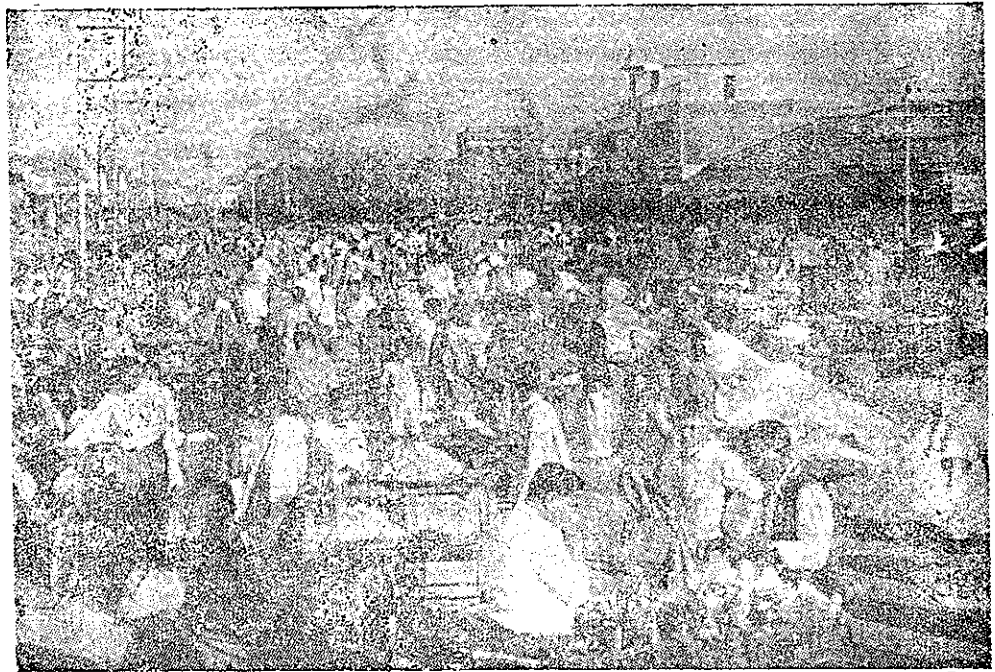
**(e) Timber Market**

It is surprising that Hamidia Road, which, owing to its location and sufficient width could have been one of the best shopping streets of the city, has been converted into most incongruous streets of the city by location of Saw mills and Timber godowns and other unharmonious activities in haphazard manner along the road, Saw mills have also been established near Railway Goods yard near Bharat Talkies. Recently these have overflowed to Raisen Road and are also causing obstruction to regional traffic. According to the proposals contained in the Interim Development Plan, a new site for timber market is under development near Chhola Railway station and a categorised market is also being developed near Straw Products. Saw mills and wholesale timber trade is to be shifted to the timber market near Chhola Railway station and Retail market is to be shifted to 'categorised market' near Straw products. It will be desirable to examine the situation in the wake of nationalisation of timber trade in the State and see if the location and space provided for these two markets are sufficient.

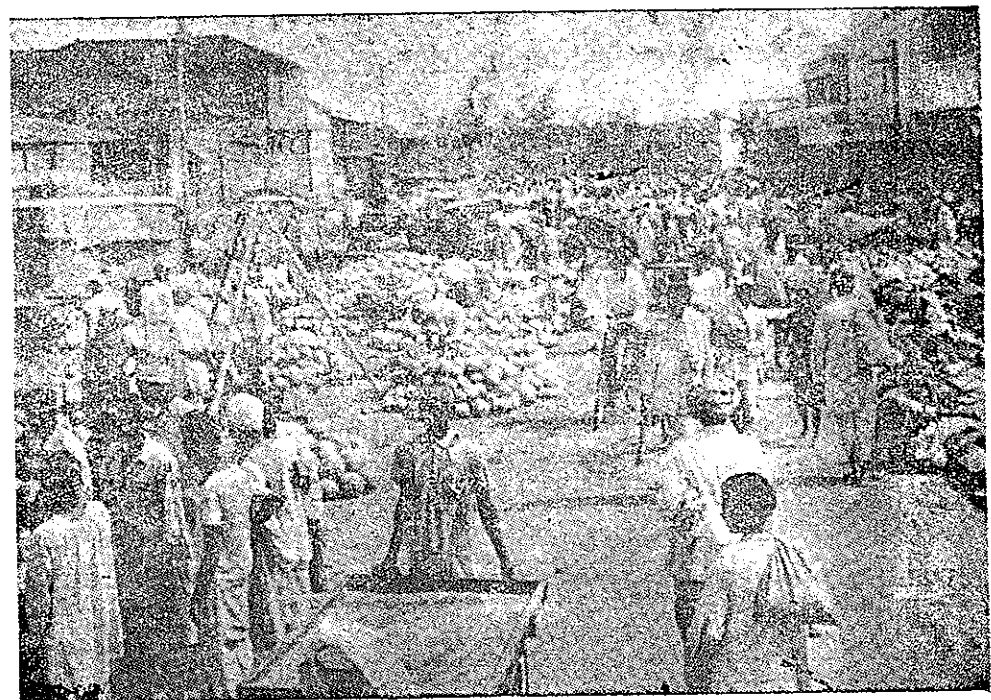
**(f) Vegetable cum-Fruit Market**

Presently the vegetable-cum-fruit market is also functioning on the road space created by removal of fort wall. This road space could have provided a very good vehicular access to otherwise inaccessible central area. According to the proposals contained in the Interim Development Plan a vegetable cum-fruit market is being developed in Gurbaksh-ki-Talliya. This market is proposed to be shifted to this new site. However, even this market will not be able to serve the future city needs both for retail as well as wholesale market. This market will only provide an interim relief. A separate wholesale

vegetable market will have to be developed to fulfil the needs of the city and various townships



*Vegetable, fruit and kirana market functioning on road space.*



#### **(g) Grass Market**

Presently one grass market is situated between Budhwara Road crossing and Itwara Gate. This area is now situated near an important shopping area of the city. Moreover, the market is located on the road space which obstructs traffic. It will, therefore, be necessary to shift this market from its present location.

Another grass market is situated along Chhola Road near Bus stand. This Market will also require shifting from the present site so that this could be utilised for more efficient urban uses.

#### **(h) Cattle Market**

Paradoxically Bhopal also has a regular market for trade in cattle. It serves as an important centre for supply of cattle to different parts of the region. A weekly cattle market is held in Jehangirabad area of the city. The total area available for this purpose even after encroaching on a playground and road, is estimated to be nearly 1 hectare. Obviously the space is not sufficient and there is no possibility for expanding the market at this place. It will be worth while to reserve sufficient space for this purpose at some other location.

### **5.13 Categorical Markets**

#### **(a) Kabadi Market**

Kabadi Market is functioning right in the centre of the city on the space created by removal of fort wall. Because of this market some allied activities such as manufacture of thelas, Iron and Tin goods have also sprung up in the same vicinity. According to the proposals contained in the Interim Development plan the Kabadi Market as well as Tin smithy and other workshops are to be shifted to the categorised market being developed near Straw products along Chhola Road. Unless this scheme is implemented it will neither be possible to improve the environment of the retail shopping area of the city nor to provide proper access to the central business area of the city.

#### **(b) Workshops and Repair Shops**

There is a sizable increase in the number of fast moving vehicles. Scooters and motor cycles have become a popular mode of transportation because of long distances in different townships and the main city. This has given rise to haphazard growth of workshops and repair shops in various parts of the city. Some roads have specialised in repairing of cars and heavy vehicles

like trucks and buses. Concentration of these activities in various parts of the city is enumerated as below :—

Truck Repairs	Hamidia Road, Chhola Road.
Car Repairs	Model Ground (Piplani and Bairagarh Bus Stand Terminus) Opp. State Bank and Old Secretariat.
Scooter and Motor Cycles	Noormahal Road, Royal Market, Near Peer Gate, Budhwara, Near Bharat Talkies, Roshanpura Naka, Bairagarh, Berkhedha Market.

Workshops and Repair shops have added to the problem of congestion particularly on Hamidia Road and Chhola Road where the trucks are parked on the road side for repairs. Other areas facing problem due to repair works of scooters and motor cycles are Noormahal and Bharat Talkies roads. A suitable site needs to be reserved in the Development Plan for this purpose.

#### (c) Tin and Steel Goods

These are located in the triangular space between Imami Gate Road and Bhopal Talkies. These are all single storeyed temporary structure. In addition to it, there are several shops behind Laxmi Talkies which are engaged in manufacturing tin and steel goods. With the increase in population of the city and the region, there is a great demand for such articles and it is necessary to reserve some space for this purpose in the new market centre proposed to be developed.

### 5.14 Transport Agencies

The transport agencies are mainly concentrated in Jawahar Chowk (Jumerati area), Saifia College Road, Itwara and Mangalwara. These areas are no doubt, main centres of commercial activity, but forwarding agencies along their narrow roads create numerous problems. Adequate space for loading and unloading of the goods, parking of trucks and circulation space for movement of trucks is not available. It is imperative to shift these transport agencies from this area. The future location will have to be in conformity with the location of mandies and other wholesale markets.

### 5.15 Centres of Retail Trade

#### (a) City Level

Chowk area around Jama Masjid is the parent city centre for retail trade and commercial activity. In earlier stages of rapid growth of population of the

city during 1955-65, it began to assume a greater importance. Till 1964-65 this was the only market of the city. Owing to the time lag between requirement of new shopping areas and the development of same in capital project township and the B. H. E. L. township, the impact of growth of trade and commerce was by this shopping centre. Even at this stage there is no other shopping area which can claim to provide variety in various commodities. However, many activities and non-conforming uses have invaded this area. This has changed the environment and character of the area. Chowk area is characterised by almost straight streets but not wide enough to provide for all commercial activities and consequent vehicular, thela and pedestrian traffic. Moreover, this shopping centre is situated on the north-western corner of the new townships and owing to peculiar topography of the city the distance between the new township and this centre is much more than it would be in a city on flat land. It will not be possible, therefore, for this area to cater for unlimited commercial activity. The trade will tend to specialise commodity-wise and the present area will continue to play an important role in the trade and commerce of the city, provided selective commercial development is encouraged in the area so as to maintain its character and enhance its utility to the city and the region. The future city will, however, need a new city level commercial centre which can serve the new townships as well as provide space for growing need for business offices and commercial activities, which cannot function in the parent city centre.

According to proposals contained in the Interim Development Plan, a site along Obeidullah Ganj Road for major shopping centre is being developed by the Improvement Trust. It needs to be examined if it is necessary to provide more space on the eastern side of the Railway line as the B.H.E.L. township and Capital Project township are being inter-linked by a road over bridge which will provide proper vehicular accessibility between areas lying east and west of the Railway line.

#### (b) Other Shopping Centres

Five organised retail shopping centres are being developed in new townships, out of which three are situated in T. T. Nagar while the remaining two have been developed in the B.H.E.L. township. Of these, New Market has gained the status of a main centre of retail trade in the new city area. Pressure of retail trade has been high on these centres, as subsidiary and local shopping centres have not been developed in the respective housing areas. Organised shopping and work centres need to be developed at planning unit level also so as to maintain proper relationship between living areas and distribute the activity throughout the city.



### (c) Weekly Markets

Nearly seven weekly markets are held in local planning area of the city. A major weekly market which needs consideration is the market held in Jehangirabad area of the city. This market caters for a large number of persons. On the market days nearly 3000 shoppers visit the market and 200 temporary shops are arranged by the shop keepers. The market is held on the road space and abutting open space in a most disorganised manner. It is necessary to consider the possibility of allocating appropriate place for this market. Similarly other weekly markets will have to be provided an organised space either at the present location or nearby location keeping in view the feasibility.

### 5.16 Thela Shops

In spite of sudden increase in population and a consequent growth of retail trade, Bhopal did not witness the invasion of gumtees in its shopping area like the city of Indore. But Bhopal experienced something worse than that due to rapid increase in the 'thela shops'. The central shopping area in Bhopal does not have enough space which could be occupied permanently by temporary shops or gumtees. The ingenuity of traders here invented a mobile shop on hand driven thela which by virtue of its mobility could claim parking right on the road itself and thus block the road for any other vehicular traffic. Such phenomenon is witnessed in most crowded shopping areas of the city such as Jumerati, Mangalwara, Kamali Mandir Road and even the new shopping centre in T.T. Nagar. The main cause of growth of thela shops is inadequacy of space for small shops at strategic locations and the ability of thela shop owners to make a living on small income. As will be seen from the table below, thela shops and footpath shops have increased rapidly :

BHOPAL : NUMBER OF FOOTPATH SHOPS & THELAS						5-T. 2
Sr. No.	Year	Number of Footpath Shops			Total No of Thela Shops	Revenue Collected (in Rupees)
		Old City.	Capital Project Area.	Bairagarh		
1.	2.	3	4.	5.	6.	7.
1.	1972-73	528	130	59	1774	23505
2.	1973-74	568	145	76	3067	27387

Source : Municipal Corporation, Bhopal.

The significant increase in number of footpath shops in the capital project area obviously indicates the need for developing organised shopping area in

the newly developing area of the city. Unless some space for thela shops and gumtees is provided, these are likely to remain an essential part of urban scene at places where they would cause maximum chaos and obstruction, reducing vehicular mobility.

### 5.17 Growth of Shops and Commercial Establishments

Owing to very weak economic base of Bhopal, its inhabitants suffered from extreme poverty. The city turned corner only after reorganisation and experienced a phenomenal increase in the number of shops and commercial establishments. The city presently houses nearly 8000 registered shops and commercial establishments. Table below shows the trend of growth of shops and commercial establishments in the city :

BHOPAL : SHOPS AND COMMERCIAL ESTABLISHMENTS

5-T.3

Year	Shops	Commercial Establishments	Other Establishments	Total	Number per 1000 persons
1.	2.	3.	4.	5.	6.
1960	4048	44	628	4720	22
1961	4899	59	782	5740	25
1965	4949	65	724	5738	20
1970	6189	180	852	7221	20
1971	5958	259	800	7017	19
1973	6700	294	837	7831	19
Percentage (1973)	85.5	3.8	10.7	100.0	

Source : Assistant Labour Commissioner, Bhopal.

The above table reveals that although number of registered shops and establishments has nearly doubled from 4720 in 1960 to 7831 in 1973, the number of shops per 1000 persons has declined from 25 in 1961 to 19 in 1973. Obviously, the growth of shops has not kept pace with the growth of population and the number of unregistered and small shops seem to have increased.

Indore which is an important commercial-cum-industrial city recorded 25 registered shops and establishments per 1000 persons.

In 1961, Commercial areas (wholesale market, wholesale and retail shopping, cinema etc.) measured 51 acres which give rate of 0.2 acres per 1000 persons. As per 1970 land use survey, commercial areas have increased to 142 acres, which give rate of 0.4 acres per 1000 persons. Even the increased land utilisation rate of commercial areas is much below in comparison to other cities. This fact is supported by census houses used for shop, shop-cum-dwellings, restaurants, business, their number increased from 4559 in 1961 to 5377 in 1971 recording only a marginal increase of 18% during 1961-71.

### 5.18 Problems of Trade and Commerce

Studies of commercial areas revealed that land under commercial use is inadequate, resulting in constant change of residential areas into commercial area. The front portion of Lakherapura is rapidly being converted into commercial use and so is the case in the Malviya Nagar, opposite New Market where the residences are converted into shops. The first and second floors are gradually being occupied by business offices. In the main city, business area appears highly cramped with very little scope for its expansion.

Road space in central area is still occupied by retail shops, fruit and meat market in Itwara, wholesale and retail vegetable market and market in Jumerati resulting in complete checking of a useful road space around the central areas.

Owing to shortage of space for wholesale trade and warehousing, these are functioning on road space along narrow streets in Mangalwara, Jumerati, Aliganj, along Mandir Kamali Road and road from Laxmi Talkies to Jumerati. The loading and unloading activities and transportation of goods in truck, and hand carts often create traffic jams in the city and cause inconvenience to transport agencies also. These agencies need to be provided more space at better locations. Wholesale fruit and vegetable market also needs more space which is not available in Mangalwara. Loading and unloading of foodgrains in Hanuman Ganj continues to post many problems. Khadi Market is of course likely to be shifted to categorised market being developed along Chhola Road.

### 5.2 OFFICES

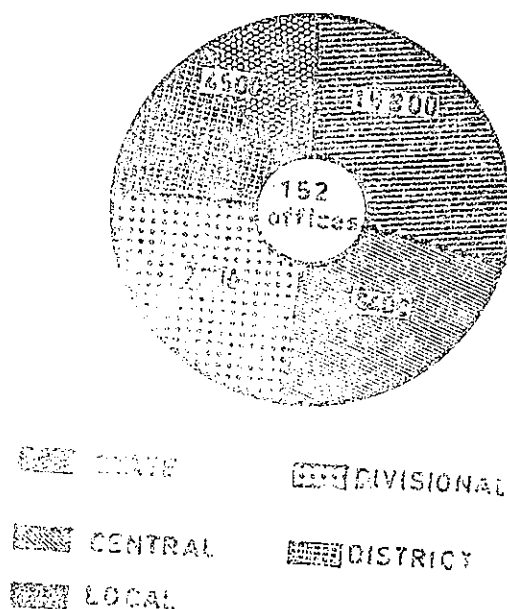
Ever since Bhopal became the seat of State Government, the city has been continuously receiving state level offices which were previously located in different places in the State. In addition, the city has to function as Divisional

and District headquarters. There is, therefore, great demand for office accommodation, which could not be provided except in old and new secretariat. Most of these offices have occupied residential buildings. Evidently this situation has produced scattered and unrelated distribution of offices.

## 5.21 Hierarchical Structure of Offices

Offices of the Central Government, semi-Government organisations, autonomous bodies, business offices, banking institutions, and similar other regional offices have been and are being located at Bhopal. The city has entire range of hierarchical administrative offices. Their unrelated and scattered locations obviously have impaired their efficient functioning causing inconvenience to the public. This also has effected seriously the nature of close relationship, which otherwise should exist between the various offices for efficient discharge of administrative functions.

**B H O P A L**  
**51 OFFICE HIERACHY**



The table 5-T.4 gives hierarchical structure of various offices :

BHOPAL : HIERARCHICAL STRUCTURE OF GOVERNMENT OFFICES 5-T.4

S. No.	Hierarchy of offices	Number Total	Distribution			
			T. T. Nagar	Main City	Bairagarh	B.H.E.L.
1	2	3	4	5	6	7
1.	State Level	45	24	21	—	—
2.	Central Govt.	35	8	15	9	3
3.	Divisional	37	16	20	—	1
4.	Dist. Level	21	—	21	—	—
5.	Local	14	5	8	1	—
Total		152	53	85	10	4

*Source :* Surveys conducted by Town & Country Planning Department.

Major concentration of these offices is in the old secretariat (23), followed by Jawahar Chowk (15), Jehangirabad (14) Malviya Nagar (10), Shahjahana- bad (10), Bairagarh (10), Gol Ghar (7), Vallabh Bhawan (7), Sadar Manzil (6), Professors Colony (7).

Except for Vallabh Bhawan, old secretariat and Jawahar Chowk ( temporary sheds ), almost all the offices need separate office accommodation. Even offices located in Jawahar Chowk under temporary sheds require new office buildings. Looking to the specialised need of administrative functions, hierarchical distribution of office complex and necessity of inter-relation between them, every care needs to be taken to achieve locational efficiency.

The next table gives inventory of offices giving hierarchical structure and location in different constituents of city :

**BHOPAL : INVENTORY OF OFFICES**

5-T.5

Status	Main City		T. T. Nagar		Other Places	
	Location	No.	Location	No.	Location	No.
1	2	3	4	5	6	7
Central Government Offices (35)	1. Idgah Hill	2	1. Malviya Nagar	2	1. B. H. E. L.	3
	2. Station Area	1	2. Prof. Colony	4	2. Bairagarh	9
	3. Hamidia Road	1	3. Shamla Hill	2		
	4. Benazir	1				
	5. Gol Ghar	2				
	6. Taj Mahal	1				
	7. Sadar Manzil	3				
	8. Imami Gate	1				
	9. Ahmedabad Palace	1				
	10. Old Secretariat	2				
Total		15		8		12
State Level Offices (45)	1. Jehangirabad	4	1. New Market	2	Nil	
	2. Shahjahanabad	1	2. Jawahar Chowk	4		
	3. Benazir	3	3. Malviya Nagar	5		
	4. Gol Ghar	2	4. T. T. Nagar (1250)	2		
	5. Bab-e-Ali	1	5. T. T. Nagar (1464)	3		
	6. Ibrahimpura	1	6. Habibganj	1		
	7. Old Secretariat	9	7. Vallabh Bhavan	7		
Total		21		24		
Divisional Offices (37)	1. Budhwara	1	1. New Market	2	1. B. H. E. L.	1
	2. Jehangirabad	5	2. Jawahar Chowk	7		
	3. Lady Hospital	1	3. Malviya Nagar	3		
	4. Gol Ghar	1	4. Habibganj	1		
	5. Bab-e-Ali	1	5. Shamla Hill	1		
	6. Ibrahimpura	1	6. Prof. Colony	2		
	7. Fateh Garh	1				
	8. Sadar Manzil	1				
	9. Old Secretariat	5				
	10. Benazir	3				
Total		20		16		1

1	2	3	4	5	6	7
Distt. Offices (21)	1. Budhwara 2. Jehangirabad 3. Hamidia Road 4. Shahjahanabad 5. Benazir 6. Gol Ghar 7. Putli Ghar 8. Fateh Garh 9. Old Secretariat	1 4 1 2 3 2 1 1 6	Nil		Nil	
Total		21		—		—
Local Admi-nistra-tion (14)	1. Budhwara 2. Sadar Manzil 3. Jehangirabad 4. Old Secretariat	4 2 1 1	1. Jawahar Chowk 2. Prof. Colony	4 1	Bairagarh	1
Total		8		5		1
Grand Total		85		53		41

Source : Surveys by Town & Country Planning Department.

## 5.22 Office Employment

The total strength of office employees in 1971 was nearly 36500. The Central Government employees from 16.6% of total strength. Autonomous bodies of Central and State Government share 22.4% of total employees. This does not include employees of B. H. E. L. The remaining 61% is accounted for by Government employees of State level, Divisional level, District and local level. This includes 2500 staff working in Vallabh Bhavan.

The table 5-T.6 gives number of employees in offices of different levels :—

## BHOPAL : OFFICE EMPLOYMENT

5-T.6

S. No.	Category	No. of Employees ( 1971 )	Percentage
1	2	3	4
1.	Central Government	6,366	16.6
2.	State Level	11,294	29.4
3.	Divisional Level	7,694	20.0
4.	District and Local level	4,471	11.6
5.	Semi-Govt. and Autonomous Bodies	8,599	22.4
Total		38,424	100.0

Source : Compiled from data received from Directorate of Employment and Training, Jabalpur.

## 5.23 Offices in Rented Buildings

The shortage of office accommodation is reflected from the fact that nearly 41 offices are housed in rented buildings accommodating nearly 2300 employees. 29 offices are located in capital project area, 11 offices are situated in old city area while only 1 office is located in B.H.E.L. area. These offices are paying annual rent of Rs. 4.63 lakhs.

The following table shows distribution of various offices housed in rented buildings :-

## BHOPAL : OFFICES IN RENTED BUILDINGS

5-T.7

Sr. No.	Category	No. of offices	No. of employees	Annual rent in Rs. (lakhs)
1	2	3	4	5
1.	State Level	11	994	2.21
2.	Divisional Level	11	614	1.33
3.	District Level	12	516	0.70
4.	Local Level	7	179	0.39
Total		41	2303	4.63

Source : Field survey conducted by Town & Country Planning Department.



The offices employing sizable employment are Directorate of Panchayats and Social Welfare, Conservator of Forests, Directorate of Tube Wells, Directorate of Irrigation and Research, Directorate of Technical Education, Directorate of Local Bodies etc. at the State level; Superintending Engineers, Public Health Division and Survey Division, Regional Transport office, Sales Tax office etc. at Divisional level; Executive Engineers, Public Health Divisions, Govt. Milk Scheme etc. at District level.

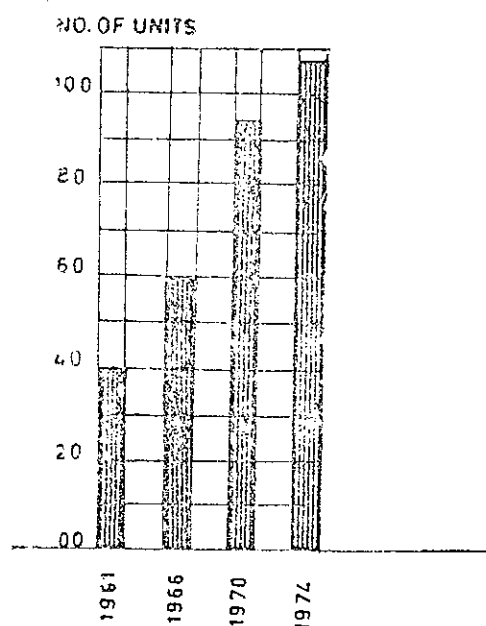
It will be desirable to develop new administrative complexes to provide accommodation to various offices who are either short of accommodation or housed in rented buildings or having sub-standard office accommodation.

### 5.3 INDUSTRIES

#### 5.31 Growth of Industries

Industrial units located at Bhopal belong to recent past i. e. after 1936, when Nawab Hamidullah Khan encouraged location of Industries at Bhopal, and offered inducements to entrepreneurs in terms of grant of free land, cheap power etc. The city received some industries during 1936-47. Important industrial units like Bhopal textile mill. Straw Products, Central India Flour Mill were established during this period. Post Independence period could not keep up even this growth trend, till Bhopal was selected for location of

**B H O P A L**  
**5.2 GROWTH OF REGISTERED**  
**INDUSTRIAL UNITS**



B. H. E. L. and a large Industrial township started taking shape. This gave rise to ancillary industries and an Industrial Estate along Raisen Road was established. Within a short period the Estate has grown into a large industrial area covering nearly 140 hectares. Industries in Chhola area have also been established at Mandideep along Hoshangabad Road. This is an indication of the increasing importance of Bhopal as an industrial centre also.

### 5.32 Industrial Establishments by Employment

The city has very large number of small and unregistered units located all over the city. The 1961 census revealed that nearly 90% of the total establishments employed up to 5 workers only. Out of total industrial establishments of 1696, 1537 units belong to this category. Only 5 establishments employed more than 100 persons, out of this only one unit was situated in the city while the remaining four were outside the Municipal Limits.

The table given below gives the details in respect of the size of establishments in terms of employment;

BHOPAL : INDUSTRIAL ESTABLISHMENT (BY EMPLOYMENT) 5-T. 8			
S. No.	No. of Workers	No. of Establishments	Percentage to Total
1	2	3	4
1.	1	589	34.7
2.	2-5	948	55.9
3.	6-9	76	4.5
4.	10-19	48	2.9
5.	20-49	24	1.4
6.	50-99	6	0.3
7.	100 and above	5	0.3
Total		1696	100.0

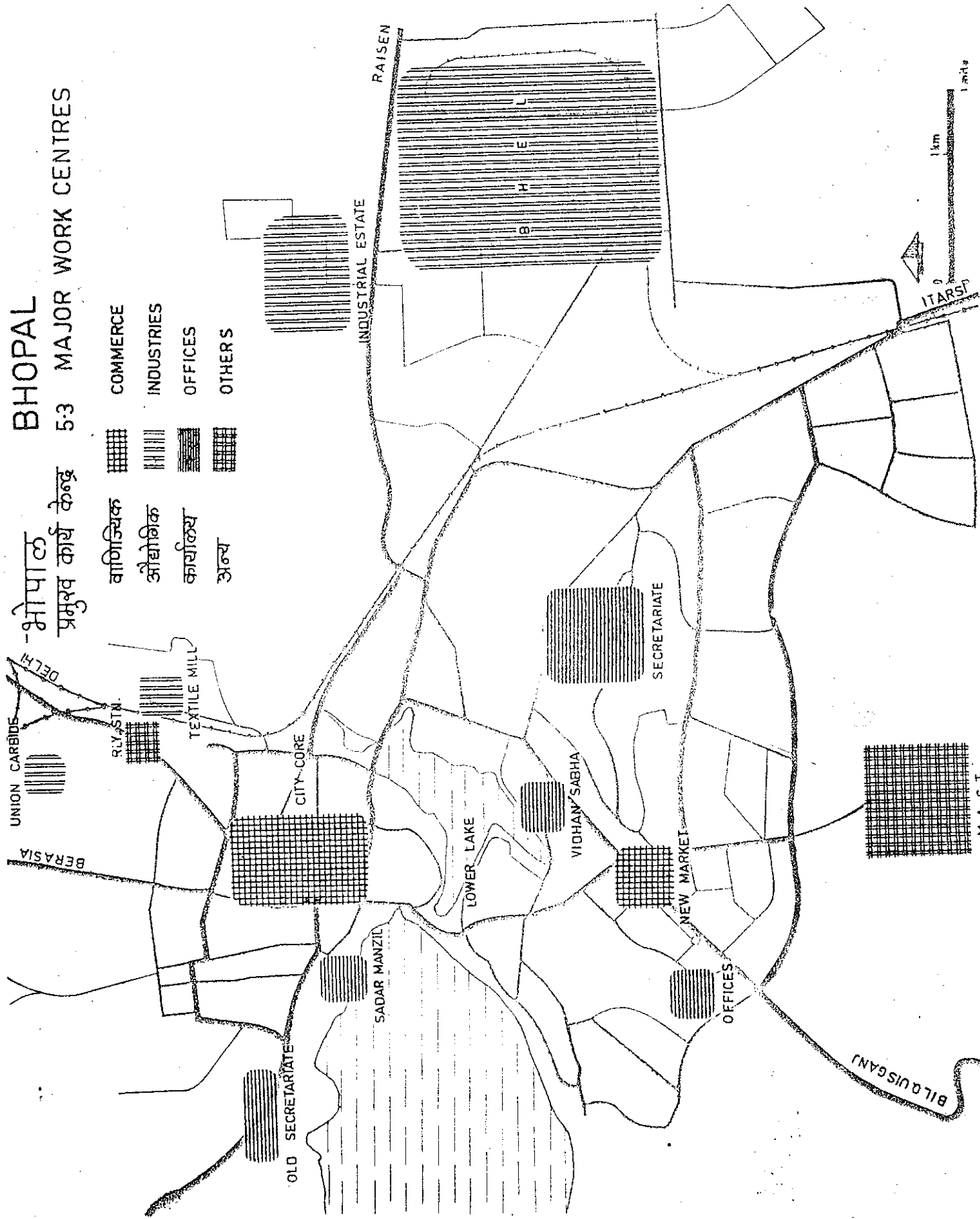
Source : Census Report 1961.

During the period from 1961 to 71, the city has experienced a continual increase in large and medium size industries which have increased from 5 in 1961 to 15 in 1971, out of which 5 are located outside the Municipal Limits. Small industrial units employing up to 5 workers per unit within the city limits still

# BHOPAL

## प्रमुख कार्य केन्द्र 5.3 MAJOR WORK CENTRES

- |           |            |
|-----------|------------|
| वाणिज्यिक | COMMERCE   |
| औद्योगिक  | INDUSTRIES |
| कार्यालय  | OFFICES    |
| अन्य      | OTHERS     |





account for 90% (1971 census) units. This fact needs to be taken into consideration while planning industrial estates and industrial area. Most of the small industrial units can also be located in flatted factories on the fringe of the central area which will reduce travel distance, and provide market facilities of these industries.

BHOPAL : INDUSTRIAL ESTABLISHMENT BY EMPLOYMENT IN  
"MUNICIPAL CORPORATION LIMITS" 5-T.9

S. No.	No. of Workers	No. of Establishments		Percentage to Total		Percentage Increase 1961--71
		1961	1971	1961	1971	
1	2	3	4	5	6	7
1.	1	527	913	34.31	42.01	73.0
2.	2-5	871	1045	56.72	48.10	20.0
3.	6-9	69	132	4.49	6.08	91.3
4.	10-19	44	45	2.86	2.07	2.3
5.	20-49	20	21	1.30	0.96	5.0
6.	50-99	4	7	0.26	0.32	75.0
7.	above 100	1	10	0.06	0.46	900.0
Total		1536	2173	100.00	100.00	41.5

*Source : Census Report, 1961, Provisional 1971 Census Data.*

### 5.33 Industrial Establishments by Type

Industrial pattern by type is reflected in the table No. 5-T.10 which is based on the information available in 1961 census reports. It can be easily seen that out of 1696 nearly 25% i.e. one out of every four units is engaged in manufacturing food-stuffs, followed by textile goods (19%), transport equipments (12.9%), basic metal (8.1%), wood and wooden products (7.6%).

Thus it can be said that most of the industrial establishments are manufacturing consumer articles and are of such type that sizable number of units can be accommodated in flats. The ground floor can be more efficiently

used for industries. The table below gives number of industries according to type :

BHOPAL : INDUSTRIAL ESTABLISHMENT BY TYPE

5-T.10

S. No.	Type (major group)	Total No. of industrial establishment	Percentage
1	2	3	4
1.	Food-stuffs	408	24.1
2.	Beverages	11	0.6
3.	Tobacco products	111	6.6
4.	Textile	324	19.1
5.	Wood & wooden products	129	7.6
6.	Paper & paper products	14	0.8
7.	Printing and publishing	40	2.4
8.	Rubber petroleum and coal products	13	0.8
9.	Leather and leather products	77	4.5
10.	Chemical and chemical products	20	1.2
11.	Non-metallic mineral products	1	0.1
12.	Manufacture of earthenware & earthen pottery	29	1.7
13.	Basic metal & metal product except machinery & transport equipment	138	8.1
14.	Electrical equipment & machinery other than transport	58	3.4
15.	Transport equipment	219	12.9
16.	Miscellaneous manufacturing industries	104	6.1
		1696	100.00

A study of industrial units by size and type indicates that large number of small units can be suitably housed in flatted factories. Such units which

### 5.35 Incompatible Industries

Considering the performance characteristics and nature of traffic generated by these units, some industries have been identified as incompatible. The details of such units are summarised in the table as under :

BHOPAL : INDUSTRIES EARMARKED FOR RE-LOCATION

S. No.	Present Location	Type of Industry
1.	Hamidia Road	Saw Mills.
2.	Hamidia Road	Engineering Works.
3.	Chiklod Road	Saw Mills & Wooden articles.
4.	Station Road	Saw Mills & Wooden articles
5.	Pull-Bogda	Distillery.
6.	Pull-Bogda	Bone Mill.
7.	Jehangirabad	Tannery & Glue Factory.
8.	Putli Ghar	Engineering Works.
9.	Noor Ghar	Engineering Works.
10.	Near Bhopal Talkies & Sindhi Market	Tin articles
11.	Laxmiganj	Dal & Oil Mills.

### 5.36 Land Utilisation Rate

In order to make an assessment of land utilisation for industries, field investigations were undertaken which have revealed interesting results. Most of the industrial units at Bhopal have provided for more space per worker as compared to units at Indore. Table 5-T.13 gives the land utilisation rate for some units, as compared with that of Indore.

# BHOPAL : LAND UTILISATION RATE

5-T.13

S. No.	Type of Industry	Land per worker (sq.ft.)	
		Bhopal	Indore
		3	4
1.	Flour Mills	3884	N A.
2.	Dal Mills	3170	1640
3.	Biscuit and Confectionary	11	130
4.	Ice Factory	3070	720
5.	Ginning Factory	1328	N A.
6.	Textile	995	3721
7.	Saw Mills	1570	N A.
8.	Wood Products	370	1775
9.	Printing Press	433	127
10.	Straw Product	1216	N A.
11.	Engg. Works	1388	1060
12.	Miscellaneous	1626	7300

Source : Field Survey, Town & Country Planning Department.

This illustrates the fact that ratio of utilisation of industrial land even for the same type of units is not the same. However, this data would help in assessing the general land requirement for industries and to arrive at a general acceptable norm.

## 5.37 Industrial Infrastructure

Bhopal, the principal regional city of the Bhopal Capital Region, (apart from being the seat of State Capital) is assuming manufacturing function as well. In fact, administrative facilities and effective rail and road linkages, linking the city with all the major metropolitan cities of the country are important factors for development for Industries at Bhopal. B.H.E.L., an industrial township, extending over 300 hectares has made significant contribution in the field of manufacturing heavy electrical equipments. An industrial estate and industrial area with nearly 225 units covering over 140 hectares has provided an industrial climate. Another industrial complex



forthcoming in Mandideep area will further strengthen industrial activity in the city. Although sufficient land for development of industrial area is available at Bhopal, yet the city suffers from inadequate water supply. There are proposals to tap Parvati as well as Halali Projects for augmentation of the water supply to the city. However, implementation of these projects is likely to take sometime, sufficient water supply to industries cannot be assured. In the meantime location of water-intensive industries at Bhopal should be discouraged.

In case, Halali Project is tapped for water supply to the city as well as to the industrial units, disposal of industrial wastes will be a great problem which will have to be tackled. Industrial waste from straw products and also from obnoxious industries which can only be located on the north-eastern corner of the city will discharge their effluent into natural drainage system which joins Halali river and will, therefore, pollute the source of water supply to the city itself. It will have to be examined if the 'nullah' which carries industrial waste can be diverted before it joins river Halali or the water is utilised for irrigation purposes. In that case, these obnoxious industries (including water polluting) can be allowed to be located on the north—eastern corner of the city.

### 5.38 Industrial Problems

Bhopal has still to establish as major industrial centre, and as such does not pose many industrial problems except for stray obnoxious industrial units like glue factory, tannery and distillery etc. These units have caused serious environmental problems for the southern part of the T. T. Nagar and developments along Raisen Road where wind spreads the foul air over the habitated area. Saw mills and such similar industrial units are already being shifted in organised areas. Random quarries, in and around the city have posed some problems and are creating a problem of land dereliction. It is essential to prescribe precisely actual sites where such quarrying operations could be permitted together with period and extent of quarrying. Some of the hillocks, which offer an interesting landscape element in the setting should not be quarried upon. The Development Plan will have to spell out effective control over quarrying activities.



## Chapter 6

### TRAFFIC AND TRANSPORTATION

Transportation network of a city plays an important role, and effects intimately the city's economic and socio-cultural life. A well laid out road network can provide answer to many problems of urban life. Historic cities often have very complex road network. Bhopal, besides having all the complexities imposed by historic events, has added disadvantage of its peculiar topography which is unsuitable for convenient and direct road linkages.

The efficiency of the road and railway network needs to be examined both in terms of inter-city and intra-city movement. The growing demand of movement space calls for scientific assessment of the problems of movement, such as circulation pattern, road geometrics, road capacities, inaccessibility so that remedies could be evolved both in terms of short term as well as long term measures. This requires systematic traffic surveys, engineering surveys, which have to be related to existing land use pattern, points of traffic generation, age and condition of structures. These studies will bring out problems as well as possibilities of improvement with least disturbance in existing pattern.

#### 6.1 TRANSPORTATION SYSTEM (REGIONAL)

The inter-city movement of goods and passenger takes place by three forms of transportation system viz., Rail, Road and Air. Bhopal being situated on the main broad gauge Railway line, is linked with all metropolitan centres of the

country viz., Delhi, Madras and Calcutta through Bilaspur. All these rail links happen to be the vital transportation links of the country. Road network also links the capital with other important cities of the country through National Highway No. 12, which connects N.H. 7 on the eastern side at Jabalpur and N.H. 3 on the western side at Biora. Two more National Highways are proposed. One will connect the city with N.H. 2 (Delhi-Kanpur-Calcutta) at Kanpur on the northern side with N.H. 3 at Dewas and the other will connect N.H. 7 (Varanasi-Hyderabad-Bangalore) at Nagpur with N.H. 3 at Biora. With these connections Bhopal will have 3 National Highways (N.H. 12 and two proposed National Highways) crossing each other within the planning area of the city. Planning of through road traffic will, therefore, require careful considerations.

The city is also connected with other important cities of State like Indore, Gwalior, Jabalpur, Raipur etc. through a network of State highways. District roads connect the city with its hinterland, but there is need to develop effective linkages within the region and the hinterland.

The city is already on the air map of India linking it with inland air route of Delhi Gwalior-Bhopal. Bhopal-Calcutta flight via Nagpur, Raipur, Ranchi has been presently discontinued but it is likely to be resumed. Thus Bhopal is likely to receive considerable air traffic also in the future. The present airport is situated within 5 k. m. from Lalghati (M. C. limits) the pressure of development around the airport will therefore be high. The Development Plan should specify the type of development permissible around the airport. It will also be necessary to integrate development of airport with the overall development of the city.

#### 6.11 Regional Traffic (Passenger/Buses)

Bhopal being the administrative centre of the State, generates considerable passenger traffic by road also. Nearly 213 buses come to Bhopal daily and the same number leave Bhopal for other cities. Bus traffic has been steadily increasing. During the last 10 years 1964-74, the bus traffic along Bhopal-Raisen Road has increased by 50% and along Bhopal-Sehore Road by 30%. Besides this, a large number of taxis ply between Bhopal and Indore. The actual increase of passenger traffic between these two cities is much more than 30% as reflected in the next table :—

can be accommodated in flatted factories are :—

1. Bakery
2. Confectionaries
3. Sweat Meats
4. Hosiery Goods
5. Readymade Clothes
6. Thread Ropes
7. Paper Board Articles
8. Shoes & other Leather goods from tanned leather
9. Cotton weaving
10. Electrical goods & Radio assembling
11. Small Engineering works
12. Book Binding

#### **5 34 Industrial Establishments by Location**

Most of the medium and large scale industries which came up prior to 1960, are located on the northern and eastern fringe of the city. Interim Development Plan for Bhopal provided for nearly 336 hectares of area for heavy and obnoxious industries near Chhola village. Similarly an area of nearly 300 hectares of land was earmarked for medium and small size industries along Raisen Road. In accordance with the plan proposals, an Industrial area has developed along Raisen Road, and most of the medium size industries such as engineering and metal works, plastic industries, glass works etc. have come up in this area. These industries not only feed the requirements of the Bharat Heavy Industries Limited but also cater for some extent the regional demand also. Most of the industries have been established in an organised way but some air water polluting industries which should have their location near Chhola have also been located in this area, because land at Chhola industrial area is still to be acquired. Segregation of obnoxious industries is essential to maintain the quality of environment within acceptable standards.

**BHOPAL : INDUSTRIAL ESTABLISHMENTS (BY TYPE & LOCATION)**  
(WARD-WISE)

5-T.11

Ward No.	Total Units	Food-Stuffs	Bevarages & Tobacco	Textiles	Products	Paper Products	Printing & Publishing	Leather Products	Rubber Chemical Products	Non-Metallic	Earthen Products	Basic Metals	Machinery	Transport Equip-ment	Misc. Industries
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1.	27	13	—	6	—	—	—	—	—	—	4	1	—	2	1
2.	17	7	—	1	—	—	2	—	1	—	—	—	—	6	—
3.	17	3	—	—	10	—	—	—	1	—	—	—	2	1	—
4.	13	6	—	1	—	—	—	—	—	—	—	—	—	4	2
5.	5	2	—	1	—	—	—	—	—	—	—	—	—	2	—
6.	41	6	1	11	2	—	1	1	4	—	—	4	1	8	2
7.	153	25	2	42	8	—	5	36	—	—	—	5	1	9	20
8.	84	17	—	26	8	—	2	—	3	—	—	4	1	4	19
9.	80	14	3	21	3	1	—	2	7	—	2	4	4	17	2
10.	151	17	1	5	2	—	2	—	1	—	—	68	4	50	1
11.	51	2	7	7	3	—	1	—	2	1	—	9	2	17	—
12.	14	6	—	3	—	—	—	2	—	—	—	2	—	1	—
13.	17	5	—	—	—	8	—	—	—	—	—	1	3	—	—
14.	146	46	13	23	9	—	2	4	1	—	—	18	9	11	10
15.	42	17	9	4	2	2	4	—	—	—	—	—	3	1	—
16.	98	12	6	7	1	1	13	12	1	—	—	2	9	10	24
17.	61	16	1	13	5	2	—	—	1	—	—	3	4	10	6
18.	23	8	2	7	—	—	1	—	—	—	—	—	—	5	—
19.	14	4	3	2	2	—	—	1	—	—	—	—	—	2	—
20.	57	19	5	12	5	—	1	5	—	—	—	2	—	8	—
21.	70	24	11	16	1	—	—	1	—	—	7	—	—	10	—
22.	74	13	18	10	3	—	—	—	2	—	16	—	5	7	—
23.	46	9	2	8	16	—	—	—	1	—	—	—	3	7	—
24.	43	11	4	10	5	—	1	2	—	—	—	2	—	8	—
25.	43	6	10	3	13	—	1	—	2	—	—	—	—	7	1
26.	54	22	4	10	5	—	—	2	2	—	—	2	—	7	—
27.	14	5	2	3	1	—	—	1	—	—	—	—	—	2	—
28.	40	17	1	11	11	—	—	—	—	—	—	—	—	—	—
29.	19	5	1	4	1	—	—	2	3	—	—	—	1	2	—
30.	14	3	—	3	5	—	—	1	—	—	—	1	—	1	—
BHEL.	17	8	—	2	—	—	—	—	—	—	—	—	5	2	—
Baira- garh.	143	39	16	25	13	—	4	5	1	—	—	10	1	13	16
<b>Total</b>	<b>1688</b>	<b>407</b>	<b>122</b>	<b>297</b>	<b>134</b>	<b>14</b>	<b>40</b>	<b>77</b>	<b>33</b>	<b>1</b>	<b>29</b>	<b>138</b>	<b>58</b>	<b>234</b>	<b>104</b>

Source : Census Report, 1961.

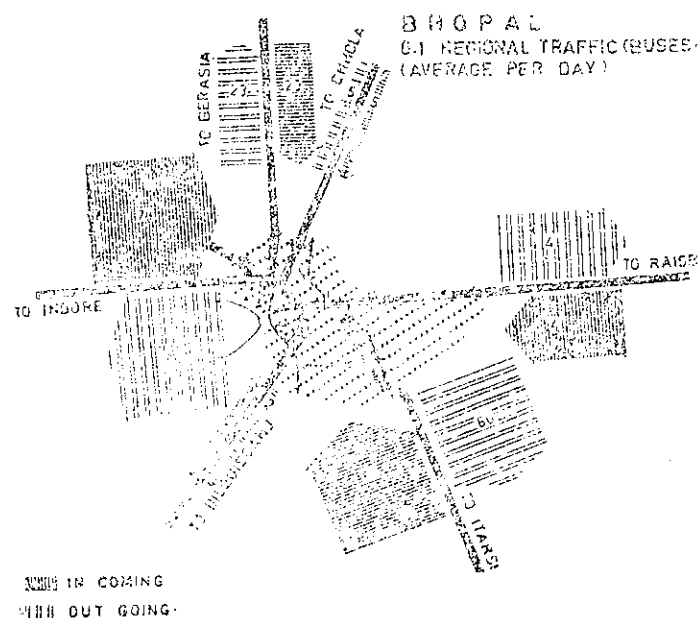
**BHOPAL : REGIONAL TRAFFIC (PASSENGER/BUSES)**

6-T.1

S. No.	Road	Daily Average		Trips		Rate of Growth Over 1964 (Per cent)
		Incoming 1964	1964	Outgoing 1964	1974	
1	2	3	4	5	6	7
1.	Bhopal-Raisen	27	41	27	41	51.8
2.	Bhopal-Sehore Bhopal-Gwalior }	61	78	61	78	27.9
3.	Bhopal-Hoshangabad	61	64	61	64	4.9
4.	Berasia Road	23	23	23	23	0.0
5.	Chhola Road	5	5	5	5	0.0
6.	Bhadbhada Road	—	2	—	2	—
		177	213	177	213	

Source : Regional Transport Survey M. P. S. R. T. C.

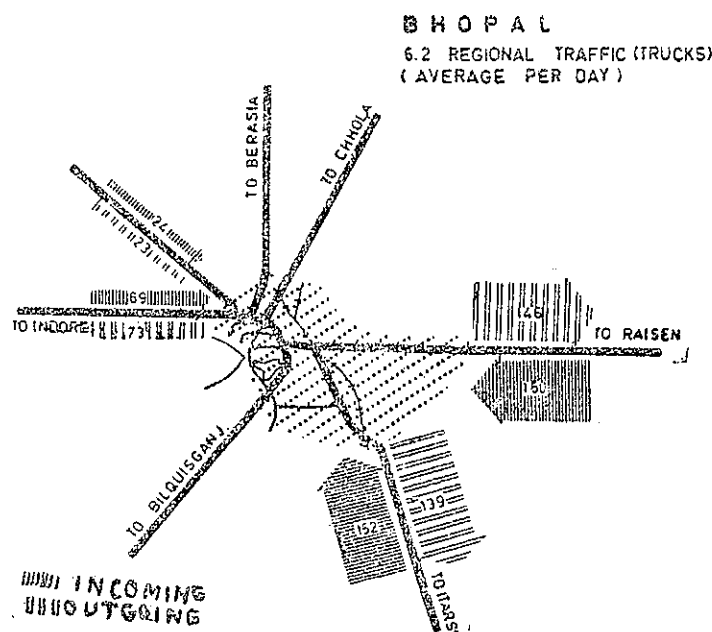
Long distance bus service is also available between Bhopal and Ajmer, Gwalior, Kota, Jaipur, Jabalpur, Bilaspur, Rewa, Nagpur, Raipur etc. Location of Bus terminal centres and movement of regional traffic in the planning area, could therefore require careful consideration.



## 6.12 Regional Traffic (Goods)

Regional goods traffic by road to and from Bhopal is as important as passenger traffic. Nearly 395 trucks enter the city every day. Maximum incoming trucks are from Hoshangabad side and Raisen side. Nearly 381 trucks leave Bhopal daily. Here again maximum traffic is towards Hoshangabad and

towards Raisen. One peculiarity in the regional goods traffic is that a very large number of empty trucks leave the city, out of 381 trucks which go out from Bhopal every day as many as 260 are empty. Maximum number of empty trucks go towards Hoshangabad side which bring in Narmada sand and other building materials, while those going towards Raisen side bring forest produce and building materials. This shows that the city is more of a consuming centre than a distributing centre.



BHOPAL : REGIONAL TRAFFIC (GOODS)

6-T.2

S. No.	Place of Count Road Section	No. of Trucks per Day					
		Empty	Incoming Loaded	Total	Empty	Outgoing Loaded	Total
1	2	3	4	5	6	7	8
1.	LALGHATI						
	(a) Bhopal-Biora	4	20	24	18	5	23
	(b) Bhopal-Dewas	12	57	69	27	46	73
2.	HABIBGANJ						
	(a) Bhopal-Hoshangabad	5	147	152	133	6	139
3.	PUL-BOGDA						
	(a) Bhopal-Sagar	26	124	150	83	63	146
Total		47	348	395	261	120	381

Source : Regional Transport Survey, 1964.



**BHOPAL : REGIONAL TRAFFIC(GOODS) (QUANTUM OF GOODS)**

6-T.3

S. No.	Place of Count	Average per Day	
		Incoming goods M. Tons	Outgoing goods M. Tons
1	2	3	4
1.	LALGHATI		
	(a) Bhopal-Biora	29.9	4.6
	(b) Bhopal-Dewas	159.3	64.0
2.	HABIBGANJ		
	(a) Bhopal Hoshangabad	1039.6	32.0
3.	PUL-BOGDA		
	(a) Bhopal-Sagar	788.3	108.6
	Total	2017.1	209.2

Source : Regional Transport Survey, 1964.

### 6.13 Through Traffic

The Regional Transport Survey conducted in 1964 reflects through traffic (goods) between Sagar and Indore and Hoshangabad and Indore to some extent. However, improvement of road section between Bhopal and Biora (N. H. 3) is likely to induce through traffic along this section also.

**BHOPAL : THROUGH TRAFFIC (GOODS) NUMBER OF TRUCKS PER DAY** 6-T.4

S. No.	From Road Section	To Road Section		
		Bhopal-Sagar	Bhopal-Indore	Bhopal-Hoshangabad
1	2	3	4	5
1.	Bhopal-Sagar	—	38	—
2.	Bhopal-Indore	41	—	—
3.	Bhopal-Hoshangabad	—	16	—

Source : Regional Transport Survey, 1964.

## 6.2 CIRCULATION PATTERN

The circulation pattern of Bhopal has some peculiar features which distinguish the city from other cities of similar size and importance. Problems arising out of these peculiarities will require careful study and approach to arrive at a workable solution.

(a) All regional roads terminate in the city and lose their identity as regional roads. The traffic therefore distributes along many roads, although maximum share is taken by Hamidia Road.

(b) The city and the various townships have their own separate road patterns unrelated to each other. Because the city and the townships were developed in different periods and have different topography also.

(c) The townships do not have proper physical linkages between themselves and between the main parent city. The B. H. E. L. township is separated from T. T. Nagar and the city by a railway line. T. T. Nagar is separated from the whole city by hillocks and two lakes. Bairagarh is a separate entity because it is separated from the city by hillocks and the upper lake.

(d) Road pattern of city and the townships have specific features which are described below.

## 6.21 Main City

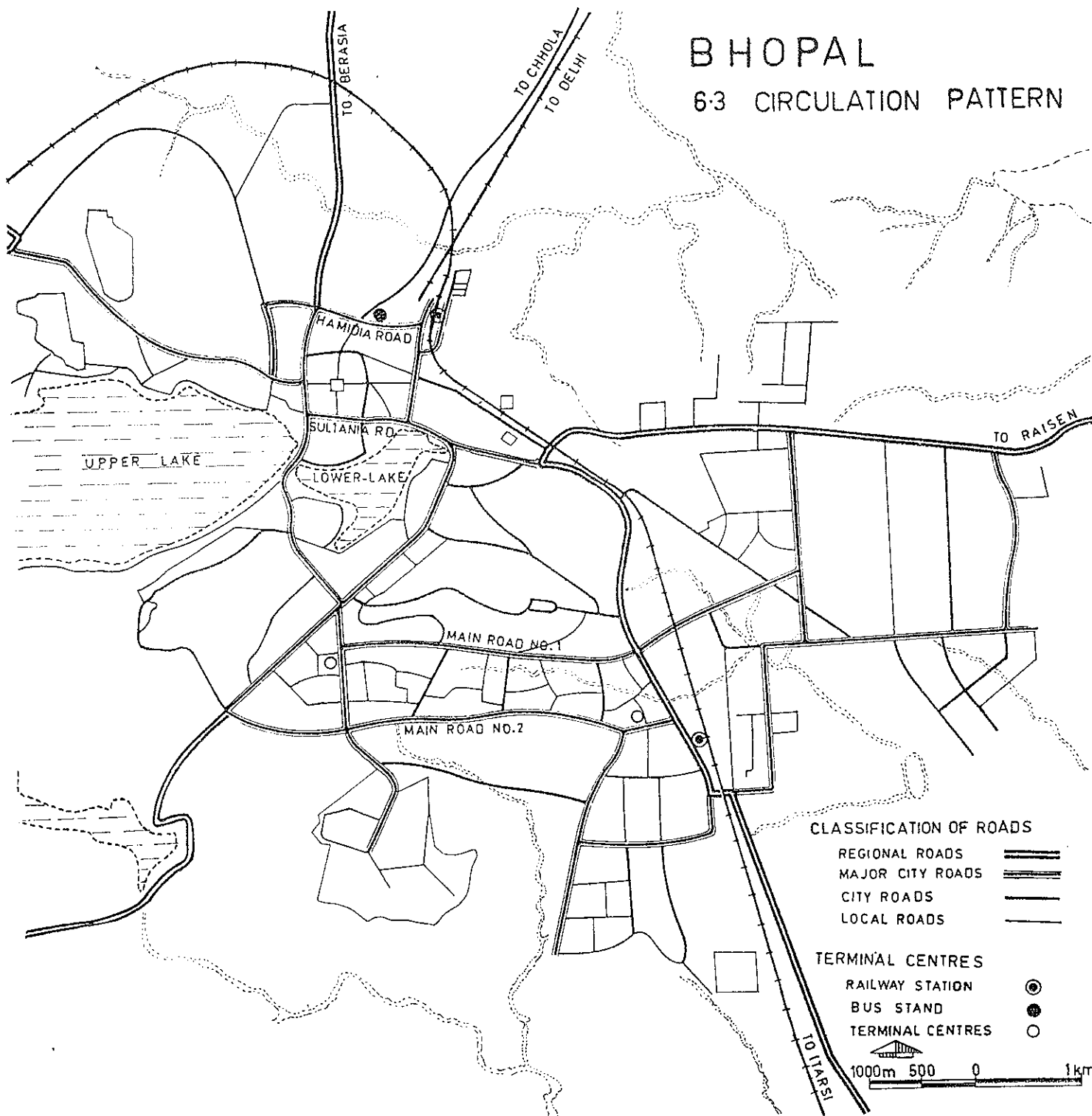
Road pattern of the main city particularly its core is a bold grid iron pattern. The road widths provided originally were in tune with the requirement and character of traffic obtaining during that period when Bhopal was single-centered small town. The road width in this part ranges between 6-12 metre. This area has now assumed the role of main central core for all the townships to certain extent though, nonetheless it attracts vehicular traffic, which this road network is unable to accommodate. This has caused traffic bottle-necks particularly at the points of entry. This has caused traffic bottle-necks particularly at the points of entry. Complex road geometrics add to traffic congestion and confusion. The grid iron pattern corresponding to the parent city core consists of :—

BHOPAL : MAIN CITY NETWORK				6-T.5
Name of Roads	Average Width (in meter)		Accessibility by Bus	
	Right of way	Effective carriage way		
1	2	3	4	
<b>A. East-West Alignment</b>				
1. Hamidia Road	24	12		
2. Sultania Road	18	10.5	Unsatisfactory	
3. Bharat Talkies Noor Mahal	12	8	Unsatisfactory	
4. Itwara Peer Gate	9	6	Inaccessible	
<b>B. North-South Alignment</b>				
1. Railway Station to Pulpukhta	15	9	Average	
2. Marwari Road	9	6	Inaccessible	
3. Ibrahimipura	9	6	Inaccessible	
4. Bhopal Talkies to Kamla Park	10.5	6.5	Accessible in some portion only.	

Source : Field survey by Town & Country Planning Department.

# BHOPAL

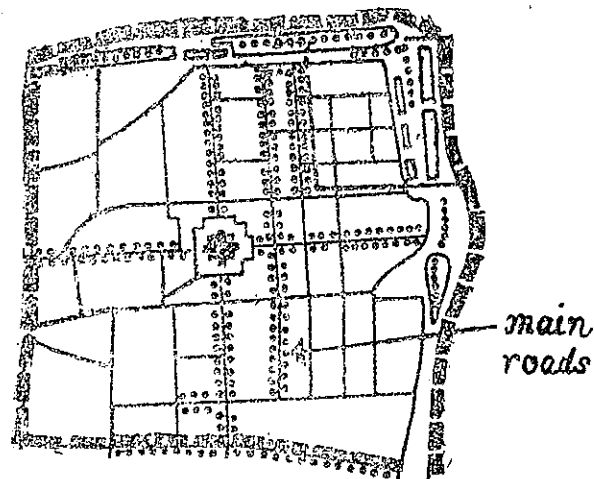
## 6-3 CIRCULATION PATTERN





Barkhedi, Jehangirabad, Ginnori, on the outskirts of the walled city have narrow lanes with widths between 2.5—3.5 meter which renders these areas almost inaccessible to vehicular traffic.

#### CITY CORE 6·4 GRIDIRON PATTERN



Unlike, other Indian cities narrow roads within the main city core have helped in eliminating the through traffic in this area which has to circulate on periphery of the main core. This necessitates that the road on the periphery should be wide enough to accommodate this vehicular traffic.

#### 6.22 T. T. Nagar Road Network

The road network obtaining here is according to a pre-conceived plan, which has been dictated by the land forms, as can be easily read on the map. Inter-links between T. T. Nagar and the parent city are also dictated by the intervening lower and upper lakes and Arera hill. Possibilities to strengthen the linkages need to be explored.

#### 6.23 B. H. E. L. Road Network

The B. H. E. L. industrial township is laid on a plain land the network obtaining here is therefore more close to a grid plan. However, it does not reflect a hierarchy of road network linking work centres, recreational areas shopping areas and residential areas of the township.

External linkages are also poor, particularly with T. T. Nagar, as Railway line presents a barrier between the two townships.

## 6.24 Bairagarh Network

The entire township is strung along the State Highway Bhopal-Indore Road with numerous punctures on the highway. Fortunately the development control on Bairagarh, exercised by the department has effectively protected the highway from being encroached upon by the shops. However, direct approach to shops from the highway has seriously impaired the movement of regional traffic along the road. It is necessary to contain the shopping activities on service roads, and also reduce the direct entries to and from the highway. Inter-links with main city is through state highway. Feasibility of more effective links could be examined in relation to the overall network of the urban agglomeration.

The above mentioned defects and shortcomings of the circulation pattern of the city need to be effectively dealt within Development Plan proposals.

## 6.3 TRAFFIC GENERATING NODES

### 6.31 Work Centres

Major traffic nodes (passenger) in an urban settlement are normally work centres, recreation centres and traffic terminals. Work centres generate fairly regular traffic, while the traffic generated by recreation centres is periodic. In order to study the movement of people it is necessary to identify major work centres and traffic terminals in the city and their relationship with residential area.

Fortunately the townships such as B.H.E.L., Capital Project and Bairagarh have their own work centres located within the township which have minimised criss-cross movement to a great extent. However, certain work centres do not have residential areas in their close vicinity such as industrial area along Raisen Road, offices in old secretariat and Gol Ghar etc. Major traffic generating nodes in the city are given in table 6-T.6 :

**BHOPAL : WORK CENTRES (TRAFFIC NODES)**

**6-T.6**

Township	Location	Description
<b>A. Main City</b>	City core around Chowk	The area covers localities such as Budhwara - Mangalwara Mangalwara - Ibrahimpura Ibrahimpura - Moti Masjid Moti Masjid - Budhwara
	Royal Market	Area around Royal Market, Hamidia Hospital, G.P.O., State Bank, Old Secretariate
	Sadar Manzil	Sadar Manzil, Shoket-Mahal, Shish Mahal, Zari Centre etc.
	Gol-Ghar Mandi and Timber Market	Gol-Ghar, District Court, Bara Mahal etc. Area along Bharat Talkies, Pull-Bogda.
	Union Carbide	Area in between Berasia Road and Diwan-ganj road i. e. Straw Products, Union Carbide, C. T. O. etc
<b>B. T. T. Nagar</b>	Vallabh Bhawan	Vallabh Bhawan and other offices, Central India Flour Mills,
	New Market	Area around the New Market, Roshanpura, Area around Polytechnic junction, Hamidia College, Shymia Hills.
	Jawahar Chowk	Area near Jawahar Chowk, Bhadbhada Road.
	Board Office	Area near the Board Offices of Higher Secondary Education i. e. University Office, Irrigation office, Housing Board office and some commercial establishments.
<b>C. B. H. E. L.</b>	Govindpura	Industrial Estate at Govindpura Developments along Raisen Road.
	Piplani	Around Piplani Shopping Area.
	B.H.E.L. Main Factory	Around main factory area.
<b>D. Bairagarh</b>	Market Area	Area on either side of Bhopal, Sehore Road at Bairagarh B. H. E. L.
	M. P. S. R. T. C. Cantonment	Establishments along the main road, Aerodrome and the E.M.E. Centre.

**6.32 Residential Nodes**

In order to study present 'work place' relationship, it is necessary to identify residential areas and their related work centres on the basis of field investigations and observations. The following have been identified as important residential areas and their related work centres.

Residential area and related work centres	Residential zone	Related work centres
A. Main city	1. Chowk area	Chowk, Berasia Road Industrial area, B.H.E.L., Industrial Estate.
	2. Shahjahanabad Idgah, Royal Market	General Post Office, Old Secretariat, Court, Jawahar Chowk, Vallabh Bhawan, Bairagarh, Chowk.
	3. Jehangirabad.	B.H.E.L., Industrial Estate, Jawahar Chowk Malviya Nagar, (New Market).
B. T.T. Nagar	4. Shyamla Hill (Polytechnic area) Prof. Colony.	Shyamla Hill (Polytechnic) Jawahar Chowk, New Market, Royal Market, Vallabh Bhawan.
	5. New Market (Jawahar Chowk)	New Market, Jawahar Chowk, P.M.G. Office, Vallabh Bhawan, Other offices in C.P. area, Old Secretariat.
	6. R.S. Market, (1250-1464) South.	Vallabh Bhawan, Jawahar Chowk, New Market, Scattered Offices in C.P. area, Old Secretariat, Vallabh Bhawan.
	7. Arera Colony.	Berasia Road, Hamidia Road, Vallabh Bhawan, Jawahar Chowk, Old Secretariat, B. H. E. L. Industrial Estate, New Market.
C. B.H.E.L.	8. Govindpura	B.H.E.L., Jawahar Chowk, Secretariat, Industrial Estate.
	9. Piplani	B.H.E.L.
D. Bairagarh.	10. Bairagarh.	Bairagarh, M.P.S.R.T.C., Chowk, Jawahar Chowk, Old Secretariat, Bus Stand.



## 6.4 TRAFFIC TERMINAL CENTRES

Location of terminal centres both for inter-city traffic and intra-city traffic play significant role in the efficiency of city traffic. Their location in relation to the traffic nodes is also very significant. It is necessary to examine suitability of location of the existing traffic terminal centres. The following table gives an inventory of traffic terminals in the city.

**Bhopal Traffic Terminals**

Terminal Centre	Location	Observation
<b>A. Inter-city (Regional)</b>		
1. Passenger :	Bus Station, Hamidia Road.	Convenient for Shahjahana- bad, Chowk, Ahmedabad area and inconvenient for B.H.E.L., T.T. Nagar, Jehangirabad, Bairagarh.
	Railway Station.	Convenient for main city, but inconvenient for T.T. Nagar, B.H.E.L, Bairagarh.
	Habibganj.	Mainly passenger station serving T.T. Nagar, B.H.E.L.
2. Goods :	Truck Stand.	No organised stand, spread- ed over main city core in areas around Itwara, Man- galwara, Laxmibai Mandi.
	Railway Goods Yard Main city	Serves the main market, T.T. Nagar, Bairagarh,
	Railway Goods Yard, Chhola.	Serves Industries along Chhola Road and Berasia Road, Grain Godowns, Timber market etc.
3. Bus Depot :	Bhadbhada	City Bus Depot.
	Habibganj.	Regional (Inefficient use of the area).

Terminal Centre	Location	Observations
<b>B. Intra-city</b>		
1. Main City Passenger :	Bus Terminal Centre (Not organised)	The main city area does not have any organised space for city bus terminal centres. The important areas which are functioning as main terminal centres are Hamidia, Bus stand, Budhwara, Railway Station. Most of these either do not have adequate space or functioning on road space.
	Jawabar Chowk	Covers entire T.T. Nagar.
	Ravindra Chowk	More centres are emerging terminal centre in Arera Colony is one such centre.
	Bus Stand	It serves effectively the Bairagarh Township.
	Piplani	Serves B.H.E.L. township. Space is inadequate.

#### 6.41 Bus Station

The present bus station on the junction of Hamidia and Chhola Road is very convenient because it is situated very close to the central business area of the city but it is away from other townships such as T.T. Nagar, and B.H. E.L. townships. The present location of bus station cannot be considered unsuitable on account of its distance from new townships, as distances in the large cities are unavoidable. This bus station will not be able to serve the city as the main bus station because space available for expansion at this place is very limited. It will not be possible to accommodate increasing regional bus traffic. It is, therefore, necessary to locate regional bus station at some other place. The present bus station could be converted into a pick up station where the idle buses will not be parked and the incoming and outgoing will only stay for 15 to 20 minutes or even less.

#### 6.42 Bus Depot

At present, area earmarked for regional bus station near Habibganj railway station has been converted into a depot. This site being very close to the railway station as well as to the residential colony is more suitable for a regional bus station rather than a bus depot. It is, therefore, necessary to shift bus depot from this place. The other bus depot located at Bhadbhada Road could continue to function as bus depot for city transport service.

#### 6.43 Transport Nagar and Truck Stand

At present, there is no organised transport nagar or even truck stand in the city. The loading and unloading activities and the forwarding agencies are spread all over the business area and idle trucks are parked on the roads particularly in Loha Mandi, Itwara, Mangalwara etc. Although, according to the 1964 Regional Transport Survey the city was not functioning as distribution centre, but according to a sample traffic survey conducted by Town & Country Planning Department in August, 1974 it was revealed that the city is assuming a role of distribution centre as well. It will, therefore, be necessary to earmark a site for transport nagar and truck stand so as to facilitate this activity.

#### 6.44 City Bus Terminals

Except at few places such as Jawahar Chowk (North T. T. Nagar), Ravindra Chowk, Berkheda, Piplani in the new township no organised city bus terminals function in the city. Most of the buses are parked on the road space. It will, therefore, be necessary to earmark and develop proper sites for city bus terminus also.

#### 6.45 Railway Station

At present Bhopal has two railway stations. The main railway station and Habibganj railway station, but for all practical purposes only main city railway station serves the city and the township because Habibganj Railway station has not yet been developed to cater for the needs of these townships. Although accessibility to the main railway station is likely to be improved after completion of the overbridge, it will be still desirable to improve Habibganj station to cater for needs of Capital Project township and B. H. E. L. township. This will reduce traffic along narrow roads of the city. It will be necessary to earmark sufficient area for the future expansion of Habibganj railway station.

#### 6.46 Goods Yard

Presently the main city station also serves as a goods station for the city.

However, this will not be able to cater for the needs of the increasing goods traffic for the city. Moreover, this station will not be convenient for movement of goods related to industries which are likely to be established near Chhola railway station. It will, therefore, be desirable to develop a separate goods station to serve industries of the growing city.

## 6.5 MODES OF TRANSPORTATION

Traffic carrying capacities of urban roads are intimately related to the modes of traffic in use along these roads. Intermixing of different modes, depending on their proportions reduces the traffic carrying capacities of the roads. Traffic studies are, therefore, necessary to investigate various modes of traffic and their changing trends.

BHOPAL : GROWTH OF FAST MOVING VEHICLES

6-T.7

Year	Car/Jeep Tempo	Motor Cycle	No. per 1000 persons	Bus	Truck	Total	Rate of growth
1	2	3	4	5	6	7	8
1951	1156	75	12	26	1166	2423	—
1956	1650	275	12	52	1450	3427	41%
1961	2100	555	12	300	1650	4605	34%
1966	3735	2156	19	660	2581	9132	98%
1971	6870	6775	32	1256	3352	17253	88%

Source : Regional Transport Authority. (Figures related to the total jurisdiction of the authority).

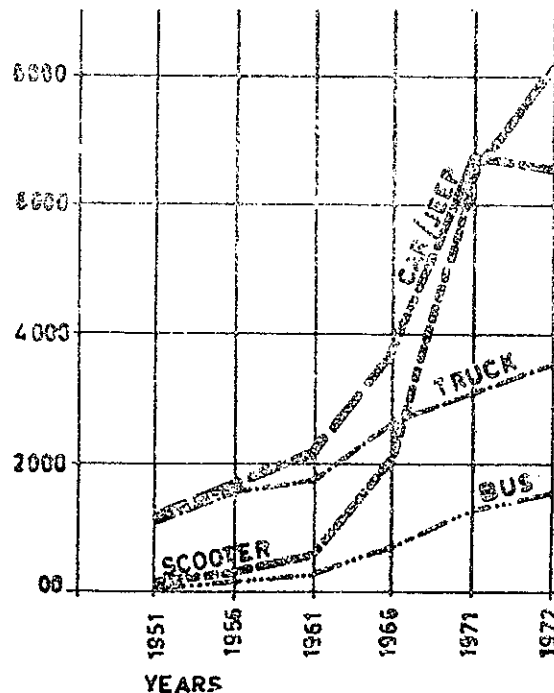
### 6.51 Fast Moving Vehicles

The number of fast-moving vehicles given in the table pertain to the whole jurisdiction of Regional Transport Authority, as there are no large urban centres like Bhopal in whole division, the figures in the table reflect the trend of growth of fast-moving vehicles in Bhopal. The growth of vehicles particularly motor cycles and scooters from 1961 onwards has been very phenomenal. In a period of 11 years (1961-72) the number of these vehicles has increased 15 times. This trend is likely to continue in future also. Sufficient space for parking in shopping and other area for scooters and motor cycles will have to be provided. The growth of car, jeep and tempo have also been significant. The number has increased three times from 1961-72. The trend of increase for these vehicles might decline temporarily owing to increase in price of petrol. The city buses as a means of mass transportation are playing greater role in movement of people within the city. The number of buses increased nearly four times from 1961-72.

## BHOPAL

### 6.5 GROWTH OF FAST MOVING VEHICLES

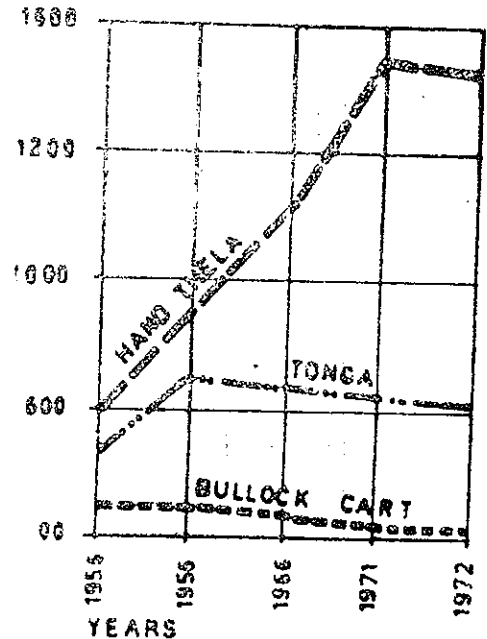
NO. OF VEHICLES



## BHOPAL

### 6.6 GROWTH OF SLOW MOVING VEHICLES

NO. OF VEHICLES



#### 6.52 Slow Moving Vehicles

Surprisingly the slow moving tonga is still a part of urban transportation system. There has been very nominal decrease in the number of tongas in last 10 years. In 1972 there were still 629 tongas against 700 in 1961. Tongas serve the old city more because of its capacity to ply in narrow lanes. Three wheeler is a recent addition to the modes of traffic in the city. It is very likely that the three wheelers will replace tongas in time to come. The hand thelas are still means of transportation of goods for short distances particularly in the business areas of the old city. This mode of transportation is also likely to continue.

The roads in the city particularly in the old parts will continue to have mixed traffic—slow and fast moving as is evident from the table 6-T.8. Traffic carrying capacities of these roads will have to be worked out on the basis of mixed traffic.

## GROWTH OF SLOW MOVING VEHICLES

6-T.8

Year	Passanger		Goods			
	Tongas	Rate of growth	Bullock carts	Hand Thelas	Total	Rate of growth
1	2	3	4	5	6	7
1956	460	—	200	600	800	
1961	700	52%	199	903	1102	27%
1966	675	-3%	170	1215	1385	20%
1971	631	-6%	32	1500	1532	11%
1972	629	-0.6%	31	1409	1440	-6%

Source : Municipal Corporation, Bhopal.

## 6.6 TRAFFIC SURVEYS AND PROBLEMS

Various traffic surveys such as volumetric, traffic-mix, accident, time distance study, parking etc were conducted by the department so as to identify traffic problems and their magnitude. These studies and their results are briefly enumerated below. The department is organising again traffic studies for 10 large cities of the State in a chain operation. The Central Town & Country Planning Organisation is being associated in these studies. The results will be utilised for traffic operation plans for these cities.

### 6.61 Traffic Volume

Study of traffic volume on major important arteries of the city covers traffic counts undertaken in collaboration with Police. Department during three different periods viz. 1957, 61, and 66. These counts have brought out the changing traffic pattern in the city.

Points covered in 1957 were 32, 54 in 1961 and 44 in 1966. The table gives values of counts in p. c. 4 for fast and slow moving modes. The data have been compiled for the peak hour traffic only.

A study of 'peak traffic hour' reveals that the peak hour along those roads which link offices, schools etc. coincides with the opening hour of offices and schools. Similarly in industrial areas where work timing are different, the peak hour of those roads which carry industrial traffic is different. This study coupled with traffic volumes can yield some solution in terms of traffic operation plan.

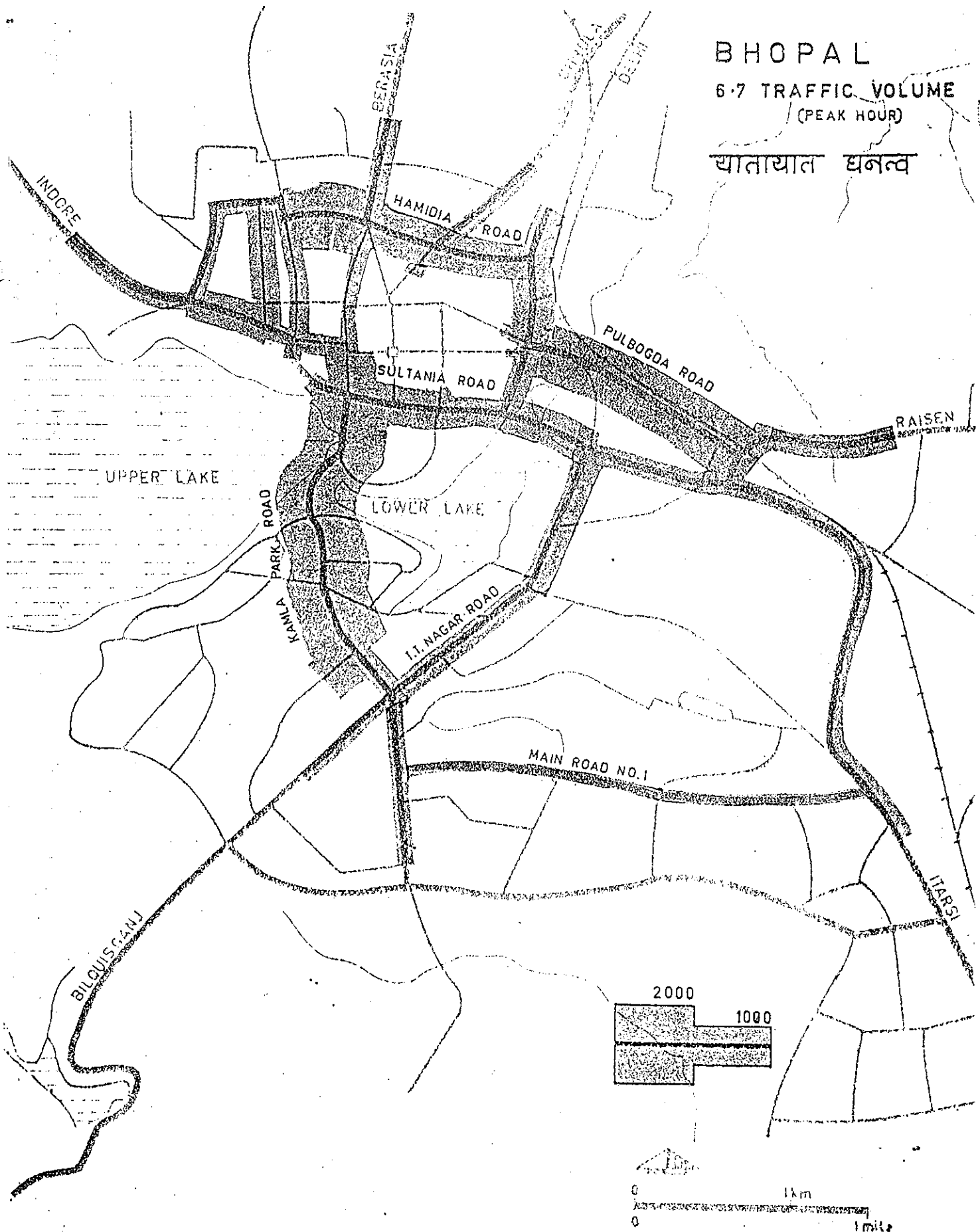
Traffic surveys along regional roads have revealed that maximum traffic is from Indore Road followed by Gwalior, Hoshangabad and Raisen. The regional traffic entering from Sehore, Narsingarh, Raisen and Hoshangabad mixes with the city traffic. It will be necessary to evolve a pattern which can

# BHOPAL

6.7 TRAFFIC VOLUME

(PEAK HOUR)

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either provide separate lane for through-traffic or provide effective by-pass. Possibilities for re-organising the activities generating regional traffic could also be explored.

## 6.62 Changes in Traffic Pattern

Traffic counts undertaken during the year 1956, 1962 and 1966 have brought out the changes in traffic pattern in the city (refer tables in appendix). Establishment of new activities in T. T. Nagar and B.H.E.L. and Raisen Road have completely changed the traffic pattern of the city. The roads linking the main city with T. T. Nagar and B. H. E. L. have shown tremendous increase in traffic. Growth of offices in Shahjahanabad and Ahmedabad palace area have again indicated tremendous growth in traffic on roads linking these centres of activities, while traffic on certain roads has declined. The statements given below indicate the roads on which traffic has increased and decreased.

### A. Roads, recording increase in Traffic

#### Observation

- |                       |   |  |
|-----------------------|---|--|
| 1. Kamla Park         | } | Links Main city with T. T. Nagar   |
| 2. Itwara, Mangalwara |   | Increase of truck traffic due to growth of transport of vegetable and fruit mandi. |
| 3. Budhwara, Itwara   |   |  |
| 4. Hamidia Road       |   | Outgrowth of central area activities of Hamidia Road.                              |
| 5. Noor Mahal Road    |   | Increase of industrial units, workshops and repair shops.                          |
| 6. Pulpatra Road      |   | Links main city with B.H.E.L.  |
| 7. Lal Parade Ground  |   | Links main city with T. T. Nagar.  |

### B. Roads, recording decrease in Traffic

#### Observation

- |                   |   |                                |
|-------------------|---|--------------------------------|
| 1. Ibrahimipura   |   | Road is narrow.                |
| 2. Chiklod Road   |   | The road has lost importance.  |
| 3. Ginnori Road   |   | Inconvenient link.             |
| 4. Mangalwara     |   | Narrow link.                   |
| 5. Saifia College | } | Used now as one-way road only. |
| 6. Sindhi Market  |   |                                |

## 6.63 Findings of Traffic Volume Survey, 1966

The traffic survey (1966) has reflected interesting facts regarding traffic characteristic, peak-hour value, volume in relation to capacities etc. Only

important tables are included in this chapter. The table placed below summarise the traffic values (p. c. u.) for the peak traffic flow as recorded in 1966. The data have been further analysed and compiled to study 'road efficiency'.

BHOPAL : PEAK-HOUR TRAFFIC VOLUME ( In P. C. U. )

6-T.9

S. No. & Counting Station No.	Name of the Road	Peak Hour Time		Peak Hour Volume		Total
		Fast	Slow	Fast	Slow	
1	2	3	4	5	6	7
✓ 1.	Old Secretariat Road	12-13	17-18	272	255	547
✓ 2.	Pari Bazar Road	17-18	11-12	156	205	361
✓ 3.	Medical College Road	10-11	18-15	668	316	992
✓ 4.	Noor Mahal Road	12-13	9-10	191	312	493
5.	Imami Gate	17-18	10-11	239	162	401
6.	Taj Mahal Road	10-11	10-11	365	488	853
7.	Imami Gate to Peer Gate	9-10	17-18	205	463	677
8.	Sultania Road (Peer Gate-Moti Masjid)	10-11	17-18	300	459	759
9.	Sindhi Market	17-18	17-18	56	524	520
10.	Saifia College Road	18-19	17-18	155	305	461
✓ 11.	Hamidia Road (Bada Bagh)	9-10	17-12	882	899	1781
✓ 12.	Berasia Road	8-9	8-9	102	926	928
13.	Hamidia Road (Bus Stand)	16-17	14-15	665	1020	1685
✓ 14.	Chhola Road	15-16	16-17	112	457	569
15.	Hamidia Road (Bus Stand-Ice Factory)	17-18	17-18	458	958	1416
16.	Railway Station Road	14-15	17-18	223	673	896
17.	Bharat Talkies Road (Hamidia Road)	18-19	18-19	569	615	1184
18.	Mangalwara Road	9-10	17-18	58	621	679
19.	Chhawani Road (Itwara to Mangalwara)	17-18	17-18	220	1578	1798
20.	Fruit Market to BHEL.	17-18	18-19	61	468	529
21.	Itwara to Fish Market Road	14-15	16-17	200	812	1012
22.	Sultania Road (Ibrahimpura)	18-19	9-10	630	1267	1897
✓ 23.	Budhwara Road to Lady Hospital	17-18	17-18	216	3661	3877
✓ 24.	Lady Hospital Road (Hamidia Road)	16-17	16-17	234	348	582
25.	Pulpukhta Road	18-19	16-17	499	2737	3236

1	2	3	4	5 From	6 To	7
26.	Chiklod Road (Jehangirabad)	19-20	18-19	395	594	789
27.	Raisen Road	18-19	18-19	1100	1692	2702 ✓
28.	Hoshangabad Pulbogda	18-19	18-19	194	333	527 ✓
29.	Church Road (Jehangirabad)	19-20	9-10	125	380	505
30.	Lal Parade Ground Road	11-12	17-18	255	446	701
31.	Kamla Park Road	10-11	10-11	542	1281	1823
32.	Ginnori Road	10-11	10-11	182	420	602
33.	Polytechnic to Circuit House	8-9	17-18	50	62	112
34.	Polytechnic to Roshanpura	10-11	17-18	258	447	705
35.	Prof. Colony to Vidhan Sabha	10-11	17-18	116	116	232
36.	Bhadbhada Road	16-17	17-18	124	189	313
37.	Vidhan Sabha to Roshanpura Naka	10-11	19-20	215	416	631
38.	MR-I ( T. T. Nagar )	19-20	18-19	201	452	653
39.	Jain Mandir-New Market Road	16-17	16-17	433	1331	1764
40.	M.L.A. Rest House Rd.	10-11	17-18	109	47	159
41.	Malviya Nagar Road	10-11	17-18	58	113	171
42.	Vallabh Bhawan Road	10-11	17-18	126	135	251
43.	Mandir Kamali Road	7-8	14-15	72	4898 ✓	4970
44.	Pulpatra	12-13	10-11	798	1499	2297

Source : Traffic surveys conducted by Town and Country Planning Department.

Traffic volume and capacity which reflects the road efficiency is given in the next table :

BHOPAL : TRAFFIC VOLUME & CAPACITY OF ROADS  
(ROAD EFFICIENCY)

6-T.10

S. No.	Road Section.	Average width of road in feet.	Available C. W. for fast vehicles in ft.	Peak Traffic 1966 (PCU).	Traffic capacity of the road (PCU)	Appox. over-burden (PCU).	Remarks.
1	2	3	4	5	6	7	8
1.	Sultania Road	80	24	1815	900-1000	800	Regulatory measures are needed for immediate relief and widening of this road to a four lane traffic route as long term measure
2.	Sultania Road (Moti Masjid to Budhwara)	30	12	1558	400-500	1000	Busy shopping street, not suitable for main city vehicular traffic.
3.	Lady Hospital Road (from Pulpukhta to Ice Factory)	40-50	20	1143	500-600	500	Major city road requiring widening the future demand also.
4.	Budhwara to Pulpukhta Road	30	24	1612	900-1000	600	Major city road requiring widening.
5.	Peer Gate to Moti Masjid Rd.	40	20	724	500-600	125	Major city road requiring widening.
6.	Bharat Talkies to Itwara Road	32	12	490	250-300	200	One way as short term measures and widening as a long term measure.
7.	Mandir Kamali	30	18	4970	700-800	4000	—do—
8.	Pulpukhta	40	24	2737	900-1000	1700	Road widening essential.
9.	Railway Station	30	12	1416	400-500	1000	Road widening essential.
10.	Berasia Road	30	12	928	400-500	400	Road widening essential.
11.	Pulpukhta	30	12	2297	400-500	1700	Road widening essential.
12.	Raisen Road	60	24	2702	900-1000	1700	Road widening essential.
13.	Jain Mandir	70	24	1764	900-1000	700	—
14.	Bharat Talkies to Mangalwara Rd.	32	12°	678	400-500	200	One way as short term measure and widening as a long term measures.
15.	Kamla Park Rd. (Moti Masjid to Kamla Park)	40	24	1833	900-1000	900	Need widening as a immediate measure as it is the only important link between T.T Nagar and the main city.
16.	Budhwara to Itwara Road	80	50°	1393	1200-1400	—	Just sufficient to carry the present load. But encroached road space will be able to take future traffic.

Note— °Carriage road space available in each case is actually much less than actual road width because road is also used for display of goods, temporary shops, parking etc. The capacity has been worked out on the basis of road space available for vehicular traffic.

The nature of traffic predominantly carried out by different roads e. g. truck traffic, pedestrians and stray animals is listed below :

BHOPAL : NATURE OF TRAFFIC—PREDOMINANT (1966)						6-T.11
S. No.	Name of Road	Volume	S. No.	Name of Road	Volume	
1.	2	3	1	2	3	
<b>A. Stray Animal</b>						
1.	Itwara to Fish Market	1925	9.	Mangalwara Road to Pulpatra Road	553	
2.	Pulpukhta to Chiklod Road	1640	10.	Hamidia Road	521	
3.	Sultania Road Budhwara to Lady Hospital	1198	11.	Royal Market Road	478	
4.	Railway Station Bajaria Road	972	12.	Raisen Road	473	
5.	Kamla Park Road	961	13.	Chhola Road	450	
6.	Pulpukhta Road	805	14.	Church Road	450	
7.	Mandir Kamali Road	672	15.	Central Library	407	
8.	Sultania Road Ibrahimipura	588				
<b>B. Pedestrian Traffic</b>						
1.	Mandir Kamali Road	160606	9.	Sindhi Market Road	6855	
2.	Itwara to Fish Market	11361	10.	Kamla Park to Tagore Bhawan Road	6257	
3.	Noor Mahal Road	9229	11.	Mangalwara to Fish Market	6180	
4.	Sultania Road	7664	12.	Central Library	5561	
5.	Sehore Road	7225	13.	Narbada Factory to Lady Hospital	5492	
6.	Ginnori Road	7020	14.	Chhola Road	5259	
7.	Hamidia Road	6940	15.	Pulpukhta Road	5179	
8.	Lalparade to T. T. Nagar	6915				
<b>C. Truck Traffic</b>						
1.	Railway Station Textile Mill Road	1387	7.	Kamla Park to Tagore Bhawan.	414	
2.	Sehore Road	1272	8.	Chhola Road.	280	
3.	Hamidia Road	1106	9.	Pulbogda (Raisen Rd.)	279	
4.	Narbada Factory to Lady Hospital	598	10.	Mangalwara to Fish Market Road	233	
5.	Sultania Road	528	11.	Lalparade to T. T. Nagar Road.	136	
6.	Pulpukhta Road	439	12.	Berasia Road	104	

The roads which carry predominantly fast, slow, mixed and heterogeneous traffic are given below :—

#### TYPE OF TRAFFIC (PREDOMINANT)

Fast	Slow	Mixed	Heterogeneous Traffic
Hamidia Road	Mandir Kamali Road	Kamla Park	Hamidia Road
Sultania Road	Kamla Park	Mandir Kamali	Sultania Road
Kamla Park	Pulpukhta Road	Hamidia Road	Noor Mahal to Bharat Talkies Road.
Old Secretariat	Hamidia Road	Peer Gate Moti Masjid	Bharat Talkies to Itwara Road.
Noor Mahal Road	Polytechnic to Roshanpura	Pulpukhta Road	Bhopal Talkies to Moti Masjid Road.
Ibrahimpura	Itwara to Mangalwara	Lalparade Ground	Bharat Talkies to Pul-Bogda.
Pulpukhta Road	Hamidia to Peergate	Church Road T. T. Nagar M.A.C.T.	Bus-Stand to Jumerati Road.
Lalparade Road	Hathikhana Road	Polytechnic-Roshanpura	
Shahjahanabad	Noor Mahal	Old Secretariat	
Pul-patra	Lalparade Ground	Fish Market	
—	—	Hathikhana Road	
—	—	Itwara to Mangalwara	

#### 6.64 Time-Distance Study

'Time-distance' study was conducted along important city roads to ascertain the delay in movement due to traffic congestion, mixed traffic, traffic jams, blind corners etc. The table 6-T.12 indicates that the maximum speed in the old city area is 13-16 km/hour during peak hours. This is highly inefficient road system. The inordinate delays result in economic loss to the community.

## BHOPAL : TIME-DISTANCE STUDY

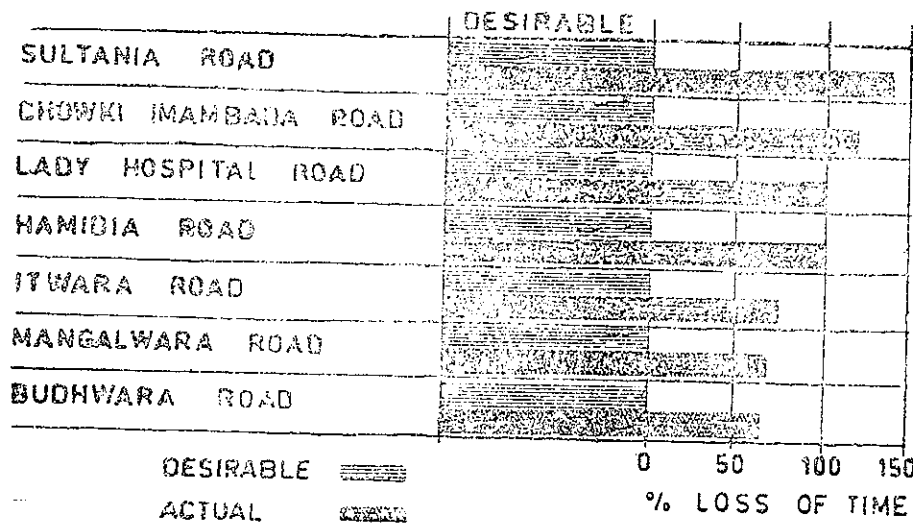
6-T.12

S. No.	Name & Road Section	Distance (in feet)	Time taken in minutes.	Max. speed acquired in km/hour.	Loss of time with 30 km/hour speed (%)	Remarks
1	2	3	4	5	6	7
1.	Hamidia Road from Ice Factory to Shahjahanabad	1550	6.0	16	99	Major city road, having mixed traffic pedestrian interference; needs control measures.
2.	Sultania Road (Moti Masjid to Pulpukhta)	1050	4.8	13	128	Main shopping street narrow carriage way, mixed traffic and serious interference.
3.	Bhopal Talkies to Moti Masjid Road	1270	5.5	13	120	Link road to Sultania and Hamidia Road, narrow in width, mixed traffic steep gradient.
4.	Bharat Talkies to Mangalwara Road	685	3.0	13	114	A link to central area, goods traffic mixed with local traffic, narrow road.
5.	Kamla Park Rd. (Moti Masjid to Kamla Park)	3000	2.0	29	5	A major link road between old and new settlement, bottle-neck portion at Retghat.
6.	Budhwara to Itwara Road	680	3.0	13	114	A link from regional to central area, goods traffic is mixed.
7.	Bharat Talkies to Itwara Road	710	3.5	13	150	A link for regional to central area, narrow road significant pedestrian traffic.
8.	Lady Hospital Road (Pulpukhta to Ice Factory)	1085	4.0	16	89	A major city road leading to Railway station, regional traffic, pedestrian traffic.

Source : Traffic survey conducted by Town & Country Planning Department.

## B H O P A L

### 6.8 TRAFFIC DELAY

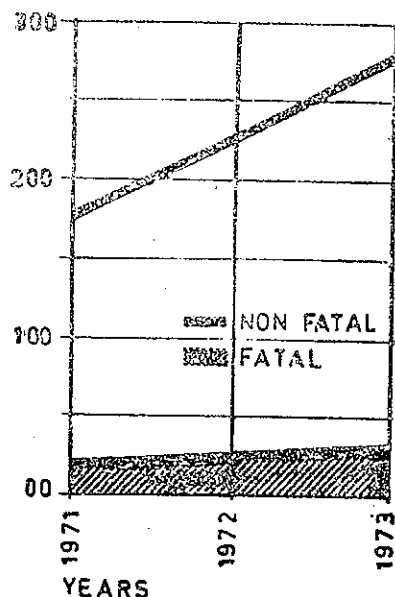


### 6.65 Traffic Accident

A study of traffic accidents in the city reveals an alarming increase in fatal as well as non-fatal accidents. Occurrence of accidents successively at the same

### B H O P A L

#### 6.9 TREND OF ACCIDENTS



point indicates defective design and lay-out of roads, curves, junction or crossings. It will be necessary to undertake a detailed study to identify the causes of such accidents so as to evolve remedial measures. For this purpose, the department is organising a continuous study of traffic accidents in collaboration with the state Police Department. A detailed proforma for every accident occurring within planning area of large cities will be compiled by the Police Department and same will be analysed by the Town & Country Planning Department. This information will be used for working out improvement of accident prone points.



# BHOPAL : ACCIDENTS (THANA-WISE)

6-T.13

Police Station		Accidents in the last three Year			
		Fatal	Non-Fatal	Total	Percentage of Fatal to total
1	2	3	4	5	6
1.	Thana Kotwali	2	87	89	2.2
2.	Thana Hanumanganj	3	42	45	6.6
3.	Thana Mangalwara	—	61	61	—
4.	Thana Tallaiya	10	80	90	11.1
5.	Thana Shahjahanabad	6	84	90	6.6
6.	Thana Bairagarh	—	30	30	Nil
7.	Thana Jhangirabad	15	97	112	13.3
8.	Thana T. T. Nagar	4	120	124	3.2
9.	Thana Habibganj	5	23	28	17.8
10.	Thana Govindpura	18	73	91	19.7
Total		63	697	760	8.2

Source:—Police Department.

It has been observed that most of the accidents (80% of the total) occurred on road junctions in the old city area where geometrics of the junction is defective and adequate sight distance is not available. Junctions at Budhwara, Pulpukhta, Bharat Talkies, near inter-State bus terminal, near Shahjahanabad Police station, at Peer Gate, Imami Gate and Moti Masjid are some of the problem junctions which need immediate improvement and management control. Some of the road sections viz. Bhopal Talkies to Mangalwara, bus terminus to Jumerati, Bhopal Talkies to Kamla Park are accident prone sections.

## 6.66 Parking Survey

Parking survey were organised at 12 places. Except at five places no specified space for parking existed. The result is compiled in the following table :

### BHOPAL : REGULATED AND UNREGULATED PARKING (FAST MOVING VEHICLES)

6-T.14

S. No.	Place of Parking Count	Date	Maximum vehicles parked at any count (30 Minutes)				
			Taxi Cars	Tempo	Auto-Rick-shaws	Scooters	Others
1	2	3	4	5	6	7	8
<b>A. Regulated Parking</b>							
1	New Market	3-2-74	85	9	4	89	—
2.	Bharat Talkies	25-6-72	21	—	9	24	—
3.	Tagore Memorial Hall	9-6-72	85	—	6	30	11
4.	Aishbagh Stadium	9-6-72	54	—	3	87	—
5.	Lalparade Ground	26-1-72	267	25	8	370	61

1	2	3	4	5	6	7	
B. Unregulated Parking							
6.	Moti Masjid	4-6-72	10	2	—	15	20
7.	Hamidia Road	4-6-72	56	17	10	50	34
8.	Jumerati	4-6-72	5	—	—	—	—
9.	Itwara Junction	4-6-72	5	2	3	10	12
10.	Jania Masjid side Rd.	4-6-72	40	10	8	50	20
11.	New Market (T. T. Nagar)	3 2-74	52	12	1	100	13
12.	Bharat Talkies	21-6-72 25-6-72	27	—	15	2	18

The above figures indicate parking demand for respective areas. Even in New Market (T.T. Nagar), adequate parking space is not available. Moreover, due to ineffective parking regulations nearly 50% of the vehicles coming to the shopping centres are parked on the carriage way or inside the narrow shopping lanes. Adequate parking space will have to be provided in these areas after assessing the future needs as well.

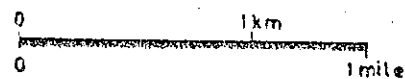
#### 6.67 Inaccessible Areas (by vehicles)

Old city area has narrow and congested roads. The main core, which more or less laid on a grid iron pattern is also built on a narrow road system. The study of inaccessible areas indicate that, road pattern as well as road width in central areas is highly sub-standard. The inventory of such inaccessible area is given below. It will be desirable to improve the accessibility to these areas.

#### INVENTORY OF ACCESSIBLE AREAS

S. No.	Name of Locality	Description and Location	Observation
1.	Jogipura	This area is in South-East of Budhwara Junction.	This area needs redevelopment, as the 80% houses are of Kachha structures.
2.	Chataipura	-do-	-do-
3.	Bhoipura	-do-	-do-
4.	Pathar	This area is behind the G.P.O. and practically inaccessible to fast vehicular traffic.	Partial redevelopment possible.
5.	Balaipura	This area is between Noor Mahal Road and Peergate-Imamigate Rd.	-do-

## 6.10 TRAFFIC PROBLEMS





S.No.	Name of Locality	Description and Location	Observation
6.	Ghora Nakkas	This area is adjoining to central area.	Partial redevelopment possible.
7.	Kanjerpura	This area is having major city road on three sides i. e. Budhwara-Itwara Road, Budhwara Pulpukhta Road, Itwara-Bharat Talkies Road.	Re-development possible.

#### 6.68 Bottle-Necks

Bottle-necks not only reduce the traffic carrying capacity of the road, but cause accidents and traffic jams also. Bottle-necks occur on the following major roads :

- |                                |  |
|--------------------------------|--|
| 1. Ibrahimpura to Budhwara     | 5. Mangalwara Road                       |
| 2. Sultania Road               | 5. Itwara to Jumerati                    |
| 3. Retghat to Moti Masjid      | 7. Laxmi Talkies Peergate to Jama Masjid |
| 4. Bharat Talkies to Pulpukhta |  |

Removal of the above mentioned bottle-necks will certainly increase the road capacity, without even widening the entire road in the first phase.

#### 6.69 Encroachment of Road Space

Owing to pressure of commercial activities, the road space has been continuously encroached upon by organised markets such as Vegetable-cum-Fruit Market, Kabadi Market, Azad Market, Loha Market near Bhopal Talkies. Forwarding agencies in Itwara area, Sindhi Market, Fish Market, Fruit Market, some are functioning on the road space itself. Besides this, narrow roads are subjected to constant encroachments by shopkeepers and footpaths are being misused by the hawkers. Pedestrians therefore have to move on the carriage way endangering their life and limb. To achieve an efficient circulation pattern these encroachments will have to be removed.

#### 6.7 DIAGNOSTIC SURVEY OF ROADS

A diagnostic analysis of conditions on important roads was carried out. Results in respect of some roads are given in the table. A complete analysis forms a separate study. This will help in evolving future course of action for correct measures to improve circulation system of the city.

BHOPAL : DIAGNOSTIC ANALYSIS

BHOPAL : DIAGNOSTIC ANALYSIS

S. No.	Description					Road with their
1	2	3	4	5	6	7
1. Name of Road	Hamidia Road	Sultania Road	Itwara Road Mangalwara Road	Itwara Road	Imambada Road- Badabagh Road.	
2. From-to	Ice Factory Shahajahanabad	Pulpukhta- Moti Masjid	Noor Mahal- Bharat Talkies via Jumerati (P. O.)	Bharat Talkies- Itwara Jama Masjid	Bhopal Talkies Moti Masjid.	
3. Road width (in feet)	80	24	24	20	24	
4. Road length (in feet)	5000	3400	5300	2700	4100	
5. Predominant Use	City level shopping	City level shopping	City level shopping	City level shopping	City level shopping	
6. Parking	Stray	Stray	Yes	No parking	No parking	
7. No. of intersection	2	10	4	6	4	
8. Traffic Type	Regional/ City	City	City	Regional/ City	City	
9. Accident	V. frequent	V. frequent	V. frequent	V. frequent	V. frequent	
10. Traffic Control	average	Poor	Poor	—	Average	
11. Footpath	Misused	Do not exist	Do not exist	Do not exist	Do not exist	
12. Bottle-necks	No	Ibrahimpura	Ibrahimpura	Itwara crossing	No	
13. Road Geometrics	Poor	V. Poor	V. Poor	V. Poor	V. Poor	

Road Portions				
8	9	10	11	12
Moti Masjid Kamla park	Pulpukhta Bharat Talkies	Around Jama Masjid	Pulpukhta Pul-Bogda	Jehangirabad to Church
Kamla Park Road	Hamidia Road	—	Chiklod Road	Church Road
24	30	18	40	25
3000	1800	800	6000	3300
Traffic artery	Traffic artery	City/Region shopping	Partly shopping	Partly shopping
No parking facility	No parking space	Yes	No parking space	No parking space
2	2	4	3	2
City	Region/City	City	Region/City	City
Frequent	V. Frequent	No	Frequent	No
Average	Average	—	Poor	Poor
Path does not exist	Does not exist	Does not exist	Does not exist	Does not exist
No	Grand Hotel & Patra	No	No	Zig-Zag Road
Poor	Very poor	Average	Very poor	Very poor





## Chapter 7

### URBAN INFRASTRUCTURE (URBAN SERVICES AND AMENITIES)

#### 7.1 WATER SUPPLY

The existing water supply system of Bhopal is upper lake as its major source, which has a maximum capacity of 25.0 M. G. D. of water. As against this, the present draw from this source is nearly 21.0 M. G. D. Efforts are already being made to utilise the Upper lake to its full capacity. There are 7 intakes in and around Upper lake as listed below.

BHOPAL : WATER SUPPLY CAPACITY			7-T.1
Sr. No.	Particulars	Capacity of intakes M. G. D.	Population Served (in lakhs) 1974
1	2	3	4
1.	City with inakes located at Karbala Yatch Club, Pulpukhta, Railway	8.2	2.75
2.	Capital Project P.H.E.D. intake	5.0	0.75
3.	Bairagarh intake	1.0	0.30
4.	B.H.E.L.—P.H.E.D. intake	7.0	0.60

Source : P.H.E.D. and Municipal Corporation. Bhopal.

Lower lake could have been another source but it is heavily contaminated. However, some water is used for industrial and gardening purpose. Water supply is further supplemented by nearly 42 tubewells located in various parts of the city, particularly in scarcity areas where water pressure is low.

Ground strata being rocky and deep, tubewells, therefore, are not found very successful.

The catchment area of the Upper lake is nearly 140 sq. mile and the full tank level is 1660.80, whereas the maximum level is 1668.80. The existing gross capacity of the Upper lake is nearly 65 MGD and the net capacity after deducting dead shortage, evaporation losses etc. is between 25 to 30 M. G. D. (million gallons per day). The pumping and filtration capacity at present is, however, only 22 M.G.D. Efforts are being made to utilise the full capacity of the lake. 6 M.G.D. filtration plants are scheduled to be commissioned by March, 1975. The present source of water supply, i. e. Upper lake, is not adequate to meet the growing demand of the city, T.T. Nagar township, Bairagarh, B.H.E.L. factory and its townships and other industrial units. Even the present requirement of water for domestic as well as industrial use is nearly 30 M. G. D. while the supply is only 22 M. G. D.

Supply in Capital Project and B.H.E.L. township is adequate, although some areas in North T.T. Nagar and S.A.F. face problem of short supply owing to low pressure. The city, however, suffers from short supply. Only 65 to 75% dwellings in the city have independent water connections, the remaining depends on public taps which are inadequate in number and duration of supply is too short. Some of the areas such as Fatehgarh, Hawa Mahal Road, Dhobipura, Badhaipura, behind Jehangirbad Church, Ashoknagar (Pul-Bogda), Neemwali Road (Jehangirabad), Malipura, Jamunwali Masjid, Birjisia school etc. do not have adequate supply of water. During water scarcity in 1972 to the Municipal Corporation installed nearly 50 tubewells out of which 35/40 are yielding satisfactory supply. This has given some relief in the city area particularly in the following localities : Kabitpura, Putlighar, Municipal Colony on Berasia Road, Malipura, Aliganj, Tallaiya, Jehangirabad, Railway crossing area, Sarai Sikandari, Textile Mill area, part of Mangalwara, Jinsi Jehangirabad, Central library area, Patel Colony, Hathikhana, Kazi Camp, Jawahar Chowk in Jumerati and Bal-Vihar area near Bhopal Talkies.

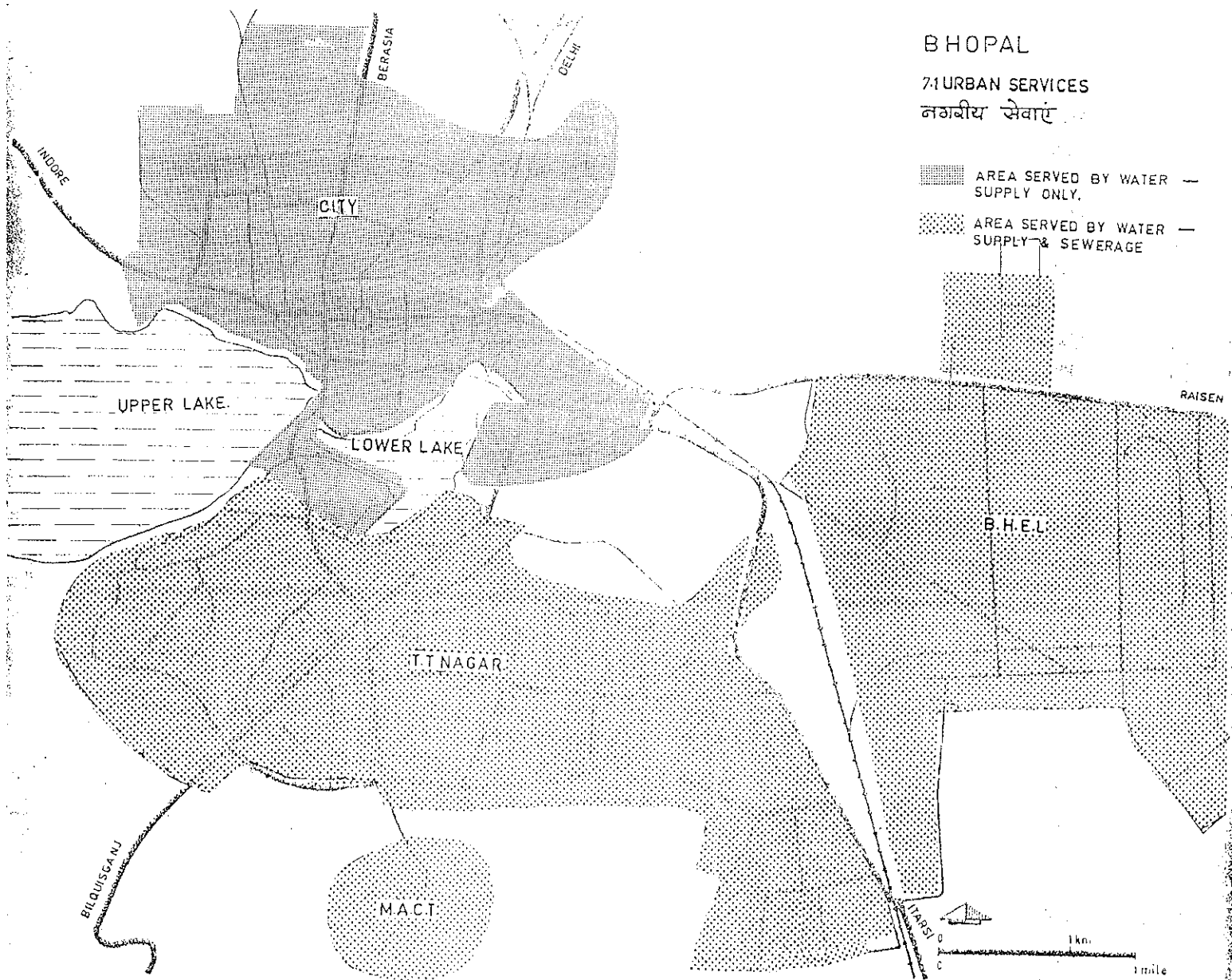
In the Capital Project area also nearly 31 tubewells were tried out of which only 13 are working satisfactorily. The available sources of water supply have now been tapped to the maximum. It is not possible to increase the capacity because the catchment area is limited. Moreover, further increase in level of lake is likely to endanger built up areas in the city. Even at present during heavy and continuous rain some areas are flooded and equipment in pumping stations is submerged. Areas on down-stream side are

# BHOPAL

## 71URBAN SERVICES

नगरीय सेवाएं

- AREA SERVED BY WATER — SUPPLY ONLY.
- AREA SERVED BY WATER — SUPPLY & SEWERAGE





flooded with opening of gate at Bhadbhada. It will be worth-while to examine if the water of lake can be discharged into Halali river.

### **7 11 Distribution**

The city does not have an integrated water supply distribution system. Water supply lines were extended in parts according to the growth of the town, with the result that many areas in the city are facing water shortage, low pressure owing to faulty distribution system. The fringe areas of the city where new colonies are being developed are facing acute water problem as the distribution lines to serve these areas are not available. The colonies located along Raisen Road, Lalghati and even along Berasia Road are not connected with water supply system. Most of these colonies have some independent water supply arrangement which is highly unsatisfactory. During heavy rains in 1973, all the pumping stations on the Upper lake were submerged. The PHED has suggested a Water Supply grid by spreading out the head works and the treatment plant on the periphery of the Upper lake and inter-linking the entire water supply system.

### **7.12 Water Pollution**

Upper lake, which is the major source of water supply, is polluted. Situation now is better but still very unsatisfactory. The contamination of source of water supply is detrimental to the health of the citizens. Most of the pollution is caused by built up areas situated along the northern bank of the lake viz. Retghat, Fatehgarh and Bhoi Mohalla. Bhoi Mohalla had already been shifted recently. Part of Retghat area is being shifted, 4 sewer lines with pumping stations have been constructed to check the pollution of water by Fatehgarh area. However, most of the houses have not yet adopted water carriage system and connected their water closets to the sewer line. These pumping stations and the sewer line have not, therefore, proved to be very effective. Moreover, waste water from city and from settlements in the catchment area still finds its way into the Upper lake.

It is, therefore, essential to take immediate measures to provide complete underground sewerage system atleast for all such areas which contaminate water e. g. Ahmedabad, Old Secretariat, Hamidia Hospital, Sultania Road thickly populated central area of the city etc. draining into the Upper lake.

### **7.2 SEWERAGE**

Unlike Gwalior and Indore, Bhopal the city of beautiful lakes had no underground sewerage system in the city till nineteen fifties except in Ahmedabad

area. Only a few houses at Shamla hills, Professors Colony and other institutional buildings had their own septic tanks without any system of collective disposal of the effluent. The entire city had conservancy system with disposal of human waste in trenching grounds, which are located in the north-eastern part of the city behind Aishbagh stadium. These are now too near the urban area and will, therefore, require re-location.

The sullage water is drained off through open drains constructed separately in various parts of the city without a proper drainage system even for disposal of sullage. Cesspools of sullage, therefore, accumulate in various parts of the city. Only a few years back construction of large drains designed to dispose this water has been undertaken. At present, only T. T. Nagar and B. H. E. L. township are having well-laid sewerage system. The sewerage system of T. T. Nagar is maintained by Public Health Engineering Deptt. There are two sewerage treatment plants. The sewerage treatment plant located in 'Char-imli' area is now surrounded by residential quarters. It will require re-location. The other is, however behind Shahpur hills, away from residential area.

The sewerage system in B.H.E.L. township is maintained by its own management. The sewerage treatment plant is located far away from the residential area. The effluent is used for a vegetable farm.

In Bairagarh township, the same old conservancy system is in vogue. However, at the certain levels towards lake, sewage and sullage are collected into sewerage pipes and pumped with pressure towards Singarcholi area, so as to eliminate pollution of Upper lake. Although an underground sewerage system in the old city will be comparatively more expensive and difficult to execute owing to peculiar topography and rocky strata. However, it is essential to provide sewerage because the area is very densely built & heavily populated. It is impossible to improve sanitary condition of this area without underground drainage and sewerage. Moreover, open drains in some of this area cause pollution to the Upper lake.

### 7.3 STORM WATER DRAINS

The natural topography of Bhopal is such that the rain water flows mostly towards the northern and eastern side of the city. Most of the western part of the city comes under the catchment area of Upper lake, therefore, the entire rain water from the Shamla hills, Kamla park and Idgah hills flows into the Upper lake.

In the old city, pukka and semi-pukka channels have been constructed on both sides of the roads which carry water to five main drains, which have been recently improved. The entire surface water is carried by these drains

and discharged into this Patra nullah. The industrial waste is also discharged into this nullah.

Most of the rain water of North T. T. Nagar, Jehangirabad, and area around Raj Bhawan in natural course is drained into Lower lake, which overflows into Patra. The new colonies still do not have pukka drains. The hard moorum soil and steep gradient do not allow stagnation of water, and hence even after heavy rains the water drains out quickly. Although excessive speed of rain water erodes roads and 'kaccha' footpaths.

The low-lying areas e. g. Sikandari Sarai, Nehru Colony, Garamgadda area, Israni Market, P. G. B. T. College area, Kazi Camp, Chhola Kainchi, Jamal-pura; Anand Nagar Colony, Chowk, Itwara near Kabristan, Police Colony behind New Bus Stand suffer due to flooding almost every year. During years of heavy rainfall, areas around Retghat, Tallaiya, Pulpukhta, Krishna Colony and Rajendra Nagar Achhemian-ki-Tallaiya (Jehangirabad) etc. are also flooded.

#### 7.4 ELECTRIC POWER

City is served by electric power distribution network which is connected to Hydel grid system. The distribution network of H.T. lines within the city area fits into the present pattern of roads. However, certain transformers particularly one Azad Chowk need to be shifted as it obstructs the traffic. Similarly the transformer in Jawahar Chowk area needs re-location.

The present yearly consumption of the power is nearly 2.5 crore units. Of the total consumption nearly 33.3 per cent is consumed for domestic purpose, the industrial consumption works out to 26.00 per cent whereas nearly 18.30 per cent is consumed for commercial use. The present pattern of power consumption is expected to undergo a change after location of new industrial units within the Plan period. In any case the present source of supply is likely to meet the growing need of electric power.

#### 7.5 HEALTH

Since long the city has a reputation for extending medical facilities of higher order to the neighbouring districts. With the establishment of Gandhi Medical College and expansion of attached hospital, it is gradually assuming a status of health centre providing specialised medical treatment and facility for the entire region. People use to come to Bhopal from all parts of the region for specialised treatment and delicate operations. However, the city still lacks in facility for advance surgery and treatment of diseases like cancer, hydrophobia, mental disorders etc.

The city has 10 hospitals including specialised ones which are located in the following areas :—

BHOPAL : EXISTING HEALTH FACILITIES

7-T.2

Sr. No.	Type/Name	Location	No. of Beds
A. GENERAL HOSPITAL			1200
1.	Hamidia Hospital	Opp. G.P.O. in old city	
2.	Civil Hospital	1250 Qrts. T.T. Nagar	
3.	Kasturba Hospital B.H.E.L.	Habibganj (Piplani)	
B. SPECIALISED HOSPITAL			600
1.	T.B. Hospital	Lalghati	
2.	Sultania Zanana Hospital (Gynaecological)	Near Pulpukhta	
3.	Asha Niketan	Arera Colony Pvt. Sector	
C. OTHER HOSPITALS AND LARGE DISPENSARIES			65
1.	Govt. Ayurvedic & Unani Hospital	Marwari Road	
2.	Homoeopathic Hospital	Noor Mahal Road	
3.	Dr. K.N. Katju Hospital	Near Rang Mahal Cinema, T.T. Nagar	
4.	Primary Health Centre	Bairagarh	
5.	District T.B. Centre	Near Central Library	
6.	National Malaria Centre	Near Kilol Park	
Total Beds			1865

The city has no large nursing home but a few small nursing homes are functioning in the city which have nearly 50 beds. Thus 1300 beds available give about 4 beds per 1000 persons in respect of the city population. However, the actual ratio is much less since the specialised hospitals and even general hospitals serve a much larger area than the city.

In addition to the hospitals there are five allopathic and three Unani dispensaries in the city. The allopathic dispensaries are located in the areas known as Ahmedabad, Shahjahanabad, Jehangirabad, Vallabh Bhawan, Government Press and M. L. As., rest house. The Unani dispensaries are located in Shahjahanabad, Jehangirabad and Chhola area. Apart from this, the city has three allopathic dispensaries run by Railway, P & T department and Municipal Corporation exclusively for their employees.



The Sultania Zanana Hospital is the main maternity and child welfare centre for the city. In addition to it, the city has two maternity centres viz., Labour Health centre near Bharat Talkies and Lady Bhore maternity and child welfare centre near Sadar Manzil. In the townships of T.T. Nagar and B.H.E.L., the general hospital of the respective areas have maternity facilities.

Nearly 300 medical practitioners and a large number of homoeopaths are serving the city population. The city has three homoeopathic colleges also.

Owing to its central location and moderate climate, the city has potential for development as a centre of specialised medical service for the entire region. Moreover, there is a need for establishing more dispensaries and one general hospital for Govindpura area of the city.

The total area under various hospitals and dispensaries is around 75 hectares. Sufficient space needs to be provided in the Development Plan for locating the specialised hospitals in the city.

## **7.6 EDUCATION**

The first school in Bhopal was established in 1860 by Shahjahan Begum. A girls school was started in 1918. With this modest beginning, the educational facilities multiplied fast particularly after Bhopal became part of State. Today the city has excellent facility for general and technical education. The city has 11 technical/professional institutions and 8 colleges besides the University for which a separate campus is being developed. These educational institutions not only cater for residents of Bhopal but serve other Urban and Rural settlements of the region and the State.

### **7.61 Specialised Institutions**

The first technical institute viz., S.V. Polytechnic was started in the year 1953 whereas Gandhi Medical College was established in the year 1955. After integration of States, Maulana Azad College of Technology (Centrally aided institute) began functioning in July, 1960, whereas Women's Polytechnic was established in the year 1964. Apart from these, the institutions offering coaching in technical and professional courses are Regional College of Education, Western Regional Institute, Post Graduate Basic Training College, and three Homoeopathic College. A centre of advance studies in Indology and Musiology has also been opened by Hindustan Charitable Trust (Birlas). Medical College, being located in the existing hospital area has no room for expansion. In fact, no space is available for playgrounds or even the hostels. Some space for these functions will have to be provided in the close vicinity

of the college. Similarly S.V. Polytechnic also has no space for playgrounds, which will have to be provided in the close vicinity of the college, if possible. The total area under technical institutions is 617 acres.

### UNIVERSITY CAMPUS

At present the University campus has not been developed. However, an area of 450 acres of land has been made available by B.H.E.L. for University in the southern part of the city near Habibganj Railway crossing. With the Development of University campus, the city will develop as one of the important seats for research and advance studies in the region.

### 7.62 Colleges

The city has seven degree colleges viz. Hamidia College, Motilal Vigyan Mahavidyalaya, Saifia College, and Maharani Laxmi Bai College, Girls College in T. T. Nagar, Ravindra College, T. T. Nagar and Kasturba College located in Shahjahanabad locality are exclusively for women. Bhopal School of Social Sciences has been established in capital project area. There is only one college located in B.H.E.L. area, whereas Bairagarh has no college. Some of these colleges do not possess adequate open space for playgrounds. Moreover, there is no scope for future expansion in the existing premises. Details regarding the same are given in the next table.

BHOPAL : ANALYSIS OF COLLEGES

7-T.3

S. No.	Name of the College	Area in Hectares	Attached Play-ground	Expansion possibility	Build- ing owned /rented	Struc- tural con- dition	Locatio- nal suita- bility	Remarks
1	2	3	4	5	6	7	8	9
<b>A Specialized/Professional</b>								
1.	P.G.B.T. College	12.2	+	+	+	+	+	
2.	Gandhi Medical College	10.1	+	+	+	+	+	
3.	S. V. Polytechnic	4.9	+	+	+	+	+	
4.	Regional College of Education.	40.5	+	+	+	+	+	
5.	Govt. College of Education.	8.8	No	+	+	Fair	Unsu- table	Needs relocation
6.	Centre of advance studies in Indology & Musiology	0.1	+	+	+	+	+	
7.	Maulana Azad College of Technology	182.2	+	+	+	+	+	
8.	Western Regional College	.4	+	+	+	+	+	
9.	Women's Polytechnic	.4	No	No	+	+	Unsu- table	Needs relocation
10.	I. T. I. (Govindpura)	4.0	+	+	+	+	+	
<b>B. General</b>								
1.	Kasturba Girl's College	0.20	No	No	Rented	Fair	+	Needs relocation
2.	Saifia College	2.4	No	+	+	+	+	Higher Secondary needs relocation
3.	Laxmibai Girl's College	2.4	+	+	+	+	+	
4.	Motilal Vigyan Mahavidyalaya	2.5	+	+	+	+	+	
5.	Hamidia Arts, Com- merce & Law College	3.4	+	+	+	+	+	
6.	Ravindra College	.8	+	+	+	+	+	
7.	Sarojini Naidu Girl's College	.8	+	+	+	+	+	
8.	Career College	0.2	No	+	Rented	+	+	Needs reloca- tion
9.	Bhopal School of Social Sciences	.1	No	No	+	+	+	
Total		277.08						

Note : + Indicates positive answer.

Source : Field survey by Town & Country Planning Department.

## 7.63 Higher Secondary and Middle Schools

The city has 73 higher secondary and 87 middle schools. Nearly 44.7 per cent of Higher Secondary schools are run by State Government. Out of 37 Higher Secondary schools, nearly 10 are in rented buildings which are not functionally suitable. Only twelve schools have space for playgrounds. The condition of middle schools is more or less the same. The total area under Higher Secondary schools measures around 5125 hectares. Details are given in the following table :

BHOPAL : ANALYSIS OF HIGHER SECONDARY SCHOOLS

7-T.4

Sr. No.	Name of the School	Location	Area in hectare	Play-ground	Future expansion possibility	Building ownership	Good structural condition	Location	Remarks
1	2	3	4	5	6	7	8	9	10
1.	Govt. Girls H. S. S.	Jehangirabad	1.21	P	P	P	P	P	—
2.	Govt. Model H.S.S.	Shahjahana-bad	0.80	No	No	P	Fair	Unsuitable	Needs relocation
3.	Govt. Hamidia H.S.S. Boys	Ginnori	0.60	P	P	P	P	P	—
4.	Govt. Maharana Pratap H.S.S.	Jehangirabad	0.40	No	P	P	P	P	—
5.	Saifia H.S.S.	Shahjahana-bad	0.20	No	No	—	Fair	Unsuitable	Needs relocation
6.	Demonstration H.S.S.	Shamla Hill	0.80	P	P	P	P	P	—
7.	Govt. Habibia H.S.S.	Station Ward	0.80	P	P	P	P	P	—
8.	Govt. Hamidia Girls H.S.S.	Sultania Road	0.60	No	P	P	Fair	P	Needs relocation
9.	Govt. Sultania Girls H. S. S.	Shahjahana-bad	0.20	No	No	P	Fair	Unsuitable	Needs relocation
10.	Govt. Girls H.S.S.	Jehangirabad	0.20	No	No	P	P	P	—
11.	Govt Girls Kamla Nehru H.S.S.	T.T. Nagar	1.21	P	P	P	P	P	—
12.	Govt. Sarojini Naidu H.S.S.	T.T. Nagar	1.21	P	P	P	P	P	—
13.	Govt. Mahatma Gandhi H.S.S.	B. H. E. L. Bhopal	2.02	P	P	P	P	P	—
14.	Govt. Women B.T.I.	Ginnori	0.40	P	P	P	P	P	—
15.	Govt. Boys H.S.S.	Bairagarh	2.20	P	P	P	P	P	—
19	Govt. Model H.S.S.	T.T. Nagar	2.02	P	P	P	P	P	—
17.	Jehangiria H.S.S.	Ibrahim-pura	0.20	No	No	P	Fair	Unsuitable	Needs relocation
18.	Govt. Girls H.S.S.	Bairagarh	0.80	P	P	P	P	P	—

1	2	3	4	5	6	7	8	9	10
19.	Digambar Jain B. H. S.S.	Chowk	0.80	No	No	No	Fair	Unsuitable	Needs relocation
20.	Educational Society	B.H.E.L.	P	P	P	P	P	P	—
21.	Central School	Arera Hill	2.02	P	P	P	P	P	—
22.	Convent School Idgah	Idgah „	4.85	P	P	P	P	P	—
23.	Maulana Azad B.H.S.S.	Idgah „	0.80	P	P	P	P	P	—
24.	Convent School	B.H.E.L.	1.21	P	P	P	P	P	—
25.	Campion School (Present)	Shahpur Village	14.97	P	P	P	P	P	—
26.	Saint Francis School	Jehangirabad	1.21	P	P	P	P	P	—
27.	Cambridge School	Pari Bazar	0.80	P	P	P	P	P	—
28.	Saifia H.S.S.	Near Saifia College	0.80	No	No	P	P	No	Needs relocation
29.	T.M. Convent School	Opp. State Bank	0.20	P	P	P	P	P	—
30.	Subhash H.S.S.	T.T. Nagar	4.04	P	P	P	P	p	—
31.	Adarsh H.S.S.	Budhwara	0.04	No	No	Rented	Fair	Unsuitable	Needs relocation
32.	Swami Vivekanand	Pul Bogda	0.20	No	No	„	„	„	„
33.	Girls H.S.S.	Station area	0.04	No	No	„	„	„	„
34.	Vikram H.S.S.	Piplani	0.20	P	P	P	P	P	—
35.	Gandhi Vidya Niketan	Govind-pura	2.0	P	P	P	P	P	—
36.	Nehru H.S.S.	Lohabazar	0.04	P	P	P	P	P	—
37.	Lal Bahadur Shastri	Kaystha-pura	0.04	P	P	P	P	P	—
Total			51.25						

Note :—P Indicates positive answer.

Source : Field survey by Town & Country Planning Deptt. M. P.

#### 7.64 Primary and Pre-Primary Schools

The city has 94 primary schools and 14 pre-primary schools and most of the pre-primary schools are attached to middle schools. The area under such schools is as low as 0.5 acre per unit and 0.12 acre per unit under pre-primary. Almost all schools are functioning in two to three shifts and do not have adequate accommodation also. The existing facility for pre-primary education is extremely inadequate. Most of the schools are located in residential buildings with no playgrounds around them.

## 7.7 SOCIAL AND CULTURAL INSTITUTIONS

The city has assumed status of a cosmopolitan city. Persons from almost all parts of the country have migrated to the city who have established cultural institutions to suit their requirements, but there is no common cultural centre, which can provide opportunities for emotional integration. At present social and cultural institutions obtaining in the city for this purpose are 2 public halls, 2 museums, 3 public libraries, 1 aquarium nearly 30 reading rooms and 5 community halls.

The city needs a new civic centre for promotion and development of social and cultural life of the city and the region.

### 7.71 Public Fair Sites

There is no permanent fair place as such in the city. It is only on festival days that small shops dealing in various commodities are allowed on roads. The fair on the occasion of ( Id Milap ) is held in front of Tajul Masajid near G. P. O. The following are some of the locations where such public fairs are held.

Fair	Place	Period
1. Ganga Dashehra	Ginnori Mandir	May/June
2. Alha-Udal Mela	Karbala	August/September
3. Bhajaria	Shitaldas-ki-Bagiya	August/September
4. Guwal Chawni	Jharno Mandir (Near State Bank)	August/September
5. Dol Gyaras	Khatlapura Mandir (Near Tilak Hostel)	August/September
6. Dashehra	Chhola Mandir & T. T. Nagar Stadium	September/October
7. Shivratri	Gufa Mandir	February/March

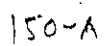
## 7.8 RECREATION

At present the city has following facilities for passive and active recreation:

### 7.81 City Parks

The important parks in the city are Bada Bagh, Kamla Park, Yadgare Shaha-jahani, Abida Park, Bal Vihar, Kilol Park, Mayur Park, and Nehru Park at Bairagarh. Kilol Park has been developed by the Municipal Corporation within the last two years at a site which was cut-up, barren and refuse

## 7.2. DISPOSITION OF AMENITIES







dumping place in otherwise better residential localities of the city. This is a very good example of how even such neglected and apparently useless sites can be converted into places of beauty, joy and recreation. The city also has nearly 20 small parks, located in different parts of the city. In addition to these, there are three nurseries maintained by Agricultural Department. The total area under these parks is around 30 hectares.

#### 7.82 Picnic Spots

Despite the fact that the city has a picturesque surroundings, there is no properly developed picnic spot in and around the city. Only few spots undeveloped, are visited by people on holidays. These are :

1. Hataikheda
2. Lal Ghati Gufa Temple
3. Bhadbhada
4. Ajnal

All these and many other places have great potentialities for development of organised picnic spots with necessary facilities and amenities.

#### 7.83 Play Area (Stadium)

The city has only four major sites which are being used as play spaces. These are Bab-e-Ali Stadium, Aishbagh Stadium, Police Stadium and a stadium located in South T. T. Nagar area. Of these, only T. T. Nagar stadium has sufficient space for sports of national standard. The other two stadiums have limited space. Expansion of Aishbagh stadium is worth consideration.

#### 7.84 Playgrounds

The city badly lacks in playgrounds. There are only 4 playgrounds which need to be mentioned in old city near Islami Gate, one each in Piplani, Baira-garh near Higher Secondary School and in Arera Colony. As discussed earlier most of the educational institutions do not have playgrounds. This makes the situation much worse. Though it is advisable to provide sufficient space for playgrounds in schools, but it is nonetheless important to provide adequate space for the same in residential localities as well. It is in residential areas where it is more effectively used by children and adults. The existing area under this use is worked out to be 10 hectares which is obviously very insignificant.

#### 7.85 Swimming Pools

The city has one public swimming pool at present in Mayur

Park of T. T. Nagar area. However, there is need for constructing more swimming pools.

## **7.9 OTHER UTILITIES AND SERVICES**

### **7.91 Post & Telegraph Offices**

There are 38 post offices in the city. The city level post office is located in front of Hamidia Hospital on Sultania Road. The Post and Telegraph office located in Roshanpura area also, more or less, offers services of city level. There are three telephone exchanges functioning in the city operating nearly 5000 telephone connections. Space for more city level post office, particularly in Habibganj area and Raisen Road area are necessary to serve industrial area, 1464 quarters, private sector and the area proposed to be developed as University campus.

### **7.92 Police Station**

The city is served by ten police stations of different levels. They are widely distributed within habited area of the city. The police stations located in Mangalwara, Hanumanganj and Tallaiya do not have sufficient space and obviously the expansion or relocations need considerations. The city Kotwali also needs relocation in view of the fact that it should more or less be in the central part of the entire city.

### **7.93 Fire Station**

Municipal Corporation of the city maintains a fire protection service. It is located near Sadar Manzil. Fire protection service maintained by Bharat Heavy Electricals Ltd., is also available in emergency to other areas also. It is necessary that the fire stations are located in such a way that these can reach the affected spots in shortest possible time. The city, obviously needs at least two more sites for locating this service.

### **7.94 Cremation and Burial Grounds**

#### **Grave Yards**

Bhopal has unusually a large number of grave yards. The total area under these in the city is nearly 46 hectares. Out of 28 grave yards, 17 covering an area of 18 hectares are not in use. Some grave yards like Bada Bagh Grave yard (for the members of the royal family) and near Bharat Talkies have limited use. The grave yards not in use need to be improved and maintained properly to improve the quality of the environment.

Eleven grave yards which are in use, cover an area of 22 hectares. Kalandar Shah mainly serves the city while grave yard near Jail Road serves T.T. Nagar population. Some grave yards which are surrounded by residential localities need to be discontinued. These grave yards are near Bharat Talkies, Nishatpura, behind power house, near Khankah known as compound Atiya, Tallaiya Gurubux including Takiya Kalandar Shah, Compound Kalla Shah near Rashidia school, and in front of Mosque Jinsi, Jehangirabad.

# BHOPAL : GRAVE YARDS & CEMETERY

7-T.5

Sr. No.	Name of the Grave Yard	Area in hectare	Sr. No.	Name of the Grave Yard	Area in hectare
1	2	3	1	2	3
A. Not In Use			B. In Use		
1.	Grave yard of Christians near Regiment	0.61	18.	Grave Yard for Christians near Putlighar	0.30
2.	Grave yard Bada Bagh (Interior)	1.70	19.	Grave yard near Putlighar	0.81
3.	Grave yard near Imami Gate	0.61	20.	Kalandar Shah	7.09
4.	Ganj Shahidan	6.48	21.	Nishatpura	0.81
5.	Grave yard near Plot Sharma Sahib Hamidia Road, Bhopal	0.16	22.	Behind Power House	1.63
6.	Grave yard near Card-Board Factory	0.41	23.	Near Khankah known as compound Atiya	0.91
7.	Grave yard behind Wahidia School, Fategarh	0.08	24.	Tallaiya Gurubux including Takiya Kalandar Shah	2.55
8.	Grave yard near Karbala Pump in front of house	4.86	25.	Compound Kalla Shah near Rashidia School	3.32
9.	Grave yard Phoota Makbara on Chhola Road	0.61	26.	Near Aish Bagh Gate	1.78
10.	Grave yard Bhoipura Gandinala	0.51	27.	In front of Mosque Jinsi Jehangirabad	0.20
11.	Grave yard near Feroz Khelan	0.24	28.	Near Jail Road	2.73
12.	Grave yard near Masjid Bhajorian	0.41			22.13
13.	Grave yard near Bharat Talkies	0.51			
14.	Grave yard in front of Central Library	0.12			
15.	Grave yard Hindu Orphanage	0.10			
16.	Grave yard Minto Hall (Assembly Hall)	0.49			
17.	Grave yard Retghat	0.04			
		17.94	Total		40.07

Source :—Field surveys by Town & Country Planning Department M. P.

## Cremation Ground

There are four sites for cremation grounds, including one each serving city, T. T. Nagar, B. H. E. L. and Bairagarh. The site of cremation ground near Govindpura is very close to the Housing Board Colony and is unsuitable. The total area under cremation grounds is nearly 8 hectares as listed below.

BHOPAL : CREMATION GROUND (MARGHAT)			7-T.6
S. No.	Name of Location	Area in hectares	Remarks
1	2	3	4
1.	City Chhola Road	4.0	
2.	T. T. Nagar Bhadbhada (near Fisheries Centre)	2.4	
3.	Bairagarh Railway level crossing	0.4	
4.	B. H. E. L. Govindpura (Near Housing Board Colony)	1.2	Requires relocation
Total		8.0	

## 7.95 Dhobi Ghat

Dhobighats have come to stay along water fronts of lake and other water bodies, such as on lower lake near Kilol park and near Pulpukhta (down stream). Most of the families engaged in this profession reside near the lower lake ghat in jhuggies. A detailed socio-economic survey of washermen was conducted by the department. The results are given in the following table. It was found that most of them have monthly income of less than Rs. 200. The problem of their living areas is also inter-related with their work place and their service area. Keeping in view these factors, it will be necessary to formulate a rehabilitation project for washermen.

BHOPAL : SOCIO-ECONOMIC SURVEY OF WASHERMEN (DHOBI GHAT LOWER LAKE)			7-T.7
1.	Total No. of households engaged in the profession surveyed	94	
2. (i)	Average monthly income of a household	Rs. 180.47	
(ii)	Income Group (Household)	Number	Percentage
	(A) Rs. 100/- and below per month	18	19
	(B) Between Rs. 101/- and Rs. 200/- per month	71	76
	(C) Between Rs. 201/- and Rs. 300/- per month	5	5
	(D) Between Rs. 301/- and Rs. 400/- per month	—	—
	(E) Rs. 401/- and above per month	—	—
3.	Household residing (Nos.)		
	(i) At Dhobighat	58	60
	(ii) Elsewhere in the city	36	40

4.	Mode of Transport of clothes to (Dhobighat and back)		
	Animal	1	1
	Hand thela	31	33
	Manual	22	23
	Others (Cycle, Tongas)	40	43
5.	Duration of stay at Dhobighat		
	Between 4 and 8 hrs.	92	98
	More than 8 hrs.	2	2
6.	Number of persons per household	5.11	
7.	Households having accommodation		
	Rented	42	45
	Owned	52	55
8.	Average plinth area of accommodation sft.	288	
9.	Average washing place sft.	30	
10	Average place for Bhatti sft.	16	

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Source : Socio-Economic surveys by Town & Country Planning Department.

#### 7.96 Dairies and Cattle Breeding

The small scale dairies scattered throughout the main city pose severe environmental problem as well as traffic problem. Cattle are taken out every day for grazing and they move along main traffic routes and cause obstruction and accidents endangering the life of citizens. The premises where cattle breeding is concentrated are most unhealthy for human habitation.

Relocation of this activity as an organised centre with complete range of facilities will improve these areas and also improve the socio-economic condition of persons engaged in this activity.

The following table gives number of units and population coverage in respect of various services and amenities available for the present in Bhopal city.

BHOPAL : EXISTING AMENITIES & SERVICES

7-T.8

Type of services & Amenities	Description				Total	Population per unit
	City	T. T. Nagar & C.P.	Baira-garh	B.H.E.L.		
1	2	3	4	5	6	7
<b>A. Health</b>						
1. Dispensaries	10	3	—	2	15	0.30
2. Large Dispensaries	2	1	1	—	4	1.10
3. General Hospital	2	1	—	1	4	+1.10
4. Specialised Hospital	2	1	—	—	3	+1.46
5. Maternity/Nursing homes	5	1	—	—	6	-0.73
6. Hospital Beds	1400	200	30	225	1865	
<b>B. Education</b>						
1. Nursery Schools	1	8	—	5	14	0.32
2. Primary Schools	57	18	10	9	94	0.05
3. Middle Schools	50	16	7	14	87	0.05
4. Higher Secondary Schools	23	7	2	5	37	0.12
5. Colleges	5	3	—	1	9	+0.49
6. Technical/Professional Colleges	6	3	—	1	10	+0.44
7. University	—	1	—	—	1	+4.40
<b>C. Social &amp; Cultural</b>						
1. Town Hall	1	—	—	—	1	+1.10
2. Art Gallery	—	2	—	—	2	+2.20
3. Clubs	5	1	—	1	7	0.63
4. Libraries	2	1	—	—	3	1.47
5. Auditorium-cum-Community Hall	—	5	—	1	6	+0.73
<b>D. Recreation</b>						
1. Children Parks	3	5	—	1	9	0.49
2. City Parks	7	1	1	1	10	0.44
3. Woodlands	—	1	—	—	1	4.40
4. Picnic Spots	1	2	—	1	4	1.10
5. Area of scenic beauty	4	1	—	—	5	+0.18
6. Playgrounds	1	1	1	1	4	1.10
7. Swimming Pools	—	1	—	—	1	4.40
8. Stadium	3	1	—	—	4	+1.10
9. Aquarium	1	—	—	—	1	4.40
<b>E. Other Amenities</b>						
1. P & T Office	—	—	—	—	38	0.12
2. Telephone Exchange	1	1	—	1	3	1.47
3. Police Stations	7	2	1	1	11	0.40
4. Fire Stations	1	—	—	1	2	2.20

Source : Education, Health, Municipal Corporation & Field surveys by Town & Country Planning Deptt.

Note— + These units serve the region in addition to the city.

## PART II

### PLANNING PROPOSALS





## Chapter 8

### CITY FUNCTIONS AND FUTURE CITY NEEDS

Preparation of Development Plan for a city is an effort to evolve scientific and rational policies which will meet functional needs of the city and yet satisfy aesthetics and emotional aspirations of its citizens. This requires systematic analysis of present problems and inadequacies of the city and a judicious assessment of future requirements particularly during the period for which the plan is prepared.

The present problems and inadequacies of Bhopal have been systematically studied and described in Part I of the report. The estimates for future requirements based on the major functions which the city will be required to cater for, the trends of development of other urban centres in the region, the policies of Government for industrial and economic development are attempted and discussed in the following paragraphs. Basically the assessment of needs of the city is to be made in respect of the following important aspects :—

- (a) Population projections particularly within plan period for assessment of various needs.
- (b) Break-up of population in terms of number of families to assess housing requirements. Age and sex structures to assess educational requirements, and working force.

- (c) No. of workers to assess land requirement for industries, offices and other work centres.
- (d) Specific needs of trade and commerce and specialised markets.
- (e) Public utilities and amenities.
- (f) Transportation network and terminal centres for efficient movement of people and goods.

## 8.1 MAJOR CITY FUNCTIONS

Major functions of the city have been briefly enumerated in para 2.4. However, it will be desirable to understand with clarity their relative impact on the future growth of the city.

### 8.11 Capital City

A capital city of the State is required to function as :—

- (a) Place where elected representative of the state assembly, deliberate and lay-down policies of the Government.
- (b) State level platform for congregation of intellectuals to deliberate, through symposia-seminars, conferences, exhibitions, competitions and host of other socio-economic and socio-cultural activities.
- (c) Host city, receiving dignitaries and people from various walks of life covered under (a) and (b). Such functions place demand for reception, procession, exhibition and facilities like transit hostels, boarding, shopping, hotels, rapid transit, transport and communication.
- (d) Being the centre of social, political and intellectual activity, the city assumes the role of a focal communication centre for dissemination of knowledge and news through News Agencies, Publicity, Press, Broadcasting, Telecommunication and Television.
- (e) Centre of cultural heritage of the State and a place for promotion of national integration which will place space demand for museum, library, theatre for performing arts etc.
- (f) Capital city—a place of pride for people of the state who look towards the city as a model city.

### 8.12 Administrative Centre

Bhopal apart from its function as capital city also serves as an Administra-

tive centre. The city is required to hold administrative entities of all the hierarchies viz., State, Regional, Divisional or Zonal, District & Local Level.

#### 8.13 Industrial Centre

Strategic location of Bhopal, along the main Transport system of the country and owing to the impetus location of large industrial undertaking like BHEL, Union Carbide, has made it as a nerve centre of Regional Trade and Commerce-cum-Industrial centre.

#### 8.14 Educational-cum-Research Centre

Bhopal is also assuming the role of a principal centre of educational importance. The basic institutions viz., Regional College of Education, Engineering, Technical Training, Medical College, University are some of the higher order educational centres which have already come to stay in the city. These institutions together with organisations like Research and Development for Electrical Industries, pesticides etc. lend Bhopal a status of educational-cum-research centre of national and State importance.

#### 8.15 Other Ancillary Functions

Bhopal being served by principal axis of transportation network, is emerging as one of the nodal metropolitan centres of the country. It will, therefore, acquire ancillary functions of a transport and communication centre of national and State importance as well.

### 8.2 PLAN PERIOD

Growth of an Urban settlement is a timeless phenomenon, yet for the purpose of preparation of a Development Plan, it is necessary to assume a 'time span' for the plan. The time span facilitates estimation of various requirements of the city during the period. Normally a period of 20/25 years is taken as 'plan period' but in case of a city subjected to rapid and abnormal growth, a shorter period will be more realistic. The plan period for Bhopal has therefore been assumed up to 1991. It will coincide with census decades. A relationship with census decade will facilitate utilisation of valuable census data available. It will also enable comparison at a later data between various projections made for the city and actual figures recorded during census operations.

The proposals contained in the Development Plan cannot be entirely based on the requirements of the plan period. The city has to function efficiently for centuries beyond the plan period. A limited view within the restrictions of any time scale will, therefore, be harmful to the future life of the city.

Moreover, many times such as Urban Infrastructure (road network, water supply etc. amenities and recreation and so on will require preception beyond the plan period.

The Plan is required to be reviewed every 5/7 years so as to modify the same to suit the new and unforeseen requirements and make adjustments in the programme of implementation accordingly.

The phasing of implementation of the plan will be related to five year plan periods so as to facilitate inter-relationship between financial requirement for plan implementation and financial allocations available under various sectoral heads.

### **8.3 FUTURE POPULATION AND CHARACTERISTICS**

#### **8.31 Population Estimates**

An assessment of future population and its characteristics is a basic requirement for preparation of a Development Plan for a city. Because needs of a city are directly related to its population, although certain needs depend on the population of hinterland also to which the city directly serves. In order to assess these needs, it is essential to forecast population of the city during the plan period. It is also essential to know its break-up in terms of number of families, age and sex structure, future labour force, students population requiring educational facilities of different types, socio-economic structure of the population to assess type of houses and amenities required. Needs in respect of health and education will have to be based on the population of the city and of the region which will utilise these facilities.

It is difficult to work out exact estimates of future population of a city because the factors on which growth of population is dependant cannot be foreseen with accuracy. To many variables, and even unknown factors are involved in the estimation. Moreover, at present we neither have enunciated policy on urbanisation nor any control on migration is exercised. In any case every accurate estimates for the purpose of a Development Plan are not required.

The estimates for future population are normally on the past trends of growth and indication of new trends, if any. Various methods such as Decennial growth method, Fitting curve method, Ratio method and comparative graph method can be applied for population projections.

##### **(a) Decennial Growth Method**

Decennial growth method or Mathematical method is based on decennial

growth of preceding decade. In this method mean decennial rate of growth of the last decade is calculated. If the mean decennial growth of the last decade is abnormal (high or low) the average of preceding two or three decades is taken for estimating the population. It is assumed that trend of growth set forth by the city during the last two to three decades is likely to influence the future trend of growth. This does happen when forces responsible for the growth of population are matured and stable.

(b) Fitting Curve Method

Fitting curve method consists in establishing population time series based on past census data. It assumes that the past trend of population growth is likely to continue.

(c) Ratio Method

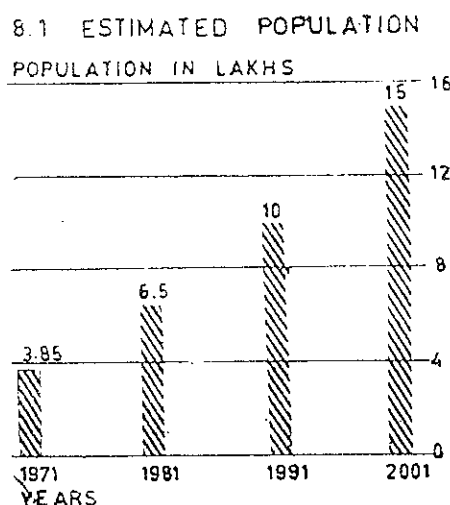
Estimates are based on the growth estimates of a larger area and it is calculated how much the city is expected to share its urban content in relation with the large area. The estimated population of Bhopal city is based on the projected urban population of Bhopal and Sehore districts and share of population content of Bhopal in Bhopal and Sehore districts. It has also been taken into consideration how this content (share) has been changing in the last few decades.

(d) Comparative Graph Method

It consists in selection of cities with similar characteristics and having same population as that of city in question about two or three decades ago, the period for which the future estimate is intended. The cities selected for estimating the population of Bhopal are Agra, Poona, Nagpur, Patna, Jaipur etc. The population estimates worked out by above methods are given in table below :—

BHOPAL : POPULATION ESTIMATES				
Method	Present	Future		Estimates
	1971	1981	1991	2001
1	2	3	4	5
1. Decennial Growth	3.85	6.6	12.5	18.7
2. Fitting Curve Method	3.85	6.8	10.6	15.1
3. Ratio Method	3.85	6.7	11.8	19.5
4. Comparative Graph Method	3.85	6.7	9.5	14.0
Figures adopted	3.85	6.5	10.0	15.0

Growth trends exhibited by Bhopal during the preceding decade will not decline because the capital contents of the city are still in the formative stage. Moreover, major city functions discussed under para 8.1, strategic



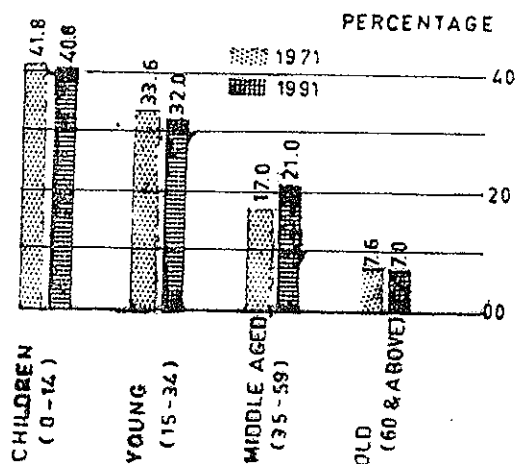
locations of Bhopal and its climatic and unique landscape value will give impetus to growth. Eventually the city will grow into an important metropolitan capital city of the State and the nation. In view of this, it will be reasonable to plan the city for a population of 10 lakhs by 1991.

### 8.32 Distribution by Age and Sex Groups

Age structure of future populations is influenced by various factors such as planning in urban areas, general medical facilities being offered to the citizens and the tendency of migrants to settle down in the city. Besides these factors, the transitional character of population of Bhopal is also likely to influence the age and sex structure for a long time. The structure may stabilise by 2001 AD. The working age group is likely to increase. Old age group is also likely to keep swelling because a large number of employees of the Government and others are attracted to settle in Bhopal after retirement, because Bhopal presents all attraction for settlement of such families. The city must provide for social and other needs of the old and retired people. The distribution of future population by broad-age groups, with age intervals 0-14, 15-34, 35-59, and 60+ which corresponds to children, young persons, middle-aged persons, and old persons has been based on the above considerations. It is estimated that distribution of population under the above broad-age groups is likely to be 40%, 32%, 21% and 7% respectively by 1991. It is rather difficult to estimate the sex composition of the future population. However, the general observations make us to believe that by 1991 the sex

ratio is likely to be around 900. There is wide variation in sex ratio in broad-age groups and it is expected to continue.

## 8.2 ESTIMATED AGE SEX STRUCTURE



## BHOPAL : ESTIMATED POPULATION BY AGE AND SEX

8-T. 2

Broad-Age Group	Age Groups broadly classified to educational level	Estimated population (in lakhs) in 1991		
		Males	Females	Total
1	2	3	4	5
Children (0-14)	0-4 Pre-Primary	0.72	0.68	1.40
	5-14 Primary & Secondary	1.34	1.26	2.60
Young (15-34)	15-19 Higher Secondary	0.48	0.42	0.90
	20-24 College	0.51	0.44	0.95
	25-34 Young Persons	0.71	0.64	1.35
Middle-Aged (35-59)	35-59 Middle-aged persons	1.14	0.96	2.10
Old (60+)	60+ Old persons	0.36	3.34	0.70
Total		5.26	4.74	10.00

Assuming that by 1991 primary+ secondary education is to be provided to 100 per cent children, the number of students to be provided with this facility works out to 2.60 lakhs by 1991. As regards higher secondary education, the proportion for males and females to be provided this facility in corresponding age group may be taken as 75% and 40% respectively. On the

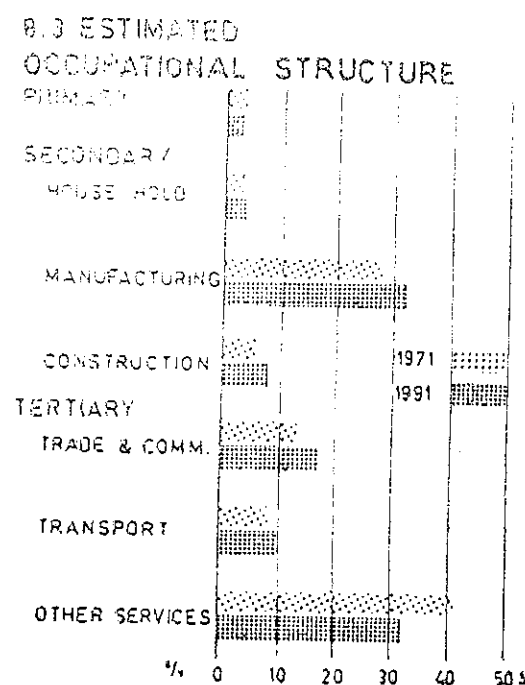
Note:—(1) As per existing policy of the State Government, Primary and Secondary education is proposed to be provided to 100% and 50% children in respective age groups by 1978-79.

assumption that the remaining persons would seek employment while females are expected to begin their married life at this age. The number of students to be provided with this facility thus works out to 0.36 lakh males and 0.17 lakh females. As regards higher education, the proportion in corresponding age group which is predominantly working age group may be taken as 40% for males and 15% for females. On this basis this facility will have to be provided for nearly 0.10 lakh males and 0.07 lakh females.

Although the number of schools and colleges has been estimated on the basis of the population standard, the same has also been assessed and verified on the basis of the estimated school and college going strength discussed above.

### 8.33 Occupational Structure-Estimates

Occupational structure indirectly reflects the composition of various activities thriving in the city. In order to estimate the space demand by different activities, it is essential to have an idea of changing occupational trend likely to take place during plan period. Although in absence of adequate data, it is further difficult to foresee a correct picture of distribution of working force in the year 1991, yet some approximate estimates are possible which can be used for estimation of land requirement for various uses. The distribution of working force for Bhopal has been based on the structure obtaining in the city during 1961 and 1971 censuses and the emerging city functions spelled out under para 8.1. According to these estimates, working force in primary





sector is likely to reduce, while in secondary sector it will increase. The categories which are likely to swell up are : Manufacturing and Household Industry, Trade and Commerce, Transport and Storage, Construction, Services.

The Percentage of workers to total population has reduced owing to the slight change in the definition of 'worker' adopted in 1971\* census. However, in Bhopal, the content of working population has indicated abnormal reduction from 36.9% in 1961 to 28.7% in 1971, such a situation reflects the sudden influx of population owing to establishment of new activity. Initially the city received working population, and gradually the migrants brought their families as well. Content of workers to the tune of 28.7% in 1971 compared with a normal city like Indore (26.1%), indicates that the city has not yet attained normal situation. Assessment of major functions indicate that migrational trends of workers will persist during the plan period, although at a lower rate. In view of this, workers' content will revolve around 28% during the plan period. Accordingly, the working force is expected to be around 1.82 lakhs in 1981 and 2.8 lakhs in 1991.

These considerations have been kept in view in computing the occupational structure which is compiled here :—

#### BHOPAL : ESTIMATED OCCUPATIONAL STRUCTURE

8-T.3

Category/Sector	Percentage of workers to total workers		Number of workers (in 1000)	
	1971	1991	1971	1991
1	2	3	4	5
Primary Sector I × II × III	3.2	2.0	3.56	5.60
IV. Household Industry	2.3	3.0	2.54	8.40
V. Manufacturing Industry	26.2	30.0	28.87	84.00
VI. Construction	4.3	4.5	4.81	12.60
Secondary Sector	36.0	39.5	39.78	110.60
VII. Trade & Commerce	14.8	17.5	16.30	49.00
VIII. Transport Storage & Communication	8.4	10.0	9.26	28.00
IX. Other Services	40.8	33.0	44.98	92.40
Tertiary Sector	64.0	60.5	70.54	169.40
Grand Total	100.0	100.0	110.32	280.00

Note:—\* The census data of 1971 cover city limits only, which exclude Bairagarh and B.H.E.L. Necessary adjustment in future estimates on this account has been made.

### 8.34 Projected Office Employment

In order to work out the office space requirement and need for rental housing, an attempt to assess the future office employment is made. This is based on the existing strength of office employees and their distribution in various types of offices functioning in the city.

As per estimated occupational structure, 92400 workers will be engaged in other services. 60% of projected service workers are estimated to work in offices of different level. Their percentage distribution in various offices is based more or less on the existing distribution pattern.

BHOPAL : OFFICE EMPLOYMENT (ESTIMATES)  
(GOVERNMENT & SEMI-GOVERNMENT)

8-T.4

S No.	Category of Offices	Existnig		Project	
		No of Emp- loyees 1971	Percentage to total	Estimated employees	Percentage to total
1	2	3	4	5	6
1.	Central Government	6366	16.6	8,800	16.0
2.	State Level	11294	29.4	16,500	30.0
3.	Divisional Level	7694	20.0	9,350	17.0
4.	District & Local level	4471	11.6	6,600	12.0
5.	Semi-Govt. & Auto- nomous Bodies	8599*	22.4	13,750	25.0
Total		38424	100.0	55,000	100.0

\*Excluding office employees of B.H.E.L.

### 8.4 HOUSING REQUIREMENTS

On the basis of 1971 census data and survey conducted by the department, the housing backlog corresponding to 1971 has been estimated to be around 32750 dwelling units, out of which nearly 17,700 dwelling units account for the shortage of quarters for staff of State, Central and Semi-Government organisations. The shortage also takes into account the relatively unacceptable (6550) dwelling units, including those of slum and jhuggi dwellers. The detailed study revealed that 4 out of every 10 families are without acceptable dwelling space.

The future need will have to be related to future growth of population, change in socio-economic conditions resulting in disintegration of joint families reduction in the present housing stock owing to dilapidation etc. Reliable figures regarding number of families living in the city are not available. The 1971 census, gives number of households which can be taken as very close to the number of families requiring separate dwelling

units. Similarly, no authentic information is available about the size of urban family which will require independent dwelling unit. 1961 census gave 4.5 as the average household size while in 1971 the household size has swelled up to 5.0. It, however, does not indicate the family size. Larger household size may be owing to sharing of accommodation. In general, the number of persons per family is reducing for many socio-economic reasons. It is anticipated that the family size might reduce to 4.7 in 1981 and 4.5 in 1991.

In view of these considerations, the future housing requirement is based on the following assumptions :

- (a) The family size has been assumed as 4.5 (only for additional population after 1971).
- (b) Each household will require a separate dwelling unit.
- (c) Acceptable housing stock is likely to shrink to the rate of 1% per annum. Based on these considerations, the future housing requirement is estimated at 1.78 lakh units. Details are given in the following table :

BHOPAL : PROJECTED FAMILIES & HOUSING REQUIREMENT				8-T. 5
Sr. No.	Particulars	Requirement of dwelling units		
		1971	1981	1991
1	2	3	4	5
1.	Population (in lakhs)	3.85	6.5	10.0
2.	Additional population (in lakhs)	—	2.65	6.15
3.	Average family size	5.0	4.7	4.5
4.	Additional families	—	56.400	1.36.700
5.	Requirement of units including 1971 backlog	32,800°	89.200	1.69.500
6.	Units requiring replacement @1% per annum of habitable dwelling units.	—	4.30	8.600
Total requirement of dwelling units including backlog.		32.800	92.500	1.78.100

° 1971 backlog.

The city will have to provide for 1,78,100 additional dwelling unit during the plan period. The total requirement includes large-scale requirement of rental

accommodation to be provided by State, Central and autonomous bodies for its staff.

#### 8.41 Rental Housing

In order to assess the requirement of rental housing for employees during the plan period, it is necessary to determine the growth of employment in respect of :—

- (a) The future capital complex.
- (b) Future industrial employment in public undertaking
- (c) Growth of autonomous and other local institutions.

The estimates are based on the following assumptions :

1. 15% of employees of Government and Semi-Government organisation are likely to build their own houses, while 20% are expected to live with other relations such as wife/husband/son etc. The remaining 65% employees will require separate rental accommodation.

2. 10% of employees of BHEL are expected to live in their own houses, while 15% are expected to live with their relations. Thus 75% employees of BHEL will require separate rental quarters.

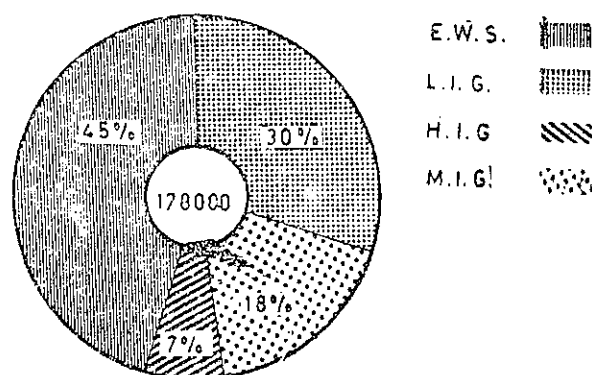
On this basis, the requirement of quarters by 1991 is worked out and compiled in the table as under :

BHOPAL : REQUIREMENT OF QUARTERS FOR GOVT./SEMI-GOVT. EMPLOYEES S-T.6

Employer	Employment		Requirement		Existing Qrts.	Additional Qrts.needed
	1971	Estimated 1991	Rate	No.		
1	2	3	4	5	6	7
1. Govt. Semi-Govt.	38400	55000	65%	35750	10750	25000
2. B.H.E.L.	19000	25000	75%	18750	12000	6750
Total	57400	80000	68%	54500	22750	31750

## 8.4 HOUSING REQUIREMENT

DWELLING UNITS BY TYPE



From the table, it can be easily seen that requirement of rented quarters forms nearly 18% of the total additional requirement.

### 8.42 Housing Type

In order to specifically earmark areas for housing particularly for economically weaker section & L. I. G., it is necessary to break up the total requirement in terms of income groups.

The data on housing stock in terms of E.W.S., L.I.G., M.I.G., and H.I.G. are not available. However, the distribution of households living in slum areas, 1 room, 2 rooms, 3 rooms, and 4 rooms tenements could be utilised for this purpose. On this basis, the following proportion has been worked out.

BHOPAL : DWELLING UNIT REQUIREMENT BY TYPE 8-T. 7

Category	Dwelling Units	
	Number	Per cent
1	2	3
E.W.S.	76,500	45
L.I.G.	53,400	30
M.I.G.	35,600	18
H.I.G.	12,500	7
Total	1,78,000	100

### 8.43 Housing Area Requirement

At present, there is vast contrast in residential densities in different areas of the city. The residential land works out to 8.8 acres (3.6 hectares) per 1000 persons which seems to be less. It is proposed to provide residential land at the rate of 10 acres (4.05 hectares) per thousand persons. This would give gross residential density of 100 persons per acre. Thus, the requirement of area under residential use on this basis works out to 10,000 acres (4050 hectares) for the projected population of 10.0 lakhs.

### 8.5 TRADE AND COMMERCE

Bhopal being the principal regional city of Bhopal region, will also require adequate space for commercial activities of regional importance. This function presently has not grown into its full form, as the picture of commercial activities obtaining in the city is still in a formative stage. It will be necessary to build up its due form by providing space at appropriate location for trade and commercial activities to suit the status of a regional city. Present land utilisation rate of 0.13 hectare per 1000 persons under trade and commerce is obviously low. In terms of workers in the trade and commerce the rate works out to be 4.0 hectares per 1000 persons as against 4.5 at Indore. This includes the inadequacies which persist even for presently functioning activities at Indore. Taking 8.3 hectares per 1000 workers as the rate for needs of these activities, the total land required for commercial use be around 1000 acres or 405 hectares. Out of the total requirement of space in respect of various commercial activities is proposed to be guided by the norms as under :—

BHOPAL ; LAND REQUIREMENT FOR TRADE AND COMMERCE 8-T.8			
Sr. No.	Name of the Activity	Description	Approx. space requirement in hectares
1	2	3	4
1.	Grain Mandi (one)	Present mandi will have to be relocated for want of more space and proper regional access.	40-50
2.	Timber Mandi (one)	Haphazard growth on main arteries needs to be curbed. Organised new mandi site is to be proposed.	12-20
3.	Vegetable/Fruit Mandi	The site vacated by Laxmibai mandi could be used for the relocation of Vegetable & Fruit mandi.	12-20
4.	Building Material Mandi (Two sites)	Organised sites will have to be provided for.	45-50

1	2	3	4
5.	Grass Mandi	Shifting of existing grass mandi to new site.	8-10
6.	Cattle Market	Shifting of cattle market to new site.	8-10
7.	Wholesale/Retail & Specialised Markets		40-50
	( i ) Cloth	Bairagarh Market has adequate space. Organised market needs to be proposed in the new centre as expansion of the Bairagarh market.	
	( ii ) Kirana/Grain (two sites)	1. Existing main city core. 2. In new city centre.	
	(iii) Hardware (two sites),	1. New city centre. 2. Main existing city centre.	
	(iv) Expansion needs of markets of Cloth, Hosiery, Readymade Garments, Hardware, Steel goods & Furniture, Machinery spare parts, Wooden furniture, Plastic Crockery, Forwarding Agencies, Business Offices, could be met by providing space vacated by mandi and space earmarked in the new city centre.		
8.	Transport Nagar	Present site could function as the offices of forwarding agencies, but godowns loading & unloading activities have to be provided an organised Transport Nagar.	15-20
9.	Kabadi Market (one)	Shifting of Kabadi market from Central area. A new site to accommodate various existing markets.	8-10
10.	City level retail shopping including business complex (Two sites)	1. Existing main city centre. 2. New city centre.	15-20 25-30
11.	Periodical Market	4. New sites.	3-5
12.	Zonal shopping centre	One for each planning unit with nearly 1 lakh population.	5-10
13.	Sector shopping Centre	Shopping centre to cover population of 12-15 thousand inhabitants.	1-2

## 8.6 OFFICE SPACE REQUIREMENT

Bhopal being capital city, places a special consideration for earmarking space for administrative complex in the Development Plan. The city is still in its formative stage and most of the offices are being accommodated in temporary buildings or in old buildings, and residential buildings, wherever accommodation is available. This has resulted in un-co-ordinated work place relationship.

Presently total office spaces covers only 100 acres (40 hectares) and it does not account for space covered by business offices and those in mixed use areas. Looking to the total number of offices, and their status, total office space needed for even present requirement is around 200 hectares.

The general norm for providing office space could be based on the following consideration :

- |                         |                                      |                   |
|-------------------------|--------------------------------------|-------------------|
| 1. Capital complex.     | State level offices.                 | 120-160 hectares. |
| 2. Sub-Capital complex. | Zonal & State level.                 | 50-75 hectares.   |
| 3. Zonal complex.       | Divisional & District level offices. | 25-50 hectares.   |

## 8.7 INDUSTRIES

It is impossible to make an exact forecast of number of industries which will be established during the plan period. However, it is expected that the following large and medium size industries will be established in the city:—

- |                            |                                 |
|----------------------------|---------------------------------|
| 1. Electrical goods        | 12. Food production             |
| 2. Agricultural implements | 13. Bakery products             |
| 3. Engineering goods       | 14. Utensils                    |
| 4. Medicine                | 15. Beverages                   |
| 5. Chemical units          | 16. Steel Furnitures            |
| 6. Leather goods           | 17. Auto parts/Tractor parts    |
| 7. Plastic goods           | 18. Electric lamps              |
| 8. Building material       | 19. Cement products             |
| 9. Fertilizer              | 20. Prefab. Building Industries |
| 10. Wood Products          | 21. Agro-Based Industries       |
| 11. Steel                  | 22. Electronic Industries       |

The present rate of utilisation of land for industries works out to nearly 11 hectares per 1000 industrial workers. However, a higher ratio for area estimates will have to be maintained owing to a large area reserved for B.H.E.L. factory and other large units. On the basis of 11 hectares per 1000 industrial workers, area required works out to nearly 1015 hectares. It will, however, be safer to reserve another 120 hectares for unforeseen industrial



growth in order to maintain a continuity of industrial area for future expansion. The break up of land so worked out for industries is proposed to be earmarked as under :—

1. Heavy Industries	525 hectares
2. Heavy and Medium	325 hectares
3. Medium and Small Industries	185 hectares
4. Service and Flatted	100 hectares
Total	<hr/> 1135 hectares <hr/>

## 8.8 URBAN INFRASTRUCTURE

### 8.81 Traffic and Transportation

Equipments employed for traffic movement on our roads in urban areas have been changing rapidly. More and more power driven vehicles are entering in the same road space. Growth trends of vehicles reflect this trend. The increasing petrol cost and shortage of petrol, however, are likely to influence this trend for sometime. In view of the petrol crisis, it will be appropriate to activate mass transportation system by improving circulation pattern and increasing its efficiency and coverage. This will encourage people to adopt modes of mass movement. Future growth of modes of movement is difficult to forecast, but it can be stated that number of trips by individual vehicles is likely to reduce, and that mass movement trips are likely to increase. Inter-city movement of goods by trucks is likely to increase along with movement by rail, while intra-city movement of goods through hand carts, and small vans is likely to increase.

The topography and distances between different 'work places' in Bhopal render use of cycle difficult. In other cities such as Indore and Jabalpur, this is most popular mode of transportation. Similarly 'tempos' which are replacing 'tongas' in most of the cities have disadvantage due to frequent ups and downs in the city roads. The taxis and three-wheelers are likely to increase.

The increase in number of scooters and cars works out to 38% and 11% per annum respectively. This trend is likely to be affected as a result of petrol crisis particularly in respect of cars and jeeps. Bus travel is getting quite popular and is cheapest mode of travel in Bhopal. The increase in number of buses (13 per cent per annum) during the last decade was quite significant.

So far as transportation of goods in the city area is concerned, the carts are being replaced by 'goods vans'. In case of regional transport, the trucks have gained considerable importance over railways and the increasing trend in number of trucks is likely to continue in future also.

Since trucks and goods' vans are used mostly for commercial purpose, their increase will be in proportion to increase in commercial activity in the city. The commercial activity is anticipated to increase at a faster rate and the same rate may be presumed to be followed in assessing number of goods' vans and trucks in the city.

The estimated number of fast moving vehicles, as calculated on the presumption given above, are shown in the infra table :—

BHOPAL : ESTIMATED FAST MOVING VEHICLES

8-T.9

S. No.	Category	Existing (1972)	Percentage decennial increase	Projected by past trends	Estimated 1991
1	2	3	4	5	6
1.	Buses	1,000	130.0	5,290	5,000
2.	Trucks	3,000	100.0	12,000	10,000
3.	Jeeps/Cars/Taxies	6,000	110.0	26,460	25,000
4.	Auto-Rickshaws	110	300.0	1,760	5,000
5.	Scooters/Motor Cycles	6,000	380.0	1,38,240	75,000
6.	Goods' Vans/other Vans	4,000	170.0	22,160	15,000
Total		20,110	95.0	2,05,910	1,35,000

The existing number of fast moving vehicles per 1000 population works out to 50 vehicles. The estimated number of fast moving vehicles will be 135 vehicles per 1000 persons by 1991. It works out to 0.13 vehicles per head. Since a higher ratio of mass transportation is presumed, this ratio appears to be quite justified looking to the proportion of service-class population in the city.

The road network will have to be worked out on the basis of above trends. Apart from road network, which is also to be related to the land use pattern, or the disposition activities, the other space needs of transportation elements of the city will be governed by the following norms :

### Terminal Centres Parking

1. Railway station	25-30	hectares
2. Goods yard	15-25	„
3. Regional bus stand	6-8	„
4. Subsidiary bus stand (4 Nos.)	1½-3	dectares
5. Bus depots with workshops (2 Nos.)	6-8	„
6. Pick up stations	½-1	„
7. Major taxi stand	½-1	„
8. Major city bus terminal centres	1-1½	„
9. Other city terminal centres	½-1	„
10. Bus stops	¼-½	„
11. Parking—cars, scooters etc.		as per need

### 8.82 Services and Amenities

Besides population content of an urban settlement, its economic and demographic structure need special consideration for working out need for services and amenities. To cities with equal population content but different socio-economic structure would claim for different order and type of services and amenities. For Bhopal, the following considerations will have to be kept in view, in assessing the demand for services and amenities.

1. Large number of households belongs to service class, this places a special demand for educational, recreational and other needs.
2. Place for congregation of people for political, cultural and religious purposes.
3. Amenities for people often visiting the city to participate in the Vidhan Sabha, Seminar, Conferences, Exhibitions.
4. Cosmopolitan social structure, professional classification of its working force, employment pattern, income structure will also influence the type and order of amenities.
5. Capital city being the pride city of the people of the State looks towards Bhopal as a model city, and accordingly everything being developed here will have its influence in other areas of the State. This will influence the quality of services and amenities to be provided in the city.

Services and amenities so assessed will have to be built within the framework of major city functions, spelled out under para 8.1 and regional demand for services and amenities. The above basic considerations have been taken into account to work out norms for services and amenities to be

provided for in the Development Plan for Bhopal. This is compiled in the table given below :

BHOPAL : NORMS FOR SERVICES AND AMENITIES

S-T.10

Level of Amenity	Category	Norms adopted (Population/Area served)
1	2	3
<b>Education</b>		
City Level	1. University	Region/City.(1)
	2. Technical & Professional Colleges	City/Region.(2)
Planning Unit level	3. Colleges	40-50 thousands
Sector level	4. Higher Secondary Schools	10-15 ..
	5. Middle School	5-6 ..
	6. Primary School	3-4 ..
	7. Pre-primary School	7-10 ..
<b>Health</b>		
City level	1. General Hospitals	City/Region
	2. Specialised Hospitals	Region/City
	3. Other Hospitals Ayurvedic, Unani Homoeopathic	City/Region
	4. Nursing Homes	City/Region
	5. Hospital Beds (one calculated on city population)	400 persons
Planning Unit level	6. Large Dispensary	One for each planning unit
	7. Maternity Home	..
Sector level	8. Dispensary	10-15 thousands
<b>Social and Cultural</b>		
City level	1. Town Hall	3 to 5 lakhs
	2. Art Gallery & Museum	City/Region
	3. Major City clubs	2 to 3 lakhs
	4. Auditorium	2 to 3 lakhs
	5. Central Library	City/Region
planning Unit level	6. Auditorium-cum-Community Hall	One for each planning unit
	7. Club	..
	8. Library	..
Sector level	9. Community Building	10 to 15 thousands
	10. Reading Room	4 to 6 thousands
<b>Recreation</b>		
City level	1. Botanical Garden	Region/City
	2. Zoological Garden	Region/City
	3. Region Park	Region/City

1	2	3
	4. Aquarium	City/Region
	5. Picnic spots	City/Region
	6. Amusement park	City Region
	7. Exhibition grounds	3 to 5 lakhs
	8. Central stadium	6 to 10 lakhs
	9. Stadium	2 to 3 lakhs
	10. Swimming pool	"
	11. City park	"
	12. Large open spaces	"
Planning unit	13. Zonal park	One for each planning unit
Sector level	14. Sector park	10 to 15 thousands
	15. Children park	4 to 6 thousands
	16. Playground	10 to 15 thousands
	17. Play field	2 to 4 thousands
	18. Tot-lot	500 persons
Other Services		
City level	1. Central & Traffic	City/Region
	2. Auto-telephone exchange	3 to 5 lakhs
	3. Main Police station	2 to 3 lakhs
	4. Fire station	3 to 5 lakhs
	5. Burial ground & cremation ground	1.5 to 2 lakhs
Planning unit level	6. Zonal P & T office	One for each planning unit
	7. Zonal Police station	"
	8. Electrical sub-station	"
Sector level	9. Sub- P & T office	10 to 15 thousands
	10. Sub-Police station	"

1. Region/City :—Mainly for the region but serves the city also.
2. City/Region :—Mainly for the city but serves the region also.

### 8.83 Public Utilities

#### Water Supply

Requirement of water for the projected population of 10 lakhs is estimated to be 35 MGD for domestic use taking an average consumption of 35 gallons per head per day. The requirement may be little higher for T.T. Nagar and B.H.E.L. townships compared to the city. In addition to this, about 20% of daily demand would be needed for industrial use and nearly 10% for misc.

purposes. Thus about 10 MGD water may be needed for industrial use and another 5 MGD for misc. purposes. Future water supply need for Bhopal is estimated at 50 MGD. This gives average water need for all purpose @ 50 gallons per head per day.

It is imperative to look for another source to meet this demand as the present source of lake water cannot be topped beyond 22 MGD. In the long run, it will be appropriate to abandon the use of Upper Lake water for domestic use. The beautiful lake has great recreational values and could be made to attract inland and foreign tourists.

### **Sewerage**

Bhopal requires underground drainage system for the old city as well as areas earmarked for future development. The sewerage from the residential areas and industrial areas would require treatment. Industrial effluent needs to be treated to the required standard and disposal in a manner so that it does not pollute the down stream of river and rivulets. The effluent could also be utilised for vegetable and market gardens. About three-fourths of total water supply forms the sewage. Roughly the treated sewage for a unit of 1000 persons could be useful for 0.4 to 0.5 hectares of land for vegetation. Thus nearly 400 to 500 hectares could be reserved for vegetable and market gardens.

Garbage disposal for a city of 1 million size is another task. Possibility of using the garbage for making cooking gas could also be explored. In the meantime sufficient area for trenching grounds at suitable places will have to be provided for.

### **Power**

The per capita annual consumption of power for all purposes is nearly 60 units. At the present rate of consumption, the total requirement by 1991 is estimated to be 6 crore units. As the supply position is still satisfactory, there is no restriction on domestic or industrial power consumption. The present source would stand well to the growing power needs of the city. However, the overall power assessment for the country or the state and adequacy of existing source and or its augmentation is a matter beyond our jurisdiction.

## Chapter 9

### PROPOSED LAND USE PLAN

#### 9.1 AIMS AND OBJECTIVES

The purpose of Development Plan, limitations within which plan is being evolved, population projections, plan period, estimates of various needs of the city particularly during the plan period, have been spelled out in Chapter 8. The main aims and objectives which are attempted to be achieved in preparation of Development Plan for Bhopal are as follows :

- (a) Integration of various units of 'Bhopal Capital Region'.
- (b) Development of Inter-city transportation and communication network to discharge regional functions with efficiency.
- (c) Give shape to the urban structure with the city functions being acquired by Bhopal in the process of its growth.
- (d) Functional disposition by urban use so as to achieve :—
  - (i) Efficient and judicious utilization of land.
  - (ii) Harmonious and coherent inter-relationship between various uses and activities.
  - (iii) Functional distribution of work centres and living areas, minimise travel distances and increase efficient functioning of activities, and
  - (iv) Compact city development.

- (e) Hierarchical city structure in terms of self-contained planning unit, and ensure disposition of services and amenities on the basis of hierarchy of the planning entities.
- (f) Gradual removal of existing disorder.
- (g) Functionally efficient transportation network and circulation system, ensuring safe and at the same time speedy movement of urban and Regional traffic.
- (h) Open-ended circulation pattern to provide for the growth of city even after the plan period.
- (i) Proper system to provide movement space for periodic procession related with capital city.
- (j) Separate pedestrian ways, where such traffic is excessive and segregation is desirable.
- (k) Formulation of traffic operation plan to maximise the efficiency of the transportation system.
- (l) Effective and direct linkages between the work centres and living areas through effective mass transportation system.

## 9.2 BASIC CONSIDERATIONS

Detailed studies in respect of land use pattern, traffic and transportation, physiography, housing and services and work centres contained in Chapters 1 to 7 have brought on many significant problems being experienced by the city. These studies have also brought out opportunities available for proper development of Bhopal in future. A simultaneous study of both, problems as well as opportunities has thrown up following basic points which will form guiding factors for preparation of the Development Plan for Bhopal.

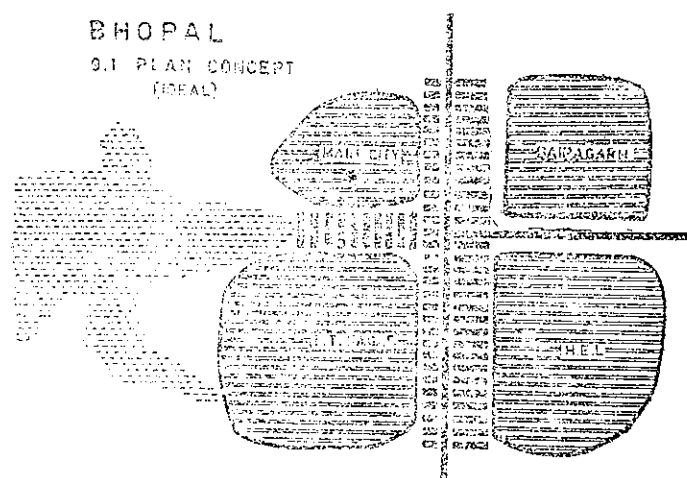
- (a) Development of a new 'city level shopping centres' to relieve congestion in the present city centre and provide for growth of commercial activities.
- (b) Development of a 'civic centre' and specific areas for social and cultural activities to provide for cultural and emotional integration of various townships.
- (c) Development of 'administrative centre' to accommodate various public and semi public offices of State, regional and local level.
- (d) Efficient use of Government land and properties by putting them to most proper use.
- (e) Encouragement for establishment of small industrial units by provision of flatted factories at suitable places.
- (f) Development of land for industries in such a way that future growth even beyond the plan period is possible without creating conflict in land use pattern.



- (g) Provision of proper circulation pattern which will enable the through traffic to by-pass city.
- (h) Provide as far as possible, direct links in between various townships.
- (i) Prescribe street lines for narrow but important roads of the city and enforce the same even beyond the plan period for new constructions or renovations.
- (j) Rational distribution of residential densities so as to minimise disparities.
- (k) Ensure proper urban environment by :—
  - (i) Location of obnoxious industries at proper place.
  - (ii) Improvement and clearance of slum areas by providing environmental improvement and by construction of cheap houses to suit the paying capacity of the poor slum dwellers.
- (l) Development of urban scape of Bhopal in tune with the intrinsic quality of land form so as to enhance the natural scenic beauty of the city.
- (m) Provision of integrated water supply and sewerage system for the whole city particularly for the colonies which are at present physically un-co-ordinated and are devoid of services.

### 9.3 PLAN CONCEPT

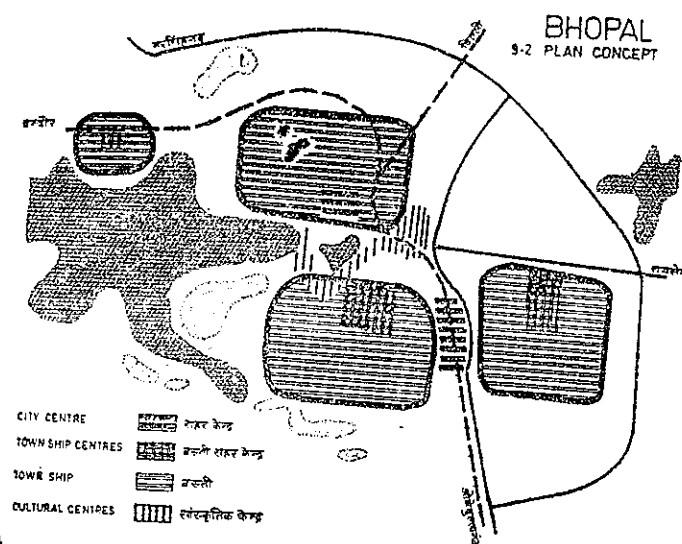
Bhopal urban agglomeration is presently a city of townships viz., the present city, Capital Project township, BHEL township and Bairagarh. Each is separated from the other by physical features, rendering social and cultural integration all most impossible. To remedy this situation, a plan based on the concept of 'corridor of city level activities' will be ideal. This will provide opportunities to persons residing in various townships to participate collectively in social and cultural activities located in 'activity corridors' situated almost at equal distance from all. Unfortunately the space for



provision of continuous corridors can only be available after dislocation of present activities, which in view of the financial and other limitations may not be feasible, at least during the plan period. The sketch given below elaborates ideal solution.

In view of the limitations mentioned previously, the second alternative to achieve the desired physical, social and cultural integration will be to conceive a plan with city level. Social, cultural, recreational and sport centres should be at convenient places as far as possible in between townships.

Again, the present form of the city conforms to a single city centre around the 'chowk' which is hub of city level and local commercial activities. This core is unable to function efficiently owing to poor accessibility and overcrowding conditions. Moreover, the city is growing in a horizontal form through different townships. The city needs a new city centre which is proposed near Habibganj. The concept of the Bhopal Development Plan based on the above factors is highlighted in the following sketch diagram.



## 9.4 PLANNING UNITS

The Development Plan for Bhopal has been formulated on the concept of self-contained planning units. Conceptually each unit will function as an entity in respect of shopping, educational and health amenities, recreational areas and to the extent, possible work centres will also be provided within the unit. The planning unit centres will be linked to the city centres, work centres of the higher order, city level amenities and traffic terminals etc. Each planning unit is further divided into sectors and sub-sectors which will also contain sector-level and sub-sector level amenities.

The hierarchy of city structure thus comprises of sectors and 10 planning units covering an area of 10120 hectares. The size of planning units is not uniform because the area included in a planning unit is based on the conformity of various land uses, character of existing and proposed development, functional hierarchy and physical homogeneity etc. rather than the land area. The planning units have been numbered, and the major city roads of the proposed circulation pattern have been given functional names for the sake of convenience of description of the planning proposals.

#### Unit No. 1

This unit comprises of main city area including existing city centre. It is bounded by railway track and Bharat Talkies Road along eastern side, Pulpukhta Road and northern bank of Lower Lake encircling Bhoipura, Berkhedhi and Jehangirabad on the southern side, northern and eastern lake front (Upper Lake) and Noor Mahal Road along western side, and Hamidia Road (Gol Ghar-Narbada Ice Factory) on northern side.

This unit contains the main shopping centre of the city. The total area covered in this unit is nearly 332 hectares, most of which is under urban use.

#### Unit No. 2

Planning Unit 2 is another important unit which includes capital complex and new city centre. It is bounded by north-south Regional Road RNS (Realigned National Highway) from Pulbogda to Habibganj Railway line on the eastern side, Ring Road (SR) near Shahpur on the southern side, Link Road No. 1 (Capital Project Area) on the western side and boundary of planning unit No. 1 on the northern side. It includes Arera Colony, Shahpur, Char-Imli, part of Arera Hill covering capital complex, New City centre, Lal Parade ground etc.

The total area covered in this unit is nearly 1216 hectares, out of which an area of 655 hectares is already in urban use.

#### Unit No. 3

This unit corresponds to the main residential area of Tantya Tope Nagar. It is bounded by boundary of planning unit No. 2 on the eastern side, villages of Chunabhatti, Singhpur and Chhawani on the southern side, covering the development of Shamla Hills and partly Lake Drive Road on the western side and boundary of planning unit No. 1 on the northern side.

It covers localities of 1464 Qrts., 1250 Qrts., South T. T. Nagar, Panchheel Nagar, North T.T. Nagar, 45 Bungalows, Malviya Nagar, Professors Colony,

Vidhan Sabha, Raj Bhawan, Shamla Hills Area, Engineering College and villages of Kotra Sultanabad, Sighpur and Chunabhatti.

The total area covered by this unit is nearly 1340 hectares out of which an area of about 496 hectares is presently in urban use.

#### Unit No. 4

Planning Unit 4 corresponds to the south-eastern part of Planning Area. The unit is bounded by Ring Road (SR) on eastern and southern side, a portion of National Highway (RNS) on the western side and Major Road No. 2 (MR-2) on the northern side. It includes villages of Bawaria Kalan, Misrod, Jalkheri, Laharpur, Bagh Mungalia, Ahmedpur, part of Bagh Sewania, and Amarwad.

The unit covers an area of nearly 1008 hectares and most of it is presently open and under agricultural use.

#### Unit No. 5

This unit primarily corresponds to the company township of B.H.E.L. It is bounded by Ring Road (SR) on eastern side, Major Road No. 2 (MR-2) on southern side, realigned National Highway (RNS) on western side and Raisen Road on northern side. This includes villages of Khajuri Kalan, Berkheda-Pathani, Khajuri Khurd, Bobra and part of Bagh Sewania, Amarwad.

The total area covered by this unit is nearly 1690 hectares out of which an area of about 796 hectares is presently in urban use.

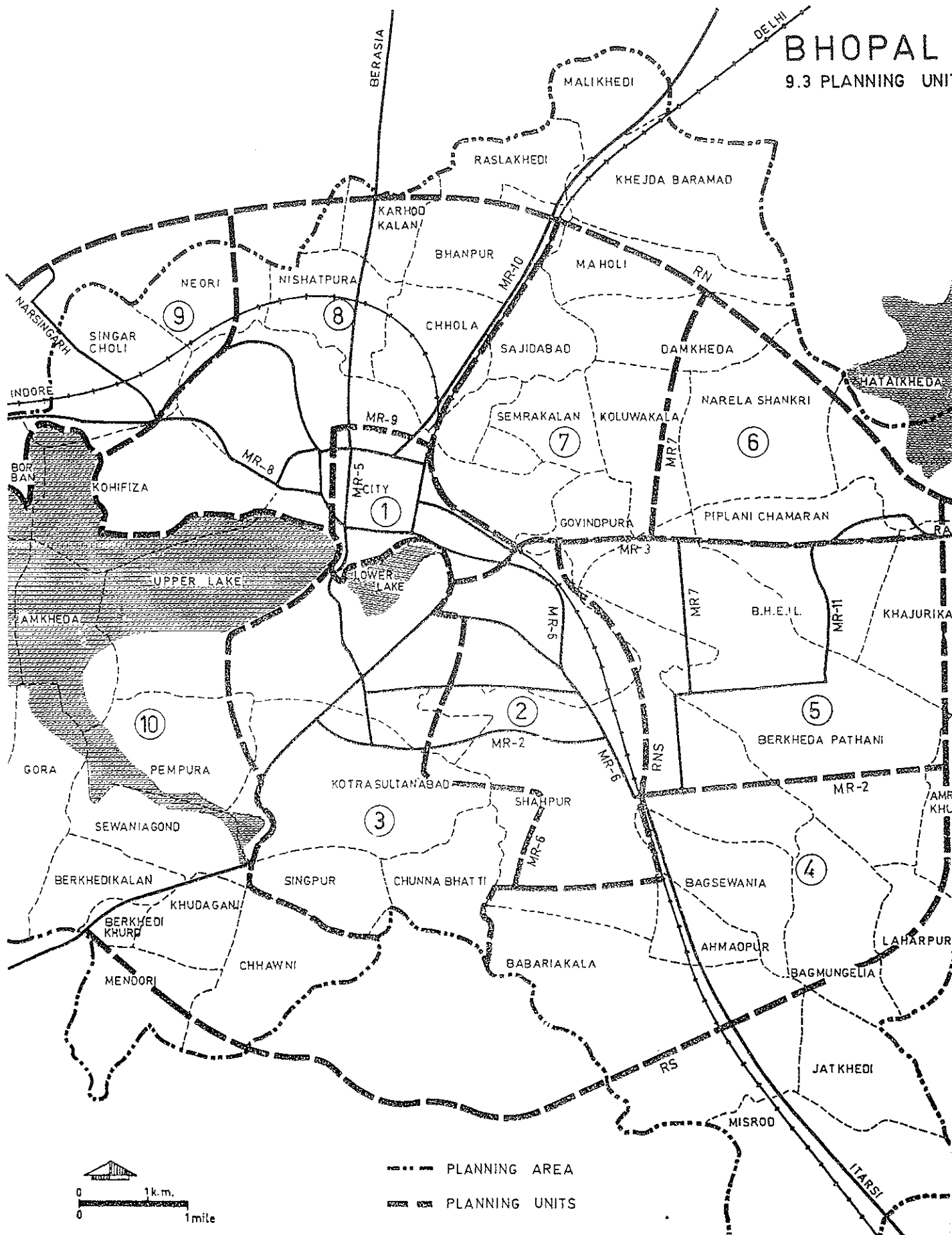
#### Unit No. 6

The unit corresponds to the Govindpura Industrial Estate and Industrial Area. It is bounded by Ring Road on the eastern side, Raisen Road on the southern side, proposed Major City Road (MR-7) between Bijli Nagar and Industrial area on the western side, boundaries of Narela Shankari, Hatai Kheda and Kokta on the northern side.

It includes villages of Kokta, Narela Shankari, Hathaikheda, and part of Khajuri Khurd, Maholi, Damkhedi. The unit covers an area of nearly 1100 hectares, out of which an area of 200 hectares is presently under urban use.

# BHOPAL

## 9.3 PLANNING UNIT





#### Unit No. 7

This unit corresponds to the proposed heavy and obnoxious Industrial Zone and the rich agricultural market gardening area. It is bounded by the boundary of planning unit No. 6 on eastern side, Raisen Road on southern side, railway line on western side and boundary of Khejra Baramad on the northern side. It includes villages of Kolvan Kalan, Sajidabad, Semra Kalan, Khejra Baramad and part of Maholi, Damkheda, Bhanpur.

The total area included in the unit measures nearly 1100 hectares. Most of the area covered in this unit is presently in agricultural use.

#### Unit No 8

The unit corresponds to the area lying north of the main city. It is bounded by railway line on the eastern side, Lake Drive Road along northern bank of Upper Lake on the southern side, Neori Road on the western side and boundaries of villages Malikhedi, Rasla Khedi, Karhaud, Russali and Neori on the northern side. It includes Shahjahanabad, Medical College, Ahmedabad, Old Secretariat, T.B. Hospital etc. and villages of Malikhedi, Rasla Khedi, Karhaud, Russali, Nishatpura, Chhola and part of Neori and Bhanpur.

The unit covers an area of 1516 hectares out of which nearly 400 hectares are presently under urban use.

#### Unit No. 9

This unit mainly corresponds to Bairagarh township. It is bounded by the boundary of planning unit No. 8 on the eastern side, northern bank of Upper Lake on the southern side, limits of Bhainsa Khedi on western side and Railway line on the northern side. This includes villages of Singar Choli, Halalpura, Nayapura, and part of Kohifiza, Borban, Laukhedi, Beheta, Bairagarh Kalan and Bhainsa Khedi.

The unit covers an area of 280 hectares out of which an area of nearly 112 hectares is already in urban use.

#### Unit No. 10

This unit corresponds to the main Tourist-cum-Residential complex proposed in Development Plan. The unit envelopes vast area of Upper Lake and Bhadbhada area. It is bounded by boundary of planning unit No. 3 on the eastern side, boundaries of villages of Chawni, Mendori and Berkhedi Khurd and Kalan on southern side, boundaries of villages Gora, Bhilkhedi, Bhainsakhedi and Bisankhedi on western side, Upper Lake limits on the northern

side. It includes villages of Chhawni, Mandhori, Gora, Bailkheda and Bhainsakhedi, Sewania Gond, Premapura, Dharampuri.

The unit enbounds an area measuring 538 hectares of which only 9 hectares are under urban use.

The table below shows existing developed area and area proposed for development in each planning unit :

BHOPAL : PLANNING UNITS-PROPOSED AREA

9-T.1

Planning Unit	Developed Area (in Hectares)		
	Existing	Proposed (Additional)	Total
1	2	3	4
1.	303	29	332
2.	655	561	1216
3	496	844	1340
4.	68	940	1008
5.	796	894	1690
6.	200	900	1100
7.	133	967	1100
8.	460	1056	1516
9.	112	168	280
10.	9	529	538
Total	3232	6888	10120

## 5 LAND ALLOCATION

Land use analysis of the present urban spread agglomeration gives urban spread at the rate of 7.18 hectares per 1000 persons, whereas at Indore, it was 4.29 hectares per 1000 persons. In view of present inadequacies, future requirements, undulating terrain of Bhopal, it is desirable to provide land at a rate of about 10 hectares per 1000 persons. On this basis, the total requirement would be around 10,000 hectares. This requirement is exclusive of unusable and unbuildable land under excessive slopes, water spread etc.

The table 9-T.2 gives land utilised at present as well as proposed to be earmarked for various uses in the Development Plan. The relative percentage for various land use brings out that the proportion of land for residential use has been reduced from 47.5% to 40%. The land allocation for recreational use has been increased from 6.3% to 14%. This will meet the present deficiencies for this particular use. The proportional area under transportation has been kept more or less same. Proportional land for commercial use has been increased from 1.9% to 4% almost double. This will



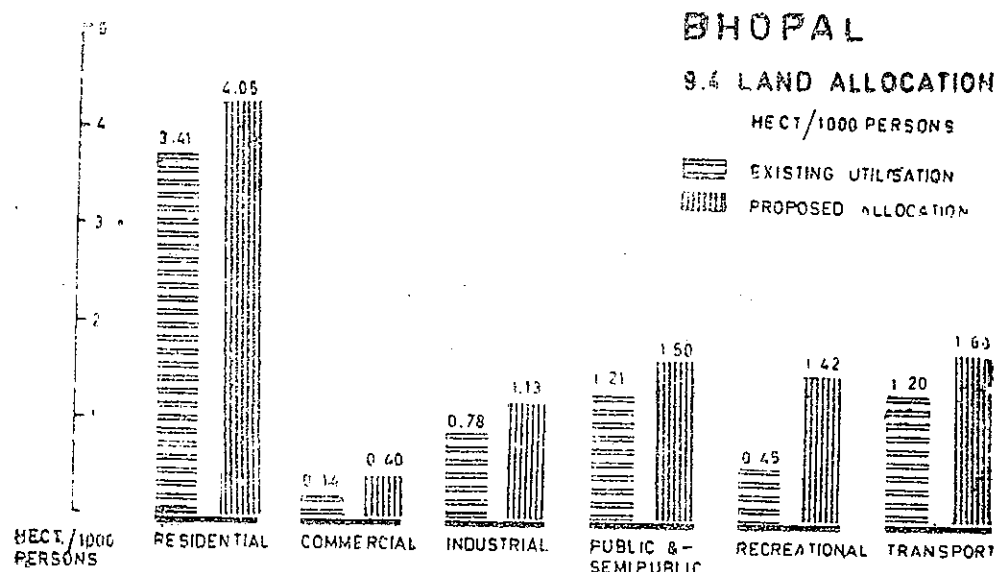
provide space for growing commercial activities in the city. Detailed proposals of land allocated for various activities are contained in Chapter-11.

# BHOPAL : PROPOSED LAND USE & LAND ALLOCATION (1991)

9-T.2

Land Use	Area in Hectares					
	Existing (1973)			Proposed (1991)		
	Existing Area	%	Land Utilisation per 1000 persons	Proposed Area	%	Land Allocation per 1000 persons
1	2	3	4	5	6	7
Residential	1534	47.5	3.41	4050	40.0	4.05
Commercial	65	1.9	0.14	405	4.0	0.40
Industrial	348	10.8	0.78	1135	11.2	1.13
Public & Semi-Public Use	382	11.8	0.85	1215	12.0	1.22
Public Utilities and Facilities	160	4.9	0.36	280	2.8	0.20
Recreational	203	6.3	0.45	1415	14.0	1.42
Transportation	542	16.8	1.20	1620	16.0	1.62
Total	3234	100.0	7.19	10120	100.0	10.12

It will be more meaningful to relate allocation of land for various uses to population. It is proposed to allocate nearly 10 hectares per 1000 persons for all categories of land uses as against 7.2 hectares available at present. The diagram indicates that land allocation in all the land use categories is more than what is available at present, except in public utilities and facilities. The land allocation for residential areas is 4.05 hectares at per 1000 persons compared to nearly 3.41 hectares at present. The land allocation in other uses are 0.40 hectares in commercial areas against 0.14 available at



present, 1.13 hectares for industrial use, 2.10 hectares in Public and Semi-Public uses (including public utilities) 1.42 hectares in recreational use and 1.62 hectares in transport and communications.

## 9.6 LAND USE PATTERN

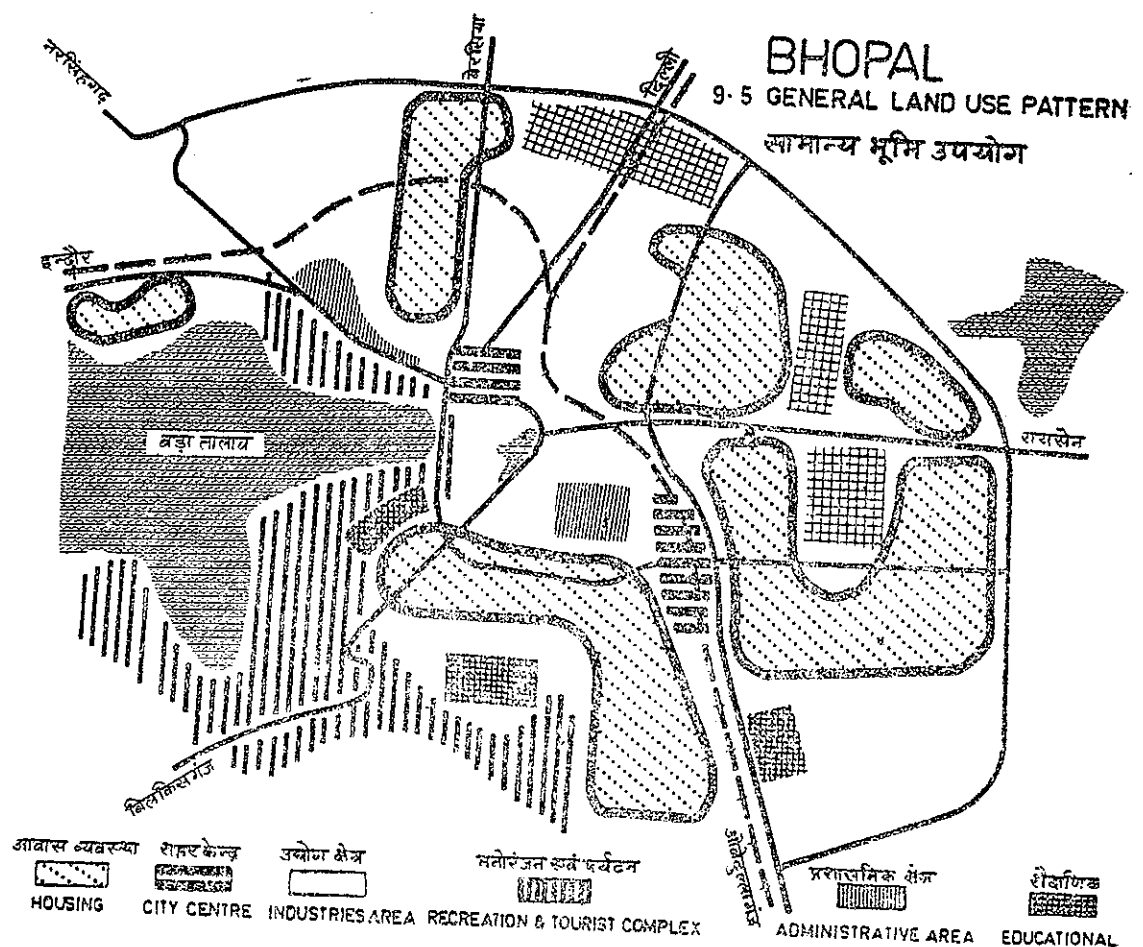
Cities in India, do not function strictly within the bounds of single-use zones. Almost all cities have mixed uses. Service industry, commerce, residential areas are found to be functioning in the same areas conveniently. The concept of mixed land use zoning is, therefore, accepted as most suited to the present situation obtaining in Indian cities. Complete segregation will be undesirable as it will unnecessary create problems of inter-relationship and increase distance of movement. However, some land uses which do not conform to the functions of the area where they are located and cause nuisance are proposed to be relocated at new sites. Industrial units which either owing to their performance characteristics or requirement of specialised services and infrastructure of their efficient functioning are also proposed to be relocated. In general, land use pattern for Bhopal has been evolved on the following considerations.

- (a) Mixed land use zoning particularly in the city centres and planning unit centres to maximise use of services and minimise movement.
- (b) Minimum dislocation of present land use pattern.
- (c) Inter-relation of mandies, wholesale markets with retail market.
- (d) Inter-relation of highest order activities with planning unit level activities.
- (e) Coherent relationship between Industrial and Commercial activities.
- (f) Decentralization of work centres.
- (g) Physical and emotional integration of the existing townships through social, cultural and other activity.
- (h) Making best use of land forms and natural beauty for area enriching the visual and aesthetic values of urban form.

### 9.61 Residential Area

Development Plan envisages distribution of residential areas in terms of self contained residential entities grouped around major work centres, such as industries, commerce and administration etc. Such a system has in built advantage of curtailing unnecessary long trips, which ultimately reduce the burden on transportation system. Close work place relationship will not only increase the efficiency of circulation system but will enhance the functional efficiency of the city.

According to the studies conducted and described in Chapter 4, some of the present residential areas suffer from overcrowding and lack of amenities which are essential part of residential areas. To meet these deficiencies and accommodate an additional population of 5.50 lakhs (1973-1991) an additional area of 2516 hectares has been provided. The total area of 4050 hectares (including 1534 hectares existing area) will form 40% of the total land proposed for development. Detailed proposals in this regard are contained in Chapter 12.



## 9.62 Commercial Areas

The present commercial area around Chowk will not be able to function as city centre owing to poor accessibility and overcrowding conditions. Another city centre is, therefore, proposed in the Development Plan conceived for Bhopal. The city centre around Chowk will continue to function as a city core with limited functions proposed for the central area, and a specialised market centre accommodating retail and to some extent wholesale trade.

The new city centre proposed near Habibganj is meant to receive overflow of existing city centre and provides space for growing commercial activities. It is located in between Capital Project and B.H.E.L. township. It will, therefore, function as a binding element between these townships. It is being conceived as centre for high order commercial activities and regional trade. The total area earmarked under commercial use is 405 hectares which is 4% of the total area. Every care has been taken to diffuse the commercial activity centres so that it is possible to maintain work place relationship with living areas as well. The detail proposals in this regard are discussed under Chapter 11 the 'Major Work Centres'.

### **9.63 Industrial Areas**

The large industrial units such as B.H.E.L., Union Carbide, Central India Flour Mills are located in the separate areas where no space for general industries can be provided. Land for future industrial use has been provided in continuation of present industrial area along Raisen Road. Obnoxious industries have been located in the north-east corner. The areas lying east of these form the polluted zone and as such no habitation is proposed in this area. Land for Agro-based industries is earmarked close to grain mandi around Berasia Road. Flatted factories are proposed at suitable places in city centre No. 2, along Chhola Road and Berasia Road. These areas will contain the existing units which are identified as incompatible and will also provide space for new units likely to come up during plan period.

An area of 1135 hectares is earmarked for industrial use which forms 11.2% of the total land. Detailed proposals in this regard are discussed under Chapter 11 entitled as 'Major Work Centres'.

### **9.64 Public and Semi-Public**

This category consists of multiple uses like Government and Semi-Govt. offices of various levels, education and health amenities, social, cultural and religious institutions. Social and cultural institutions are located in such a way as to function integrating elements binding the various townships and residential areas into a total urban entity. Land allocations under various uses forming a part of public and semi-public use is briefly given as under. Details are described in Chapters 11 and 13.

#### **Offices (Government & Semi-Government)**

Major office complex is proposed in planning unit No. 2 which will accommodate offices of Central & State Govt. and Divisional level. Offices of district and local level are earmarked in planning units 6, 7, & 8. An area of 263 hectares is earmarked for Government and Semi-Government offices. It will

be possible to provide for alternative accommodation to offices presently located in old Government building and private rented buildings.

### **Education**

Although a separate zone has been provided in planning unit No. 3 which includes M.A.C.T. complex, and other specialised institutions, the University complex is earmarked in planning unit No. 4. Thus the proposed education activities are more or less in a diffused manner. The educational zones will also cover land for all other allied activities related with education such as social and cultural needs of educational campus, staff quarters for educational institutions, hostels for the students etc.

The land for college and schools will be provided at the planning unit level and sector level. Land earmarked for educational use in the Development Plan is 547 hectares.

### **Health**

Public health zone is proposed in planning unit No. 8 which covers existing medical college complex and T.B. Hospital. General and specialised hospitals are also earmarked in planning units 5, 6, 7 & 9. Large dispensaries, Ayurvedic and Unani hospitals, Nursing & Maternity Homes and small dispensaries will also be provided at unit level and sector level.

Total area earmarked for public health use is nearly 142 hectares.

### **Social and Cultural**

Social and cultural functions of the city with cosmopolitan character need to be strengthened further so as to enrich social life of the city. These institutions are mainly proposed in planning units No. 3, 4 and 5. One civic centre near Sadar Manzil and Retghat and two cultural centres near Tagore Bhawan and near Natraj Cinema in planning unit No. 5 are proposed. Cultural centres will contain sites for art gallery, museum, auditorium, library etc. and civic centre will contain site for Town Hall and allied activities. Land for Auditorium-cum-Community halls and other cultural activities will also be provided at the planning unit level and at the sector level.

Total area earmarked for social and cultural activities in the plan is about 263 hectares.

## **9.65 Public Utilities and Services**

Except for the intake works, sewage and garbage disposal and treatment

works, the land under utilities form the part of road network and as such do not consume much land. Land under sewage form and trenching grounds is around 605 hectares which is treated as areas under agricultural use. Land under other installation works is around 230 hectares which is 28% of the total area. Detail proposals in respect of these are contained in projects formulated by Public Health Engineering Department and Municipal Corporation. These proposals will be required to be built in conformity with the road network and spread of residential and other use areas, requiring extension of these utilities and services.

#### **9.66 Tourist-cum-Recreational Zone Areas**

Bhopal is assuming the status of a tourist centre of state and national importance. Land form obtaining here presents an unique opportunity for landscaping and development of tourist centre of a high order. Special attention has been exercised to make best use of the land form in determining the areas for landscape and recreational zone. A separate zone in planning unit No. 10 has been earmarked for tourist-cum-recreational centre of highest order. Apart from this, the other areas endowed with rich land forms have been preserved and earmarked for recreation and institutional uses. The detail proposals in respect of these areas are discussed in Chapter 13. Total area earmarked for the purpose is approximately 1415 hectares.

#### **9.67 Transportation**

This category of land use includes land for roads and Railway network, Terminal centres, Bus depots, Parking areas, Airport etc. The total land earmarked under transportation is around 1620 hectares which is 16% of the total area. Detail proposals in respect of traffic and transportation network conceived for the city and region, Major City Roads, Sector Roads, Traffic Terminals, Truck Stands, Transport Nagar, Railway Station and Yards etc., are discussed at length under Chapter 10.

#### **9.7 LAND USE DISTRIBUTION (PLANNING UNIT-WISE)**

The overall city structure consists of ten planning units. Each planning unit derives its land uses characteristics from the linkages it builds within the framework of total land use pattern envisaged in the Development Plan. Planning Units 1 and 2 contain the city centres and as such are the principal core units, planning unit No. 7 contains limited commercial activity related to industries. Unit No. 8 provides for regional mandi, timber market and industrial area of importance, planning units 5 and 6 reflect their identity as main industrial centres of the urban agglomeratinn while

planning unit No. 3 and 4 have predominance of institutional uses. Planning unit 10 will contain tourist-cum-recreational activities for the region and the city.

BHOPAL : LAND USE DISTRIBUTION (PLANNING UNIT-WISE) 9-T.3  
(Area in hectares)

Planning Unit No.	Residential	Commercial	Industrial	Public & Semi-Public	Public Utilities and facilities	Recreational	Transportation	Total
1	2	3	4	5	6	7	8	9
1.	146	43	10	24	20	36	53	332
2.	498	77	14	263	12	101	251	1216
3.	385	19	4	336	28	385	183	1340
4.	470	18	16	215	46	81	162	1078
5.	846	28	316	85	10	162	243	1690
6.	457	24	279	25	40	65	210	1100
7.	482	20	251	41	72	40	194	1100
8.	603	166	245	162	38	61	241	1516
9.	163	10	—	16	10	20	61	280
10.	—	—	—	48	4	464	22	538
Total	4050	405	1135	1215	280	1415	1620	10120

Land use distribution of the respective planning units forms the basis of the detail zoning plans for each planning unit. The detailed zoning plans for each unit will prescribe the detail lay-out of the planning unit, use of land in detail, road norms for widths, density, plot coverage, F.A.R. etc. zoning plans for 'action areas' will be prepared after sanction of the Development Plan under section 19 of the M. P. Nagar Tatha Gram Nivesh Adhiniyam, 1973.

## 9.8 INCOMPATIBLE USES (RELOCATION)

A meticulous application of standards of incompatibility of land uses will bring out a large number of uses which will require shifting from their present places. This will mean a major dislocation of urban life and activities in the city which will be contrary to the objectives mentioned above. Only those are, therefore, being proposed for shifting and relocation at another place which either cause nuisance to the areas where they are functioning or require relocation because they need specialised services for their efficient function, such as wide roads, more space for storage etc. A use-wise list is given in the table. After coming into operation of the Development Plan, these uses will have to be relocated as soon as possible. A reasonable period for shifting will no doubt be available as specified under section 25 of the Nagar Tatha Gram Nivesh Adhiniyam, 1973.

The inefficient uses are also listed in the table. These will not require immediate shifting but, future expansion of these activities in their present areas will be restricted so that ultimately these areas can be put to better and efficient use as proposed in column 5 of the table given below. However, such expansion programme which can form part of the proposed use also will be permitted with appropriate conditions.

**BHOPAL : RELOCATION OF LAND USES AND DEVELOPMENT OF VACATED LANDS**  
(Excluding those Covered in the Central Area) 9-T.4

S. No.	Uses to be Shifted	Existing Location	Proposed Location	Use after Vacation
1	2	3	4	5
<b>A. Incompatible Uses</b>				
1.	Saw Mills	Raisen Road	Sites for Timber markets and Categorised market	Transportation
2.	Murgi Bazar Dhor Bazar	Jehangirabad	Raisen Road (P.U.6)	Educational and Recreational
3.	Bone Mill	Pulbogda	Obnoxious Industrial Area (P. U. 7)	Flatted Factories
4.	Glue Factory	Pulbogda	Obnoxious Industrial Area (P. U. 7)	Flatted Factories Workshops/Commercial
5.	Bhopal Oil Mill	Jehangirabad	Industrial area-Agro based industries (P. U. 6,4,8)	Flatted Factories
6.	Dal and Oil Mills	Around Laxmi Grain Mandi	Near New Grain Mandi (P. U. 8)	Commercial
7.	Tannery Centre	Jehangirabad	Obnoxious Industrial Area (P. U. 7)	Residential
8.	Distillery	Pulbogda	Obnoxious Industrial Area (P. U. 7)	Flatted Factories/ Commercial
9.	Slaughter House	Jehangirabad	Obnoxious Industrial Area (P. U. 7)	Residential
10.	Trenching Ground	Chandbad	Near Obnoxious Industries (P. U. 7)	Residential
11.	Oxidation Ponds / Sewerage treatment Plant	South T.T.Nagar	--	Residential
12.	Vehicle Repairs	Royal Market	Kabadi Market	Residential/Recreational
13.	Cremation Ground	Govindpura	(P. U. 5)	Weekly Market
14.	Area used as Jhuggi and Jhoddies	T. T. Nagar	Proposed residential areas of E. W. 3 & 4	Commercial/Public & Semi-Public
15.	Dhobighat	Lower Lake	Dhobighat, Jehangirabad	Recreational / Dhobighat
16.	Straw Product	Chhola Road	Could be refer to water pollution board	--



1	2	3	4	5
<b>B. Inefficient Uses</b>				
1. S. A. F. Quarters	Jehangirabad	P. U. 3		Public & Semi-Public
2. Poultry Form	Kotra Sultana-bad	Bhadbhada Road*		Education
3. Raj Bhawan	Near Roshan-pura	Dharampuri		Public & Semi-Public
4. S. A. F. Quarters	P. H. Q.	Residential area proposed and P.U. 2 near Jehangirabad		Civic Building
5. Laxmibai Grain Mandi	Berkhedhi	P. U. 8. on Berasia Road		Vegetable-cum-fruit Mandi
6. M.P.S.R.T.C. Offices	Bairagarh	P. U. 2		Residential
7. Bhopal Tractor Organisation	Sindhi Colony	Kabadi Market (P. U. 8)		Educational
8. Scattered Offices	Benazir Building	Old Administrative complex and Arera Hill complex		Educational
9. Central Jail	Arera Hill	North of Sultania Infantry (P. U. 8 )		Capital Complex P. S. P.
10. Stud Farm	Jehangirabad near Pulbogda	Agricultural P. U. 4		Recreational
11. M. P. S. R. T. C. Depot.	Habibganj	P. U. 4		Regional Bus Stand
12. State Garage	Jehangirabad	P. U. 2		Public & Semi-Public
13. Scattered Offices	Malviya Nagar Central area Shahjahanabad	Respective Office complex		P. S. P./Residential

\* Existing use may be allowed to continue for 10 year. No further construction be permitted in future except for those uses indicated in the plan.



## Chapter 10

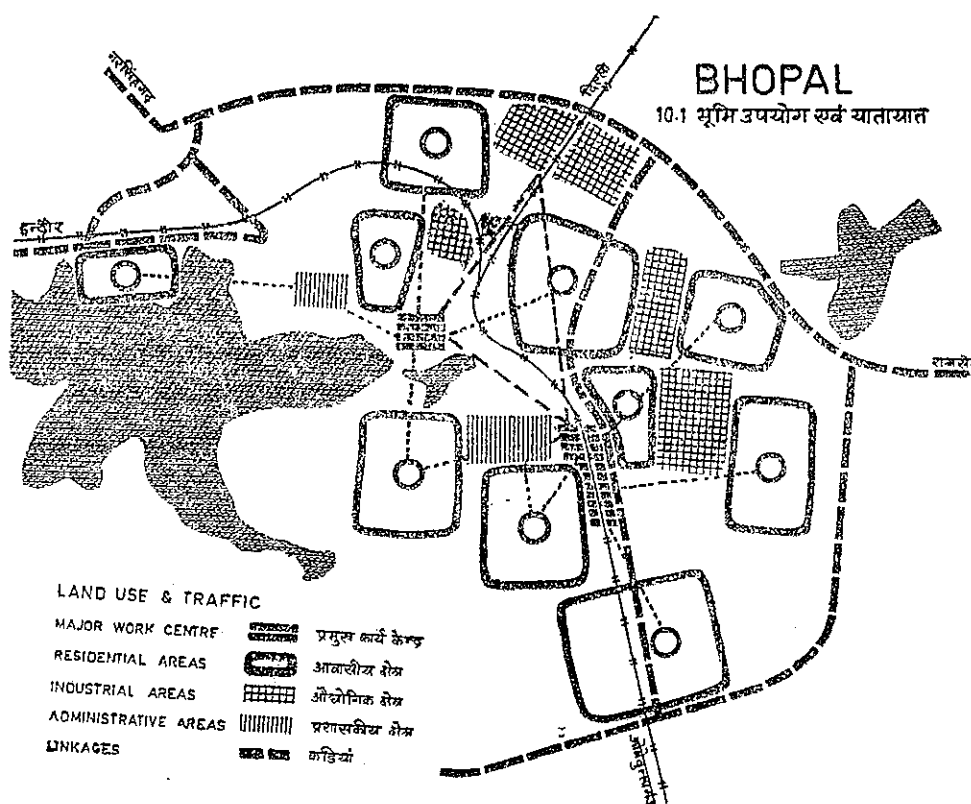
### PROPOSED CIRCULATION PLAN

A workable circulation pattern backed by efficient transportation system is the main stay of economic and socio-cultural life of a city. Even proper growth and functioning of the city and its efficient management is very much dependent on the circulation pattern and transportation system, it develops and maintains. It is often not realised that road pattern once developed remains in use for centuries, even though the buildings abutting these roads often undergo change in volume and use, putting greater demand on the same road space. Circulation pattern of a city thus leaves relatively a permanent imprint on the city, which is often difficult to alter. Even in Bhopal, the building content in central area has increased tremendously, their use has changed from residence to commerce and service industry requiring more space for movement. But in spite of best intentions of concerned authorities and wishes of the citizens, the road space in the central area has paradoxically decreased. To meet such a situation, the circulation pattern has to be designed not only to satisfy the need of immediate future but also the need of distant future to a great extent.

Efficient functioning of the city can be achieved by evolving functionally inter-related land use pattern, inter-connected by convenient circulation pattern requiring minimum travel distance. It is pertinent that circulation pattern and land use pattern be derived simultaneously rather than in isolation. Besides this basic consideration, various other factors which have guided the design of proposed circulation pattern for Bhopal are :—

- (a) Effective linkages within the region.

- (b) Within the constrain of difficult terrain, effective and direct linkages between townships.
- (c) Segregation of regional traffic and city traffic.
- (d) Direct linkages between the functionally inter-related traffic generators.
- (e) Open ended circulation pattern to provide for the city growth even after plan period.
- (f) Road system to ensure movement space for periodic procession related with capital city.
- (g) Separate pedestrian ways, where such traffic is excessive, and segregation is desirable.
- (h) Formulation of traffic operation plan to maximise the efficiency of the transportation system.
- (i) Effective and direct linkages between the work centres and living areas through effective mass transportation system.

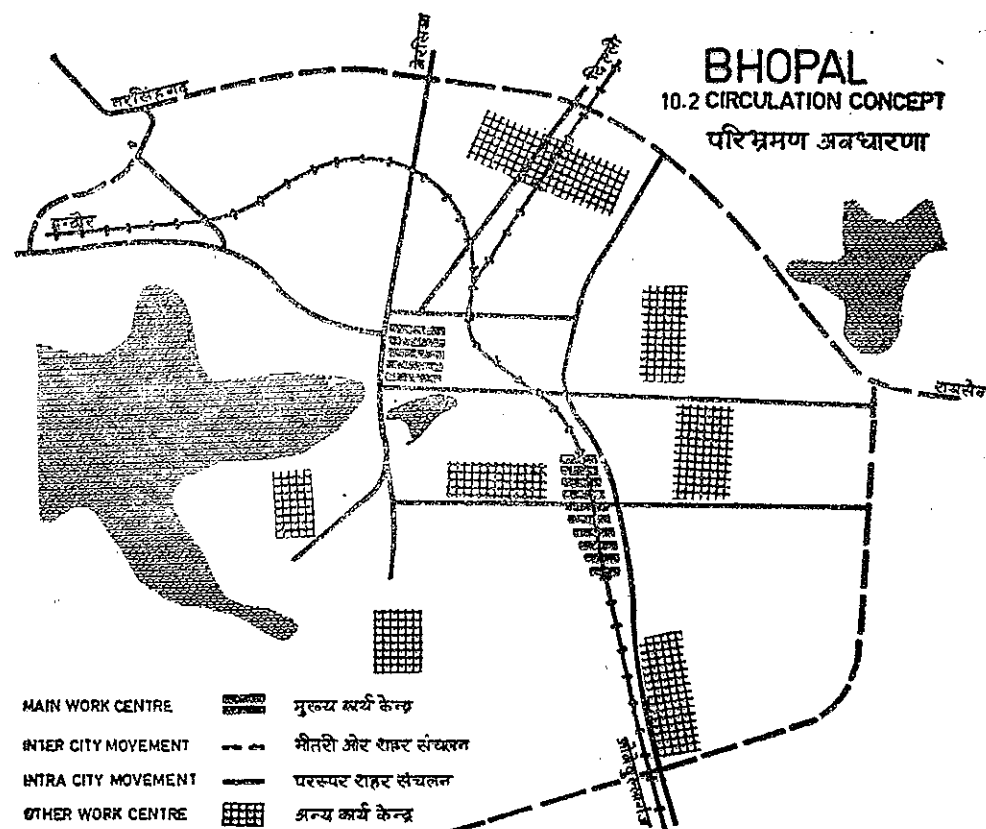


## 10.1 CONCEPT OF CIRCULATION PLAN

Presently each township has different, independent and unrelated road system depending on the topography of the township and the period in which they were developed. The regional roads from south-east, east, north and

north-west lose their identity after entering into the city. This cause inter-mixing of through-traffic with local city traffic. No road link from south because of hills and Upper Lake. In view of this and other traffic problems or east is possible because of hills and Upper Lake. In view of this and other traffic problems described in Chapter 6, conceptually a half Ring Road within a central spine will meet the requirement. The Ring Road RS-RN will inter-connected various regional roads and will also provide a by-pass. Facilities for intra-city movement will be provided by the central spine (RNS) and four east-west Roads-MR 1, MR 2, MR 3, and MR 4. These roads will also provide direct and effective linkage between townships and work centres.

The future road network is thus designed basically on a linear system stringed along a main central spine road, which is also designed to take regional traffic to a certain extent. The sketch below gives the general concept based on which the circulation network is planned for the capital city.



## 10.2 REGIONAL LINKAGES

In order to build effective linkages viz., Road, Rail and Air, it is necessary to ensure the following points :

(a) The capital city of Bhopal needs effective linkages with the national capital and the other state capitals.

(b) The capital city also needs effective linkage with the Divisional Headquarters within the State.

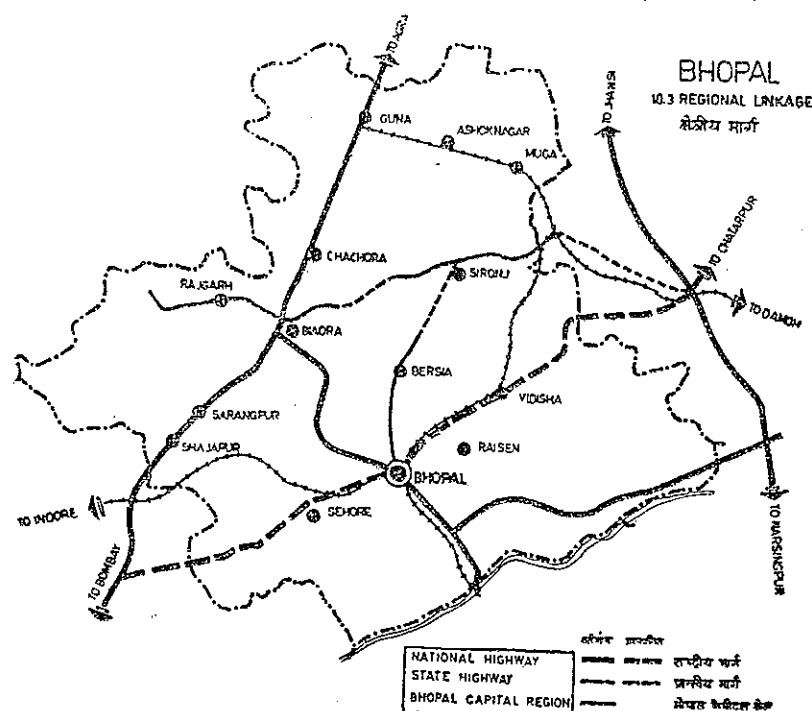
(c) Within the region, the city should build up effective linkages with important urban centres and market towns. Based on these considerations, the following regional linkages are proposed for Bhopal.

## 10.21 Rail Linkage

Main railway line running north-south happens to be the main and important line of the country. Bhopal is fortunate to be on this line and is thus linked with Delhi, the national capital and other important urban centres of the country. Another broad gauge also links it with western part of the country. The present alignments and other right of way are to be effectively protected to ensure their doubling and space for over bridges and under bridges at suitable locations.

## 10.12 Road Linkage

National Highway No. 12 (an east-west connection) links Bhopal with National Highway Nos. 3 and 7 traversing the country into north-south direction, thus providing a link with the northern and southern part of the country. At present, it passes through shopping area of the city. Obviously it loses its function and significance for the portion it traverses through this area. Thus its realignment is proposed, ensuring its regional function



and status. The proposed alignment (RNS) happens to be the life line and the main axis of city connecting Ring Roads RS and RN.

In order to ensure effective east-west linkage with the region, the State Highway is proposed to be upgraded to the status of National Highway. The proposal affecting regional linkage through proposed National Highway envisaged by the Public Works Department (B & R) will surely provide better regional linkage.

Other regional roads such as Indore, Narsingarh, Berasia, Chhola and Raisen Roads are proposed to be inter-linked through a Ring Road (Half Ring). This will inter-link all the regional roads with each other and will provide effective by-pass road for regional traffic. Proposals to strengthen linkage with Sehore through Bhadbhada Road, and Vidisha through Chhola Road, will further strengthen the linkage of Bhopal with important urban centres of the region.

#### **10.23 Air Linkages**

Bhopal is already on the air map and is one of the important inland air station. Increasing inland air traffic and tourist traffic (both inland and foreign) will demand more facilities for the aircraft inter-change facilities. The aerodrome is presently located at a proper site although its linkages with the main city need improvement.

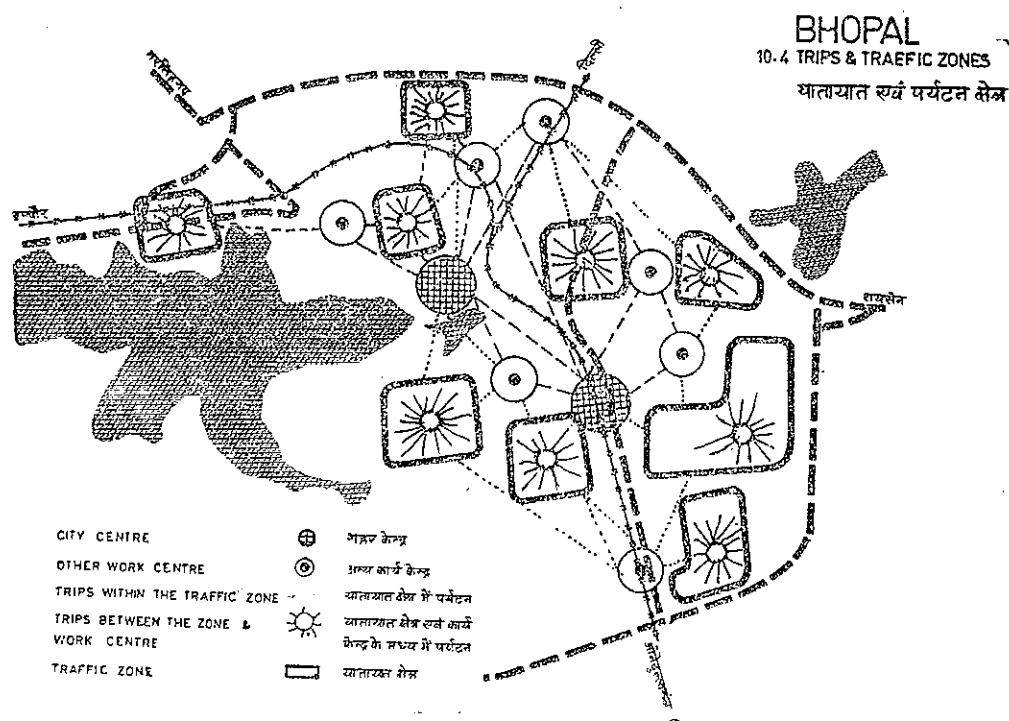
### **10.3 CITY CIRCULATION PATTERN**

Circulation pattern of the city is broadly a network of parallel system of east-west road suitably aligned - so as to provide direct access between various townships and the new areas proposed for future development to absorb additional population and work centres. These roads traverse the main spinal road RNS. The road crossing will provide sufficient inter-changeability for city traffic and regional traffic terminating in the city. The entire pattern is based on the concept of city growing to a metropolitan city. It takes into account the mass transportation needs of the capital city between the townships and nearby market towns. The major proposal in respect of the intra-city road network is described in the proceeding paragraphs.

#### **10.31 Through Traffic**

Regional roads aligned within the planning area of Bhopal, provides for easy passage of through traffic, as well as regional traffic leaving and terminating at Bhopal. The Ring Road (RN and RS) originating at Bilkisganj Road meeting Obeidullaganj Road near village Bawaria Kalan, Raisen Road near

Anand Nagar and meeting Chhola Road beyond railway station, Berasia Road beyond Union Carbide and Narsingarh Road near aerodrome, provides passage of through traffic moving between Vidisha, Jabalpur, Gwalior and



Indore, Raisen and Hoshangabad i. e. Nagpur side. Realigned national highway (RNS) parallel to railway line provide linkage for traffic moving either from Nagpur side to Gwalior, and Indore side. This also provides easy passage of regional traffic leaving and terminating at Bhopal.

### 10.32 Links to Work Centres

Incidentally most of the work centres are situated as far as possible within the township itself, and in only few cases outside the township. In order to ensure effective linkage among the work centres with the regional roads, these work centres e.g. Main city centre, New city centre, BHEL, new industrial area, Regional commercial areas on Berasia Road, are also tied up with the total system of major city network, as depicted in the next table :



## BHOPAL : LINKS TO WORK CENTRES

10-T.1

Work Centre	Road linkage linking work centre as in Col. (3)	Linked work centre
1	2	3
1. Main City Centre	MR-8 Old Secretariat Road MR-5 Berasia Road  MR-4  MR-6 MR-10 MR-3 MR-6 Lake Drive Road	Bairagarh Market Mandi and Industrial area of Development Industrial Centre of P. U. 6 and 7. New City Centre New Industrial Area BHEL Capital complex Lake front activities
2. B. H. E. L.	MR-7 MR-1 MR-3 & MR-6 MR-7	Industrial Estate New City Centre Main city centre University
3. T.T. Nagar Township	MR-1 & MR-6 MR-1 & MR-7 MR-1/RNS MR-5 & MR-6 MR-1 MR-1, MR-2, and Lake Drive Road MR-5 & MR-6 & MR-10	Capital complex Industrial Estate University Main City centre New city Centre Lake front activities  Main Mandi & Industrial area
4. Bairagarh Township	MR-8 Lake Drive Road Nevri Road & MR-5 MR-8 & MR-5 MR-8 & MR-5 & MR-2	Main city centre Lake front activities Industrial areas Capital complex Sub-capital complex

**10.33 Inter-Township Linkages**

The proposed network provides for direct linkage between the township, through system of major city roads MR 1, MR 2, MR 3 and MR 4. Capital Project township is linked with B.H.E.L. township and main city through a major city roads MR 1 and MR 2 respectively.

Capital city is further linked with the new areas lying south and south-east through major city road designated as MR 6 and B.H.E.L. township is linked with the Main city and the Planning Units 6 and 7 through major roads designated as RNS and MR 7 respectively.

Main city is linked with the development in the north, through major city roads designated as MR 5 and MR 9.

Bairagarh township remains locked up between the Upper Lake in the south and Defence area in the north and as such it is not possible to open up any more linkages than MR 8. However, in order to improve the linkages with the main city for some of the bottle-necks of movement between main city and T.T. Nagar with Bairagarh are overcome. This township can, however, be linked with the main city and capital project township through waterway over the Upper Lake after it can be ensured that power boats will not pollute the lake. An overcraft service after sometime, perhaps by 2000 A.D. may be feasible and necessary for essential traffic and amenity. But space for stations at Kamla Park, Retghat, Dharampuri and Bairagarh will have to be reserved now.

#### 10.34 Grade Crossing

The main railway line lying in north-south direction occupies the central position in the proposed area for future development and divides into two parts. In order to link up the development on either side of the railway line, grade crossing at suitable points will be necessary. Presently only one over bridge exists (at Raisen Road). Two more grade crossings are under construction, one near Railway station and the other at MR 1 inter-connecting T.T. Nagar with BHEL township. Inter-connection between areas lying on either side of Railway line at other places is through level crossing at Obeidullaganj Road, Old Chiklod Road (two crossings), Berasia Road, Narsingarh Road (Partial). In order to eliminate vehicular traffic jams at level crossing and to facilitate free movement of traffic between the parts separated by the railway line grade crossings at 5 more points are proposed. No. 1 at the junction of Northern Ring Road (RN) and railway line beyond Chhola Railway station No. 1 on Chhola Road near Nishatpura industrial area and octroi free zone No. 3 on Berasia Road, No. 4 along proposed Road inter-connecting Narsingarh Road with Indore Road, No. 5 along proposed Road inter-connecting sector E-5 and University area, only for light vehicles.

Even if these grade crossings are not constructed during the plan period i. e. up to 1991, it will be necessary to ensure provision of sufficient space so that it will be possible to construct these grade crossings even after the plan period.

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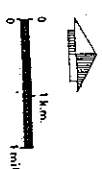
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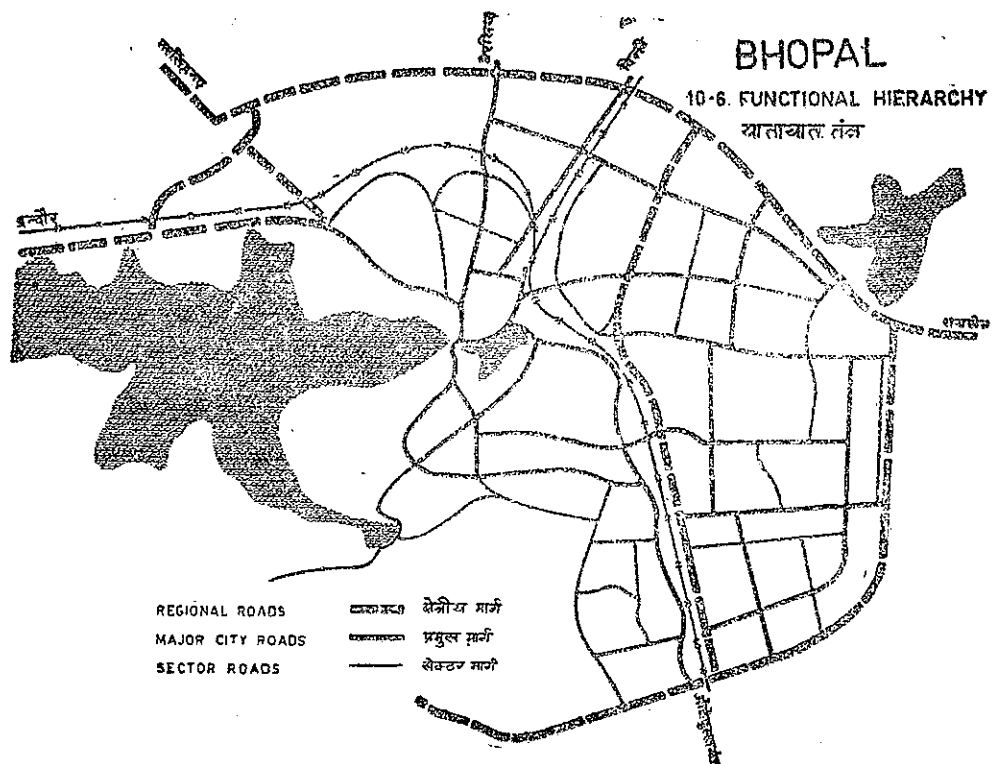


## 10.4 FUNCTIONAL HIERARCHY

The hierarchy of road pattern has been built up basically from the hierarchy of functions and communities of which the city will be composed of. The proposed road network of the city consists of seven categories of roads which correspond to the hierarchy of movement and linkages. The seven categories are :—

1. Regional Roads (National, State Highway and District Roads).
2. Major City Roads
3. Sector Roads
4. Sub Sector Roads
5. Local Roads
6. Cycle Arterial Ways.
7. Pedestrian Ways (ped. ways).

The figure below illustrates the functional hierarchy of road pattern.



### 10.41 Regional Roads

These roads provide linkages between the city and other rural and urban centres in the region and beyond. The Ring Roads inter-connecting these Regional Roads also fall in this category. These roads are designed to carry heavy traffic particularly goods traffic. The proposed right of way of these roads is 75/90 metres. The width of roads through existing build up portion will have to be different on the basis of individual road scheme framed for the respective portion:

#### 10.42 Major City Roads

These roads basically carry intra-city (i. e. traffic within the city) between various planning units and major centres of employment, recreational areas, educational and health amenities etc. All major city roads are designed to function as mass transportation routes within the city. The right of way of these roads is proposed to be 45/75 metres. The width of portion passing through existing build up areas will have to be kept as per road scheme prepared for the respective portion.

#### 10.43 Sector Roads

These roads are provided along the periphery of the residential sectors and land use zones. These will cater for the fast moving traffic and are also meant to inter-connect residential sectors and other land use zone situated nearby. Right of way of these roads is proposed between 35/40 metres. Access to the residential sectors will be from the controlled points only and residential buildings in the sector will not have direct access on the sector roads. These roads will serve as city Bus routes and carry fast vehicular traffic between various planning units.

#### 10.44 Sub-Sector Roads

These roads are primarily meant to serve the traffic needs of individual residential sector or any other land use zone. These roads will be connected to sector roads at controlled points, as uncontrolled inter-connections will be a source of traffic hazard and will reduce speed along sector roads. The right of way for these roads is proposed to be 20/25 metres. The alignment of these roads has not been shown in the proposed circulation plan as details of these roads will be worked out at the level of zoning plans as prescribed under sections 20 and 21 of the Madhya Pradesh Nagar Tatha Gram Nivesh Adhiniyam, 1973.

#### 10.45 Local Roads

These roads are meant for circulation within residential sectors and as such provide access to the building sites. These roads will carry all local services such as water supply lines, sewerage lines, power lines which will provide connections to individual building sites. Since the local residential roads will be part of residential lay-out plans, the details and alignment of these roads have not been shown in the proposed circulation for the city. The right of way for these roads will range between 8/12 metres depending on the nature of lay-out and the community for which residential lay-out plans are prepared and length of the road.

Service lines will not be provided, except in those areas where row type development in residential area is planned. The width of the land will be 3/4 metres depending upon the prevailing conditions and nature of lay-out plan. Service lanes may also be provided in shopping or industrial areas where width of service lanes will be 6/10 metres depending on the purpose of the service lane.

#### **10.46 Cycle Tracks**

Cycle, the common man's vehicle is not an important mode of transportation in the city of Bhopal. However, this is popular in BHEL area and Capital Project towns to a certain extent. It will also be used in areas earmarked for future development. It has been observed that because of the habits of cyclists to ignore traffic rules and to park cycles anywhere along roads, capacity of the roads with cycle traffic and vehicular traffic is reduced to a considerable extent. Besides, mixed traffic endangers the lives of cyclist and creates traffic hazards. It will be desirable to provide cycle tracks in such areas particularly those which generate cycle traffic. Cycle tracks in proposed along Ring Roads RS and RN and along main city spine road RNS. Major city roads MR 1, MR 2, MR 3, MR 4 along MR 7 linking BHEL with new areas, MR 12 encircling BHEL, MR 4 lying east of RNS MR 5, north of central area, and other important sector roads. Cycle tracks will also be provided within the residential as well as other land use zone sectors wherever necessary. The details of these will be worked out at the time of preparation of sector and zoning plans

Grade crossings for cycle tracks are proposed at meeting points of MR 3, MR 1 with RNS, and other important crossings. Details will be worked out at the time of preparation of sector and sub-sector plans.

#### **10.47 Ped Ways**

Ped ways are essentially needed for the safety of the pedestrians particularly children and old persons. Ped ways are proposed in such a way that the pedestrians would find easy to reach the places where amenities like convenient shops, pre-primary & primary schools, reading rooms are provided. These ped ways also effectively link one neighbourhood with the other within the sector and one sector to other sectors, avoiding crossing of main roads as far as possible.

#### **10.48 Road Sections**

Road sections are proposed for different categories of roads. The road sections are recommended in accordance with the functional importance,

long term perspective and the nature and character of traffic which they are likely to carry. The table below gives recommended road sections for Bhopal.

# BHOPAL : RECOMMENDED ROAD SECTORS

10-T.2

S. No.	Classification	Right of way in metres (excluding service roads)	Purpose
1	2	3	4
1.	Regional Roads		Regional Traffic
	National Highway 12	90	"
	Raisen Road	75	"
	Berasia Road	75	"
	Chhola Road	75	"
	Indore Road	75	"
2.	Ring Roads		
	Southern Regional Road RS	75	Inter-city movement
	Northern Regional Road RN	75	Regional through-traffic
	Central Spine Road RNS	90	Inter-city movement and Regional terminating and originating traffic.
3.	Major City Roads		
	MR 1	60/75	Intra-city movement
	MR 2	45/90	"
	MR 3	45/60	"
	MR 4	45/60	"
	MR 5	45	"
	MR 6	45/60	"
	MR 7	45/60	"
	MR 8	45/60	"
	MR 9	30/45	"
	MR 10	45/60	"
	MR 11	45/60	"
	MR 12	60/75	"
4.	Sector Roads	30	Movement within Planning Units.
5.	Sub-Sector Roads	18/24	Movement within sector.
6.	Local Reads	9/15	"
7.	Ped Ways	5	"

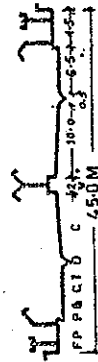
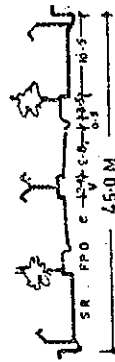
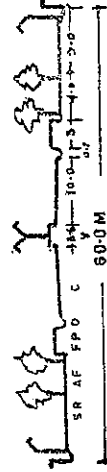
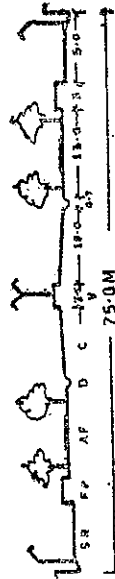
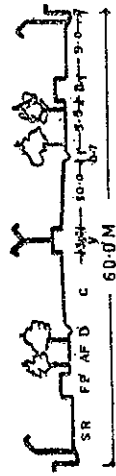
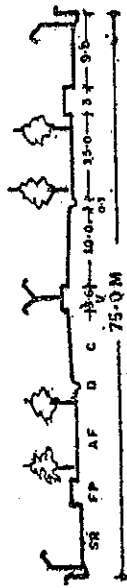
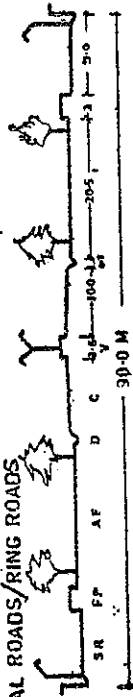
## 10.5 TERMINAL CENTRES (GOODS)

### 10.51 Raiway Goods Yard

The development plan provides for expansion of goods yard near Nishat-pura. The present marshalling yard near Ice Factory could be used for expan-



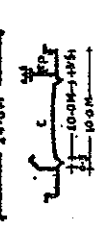
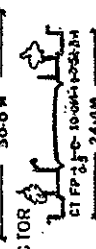
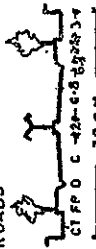
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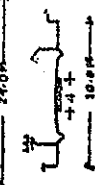
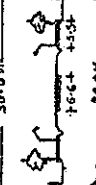
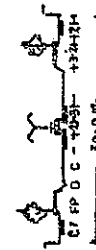
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SECTOR BOARD

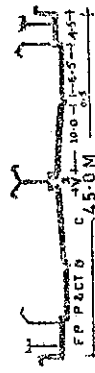
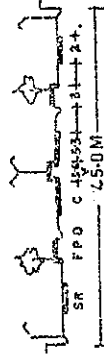
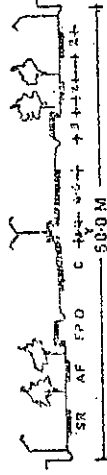
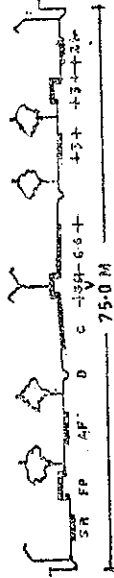
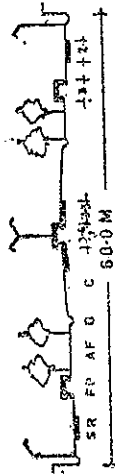
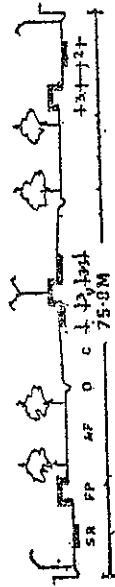
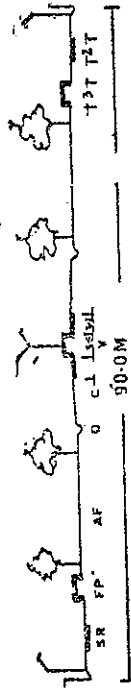
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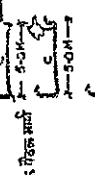
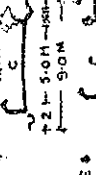
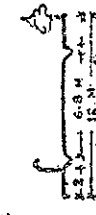
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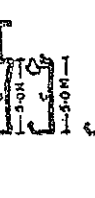
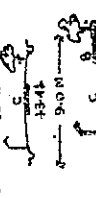
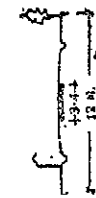
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CROSS SECTION  
OF ROADS

मार्गिक नियन्त्रक दोष

—SNOI 310H

V. VERGE

C. CARRIAGE WAY

D. DRAINS.

FP, FOOT PATHS

# EA PLANTATION

CT. CYCLE TRACK

SR. SERVICE ROADS

P. CASUAL PARKING

9. EURMS

100 METER

SCALE



sion of Railway station facilities, and as such could be used for handling a limited goods traffic by rail. Space for a Railway yard will have to be provided near Mandideep to serve industries being established there. This area is, however, outside the planning area for Bhopal. Space for goods yard is also proposed at Railway station to serve this township.

#### 10.52 Truck Stations

Mandies, Timber Market, Industrial Centres, Railway Goods Yard, Transport Nagars, Octroi posts and building goods yard are the main centres generating goods traffic by truck. The space for truck station will be provided in all these areas. Areas which will contain space for truck station are marked with (TS) in the plan for reservation of land. The truck station will range between one hectare to two hectares, depending upon the bulk of truck traffic being generated by the respective activity. The detail lay-out plan for these areas will have to provide space for such truck parking accordingly. In addition to these, an area of nearly 8/10 hectares is being earmarked for parking and service centre for trucks in planning unit 8, which is the main zone containing most of the truck traffic generating activities.

### 10.6 TERMINAL CENTRES (PASSENGER)

#### 10.61 Airport

Aerodrome situated near Bairagarh on Narsingarh Road serves defence as well civil needs of the air traffic. Sufficient space near the present site is available for expansion to meet the future needs of air traffic. One of the hillocks situated on the north-eastern side is being earmarked for quarrying. This will further improve the land take off of aircrafts.

#### 10.62 Railway Stations

Railway facilities at present are externally poor. The only main station provides passenger facilities like waiting rooms, reservation counter etc., on the eastern side while the city is situated on the western side, just opposite to what it should have been. This has caused inconvenience and loss of energy and time of its large number of users. Moreover, the city has expanded and one station alone will not meet needs of the city. It is, therefore, proposed to expand the existing main station and develop other two stations i. e. Habibganj and Bairagarh as full fledged Railway stations. Railway stations at Habibganj and Bairagarh are proposed to be as double faced stations with facilities on both side of the station so as to serve the areas

lying on both the sides. Space is therefore, earmarked for development of these stations as given below.

- |              |             |
|--------------|-------------|
| 1. Habibganj | 25 hectares |
| 2. Bairagarh | 10 hectares |

These Railway stations will have to be served with either under pass or over bridge or pedestrian bridge to facilitate movement of passenger traffic on either side.

#### 10.63 Bus Depot-Central

M. P. State Road Transport Corporation has its headquarter situated at Bhopal. This calls for a Central Transport Corporation Depot providing large-scale facilities for repair and parking of buses, and stacking of scraps, storage of spares etc. An area of 15 hectares is thus earmarked for its central office and depot in addition to the Bhadbhada Depot, which is meant to serve only city buses. The proposed site is located near Misrod village on the Hoshangabad Highway. The Habibganj depot is, therefore, proposed to be relocated on this site.

#### 10.64 Regional Bus Station

Bhopal is mainly linked within its region and the state with road transport system. Movement by bus is likely to increase further. Accordingly the Development Plan proposes to develop Regional Bus Stand near Habibganj on a site to be vacated by the Regional Bus Depot. Some more area on the nullah is proposed to be added for the purpose, so that total area of nearly 6/7 hectares for the Bus station is available.

#### 10.65 Pick-up Station

As the city is spread over a large area owing to intervening space of lakes and hillocks, it is necessary to provide pick-up station facilities so that the passengers are conveniently served within convenient distances. This will also reduce traffic on city roads. Pick-up stations at the following places are proposed.

- |  |             |
|--|-------------|
| 1. New city centre along central spine (BHEL side) | 1½ hectares |
| 2. University                                      | 1 "         |
| 3. Bus stand (Chhola Road)                         | 1½ "        |
| 4. Jawahar chowk near New Market in P. U. 3        | 1 "         |
| 5. Bairagarh P. U. 9                               | 1 "         |
| 6. Piplani near Industrial Estate in P. U. 6       | 1 "         |

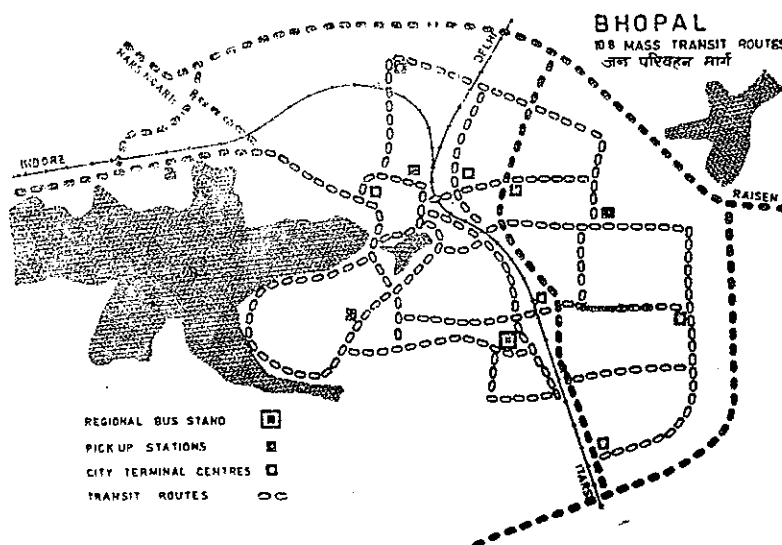
These pick-up stations will serve as important city terminal centres for local Bus service for the intra-city movement as well.

### 10.66 City Terminal Centres

In addition to the Major city terminal centres, which will primarily function as pick-up stations, it is proposed to develop a network of city terminal centres to serve the mass urban transit system. City terminal centres are proposed along MR-1 Planning Unit No. 5, P. U. Centres in Planning Unit No. 6, Planning Unit No. 1, and Planning Unit 8, near Medical College. The location of these city terminal centres are marked on the plan showing mass transportation. Nearly 0.5 to 1 hectare of land will be made available for these centres.

### 10.7 MASS TRANSPORTATION

The circulation pattern of the capital city has been designed to suit the requirement of mass transportation system. The capital city growing into a metropolitan city can only function efficiently, if the mass transit system ensures linkages with all the major work centres and residential areas. The mass transit route is designed to serve the traffic in both the direction i. e. vertical (north-south) as well as horizontal (east-west). The transit route is designed on a loop system so that it ensures fullest use of the transit trip (i.e. both up and down movements) and inter-exchangeability. The mass transit route also provides linkage with regional Bus Station Centres. This will also facilitate people to come to pick-up stations. The system covers the two city centres, industrial areas, educational centres (University, Regional College, Engineering College), Office complex (capital & sub-capital complex), planning unit centres of all the planning units. The system also provides a route serving the reservation-cum-amenity zone. The sketch below illustrates the transit routes designed for the city.



## 10.8 PARKING

Sufficient 'Off Street' parking space at various places particularly near or within the areas of concentrated activities is very essential so as to avoid use of city streets for parking which adds to traffic congestion. According to the estimates contained in Chapter 8, the city is likely to have 25000 cars, jeeps, taxis and tempos, 75000 motor cycles and scooters and 5000 auto-rickshaws, apart from 15000 trucks and buses. Sufficient parking spaces to accommodate these vehicles have been provided particularly in all work centres, commercial areas (City centres, Civic centres, Administrative and Cultural centres etc.), industrial areas, and all terminal centres, such as Railway stations, Bus stands, Pick-up stations, City Terminal centres etc. Proposals for provision of parking spaces within the central area have been given in Chapter 14 on "Central Area."

## Chapter 11

### MAJOR WORK CENTRES

The proposed general land use pattern of Bhopal has been broadly described in Chapter 9. Specific proposals regarding location, extent of land allocated for commercial areas, offices and industrial areas which happen to be major areas of employment and concentrated activity are discussed in this chapter.

Major work centres viz. Commercial areas, Industrial areas and Offices are centres of economic activities supported by a city. Their disposition is often intimately inter-related to each other and residential areas in terms of travel time, as these centres happen to be major traffic generating nodes of the city. These centres, therefore, require special treatment by way of location, provision of services and accessibility. Detailed proposals regarding the linkages, accessibility have already been described in Chapter 10 on "Proposed Circulation Plan".

According to estimates given in Chapter 8, Bhopal will have nearly 2.8 lakhs of workers by 1991. Most of the workers will be employed in administration, industries and commerce i. e. in secondary and tertiary sectors. Employment in Primary Sector will be negligible. The major work centre will be in Administrative (capital complex), Commercial and Industrial land use zones, although some workers may be distributed in areas devoted to Amenities

such as education, health, recreation etc. Broadly the distribution based on work centres has been assessed as follows :—

City centres	0.7	lakh
Major Industrial centres	0.8	lakh
Administrative centres	0.5	lakh
Other work centres	0.8	lakh
Total	<u>2.8</u>	<u>lakhs</u>

## 11.1 PROPOSED COMMERCIAL AREAS

Development Plan provides for commercial centres of various hierarchy which cover an area of nearly 405 hectares. This is around 4% of the total area under all use zones. This works out to 0.4 hectare per 1000 persons as against present 0.16 hectare (0.4 acre) per 1000 persons. (Refer para 5.17). The nature and hierarchy of commercial activities envisaged in the Development Plan are as under :—

### City/Region Level

- (a) City Centres
- (b) Wholesale Market
- (c) Specialised Markets
- (d) Mandies
- (e) Periodic Markets

### Planning Unit Level

- (a) Planning Unit Centres
- (b) Periodic Markets

### Sector Level

- (a) Sector Shopping Centre
- (b) Weekly Market
- (c) Local Shopping Centres  
(Included as part of residential area)

The table 11-T.1 gives allocation of areas earmarked in various commercial activities :—



**BHOPAL : COMMERCIAL WORK CENTRES**

**11-T.1**

S. No.	Activity	Location	Area (in hectares)	
1	2	3	4	
1.	WHOLESALE/SPECIALIZED MARKET	City Centres (a) City Centre Anand Chowk (b) Habibganj, New City Centre	16 24 <u>40.0</u>	40.0
2.	WAREHOUSING/COLD STORAGE/GODOWNS	(a) New Vegetable Market (b) Near Railway Goods Yard (c) Habibganj city centre (d) Chowk City Centre (e) Transport Nagar (Octroi Free Zone) (f) Lalghati P.U. No. 9	2.0 8.0 8.0 4.0 32.0 4.0 <u>58.0</u>	58.0
3.	MANDIES			
	1. Grain/Kirana Mandi	Relocation of Laxmibai Mandi on Berasia Road	49.0	
	2. Vegetable-cum-Fruit Mandi	In the space vacated by Laxmibai Mandi	12.0	
	3. Timber Market	Chhola Road and Central Spine (RNS)	30.0	
	4. Grass/Cattle Market	P.U. 6	16.0	
	5. Loha Mandi	Near Categorised Market Berasia Road	8.0 <u>115.0</u>	115.00
4.	CATEGORIZED MARKET			
	1. Building Material Yards	P.U. Nos. 4 & 7	50.0	
	2. Categorized Market	Chhola Road	13.0	
	3. Fuel Depot	P. U. 8 & 1	34.0	
	4. Coal Depot	Raisen Road, Hoshangabad Road and Near Chhola Rly. Station	8.0 <u>105.00</u>	105.00
5.	PLANNING UNIT SHOPPING CENTRE	Planning Unit 1 to 9	56.0	56.0
6.	SECTOR LEVEL SHOPPING CENTRE	In Residential Sectors	61.0	61.0
			<b>Total</b>	<b>435.00</b>

**11.11 Wholsale and Specialised Markets**

**(a) City Centres**

Development Plan for Bhopal envisages growth of highest order commercial facilities in two city centres viz. Chowk and New city centre. The city centres will be developed to suit the Indian concept and conditions as zones

of mixed land uses particularly those which will function in commercial areas. The proposed city centres are, therefore, proposed to be developed as complex of central activities such as commercial, business, service shops, wholesale-cum-retail markets, specialised markets including cloth market, cultural institutions, health amenities and other services. City centres will also provide space for service units which can be accommodated in flatted factories.

### **City Centre and Chowk**

This city centre is unable to absorb pressure of growth. The space vacated by cattle, vegetable and fruit Mandi and Market, Kirana Mandi, Loha Mandi, Kabadi Market and other incompatible and inefficient land uses are proposed to be used for growth of commercial activities and provision of amenities and services essential for the city centre. This centre will contain specialised markets dealing in General Goods, Cloth, Readymade Garments, Sanitary wares Electrical Goods, Cycle Market, Spare Parts, Plastic Wares, Hardware etc. Total area available for this city centre is nearly 16 hectares.

### **New City Centre**

The new city centre provides space for growth of commercial activities during the plan period. It will also absorb overburden of existing city centre, Bairagarh and New Market. The city centre will contain wholesale and retail trade in Cloth, Books and Stationary, Medicine, Kirana, Furniture, Readymade Garments, Crockery, Specialised equipments etc. Besides trade, it will contain business offices. The total space earmarked for these activities is around 24 hectares.

### **(b) Special Markets**

The special markets dealing in jewellery, zari works, readymade clothes, brass materials will continue to function in the old city centre as household units. Space for growth of such units will also be provided in flatted factories earmarked on the periphery.

### **(c) Periodical Markets**

Presently periodical markets are functioning at 7 places in the city. These markets form part and parcel of commercial centres of the city, and as such have tendency to function close to the retail centres. The Development Plan, therefore, envisages additional four sites for functioning of these major periodical markets. The markets at present functioning at Jehangirabad, (para 5.13) is proposed to be relocated at the junction MR-3 and MR-6 near Pulbogda. Planning Unit level shopping centres will also pro-

vide space for functioning of other periodical markets. Total area earmarked for the major periodical markets is 16 hectares.

**(d) Thela and Gumtee Markets**

These markets are fast growing in the vicinity of retail commercial centres, these markets do provide self employment to the weaker section of the population. In view of this, it is proposed to develop organised thela and grain markets with complete architectural, planning and supervision control of the development authority. The structure permitted will have conform to a specialised design. All planning unit centres will provide space for development of such markets. The existing market located in chowk area (para 5.16) is proposed to be shifted in shopping centre being developed by Municipal Corporation at Gurubux-ki-Tallaiya according to proposals contained in the Interim Development Plan.

**11.12 Mandies**

The Development Plan envisages organised spaces to contain mandies both new as well as proposed to be shifted from the congested areas of the city. Total area earmarked for mandies is round 115 hectares.

**(a) Grain Mandi**

The existing Laxmibai Grain Mandi has an area of nearly 4 hectares. It has no possibility of future expansion. The wholesale business in grain cereals, food-stuffs etc. is also conducted at Hanuman Ganj street on the road space which lacks loading and unloading, parking and storage facilities. An area of 33 hectares has been earmarked along Berasia Road. This site will be easily accessible from regional roads. Transport Nagar is also located in the same vicinity. Space for Agro-based industries is also being provided adjacent to mandi. The existing site of mandi is proposed to be utilised for vegetable-cum-fruit market and other shops.

**(b) Kirana Mandi**

Presently Kirana trade is concentrated in congested Jumerati area and Jawahar Chowk. Business connected with grains and dry fruits is also transacted in Dhan Mandi. An area of 16 hectares has been earmarked at Chhola Road near Grain Mandi and Octroi Free Zone. Octroi Free Zone itself is an incentive for the traders to locate their activity in the new site.

**(c) Vegetable and Fruit Mandi**

The Development Plan envisages a site for wholesale vegetable-cum-fruit

mandi in the space vacated by Grain Mandi. Total area earmarked for the mandi is around 12 hectares. The site will provide other facilities like cold storage, godowns, truck parking etc. Retail fruit and vegetable market functioning in and around Mangalwara will, however, be located in the New Vegetable-cum Fruit market being developed in the Gurudux-ki-Tallaiya, as per proposal contained in the Interim Development Plan. The space vacated by the wholesale and retail activity is primarily meant to improve the accessibility to the city core with space for parking etc.

**(d) Grass Mandi and Cattle Market**

The Development Plan envisages a new site for location of Grass Mandi and Cattle Market near Anand Nagar, on Raisen Road in planning unit 6. The proposed site is cold to the Dairy township being developed beyond Hataikheda. Total area earmarked for the purpose is around 16 hectares.

**(e) Loha Mandi**

The present 'Loha Market-cum-Mandi' is, functioning around Bhopal Talkies and Jumerati mostly occupying the road space. Leaving apart space for its growth, there is hardly any space even to contain the present activity. Moreover, the activity also brings into the area undesirable truck traffic. It is proposed to locate Loha mandi in categorised market being developed by the Municipal Corporation.

**(f) Timber Market**

Timber market and Saw mills have grown in a most haphazard manner. It is proposed to develop timber market at three sites.

- (a) Categorised Market
- (b) Near Nishatpura Railway Station
- (c) Along Central Spine Road (RNS)

Wholesale trade in timber and associated Saw mills are proposed in the area being developed as Timber Market near Nishatpura, while its retail trade is proposed to be contained in the space earmarked for categorised market. Two market viz. Categorised market and Timber market are already being developed as per Interim Development Plan proposals.

**11.13 Warehousing, Cold Storage and Godowns**

Besides space earmarked for warehousing, godowns and cold storage in the respective mandies and Industrial areas, separate sites are also earmarked for warehousing, godown and cold storage facilities. The sites are located in the Planning Units 1, 5, 8 and 9 as mentioned above (refer table 11-T.1).

Total area earmarked for this activity is 58 hectares excluding space earmarked within the mandi site and industrial area.

#### **11.14 Categorical Market**

The categorised market being developed by the Municipal Corporation along Chhola Road according to Interim Development Plan is meant to contain various activities such as smithy, welding, kabadi market, main vehicle repair centre, retail trade in timber and a host of similar activities. This market will provide space for the activities proposed to be shifted from the city centres. The proposed market will also emerge as an important Mechanic Nagar of the city.

##### **(a) Kabadi Market**

Kabadi market has occupied valuable space created after removal of fort walls. This space is otherwise extremely valuable to improve the accessibility to the city core. Kabadi market deals with commodities like iron scrap, machine parts, plastic scrap, spare parts etc. This trade is proposed to be relocated in the space earmarked for categorised market. The categorised market is being developed as per Interim Development Plan proposals near Straw Products along Chhola Road to contain this activity in an organised manner. An area of 8 hectares has been earmarked for this activity in the categorised market area. Categorised market area provides space for other activities such as tin smithy, workshops, welding, motor repair, spare part shops, retail trade in timber, steel and hardware.

##### **(b) Workshops**

Vehicle repair workshops located in and around central area are proposed to be shifted in the categorised market area. This will function as Mechanic Nagar of the city.

#### **11.15 Transport Nagar and Agencies**

##### **(a) Transport Nagar**

Transport activities in the chowk city centre is proposed to be relocated at New Transport Nagar envisaged on Berasia Road and Ring Road RN near proposed Grain Mandi and Loha Mandi. Forwarding agencies offices should, however, continue to function in the city centres and other commercial areas.

##### **(b) Transport Agencies**

Presently, the transport agencies functioning in the main centre of the city

with narrow roads e. g. Jawahar Chowk (Jumerati area) Saifia College Road, Itwara and Mangalwara have created numerous problems within the city core. An area of 32 hectares along Chhola Road is proposed for forwarding agencies. The site provides for easy access from the Ring Road. The new site would provide adequate space for loading and unloading of the goods, parking of trucks and circulation space for movement of trucks.

#### **11.16 Oil and Coal Depots**

##### **(a) Oil Depots**

Land for inflammable materials like kerosene, petrol, diesel are proposed in Nishatpura (Chhola Road). An area of 20 hectares is earmarked for this purpose. Storage tanks located near Grand Hotel covering an area of 4 hectares are proposed to be retained.

##### **(b) Coal Depots**

Three sites for large Coal Depots have been provided, one near Anand Nagar on Raisen Road, the other near Hoshangabad Road and the third site is earmarked near Chhola Railway Station, 3/5 hectares will be provided for each.

#### **11.17 Building Material Yards**

Presently there is no organised centre for the trade of these materials, and as such it causes great inconvenience to the building construction activity. Unrelated location of these yards and market adds to the cost of construction. Development Plan, therefore, envisages a building material complex in the planning unit 4 and planning unit 7. These will provide space for lime, sand stone, steel and other building materials. A total area of nearly 35 hectares is earmarked for this purpose.

#### **11.18 Planning Unit Shopping Centre**

The Development Plan envisages planning unit shopping centres 7 out of 10 planning units. Planning unit 10 which is mainly devoted to tourist-cum-recreational complex will, however, provide space for development of tourist infrastructure including its shopping needs. Planning Unit No. 1 and Planning unit No. 2 containing the two city centres will not require separate shopping centres as the city centres will also cater for the need of population of these planning units.

The planning unit centres are also being envisaged as a mixed commercial use zone so as to suit the Indian conditions. Accordingly the planning units

are envisaged to provide space for shopping centre, business-cum-administrative offices, education, health amenities and recreation etc. Area provided for each planning unit centre is around 24/30 hectares.

The table below gives location and unit-wise estimated population which is likely to be served by each planning unit centre.

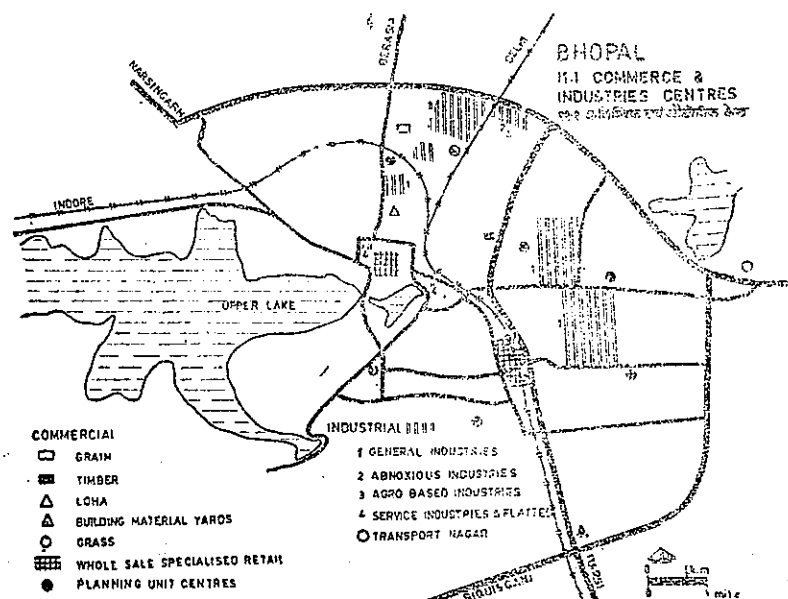
BHOPAL : PLANNING UNIT SHOPPING CENTRES

11-T.2

Planning Unit No.	Estimated Population (in lakhs)	Location
1	2	3
1.	0.85	City Centre will serve as planning unit centre also
2.	1.17	New city centre and Arera Colony market
3.	0.65	New Market
4.	0.74	Near University at the intersection of R. N. S. and MR-12
5.	1.81	MR-4 on over bridge
6.	1.33	To industrial Estate Road
7.	1.37	Inter-section of MR-4 and Industrial Road.
8.	1.59	Berasia Road MR-5
9.	0.49	Bairagarh MR-8
Total	10.00	

### 11.19 Sector-Level Shopping Centres

Residential sectors are conceived as a relatively self-contained residential areas. The Development Plan envisages residential sectors with population content ranging between 12-15 thousand inhabitants, with a sector centre of



its own, to serve the day to day needs of its inhabitants. Like planning centre, sector core is also being envisaged as complex of activities such as shops, amenities and other socio-cultural institutions, including recreation at sector level. Nearly 50-60% of the area under sector centre has been adopted as the basis for providing shopping area within each residential sector.

Each residential sector, which are further composed of Housing groups also provide for local shops. Local shops will comprise of 8-15 shops supported by population of housing group ranging between 3-4 thousands.

The location of the proposed commercial work centres is shown in the following illustration. It also illustrates the general pattern of industrial location as discussed in para 11.3.

## **11.2 OFFICES**

### **11.21 Capital Complex**

The Development Plan envisages a 'Capital Complex' occupying a commanding location on a Laxminarayangiri. This complex will contain Administrative offices (State and Central Government) of highest order. Apart from the State Secretariat, the complex will contain offices of the heads of various Departments of the State, principal offices of the Central Government such as Post and Telegraph, Income Tax etc and Semi-Government institutions and public sector undertakings and autonomous bodies. As sufficient space at Laxminarayangiri is not available some offices of the same and slightly lower order will also be located in new city centre East of Railway line, and Commercial-cum-Administrative Centre in sector E-5. Space for public sector undertakings and business offices will also be available in these two areas. This will provide desirable segregation and yet will maintain convenient physical link necessary for efficient functioning of offices.

### **11.22 Sub-Capital Complex**

Divisional and District level offices are proposed to be housed in the Old Secretariat and Kohifza and along Banganga in T. T. Nagar. At present temporary sheds for offices have been constructed at this site. Other offices of district and local level belonging to Government and autonomous bodies will also be located primarily in these three centres. These areas have the required advantages of convenient accessibility for public. In addition to these work centres, the planning unit centres also provide space for offices and other ancillary uses. Offices functioning in rented buildings and unrelated use zones are proposed to be accommodated in one of the areas stated above depending upon the status of the office. An area of nearly 263 hectares has

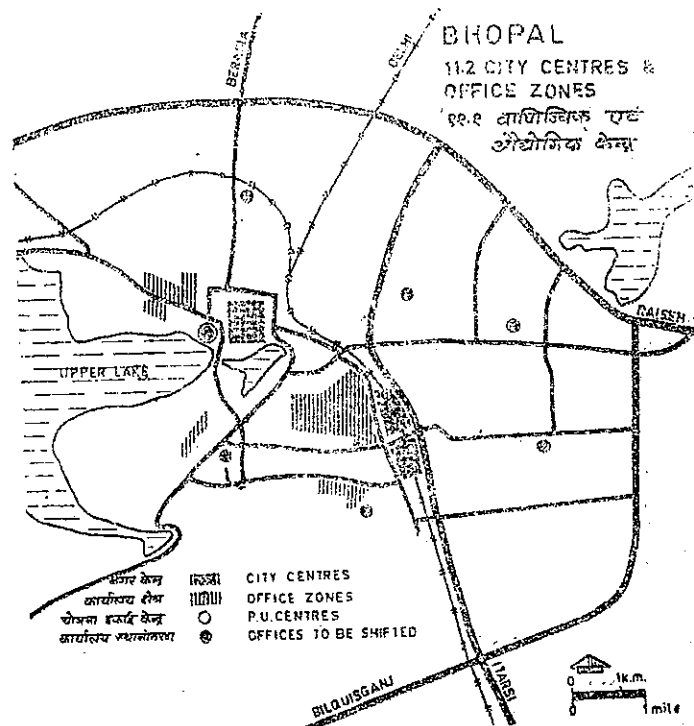


been earmarked for the offices in various complex for different hierachical order. Provision of proper zone will ultimately eliminate the discordant relationship between the work centres and living areas prevailing at present.

The development envisages distribution of office zones as under :—

BHOPAL : ADMINISTRATIVE WORK CENTRES			11-T.3
Hierarchy	Location	Area in hectares	
1	2	3	
Central and State Government Offices and Public Sector undertakings.	<b>Capital Complex</b> New Secretariat Complex and (Planning Unit 2) New City Centre	183	
Divisional Offices and Dist. Offices	<b>Sub-Capital Complex</b> MR. No. 2, Jawahar Chowk	20	
	Old Secretariate slopes and (Plannidg Unit 8) Kohifiza	40	
	Planning Unit No. 6		
	Planning Unit No. 7	20	
	Planning Unit No. 8 and offices in other Planning Unit Centres		
Total		263	

The diagram below shows the sites for city centres, administrative work centres and the offices which are proposed to be shifted.



### 11.3 PROPOSED INDUSTRIAL AREAS

Industrial establishments both in extent and variety are increasing. The Development Plan, therefore, envisages development of industrial area with certain amount of flexibility so as to provide for industries of different requirements. Four major industrial areas are proposed in addition to the small units household and service units, which could be permitted within commercial areas and flatted factories.

- (a) B. H. E. L. area
- (b) North of Raisen Road
- (c) Near Chhola Railway Station
- (d) Along Berasia Road

These industrial areas will provide sites for industries with different requirements based on performance characteristics, requirement of specialised services, accessibility by railway siding, size of employments etc.

BHEL factory area already provides for its expansion which is considered to have adequate space. Space is also provided near present industrial estate for additional ancillary units likely to come in the area. Another site opposite Anand Nagar along Raisen Road is earmarked to contain additional and ancillary units to BHEL and household and service industries.

Total area earmarked for various categories of industries is around 1135 hectares as against 348 hectares in present use. This works out to 1.13 hectares per 1000 persons as against 0.78 hectare at present. The location of industries based on the performance characteristics, requirement of specialised services like water, power accessibility, disposal of industrial waste and wind direction etc. For the purpose of location the industries are grouped in four categories viz.

- General
- Obnoxious
- Agro-based
- Household/Service

#### 11.31 General Industries

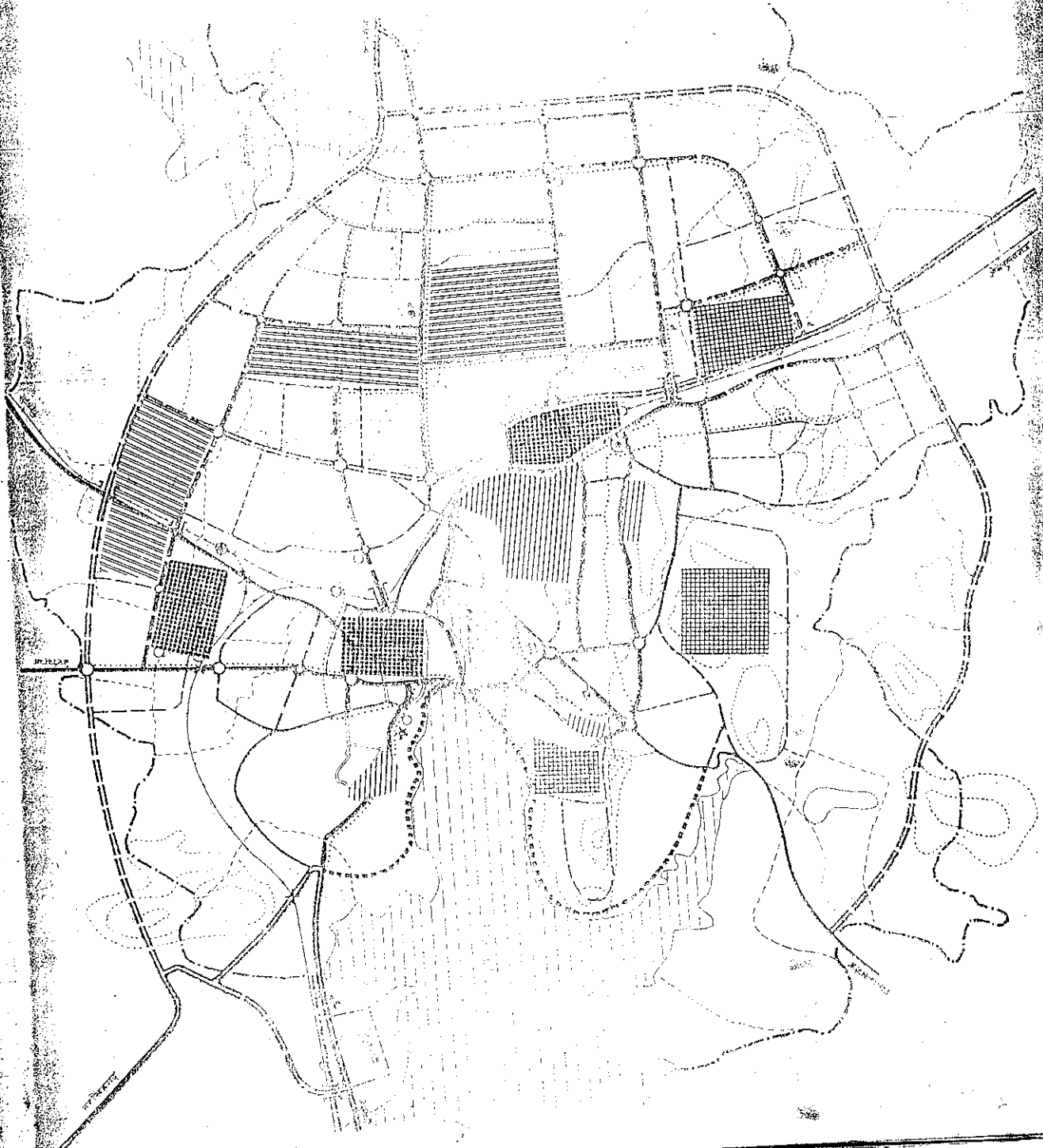
Future growth of industries is mostly conceived in the northern zone in Planning Units 6, 7 and 8, excluding BHEL factory area. Industrial area in Planning Units 6 and 7 will provide space for those industries which do not require Railway siding within their factory area. The industrial area in Planning Unit 8, will accommodate heavy and extensive industries which will require Railway siding. Intermixing of heavy and small scale units could be permitted as ancillary to the heavy industries. Flexibility to this extent has

# BHOPAL

11.3 PROPOSED  
MAJOR WORK CENTRES

प्रस्तावित  
प्रमुख कार्य केंद्र

- |          |            |
|----------|------------|
| वाणिज्य  | COMMERCE   |
| औद्योगिक | INDUSTRIES |
| कार्यालय | OFFICES    |
| अन्य     | OTHERS     |

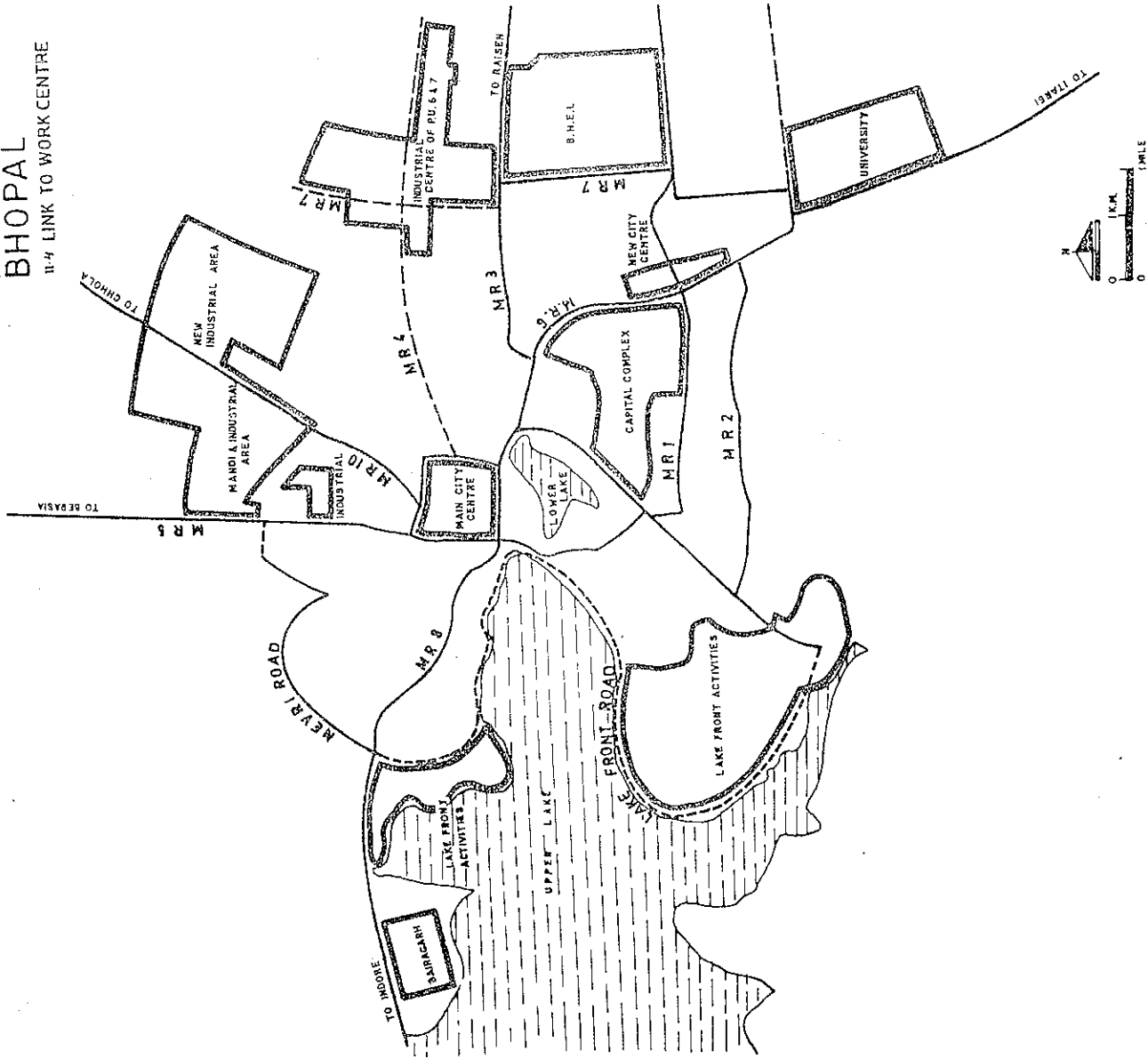


1 km  
1 mile



# BHOPAL

11.4 LINK TO WORK CENTRE





been taken care of, but in general it would be desirable that area for heavy industries, medium industries and small scale industries is planned separately because requirement of services for various industries is often different. Moreover, intermixing of those industries requiring bigger plot with those requiring smaller plot will lead to uneconomic use of urban land and services. Areas for heavy, medium and small scale could, however, be planned contiguous to each other. These aspects will have to be considered at the time of preparation of detail lay-out plan for these industrial areas. Area for industries earmarked in the plan is indicated in the statement given below :—

1. Heavy (P.U. 5, 7, 8)	305 hectares
2. Heavy-Medium (P.U. 6, 7, 8)	255 hectares
3. Medium and Small Scale (P.U. 6, 7, 8)	320 hectares
4. Household Service Industry, (P.U. 1, 2, 3, 4, 5, 8)	60 hectares
Total	<u>940 hectares</u>

### 11.32 Obnoxious Industries

Obnoxious industries which are likely to pollute atmosphere are often located on the leeward side, so as to save habitated areas from harmful effects of such industries. Obnoxious industries in Bhopal are proposed to be located on the north-eastern side of the city in Planning Units 7 and 8. The proposed site is accessible through proposed Ring Road (RN) and (RNS). At present it is connected to the city by Chhola Road. The said side will also have the advantage of railway line. The prevailing winds will carry obnoxious gases away from the city area. An area of about 150 hectares is earmarked for obnoxious industries. The site will also provide space for obnoxious industries proposed to be shifted from the city. Glue factory, Bone Mill, Distillery etc. which are identified as incompatible industrial units will be relocated in the areas earmarked for obnoxious industries.

The industrial waste from the obnoxious industrial will be thrown into nullah which ultimately joins river Halali. Presently this river is being considered for waste supply project to Bhopal. In that case, the nullah carrying industrial waste will have to be diverted, so that the effluent does not flow into the drainage system of Halali river. In any case the effluent will permit better disposal. Based on the performance characteristics of the industries the following industries will not be normally permitted to be located in areas other than places earmarked for obnoxious industries.

BHOPAL : LIST OF OBNOXIOUS AND HAZARDOUS INDUSTRIES 11-T.4

S. No.	Industrial Group	Noxious Characteristics
1	2	3
<b>I. Chemical Industries</b>		
<b>1. INORGANIC MANUFACTURING INDUSTRIES</b>		
(i)	Acids : Sulphuric acid, Nitric acid, Acetic acid (Glacial), Picric acid, Hydrochloric acid, Phosphoric acid, Battery acid, Benzoic acid, Carbolic acid, Chlorosulphonic acid etc.	Fire hazard, offensive fumes, and smoke
(ii)	Alkalies : Caustic soda, Caustic potash, Soda ash etc.	Fire hazard, corrosive substances
(iii)	Production of mineral salts which involves use of acids	Fire hazard, smoke and fumes
(iv)	Carbon disulphide, Ultramarine blue, Chlorine, Hydrogen	Risk of fire, dust and fumes
<b>2. ORGANISE MANUFACTURING INDUSTRIES</b>		
(i)	Dyes and Dye-stuff Intermediate Manufacture	Waste water is acidic contains quantities of sludge
(ii)	Synthetic plastics like Polyethylen P.V.C Resin Nylon	Distillates from reaction vessels, fire risk also
(iii)	Synthetic rubber	Liquid effluents with unpleasant smell
(iv)	Synthetic detergents	Unpleasant smell and risk of fire
(v)	Insecticide, Fungicides and Pesticides.	Unpleasant smell and dust; fire hazards
(vi)	Phenols and related industries based on coal tar distillation	Risk of fire
(vii)	Organic solvents, chlorinated minerals liquified and dissolved gases	Fire hazard, unpleasant smell
(viii)	Manufacture of compressed 'Permanent' liquified and dissolved gases	Risk of fire
(ix)	Acetylides, Pyridines, Iodoform, chloroform, B-Naphthol etc.	Risk of fire, smell
<b>3. MISCELLANEOUS</b>		
	Electro-thermal industries such as manufacture of calcium carbide, Phosphorus, Aluminium dust, paste and powder, Copper, Zinc, etc.	Risk of fire
<b>I. Poisons</b>		
	Ammonium Sulpho-cyanide, Arsenic and its compounds, Barium acetate, Barium bromide Barium carbonate, Barium cyanide, Barium ethylsulphate, Barium acetate, Cinnabar, Copper sulpho-cyanide, Ferrocyanide, Hydrocyanic acid, Potassium binoxalate, Potassium cyanide, Prussiate of Potash, Pyrogalllic acid Silver cyanide etc.	Contamination if stored on same floor as or floors above food-stuffs (fire hazard in any case)
	Manufacture of Cellulosic Products : Rayon fibre, waste products, Rayophane paper etc. Cellulose nitrate, Celluloid articles, scrap and solution.	Risk of fire



1	2	3
	Paints, Enamels, colours, Varnish (other than Litho Varnish) and varnish removers of all kinds, Turpentine and Turpentine substitutes Matches : Printing Ink. Industrial Alcohol : Manufacture of Newsprint :	Risk of fire and smell  Fire hazard Fire hazard Unpleasant smell Unpleasant smell, enormous quantities of contaminated waste water, fire hazard
II.	<b>Petroleum Products</b>	
	1. Crude oil refining, procession and cracking, Petroleum jelly, petroleum ether, Naptha cracking including Gas cracking for any purpose	Inflammable fumes and noise
	2. Carbon black manufacture and blacks of all kinds	Fire hazard
	3. Petroleum coke usage for Graphite production	Fire hazard
	4. Lubricating and fuel oils and illuminating oils and other oils such as Schist oil, Shale oil etc.	Fire hazard
III.	<b>Rubber Industry</b>	
	Reclamation of rubber and production of tyres, rubber solutions containing mineral naptha, rubber waste	Unpleasant smell, dust and fire
IV.	<b>Metallurgical Industries with the Following Operations</b>	
	1. Sintering, smelting	
	2. Blast furnaces	Noise, dust, smoke and risk of fire
	3. Recasting of ore sulphides oxides or mixtures	
V.	<b>Manufacture of Radio Active Elements such as Thorium, Radium and similar isotopes and recovery of rare earth.</b>	Radiation hazard
VI.	<b>Paper and Paper Products</b>	
	Large scale paper, pulp and board manufacture	Unpleasant smell large quantities of contaminated waste water.
VII.	<b>Leather &amp; Other Animal Products</b>	
	1. Leather tanning.	Obnoxious smell
	2. Glue and gelatine manufacture from bones and fish.	Obnoxious smell
	3. Bone crist, bond meal, bone powder or storage of bones in the open.	Obnoxious smell
	4. Glandular extractions	Obnoxious smell
	5. Animal and fish oils	Risk of fire
VIII.	<b>Manufacture of Explosive Ammunition</b>	
	1. All types of explosives or their ingredients such as fire works of all kinds, bon-bons, gun cotton, gun powder, flares, flash powders, rockets.	Fire, explosion hazards.
	2. Industrial gelatine, Nitroglycerine and fulminate.	Risk of fire.

1	2	3
<b>IX. Manufacture of Cement and Refractories :</b>		
1. Portland cement		Dust.
2. Refractories		Smoke and solid waste
3. Enamelling vitreous		Smoke from furnace
4. Glass furnaces of 3 tonne capacity and above		Fire
5. Mechanical stone crushing.		Dust, slurry noise
<b>X. Fertilisers</b>		
Nitrogenous and phosphatic fertiliser manufacturing on a large scale except mixing of fertiliser for compounding.		Fire, noise, atmosphere pollution due to noxious gases, fire and dust.
<b>XI. Heavy Engineering and Forging Shops</b>		
Using steam and power hammers and heavy metal forgings.		Noise, vibration and smoke
<b>XII. Wood and Wooden Products</b>		
Distillation of wood		Readily ignitable obnoxious gases; risk of fire
<b>XIII. Textiles</b>		
1. Oil sheets and water proof clothing		Fire hazard
(a) Wool spinning		Wool washing liquor containing certain impurities.
2. Clean rags (not including clean textile cutting), oily and greasy rags		Fire hazard.
3. Flax Yard and other fibre		Fire hazard.
4. Textile finishing, bleaching and dyeing		Waste water containing acids etc.
<b>XIV. Foods</b>		
1. Vegetable oils		Noise, unpleasant smell
2. Abattoirs		Waste water with obnoxious smell
3. Alcohol distilleries and breweries and potable spirits		Oxygen causing unpleasant smell, noise, fire hazard
4. Sugar refining		Unpleasant smell, fire hazard
<b>XV. Transport</b>		
Manufacture of aircraft, locomotives, tractors, etc.		Smoke and noise.

Note:— Recommended by Town & Country Planning Organisation vide. in the Guide to Classification of Industries.

### 11.33 Agro-Based Industries

Bhopal region has good agricultural potential and is relatively surplus in agricultural produce. Obviously the city would attract more and more agro-based industrial units. The Development Plan, therefore, envisages location of agro-based industries in the industrial area in planning unit No. 8. The site also has advantage of proximity to Mandi, Godown and Warehousing. The site also falls in the vicinity of railway goods station, Nishatpura. The existing industrial units around Laxmibai Mandi and Bhopal Oil Mills are proposed to be located in this area. Total area earmarked for agro-based industries is 100 hectares most of which falls in Planning Unit No. 8.

### 11.34 Household and Service Industries

These type of industries cater for the immediate needs of the citizens and most of these units can function near or even within the city centres and Planning unit centres depending upon the type and nature of performance of industry. The units which can function as flatted factories are also proposed to be housed in the areas earmarked for flatted factories. The development plan envisages nearly 10 hectares at various location for development of flatted factories. Total area earmarked for household and service industries including flatted factories is around 60 hectares located in planning units 1, 2, 5 and 8. Major service and repair shops, garages located on Noormahal Road, Retghat, Berasia Road, Hamidia Road are proposed to be provided site within the nearest side earmarked for flatted factories, household and service industries.

### 11.35 Extractive Industries

Bhopal environs do not offer suitable soil for brick making. The terrain is either black cotton or rocky. Hillocks, however, do provide quarry sites for extracting aggregates. However, beautiful land forms which is the unique gift to the city will have to be preserved and protected. Every possible care needs to be exercised in mining the hillocks for extracting stone aggregates. It will also be desirable to actually earmark the extent of their depth etc. for controlled quarrying. The following sites for quarrying are proposed to be earmarked. Actual area for quarrying and other details will have to be worked out while permitting the mining on these sites. The area earmarked for quarrying etc. is exclusive of area earmarked for industries. The statement below gives the list of existing quarries proposed for closing and new sites earmarked for quarrying :—

A. Sites proposed to be discontinued :

1. In Shahpur village near E-6 Sector and Asha Niketan.
2. In Kotra Sultanabad village main road No. 3 adjoining to M.A.C.T. boundary and opposite to Char-Imli Hill.
3. At Char-Imli, near slum rehabilitation area.
4. Along main road No. 3 and on the Singhpur hill near Bhadbhada.
5. Dharampuri Hill (earmarked for relocation).

B. Sites earmarked for quarrying :

1. On the south of village Shahpur, a hillock measuring about 4 hectares is proposed for stone quarrying. This area comes in planning unit No. 4 of the Development Plan.
2. The hillock portion of Shingar Choli facing the Gandhi Nagar is also suitable for stone quarrying. This area is nearly 500 metres away from Narsingarh Road.
3. Hillock in Chhawani village near Bhadbhada is proposed for stone and mooram quarrying.
4. Shingar Choli near Lalghati (for controlled quarrying).

## Chapter 12

### HOUSING

A study of housing problem, in terms of shortage of dwelling units particularly in Government Residential Housing, overcrowding in housing stock, acceptable dwelling units stock, slum areas, poor living areas, jhuggi-jhopdi settlements, lack of amenities, sub-standard and un-co-ordinated development of colonies etc. has been discussed in Chapter 4.

The future requirements in terms of dwelling units by type, requirement of land and related amenities etc. have been discussed in Chapter 8. Keeping in view both the present problems and future needs of the city, the following main considerations emerge which will form the basis of planning proposals in respect of housing and allied amenities.

- (a) Allocation of land for housing to meet a backlog of 32,800 dwelling units in addition to future requirements till 1991.
- (b) Allocation of specific areas for Government residential and General residential. Government residential is proposed to be around 18% of the total requirement.
- (c) Allocation of specific area for economically weaker section of the society and low income group.
- (d) Co-ordination of Residential colonies which have come up in disjointed manner and provision of amenities such as schools, shopping open spaces, etc.

- (e) Integration of villages in planning area with future urban development.
- (f) Allocation of specific areas for resettlement of jhuggi jhopdi settlements proposed to be cleared during the plan period.
- (g) Development of Housing areas as composite entity ensuring basic amenities, within the planning unit and the sector.

The hierarchy of relationship between residential entities such as dwelling unit, group of houses, residential sector, planning unit and the city has been maintained by provision of amenities and work centres at various levels while planning for residential areas. These will function as economic, social and cultural inter-links between these units and will foster a sense of belongingness to the community without loosening emotional ties to the city.

## 12.1 RESIDENTIAL ZONES

Residential area is distributed in 9 residential zones which correspond to the respective planning units of the city as described in Chapter 9. Each residential zone is further composed of residential sectors which are essentially self-contained entities in respect of basic need of its inhabitants. Nearly 4200 hectares of land within housing sectors (excluding residential amenities and shopping areas) has been provided in the plan. Development Plan ensures essential relationship between home, work and recreation at sector level.

Physical growth trends and limiting factors described in Chapter 3 reveals that the city could be extended towards north-east and south-east directions. Future residential development is mainly planned towards North of Raisen Road and towards South of BHEL township on Obeidullaganj Road up to proposed Ring Road RN and RS. Some residential areas have also been proposed near Lalghati towards Narsingarh and Indore for the extension of Bairagarh township since Bairagarh offers no scope for expansion elsewhere due to prevention of water pollution of Upper Lake.

### 12.11 Description of Residential Zones

The residential zones have been sub-divided into 54 residential sectors. Except the main city area which falls in planning unit No. 1, the number of sectors in each residential zone ranges between 3 to 9 depending on the size of residential zone. 9 sectors are provided in zone No. 5, 8 sectors in zone No. 8, 7 sectors in zone No. 6, 6 sectors each in zones 2, 3, 4 and 7 and 3 sectors each in zone No. 1 and 9. A brief description of each residential zone is given here.

#### **Residential Zone No. 1**

This zone corresponds to the main city area and Jehangirabad. The zone has recorded overcrowding because of families sharing accommodation and has a very high residential density. The population content in this zone is proposed to be reduced. This zone is meant to cater for nearly 0.85 lakh population at an average residential density of 582 persons per hectare. It contains 3 sectors. Necessary provision is made to reduce the high occupancy rate by allowing a higher F. A. R. and also by making available housing sites to the workers living in the central area.

#### **Residential Zone No. 2**

This zone comprises of 6 residential sectors and will contain population of about 1.17 lakhs at an average residential density of 235 persons per hectare. The zone corresponds to the capital complex area, New city centre, residential areas of private sector, 1464 quarters etc. Additional area is also earmarked for housing Government staff.

#### **Residential Zone No. 3**

The zone comprises of 9 residential sectors and covers an area of about 385 hectares. It is meant to accommodate a population of about 0.65 lakh at an average density of 151 persons per hectare. The unit mainly comprises of existing area of South and North T.T. Nagar, Shamlu Hills and M.A.C.T. Additional area is earmarked for future requirements of Government staff quarters.

#### **Residential Zone No. 4**

This zone comprises of 6 residential sectors and covers an area of about 470 hectares to accommodate a population of about 0.74 lakh. The average density would be about 139 persons per hectare. The entire zone is almost earmarked for new development including university side, proposed along Hoshangabad Road. The zone is to cater predominantly for L. I. G. and H. I. G. income groups.

#### **Residential Zone No. 5**

The zone corresponds to B.H.E.L. an industrial undertaking. Residential zone covers an area of 846 hectares comprising of 9 residential sectors. It is meant to accommodate a population of 1.81 lakhs within average density of 195 persons per hectare. A portion of the area is reserved for expansion of B. H. E. L. township towards eastern side along Raisin Road and Piplani area, all along the Ring Road.

### **Residential Zone No. 6**

Most of the area under this zone is open except Anand Nagar. The zone includes 7 sectors covering an area of 457 hectares to contain population of about 1.33 lakhs at an average density of about 276 persons per hectare. The zone is to contain residential areas for workers of industrial estate and industrial area and as such will provide for E. W. S., L. I. G. and M.I.G. categories of population.

### **Residential Zone No. 7**

This residential zone includes present railway station and railway quarters, textile mill area and Chandbad. The unit will accommodate the population working in industries, located within this zone. The zone comprises of 6 residential sectors with an area of about 327 hectares containing the population of about 1.37 lakhs. The average density works out to be 284 persons per hectare. The zone is meant to accommodate industrial workers and some population of main city required to be shifted under rehabilitation and clearance scheme.

### **Residential Zone No. 8**

The zone corresponds to present city, Berasia and Chhola Roads, Idgah hill etc. The zone is meant primarily for accommodating the population working in proposed mandi along Berasia Road and Industries along Chhola Road, Categorised market, and Agro-based units. The zone has 8 residential sectors accommodating about 603 hectares of area and a population of about 1.59 lakhs. The average density will be around 264 persons per hectare.

### **Residential Zone No. 9**

The zone 9 corresponds to Bairagarh township and provides space for expansion near Lalghati around Narsingarh Road. This zone comprises of 3 sectors. It covers an area of 163 hectares and would serve the population of about 0.49 lakh. The average density works out to be about 256 persons per hectare.

## **12.12 Distribution of Population and Area**

The distribution of population and the residential area has been based on the following considerations.

- (a) In view of the rising cost of development of land, it is necessary to plan the residential areas on a relatively high density.



(b) Areas for low density range housing are kept minimum. Incidentally this will conserve scarce agricultural land around the city.

(c) High-density range is proposed in areas situated adjacent to work centres e. g. city centres and industrial areas.

(d) High-density range is maintained in the existing built up areas near the present city centre although it is proposed to relieve this area from overcrowding and necessary land for this purpose has been earmarked.

(e) Area earmarked for rehabilitation of slums and jhuggi-jhopdi scheme is also to be developed at high density so that the residents do not have to travel long distance to their work centres and amenities.

(f) Normally in the initial stage of development of new residential areas, density tends to be low, because majority of the houses in private sector are often built in stages. Density tends to increase after lapse of sometime may be 10/12 years. Some cushion will be provided in the plan to absorb the impact of increased density.

A broad distribution of population in various residential zones is given in the infra table :—

BHOPAL : DISTRIBUTION OF POPULATION AND AREA 12-T.1

Residential Zone No.	Residential Sectors	Area Hectares	%	Population in Lakhs	%	Average Residential Density per Hectare
1	2	3	4	5	6	7
1.	3	146	3.5	0.85	8.5	582
2.	6	498	11.8	1.17	11.7	234
3.	6	430	10.3	0.65	6.5	151
4.	6	530	12.7	0.74	7.4	139
5.	9	926	22.0	1.81	18.1	195
6.	7	406	9.5	1.33	13.3	327
7.	6	482	11.5	1.37	13.7	284
8.	8	619	14.8	1.59	15.9	256
9.	3	163	3.9	0.49	4.9	300
Total	54	4200	100.0	10.00	100.0	238

### 12.13 Residential Zone and City Centre Relationship

Residential zones in planning units 1, 7, 8, & 9 and part of 6 will be served in respect of city level needs by the present central city core while residential zones in planning units 2, 3, 4, 5 and part of 6 shall be served by new

city centre at Habibganj. Broadly command area of both the city centres in terms of residential area will be as follows, although the present city centre will continue to function as main city centre for a long time.

BHOPAL : COMMAND AREA OF CITY CENTRES		12-T.2
Name of City Centre	Residential Zones (Planning units)	Housing area (Hectares)
Jama Masjid city centre	1, 7, 8, 9 & part of 6	1716
Habibganj city	2, 3, 4, 5 and part of 6	2484
Total		4200

#### 12.14 Co-ordination of Residential Colonies

Most of the private colonies established during the last 15 years have come up in disjointed manner. These colonies lack in basic infrastructure and amenities and have created pockets of developed land separated by Agricultural land such as Subhash Nagar and Ashok Nagar. Most of them are not developed properly. It is proposed that all such vacant land falling in different colonies, specially on Raisen Road, should be developed by the Development Authority so as to meet the deficiencies. This measure will also solve the problems of inter-communication to different areas. All the colonies should be taken over by the Corporation. The Corporation may make good loss by collecting additional tax from colonisers or from individual owners for provision of services where the development of land by private colonies is sub-standard. This process adopted by the Corporation for development at Idgah has proved successful.

#### 12.15 Integration of Villages

The planning area of the city covers 48 villages. Integration of villages in planning area with the urban development is essential in order to provide urban facilities to the villages also. Care will be taken to co-ordinate the existing villages with the proposed development at the time of zoning plans for different residential sectors. The villages located in the green belt will also be connected to development area at least by fair weather roads and provided essential amenities.

#### 12.2 RESIDENTIAL DENSITY

Residential density is a measure which is used as basis for assessment of requirement of land for provision of amenities and services. It is also used as a measure for study of living conditions in the existing residential areas.

Normally net residential density<sup>1</sup> is used for study of existing residential areas and also for preparation of lay-outs for sub-sectors and small areas. Gross density<sup>2</sup> is, however, used to work out requirement at sector level and for preparation of Development Plan.

## 12.21 Residential Density Ranges

A study of the existing built up areas has revealed that the net residential density varies between 150 persons per hectare to nearly 450 persons per hectare (Table 4-T.3). However, highest densities would continue in and around central area. A gross density of nearly 250 persons per hectare has been adopted as basis of assessment for requirement at sector level which will give approximately a net density of 500 persons per hectare. The density range adopted for planning proposals at sector level is :

Low	up to 125 persons per hectare.
Medium	126 to 250 p. p. h.
Medium & High	251 to 400 p. p. h.
High	401 to 600 p. p. h.

## 12.22 Residential Density (Zone-Wise)

Maximum area under high density range has been provided in zone which contains the present city centre around Jama Masjid and zone 7 which will provide accommodation to industrial labour being situated near proposed industrial area. Maximum area under medium-high density has been provided in zones 2, 5, 6, 8 and 9 since these zones contain major work centres like industries, city centre, mandi and other major commercial activities. The city will contain 15% of the total area in low density range accommodating 6% of the total population. About 26% of the total area is earmarked for medium density range sharing 17% of total population. 32% of the total area is proposed under medium-high density accounting for about 33% population, and 27% of the total area has been proposed under high density range, which will accommodate 44% of the total population. In brief 41% of the area will have density up to 250 persons per hectare accommodating 23%

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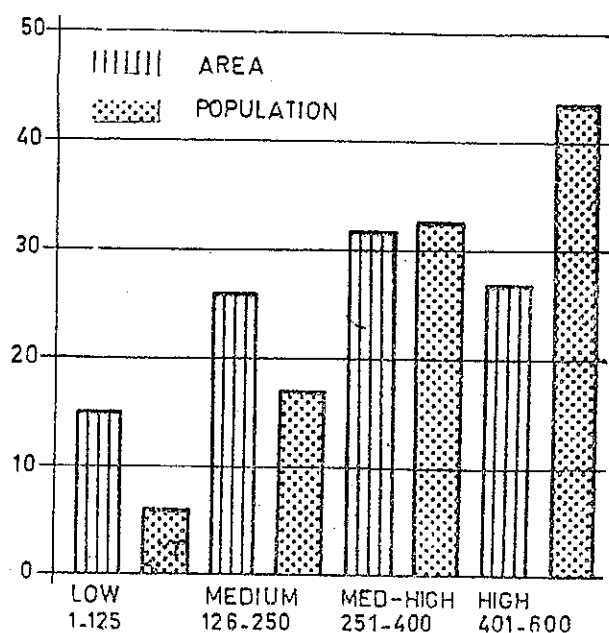
Note :—(1) Net residential density is the population divided by the acreage including dwellings and gardens, any incidental open space (e. g. children's play space or parking space) and half width surrounding roads (up to maximum of 20') but excluding local shops, primary schools and most open space and all other types of development.

(2) Gross density is the population divided by residential area including land covered by houses, gardens, roads, local shops, primary schools and most open space excluding all other urban uses such as industrial, secondary schools, town parks etc.

of the total population, while 59% of the total area sharing 77% population will have density above 250 persons per hectare. The following diagram shows the extent of areas allocated for various density ranges.

## BHOPAL

### 12-1 AREA & POPULATION BY DENSITY RANGES



Details of provisions of areas under various density ranges are given in the following table :—

BHOPAL : RESIDENTIAL DENSITY RANGE (ZONE-WISE)  
(Area in hectares and population in 1000)

12-T.3

Residential zone No.	Low up to 125		Medium 126-250		Medium-high 251-400		High 401 to 600		Total	
	Area	Population	Area	Population	Area	Population	Area	Population	Area	Population
1	2	3	4	5	6	7	8	9	10	11
1.	—	—	—	—	—	—	146	85.0	146	11
2.	60	6.5	123	20.0	215	53.0	100	37.5	498	117
3.	150	15.0	155	24.0	40	11.0	40	15.0	385	65
4.	200	19.0	170	28.0	100	27.0	—	—	470	74
5.	90	9.0	276	43.5	400	100.0	80	28.5	846	181
6.	—	—	91	14.5	175	46.5	191	72.0	482	133
7.	—	—	120	20.0	162	41.0	200	76.0	603	137
8.	110	10.5	100	16.0	140	36.0	253	96.0	657	159
9.	—	—	20	3.5	63	15.5	80	30.0	163	49
Total	610	60.0	1055	170.0	1295	330.0	1090	440.0	4050	926
Percentage Area	15%		26%		32%		27%		100.0%	
Population		6%		17%		33%		44%		100.0%

### 12.3 DISTRIBUTION OF AREA AND POPULATION BY INCOME GROUPS

Requirements of houses by type and house sites by size are dependent on the capacity of the occupants to pay for house or the site and services. An assessment of persons belonging to various income groups is, therefore, necessary. According to the studies described in Chapter 8, distribution of area and population in four groups is as follows. Location of areas have been mostly guided by relationship with type of work centres and character of development in adjacent areas.

1. Economically Weaker Section
2. Low-Income Group
3. Middle-Income Group
4. High-Income Group

In planning and allocation of areas for various income groups segregation on the basis of income will be undesirable. On the contrary, an attempt has been made to create conditions which will foster social homogeneity by :—

- (a) Provision of common amenities.
- (b) Intermixing of various income groups in each residential zone.

This has been achieved to a large extent as is evident from the infra table :—

BHOPAL : DISTRIBUTION OF AREA & POPULATION BY INCOME GROUPS 12-T.4  
(Area in Hectares & Population in Thousands)

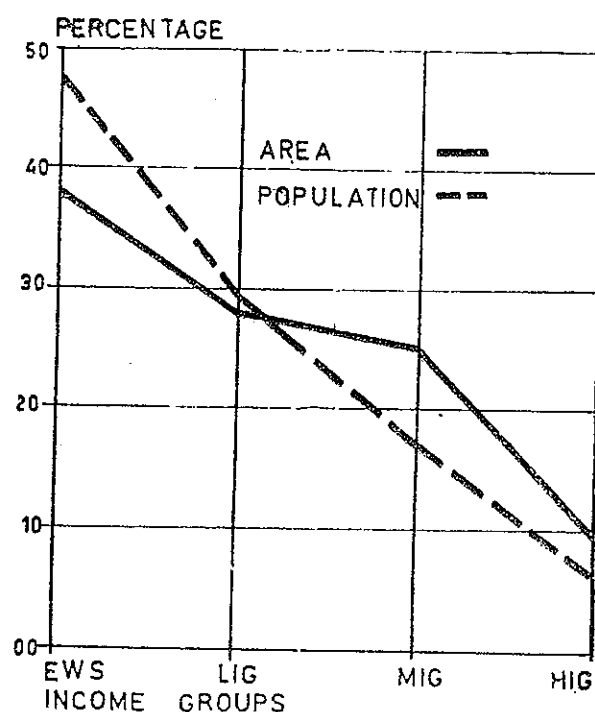
(Area in Hectares & Population in thousands)											
Residen- tial Zone No.	INCOME GROUPS									Total	
	E. W. S.		L. I. G.		M. I. G.		H. I. G.				
	Area Population		Area Population		Area Population		Area Population		Area Population		
	1	2	3	4	5	6	7	8	9	10	11
1.	41	30	41	25	28	15	36	15		146	85
2.	142	50	142	35	142	22	72	10		498	117
3.	122	25	150	20	72	15	41	5		385	65
4.	154	25	122	20	162	24	32	5		470	74
5.	202	65	271	61	304	45	69	10		846	181
6.	243	85	134	35	80	13	—	—		457	133
7.	263	80	105	37	81	15	33	5		482	137
8.	324	100	138	39	100	15	41	5		603	159
9.	49	20	32	18	41	6	41	5		163	49
Total	1540	480	1135	290	1010	170	355	60		4050	1000
Percen- tage	38%		28%		25%		9%			100%	
Area		48%		29%		17%		6%			100%
Population											

The table reveals that 66% of total area has been proposed for economically weaker section and low-income group accounting for 77% of total population while 34% of area has been earmarked for middle and high-income groups which will contain 23% of total population.

The graph below shows an interesting comparison between the area and population. In case of economically weaker section and low-income group, population-share will be more than the area allocated while it will be reverse for middle and high-income groups.

## BHOPAL

### 12.2 AREA & POPULATION BY INCOME GROUPS



### 12.4 GOVERNMENT AND SEMI-GOVERNMENT HOUSING

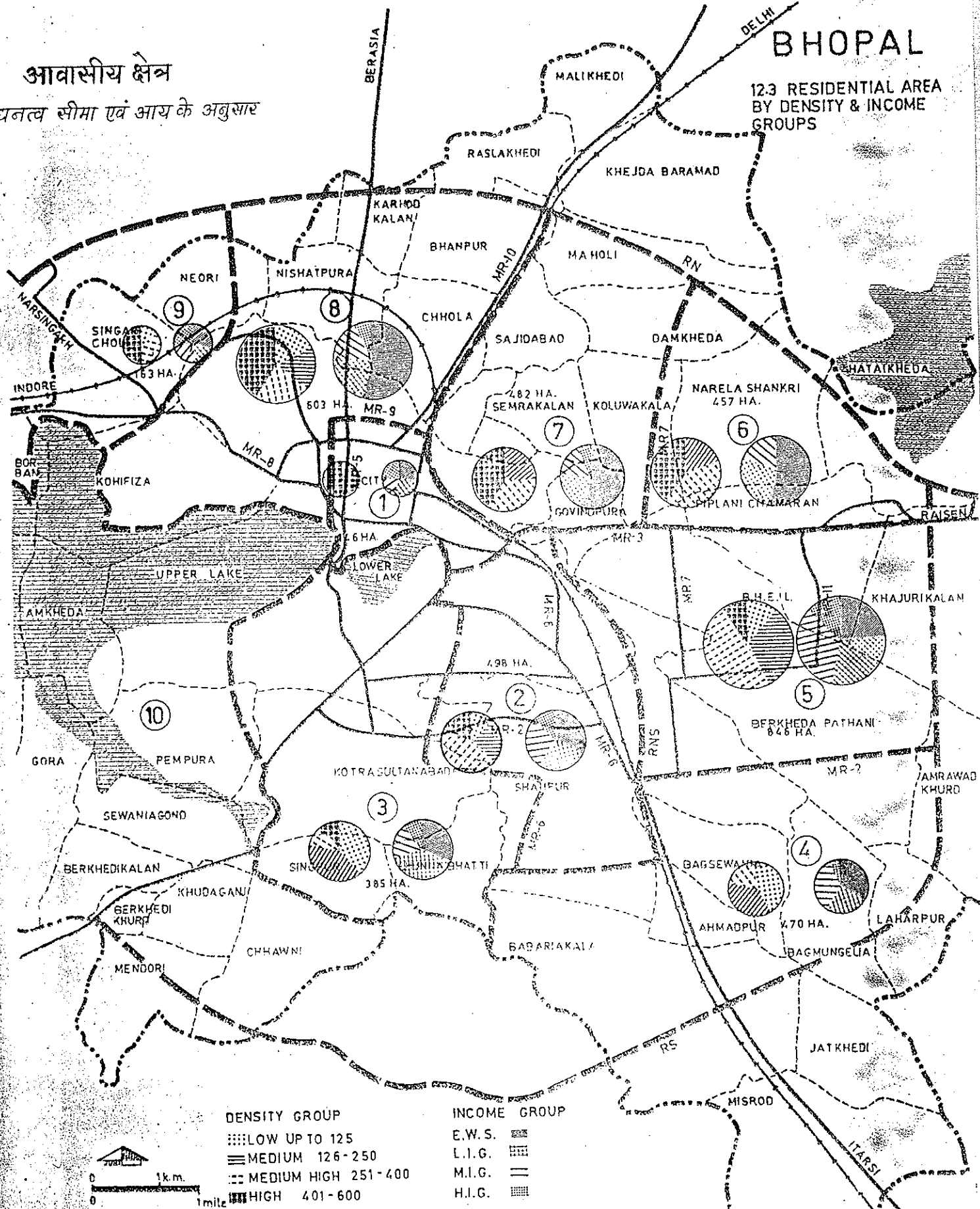
Bhopal, being the State capital, the Development Plan takes into account the requirement of Government and Semi-Government quarters for the employees of State Government, Central Government and Autonomous bodies. In addition to the existing 10,750 quarters, the additional requirement of nearly 25,000 quarters has been worked out in Chapter 8. It is imperative to earmark residential land for Government accommodation in relation to the capital and sub-capital complex. This would enable adequate land for provision of housing to all needy employees in this sector. Housing to 65% & 80% of the Govt. & Semi-Govt. employees to be provided is accepted in principle subject to the availability of funds.

The administrative complex at Laxminarayan Giri will accommodate State and Central Government offices in higher order. It will be desirable to provide housing accommodation to office workers as near to administrative area

# आवासीय क्षेत्र घनत्व सीमा एवं आय के अनुसार

## BHOPAL

12.3 RESIDENTIAL AREA  
BY DENSITY & INCOME  
GROUPS







as possible. Housing for Government employees is already in existence in T. T. Nagar area in zone Nos. 3 and 2, which is quite close to their work centre. Additional area for future requirement is proposed in these zones together with area in residential zone No. 4.

Another administrative centre is located in old secretariat area. Additional area for Government housing is, therefore, proposed close to this work centre in residential zone No. 8. This will minimise the distance of journey to work centre. Area reservations have also been made in zone Nos. 6 and 7 for local level offices. The present South T. T. Nagar area (single storeyed quarters) has a low density and is also becoming out dated. It is proposed to re-design the area with higher density with 3/4 storeyed houses. This will release some land for essential amenities and improve circulation system. Area in Kotra Sultanabad village also be utilised for Government housing.

It has been estimated in Chapter 8 that BHEL would need nearly 6,750 dwelling units for their employees during the plan period. BHEL has adequate land for the expansion of their township. At present no housing accommodation or house sites are provided within BHEL area for servicing population. The shopkeepers, casual labours, construction labours and domestic servants have encroached upon BHEL land. It will be desirable to provide residential accommodation or land for the service population of shop and commercial establishments close to their work centres. This will improve the services within township.

## 12.5 SLUMS AND JHUGGI-JHOPDI SETTLEMENTS

The problem of slums created by poor-living conditions, overcrowding lack of amenities and public convenience and that of jhuggi-jhopdi settlements created by organised squatting on public lands with active support by various pressure groups, has been discussed in detail in Chapter 4, (para 4.18). Slum areas accommodating nearly 75,000 persons and 33 jhuggi-jhopdi settlements accommodating nearly 18000 persons have been identified. Most of jhuggi-jhopdi settlements are in Capital Project and BHEL townships.

Simultaneous action for prevention, improvement, clearance and rehabilitation will be necessary to tackle this complex problem which involves physical, social and economic factors. A four-pronged approach is proposed.

1. Modification of building bye-laws, formulation of zoning regulations and strict enforcement of the same. Zoning regulations are contained in the following chapters.

2. Development of land specifically for economically weaker section of the society in advance so that at least house sites and services within reasonable cost are made available to the migrants to the city. This will prevent haphazard squatting and encroachment of public land.

3. Environmental improvement and provision of services and amenities so as to improve the living conditions of slum areas.

4. Clearance of slums and rehabilitation of the same at new sites.

The slums and jhuggi-jhopdi settlements are divided into 2 broad categories :—

(a) Slums and jhuggi-jhopdi settlements which are required to be cleared and resettled at a new site.

Clearance of slums is often difficult because the process of clearance disturbs social life, economic linkage between slum areas and the work places, evokes emotional attachment to the place of residence, particularly in case of residents who have been living there for considerable time. Besides this, clearance also involves many administrative and financial difficulties. In view of these factors, only these slum areas and jhuggi-jhopdi settlements have been earmarked for clearance which are either difficult to improve e. g. low-lying areas, or are situated on the land which is required for other uses essential for proper functioning of city life.

The site for rehabilitation of these slums and jhuggi-jhopdi settlements are selected as near to the present site as possible so as to cause minimum dislocation to their economic and social life. Details of proposals for clearance and rehabilitation and for environmental improvement are given in proper tabulated form.

A policy of resettlement of families of slum areas affected by the proposals, will have to be detailed out while framing detailed scheme of slum settlements. The implementation policy would also ensure :—

a) Minimum dislocation of slum dwellers.

b) To provide alternatives to affected slum families to rehabilitate new surroundings.

The following slum areas earmarked for clearance and rehabilitation. A time-bound programme is to be checked out while framing detail zonal plans for these areas :—

# BHOPAL

12.4 AREAS FOR IMPROVEMENT  
CLEARANCE & REHABILITATION

सुधार क्षेत्रों एवं पुनर्वास  
क्षेत्र क्षेत्र

CLEARANCE  
SLUM & JHUGGIES  
REHABILITATION  
IMPROVEMENT  
PROPOSED AREA FOR  
REHABILITATION

सुधार क्षेत्र  
सुधार क्षेत्र  
सुधार क्षेत्र  
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सुधार क्षेत्र  
सुधार क्षेत्र



0 1 km  
0 1 mile





**BHOPAL : SLUMS EARMARKED FOR CLEARANCE AND REHABILITATION**

12-T.5

Locality	Name of Slum Area	Present Location Planning Unit No.	Proposed Location Planning Unit No.
1	2	3	4
Main City	Bhoipura near Sindhi Market	1	1
	Nakkar Khana	1	1
	Yaseen Palace	1	8
	Retghat	1	7
	Fategarh Fort	8	7
	Bhoipura near Lower Lake	1	7
	Kasaipura	1	1
	Tajmahal	8	8

The following slum areas are earmarked for environmental improvement :

Locality	Name of Slum Area :
Main city :	1. Mangalwara 2. Kumharpura 3. Itwara 4. Behind Laxmi Talkies 5. Ginnori 6. Part of Kasaipura 7. Chandbad 8. Slum area of ward No. 14
Shahjahanabad :	1. Bajaria 2. Kabitpura 3. Ibrahimganj 4. Kazi Camp-Shyam Nagar
Jhangirabad :	1. Berkhedi 2. Patra 3. Church Road Area 4. Murgi Bazar 5. Behind Market Road
Bairagarh :	1. North of Sehere Road

The infra table gives jhuggi-jhopdi settlement proposed for clearance and rehabilitation :

BHOPAL : CLEARANCE AND REHABILITATION OF JHUGGI-JHOPDI SETTLEMENTS  
12-T.6

Name of Locality	Present Location	Proposed Location P. U.
1	2	3
Main City	Berasia Road	8
	Chhola Road	8
	Karbala	7
	Chandbad	7
T. T. Nagar	Behind Raj Bhawan	3
	Jawahar Chowk	3
	M. A. C. T. Road	3
	Main Road No. 2	3
	1250 Qrs. Area Char-Imli	2
	Habibganj	2
	Private Sector	2
B. H. E. L.	Govindpura	5
	Gadia Gate	5
	Anand Nagar	6
Bairagarh	Near Nullah	9

## Chapter 13

### AMENITIES AND SERVICES

Bhopal, like other capital cities provides higher order amenities and facilities at all levels. Normally the nature and character of amenities are related to the size and status of a city, and in view of its status, Bhopal has to provide better range of amenities and services at local, regional and state level. Bhopal has advantage of large water bodies situated within and on the periphery of the city. Their beauty is further enhanced by low range of hills and flowing land forms. These features call for a special treatment of landscape for enhancing its scenic beauty. The city also offers immense opportunities for provision of state level recreation amenities. Detailed proposals in respect of recreation amenities and landscaping are, therefore, given in this chapter. Besides this, the chapter contains proposals in respect of other amenities such as education, health, social and cultural and public utilities and services.

Problems in respect of inadequacy of amenities and services have been discussed in Chapter 7. Assessment of future needs has been made in Chapter 8. The provision of sites for these amenities, therefore, covers existing inadequacies as well as growing needs of the city. It is of course imperative to ensure that amenities at all levels viz. city level, planning unit level and sector level are provided at convenient place and at right time in order to make the city life convenient and enjoyable.

### 13.1 HEALTH AMENITIES

Next to Indore, Bhopal has developed as centre of specialised medical service catering for the population of the city, its region and to some extent the state as a whole. The Development Plan for Bhopal takes into account the nature of existing medical facilities available in the city and future requirement as discussed in Chapter 8.

At present an area of 75 hectares is under health amenities, additional area of 68 hectares is earmarked for future health needs. Total area proposed in the Development Plan for this purpose is 142 hectares. Area for a major health amenities is proposed in planning unit No. 8.

#### 13.11 City Level

There are 3 specialised hospitals e. g. T. B. Hospital, Lady Hospital (Sultania Zanana) and Asha Niketan at present located in planning units 8, 1 and 2 respectively and additional area of 8 hectares is earmarked for the expansion of T. B. Hospital. One specialised hospital is proposed to be located in planning unit No. 6. Three general hospitals e. g. Hamidia Hospital, T. T. Nagar Hospital and Kasturba Hospital in BHEL are at present located in planning units 8, 3 and 5. Five more general hospitals are proposed in planning units 5, 6, 7, 8 and 9. Planning unit 1 would be served by general hospital of planning unit 8. Similarly planning units 3 and 4 would be served by general hospitals of planning units 2 and 5 respectively. However, large dispensaries are proposed in each planning unit which are not provided with general hospitals. General hospital will cover an area of 55 hectares. Bhopal will need nearly 2.00 hospital beds as against 1865 beds available at present.

#### 13.12 Planning Unit Level

Large dispensaries including Unani and Ayurvedic hospitals, Nursing and Maternity homes are considered health facilities at planning unit level. The city will need 6 Unani/Ayurvedic hospitals and 6 nursing and maternity homes by 1991. At least one large dispensary is essentially needed where no provision of general hospital is made. At present there are three large dispensaries e.g. K. N. Katju, T. T. Nagar, Public Health Centre, Bairagarh, District T. B. Centre near Bharat Talkies. Two other hospitals e. g. Government Ayurvedic and Unani Hospitals and Homoeopathic hospital are also available. Bairagarh dispensary is proposed to be converted into general hospital. Additional area has been earmarked for its expansion. Two large dispensaries are proposed in planning units 2 and 4 where provision of general hospital is made. An area of 1 to 2 hectares will be needed for each large dispensary.



There are four small nursing homes of Dr. Ghooi, Dr. Katare, Dr. Sharma and Dr. Philips and two Maternity homes, Labour Health Centre near Bharat Talkies and Lady Bhole Maternity Centre near Sadar Manzil. Provision of six Nursing and Maternity homes is made and each will require an area of 1 to 2 hectares.

### 13.13 Sector level

Each residential sector will require a small dispensary. In all, 54 small dispensaries are needed for all the residential sectors as against 15 at present. The table below gives existing and proposed health amenities in all the planning units.

BHOPAL : HEALTH AMENITIES										13-T. 1
Planning Unit No	City Level				Planning Unit Level				Sector Level	
	General Hospitals		Specialised Hospitals		Dispensaries (Unit/Ayurvedic Hospitals)		Nursing and Maternity Homes		Small Dispensaries	
	Ex.	Pro.	Ex.	Pro.	Ex.	Pro.	Ex.	Pro.	Ex.	Pro.
1	2	3	4	5	6	7	8	9	10	11
1.	—	—	1	1	3	3	3	3	1	3
2.	1	1	1	1	—	1	1	1	4	6
3.	—	—	—	—	1	1	—	—	1	6
4.	—	—	—	—	—	1	—	—	—	6
5.	1	2	—	—	—	—	—	—	2	9
6.	—	1	—	1	—	—	—	—	—	7
7.	—	1	—	—	—	—	—	—	2	6
8.	1	2	1	1	—	—	2	2	5	8
9.	—	1	—	—	1	—	—	—	—	3
Total	3	8	3	4	5	6	6	6	15	54

Note :— A large dispensary will be provided where provision for general hospital is not made.

### 13.2 EDUCATIONAL AMENITIES

Bhopal has developed as an important educational centre owing to establishment of M. A. C. T., Medical College and University. The assessment of future educational need has been made on the basis of standards already given in Chapter 8. The locational pattern of this aspect which is a part of public and semi-public uses is also inter-related with the overall land use pattern of the city. Educational complex (zone) is proposed in planning units 3 and 4 covering an area of 480 hectares. Total area of 547 hectares is earmarked as against 199 hectares at present.

University	180 hectares
Engineering, and other specialised professional colleges.	300 hectares
Total	<u>480 hectares</u>

Educational zone will also cater for residences of staff and student hostels.

### 13.21 City Level

Bhopal University which has recently been established is at present functioning in a school building. The University needs its own complex. An area of 180 hectares is earmarked for the University in planning unit No. 4.

Presently there are 10 specialised and professional colleges, one in planning unit No. 1, viz. Government College of Education, six in planning unit No. 3, viz. Maulana Azad College of Technology, Western Regional College, S. V. Polytechnic, Regional College of Education, Women's Polytechnic and Centre of Advance Studies in Indology and Musiology, one Industrial Training Institute in planning unit No. 6 and two in planning unit No. 8 viz. Gandhi Medical College and P. G. B. T. College. Three more professional colleges are proposed, one each in planning unit Nos. 2, 3 and 4. An area of 300 hectares is earmarked for all such colleges.

### 13.22 Planning Unit Level

There are 9 colleges in the city, viz. Saifia College, M. L. B. Girls College, in planning unit No. 1, Hamidia Arts and Commerce College, Motilal Vigyan Mahavidyalaya, New Girls College, Bhopal School of Social Sciences and Ravindra College in Planning Unit No. 3, Carrier College in Planning unit No. 5 and Kasturba Girls College in planning unit No. 8. The city will require 6 more additional colleges which are proposed in planning unit Nos. 2, 3, 5, 6, 7 and 9. Nearly 6 hectares will be needed for each college. Total area of 67 hectares has been earmarked for colleges.

### 13.23 Sector Level

Pre-primary schools to Higher Secondary Schools are considered sector level educational amenities. Each residential sector will provide site for these schools, but their number will depend upon the supporting population of each sector. Bhopal will need 80 higher secondary schools, 200 middle schools, 330 primary schools and 120 pre-primary schools by 1991. The

requirement of area for different schools would be governed by the norms particularly in new areas as below.

Higher Secondary	3-4 hectares
Middle	2-3 „
Primary	$\frac{1}{2}$ -1 hectare
Pre-primary	$\frac{1}{4}$ - $\frac{1}{2}$ „

The following table shows existing and proposed number of educational amenities at City level, Planning Unit level and Sector level.

BHOPAL : EDUCATIONAL AMENITIES

13-T. 2

15-11-2

Planning Unit No.	City Level				Planning Unit Level		Sector Level			
	University		Technical and Professional Colleges		Colleges		Higher Secondary	Middle Schools	Primary Schools	Pre-Primary Schools
	Ex.	Pro.	Ex.	Pro.	Ex.	Pro.				
1	2	3	4	5	6	7	8	9	10	11
1.	—	—	1	1	2	2	7	17	28	10
2.	—	—	—	1	—	1	9	24	38	13
3.	—	—	6	7	5	6	5	14	21	8
4.	—	1	—	1	—	—	6	15	25	10
5.	—	—	—	—	1	2	14	36	60	22
6.	—	—	1	1	—	1	11	25	44	15
7.	—	—	—	—	—	1	11	28	46	18
8.	—	—	2	2	1	1	13	32	52	18
9.	—	—	—	—	—	1	4	9	16	6
Total	—	1	10	13	9	15	80 (37)	200 (87)	330 (94)	120 (14)*

Note :—Figures in brackets denote existing sector level amenities.

\*Since many un-recognised pre-primary schools are functioning in residential quarters and buildings, this information is incomplete.

### 13.3 SOCIAL AND CULTURAL

The deficiencies of social and cultural amenities have been brought out in Chapter 7 para 7.7. Presently an area of 58 hectares is under social and cultural institutions. Additional area of 205 hectares is proposed to satisfy future needs. These institutions are mainly proposed in planning unit Nos. 3, 4 and 5.

#### 13.31 City Level

Social and cultural complex is proposed in planning unit No. 3 which presently accommodates most of these institutions. One civic centre near Sadar Manzil and Retghat and two cultural centres near Tagore Bhawan and near

Natraj Cinema (Planning Unit No. 5) are proposed in the plan. Civic centre along northern bank of Upper lake will provide most beautiful location a city can aspire to have. It will require ingenuity of design to make it most popular civic centre of the state. Cultural centre will contain sites for Art Gallery, Museum, Auditorium, Central Library etc. The civic centre will contain site for Town Hall, restaurants and allied activities. Two sites for city clubs have been reserved in planning units 2 and 5. In addition to the existing Central Library located near Bharat Talkies, two more sites are proposed in planning unit 4 in University and 5 in civic centre complex.

### 3.32 Planning Unit Level

Space for Auditorium-cum-Community halls, clubs and libraries will be provided in planning unit centres also. Planning Unit No. 3 has four Auditorium-cum-Community halls viz. Tagore Hall, Hindi Bhawan, Gandhi Bhawan and T. T. Nagar Community Centre. A community centre in 1464 quarters area (P. U. 2) is under construction. BHEL township has one auditorium. It is proposed to have four more Auditorium-cum Community centres, one each in planning units 4, 7, 8 and 9. As against four clubs and two libraries, 9 clubs and 9 libraries are also proposed.

### 3.33 Sector Level

Each sector will contain one community building and in all 54 community buildings are, therefore, proposed. It is proposed to have 200 reading rooms and their distribution will be based on the population contained in each sector.

## 3.4 LANDSCAPE

### 3.41 Landscape Elements

As mentioned earlier, land forms of Bhopal will need special landscape treatment to bring out the best available areas at least cost and effort. For this, it will be necessary to identify the potential areas for landscape through systematic study of the landscape elements. These elements will play a predominant role in identification of areas suitable for landscape treatment for recreation and even for intensive operations such as market gardening. The detailed proposals for landscape treatment will also essentially emerge from this study. The main elements for study are :—

- (a) Land form
- (b) Geology and Soil
- (c) Hydrology
- (d) Vegetation
- (e) Birds and Animals

(f) Micro Climate

(g) Settlements

(a) Land Form

Bhopal is situated on hilly track in a physiographic interest zone. The hillocks could be classified in the following three orders depending upon their altitude. This would facilitate to identify the areas suitable for development.

1st order —Singarcholi ( Manwa Bhand ), Lalghati, Idgah, Fategarh situated to the North of the Upper Lake.

2nd order —Shamla, Dharampuri, and Arera Hills situated south-east of Upper Lake.

3rd order —M.A.C.T Char-Imli, Shahpur, Kotra Sultanabad and others adjoining south-east of Upper Lake.

The areas to the East are comparatively plain without any significant hills, and gradually sloping towards north-east and forming the bowl shape land form. The areas to south-east beyond Shahpur hill are gradually sloping towards Misrod.

(b) Geology and Soil

Sub-surface within planning area is not rich in minerals. The sheet rock of red stone is available in parts. The depth of bed rock varies according to slopes. It can be broadly classified as below.

BHOPAL : GEOLOGY AND SOIL

13-T. 3

Depth of Bed Rock	*Percentage Slope	Type of Soil	Broad Classification of Areas
1	2	3	4
0'—1'	Steep slope above 8%	Red Stone	Singarcholi ( Manwa Bhand ) Dharampuri, Idgah, Sevaniagond, Singpur, Chuna Bhatti, Shanpur, Laharpur, Hathaikheda, Char-Imli.
1'—4'	8%—6%	Black Trap and Morrum	Kalia sot, Shahpur, M.A.C.T., Nullah bed, Hathaikheda, Nullah bed for black trap and Singarcholi, Dharampuri, Sevaniagond, Singpur, Shahpur, Laharpur for morrum.
4'—6'	5%—3%	Clay Silt and Lime Stone	B. H. E. L. area, Chhola Area.
6' & above	2%—1%	Black Cotton	Northern portion of Chhola, Eastern portion of Chandbad, Semra Kalan, Hathaikheda, Nerala Shankar, Bag Sevania, Ahmedpur, Bawri Kalan, Khajuri Kalan.

Note :—\*Pc of slope =  $\frac{\text{Difference in two contour values} \times 100}{\text{Distance in two contours}}$

### (c) Hydrology

For the purpose of landscape studies, the natural drainage of Bhopal can be classified mainly in three categories viz. Dendritic (tree like branching) Basil and Parallel pattern. These are the major landscape indicators revealing the bio-physical phenomenon of the area. Broadly speaking the Dendritic pattern occurs in the southern part of the city. This area is, therefore, favourable for birds, animals and plant life. All activities related with their element should be located in this area. The (part) Basil pattern occurs near Chhola and south-eastern side of the city near BHEL. The area near Chhola has more potential for intensive agricultural owing to availability of fine soil and sub-soil water. This is the result of Basil drainage pattern. The area near BHEL contains relatively less rich soil. It can, therefore, be used for general agricultural or city park. The areas suitable for birds, animals and plant life will require further studies in respect of soil, texture, structure, drainage order vegetation etc. to work out detailed operation plans which will follow.

### (d) Vegetation

Vegetation around the city is in the nature of mixed forest. The soil being shallow the growth is stunted and not true to the original growth of the species. The following plant material is available in different areas which can be grown with advantage. Proposals for introduction of new species will be framed after further studies.

Tamirandus indica	—Peltoforum fenengisis
Ficus festusa	—Mangifera indica
Ficus infectaria	—Jambolina indica
Cassia fistula	—Cassurina equatifolia
Maringa olifera	—Gravillia robastra
Cassia semia	—Madhuka indica
Eucalyptus longifolia	—Pongamia glabra
Eucalyptus citridora	—Acasia arabica
Poinciana regia	—Acasia catatue
Plumeria acutifolia	—Prososis juliflora

### (e) Birds and Animals

Birds and animals are closely associated with the natural Phenomenon of vegetation and local environment suiting to their biological character. At present animals and birds are available at Dharampuri hills, valley region of southern part near Hathaikheda etc. Aquatic species are available in Upper

Lake, Lower Lake, Hathaikheda and other water bodies which give an indication of suitability of micro climate for birds and animals.

#### (f) Climate

Studies in respect of climate have been described in Chapter 1. A study of micro climate will be necessary for finalising detailed proposals for landscaping.

### 13.42 Identification of Potential Areas

A study of various landscape elements has helped in identifying areas suitable for conservation, recreation and picnic spots which are shown in the following table.

BHOPAL : IDENTIFICATION OF LANDSCAPE POTENTIAL AREAS

13-T.4

Area suitable for	Landscape Parameters						Identification of Areas
	Land Form	Geology	Hydrology	Vegetation	Climate	Wild Life	
	2	3	4	5	6	7	8
1. Conservation	More than 10% slopes	Fossils and educational & scenic values	Lakes	Thick plantation	...	To be conserved in original state	Hill tops of Singar-choli (Manwa Band), Southern slopes of original Kohifza slopes of Dharampuri, slopes of Sewania Gond, Hillocks in Chandempuri, Chhawani and Khedeganj, slopes of Singpur, MACT Hill (Kotra) and slopes of Shahpur.
2. Recreation							
(a) Active	0-3%	Without outcrop	Less tidal value	Less vegetation	Least stresses	Aquatic life and natural reserve.	(a) Lower Lake, Dhatic rampuri, Lalghati, Kotra Sultanabad Sewania Gond.
(b) Passive	More than 10%	exposed portion of geological formation	Natural falls	Thick vegetation	-do-	...	(b) Water spread of Upper Lake & Hatai Kheda, Bhadbhada and Chuna Bhatti.
Others	Indigenous flat land	Rock outcrops	Water Front Development	Mixed vegetation	...	Birds & animal species in the original environment	Valley development near MR 2, Hathai Kheda, Lalghati Dhatic rampuri Hills, Bananga, southern slopes of Laxminarayan Giri, Shahpur.

After identification of areas suitable for conservation, urbanisation recreational activities (active, passive and composite), it will be necessary to formulate detailed operation plan. These will be based on various considerations such as organisation of space, visual aspect, form and structure, accessibility, population to be served etc. The map shows the potential areas.

### **13.5 RECREATIONAL AMENITIES**

The Development Plan provides hierarchy of recreational spaces. More diversified and specialised recreational activities would enhance the tourist interest in the region. According to the studies described in previous paras, area falling in planning unit 10 has been selected exclusively for tourist and recreational activities. Some area has also been provided in planning unit 3. At present an area of 203 hectares is under recreational use. The Development Plan provides nearly 1415 hectares for recreational activities.

#### **13.51 Regional and City Level**

##### **(a) Pleasure Valley**

The studies have brought out that a continuous valley from the Western lip of Dharampur Hill to Singhpur (south of MACT college) is suitable for diversified recreation. Various activities can be developed in this place. The whole valley together with hill slopes is proposed to be developed as Pleasure Valley of the city and the region. It will contain the following amenities.

##### **(b) Botanical Garden**

A site covering 70 hectares of land for Botanical garden is earmarked near MACT in planning unit No. 3.

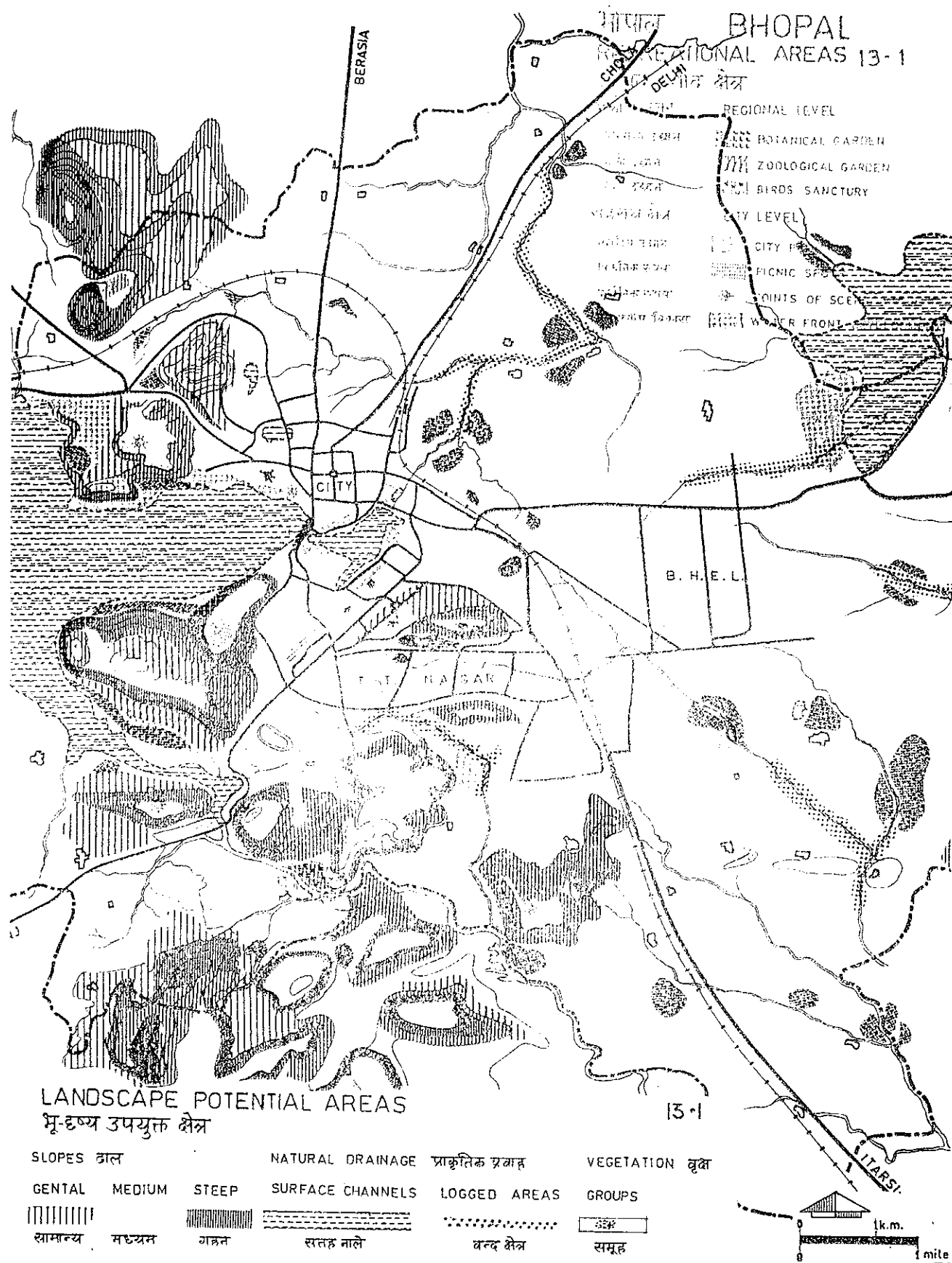
##### **(c) Zoological Garden**

Site for Zoological garden is earmarked in village Prempura. This site falls in planning unit No. 10 and covers an area of 170 hectares. On one side it has a natural barrier of very steep slop and on the other side it has water channel of Upper Lake. The site offers most natural and favourable conditions for animal life.

##### **(d) Fish Farm**

The existing site of Fish Farm near Bhadbhada (PU-3) is proposed to be expanded. It will cover an area of 30 hectares. The area around large ponds is earmarked for planning and the ponds will provide facilities for boating to children.







**(e) Amusement Park**

A portion of northern hill and Dharampuri hill is proposed to be developed as a major amusement park. Besides equipment for amusement, it will contain garden wooded area restaurants and relative activities. It will cover an area of nearly 200 hectares.

**(f) Valley and Hill Development**

In addition to the pleasure valley and amusement park, other sites proposed for hill and valley development are Shahpur, southern slope of Laxmi Narayan Giri, Banganga and Chuna Bhatti valley and one tree hill park in Bairagarh.

**(g) Picnic Spots**

At present there are four picnic spots viz. Birla Temple Complex (P.U. 3.), Hathaikheda (P.U.6), Lalghati Gufa Temple Complex (P.U.8) and Bhadbhada (P.U.10). Ajnal is another picnic spot which is outside the planning area. The existing picnic spots are proposed to be improved. Valley and hill development spots will also serve as picnic spots.

**(h) Water Front Development**

It is proposed to undertake water front development for recreation along Upper Lake particularly along southern bank in Dharampuri and Premapura village. Water body being created after construction of Kaliasote dam is also proposed to be developed primarily for recreational purposes. This will also provide locating facilities. Besides this, it is proposed to develop Hathaikheda and Bhadbhada areas and Lower Lake(Ginnori frontage, Hathaikheda area), etc. for recreational purpose.

The natural feature covering the south-western part of the city has made provision of a continuous belt of diversified recreational activities. Beginning from Kamla Park, there is Lake Drive Road opening view of vast expanse of water in Upper Lake. It leads to cave paintings and a large amusement park on Dharampuri hill with restaurants, hotels and other allied activities. A Zoological garden is located on the southern side of Dharampuri hill. After this, there is Fish Farm and ponds with boating facilities, Bhadbhada falls, (only in rainy season), and Bird Sanctuary. Further South of this area will be wood land at Singhpur hills. A road will link this area with the third lake being created by constructing a dam on Kaliasote river. The whole area from Dharampuri to the third lake will form a pleasure valley which will provide recreational facilities to the city and region.

#### (i) City Parks

There are three city level parks located in planning unit no. 1, viz., Yadgare Shahjahan (near Lady Hospital), Kamla Park complex (covering Kamla Park, Kilol and Children Park) and Neelam Park (Abdida) on the bank of Lower Lake. Mayur Park complex (Mayur Park, Deer Park, 74 Bungalows Park) could also function as city park. Bara Bagh could also be developed as city park. Another city park is proposed in Raj Bhawan area. The expansion and development of these parks is proposed in the plan.

#### (j) Stadiums

At present there are 4 stadiums in the city viz., Police stadium (Lal Parade Ground), T.T. Nagar stadium, Aish Bagh stadium and Babeali stadium. Two more sites for stadium one in the planning unit no. 4 near proposed site for university and other in planning unit no. 6 in front of administrative block BHEL are earmarked. Additional area of nearly 15 hectares is reserved for the expansion of the Aish Bagh stadium.

#### (k) Swimming Pools

At present, the city has only one swimming pool in T. T. Nagar area. Two more swimming pools are proposed in planning unit nos. 5 and 7.

#### (l) Exhibition and Mela Sites

There are five exhibition and mela grounds viz., opposite MLA's rest house near Central India Flour Mill, Dashera Maidan on Chhola Road, near Tajul Masajid and BHEL exhibition ground. Large open spaces for exhibition and mela activities will be provided in Char-Imli Area, MACT in planning unit no.7 and Bairagarh.

### 13.52 Planning Unit Level

The provision of zonal parks and major playgrounds is made at planning unit level. Bal Vihar, Mayur Park, BHEL Township Park and Nehru Park of Bairagarh could also serve as planning unit parks. Sites for another 5 zonal parks are earmarked one each in planning unit nos. 1, 4, 5, 6 & 7. The city has six playgrounds viz., Islami Gate area, Arera Colony, Opp. MLA's Rest House, North T. T. Nagar, Piplani and Opp. H. S. School, Bairagarh. Some of these playgrounds could not function at planning unit level. It is proposed to have 9 major playgrounds by 1991.

### 13.53 Sector Level

It is proposed to have one sector park and one playground for each residential

sector. The city will therefore require 54 sector parks and playgrounds. In addition to this 200 children parks, 330 play fields and 2000 tot lots will be provided. Their distribution assessment is guided by the population of these sectors.

## **13.6 PUBLIC UTILITIES**

### **13.61 Water Supply**

Requirement of water supply for the city has already been assessed and spelled out in Chapter 8.

Efforts are being made to utilise the lake to its full capacity. The Public Health Engineering Department has framed a scheme for providing additional 3.00 M.G.D. of filtered water to the Capital Project area which will also cater for emergencies during floods.

The Municipal Corporation is making all efforts to meet the growing need of the city. Construction of many overhead tanks in different parts of the city has already been undertaken. However, the present source is not likely to meet the future needs of the city. The only long term alternative source is 'Parvati River'. A site for construction of dam about half k. m. east of Kotda village in Tahsil Narsingarh (about 30 miles from Bhopal) has already been surveyed for this purpose. Its optimum capacity has been worked out to 130 M.G.D. This source will be able to meet the requirement for a considerably long time. Till the completion of this project, the existing capacity of the Upper and Lower Lake will have to be protected by checking deposition of silt as a result of erosion in the catchment area. Possibilities for utilising Halali River as source of water also deserve consideration. Its implications have been discussed in Chapters 1 and 7. Design of distribution system needs co-ordination to land use zoning and sector wide densities which have been contained in the Development Plan. It will now be possible for the P. H. E. Deptt. to work out detailed distribution system for Bhopal catering for immediate as well as future needs at least up to 2000 A. D.

### **13.62 Sewerage**

Bhopal requires underground drainage system for the old city as well as areas earmarked for future Development Plan. Since the Development Plan has spelled out details regarding land use pattern and population densities in various residential sectors, it will now be possible for P. H. E. Deptt. to work out a complete scheme for Bhopal.

The Public Health Engineering Department has prepared stage I estimates costing of Rs. 1 crore covering the areas draining into Upper Lake to provide

an immediate remedy of pollution of Upper Lake which is the source of drinking water. The area covered in phase I also includes thickly populated central area of the city and its treatment and disposal into another valley away from the lake. A Project covering entire old city which is likely to cost Rs. 8 crores has already been framed by P. H. E. D. The proposals in phase I form part and parcel of the entire city project (Bhopal Sewerage and Sewage Disposal Project) which is under preparation. The implementation of this project should take into consideration the Development Plan proposals.

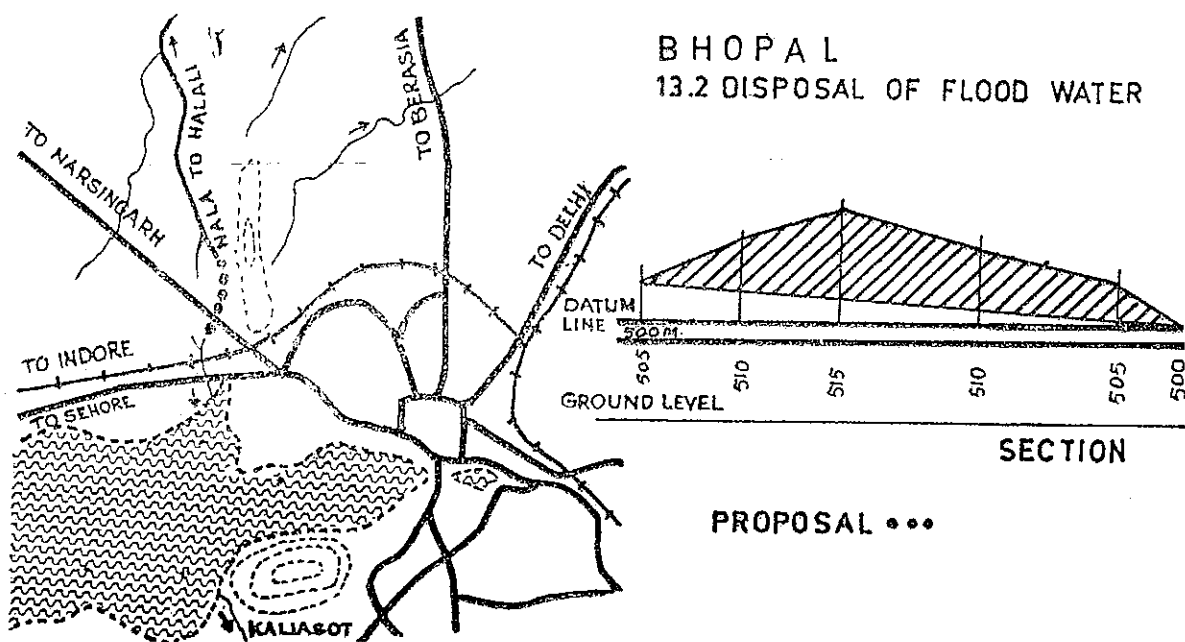
The sewage from the residential areas and Industrial areas will require treatment either by installation of treatment plants or by oxidation ponds. The effluent could be utilise for vegetable and marked garden.

### 13.63 Power

The proposed land use pattern and circulation pattern of the Development Plan will also help the Madhya Pradesh Electricity Board in designing distribution system of electric supply for industrial as well as commercial use. The electric lines will have to follow the major road pattern of the city.

### 13.64 Flood Control

During heavy rains the low lying areas along Upper Lake and Lower Lake have the danger of being affected by floods. The pumping stations have





### **13.68 Cremation and Burial Grounds**

At present there are 28 sites under Grave Yards and Cemetery out of which 12 sites are in use. Three sites are used for cremation grounds. The following sites are proposed to be discontinued which do not fit in the existing environments.

#### **Burial Grounds**

Grave Yards near Putlighar.

Behind Power House.

Near Khankhan known as Compound Atiya.

Tallaiya Gurubux including Takiya Qalandar Shah.

Compound Kalia Shah near Rashidia School.

In front of mosque Jinsi Jehangirabad.

#### **Cremation Ground**

Near Housing Board Colony.

The remaining sites are temporarily retained. Five sites have been proposed in green belt area of planning units 3, 5, 7, 8 and 9. One site is earmarked for electric crematorium in planning unit no. 3.

### **13.7 OTHER SERVICES**

The city will also need many other services e. g. Central P & T Office, Telephone Exchange, Main Police Station, Fire Stations at city level, Zonal P & T Office, Zonal Police Station and Electric Sub-Station at planning unit level, sub-P & T Office and sub-Police Station at sector level. City level services are mainly proposed to be located in new city centre in public and semi-public zone. Planning unit level services are proposed in planning unit centres whereas sector level services will be provided in respective sectors.

#### **13.71 Post and Telegraph Offices**

At present General Post Office is located in planning unit no. 8. Another central P & T office is proposed in new city centre in planning unit no. 2.

There are four zonal P & T Offices located in the areas of Jumerati, Roshanpura, BHEL and Bairagarh. It is proposed to have one zonal P & T office to be located in each planning unit centres.

Each residential sector will require a sub-P & T office. In all 54 sub-P & T offices will be required to be located.



### **13.72 Telephone Exchange**

There are 3 Telephone Exchanges viz, opp. State Bank of India (P.U. 8), near Vallabh Bhawan (P. U. 2) and BHEL Exchanges (P. U. 5). Three additional Telephone Exchanges are proposed to be located in University area (P.U. 4), Industrial area (P.U. 6) and Bairagarh (P.U. 9).

### **13.73 Police Stations**

Central Kotwali located in the old city centre is classified as main police station. Two additional main police stations are proposed, one in new city centre (P.U. 2) and the other in Industrial Area (P.U. 6).

Police stations of Shahjahanabad and ( P. U. 8 ) Tallaiya (P.U. 1) T. T. Nagar (P.U. 3) and Bairagarh (P.U. 9) could serve as zonal police stations. Zonal police stations are also proposed for planning units 4,5 and 7. City police stations of planning units 2 and 6 could also serve as zonal police stations.

It is proposed to locate one sub-police station for each sector. 54 sub-police stations will be required for the city.

### **13.74 Fire Stations**

At present there are 2 fire stations one located near Sadar Manzil (P. U. 1) and other in BHEL area (P. U. 5). Two more fire stations are proposed, one to be located in the new city centre (P.U. 2) and other in industrial area (P. U. 7).

### **13.75 Power House and Electric Sub-Stations**

Power House is located on Raisen Road in planning unit no. 7. There are 8 Electric Sub-Stations located in Jumerati, behind City Kotwali, Station Area, near State Bank of India, South T.T. Nagar, Bhadbhada Road, BHEL and Bairagarh. It proposed to have 3 additional sub-stations, one each to be located in planning units 2, 4, and 6.



## Chapter 14

### CENTRAL AREA

Unlike other cities, central area of Bhopal has been subjected to excessive pressure of growth of central activities, because Bhopal received the functions of the capital city, Industrial township B.H.E.L. and refugee township of Bairagarh almost simultaneously and suddenly. This extraordinary spurt of growth of functions entailed extra-normal, physical and socio-economic changes in the central area. Central core of Bhopal which was built on a narrow road grid iron pattern could not absorb central functions. These functions occupied the space, which was vacated by fort walls around the city. The growth of Khabadi Market, Sindhi Market, Azad Market, Budhwara forwarding agencies and warehousing activities around Itwara and Budhwara, Vegetable Market Mangalwara, Vegetable and Fruit Mandi Itwara, Kirana and Grain Mandi Jumerati, Loha Mandi near and around Bhopal Talkies. Repair and Service workshops scattered all over, growth of dairies and cattle breeding, are the glaring examples, manifesting misuse of road space and road encroachment.

The pressure of growth of commercial activities could not be met by encroachment of space vacated by the fort walls alone, there activities have been established in area in narrow lanes and 'gallies' converting residential buildings into shops, godowns, printing presses and host of their central area activities. The conversion of Marwari Road, Mandir Kamali Road, Kotwali Road, and the narrow lane across Loha Bazar and Ibrahimipura into the market roads are examples of haphazard conversion of residential buildings into such central

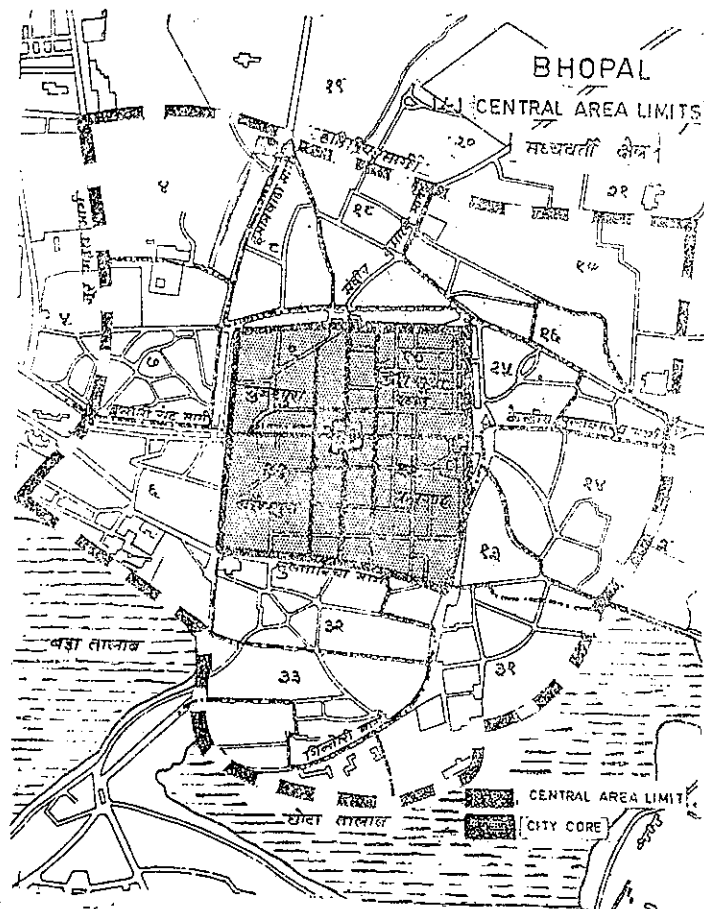
area activities. This process resulted in increasing of building content within the central area, the road system of which is unable to absorb this pressure. In spite of these limitations, the building activities in the central area are increasing, putting additional pressure on the already overburdened road system and services. The 'Central Core' can no longer serve as a nerve centre of Bhopal urban agglomeration.

## 14.1 CENTRAL AREA AND ITS PROBLEMS

### 14.11 Central Area Limits

The following factors have been taken into consideration in defining 'Central Area' limits.

- Functions of the city centre such as specialisation of trade, commerce, service industry, social and cultural institutions.
- Area of intensive activity.
- High residential density.
- Physical character of the area.
- Socio-Economic homogeneity.



Based on the above factors the following area has been defined as Central Area of Bhopal. Incidentally this occupies relatively a central position with regard to the main city.

The central area comprises of about 172 hectares which is approximately 1/40th in size of the Bhopal city (Municipal area). It includes twelve full wards (ward nos. 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18) and parts of eight wards (4, 6, 19, 20, 21, 28, 31, 32) of Bhopal Municipal Corporation as constituted in 1971. The central area thus is bounded by Hamidia Road and its abutting development on the northern side, Railway line upto over bridge on Hamidia Road forms the eastern limit, the southern limit is along Lower Lake covering Bhoipura and further follows Upper Lake bank upto Fatehgarh Road, western limit is through Fatehgarh Road, Noormahal Road extending upto Thana Shahjahanabad. The sketch on pre-page illustrates the area identified as Central Area and 'City Core.'

#### 14.12 Central Area Functions

The area reflects high intensity of development and concentration of higher order central activities.

Functional zones as identified from the central area studies are as under :—

- |  |  |
|--|--|
| 1. Specialised Market                        | Along cardinal axis of the city core.  |
| 2. Wholesale Market                          | Loha Mandi, Kirana in Jumerati, vegetable and Fruit, cloth in Ibrahim-pura, Kabadi Market.                       |
| 3. Business Offices and Banking Institutions | Marwari Road, Hamidia Road.  |
| 4. Civic and Health Institution              | Hamidia & Upper Lake Banks in Retghat and Fatehgarh area.  |
| 5. Household and Service Industries          | City core along east-west cardinal axis repair works on Noormahal Road of Imami Gate, Saw Mills on Hamidia Road. |
| 6. Transport & Warehouses                    | Budhwara.  |

From the above, it can be easily seen that central area of Bhopal has assumed multi-face functions viz. Wholesale market, Banking institutions, Business offices, Specialised markets, Civic Institutions, Small Scale and Household industrial units and Specialised trade.

Some of these activities are proposed (as per list given in this chapter) to be shifted from this area to relieve congestion and also to provide proper space and accessibility for efficient functioning and growth of these activities proposed for relocation. The space vacated by these activities in turn would improve accessibility to the city centre and also space for growth of city core activities like specialised markets, parking etc.

#### 14.13 Central Area Problems

The Central area of Bhopal is composed of two concentric squares. The inner square is the original walled city with Jama Masjid as its focal point. The development of this square seems to have taken place on a pre-concieved plan having four-cardinal cross roads dividing the area into four quadrangles. Of these, the north, east and south-east quadrangles possess a well laid out street pattern, while the remaining two are without any order. In contrast to above, the outer square reflects a most haphazard development in the shape of city sprawl with 'non-descript' street pattern. These two concentric squares and abutting localities constitute the Central Area. It is interesting to note that these two areas present a contrast picture in terms of physical development, conditions of structures, population densities, intensity of development and types of commercial activities content. The present road system of the city core is unable to take light vehicles, except on Marwari Road and a road parallel to it on the eastern side. The main problems faced by the central area are as follows :—

- (a) Overcrowding and intermixing of use causing functional problems.
- (b) Poor accessibility and outdated circulation system.
- (c) Lack of parking space within central area.
- (d) Inadequate open space amenities and services.

In order to understand the problems of movement of central area, the central area could be divided into two distinct zones :—

- (a) Pedestrian wherein the vehicular entry is negligible—defined as city core circulation.
- (b) Areas reserved by wider peripheral roads wherein vehicular entry is possible but is restricted.

The pedestrian core is bounded within the city wall, which has been removed, while the later consists of areas developed outside the city wall. The outer periphery of the central area is served by road (such as Hamidia, Imambada, Noormahal, Imamigate, Tahsil Huzur and Sultania Road.) The space vacated by city wall which could have served the central area as an inner

vehicular ring has been encroached upon by Azad Market, Sindhi Market, Vegetable Market, Truck parking, Godowns and forwarding agencies. The space will have to be restored as movement space. Traffic arteries carrying through traffic are Sultania Road and Hamidia Road. It will be necessary to divert the traffic from Sultania Road. Mixed traffic is carried by Sultania, Budhwara, Mangalwara, Hamidia, Central Library and Itwara, which is undesirable in view of the narrow road widths in the central area.

The road system of the central area also suffers from problems of bottle-necks, steep gradient, inadequate junction space at the entry points of peripheral ring and inner ring, apart from the problems of vehicular accessibility. It will be desirable to provide sufficient space at the entry points and other places. Circulation problems such as traffic congestion owing to intermixing of through and local traffic, intermixing of fast and slow traffic, misuse of road space by stray parking etc. are some of the problems which need immediate solution.

#### 1414 Circulation Pattern and Related Problems

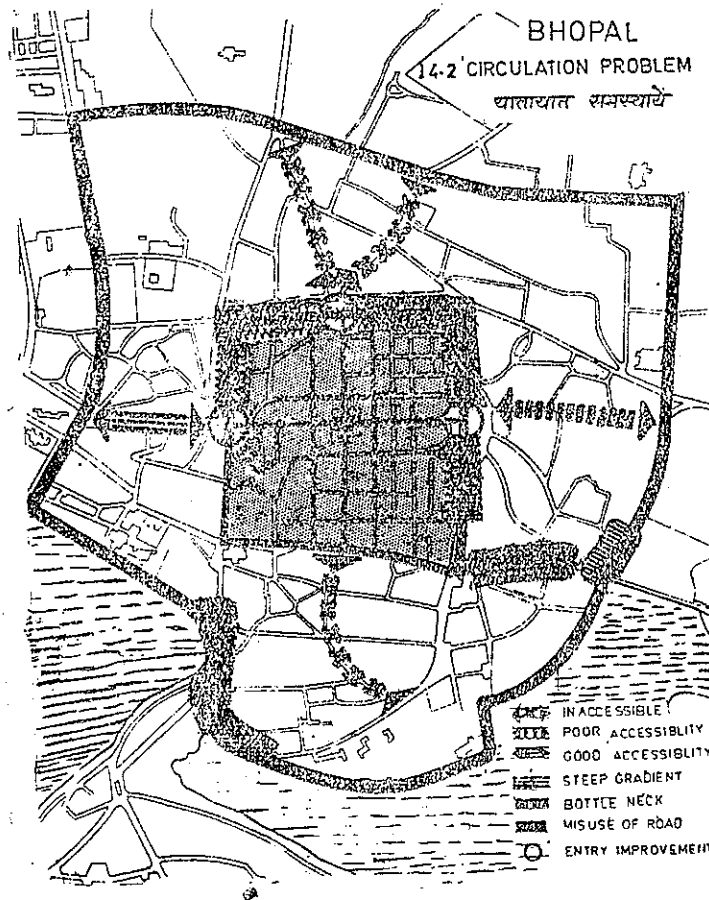
Accessibility to the central area is restricted and is limited to the periphery of its core area (refer sketch). The through traffic circulates on the peripheral roads, namely along Sultania Road, Budhwara Road and Tahsil Huzur Road. The entry to the central area and city core is described in the statement given below.

Name Of Road	Outside Areas Linked By The Road
<b>(A) Central Area</b>	
Pulpatra	B. H. E. L.
Berasia Road	Industrial centres along Berasia Road.
Pulpukhta	Jehangirabad, T. T. Nagar,
Hamidia Road	Shahjahanabad.
Kamla Park	T. T. Nagar.
Chhola Road	Industrial Centres along Chhola Road.
Sultania Road	Ahmedabad and Bairagarh.
<b>B. City Core</b>	
<b>(i) By light vehicles only</b>	
Marwari Road	B. H. E. L.
Kotwali Road	T. T. Nagar.
Imami Gate Road	Main city.

Itwara Road  
(ii) By heavy vehicles  
Central Library to Itwara

B. H. E. L.

T.T. Nagar and B.H.E.L.



### Parking Problems

The city centre, being the area of intensive activity, places heavy demand for parking sites for all types of modes particularly along major traffic arteries and at places where vehicular accessibility is poor. The area does not provide any defined parking space. Road space and side lines are used for parking space. Road space and side lines are used for reducing the traffic mobility considerably. Places where parking of trucks, cars, scooters, tongas desired are listed below. It will be necessary to provide space for parking in and around these areas, wherever feasible.

### Truck Parking

- (a) Budhwara
- (b) Transport agencies near Itwara
- (c) Jawahar Chowk, Jumerati



A comparison of land use pattern obtaining in central area in 1961 with that obtaining in 1973 has revealed rapid changes in use of land occurring in the central area. The data of land use surveys undertaken in 1961 and 1973 have been compiled in the table given below.

BHOPAL : LAND USE PATTERN OF CENTRAL AREA  
(1961 and 1973)

14-T.1

S. No.	Land Use	1961		1973		Percentage to the city (Table 3-T.3)
		Area in Hectares	Percentage	Area in Hectares	Percentage	
1	2	3	4	5	6	7
1.	Residential	100	58.2	85	49.5	47.5
2.	Commercial	13	7.5	26	15.2	1.9
3.	Industrial	5	2.9	10	5.8	10.8
4.	Public & Semi-Public	14	8.1	15	8.7	11.8
5.	Public Utilities	15	8.8	12	7.0	4.9
6.	Recreation	3	1.7	2	1.1	6.3
7.	Trasportation	22	12.8	22	12.7	16.8
		172	100.0	172	100.0	100 0

Source : Land use survey by Town & Country Planning Department.

The table reveals that the residential areas have reduced from 58.1% to 49.5% while area under commercial and industrial use has increased from 7.4% to 15.2% and 3.4% to 5.8% respectively. Area under recreation has further decreased from 1.7% to 1.1%. This highlights the inadequacy of open space. Area under major roads is as low as 12.7% only.

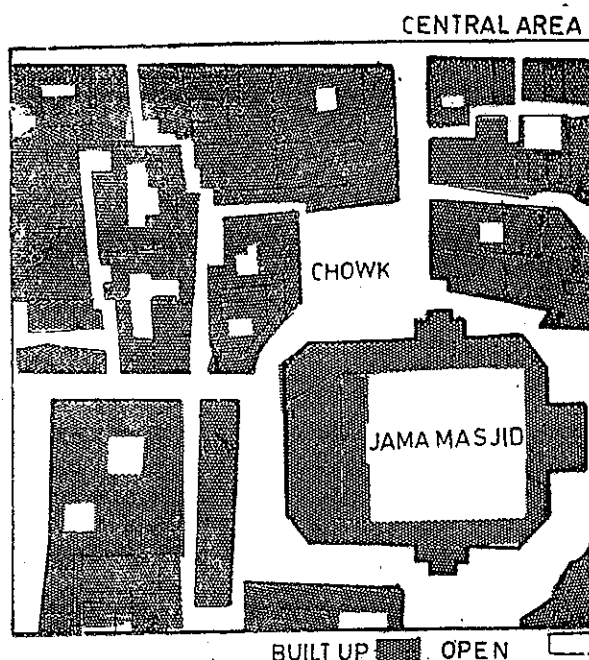
Most of the problems experienced by the city such as poor living conditions, lack of essential amenities, dilapidation, space occupied by dairies and other non-conforming uses concentrated in central area. The following land uses have been identified as incompatible and are proposed to be relocated.

- Residential buildings, around Upper Lake (Retghat, Fatehgarh), Bhoipura and Israni Banerjee Market.
- Auto repair and workshops
- Saw Mills
- Household Industries
- Earthen ware kilns
- Cattle breeding (Private Dairies)
- Grave Yards
- Forwarding Agencies
- Loha Bazar
- Kirana Mandi
- Kabadī Market
- Vegetable and Fruit Market
- Warehousing
- Fish Market
- Saifia College or Saifia School.



## 14.2 BASIC CONSIDERATION FOR CENTRAL AREA PROPOSALS

Central area problems highlighted in the preceding paras have brought out the need for revitalizing the central area to enable it to function more efficiently. The study of structural conditions of the area, indicates that large portion of the properties of the city core and its surroundings are in very bad condition. The major portion of the city core corresponds to katcha and semi-pucca structures, in extremely bad condition. Higher land values in the central area are encouraging reconstruction. It will be necessary to take timely action to guide the reconstruction activities in this area. A bird eye view of the built up area in core area shows that most of the buildings have cellular form with an open chowk. It will, therefore, be possible to provide wider road space without reducing building content, wherever necessary.



The plan proposals will have to be practicable and capable of implementation within the scope of cost benefit analysis, at the same time causing least hardships to the people by way of dislocation. Within the framework of these constraints, the following points emerge which have guided the proposals contained in the pages to follow. These considerations will also work as basic guide within which the formulation of detailed zoning plans for the central area will have to be framed.

### Land Use Pattern

- (a) Retention of mixed land use character of the central areas which is considered suitable for conditions obtaining in cities in India.

- (b) Conversion of residential use into non-residential use only along such roads which can sustain the ensuing traffic.
- (c) Promoting specialization of trade and commerce and other central area activities. It will be desirable to make available space for growth of the specialised trade which is vacated by relocation at incompatible and inefficient uses, identified in the central area.
- (d) Relocation of only those land uses which either cause nuisance, and do not fit in with the environment of the area, or are considered inefficient from the overall functioning of central area, or cause intermixing of goods and passenger traffic, or do not have adequate space for its expansion and necessary accessibility for their efficient functioning.
- (e) Space for relocation of incompatible or inefficient uses be such that the new locations offer, needed infrastructure and nearness of ancillary uses and activities.
- (f) Only those slum settlements should be cleared which are either not capable of improvement or create pollution, or the land is required for other central area functions.
- (g) Persons affected by clearance or improvement may be rehabilitated as close to the present site as possible.
- (h) Open up certain vital pockets to provide relief and some amenity to the central core.
- (i) Grave yards could be closed for their further use, and be suitably landscaped so as to improve the environmental aesthetics of the area.
- (j) Wherever feasible the shopping precinct could be encouraged where space for casual parking close to the shops is available.
- (k) Reallocate the space vacated by fort wall as main movement space to improve accessibility to the central area.
- (l) Water front of Upper and Lower Lakes needs to be restored as far as feasible and practicable for use as recreational, civic buildings and such similar uses.
- (m) Provisions of essential amenities within central area or on the fringe of central area.

#### **Circulation**

- (a) Improvement of accessibility around the central core.
- (b) Convenient circulation within the central core, for light vehicles with limited and controlled accessibility.
- (c) Promoting shopping arcade along major commercial roads.
- (d) Creating space for parking at appropriate location.
- (e) Provision of proper linkages to the central area, within the overall city circulation system.

- (f) Provision of terminal centres at appropriate location to serve the traffic destined to and leaving from the central area.
- (g) Restore the movement space and original road width of certain roads in the central area.
- (h) Improvement of important junctions, particularly at the entry points to the central core.
- (i) Prescription of street lines for roads particularly those which are not to be widened immediately.
- (j) Minimum demolition within the central area for provision of new roads and widening of existing ones.

### 14.3 PROPOSED LAND USE PLAN

The present functional zones in the central core are proposed to be retained, except those proposed for re-location. The central core continues to function as area of specialised market roads, while the outer ring will consolidate the spill over of central activities. Its extended lake front along Upper Lake is proposed as civic and institution zone of the city. While the Lower Lake front along Ginnori, Bhoipura is being proposed for amenity and recreational and residential purposes. The sketch below illustrates the functional zones on the basis of which the proposed land-use plan has been evolved.

Proposed Land-Use Zones	Description
1. Specialised Markets.	Central core.
2. Service Industries and flatted factories.	On the peripheral ring.
3. Civic and Health Institution.	Retghat, Fatehgarh, Lady Hospital and Central Library.
4. Recreational and Amenity Areas.	Part of Upper Lake and Lower Lake fronts, Yadgare Shahjani.
5. Residential Zones.	Areas situated in between the commercial roads of the city core and central area.

#### 14.31 Commercial

The central area is proposed to be developed as primarily pedestrian shopping centre with controlled vehicular entry. Most of the existing commercial roads are proposed to be retained as such. The specialised market and wholesale-cum-retail shops etc. are also proposed to be retained except those identified for re-location. Description of roads and streets proposed as commercial is as under :—

- |  |                                       |
|--|---------------------------------------|
| 1. Sultania Road from Moti Masjid to Jawabit Lines.                                    | 7. Jumerati Bazar Road.               |
| 2. Imami Gate Road.  | 8. Budhwara Road.                     |
| 3. Hamidia Road from Jehangirabad to Narbada Ice Factory and further upto Grand Hotel. | 9. Itwara Road upto Thana Mangalwara. |
| 4. Chowki Imambada Road.   | 10. Mangalwara Road.                  |
| 5. Mandir Mahadev Road.  | 11. Central Library Road.             |
| 6. Azad Market Road.   | 12. Mandir Kamali Road.               |

- |   |                              |
|---|------------------------------|
| 13. Laxmi Talkies Road                    | 20. Kazipura Road.           |
| 14. Jawahar Chowk Road.                   | 21. Peer Bazer Road.         |
| 15. Ibrahimipura Road and approach lanes. | 22. Tabba Miyan Road.        |
| 16. Loha Bazar Road and approach lanes.   | 23. Laila Burj Road.         |
| 17. Marwari Road.                         | 24. Jain Mandir Road.        |
| 18. Guliadai Road.                        | 25. Masjid Sarfe Khani Road. |
| 19. Lakherapura Road.                     | 26. Chowk Bazar.             |

In addition to the above, the following roads have been identified with commercial character. The commercial-cum-residential use shall be permitted along these roads :--

1. Obedullah Ganj Road (From Tallaiya Achhe Mian to Pul Bogda)
2. Church Road (From Maharana Pratap Higher Secondary School to Neem Wali Road Crossing).
3. Neem Wali Road (Neem Wali Road Crossing to Aish Bagh Road crossing) .
4. Galla Bazar Road (From Maharana Pratap Higher Secondary School to Obedullah Ganj Road).
5. Barkhedi Road (From Tallaiya Achhe Mian to Pul Patra).
6. Aish Bagh Road (From Grand Hotel to Pul Bogda).
7. Jumerati-Mangalwara Road (From Noor Mahal to Bharat Talkies).
8. Saifia College Road (From Chowki Immambada to Bhopal Talkies).
9. Hamidia Road (From Thana Shahjehanabad to Bhopal Talkies).
10. Thana Road (From Paiga to Bazar Shahjehanabad).
11. Sultania Road (Hamidia Square to Annapurna Building).
12. Ghoda Nakkas Road (From Nasarat Bano Masjid to Bhopal Talkies).
13. Berasia Road (From Bhopal Talkies to Qazik Camp).
14. Station Road (From Habibbiya School to Railway Station).
15. Chhola Road (From Bus Stand to Railway Crossing at Chhola Road).
16. Tabba Mian Road (From Mahal Tabba Mian to Birjisia Masjid).

#### 14.32 Re-development along Market Road

The present central area consists of buildings which are mostly semi-pucca and katcha in character. Changing land values have already initiated process of re-construction. It is estimated that during the plan period more than 59% of the buildings will undergo re-construction. It will be desirable to guide the re-construction activities in a planned manner and create adequate space for movement and parking. It will also be desirable to encourage small shopping precinct approachable from the main road but not situated on the main traffic routes.

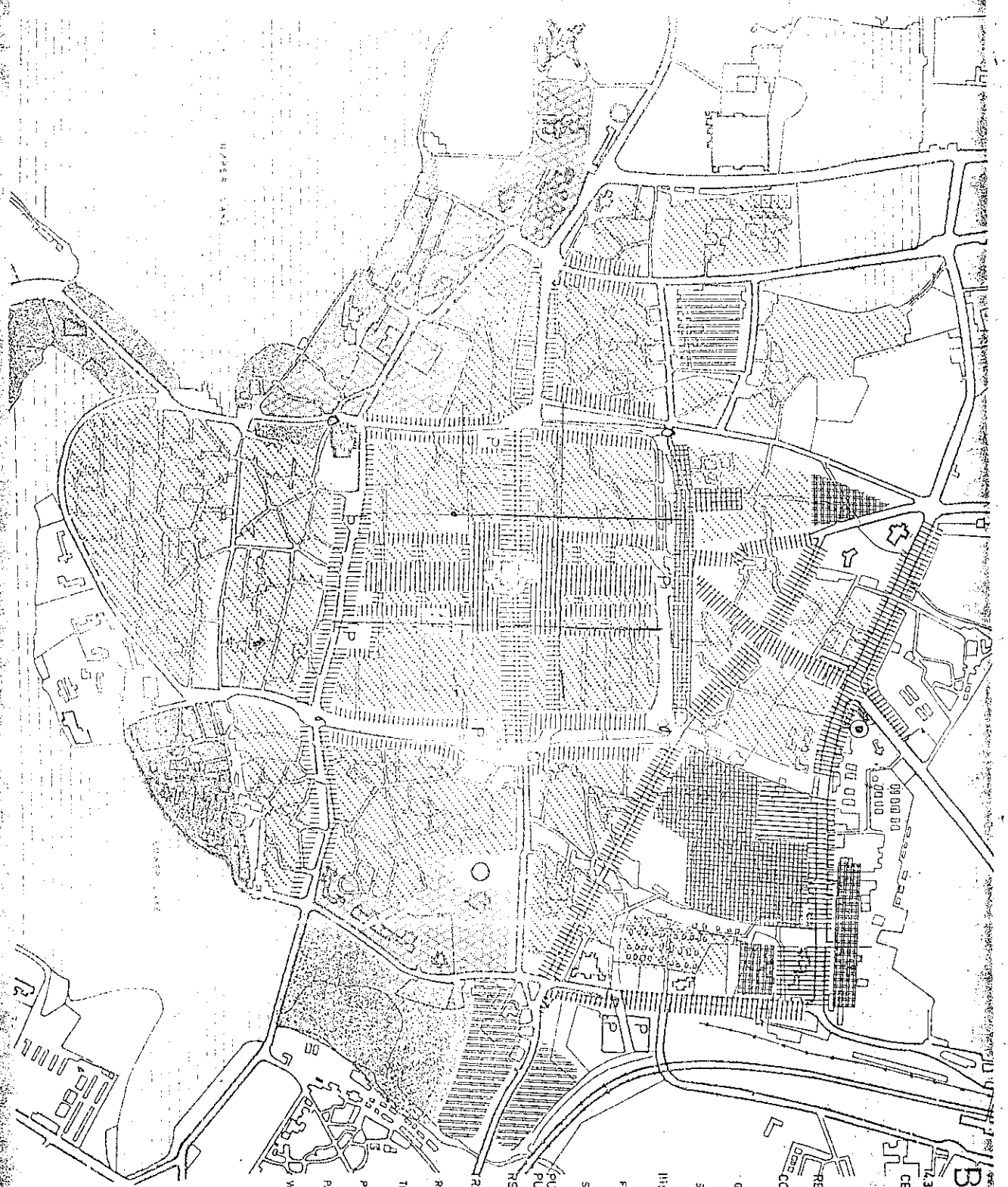
A detailed re-development to be taken up as a follow-up action of the central area proposals will be published in zoning plan under Section 21 of the Madhya Pradesh Nagar Tatha Gram Nivesh Adhiniyam, 1973. However, in the meantime, re-construction activities will be permitted on the basis of planning proposals and zoning regulations contained in this chapter.

#### 14.33 Civic Centre

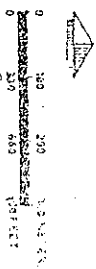
The present Sadar Manzil complex corresponding to the Retghat and Fatehgarh upto Sultania Road and upto Upper Lake front is proposed as civic centre complex. The office of the P. M. G. and other offices are proposed to be re-located in the respective administrative zones.

# BHOPAL

12.3 PROPOSED LAND USE PRESENTED IN 1970  
CENTRAL AREA  
मध्य क्षेत्र



- RESIDENTIAL  
आवासीय
- COMMERCIAL  
वाणिज्यिक
- GENERAL  
सामान्य
- SPECIALISED  
विशेष
- INDUSTRIAL  
औद्योगिक
- PLATED  
प्लेटेड
- SERVICE  
सेवा
- PUBLIC & SEMI-PUBLIC  
सार्वजनिक-अर्ध-सार्वजनिक
- RECREATIONAL  
आनंदोत्सव-प्रमोद
- TRANSPORTATION  
यातायात
- ROADS  
मार्ग
- TERMINAL CENTERS  
दूरस्थित सेवा
- PICK-UP STATION  
चौक-अट्टर
- PARKING AREAS  
P  
चिह्न क्षेत्र
- WATER BODIES  
उपनगर



27L-A





The proposed civic centre is to be designed to contain the following :

- |  |                         |
|--|-------------------------|
| 1. City Hall and Municipal Corporation Office. | 2. Auditorium.          |
| 3. Library                                     | 4. Museum               |
| 5. Art Gallery                                 | 6. Restaurants          |
| 7. Water Front Development                     | 8. Organised Open Space |

#### 14.34 Household and Service Industries

The industrial units which are proposed to be shifted from central area are given in table 14-T. 2. The other small units corresponding to service industries and household industries related with functions of central area could continue to function, provided they conform to the performance and environmental standards. A few sites for flatted units are proposed at existing Tin Metal Workshops near Bhopal Talkies along Noormahal Road. The possibilities for flatted factories along Budhwara Road and in Gurubux-ki-Tallaiya area will have to be explored at the time of preparation of zonal plans

#### 14.35 Relocation of Uses and Development of Vacated Lands

The proposals regarding various activities identified as incompatible and inefficient and use of lands vacated in the process of relocation are shown in the table given below. Columns 2 and 3 show uses to be shifted and their present location, Col. 4 gives proposed site for location while Col. 5 gives the proposed use after shifting of the present use.

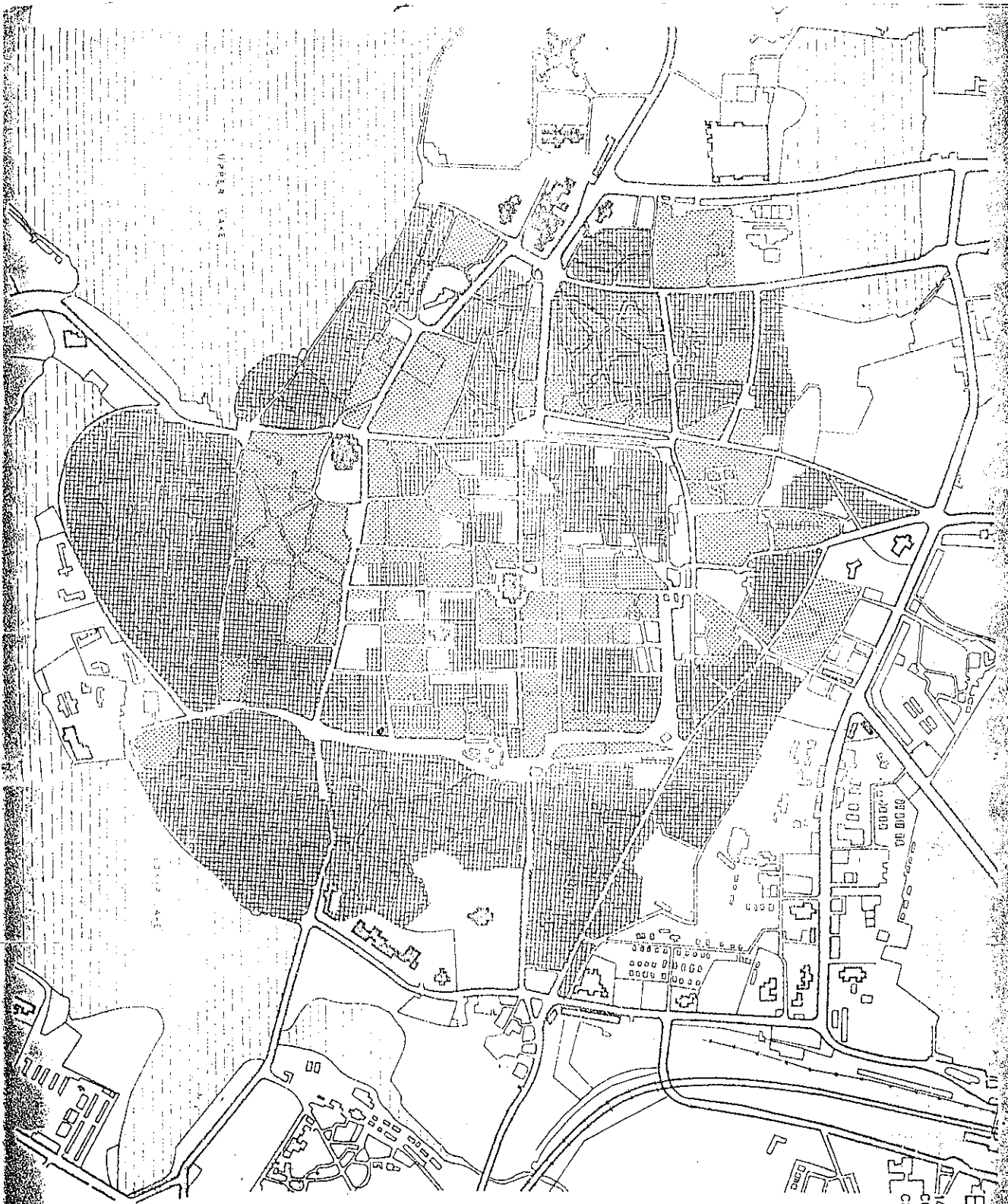
BHOPAL : RELOCATION OF LAND USES AND DEVELOPMENT OF VACATED LAND IN CENTRAL AREA 14-T.2

S. No	Uses to be Shifted	Existing Location	Proposed Location	Use after Vacation
1	2	3	4	6
<b>A. INCOMPATIBLE USES</b>				
1.	Residential	Residential buildings around Upper Lake within 200 F. T. L. Retghat, Fategarh Bhoipura.	Residential Zones nearby PU 3 and 8.	Recreational.
2.	Residential dilapidated area.		P. U. 1. Jehangirabad.	Recreational/ Public & Semi-Public.
3.	Residential area.	Israni Banerjee Market.	P. U. 8. Berasia Road.	Commercial
4.	Kabadi Market.	Imamigate Jumerati.	New Kabadi Market. P. U. 8.	Transportation/ Commercial.
5.	Auto Repairs & Workshops.	Peer Gate Budhwara Sultania Road.	Kabadi Market P. U. 8.	Transportation.
6.	Saw Mills.	Hamidia Road & around Bharat Talkies, Ice Factory	Timber Markets.	Transportation/ Commercial.

1	2	3	4	5
7.	Cattle Breeding. Private Dairies	Central Area.	Dairy of Kokta, Raisen Road, Bhadbhada.	Transportation/ Residential.
8.	Vegetable and Fruit Market.	Azad Market and Mangalwara.	Vegetable Market Gurubux-ki-Tallaiya.	Transportation.
9.	Vegetable-cum-Fruit Market.	Itwara.	Berkhedi.	Commercial.
10.	Household industries.	Mangalwara.	Flatted Factories near Pulbogda.	Transportation/ Commercial.
11.	Fish Market	Central Area.	Vegetable Market Gurubux-ki-Tallaiya	Terminal centre/ parking.
12.	Workshops	Retghat and within Central Area.	Kabadi Market	Recreational/ Residential.
13.	Loha Bazar	Central Area	Categorised Market.	Transportation/ Parking.
14.	Kirana Mandi	Jumerati	Grain/Kirana Mandi	Specialised Market.
15.	Forwarding agencies.	Budhwara	Octroi free zone	Specialised Market
16.	Warehousing	Central Area	P. U. 8	Specialised Market
17.	Earthen ware Kilns.	Mangalwara, Kumar pura.	Near Chandbad	Transportation/ Commercial.
18.	Grave Yards	Central Area	P. U. 7 & 8	Open (use proposed to be closed).
19.	Saifia College or Saifia Higher Secondary School.	Noormahal Road	Educational P. U. 8	Other institutions could continue.
<b>B. INEFFICIENT USES</b>				
1.	Railway Goods Yard.	Near Bharat Talkies	P. U. 2 & 8.	Commercial.
2.	Sindhi Market	Near Peergate	Categorised Market.	Transportation
3.	Central Kotwali	Ibrahimpura	P. U. 2	Commercial.
4.	Narbada Ice Factory.	Hamidia Road	Warehousing area P. U. 8	Transportation Commercial.
5.	Building Material Mandi.	Hamidia Road	Categorised Market or New Building Material Centre P. U. 4	Transportation
6.	Govt. Residence Hathaikheda	Near Ginnori		High rise residential
7.	Unani Shafa Khana	Marwari Road	Civic complex	P. S. P./Parking.
8.	Residential Area	Sadar Manzil	Govt. and General residential in P. U. 8. and P. U. 2.	Civic Centre.

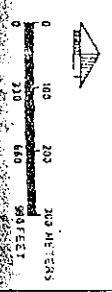
#### 14.36 Housing in the Central Area

The mixed-use zoning envisaged for the Central Area entails provision of adequate housing area. Incidentally this will build up close relationship



BHOPAL  
14.4 STRUCTURAL  
CONDITION  
CENTRAL AREA

- PURUA
- SEMI PURUA
- KUTCHA
- URBAN
- SEMI URBAN
- RURAL





between work centre and living area. Housing area is proposed to be provided in areas lying in between commercial roads and on 1st floor and subsequent floors, over non-residential use zones. This will ensure maximum use of services provided in the central area. However, it has to be ensured that at least minimum amenities necessary for housing areas are provided within convenient distance. Central area corresponds to the highest residential density area of the total urban agglomeration. The high residential density prevailing in this area is primarily due to congested built up area, narrow lanes, high occupancy rate etc. It is proposed to reduce rate of occupancy and residential density by encouraging the shifting of people to fringe areas by offering houses on rented as well hire-purchase basis. Areas along Berasia Road, Chhola Road, Kohifiza are most suitable for this purpose.

Major portion of Housing in the central area is in extremely bad repair, particularly those situated between inner ring and the peripheral ring. Most of these buildings are likely to be rebuilt during the plan period. It is proposed to avail this opportunity and prepare redevelopment plan as a follow up action of the central area proposal so as to guide the building activity on planned basis. The following areas considered appropriate are earmarked for this purpose.

- |                          |                                   |
|--------------------------|-----------------------------------|
| 1. Kumharpura (Imambada) | 6. Gandhi Nullah Mohalla          |
| 2. Bhoipura              | 7. Khatikpura                     |
| 3. Ginnori-Retghat       | 8. Islampura                      |
| 4. Hathi Khana           | 9. Gurubux-ki-Tallaiya (Part)     |
| 5. Mazar Domni           | 10. Kumhar Pura (Mangalwara Road) |

#### 14.37 Preservation of Buildings and Open Spaces

The central area also has some buildings which are of architectural as well as religious and historical importance. These buildings together with their foreground are proposed to be preserved and improved. The buildings proposed for preservation and improvement are Sadar Manzil (Part), Jama Masjid, Moti Masjid, Museum (Central Library) etc. The grave yards located in the central area are proposed to be prohibited for further use. These are proposed to be suitably landscaped to function as open spaces and breathing areas in the thickly built up central area.

#### 14.4 PROPOSED CIRCULATION

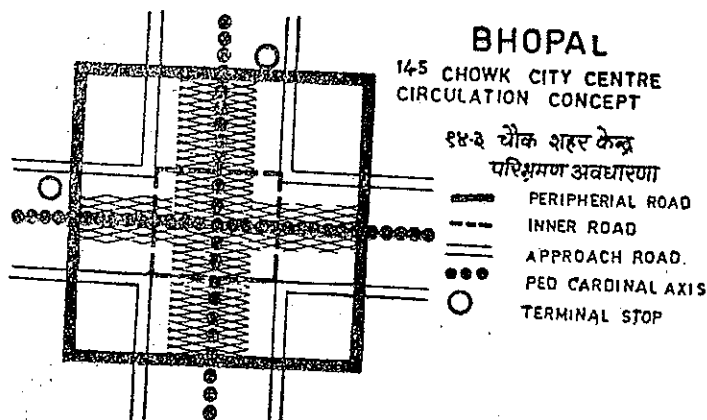
Traffic studies conducted by the Department reveal that the circulation pattern in central area suffers from problems of accessibility, encroachment of road space, mixed traffic, parking, narrow roads, poor linkages with other

areas etc. These problems have rendered efficient functioning of the central area difficult. Keeping in view the problems of circulation, the following basic considerations emerge which will guide the proposals for circulation pattern for the central core and central area.

- (a) The central core will function primarily a pedestrian shopping area with united vehicular entry.
- (b) The activities generating truck traffic are proposed to be shifted from the central core so as to eliminate truck traffic.
- (c) Provide direct and efficient inter-links with new city centres and other important work centres.
- (d) Eliminate city traffic as far as possible from the outer roads of central core.
- (e) Provide defined parking lots, and casual parking space within central core and central area.
- (f) Ensure that central area is served by city terminal stations and regional pick up station.

#### 14.41 Concept of Circulation Pattern

In order to provide workable solution to the problems outlined above, and keeping in view the basic considerations outlined in the preceding para, it is proposed to adopt a 'Double Concentric Rectangular Ring System' as the main circulation pattern for the central area. The peripheral or outer ring will carry through-traffic, both inter-city as well as intra-city. The inner ring encircling the central core will carry vehicular traffic entering and leaving the city core. The inner ring and the peripheral ring is lined through axial vehicular traffic roads on the eastern, western and northern side. The outer peripheral ring is served by the Regional Bus pick up stations and the City bus terminal station. A concept of the circulation plan is illustrated through a sketch given here under.



## 14.42 Ring Road and Inter-Links

### Outer Ring

The Outer Ring follows the alignment of Taj Mahal Road on the western side, Hamidia Road upto Lady Hospital on the northern and eastern sides, from Lady Hospital the road follows proposed alignment along Lower Lake through Bhoipura and joins Ginnori Road at Hathi Khana. This is the only new proposed link of the outer ring. From Hathi Khana junction, the ring follows the alignment of Masjid Gulam Mohammed Road and joins Moti Masjid Road on the western side. On the southern side to alternative roads are available viz. Sultania Road, and a portion of the new ring and Masjid Gulam Mohammed Road, while from Hathi Khana to Moti Masjid Road, another wide road viz. Ginnori Road is also available for the vehicular traffic. Thus, on this side, the vehicular traffic can be distributed on all the three roads. From Moti Masjid the ring will follow the alignment of Sultania Road and meet Taj Mahal Road near G.P.O. On the western side also two roads viz. Taj Mahal Road and Noor Mahal Road will be available for vehicular traffic. However, Noor Mahal Road could be declared as one-way traffic road. The actual operation of traffic will be proposed at the time of 'Traffic Operation' Plan which will follow the Development Plan. The outer ring is served by regional as well as city transportation system through a regional pick up station located along Hamidia Road and two city bus terminal stations near Hamidia Hospital and Central Library. The outer ring is also inter-connected to the proposed circulation plan of the city.

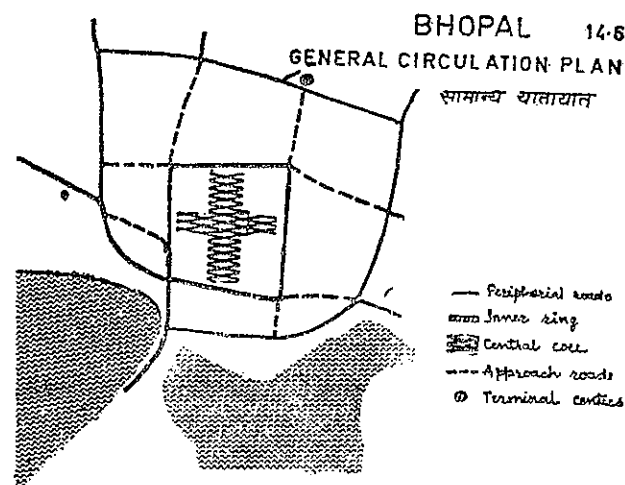
### Inner Ring Road

The Inner Ring Road beginning from Moti Masjid on the western side follows the alignment of Tahsil Huzur Road upto Imami Gate on the western side and Sindhi Market Road and Chowk Imambada Road beyond this point, Mahadev Mandir Road and Azad Market Road on the southern side. The roads from Moti Masjid to Imami Gate will require widening, similarly Sindhi Market Road will also require widening. Sufficient width along Mahadev Mandir Road and Azad Market Road will be available after shifting Khabadi Market and Kirana and Vegetable Markets along this road.

### Inter-Links

The Outer Ring and the Inner Ring are inter-connected to each other through the following major road links. On the western side, the linkage is provided by Sultania Road and Imami Gate Road, and on the northern side, it is provided by Mandir Kamali Road. As this road carries very heavy mixed-traffic, it will not serve an effective link. A new link is there-

fore, proposed to inter-connect Hamidia Road and Azad Market Road through Gurubux-ki-Tallaiya. On the eastern side, Maulana Azad Library Road and Sultania Road will provide the necessary linkage. On the southern side, no effective link is possible. Two roads of the outer ring viz. Ginnori Road and Moti Masjid Road will provide the link on this side. Besides this, some other roads which facilitate entry of light vehicles to the city core are : Bhangipura Road, Chowki Imambada.



The table containing details about outer and inner rings and inter-connecting roads are given below :

BHOPAL : EXISTING AND PROPOSED ROAD LINKS

14-T.3

Sr.No. Particular		Existing Road Portion	New Road Portion
1	2	3	4
1.	Outer Ring		
	North	Hamidia Road and Thana	
	East	Hamidia Road from Narbada Ice Factory to Lady Hospital	
	South	Masjid Gulam Mehboob Road	
	South		From Lady Hospital to Ginnori Road through Jogipura and Bhoipura.
	West	Kamla Park Road, Imami Gate Road and Taj Mahal Road	
2.	Inner Ring		
	North	Mandir Mahadev Road and Azad Market Road	
	East	Itwara Road and Budhwara Road	
	South	Sultania Road	
	West	Moti Masjid to Peergate and further extending to Jawahar Chowk along the space of city walls.	



# BHOPAL

## 1:7 GENERAL CIRCULATION PLAN

CETRAL AREA

मध्य क्षेत्र

○ VEHICULAR ROUTES

नया पारगमन मार्ग

▬ PEDESTRIAN WAYS

पहले पारगमन मार्ग

P PARKING

वाहन स्थान

● TERMINAL CENTERS

प्रमुख आवागमन केंद्र

○○○ APPROACH ROADS

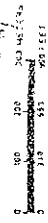
प्रवेश मार्ग

---- NEW LINKS

नये जोड़ मार्ग

⊙ PICK UP STATION

शिकारू स्थान





1	2	3	4
<b>Inter-connecting Roads</b>			
<b>A. Main</b>			
East		Royal Market to Peer Gate	
West		Central Library to Itwara	
<b>B. Others</b>			
North 1		Chowki Imambara	Road connecting Hamidia Road to Mangalwara junction through Gurubux-ki-Tallaiya.
East 1		Mangalwara	
South 1		Ginnori Budhwara to	
West		Hathikhana	
		Bhangipura	

#### 14.43 Road Widths

It may not be possible to provide a uniform for the whole length of a road owing to various limiting factors. However, minimum road widths and desirable road widths are specified in general which will form guide for preparation of detailed plans.

Road Description	Proposed Road Width (in meters)	
	Minimum	Desirable
A. Outer Ring	30	45
B. Inner Ring		
(i) Except the Sultania Road portion	30	35
(ii) Sultania Road portion	20	25
C. Approach (Inter-connecting) Roads		
(i) Main Approach Road		
(a) Royal Market to Peer Gate	30	35
(b) Central Library to Itwara along Central Library Plot.	—	30
Remaining portion up to Itwara	20	25
(ii) Other Approach Roads	15	20

Based on the above general consideration, the road widths prescribed for the central area are given in the following table :—

**BHOPAL : ROAD WIDTH (CENTRAL AREA)**

14-T.4

S. No.	Road Description	Proposed Road Widths in Meters	S. No.	Road Description	Proposed Road Widths in Meters
1	2	3	1	2	3
1.	Hamidia Road	30	13.	Mangalwara Road	12/15
2.	Hamidia Road from Narbada Ice Factory to Lady Hospital	30	14.	Central Library Road	30 and 20-25
3.	Ginnori Road	30	15.	Masjid Gulam Mehboob Rd.	20
4.	Kamla Park Rd. upto Peer Gate	25-30	16.	Sarai Hussain Khan	12
5.	Imami Gate Road	30	17.	Jawahar Chowk Road	12/15
6.	Mandir Mahadev Road	35	18.	Laxmi Talkies	12
7.	Azad Market Road	35	19.	Jumerati Bazar Road	12/15
8.	Budhwara Road	30-35	20.	Saifia School Road	12
9.	Sultania Road	20	21.	Masjid Chameli Wali Road	7.5-9.5
10.	Chawki Imambara Road	12/15	22.	Tallaiya Road	7.5-9.5
11.	Bhangipura Road	12/15	23.	Masjid Tolwali Road	10/12
12.	Mandir Kamali Road	12/15	24.	Fatehgarh Road	9.5-10
			25.	Hawa Mahal Road	8/10

The road width prescribed for roads within city core are given as under :—

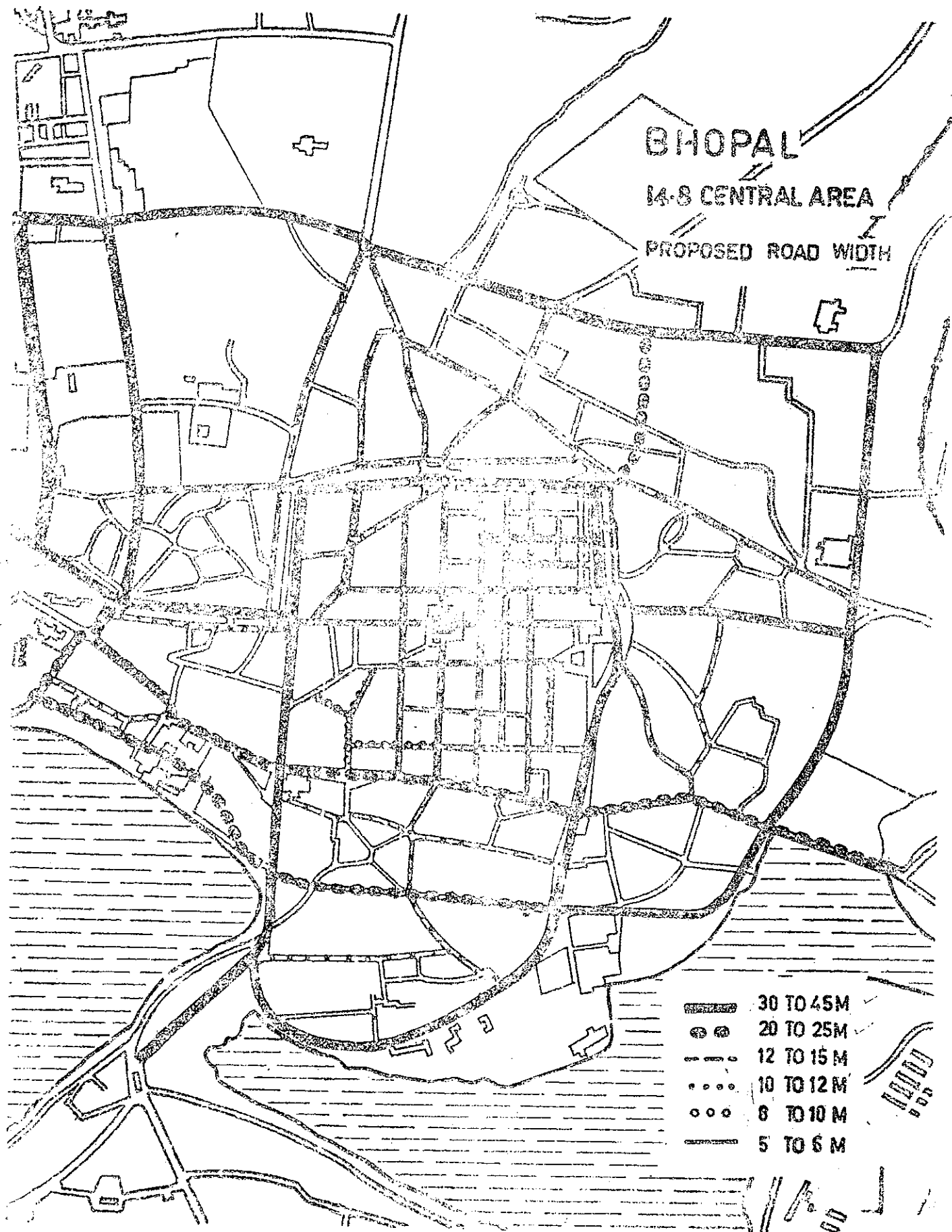
**BHOPAL : ROAD WIDTH (WITHIN CITY CORE)**

14-T.5

S. No.	Road Description	Width [In meters]	S. No.	Road Description	Width [In meters]
1	2	3	1	2	3
1	Ibrahimpura Road	5/6	12	Sulemania Road	10
2	Loha Bazar Road	5/6	13	Kotwali Road	10
3	Lakherapura Road	5/6	14	Gulia Road	10
4	Kazipura Road	5/6	15	Laila Burj Road	10
5	Marwari Road	10	16	Jehangirabad Road	8
6	Peer Bazar Road	5/6	17	Sadda Miyan Road	8
7	Itwara Road	5/6	18	Mahal Ulman Sahiba	8
8	Jain Mandir Road	10	19	Paigah Road	8
9	Masjid Sarfe Khan Road	10	20	Atta Sujah Khan Road	8
10	Tabba Miyan Road upto Lakherapura	10	21	Masjid Shakur Khan Road	8
11	Ibrahimpura lane from south of 10 Unani Safa Khana to Lakhera Rd.				

The exact alignment of these roads and other roads and lanes will be given in the zone plans.

**Note :—** Major market roads will have pedestrian arcade on both sides (covered corridor) 2½ meter wide.





#### **14.44 Road Widening**

Road widening particularly in central area, where the intensity of buildings is very high, is always very expensive and it tends to dislocate large number of persons and activities at the time of widening. The number of roads proposed for widening has, therefore, been kept minimum. Only those roads which form part of the two rings are proposed to be undertaken for widening, beside construction of two new links. The remaining roads will be prescribed under deferred street schemes. The list of new links and widening is given below.

##### **New Links**

1. Road through Gurubux-ki-Tallaiya joining Hamidia Road to Mangalwara.
2. Road from Lady Hospital to Ginnori Road through Bhoipura meeting at Hathi Khana.
3. Over bridge link to be extended from Mangalwara Road to Central library Road.

##### **Roads Proposed for Widening**

1. Mahadev Mandir Road after shifting of Kabadi Market.
2. Mahadev Mandir Road after demolition of shops at Sindhi Market.
3. Azad Market Road after demolition shops.
4. Maulana Azad Central Library Road, from Itwara to Grand Hotel.
5. Sultania Road from Budhwara square to Lady Hospital.
6. Masjid Gulam Mahboob Road.
7. Road from Moti Masjid to Peer Gate.
8. Hamidia Road from Lady Hospital to Grand hotel.
9. Mandir Kamali Road.
10. Budhwara to Lady Hospital.
11. Pul pukhta Road.
12. Raisen Road.
13. Pulpatra Road.

#### **14.45 Street Lines**

Except for the roads mentioned above, most of the roads and lanes are proposed to be undertaken as deferred street schemes to achieve the desired road widths. It is proposed to regularise the line of streets particularly within city core by way of giving setback to building at the time of reconstruction or modification.

The study of roads in the central core reveals that most of the roads were originally wider. Successive encroachment of road space have reduced the road width. General policy of regularisation of right of ways shall be to bring back these roads to their original widths. The roads having their

present width more than the prescribed widths above, will retain their present width. The permission for reconstruction along market and other residential roads will, therefore, be guided by the basic consideration stated above.

#### **14.46 Bus Routes and Terminal Centres**

The outer ring is linked with the Regional pick up stations as well as city bus terminal stations near Central Library, and Hamidia Hospital. These will provide facilities of mass transportation system to central area and city core.

#### **14.47 Pedestrian Ways**

Circulation path of Central area envisages provision of exclusive pedways. The two cardinal pedways form the major pedways while other market roads also are primarily meant for pedestrian movement. In addition to this, Mandir Kamali Road, Chameliwali Road and Tallaiya Road will also serve as pedways.

The roads envisages as pedways are as under :—

1. Ibrahimipura Road.
2. Loha Bazar Road.
3. Lakherapura Road.
4. Marwari Road.
5. Main Mandir Road.
6. Kazipura Road.
7. Peer Bazar.
8. Itwara Road.
9. Masjid Sarfe Khani.
- 10] Tabbu Miyan Road

#### **14.48 Parking**

Efficiency of road system can be improved by providing parking lots at appropriate places as this will eliminate parking of vehicles on the movement space. Off-street parking lots are, therefore, proposed within the limitation of space available in the central area. As vehicular entry to city core is difficult, it is proposed to provide parking along inner ring. The important parking sites envisaged are as under.

1. Yaseen Palace area near Peer Gate.
2. Old Subzi Mandi near Moti Masjid.
3. Fish and vegetable market at Budhwara.
4. Jumerati Gate.
5. Unani Shafa Khana.
6. City Kotwali.
7. Hamidia Hospital square near Kumhar Pura.
8. Gurubux-ki-Tallaiya.



9. Existing road space and surrounding open space at overbridge near Bharat Talkies.

10. Near Pick up stations and the terminal centres.

#### 14.49 Traffic Operation Plan

The proposals regarding circulation pattern contained in the Development Plan are likely to be implemented in stages. Some of the proposals are long term proposals. It will, therefore, be necessary that the traffic in the central area is regulated so as to achieve maximum efficiency with the present circulation system. A 'Traffic Operation Plan' will therefore, be prepared which will contain mainly traffic management such as one-way streets, restriction regarding entry of heavy vehicles to certain roads during day time, reservation of certain streets for cycle and pedestrian traffic, regulation of working hours for the workers in the central area to distribute the peak hour traffic etc.

#### 14.5 ZONING REGULATIONS FOR CENTRAL AREA

Zoning regulations will provide guide lines for development within each zone or sector in respect of location, height, size of buildings and structures, open spaces, and the use to which such buildings, structures and land may be put. Zoning regulations cannot be applied uniformly to the existing built up areas and the new developments which are taking place or are likely to come up during the plan period. The zoning regulations for the central area will be different from those applicable in other areas of the city. Zoning regulations for areas other than central area are given in the next chapter. Plot coverage and F. A. R.\* which will regulate size of structure, open space within plot and height to a certain extent for different localities and uses of central area are given below.

##### 14.51 Residential Area

In already built up areas, it will not be possible to fix minimum and regular size of plots because most of the houses in the central area have irregular plots and size, Floor Area Ratio (F. A. R.) and plot coverage have been proposed to achieve the proposed density within the requirements of ventilation sun light for healthy living and work places in the central area. The coverage under present Municipal Corporation Building by-law will have to be revised up to conform to the following standard.

---

\* Floor Area Ratio = Floor Area (on all the floors)  
on Plot Area.

### Coverage (Maximum)

1. Plot area not exceeding 100 sq. meters	75%
2. Plot area from 101 to 200 sq. meters	66%
✓3. Plot area from 201 to 500 sq. meters	60%
4. Above 500 sq. meters	40%

### Floor Area Ratio

Floor area ratio for different residential location is given below. For plots situated along road less than 10 metres wide, the F. A. R. will be reduced by 0.25.

✓1. Central core	1.75
2. Kumhar Pura (Imamigate)	1.50
3. Beldarpura	1.50
4. Chaklapura	1.75
5. Jumerati	1.75
6. Ghora Nakkas	1.75
7. Mangalwara	1.50
8. Kazipura	1.50
9. Islampura	1.25
10. Bhoipura	1.25
11. Hathi Khana	1.50
12. Majar Momni	1.50
13. Ginnori	1.50
14. Retghat	1.25
15. Fatebgarh	1.25

### 4. 52 Commercial Area

Maximum coverage in existing built up commercial areas will be 80% on the ground floor. Floor area ratio permissible for various commercial properties is given below :—

1. Central Core	2.00
2. Inner Ring Road	2.50
3. Commercial roads in between inner and outer rings with 60' and above width	2.50
4. Other roads less than 60' width	2.00
5. Commercial areas outer ring roads	2.50
6. Gurubux-ki-Tallaiya area	2.50

In case some area is left by the owner out of his own plot for public use such as road, footpath or parking etc. two times of normally permissible F. A. R. in respect of the area left for public use will be permitted to be added to the structure on the remaining plot. This will offset the loss of area to great extent and will encourage leaving of some area in front of the building plots.

#### 14.53 Flatted Factories

Maximum coverage and F. A. R. for flatted factories will be as follows:—

Coverage	50%
F. A. R.	2.00

The coverage and F. A. R. of residential in central core shall be applicable for household industries permitted in central area.

#### 14.54 Public Buildings and Institutions

The public buildings including religious, health and local bodies shall have maximum coverage of 35% including 5% covered parking and F. A. R. of 1.80.

#### 14.55 Institutional Uses

Maximum coverage including covered parking for plot size upto one acre (.4 hectare) shall be 30% of the plot size and 25% for plots above one acre. F. A. R. will be determined on the merit of each individual case depending upon the location and nature of use.

##### Hospitals

Maximum coverage	40%
F. A. R.	1.5

##### Health Centres

Minimum plot area	225 sq. Meters
Maximum coverage	40%
F. A. R.	1.0



## Chapter 15

### PLAN IMPLEMENTATION AND ENFORCEMENT

The efforts for preparation of the Development Plan and the Zoning Plans at a later date will not improve the city life in any way, unless sustained efforts are made to enforce as well as implement these plans. In building a city, a major role is often played by the citizens, individually or collectively, by undertaking construction reconstruction and development of land for various uses, co-operation of citizens in city improvement and city building is, therefore of utmost importance. The Town & Country Planning Department will provide necessary guidance by rendering, technical advice and by ensuring guide and proper scrutiny so as to ensure that the proposed constructions conform to the proposals contained in the approved Development Plan or the Zoning Plans. Effective enforcement of the Plan will now be possible because as per provision of the Madhya Pradesh Nagar Tatha Gram Nivesh Adhiniyam, 1973, all development to be undertaken by individuals, public sector undertakings, Semi-Government bodies and Central and State Government Departments will be subjected to technical scrutiny. Various provisions regarding control of development and use of land are contained in sections 24 to 29 of the above Act.

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*Note:— 1* 'Development' with its grammatical variation means the carrying out of a building, engineering, mining or other operation in, or over or under land, or the making of any material change in any building or land or in the use of either and includes sub-division of any land.

Effective control particularly on change of use of land within planning area will be feasible, because existing land use maps for Bhopal have been duly published and adopted under section 2-E of the M. P. Town Planning Act, 1948 as amended by the M. P. Town Planning (Amendment) Act, 1968 vide No. 13170 T. P. Dated 27-12-1972. Zoning<sup>2</sup> regulations in respect of various use zones, floor area ratio, coverage etc., are given in this chapter. These will facilitate planning and designing the prospective developers and Government Departments, and will form the basis of scrutiny of these proposals.

Implementation of the Development Plan will be undertaken exclusively by the Improvement Trust or Town & Country Development Authority likely to be established under section 38 of the Madhya Pradesh Nagar Tatha Gram Nivesh Adhiniyam, 1973. Madhya Pradesh Housing Board is playing very important role for the last two years in undertaking large scale construction of houses and shopping centres. The Municipal Corporation has also undertaken implementation of some important schemes such as shopping centre at Gurubux-ki-Tallaiya, Categorised market, Timber Market, Dairy Projects etc. It is hoped that both of these organisations will increase the tempo of their activity. Besides this, other Government Departments and Autonomous Bodies such as Public Health Engineering, Public Works, Commerce and Industries, Education, Health, M P S R T C, Laghu Udyog Nigam etc. will also be undertaking construction within their respective fields of activity. This will add to the process of implementation of the Development Plan. It will, however, be desirable to co-ordinate constructional activities of various Government and Semi-Government Organisations not only in terms of location, design etc. but in terms of phasing and programming as well. This will ensure quicker returns and benefits.

## 15.1 IMPLEMENTATION OF DEVELOPMENT PLAN

The cost of implementation of various proposals contained in the Development Plan estimated at current rates, works out to Rs. 86 crores. This includes cost of acquisition of 6886 hectares of land for various uses and development of 5390 hectares within the plan period. This also includes cost of clearance of slums in 55 hectares of land, development of land for rehabilitation of evictees and also environmental improvement of slums, construction of roads and 7 bridges and grade crossings. It also includes

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*Note:— 2* Existing land use maps for the planning area of Bhopal prepared under the M. P. Town Planning Act, shall be deemed to have been prepared under the M. P. Nagar Tatha Gram Nivesh Adhiniyam, 1973, under the provisions of clause (b)(ii) of section 87 of the Act.

cost of redevelopment and improvement of the old city at a cost of Rs. 2.95 crores. The average cost of acquisition has been assumed at Rs. 12,400/- per hectare. Development cost for various land uses has been assessed as per following norms.

Land Use	Rate	
Residential	1,12,000	Rs./hectare
Environmental Improvement of slums	1,12,000	„
Commercial	1,36,000	„
Slum Clearance	1,36,000	„
Rehabilitation	1,36,000	„
Public & Semi-Public	1,36,000	„
Redevelopment	2,47,000	„
Recreational (including Landscaping)	2,47,00 0	„
Transportation	62,000	„
Industrial	1,61,000	„

Stage one estimates of Plan implementation covering cost of acquisition and development is contained in the table.

**BHOPAL : COST OF PLAN IMPLEMENTATION**

15-T.1

Sr. No.	Land Use	Area Hectares		Cost of acquisition Rs. 12400/- per hect. (lakhs)	Development of 70% of acquired land.			Compensation for structure Rs. in (Lakhs)	Grand Total (6+9+10) Rs. in (Lakhs)
		Proposed	Exist- ing (Hactare)	Balan- ce to be ac- quired	Hactare	Rate (Rs. in Lakhs)	land. lakhs		
1	2	3	4	5	6	7	8	9	11
1.	Residential	4050	1534	2516	312	1761	1.12	1972	2284
2.	Commercial	405	65	340	42	238	1.36	324	366
3.	Industrial	1135	348	787	98	551	1.61	887	985
4.	Public & Semi-Public	1495	542	953	118	667	1.36	907	1025
5.	Recreation	1415	203	1212	150	852	2.47	2104	2254
6.	Transport (Including Road widening new links.)	1620	542	1078	134	1078	0.62	668	802
7.	City Redevelopment	(85)	...	...	...	85	2.47	210	295
8.	Clearance	(553)	...	...	...	55.3	1.36	75	90
9.	Bridges Grade Crossing 9 Nos.	(47)	(2 Nos)	...	...	...	L.S.	350	350
10.	Railway stations (4 expansion)	(16)	(3 Hect)	...	...	...	L S.	25	25
11.	Rehabilita- tion	(42.4)	...	...	...	42.4	1.36	58	58
12.	Environmen- tal Improve- ment	(60)	...	...	...	60	1.12	67	67
Total		10120	3234	6886	854	5389.7	...	7647	8601

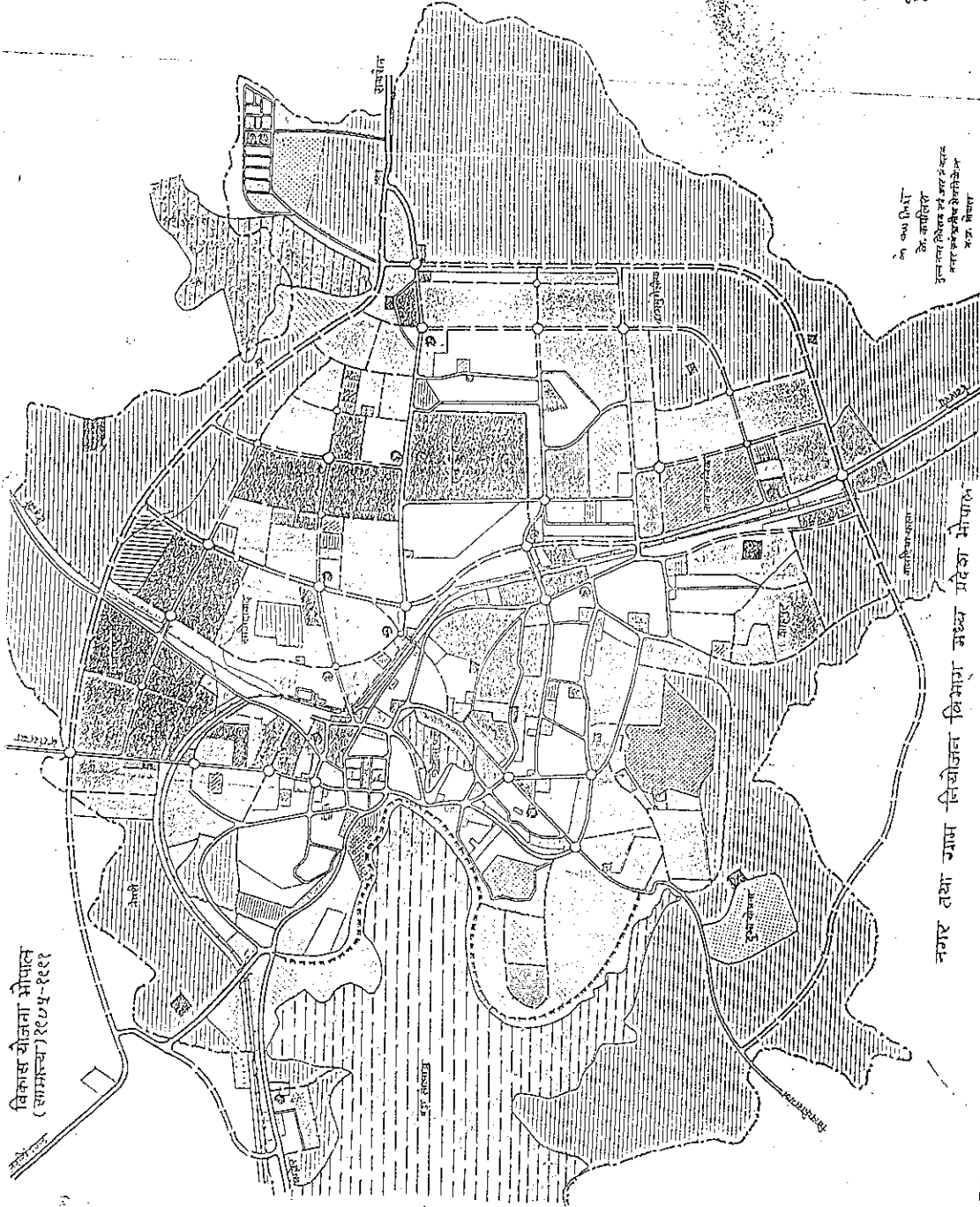
## 15.2 FIRST-PHASE PROGRAMME

The implementation programme has been divided in two phases viz. the first five years 1974-75 to 1999-80 and the remaining period of Development Plan. The total expenditure for executing the first-phase programme, works out to approximately Rs. 22 crores. This envisages mainly :—

- Acquisition of 1740 hectares of land exclusive of 340 hectares of land already acquired.
- Compensation of land and structures.
- Development of acquired land and also already acquired land of 1816 hectares.
- Construction of 61 km. of new roads and improvement of some old road links.



विकास योजना भोपाल  
(सामान्य) १९७५-१९९१



नगर तथा ग्राम नियोजन विभाग मध्य प्रदेश भोपाल

# BHOPAL: DEVELOPMENT PLAN 9.6 (GENERAL) 1975-1991

RESIDENTIAL	आवासीय
EXISTING	कई-मन
PROPOSED	प्रस्तावित
COMMERCIAL	वाणिज्यिक
GENERAL	सामान्य
INDUSTRIAL	औद्योगिक
GENERAL	सामान्य
AGRICULTURAL	कृषि
PUBLIC & SEMI PUBLIC	आवासीय एवं अर्ध-आवासीय
ADMINISTRATIVE	प्रशासनिक
SOCIAL & CULTURAL	सामाजिक एवं सांस्कृतिक
EDUCATION	शैक्षणिक
HEALTH	स्वास्थ्य
RECREATIONAL	अभिवृद्धि-प्रमोद
LAKE & POND	लेक/झील
CITY PARK	नगर उद्यान
TRANSPORT	यातायात
TERMINAL CENTRES	मार्ग
GRADE CROSSING	यातायात केन्द्र
OTHERS	बेड/कसींग
WATER BODIES	अन्य
AGRICULTURE	कृषि





1	2	3	4	5	6	7
<b>4. PUBLIC &amp; SEMI-PUBLIC</b>						
(a) Offices		20	3	20	32	35
(b) Health		50	6	50	81	87
(c) Social & Cultural		50	6	50	81	87
(d) Education		50	6	50	81	87
Total Public & Semi-Public		170	21	170	275	296
<b>5. RECREATION</b>						
		100	13	225	225	238
<b>6. URBAN SERVICES</b>						
		—	1	—	299	3.06
<b>7. TRANSPORT</b>						
(I) Regional Roads						
(a) Regional Road (N. S.) 4 lanes-90 M.	9 km.	—	—	—	36	36
(b) Bye-pass (Northern) 2 lanes 75 M.	10 km.	—	—	—	20	20
(c) Approach Road Sehore Narsingarh (2 lanes 90 m)	2.5 km.	—	—	—	5	5
(d) (a to c) Acquisition	171 Hec.	21	—	—	—	21
Total	21.5 km 171 Hec.	21	—	—	61	82
(II) Major City Road						
(a) Industrial Estate only 2 lanes 45 M-3 km.	3.0 km.	—	—	—	6	6
(b) Overbridge to Industrial Estate 4 lanes-75 M-4 km.	4.0 km.	—	—	—	16	16
(c) Kasturba Road 2 lanes 45 M-3 km.	3.0 km.	—	—	—	6	6
(d) Planning Unit-5 Road 2 lanes-45 M-3.6 km.	3.5 km.	—	—	—	7	7
(e) Pulbogda to P. U. Centre 7 Road-4 lanes-60 M. 1.5 km.	1.5 km.	—	—	—	6	6
(f) University Road (2 lanes-45 M. 2.5 km.)	2.5 km.	—	—	—	5	5
(g) Factory Road (2 lanes-60 M. 1.5 km.)	1.5 km.	—	—	—	3	3
(h) H. E. L. Ring Road (2 lanes-60 M-7 km.)	7.0 km.	—	—	—	14	14
(i) Mandi Road (4 lane 75-M 2.5 km.)	2.5 km.	—	—	—	10	10
(j) Bhadbhada Road (2 lane-45 M-3 km.)	3.0 km.	—	—	—	6	6
(k) Lake Drive Road (2 lanes 45 M-4 km.)	4.0 km.	—	—	—	8	8
(l) Station Road (2 lane-35 M-4 km.)	4.0 km.	—	—	—	8	8
(m) (a to l) Acquisition.	103 Hec.	13	—	—	—	13
Total	39.5 km. 100	13	—	—	95	108
<b>III. Terminal.</b>						
(a) Regional Bus Stand		11	2	11	7	9
(b) City Terminal Centre,						
(c) Pick up stations, (1) and						
(d) Bus stop (10)						
(e) Parking		2	1.0	2	4	5
IV. Over Bridges 2 Nos.		32	4	—	100	104
V. Railway Station Expansion 4 Nos.		16	2	—	20	22
GRAND TOTAL		1740	217	1816	1972	2186

Note : 1. Cost for Physical Development reduced as 1/4th is already developed @ Rs. 80,000/-  
 (a) Road fund shall be tapped for this purpose.  
 (b) Fund will be mobilised from agencies to which these roads proposals pass through.  
 II. (a) to (j) cost for Physical Development reduced as 1/2 portion is developed @ 68,000/-  
 III. (a) & (c) to (e) cost for Physical Development reduced as 1/2 portion is developed @ Rs. 80,000/-  
 IV. Cost for Physical Development reduced as 1/2 portion is developed @ Rs. 100,000/-

- (e) Construction of 2 over bridges.
- (f) Development of land for expansion of 4 existing Railway stations.
- (g) Provision of land for construction of 10 Bus stops, I pick up station, Regional Bus stand and city Terminal Centre.
- (h) The programmes for continuation of additional houses by agencies like Housing Board, Capital Project, Development Authority, Local authority, Semi-Govt. organisations like B. H. E. L, out of their own resources.

Housing Board programme as given below is to be implemented out of their own resources.

Year	Housing Board Programme No. of housing units
1976-77	1700
1977-78	2000
1978-79	2300
1979-80	2600

- (i) Ring road portion (M.H. by-pass) part of the funds to developed form their own resources.

- (j) Developing of parking sites as provided in para 14. 48 of the report.

- (k) Sewerage and sanitation of city is to be given priority.

Land for industrial use is being acquired and developed by the Industries Deptt. Cost of acquisition and development of 320 hectares of land for industries which works out to Rs. 3.76 crores needs to be deducted. The cost of acquisition and development of remaining land and other works amount to Rs. 18.13 crore.

The table below shows the stage one estimates of first-phase of works to be undertaken under the plan.

BHOPAL : FIRST-PHASE COST IMPLEMENTATION

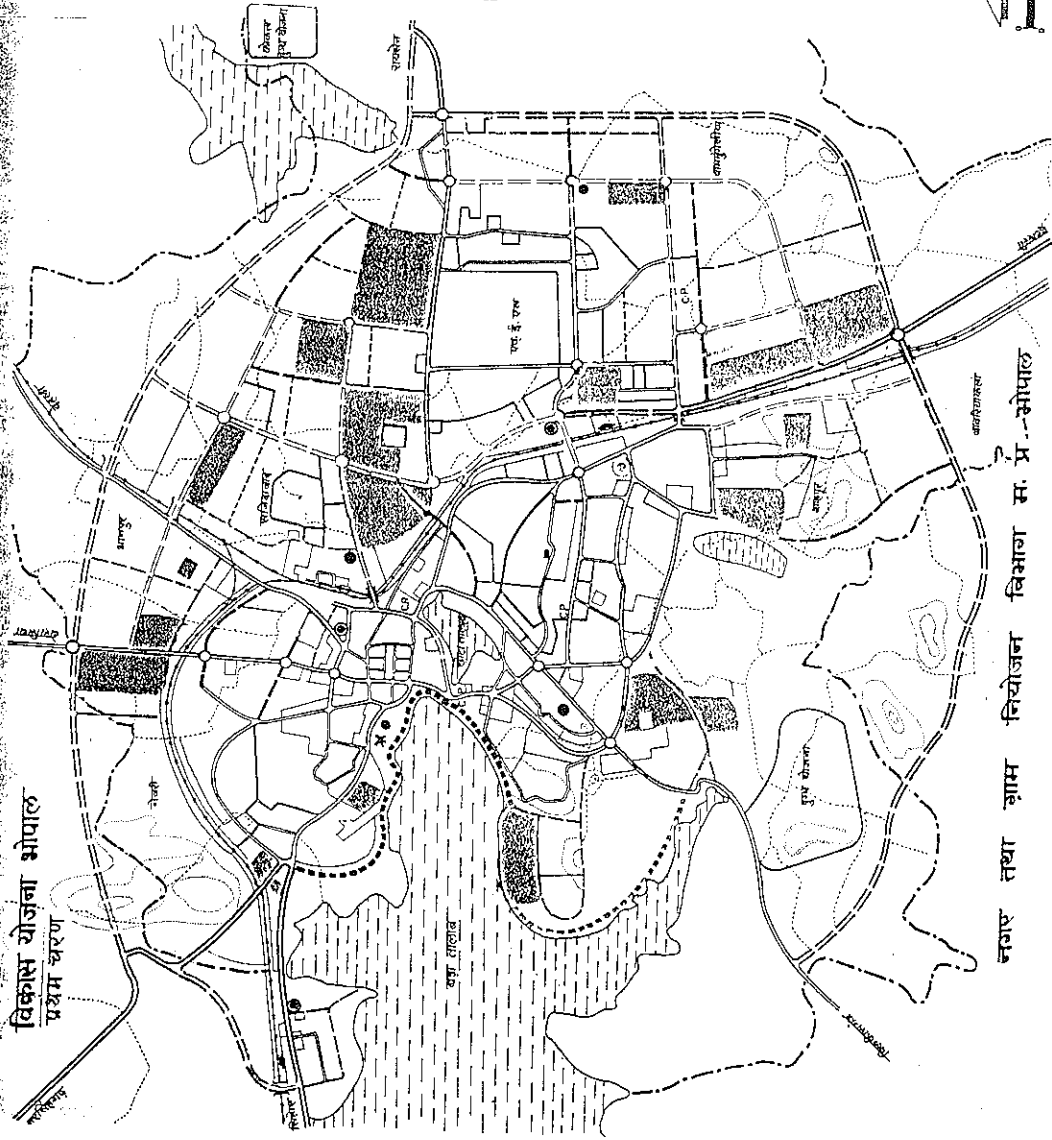
15-T.2

S. No.	Classification of works under Planning	Acquisition		Development costs		Total Cost (4+6)
		Physical Target (Hectares)	Cost Rs. in lakhs	Physical Target (Hectares) 1st Phase	Cost Rs. in lakhs	
1	2	3	4	5	6	7
1.	RESIDENTIAL	700	87	930	744	831
2.	COMMERCIAL					
	(a) Grain Mandi & Transport Nagar	40	5	40	27	32
	(b) Timber Market	—	—	8	5	5
	(c) Kabadi Market	—	—	20	14	14
	(d) Building Material Yard	30	4	30	20	24
	(e) Vegetable & Fruit Market	—	—	8	5	5
	(f) City-Level Shopping Centre (Existing)	8	1	8	5	6
	(g) Habibganj City Centre	10	1	10	7	8
	(h) Cattle Market / Grass Mandi	10	1	10	7	8
	(i) Planning Unit Level Shopping Centre	16	2	16	11	13
	(j) Sector Shopping Centre	6	1	10	7	8
	Total Commercial	120	15	160	108	123
3.	INDUSTRIAL					
	(a) Heavy Industries	80	10	80	64	74
	(b) Heavy & Medium Industries	100	12	100	161	173
	(c) Medium & Small Industries	100	12	100	80	92
	(d) Household & Flatted Industries	15	2	15	12	14
	(e) Service Industries	25	3	25	20	23
	Total Industries	320	39	320	337	376

विकास योजना भोपाल  
प्रथम चरण

BHOPAL: DEVELOPMENT PLAN  
15:1 FIRST PHASE

FIRST PHASE  
प्रथम चरण  
अन्तर्गत क्षेत्र



नगर तथा ग्राम नियोजन विभाग म. प्र.-भोपाल



294-A



The following table gives statement of first-phase receipts from the sale proceeds of the developed land.

BHOPAL : FIRST-PHASE RECEIPTS

15-T.3

S. No.	Source of Receipt	Corresponding gross area under planning (Hectares)	Receipts from sale of developed land		
			Area (Hect.)	Rate Rs / Hect.	Receipt (Lakhs)
1	2	3	4	5	6
1.	Residential Plots Break ups.				
	(a) H. I. G. & M. I. G.	350	210	3, 23, 000/-	678
	(b) L. I. G. & E. W. S.	580	348	2, 15, 000/-	748
2.	Commercial Plots	160	72	10, 76, 000/-	775
	Total	1090	630		2201

Note :—(a) Receipts under industrial plots are not taken into account as the investments are to be made by the Industries Department.

(b) Cost of development and acquisition of industrial plots have therefore, been deducted under recapitulation statement.

It will be possible for the Development Authority to undertake implementation of the plan (first-phase) with a seed capital of Rs. 2 crores, which may be raised through government loan, institutional financing and public borrowing. The total expenditure including normal interest on the seed capital and nominal overhead charges (8%+2%) works out to nearly 19 crores. Against this investment, total anticipated receipts from the sale proceeds of developed land for residential, commercial and other plots works out to Rs. 22.0 crores. This will give a surplus of nearly Rs. 3.0 crores after discharging all liabilities. In addition, the executing agency will be in possession of 264 hectares of undeveloped but acquired land for undertaking its second-phase work. This establishes that the proposals are viable and financially sound. First-phase of implementation will not only generate a capital for the next phase work, but also help the process of urbanisation in a planned and systematic manner. A recapitulation statement is given in the table below.

BHOPAL : RECAPITULATION STATEMENT OF FIRST-PHASE WORK (FIVE YEARS)

15-T.4

Cost of first phase works	Less cost of work to be financed by the Industries Deptt. (Lakhs)	Add. 10% Interest and over head charge on loan of 2 crores for 5 years (Lakhs)	Expenditure on the first phase programme (1—2)+3 Lakhs	Receipt sale of developed plots (Lakhs)	Saving Ex-cess (Lakhs) (5-4)
1	2	3	4	5	6
2189	[—] 376	[+] 100	1913	2201	[+] 288

### 15.3 ZONING REGULATIONS

The Zoning Regulations shall be applicable to the whole city except central area for which separate regulations have been given in Chapter 14. The planning area has been divided into 7 broad land use zones. Zoning Regulations covered in this chapter are very broad in nature. The detailed regulations will be framed at the time of preparation of Zoning Plans. Till then, Zoning Regulations prescribed here shall be effective.

#### 15.31 Land Use Zones

Various Land Use Zones have been prescribed in the Development Plan for the land situated within Planning Area. The land earmarked for a particular use in the plan such as residential, commercial, industrial can only be used for the purposes for which it has been earmarked. Details of the same are given in the table. Immediate conversion of present use to prescribed use (as per plan) is not intended. The present use of land can continue. The present use can however, be changed to prescribed use only, e.g. if the present use of land is agriculture and prescribed use is commercial its use can be converted to only commercial and permission for a change of use can be obtained as per requirement laid down in para 15.33 and rules framed under the provision of the Nagar Tatha Gram Nivesh Adhiniyam, 1973.

Section 25 of the Act regarding conformity with the Development Plan will apply to those uses which have been tested as incompatible and for non-conforming uses.

#### 15.32 Permissible Uses

The uses permitted in the 7 broad use zones and permissible on approval by competent authority are given below.



**BHOPAL : USES PERMITTED AND PERMISSIBLE**

15-T.5

Land use zone	Uses permitted in the Zone	Uses permissible on approval by competent authority
1	2	3
<b>Residential</b>	Residences, hotels, boarding houses, with density limitations, nurseries, kindergardens schools, temples, mosques, churches and other places of worship, clinics, social and cultural insitutions, public utilities and buildings, recreational uses, clubs, taxi and scooter stands.	Professional officers or home occupations when situated in the same buildings, hospitals, clinics, that are not treating contagious diseases, colleges research centres, Municipal, State or Central Government offices, poultry, household industry, local shops,atta-chakki-religious & cultural, hotels petrol filling stations on approval by Director of Tourism.
<b>Commercial</b>	Retail shops, business and professional offices, service uses like barbers, tailors, laundry, dry cleaners shops, restaurants, entertainment places, like cinemas, theatres specialised markets wholesale markets, mandis, warehousing and godowns residential dwellings and professional establishment.	Petrol filling stations service stations, coal, wood or timber yards, octroi free zone, flatted factories service industry which do not cause nuisance small workshop and repair shops
<b>Industrial</b>	General industries, such as heavy industries medium industries, light industries flatted industries, Agro-based industries such as dal & oil mills, tinning milk dairies, fruit canning etc. Services industries such as repaires, workshops and servicing center. Extraction industries such as removal of gravel murum, quarrying stone and such other uses. Public utility and service buildings.	Petrol filling stations, service stations, transport companies junk yards, show rooms, shop and restaurants, residential or dwellings for essential staff.
<b>Public &amp; Semi-Public</b>	Municipal, State or Central Government and other offices, cultural institutions, libraries museums, art galleries, utility and service buildings. educational institutions such as university colleges. polytechnics, technical institutions, research laboratories etc. General and specialised hospitals, clinical laboratories, health centres.	Petrol filling stations, parking areas, shops, restaurants, residential dwellings
<b>Recreational</b>	All the public & semi-public recreational uses, including parks, playgrounds, stadium, swimming pools and areas allocated for recreation.	Petrol filling stations, restaurants hotels, dwellings incidental to recreation.
<b>Transportation</b>	Railway stations, goods yards, marshalling yards, inter-city and intra-city bus terminus depots, workshops truck stand. truck terminus, aerodrome.	Warehousing, godowns, cold storage.
<b>Agricultural</b>	All the uses permitted as covered in definition of agriculture in M. P. Town and Country Planing Act. 1973.	

### 15.33 Requirement for Development Permission

The following documents and particulars should accompany the application for permission for development under section 29 of the Act.

- (i) Description of land (location with name of road/roads on/off which the property abuts and boundaries)
- (ii) Khasra plan showing numbers of land in question and also adjoining Khasras falling within 200 mts. from the outer limit of the land. The land applied for shall be shown in 'Red' in Khasra Maps.
- (iii) Location plan indicating the land in question showing main approach roads and any other important buildings in the vicinity such as hospital, school, cinema etc. and existing uses surrounding the land.
- (iv) Survey plan to a scale of 1:1000/1:500 showing the boundaries of land in question, natural features like nullah, ponds, tree slopes, contours plan if the land is undulated, high tension line passing through or adjoining land upto a distance of 200 mts. existing road showing the right of way and railway lines with their specification and railway boundaries, position of electric and telephone poles and all such other matters which need to be co-ordinated with adjoining areas.
- (v) Existing land use.
- (vi) A plan showing : all developmental proposals with respect to land in question with a general report. A model may be submitted so as to make a self-explanatory.
- (vii) A plan showing details of utilities and services like water supply, drainage, electricity and in case a septic tank is provided the same shall be shown along with the disposal of sludge water.
- (viii) Other architectural details required for proper scrutiny of proposals.
- (ix) A note indicating the type of development proposed, viz. residential, commercial or industrial.

### 15.34 Residential Development

Proposals for development of land for residential areas will be scrutinized on the basis of following standards till zoning plans are published. After publication of zoning plan regulation provided in the zoning plans for specific areas will apply.

#### Open Spaces

8 to 10% of total land proposed for development should be provided as open space under gardens, tot-lots etc.

### Schools

One primary school (0.5 hectare) should be provided for every lot of 300 to 400 residential plots. Proportionate space for a school should be provided in case the development is not large enough to justify one school. In this way, it will be possible to ensure provision of space for a school by pooling required proportionate space from adjacent colonies.

### Road Width

The following road width should normally be provided. In case a Ring Road, Major City Road or Sector Road provided in Development Plan falls within the proposed area for development, space according to the right of way of those roads will have to be provided for within the lay out.

#### Width of Road in Residential Areas

- |                             |           |
|-----------------------------|-----------|
| 1. Feeder Road              | 24 mts,   |
| 2. Collection street        | 18 mts.   |
| 3. Residential street       | 9/12 mts. |
| 4. Loop street <sup>1</sup> | 2 mts.    |
| 5. Cul-de-sac <sup>2</sup>  | 7/8 mts.  |

### Shops

Space for local shops at the rate of 1 shop per 30 to 40 residential plots may be provided. Built up area for these plots will be 79%.

### Plot Size

The minimum size of the plot should be 75 square meters. However, the plots with area of 48 sq. mts. may be permitted to cater for the needs of economically weaker section in specific areas. The maximum size of plot should not be more than 750 square meters.

- 
1. Maximum length of loop street should not be more than 450 meters.
  2. Maximum length of cul-de-sac should not be more than 150 meters.

The table specifying coverage and setback according to plot sizes for residential plots is detailed below :—

BHOPAL : PLOT SIZES COVERAGE AND SETBACKS RESIDENTIAL 15-T.6

S. No.	Size of plots in meters.	Area in sq. met.	Percen— tage built up areas.	Type of const- ruction.	Marginal open space (Meters)		
					Front	Side	Rear
1	2	3	4	5	6	7	8
1.	4 x 12	48	60	Row	3.0	0	1.5
2.	5 x 15	75	60	Row	3.0	0	1.5
3.	7 x 15	105	50	Row	3.0	0	1.5
4.	9 x 15	135	50	Semi-detached	3.0	2.5	1.5
5.	12 x 18	216	50	„	3.5	2.5	2.5
6.	12 x 18	216	42	Detached	3.5	3.5	2.5
7.	12 x 24	288	40	„	4.5	2.5/2.5	2.5
8.	15 x 24	360	35	„	6.0	3/3	2.5
9.	15 x 27	405	33	„	7.5	3/3	2.5
10.	18 x 20	540	33	„	9.0	3/3	3.0
11.	20 x 30	600	33	„	9.0	3.5/3.5	3.0
12.	25 x 30	750	33	„	12.0	4.5/4.5	3.0

The width and depth of plots and marginal open spaces may vary from location to location and should be approved by the competent authority.

### 15.35 Commercial Development

Percentage built up area for individual plots and F. A. R. for City Centres, Planning Unit Centres, Sector centres etc. are given below :

BHOPAL ; COVERAGE AND F.A.R. FOR COMMERCIAL DEVELOPMENT 15-T.7

Location.	Percentage built up area for individual plots.	Floor Area Ratio
1	2	3
City centres	80%	2.5
Planning unit centre	80%	2.0
Sector level centre	80%	1.5
Convenient shopping centre	70%	1.0
Wholesale	80%	1.5
General warehousing and storage	80%	1.5

## Cinemas

The plot area required for a cinema is directly related to auditorium capacity, adequate vehicular parking within premises, incidental shops and open space around the building for ventilation and safety measures against fire hazards. The area required for cinema plot shall be at the rate of 2.3 square metres per seat capacity of the proposed auditorium. The permissible coverage on plot shall be 50% of the total area of the plot and shall be subject to the necessary setbacks prescribed on the plot.

The front setback will depend upon the location of cinema plot and shall be from 10 to 15 metres. The side setbacks and rear setbacks shall be 4.5 metres. The incidental shops may be permitted in cinema premises provided the total coverage including cinema building and shops does not exceed more than 50% of the plot area. Adequate parking space for cars, scooters and cycles must be provided within the plot area.

## 15.36 Industries

### A. Flatted Factories

The permissible coverage and F. A. R. for flatted factories shall be as follows :—

Coverage	50%
F. A. R.	2.5%

The minimum setbacks shall be provided according to the development along streets. Suggested setbacks are :

Front	5 to 10 metres
Rear	4.5 metres
Side	4.5 to 6 metres

### B. Other Industrial Areas

The permissible coverage and setback schedule shall be governed by the following table :—

Coverage and Setbacks for Industrial Developments

Type of Industries	Coverage	Setback In Metres		
		Front	Side	Rear
Heavy	25%	30	3/3	6.0
Medium Scale	30%	6	3/3	4.5
Small Scale	40%	4.5	3/3	4.5
Household & Service	40%	4.5	2/2	4.5
Aero-based	40%	4.5	3/3	4.5

Permissible coverages and F. A. R. for Public and Semi-Public uses proposed in the Development Plan and not covered elsewhere shall be as follows :—

Sr. No.	Description	Minimum Land Requirements (Hectares)	Coverage	F. A. R.
1.	College	4	30%	1.00
2.	Higher Secondary School	2	30%	1.00
3.	Primary School	1/2	40%	1.00
4.	Nursery School	1/4	40%	1.00
5.	Hospital	4	40%	1.50
6.	Health Centre	1/2	40%	1.00
7.	Police Station	3/4	30%	1.00
8.	Fire Station	1	30%	1.50
9.	Community Hall and Library	1/2	30%	1.50
10.	Religious Building	1/8	30%	1.00
11.	Telephone Exchange	1/4	30%	1.50
12.	Electric Sub-Station	18	—	—
13.	Govt. and Semi-Govt. Offices	—	*25%	2.00

\* 5% additional coverage may be allowed for covered garage for cars and cycle stands.

These standards will be followed till the preparation of zoning plan of various planning units and sectors

## Appendix-I

COPY OF THE NOTIFICATION NO. 64/U/XVIII Dt. 24TH MARCH, 1958  
PUBLISHED IN M. P. GAZETTE : PART II, Dt. 4TH APRIL, 1958

Whereas no objections or suggestions in respect of the inclusion in the Bhopal Municipal limits of the areas specified in the schedule below have been received as required under notification No. 123, dated 21st November, 1957, published in the official Gazette, dated 6th December, 1957, the State Government, in exercise of the powers conferred by clause(c) of sub-section (1) of section 3 of the Bhopal State Municipalities Act, 1956 (III of 1955) are pleased to include in the Bhopal Municipality the aforesaid areas with effect from the 1st April, 1958 :—

### Schedule

S. No.	Name of Village	Area in Acres
1.	Kotra Sultanabad	1,998
2.	Singhpur	503
3.	Prempura	882
4.	Shahpur	2,918
5.	Chuna Bhatti	655
6.	Dharampuri	1,061
		8,017

### Boundaries

North : Municipal Boundary  
East : Railway Lines  
South : Kaliasote.  
West : Kaliasote.

By order and in the name of the  
Governor of Madhya Pradesh.  
Sd/- (S.S. Joshi)  
Dy. Secretary

## Appendix-II

### GOVERNMENT OF MADHYA PRADESH LOCAL SELF GOVERNMENT (URBAN) DEPARTMENT NOTIFICATION

Bhopal, dated the 3-10-1958. 9 Asvina, 1880

No. 212/U/XVIII. Whereas no objection or suggestion in respect of the inclusion in the Bhopal Municipal limits of the area specified in the schedule below have been received, as required under Notification No. 130/XVII/U dated the 17th June, 58, published in the official Gazette dated 27-6-58, the State Government, in exercise of the powers conferred by clause (c) of Sub-Section (1) of section 3 of the Bhopal State Municipalities Act, 1956 [III of 1956] are pleased to include in the Bhopal Municipality the aforesaid areas with immediate effect.

#### Schedule

S. No.	Name of Village	P. G. No.	Tahsil	District	Area [acres]
1.	Kararia	—	Huzur	Sehore	148.73
2.	Chola	—	"	"	150.52
3.	Chand Barh	—	"	"	142.03
4.	Semra Kalan	—	"	"	272.35
5.	Hinotia Kachchiyana	—	"	"	123.55
6.	Govindpura	—	"	"	234.16

#### Boundaries

North : Kh. Nos. 19/2, 24/1/2, 23/2/48/1 50/2, 53/2, 54 and 58 of village Chhola and Kh. No. 11, 12, 17, 18, 265/2, 21/24, 45, 47, 48/1 270/194, 174, 177, 182, 184, 181 and 190 of Village Kararia.  
 North : Kh. Nos. 2 5/1, 25/24, 86, 156, 211/2, 223, 239, 258 and 259 of village  
 East : Semra Kalan.  
 East : Kh. Nos. 62/17, 18, 19/1, 19/2 23, 24, 28 of village Govindpura and the boundaries of the Heavy Electricals India Ltd.  
 South-East : The Existing Municipal Boundary.  
 South : The Existing Municipal Boundary.  
 West : The Existing Municipal Boundary.

*By order and in the name of the  
Governor of Madhya Pradesh  
Sd/-  
Deputy Secretary to Government  
Madhya Pradesh  
Local Self Govt. [U] Department.*



### Appendix-III

## COPY OF NOTICE FOR ADOPTION OF EXISTING LAND USE MAPS OF BHOPAL APPEARED IN M. P. GAZETTE Dt. 22ND FEB., 1974

It is published for general information of the public that in pursuance of section 2-E read with section 2-B (3)e(4) of the Madhya Pradesh, Town Planning Act, 1948 (LXVIII of 1948) as amended by Madhya Pradesh Town Planning (Amendment) Act, 1948 (No. 21 of 1948). The present Land Use Map and present Land Use Register indicating the present use of every place of land in the Local Area specified in the following schedule, are hereby duly adopted by the Local Authorities. This notice is being published in the Madhya Pradesh Rajpatra and it will be a conclusive evidence that the Map and Register have been duly prepared and adopted.

### Schedule of the Land Situated in the Local Areas

1. All land falling within the jurisdiction of Municipal Corporation, Bhopal.
2. All land falling within the jurisdiction of Notified Area Committee, Bairagarh, H. E. Ltd. and the following villages which come in the Local Areas :-

- |                          |                         |
|--------------------------|-------------------------|
| 1. Khajara, Baramad      | 25. Khudaganj           |
| 2. Mohali Jagir          | 26. Barkheri Khurd      |
| 3. Damkhera              | 27. Barkheri Kalan      |
| 4. Sajidabad (part)      | 28. Sewania Gond        |
| 5. Semarakalan (part)    | 29. Gora                |
| 6. Kolbakalan (part)     | 30. Bisbarikheri        |
| 7. Narela Sankari        | 31. Amkhera             |
| 8. Piplani Chamaran      | 32. Kohifiza            |
| 9. Hataikhera            | 33. Bilkhera            |
| 10. Kikta                | 34. Bhainsakheri (part) |
| 11. Khajuri Khurd        | 35. Bairaghe Kalan      |
| 12. Dobara               | 36. Beha                |
| 13. Khajuri Kalan        | 37. Borbau              |
| 14. Barkhera Pathani     | 38. Halalpur            |
| 15. Amrawad Khurd        | 39. Nayapura            |
| 16. Laharpur             | 40. Singarcholi         |
| 17. Bagmungela.          | 41. Newari              |
| 18. Bag Sewania          | 42. Nishatpura          |
| 19. Ahmedpur             | 43. Rusalli Karhod      |
| 20. Jatkhari             | 44. Chhola              |
| 21. Misrod               | 45. Bhampur             |
| 22. Bawaria Kalan        | 46. Karhod Kalan        |
| 23. Chhawani (Chandpura) | 47. Rasla Khes          |
| 24. Mendari              | 48. Mali Kheri          |

The said adopted Maps and Registers shall be opened for inspection at the following places with effect from 28th December, 1972 to 12th January, 1973 only.

Place of Inspection :

Office of the Chief Town Planner, Shed No. 1, North T. T. Nagar, Bhopal.

K. KAPLISH  
Chief Town Planner

Appendix-VI

GOVERNMENT OF MADHYA PRADESH  
TOWN & COUNTRY PLANNING DEPARTMENT  
NOTIFICATION

Bhopal, dated 19th June, 1974.

No. 1776/F-1-50/XXXIII/74 Under sub-section [1] of section 13 of Madhya Pradesh Nagar Tatha Gram Nivesh Adhiniyam, 1973 [No. 23 of 1973] the State Government for the purpose of this Adhiniyam constitute Bhopal Planning Area, the limits of which are defined in the schedule given below :—

**Schedule**

**LIMITS OF BHOPAL PLANNING AREA**

1. North: — Village Bhainsa Kheri [Part] Bairagarh Kalan [Part] Behta, Nayapura, Singar Choli, Neori (Part), Nishatpura, Rusalli, Karhod-Kalan, Railakhedi, Malikhedhi Khejra Baramad, Maholi, Damkheda, Narela, Shankari, Hataikheda [Part] and up to the northern limit of Village Kokta.
2. East: — Village Kokta, Khajuri-Khurd, Dabara, Khajuri-Kalan, Amrawad Khurd, Kaharpur (Part), Bagh Mungelia, Jatkhedi, and upto the eastern limit of Village Misrod
3. South: — Village Misrod Bawaria Kalan, Chuna-bhatti, Singpur, Chhaoni Kaliasot, Mendori, Barkhedhi Khurd, Barkhedhi Kalan and upto the southern limit of Village Gora.
4. West: — Village Gora, Bishankhedhi, Bilkhedha and upto the western limit of Village Bhainsa Kheri [Part].

*By order and in the name of the Governor  
of the Madhya Pradesh  
Sd/-  
[N. C. Jain]  
Dy. Secretary to Government  
Madhya Pradesh,  
Town & Country Planning Department..*

## Appendix-5

## BHOPAL : TRENDS IN GROWTH OF TRAFFIC 1957-1966 (P. C. U.)

S. Station No.	2	Fast Moving			Slow Moving			Total			Percentage Variation		
		1957	1961	1966	1957	1961	1966	1957	1961	1966	1957	1961	1966
		3	4	5	6	7	8	9	10	11	12	13	14
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Old Sect. Rd.	344	47	229	-33	717	271	204	-71.0	1061	318	433	-59.0
2	Pari bazar	—	134	122	-17	—	418	136	-135.5	—	552	258	-107.0
3	Tajul masajid (State Bank)	1674	23	614	-63	885	733	278	-69.0	2559	759	892	-65.0
4	Noormahal Rd.	371	343	179	-517	183	733	275	+50.0	554	1076	454	-18.0
5	Sultania Rd. (G. P. O.)	344	—	247	-28	717	—	126	-82.0	1061	—	373	-648.8
6	Tajmahal Rd.	175	—	403	+130	890	—	378	-58.0	1065	—	781	-26.0
7	Sultania (Peergate) (Imamigate)	188	—	205	9.0	428	—	364	-15.0	614	—	569	-730
8	Sultania Rd. Motimasjid Peergate	164	23	841	+412	889	921	454	-36.0	954	944	1295	+47.0
9	Sindhi market	—	121	44	-127	—	459	264	-849	—	580	3028	93.0
10	Safia college	176	35	134	-24.0	685	433	271	-60.0	861	468	405	-52.0
11	Hamidia Rd. (Bada bagh)	399	—	894	+124	748	—	470	-37.0	1147	—	1864	+63.0
12	Berasia Rd.	89	—	87	-2.0	226	—	326	+44.4	315	—	413	-31.0
13	Hamidia Rd. Bhopal	504	387	521	+14.0	738	1867	694	-6.0	1242	2254	1215	-9.0
14	Chhola Road.	107	—	133	-24.0	590	—	299	-49.0	697	—	432	-38.0
15	Hamidia Rd. Alpna talkies	579	37	385	-34.0	1317	522	558	-58.0	1896	559	943	-50.0
16	Railway Station Road	—	—	103	—	—	—	621	—	—	—	724	—
17	Hamidia Road Bharat Talkies	573	185	502	-12.0	2549	1194	576	-53.0	3112	1379	1078	-65.0
18	Mangalwara Road	1163	—	132	-781	39.7	—	380	-90.0	5090	—	805	-84.0
19	Itwara-Managalwara P. S.	68	7	44	-35	297	326	773	+160.0	365	333	424	+16.0
20	Itwara-Central Library	160	61	55	-65	623	836	453	-26.0	783	897	509	-35.0
21	Budhwara Fish market	272	262	270	-07	440	1228	1099	-149.0	712	1490	1369	+92.0
22	Sultania Road (Ibrahimpura)	63	137	359	-43.0	1305	875	655	-498.0	1941	1012	1014	-46.0
23	Sultania Road-Lady Hospital	234	249	335	+43.0	943	2355	584	-38.0	1177	2604	919	-22.0
24	Budhwara	—	—	—	—	—	—	—	—	—	—	—	—
25	Hamidia Road-Lady Hospital	158	257	157	-6.0	273	1837	323	+18.0	431	2094	480	+11.0
26	Central Lib.	—	—	—	—	—	—	—	—	—	—	—	—
27	Pulpkutha Road.	330	175	313	-5.0	779	2022	722	-7.0	1109	2197	1035	7.0
28	Jehangirabad (Chiklod Road)	—	249	132	-94.03	—	2355	398	-166.0	—	2604	530	159.0
29	Raisen Road.	170	—	197	—	278	—	387	—	448	—	584	—
30	Pulbogda-Hoshangabad Road	—	—	209	—	—	—	172	—	—	—	381	—
31	Church Road	—	44	44	0	—	894	210	-153.0	—	938	554	-82.0

S. Station No.	Fast Moving						Slow Moving						Total				Percentage Variation		
	1957		1961		1966		1957		1961		1966		1957		1961			1966	
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		19	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
30	Lalparade Ground	...	66	290	+ 69	...	562	415	-52.2	...	628	705	...	...	...	...	...	...	
31	Kamla Park Road	183	286	544	+197	340	2705	1457	+322.0	523	2991	2001	...	...	...	...	...	+ 25.0	
32	Ginnori Road	...	94	203	+232	...	1243	422	-132.0	...	1837	625	...	...	...	...	...	+282.0	
33	Shamla Hill Road	...	...	53	...	...	...	46	...	...	...	99	...	...	...	...	...	-107.0	
34	Polytechnic-Rosh- anpura	...	...	211	...	...	...	309	...	...	...	520	...	...	...	...	...	...	
35	Polytechnic-Vidhan Sabha	...	...	137	...	...	...	32	...	...	...	169	...	...	...	...	...	...	
36	Roshanpura	...	...	90	...	...	...	136	...	...	...	...	...	...	...	...	...	...	
37	Rajbhawan Road	...	...	217	...	...	...	273	...	...	...	226	...	...	...	...	...	...	
38	Board Office Road	...	...	113	...	...	...	47	...	...	...	490	...	...	...	...	...	...	
39	M. A. C. T.-New Market	...	...	210	...	...	...	197	...	...	...	160	...	...	...	...	...	...	
40	M. L. A. Rest House	...	...	109	...	...	...	9	...	...	...	407	...	...	...	...	...	...	
41	Malviya Nagar Road	...	...	104	...	...	...	84	...	...	...	118	...	...	...	...	...	...	
42	Vallabh Bhawan	...	...	126	...	...	...	95	...	...	...	188	...	...	...	...	...	...	
43	Mandir Kamali Road	1265	121	180	-85.0	3173	1948	2818	-8.0	4438	2069	3098	...	...	...	...	...	...	
44	Pulpatra Road	207	580	416	+100.0	983	2993	1353	+38.0	1190	3573	1796	...	...	...	...	...	+50.0	

Source : Traffic Surveys by Town and Country Planning Department. M. P.

Source : Traffic Surveys by Town and Country Planning Department, M. P.

## BHOPAL : CITY TRAFFIC CENSUS 1966

S. No.	Name of the Place location	Fast Moving Traffic			Total PCU			Slow Moving			Total PCU			Total	Total	Re- marks
		Jeep Buses			Trucks			Scooter M/C/T			Cycles Cars					
		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	2															
1	Old Secretariat Road	61	42	21	14	138	229	442	2	13	4	461	204	599	433	
2	Pari Bazar	70	13	—	25	108	122	280	—	10	5	295	136	403	258	
3	Tajul Masjid State Bank	228	45	44	184	501	614	312	14	30	11	367	278	868	892	
4	Noormahal Road	77	10	14	56	157	179	201	11	24	37	273	275	430	454	
5	Sultania Road	29	52	23	40	144	247	253	—	14	—	267	126	411	373	
6	Taj Mahal Road	153	44	19	115	336	403	580	16	38	3	637	378	975	781	
7	Sultania Road (Peergate) Imamigate	108	23	3	48	177	205	610	1	45	9	665	364	842	569	
8	Sultania Road-Moti Masjid Peergate	157	108	132	112	509	841	474	1	90	9	574	454	1083	1295	
9	Sindhi Market	13	—	—	28	41	44	248	8	38	19	311	264	352	308	
10	Saifia Collage	73	2	9	43	127	134	268	8	24	31	331	271	458	405	
11	Hamidia Road- Bada Bagh	179	121	112	176	588	894	256	69	128	90	543	470	1131	1864	
12	Berasia Rd.	21	7	13	21	62	87	280	26	22	25	335	326	420	413	
13	Hamidia Road	110	92	62	135	399	521	536	25	105	67	733	694	1032	1215	
14	Chhola Road	25	2	42	24	93	133	221	32	16	20	289	299	382	432	
15	Hamidia Road- Alpana Talkies	101	30	64	85	280	385	455	17	87	39	598	558	878	943	
16	Rly. Station Road	20	27	9	12	63	103	95	2	144	2	224	621	292	724	
17	Bharat Talkies- Hamidia Road	101	66	70	81	318	502	362	35	77	38	512	576	830	1078	
18	Mangalwara Road	20	—	18	49	87	132	486	26	54	139	705	380	792	805	
19	Iwara-Mangalwara P. S.	5	—	12	12	29	44	280	6	60	33	379	773	408	424	
20	Iwara-Central Library	11	—	14	13	38	55	305	16	46	60	427	463	465	509	
21	Budhwara Fish Market	120	1	24	109	254	270	273	74	163	89	599	1099	853	1369	
22	Sultania Road Ibrahimipura	99	54	31	63	247	359	150	36	108	55	349	655	596	1014	

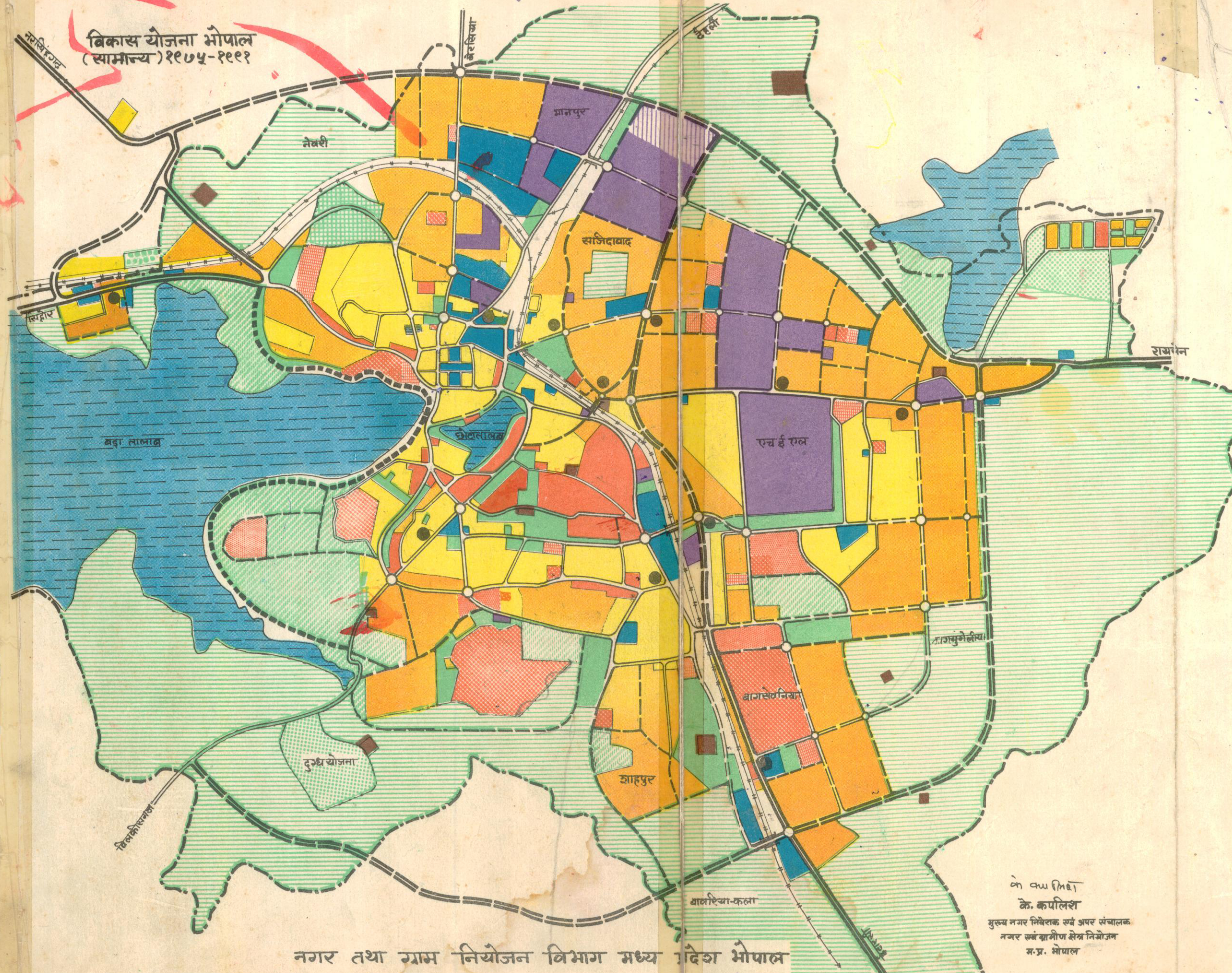
S. No.	Name of the Place No. location	Fast Moving Traffic			Total PCU	Slow Moving			Total PCU	Total	Re- marks					
		Jeep	Bus	Truck		Scooter M/C/T	Cycle	Car				Tanga	Thela			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
23	Sultania Rd. Lady Hospital-Budhwara	82	30	58	45	215	335	435	30	42	77	584	584	799	919	
24	Hamidia Road Lady Hospital Central Library	64	18	9	33	124	157	227	5	56	24	312	323	436	480	
25	Pulpukta Road	130	46	7	100	273	313	670	20	94	55	811	722	1114	1035	
26	J'Bad (Chiklod Road)	37	—	14	33	84	132	433	14	32	41	520	398	604	530	
27	Raisen Road	41	29	45	28	143	197	132	55	29	14	230	387	353	584	
28	Pulbogda H'bad Road	59	19	32	31	141	209	220	7	11	18	256	172	397	381	
29	Church Road	10	—	10	12	32	44	200	15	15	18	248	210	280	554	
30	Lalparade Ground	99	35	24	56	214	290	551	24	30	25	630	415	844	705	
31	Kamlapark Road	241	51	26	146	464	544	900	31	281	128	1340	1457	1804	2001	
32	Ginnori Road	84	15	11	70	180	203	382	02	62	14	660	422	840	625	
33	Shamla Hills Roshanpura	26	8	1	5	40	53	88	1	3	1	93	46	133	99	
34	Polytechnic	81	25	5	71	182	211	686	6	5	17	714	309	896	529	
35	Polytechnic Vidhan Sabha	79	6	4	44	133	137	95	—	—	—	95	32	228	169	
36	Roshanpura	18	15	4	31	68	90	180	12	6	4	202	136	270	226	
37	Raj Bhavan Road	118	18	—	71	207	217	430	12	15	13	472	273	679	499	
38	Board Office Road	59	9	5	24	97	113	103	2	—	2	107	47	204	160	
39	M.A.C.T. New Market	85	29	5	51	170	210	176	21	8	12	217	197	387	407	
40	M.L.A. Rest House	46	21	1	10	78	109	29	—	—	—	29	9	107	118	
41	Malviya Nagar Road	52	12	2	21	87	104	256	—	—	—	256	84	343	188	
42	Vallabh Bhavan	31	31	2	18	82	126	289	—	—	—	289	95	371	221	
43	Mandir Kamali	48	—	—	176	224	180	720	167	430	289	1606	2918	1830	3098	
44	Pulpukhta Road	31	—	124	100	285	416	256	84	231	96	667	1353	922	1769	



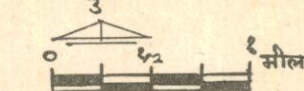
बिकास योजना भोपाल  
(सामान्य) १९७५-१९९१

# BHOPAL: DEVELOPMENT PLAN

9.6 (GENERAL) 1975-1991



RESIDENTIAL	आवासीय
EXISTING	वर्तमान
PROPOSED	प्रस्तावित
COMMERCIAL	वाणिज्यिक
GENERAL	सामान्य
INDUSTRIAL	औद्योगिक
GENERAL	सामान्य
ABNOXIOUS	प्रदूषण
PUBLIC & SEMI PUBLIC	शासकीय एवं अर्ध-शा.
ADMINISTRATIVE	प्रशासकीय
SOCIAL & CULTURAL	सामाजिक एवं सांस्कृतिक
EDUCATION	शैक्षणिक
HEALTH	स्वास्थ्य
RECREATIONAL	अमोद-प्रमोद
LAKE FRONT	लेक फ्रन्ट
CITY PARK	नगर उद्यान
TRANSPORT	यातायात
ROADS	मार्ग
TERMINAL CENTRES	यातायात केन्द्र
GRADE CROSSING	ग्रेड क्रॉसिंग
OTHERS	अन्य
WATER BODIES	जलाशय
AGRICULTURE	कृषि



नगर तथा ग्राम नियोजन विभाग मध्य प्रदेश भोपाल

के. कपिलेश  
मुख्य नगर नियोजक एवं अपर संचालक  
नगर एवं ग्रामीण सेवा नियोजन  
म.प्र. भोपाल