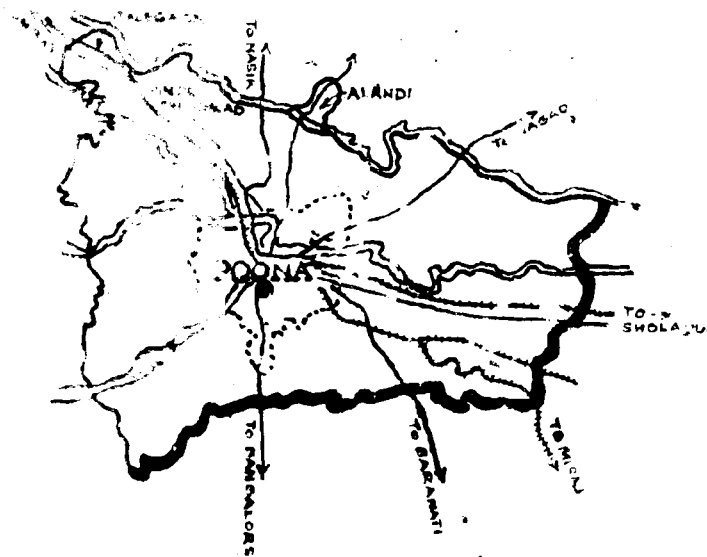


REGIONAL PLAN FOR POONA METROPOLITAN REGION.

1970 - 1991



PART-I SURVEYS

POONA METROPOLITAN
REGIONAL PLANNING
BOARD.



REGIONAL PLAN FOR
POONA METROPOLITAN REGION
1970 - 91

PART I - SURVEYS

copy without maps.

F O R E W O R D .

The dimensions of physical environment have been getting inflated to such a degree in the metropolitan areas - that a new urban scale has come into being. Population explosion sustained by all the metropolitan areas in the world was also registered in the Metropolitan Regions of India including Poona by the spread, sprawl and scatter of rapidly occurring - new development and growth of slums as well as by the transformation of old city. The Government of Maharashtra thought it expedient to guide such new development by establishing Metropolitan Regional Planning Boards endowed with the task of preparing Metropolitan Regional Plans.

It is our great satisfaction that we have participated in a share of planning for future of Poona Region. The Poona Metropolitan Regional Planning Board has, after gathering necessary basic data by means of planning surveys and their analysis and study through groups of experts and persons interested in allied fields, prepared a ~~Regional~~ Regional Plan for the Poona Metropolitan Region. The plan amongst others emphasises the necessity of establishing a new satellite township at Pimpri-Chinchwad industrial area to absorb the population growth consequential to the committed industrial activity in that area as also provide for the promotion of new growth in the other areas of the region. It stresses the necessity for long term plans and gives a programme for the next Five Year Plan during which period some of the very important recommendations could be carried out. Some of the recommendations would require statutory execution, while others are suggestions to various existing local bodies and departments to be considered or acted upon.

L.G. RAJWADE,
Chairman,
Poona Metropolitan Regional
Planning Board, Poona.

...oOo...

- ACKNOWLEDGEMENT -

The Board acknowledges with gratitude the co-operation and help extended by all the Government/Semi-Government departments, Institutions, - Associations and Local Bodies who readily supplied - the information required in connection with the various surveys and studies included in this report. It is heartening that the Study Groups appointed by the Board took great pains and showed considerable interest in preparing their reports about the various - matters referred to them and deserve our appreciation. We also extend our thanks to the Manager, - Government Photozinc Press, Poona for making available the printed copies of the maps and charts very promptly.

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SK/-

POONA METROPOLITAN REGIONAL PLANNING BOARD
REGIONAL PLAN FOR THE POONA METROPOLITAN
REGION

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CHAPTER I: HISTORICAL DEVELOPMENT AND PLANNING BACKGROUND.

I. HISTORICAL :

"Few towns are better situated than Poona. Strategically placed at the gateway of the Deccan from Bombay and the coastal strip, endowed with an excellent climate and a setting of much scenic beauty, with abundant sources of water for urban requirements close at hand, the town-ship naturally well drained into the basin of the Mula-Mutha river system across the entire greater Poona area, with a history to be proud of and considerable present day importance in political and social fields, Poona is well placed to merit the legend "Queen of the Deccan".

1.2 The above is an extract from the preface to the Report of the Outline of Master Plan for Greater Poona of the Municipal Corporation by Late Shri.S.G.Barve, the then Municipal Commissioner, Poona Municipal Corporation. The report was published in 1952 when Poona was given the status of a Corporation and was showing a trend for rapid growth and industrialisation.

1.3 Poona is known as the "Queen of Deccan" on account of its historical, cultural and political importance in the Deccan. Historically known as 'Punyapur', it is the cultural centre of Maharashtra.

1.4 The earliest reference of Poona is found in the copper plate inscription of Rashtrakuta Kings in the 8th Century A.D. After the Rashtrakutas, Poona passed under the Yadav Kings. In 1294 A.D. it came under Mohamedan Rule. Barayan Arab developed small town which came to be known as Kasabe Poona. It was situated on the Southern bank of the Mutha river in the Southern portion of present Kasaba Peth. The Arabas constructed the fortification.

1.5 In 1637 when it came under Shahaji, it had grown with habitation in areas of present Kasaba, Shanwar, Sonwar and Revdwar peths. Shivaji came to reside in Poona in about 1640. In 1656 it came in possession of Shivaji. The real progress of Poona may be said to have been started during the times of the Chatrapati Shivaji. The trend continued during the time of Peshwas during the 18th century. The fort of Shanwarwada was built in 1730. During the regime of Peshwas the town expanded into a city along the Southern bank of the Mutha river. The population of Poona reached about one and a half lacs in the Peshwa period and the

area of Poona was then about six sq.miles. After the fall of Maratha power, the development of Poona was temporarily on the decline.

1.6 At the beginning of the British Rule in 1818 ; the estimated population of the Poona City was about one lac. In 1825, it was about 1,25 lacs, while in 1851, it decreased to 73,000. After 1850, various improvements were introduced. The Poona-Bombay Railway line was established in 1856. Poona Municipality was formed in 1857. These factors helped to increase the population to 84,000 in 1860.

1.7 The construction of Khadakwasla Dam was undertaken in 1867 as a result of a severe famine and the same was completed in 1869, to serve as a source of water supply to Poona City and the cantonments. This contributed a great deal to the development of the city.

1.8 The Poona Suburban Municipality was established in 1884 to look after the suburban development taking place in the areas to the North of Poona City near about Poona and Bhamburda (now known as Shivaji-nagar) Railway stations. A paper mill at Mundhawa was started in 1885. In 1886, the meter gauge section of the Southern Railway from Poona to Miraj started functioning.

1.9 Poona regained its importance by the end of the 19th century as the seasonal capital of the erstwhile Bombay Presidency and as a military centre under the British Rule. It also gained considerable importance as an educational centre and many outstanding educational and research institutions were established. The Britishers developed the area around the city as the Head-quarters of the Southern Command and the cantonment town grew on the eastern side of the old city. Unfortunately, however, during the years 1885 to 1920, the development of Poona received a set-back due to epidemics such as plague and influenza.

1.10 After 1920, however, Poona has been practically free from any epidemic. The continuous growth of educational facilities attracted a large number of students from the other areas to Poona for higher education. The

climatic conditions and other amenities of the city life also attracted a large number of pensioners to settle in Poona after retirement, and the city therefore came to be known as the home of pensioners and students. Although Lakdi Pool (the present Sambhaji Bridge) was first constructed as back as in 1761 and the Fergusson College, established in 1885, there was not much residential development across the river till 1920. The areas like Erandwana and Bhamburda on the left bank of - Mutha river developed after 1920.

1.11 In the span of 60 years, from 1881 to 1941, the - population increased steadily from about 1 lac to about 2.76 lacs. The installation of the Defence industries near Poona to a large extent during the Second World War, resulted in - the sudden rise of the population of Poona City. There was an additional influx of refugee population as a result of the partition of the Country immediately after Independence. Besides the influx of the refugee population, some population rise was also due to extension of Municipal area to include the Suburban Municipality. In 1950, the Poona Municipality and the Suburban Municipality were merged together and the Poona Municipal Corporation was established. Consequently, during the decade 1941-1951, the population of the Poona City suddenly increased from about 2.76 lacs to about 4.81 lacs i.e. by 74% in a decade.

1.12 After Independence, a new industrial era commenced in the development of the town. The development of an industrial area at Hadapsar in the year 1956 by the Poona Municipal Corporation, coupled with Octroi concessions, facilitated industrial and ancillary development in that part of the city. After the establishment of 'Hindustan Anti-biotics Ltd.' at Pimpri, considerable industrial development has taken place nearabout that factory on the Bombay-Poona Rail-Road corridor outside the Poona Municipal Corporation limits. The industrial growth was accelerated in the Pimpri-Chinchwad centre near Poona, mainly because of its proximity and its easy accessibility to Bombay and also due to restrictions imposed by the State-Government on the industrial development in Greater Bombay.

1.13 The establishment of the National Defence Academy, the National Chemical Laboratory, Poona University, & expansion of Central Water and Power Research Station etc. in and around Poona City during the last two decades, have also contributed a great deal towards the growth and expansion of the city. The population of the Poona Municipal Corporation area increased from 4.81 lacs in 1951 to 5.97 lacs in 1961 i.e. by 23 per-cent.

1.14 The development of a large industrial area by the M.I.D.C. (Maharashtra Industrial Development Corporation) in the Pimpri-Chinchwad industrial complex near Poona since 1960 has attracted more industries. The unprecedented floods, due to the breach of Panshet Dam in 1961, affected a number of families living in the areas on the river banks. Thereafter, rapid extension of the city has been taking place on all sides to house the flood affected families as also the increased population. The boundaries of the Poona Municipal Corporation were further extended in 1962 to include certain additional areas.

1.15 During the last two decades Poona has grown as an important industrial centre in the Maharashtra State next to Bombay, manufacturing a variety of industrial and consumer goods. At present Poona City and its surrounding region has become a centre of diverse functions such as administrative, industrial, educational, commercial, military etc..

PLANNING BACKGROUND:

1.16 Poona City has been, in general, more fortunate than many other Indian cities in having secured a somewhat orderly and planned growth in the past within its Corporate limits. The Bombay Town Planning Act, 1915, enabled the preparation of Town Planning Schemes in respect of areas which were in the course of development. In 1946, the Act was made applicable to the Poona City and the Poona Municipality undertook the preparation of a Town Planning Scheme to control the development of the area on the West and the North of the old city, across the Mutha river. This

scheme was finalised in 1930. It was followed by 3 more Town Planning Schemes covering large areas in the course of development on the southern and eastern parts of the city.

1.17 Though the above schemes helped considerably in controlling the new development on planned lines, no schemes could be undertaken in the built over portions of the old city, under the 1915 Act. The Municipality therefore, undertook several improvement and development schemes such as Tilak Road Scheme, Laxmi Road Scheme, Ganesh Road Scheme, Bajirao Road Scheme etc., to improve the existing communication in the old city as also to provide new avenues for traffic and development.

1.18 Although Poona City had a few planned town extension schemes as mentioned above, these extensions were, however, not conceived as a part of a comprehensive Master Plan. Poona had attained a great deal of importance in the Fifties and was on the verge of considerable degree of industrialisation during the post Independence era. Immediately after the Poona Municipal Corporation was established, it was considered necessary by the Corporation to prepare a Master Plan for the Poona City with a view to outline and regulate its future growth on scientific and systematic basis. An outline Master Plan of Greater Poona area was prepared by the Corporation for the first time in the year 1952 and the same was finalised in 1955. This Master Plan, however, did not have any legal backing and could not, therefore be implemented and enforced as desired.

1.19 The Bombay Town Planning Act, 1954, which came into force from 1st April 1957 made it obligatory on every Local Authority to prepare a Development Plan for the entire area within its jurisdiction. In 1958, the Poona Municipal Corporation, therefore, undertook the preparation of a fresh Development Plan for its area, under the provisions of the said Act and submitted the same to Government for sanction in 1964. The Development Plan for the Poona Municipal Corporation area was sanctioned by the State Government in 1966.

1.20 Although the Development Plan of the Poona Municipal Corporation provided a basis for a limited land use planning approach, it was not adequate to control the development outside the Corporation area. During the Sixties, the development of Poona had gone far beyond the Corporation limits.

Considerable industrial development was taking place outside the Corporation limits. This unguided urban expansion and industrial development brought in serious problems of ribbon development, uni-directional commuting-traffic etc. It was, therefore, felt necessary to initiate a more integrated and co-ordinated development of a Metropolitan Region as a whole, falling within the influence of the Poona City.

1.21 Considering the need and urgency of Regional Plans for the growing Metropolitan centres of Bombay and Poona, the State Government set up a committee under the Chairmanship of Dr.D.R.Gadgil to formulate broad principles of regional planning for the Bombay-Panvel and Poona regions. The Committee in its report submitted to Government in 1966, recommended inter alia, the enactment of Regional Planning Legislation, enabling Regional Planning Boards being set up for the preparation of Regional Plans and also their execution. The recommendations of the Committee led to the enactment of the Maharashtra Regional and Town Planning Act, 1966, which amongst other matters, provided specifically for the creation of Regional Planning Boards to prepare statutory Regional Plans for the various regions. Under the provisions of this Act, the Poona Metropolitan Region was established by Government on 7th July 1967, with its limits more or less as recommended by the Gadgil Committee. The Poona Metropolitan Regional Planning Board was constituted on the 10th of August 1967, as a Planning Authority for the planning of the Poona Metropolitan Region. The Board is composed of the representatives of the Local Bodies included in the Region and persons having special knowledge and ~~prax~~ practical experience in the field of Town and Country Planning, Engineering, Transport, Industries, Commerce or Agriculture.

Regional Planning Board:

1.22 The Powers and Duties of the Regional Planning Board as specified under Section 8 of the Maharashtra Regional and Town Planning Act, 1966, are as under :-

a) to carry out a survey of the Region, and

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- prepare reports on the surveys so carried out;
- b) to prepare an existing land use map, and such other maps as may be necessary for the purpose of preparing a Regional Plan;
- c) to prepare a Regional Plan;
- d) to perform any other duties or functions as are supplemental, incidental or consequential to any of the foregoing duties, or as may be prescribed by regulations.

1.23 The Regional Plan is generally to deal with land-use, ways of communication, sanitation, green belts and park areas, and public transportation. According to Section 14 of the Act, the Regional Plan shall indicate the manner in which the available land in the region should be utilised to the best advantage of the community, having regard to both its present and prospective needs. The Regional Plan may provide for all or any of the following matters :-

- a) allocation of land for different uses, general distribution and general locations of land and the extent to which the land may be used as residential, industrial, agricultural or as forest or for mineral exploitation;
- b) reservation of areas for open spaces, gardens, recreation, zoological gardens, nature reserves, animal sanctuaries, dairies and health resorts;
- c) transport and communications, such as roads, highways, railways, waterways, canals and airports, including their development;
- d) water supply, drainage, sewerage, sewage disposal and other public utilities, amenities and services including electricity and gas;
- e) reservation of sites for new towns, industrial estates and any other large scale development or project which is required to be undertaken for proper development of the Region or new towns;
- f) preservation, conservation and development of areas of natural scenery, forest, wild life, natural resources, and landscaping;
- g) preservation of objects, features, structures or places of historical, natural, architectural or scientific interest and educational value;
- h) areas required for military and defence purposes;
- i) prevention of erosion, provision for afforestation or reforestation, improvement and re-development.

of water front areas, rivers and lakes;

j) proposals for irrigation, water supply and hydroelectric works, flood control and prevention of river pollution;

k) the relocation of population or industry from over-populated and industrially congested areas and indicating the density of population or the concentration of industry to be allowed in any areas.

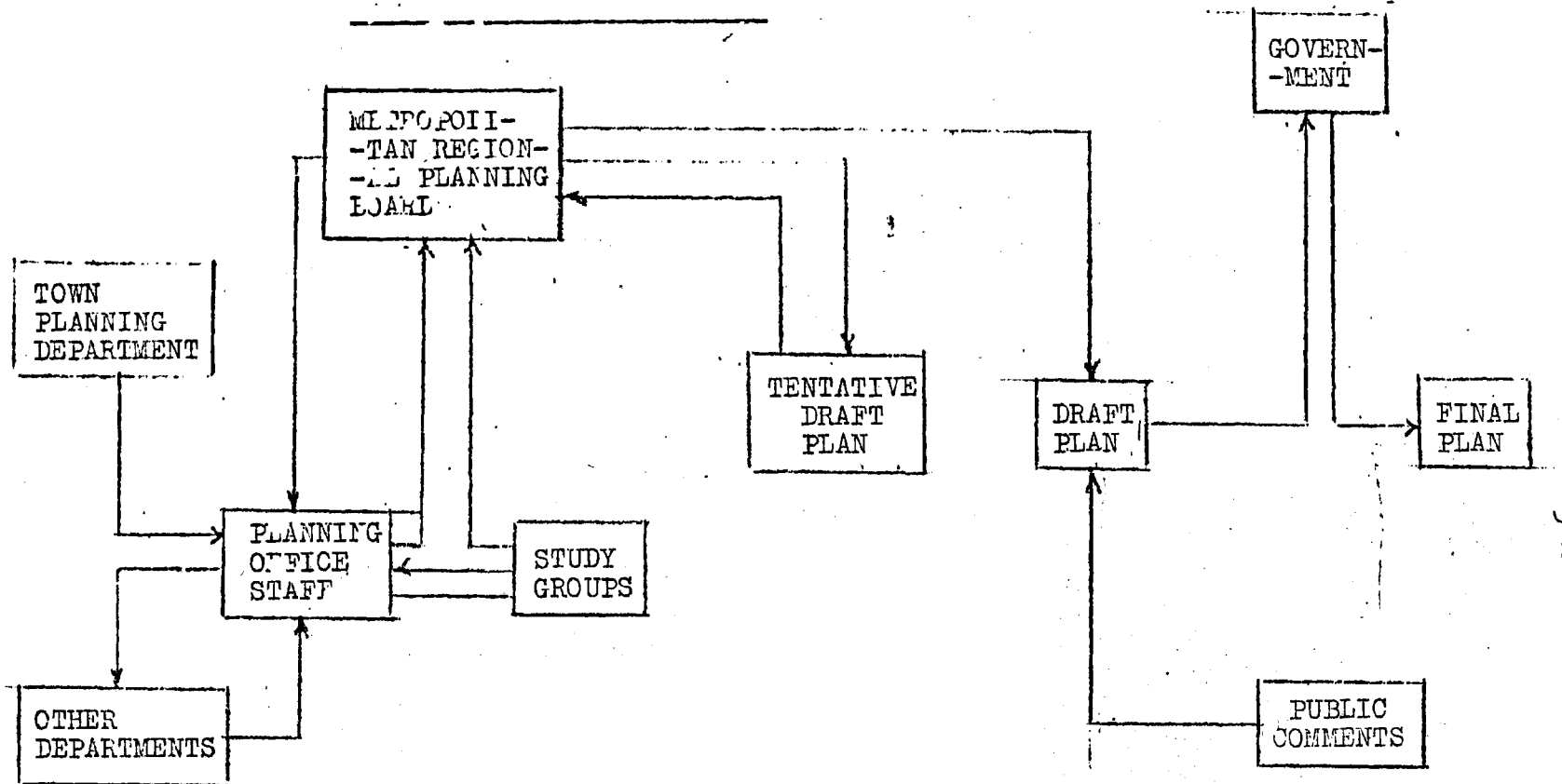
1.24 The Technical Secretariat provided to the Board by the Town Planning and Valuation Department, undertook various investigations and surveys of the physical, social and economic conditions in relation to the development of the planning area and perspective studies relating to the different aspects of the development of the region. It assembled and analysed the information collected and prepared a number of reports on the present state of development and prospective needs of the area.

1.25 The Regional Planning Board started its functioning from 26th August 1967, when it was inaugurated and its first meeting held. In its subsequent meetings, the Board took a review of the various surveys and studies undertaken and completed by the Technical Secretariat Staff and discussed the various developments taking place in the region. In its earlier meeting, the Board set up a number of Study Groups to go into the details of the different aspects of the development of the region. The Board appointed Study Groups on the subjects of Demography, New Towns, Industries, Transport and Communications, Land-use and Housing. These Study Groups collected, verified and analysed the required data in connection with their work and submitted their reports to the Board for its consideration. The same were discussed in the meetings of the Board and were accepted subject to certain modifications. The proposals framed in the Regional Plan take full account of all the conclusions of the various Committees and Study Groups, considered and accepted by the Board.

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PLANNING PROCESS



CHAPTER II: THE LAND.

2.1 An 'Urban Region' is neither the urban counterpart of a rural region, nor simply an overspill of the city, nor merely a territorial unit. According to the general consensus among experts, an urban region is a highly significant entity for the purpose of physical planning, comprising of the city core and surrounding areas having common social and economic problems, and whose structure and functioning is capable of being deliberately shaped by public policies. It is a new form of civilised life, based upon an organised pattern of settlement within the region, making economically available and readily accessible, a wide range of opportunities to its population.

2.2 The Gadgil Committee in its Report (vide para 2.41) suggested the following criteria for the limits of a Metropolitan Region.

- 1) " The area over which the activity of the Urban Core is already intimately affecting the socio-economic life " and
- 2) " The surrounding area over which it appears necessary to plan integrated development of the future."

The Committee also suggested that the Metropolitan Region must be large enough to contain within itself all the requirements for current operations and future developments of the very large Metropolitan core and must be small enough to make the planning of homogeneous frame-work of physical growth practicable. In view of the above criteria, the Committee recommended that the Poona Metropolitan Region may be defined as follows :-

" In the South, it will be bounded mainly by hill ranges; in the West, partly by the hills and partly by the large military settlement at Dehu; on the North, the boundary may be marked by the flows of the Indrayani and the Bhima in the open country; in the East no sharp physical features help to indicate limits and the administrative limits of Haveli Taluka are considered suitable."

2.3 The Poone Region as notified by the State Government in July 1967 followed generally the above limits as recommended by the Gadgil Committee covering an area of about 1316 sq.km. (503 sq.miles). Apart from the large Urban conurbation of Poona, it included 106 villages inhabited by over 1½ lacs people.

2.4 After reviewing the above limits, the Regional Planning Board came to a view that the municipal town of Talegaon-Dabhade

on the North-West, Alandi town on the North and a few villages around Sinhgad Fort should be included in the region. Accordingly, at the instance of the Board, these additional areas were included in the region by the State Government in May 1968. The Metro-politan Region so extended, covers an area of nearly 1513 sq. km. (584 sq. miles) and extends to a distance of about 19 to 32 km. (12 to 20 miles) from the heart of the Poona City. It could be contended that the economic influence of the Poona City extends much beyond the present limits. But for physical planning, the Board has confined its attention to this small Urban Region on practical considerations.

Location & Description of the area (Maps 3 & 4)

2.5 The area of the Poona Metropolitan Region lies generally between 18°-20' and 18°-45' North latitude and 73°-39' and 74°-13' East longitude. Poona city which is the Urban core of the region is situated at a distance of 177 km. (110 miles) to the South-East of Bombay on Bombay-Poona National Highway (No. 4). The region comprises the administrative jurisdiction of the following four Talukas of the Poona District to the extent given below :-

- i) Entire Poona City Taluka, ii) About 90 percent of the Revenue jurisdiction of Haveli Taluka covering 99 villages, iii) A small portion of Maval and Mulshi Talukas covering 6 villages and 20 villages respectively and iv) only one urban settlement, viz. Alandi from Khed Taluka.

Besides the Poona Municipal Corporation, it includes the area within the jurisdiction of 2 Municipal Councils viz. Talegaon-Dabhade and Alandi; 3 Cantonment Boards-Poona Cantonment, Dehu Road Cantonment, Kirkee Cantonment; three non-municipal towns - Bhosari, Pimpri, Chinchwad* and 127 villages. The area of the region included within the administrative jurisdiction of the above six urban local bodies is nearly 216 sq. km. (about 84 sq. miles); while the non-municipal territory covers an area of about 1297 sq. km. (about 500 sq. miles). The area within the jurisdiction of these urban local bodies represents 14 percent of the region. The administrative areas of the above six urban local bodies are as under :-

*A New Township Municipal Council has since been created for Pimpri-Chinchwad area from March 1970.

Table No.1

Areas of Urban Local Bodies

Name of the Local Body	Areas in...	
	Sq.km.	Sq.miles.
1	2	3
1. Poona Municipal Corporation.	138.85	53.61
2. Talegaon-Municipal Council.	10.36	4.00
3. Alandi Municipal Council.	2.59	1.00
4. Poona Cantonment.	13.99	5.40
5. Kirkee Cantonment.	13.20	5.10
6. Dehu Road Cantonment.	37.43	14.45
Total:	216.42	83.56

2.6 Poona City is situated almost at the centre of the region. The Municipal town of Alandi on the Northern boundary of the region and Katraj Ghat on the Southern boundary of the region are about 20 km. and 16 km. respectively from Poona city. Talegaon Dabhade on the North-Western boundary of the region, and village Urali-Kanchan on the Eastern boundary of the region are at a distance of about 32 km. from Poona City. Poona Cantonment is sandwiched between the old Poona City on the West and the extended area of the Poona Corporation from village Hadpsar on the East, Kirkee Cantonment is located on the North-Western fringe of the Corporation limits. Dehu-Road Cantonment is situated at a distance of 24 km. from Poona city to its North West on the Bombay-Poona National Highway. Bhosari, Pimpri and Chinchwad are the three contiguous towns situated in a belt of 11 to 19 km. from Poona city on Bombay-Poona National Highway and Railway between the present Poona Municipal Corporation limits and Dehu-Road Cantonment. A major industrial area known as Pimpri-Chinchwad industrial complex is located in this belt.

Topography of the land :

2.7 Poona City is located at the confluence of the Mula and the Mutha- the two tributaries of the Bhima in the broader Krishna drainage system. The Mula and the Mutha flow in a

maturely dissected lava topography. Though the elevation of the Poona City is 549 metres (1800 ft.) above Mean Sea Level (MSL) there are several residual flat-topped hills like Hanuman Tekdi, Parvati hills, Ram Tekdi, Parnakutti Hill etc. with an elevation varying between 625 metres (2050 ft.) and 671 metres (2200 ft.) above the M.S.L.

2.8 There are five rivers flowing through the region viz. the Mula, the Mutha, the Pawna, the Indrayani and the Bhima. The former 4 being the tributaries of the Bhima, the region forms the western part of the larger Bhima basin. A notable feature of these rivers is their direction of flow from West to East or South-West to North-East. River Indrayani flowing along the Northern Boundary of the region joins the Bhima, coming from the North at Tulapur- 27 km. from Poona. The Bhima thereafter forms the Northern boundary of the region. River Mula is joined by Pawna at Dapodi to the North-West of the Poona City. Further down towards East the Mula and the Mutha form confluence within Poona City. The combined flow of these rivers then passes to the East dividing Eastern half of the region into two. These non-perennial rivers are the rushing torrents in the monsoon, washing down soil from their upper course.

2.9 The Western and the Southern parts of the region are formed by the Eastern off-shoots of the Sahyadri hill ranges. The hills are spread North-South upto South-Western strip of the region beyond which they gradually take to East and along the Southern boundary of the region they follow West-East course. The Southern hilly area of the region is about 2 to 3 km (1 to 5 miles) in breadth. It penetrates into the Southern and the Western limits of the Poona City. The penetrating hills have elevation varying between 625 to 671 metres (2050 feet to 2200 ft.) above M.S.L. The hills rise higher and higher towards the South-West. The hilly region at the extreme South is over 610 metres (2000 ft.) above M.S.L. Sinhagad Fort 19 km. (about 12 miles) to South-West of Poona City at 1317 metres (4320 ft.) above M.S.L. is one of the highest hills in the region. These hill ranges yield gradually to plains sloping from West to East and from South-West to North-East (Maps 5, 6 & 7)

2.10 The area of the region located to the East of Poona City, bordered by the hill slopes on the South and the Mula-Mutha river on the North including a strip of land on the other bank of the river consists of fertile plains with an altitude between 549-610 meters (1800-2000 ft) above M.S.L.

2.11 The area to the North of Poona City between the flow of the Mula-Mutha rivers and the Indrayani-Bhima rivers is generally flat with altitude varying between 533 to 564 metres (1750-1850 ft) above M.S.L., although occasionally flat topped hills and their plateaus of 610 to 671 metres (2000-2200 ft) above M.S.L. are encountered. A ridge in between separates this area into two parts. The Northern part slopes towards the Indrayani river, while the Southern part slopes towards the Mula-Mutha river.

2.12 The land between the two rivers - the Mula and the Pawna running from Aundh village to Jambe village is fairly flat and broad with altitude between 564-579 metres (1850-1900 ft) above M.S.L. and there is a general slope towards the Pawna river on the Northern side. On the Southern side the slope is steeper. A low ridge in between separates the strip of flat land in two halves. The Western half is a little higher than the Eastern half.

Geology and Soil types :

2.13 The base rock throughout the region is of Deccan Trap Basalts. Two types of Basalts are commonly seen. -The non-vesicular type which is hard, compact, tough and medium to fine grained is found around Yervada and around Chinchwad-Akurdi. The vesicular type or amygdular type is comparatively soft and breaks more easily. The rock exhibits a tendency to spheroidal weathering by exfoliation of roughly concentric shells. The weathered round masses thus formed known as 'boulders' are a common sight along foot hills of the hilly areas. Another structural feature is prismatic and columnar jointing notably observed in step like series of perpendicular escarpments on the hill sides and slopes of narrow winding hills. Building stone is the only commercially important mineral in the region and is exploited extensively in the areas of Yervada;

Erandwana-Pashan and Chinchwad-Akurdi. Weathered traps and gneiss are used for roads. Vesicular rocks are used for foundation of buildings. Zeolites and Calcite are collected and after powdering used as 'rangoli'. All along the river side, there is deep fertile black soil immensely suitable for agricultural development. The soil of the region is generally brown copper coloured in the West and somewhat black in the East.

Climate:

2.14 Due to its location in the Eastern slopes of the Ghat at a high altitude above sea level and the prevalence of Western breeze, the climate of the region is dry, breezy and invigorating. The region experiences three seasons, the cold from November to February, the hot from March to May and the wet from June to October. The Western Monsoon winds bring rains with them. The region gets rainfall around 715 mm(28 inches) spread over about 50 rainy days in an year. However, the rainfall is not even. The hilly areas in the West and South of the region have more rainfall of the order of 1124 mm(44 inches) in about 68 rainy days. The maximum rainfall in the Khadakwasala catchment is about 6350 mm (250 inches). The lowest recorded temperature is 1.7° C in January and the mean maximum is about 36° C in the months of April and May. On very rare occasions the temperature as high as 43.3° C has been recorded in these months. A remarkable feature of the Poona winds is their rarity from the South. The prevailing direction of the wind is North-West and West in January and February, With the onset of Summer, the direction of wind changes to the West and continues to be Westerly till the end of Monsoon. October is a month of variable winds. Easterly winds prevail predominantly in November and December.(Map 8).

Water Resources of the region(Map 9):-

2.15 The region comprises of the basins of the five rivers, the Mula, the Mutha, the Pawna, the Indrayani and the Bhima. Major portion of the region includes the river basins of the Mula, the Mutha and the Pawana and a very small area along the Northern boundary of the region forms part of the Indrayani and the Bhima

basins. According to the surveys carried out by the Water Resources Investigation Circle of the State Government, the water potential of the various river basins and schemes for their development are as under :-

i) The Mutha Valley: The total catchment area of this valley upto the confluence with the Mula river is 743 sq.km. (287 sq.miles i.e. 74,300 hectares). The catchment upto the Khadakwasala Dam is 508 sq.km (196 sq.miles i.e. 50,800 hectares). The total 75 percent dependable water assets of this river upto its confluence with Mula are 1068 mcm (37726 Mcft). The 75 percent dependable yield available at the Khadakwasala Dam site on the Mutha river is about 1056 mcm (37,270 Mcft). A storage of 297 Mcm (10,500 Mcft) is under construction at Panshet, upstream of Khadakwasala and an additional storage of 368 Mcm (13,000 Mcft) is also proposed to be constructed at Varasgaon. These schemes would afford irrigation facilities to the farming areas in the Eastern part of Poona District.

ii) The Mula Valley : The total catchment area of this river upto its confluence with the Mutha is 777 sq.km (300 sq.miles i.e. 77,700 hectares). The total 75 percent dependable yield from this valley is 618 Mcm (21837 Mcft). A storage is provided at Mulshi by the Tata Hydro Electric Company for power generation. This storage, however, falls outside the region. The reliable yield at Mulshi Dam site (catchment area 249 sq.km. 96 sq.miles i.e. 24,900 hectares) is 498 Mcm (17,600 Mcft).

iii) The Purna Valley : The total catchment area of this valley is 505 sq.km (195 sq.miles, 50,500 hectares) and the total 75 percent dependable water assets are 336 Mcm (11,874 Mcft). A storage of 283 Mcm (10,000 Mcft) is under construction near village Phagne on this river where the catchment area is 119 sq.km. (46 sq.miles, 11,900 hectares). It is likely to be completed by 1970. Out of this storage, it is proposed to utilise about 48 Mcm (1704 Mcft) for water supply to the industrial area of Pimpri-Chinchwad industrial complex. About 97 Mcm (3408 Mcft) is proposed to be utilised for irrigation purpose by Lift

* Master Plan of the Bhima Valley for development of water resources for irrigation and power- June 1959 by Shri B.S. Apte, Superintending Engineer, Water Resources Investigation Circle.

Irrigation. For this purpose, a number of weirs are proposed to be constructed on the river. About 137 Mcm (4832 Mcft) has been reserved for a contemplated storage at Ujni on the Bhima river about 145 km. to the East of Poona City. The remaining 57 Mcm. (2056 Mcft) would be the transit and evaporation losses.

iv) The Indrayani Valley :- The catchment area of the Indrayani river upto its confluence with the Bhima river is 1069 sq.km. (413 sq.miles, 1,06,900 hectares). It has a large water potential of 941 Mcm (33,261 Mcft) of 75 percent dependable yield. Water potential in the upper reaches of this river is used for hydro-power generation by the Tatas. At present there are no new storage schemes on this river which would benefit the areas in the region.

v) The Bhima Valley :- Only a small portion of this river valley falls in this region. There are no schemes of water utilisation on the river which would benefit the area of the region.

2.16 In addition to these there are two small storage tanks, one at Katraj, 10 km South of Poona City, having a capacity 0.57 Mcm (20.25 Mcft) and the other at Pashan 10 km West of Poona, having a capacity of 1.54 Mcm (54.74 Mcft). Besides, these major river valleys which are the principal sources of water supply, there are a few sites in the region, which are suitable for construction of percolation tanks. The Zilla Parishad, Poona has undertaken schemes to utilise such sites by constructing percolation tanks.

2.17 Poona City is thus very fortunate in its surrounding rivers having a total water potential of nearly over 1416 Mcm (50,000 Mcft). The storage works in operation in these river valleys and those under construction would provide irrigation facilities to a large area in the region, besides meeting the water supply needs of increasing population and industries.

2.18 For the purpose of presenting results in this report the region is divided into 8 sub-regions on the basis of natural features and communication routes. Area, number of settlements and population in these eight sub-regions are indicated in Map 10.

Land Utilisation :-

2.19 For the purpose of land use analysis, different categories of landuses have been adopted for the Municipal and Non-Municipal areas of the region. As already stated, out of the total 1513 sq.km.(584 sq.miles) area of the region about 216 sq.km.(84 sq.miles) representing 14 percent area of the region is under the administrative jurisdiction of 6 Urban Local Bodies viz. the Poona Corporation, three Cantonments and the Talegaon and Alandi Municipal Councils. This Urban Local Government territory had a population of about 7.56 lacs according to 1961 census representing 76 percent of the total 9.93 lacs population of the region. The remaining 1297 sq.km.(about 500 sq.miles) area of the region is predominantly rural and includes 127 villages and the three non-municipal towns of Bhosari-Pimpri and Chinchwad.

2.20 The Land Utilisation data for the year 1966-67 for the non-municipal territory of the region was obtained from the Revenue Records(Village Form No.I) under the categories such as non-agricultural land, crop land, forests, pastures, water courses, roads and railways etc. Some data regarding the land use pattern of the Poona Corporation area, Talegaon-Dabhade town and Alandi town was collected by the Town Planning Department recently at the time of preparation of their Development Plans and the same has been used for the purpose of this study. This data is available in the detailed Urban Land use categories such as : residential, commercial, industrial, public and semi-public, parks , communications, vacant land, water courses etc. It is proposed to discuss in the beginning the broad landuse pattern of the region as a whole and then the landuse in the areas of Poona Corporation, Talegaon and Alandi Municipal Councils. The three cantonments and Khadakwasala(National Defence Academy) are excluded from the consideration of land use planning, as they cannot be fully integrated

physically, socially or economically with the other urban areas their separate existence being required for other considerations.

2.21 There are certain physical constraints which have influenced the development pattern of the region. The hill ranges the South and West put a limit to a large scale development on that side. On the other hand the existence of good communication facilities by Rail and Road and the availability of Waste land in the North-Western direction towards Bombay have attracted a large industrial development on the Poona-Bombay Rail-Road axis. A major Urban development outside Poona Corporation limit exists on this axis. The existence of large contiguous stretches of fertile agricultural land irrigated by the Mutha Right Bank Canal in the South-Eastern part of the region on Sholapur Road has facilitated extensive agricultural development in that area. Further, large areas in the region on all sides of the Poona Corporation area except on the South are occupied by the Defence Service Establishments and Cantonments. This has also imposed certain limitations on the other development.

Broad Land Utilisation in the Region (1966-67)
(From Revenue & other Records) Map 11.

Table No. 2

Type of Landuse	Area		Percentage
	Hectares	Areas.	
1	2	3	4
1. Non-agricultural land.	8,803	21,739	5.82
2. Grazing land (Pastures)	17,437	43,086	11.52
3. Crop land irrigated.	8,610	21,276	5.68
4. Crop land non-irrigated.	84,138	2,07,895	55.58
5. Forests.	11,567	28,583	7.64
6. Defence and Cantonments.	15,312	37,837	10.12
7. Roads and Railways.	2,103	5,197	1.39
8. Water-sheets.	3,410	8,427	2.25
Total:	1,51,380	3,74,040	100.00
i.e.	1513.80	584.43	
	sq.kms.	sq.miles.	

Non-Agricultural use :-

2.22 This category of use comprises of land for residential, industrial, commercial and the constructional activities and also includes such items as quarries, cemeteries etc. It, however, excludes the area devoted to Defence Establishments, Cantonments and Communication routes, as those have been separately accounted for. About 6 percent of the area of the region is under non-agricultural use. Besides the Poona City which is a highly developed urban centre, non-agricultural activities are centred around the Pimpri-Chinchwad-Bhosari industrial complex and the other important urban and rural centres like Talegaon-Dabhade, Alandi, Loni-Kalbhori, Urali-Kanchan, Theur, Khadakwasala etc. Out of the total 8803 hectares under the non-agricultural use in the region, the Poona Corporation area accounts for nearly 4128 hectares representing 47 percent of the total area under non-agricultural use. Pimpri-Chinchwad-Bhosari complex is the next developing area where the non-agricultural use was 2463 hectares representing 28 percent of the total area under non-agricultural use. On a reference to the land use map it would be noted that the non-agricultural use for constructional activities generally follows the communication routes.

Grazing Lands (Pastures) :-

2.23 Pasture is an important land use from the point of view of livestock development as grazing land. About 174 sq.km. or 67 sq.miles representing 12 percent of the area of the region is devoted to this use. It is mainly associated with the hill slopes in the Southern, Western and North-Eastern undulating portion of the region. Nearly 60 percent of the pasture land in the region is located in the Eastern half of the region between the Nasik Road and the Satara Road. Large areas under pasture lands (about 500 hectares or more) are observed in the villages of Mon, Lavale, Ambegaon Khd., Kharadi, Wagholi, Lokogaon, Charholi, Moshi, Bhavadi and Lonikand,

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a majority of which (6 No.) is located in sub-region "G" covering the area between the Ahmednagar Road and the Nasik Road. About 73 percent of the area under pastures is privately owned, while the remaining 27 percent is Government land.

Agriculture :-

2.24 The total cultivable land in the region is 92748 hectares (229174 acres) representing 61 percent of the area of the region. A major portion of this falls in the Eastern part of the region in the sub-regions E, F, and G between the Sarara Road and the Nasik Road, comprising low flat land along the river banks.

Forests :-

2.25 The area under forests is 11567 hectares (28583 acres). This forms roughly, 8 percent of the total area of the region and 9 percent of the non-municipal area of the region. This is very meagre as compared to the National percentage of 17.29 and the State percentage of 17.54. Forests are mostly confined to the middle slopes of steep hills, valleys and the plateaus being under cultivation. About 70 percent of the forest land is concentrated on the hill slopes on the Southern boundary of the region. The rest of the forest is also mostly located on the hill slopes, spread over different parts of the region. Large areas of forest lands (about 500 hectares or more each) are observed in the villages of Agalambe, Nandoshi, Donje, Ghera Sinhaged, Katraj, and Lonikalbhor, all of which are located in the area to the south of the region between the Mula river and the Mula-Mutha river.

Defence :-

2.26 Large areas in the Poona Metropolitan Region are held by Defence Services Establishments and Cantonments. About 10 percent of the total area of the region is under Defence establishments and Cantonments. Excluding three Cantonments, this works out to about 5.4 percent. Further, these establishments are scattered on all sides of the Poona Corporation Limits. Besides these large Defence occupied areas, two firing areas one to the North-East from village Lohogaon and the other

to the North-West from villages Kothrud and Pashan have been declared as 'Danger Zones'. The extensive areas thus occupied by the Defence have restricted the availability of land around Poona City so much needed for the urban expansion.

Water Sheets :-

2.27 The Water Sheets occupy an area of 3410 hectares (8427 acres) in the region. Of these the Khadakwasla lake is only about 18 km from Poona to its South-West and Katraj lake is located at 10 km from Poona on the Southern boundary of the Poona Corporation. Both these lakes are accessible from Poona by good roads. These water surfaces enhance landscape in the countryside and are powerful attractions, & therefore provide good opportunities for development of the some area nearby/picnic spots for recreation.

Land Utilisation Pattern in the Municipal area :- (Map 12)
Poona Municipal Corporation.

2.28 The total area within the jurisdiction of the Poona Municipal Corporation is about 138 sq.km.(53.61 sq.miles,13839 hectares). Of this the land utilisation data as collected in 1965 was available for an area of about 111 sq.km.(43 sq.miles, 11100 hectares). The information about the land utilisation pattern for the remaining area was collected in 1966-67. With the addition of these two data, the total land utilisation structure of the Poona Municipal Corporation area as in the year 1966-67 would approximately be as under :-

Table No. 3

Sr.No.:	Use.	Area		Percent age to developed areas	Percent age to the total area.
		Hectares	Acres		
1	2	3	4	5	6
1. Residential.		1,560	3,847	23.82	11.24
2. Commercial.		136	335	2.07	0.98
3. Industrial.		454	1,122	6.95	3.28
4. Defence.		1,827	4,514	27.96	13.20
5. Public & Semi-Public.		1,885	4,659	28.85	13.57
6. Public Parks & Open spaces.		93	229	1.43	0.67
7. Roads & Railways & Gliderdrome.		533	1,441	3.92	4.21
8. Total Developed area.		6,538	16,147	100.00	47.15
9. Water courses.		406	1,003		2.93
10. Vacant land (including Agriculture, hills, Forests, quarries etc.)		6,895	17,025		49.92
		<u>13,839</u>	<u>34,175</u>		<u>100.00</u>

2.29 In the light of the above table, it could be contended that an area of about 6895 hectares (17025 acres) i.e. about 50 percent of the total Corporation area was vacant and undeveloped at the time of the survey. All this area is not, however, suitable for development. An area of 1795 hectares (4436 acres) is unsuitable for development, as it consists of good agricultural land, hill slopes and hill tops and areas around the air-field.

2.30 A substantially large area within the Corporation-13.20 percent is occupied by Defence. Defence Establishments, occupy mainly the peripheral areas of the Corporation from villages Aundh-Pashan, Dapodi, Lohogaon and Wanwari etc.

2.31 Almost the same area of land as under Defence (13.57 percent) is devoted to public and semi-public use. This is mainly due to the existence of a good number of educational and other public institutions and administrative buildings with large open areas in their possession, such as the Poona University, Agricultural College, National Chemical Laboratory, Central Jail at Yervada etc.

2.32 The extent of land devoted to industries within the Corporation is 3.28 percent of the total Corporation area. The major industries are located in Hadapsar-Mundhawa area on the East and Dapodi-Dapodi area on the North. Other isolated industrial pockets are at Kothrud, Lohogaon and on the Satara Road.

2.33 The areas of the various land use activities within the Corporation limits are generally centred around the following localities:-

1. Administrative Function - centred around the Central Building near Poona Railway Station and Corporation Building near Shivaji-Nagar Bridge.
2. Educational University Campus at Ganesh Khind and other various Colleges distributed in different parts of Poona City i.e. Ferguson Road, Karve Road, Tilak Road, Jangali Maharaj Road, etc.
3. Whole-sale and Retail Markets and professional offices - Central Wards of the old city.
4. Defence Establishments-Villages Pashan, Aundh

Lohogaon, Dapodi etc. i.e. mostly on the fringe of the Corporation area.

5. Industries Near villages Hadapsar and Mundhawa on Poona-Sholapur Road in the East; Yervada, Lohogaon on Ahmednagar Road in the North-West, Parnvati, Gultekadi at Satara-Road in the South, near Poona Railway Station in villages Dapodi, Bopodi on Poona-Bombay Road. in the North-West and at Kothrud-Erandwana in the West mainly located on the fringe of the Corporation area.

6. Residential-The residential areas are naturally spread all over the Corporation area.

Land Utilisation pattern of Talegaon-Dabhade Municipal Town 1968.

Table No.4.

Type of landuse.	Area		Percentage to total
	Heetares.	Acres.	
1	2	3	4
1. Residential.	190.93	470.18	18.56
2. Commercial.	11.77	28.12	1.11
3. Industrial.	21.64	52.16	2.05
4. Public Use and Public utilities.	30.20	74.66	2.94
5. Roads & Railways.	44.40	109.72	5.32
6. Watersheets.	50.28	124.25	4.88
7. Agriculture.	134.29	331.84	13.05
8. Hills.	19.41	47.06	1.89
9. Vacant & fallow land.	512.21	1265.72	49.84
10. Defence.	13.98	34.55	1.36
Total :	1029.11	2539.16	100.00
Say	10.29 sq.km.	i.e. 4.00 sq.miles.	

2.35 It would be seen from the above, that nearly 50 percent of the area within the limits of the Talegaon-Dabhade Municipal Council is vacant. Talegaon is famous for its good climate and has developed as a health resort. The present development of the town is in a scattered form mainly near the Railway Station, near the Bombay-Poona Road and the gaathan proper.

2.36.

Land Utilisation Pattern of the Alandi Municipal Area(1966)

Table No.5

Classification of landuse.	Area		Percentage to total.
	Hectres	Acres.	
1	2	3	4
1. Residential.	10.60	25.12	3.74
2. Commercial.	0.90	2.22	0.36
3. Public and Semi-Public.	5.60	13.85	2.06
4. Roads & Communications.	10.56	26.10	3.89
5. Industries.	0.41	1.02	0.15
6. Public Utilities.	1.21	2.98	0.44
7. Vacant & Fallow.	13.12	32.42	4.83
8. Agricultural.	200.98	496.65	74.03
9. Watersheets.	15.17	37.50	5.59
10. Hills and Forests.	13.33	32.95	4.91
Total..	271.88	670.81	100.00
	2.72 i.e. sq.km. about 1 sq.mile.		

Source:- Poona Branch, Town Planning Department.

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3.1 The knowledge of the basic, demographic, economic and social trends is essential for the understanding and appreciation of the problems in regard to the Urban and Rural Development. The Poona Metropolitan Region with an area of 1513 sq. km. (1605 sq. km. as per census record) had a population of 9.95 lacs according to 1961 census representing a density of 619 persons per sq. km. Though the area of the region constitutes 0.5 percent of the Maharashtra State and 9.69 percent of the area of the Poona District, the total population of the region (1961) constitutes 2.5 percent of the State Population and 40.3 percent of the District Population. In 1951, the area of the region had a population of about 7.99 lacs. The decennial percentage increase for 1951-61 is about 24 while that for 1941-51 it was 64 indicating a very abnormal growth. In terms of absolute numbers the increase in the region's population between 1951-61 has been about 1.94 lacs and that during 1941 and 1951 about 3 lacs.

Urban and Rural Population and Settlement Pattern :

3.2 According to 1961 census the urban population of the region was about 81 percent (8 lacs) living in 11 towns and the Poona City. The remaining 19 percent of the population was rural, living in 127 villages. Out of 12 urban centres in the region the Poona City with a population of 5.97 lacs is the largest. Poona and Kirkee Cantonments are the next in size with a population of 66,000 and 58,000 respectively. The population of Talegaon-Dabhade, Dehuroad and Pimpri is between 10,000 to 20,000 while, that of Bhosari, Chinchwad, Dapodi and Khadakwasla is between 5,000 to 10,000. Alandi is the smallest urban centre with a population of 3,000. In 1962, the area of the Poona Corporation was extended to include Dapodi and Lohogaon. Consequently, there are now only 9 towns in the region outside the Poona Municipal Corporation area.

3.3 Out of the total 127 villages in the region about 50 per cent (63 villages) are having a population of less than 1000. Of these as many as 23 are having a population less than 500. About 30 percent (39 villages) have a population between 1,000 to 2,000. About 10 percent (30 villages) have a population between 2,000, to 3,000. Only 9 percent (12 villages) have a population above 3000. Out of these last 12 villages, 5 have a population over 5,000.

Trends of growth of major urban centres:

3.4 The Table No.1 on the next page shows the trends of growth of Poona City, Suburban area, Poona Cantonment and Kirkee Cantonment as recorded in the previous census years. Strictly comparable records from year to year are difficult to deduce owing to boundary changes, but the analysis of trends from available records will be of some help to understand the problem. (Map 13)

3.5 The earliest population record of Poona is for 1780 when it is roughly estimated to have numbered about 1.50 lacs souls. The first reliable record for the population of Poona is for 1851 when it numbered 73209. The introduction of railway in 1856 raised this number to 80,000 in 1864, and since then there has been a steady advance to 90436 in 1872 and 99622 in 1881.

3.6 During the period of 1891 to 1901 (vide Table No.1) it is observed that the population in Poona City Municipal City, Poona and Kirkee Cantonments has declined while that in the Suburban Municipality and the villages in the suburbs has recorded rise. In this decade a plague epidemic was reported and this might have been the result of people residing in Poona Municipal area and Poona and Kirkee Cantonments ^{having} shifted to the surrounding parts to escape from the plague.

3.7 It is seen from Table No.1 that the population of Poona City & Suburban area increased from about 1 lac in 1881 to about 2.58 lacs by 1941. In 1950, Poona Municipal Corporation was established. The increase in Population in the Poona Municipal Corporation area during the period 1941 to 1951 was abnormal, recording a rise of about 2.05 lacs or about 74%. This sudden increase in population was mainly due to the large influx of refugee population immediately after the independence and the installation of Defence Industries near Poona during the 2nd World War. The growth of population in this area during 1951-1961 was normal viz. about 23%. It is important to note here that considering the entire region according to the studies conducted by the Demography Study Group, the growth in the region's population during the decade 1951-1961 can be explained as more or less due to natural increase and there has not been any substantial net migration to this region. The

T A B L E N o. 1

Year : Poona City Municipality : Suburban Municipality : Poona Cantonment. : Kirkee Cantonment. : Suburbs.*											
Population	Percentage increase.		Population	Percentage increase.		Population	Percentage increase.		Population	Percentage increase.	
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	
1881	99622	-	-	-	30129	-	8012	-	6577	-	
1891	118790	+19	7506	-	35094	+16	10951	+37	9758	+48	
1901	111381	- 7	9694	+29	32777	-7	10797	- 1	10814	+11	
1911	117256	+ 5	9918	+ 2	32226	- 2	14028	+30	15273	+41	
1921	133227	+14	14233	+43	32726	+ 2	18357	+31	16253	+ 6	
1931	162901	+22	16676	+17	35807	+ 9	16302	-13	18501	+14	
1941	237560	+46	19994	+20	40447	+13	26285	+61	26947	+46	
<u>Poona Municipal Corporation:</u>											
1951**	480982	+74	-	-	59011	+46	48552	+85	5538	-	
1961**	597582	+23	-	-	65838	+12	58496	+20	622	-	

Source : Socio Economic Survey of Poona, Part-I(1945) by Dr.D.R.Gadgil and census reports of 1941,1951 and 1961.

* Suburbs include areas of those villages in the Poona City Taluka which are not covered either in Poona City Municipality or Suburban Municipality.

During 1950 ^{Poona} Municipal Corporation was established by amalgamating Poona City Municipality, Suburban Municipality and the entire villages of Bopodi and Yervada (excluding the areas forming part of Kirkee Cantonment), Kasbe Poona (excluding the area forming part of Poona Cantonment) Parwati, Erandvana, Shivajinagar and Aundh from Poona City Talukas, parts of the villages of Ghorpadi, Mundhava and Wanawadi from Poona City Taluka and the entire village of Hinge Budruk of Eaveli Taluka. Thus the population during 1941 for the area of Poona Municipal Corporation might have been 276306. This figure is worked out for compiling the percentage growth of population of Poona Municipal Corporation area during 1941-51 decade which is 74% as shown above. Similarly in 1961 census Wanawadi & Ghorpadi villages were included in Poona Municipal Corporation for census enumeration. Population of 4490 of these two villages has been included in 1951 census population (480982 + 4490 = 485472) of Poona Municipal Corporation for working out the percentage increase in population during the decade 1951-1961 which is 23%

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Density and distribution(Maps 14 & 15):

3.8 Within the region the population follows more or less the pattern as determined by the physical environment. The central core of the region consisting of Poona City and Cantonments of Poona and Kirkee accommodate about 73 per-cent of the total population and about 90 percent of the urban population although it occupies about 10 percent of the total area of the region. The density for the urban and rural area in the region is respectively, 2552(6610) and 145(376) persons per sq.km.(sq. mile). The densities for the Poona City and Cantonments of Poona and Kirkee are quite high viz.between about 4,500 to 5,000 persons per sq.km.* The distribution of towns and villages in the region in various density groups is given in the Table below:

T A B L E NO.2.

Density of population per sq.km. (in ranges)	Town (No.)	Village (No.)
1	2	3
1.Below 100	-	50
2.100-300	2	61
3.300-500	2	11
4.500-1000	3	2
5.1000-2000	1	-
6.2000-4000	-	-
7.4000-above.	4	-
Total :-	12	124(for 3 villages data is not available.)

3.9 In general the region can be divided into two distinct economic zones on the basis of population distribution and economic development. The existence of good transport facilities and the availability of plain waste land has facilitated a large industrial development and consequently the urban development in the North-Western part of the region. It is worth noting that a majority(7 out of 12)of the urban centres in the region is located within the belt extending from Poona City to Talegaon-Dabhade town on the North-Western side. A continuous stretch of fertile agricultural land and the extension

*For calculating densities, area as per census record is adopted.

of irrigation facilities in the South-Eastern part of the region on Sholapur Road has made possible extensive agricultural development and, therefore, a more stable rural population in that area. A majority of the villages (viz. 7 out of 12) with a population above 3000 are located in this part. The rugged topography, inadequate transport and communication facilities and interior type of land in the North-Eastern part of the region has resulted in a sparse development in that area. All the villages (viz. 18) located in this part of the region between the Mula-Mutha river, the * Bhima river and the Nagar Road are with a population below 2,000 each. The existence of hill ranges in the South and West have restricted the development in that part of the region.

Sex ratio, Age structure and Family size :

3.10 Sex ratio :- As per 1961 census the region has 879 females per 1000 males, as against the respective sex ratio of viz. 936 and 944 for the Maharashtra State and the Poona District. In 1951 the number of females per thousand males in the region was 854. The lower sex ratio for the Poona region as compared to that of Poona District and the State may perhaps be attributed to the large proportion of the student population in Poona City compared to other areas. (Map 16)

Age Structure:-

3.11 The children population upto 14 years of age constitutes about 49 percent of the total population while the persons in the working age group 15 to 59 form 56 percent of the total population. The rest 4 percent population is above 60. (Map 17).

Family size :-

3.12 According to 1961 census the 9.93 lacs population of the Poona region is distributed in 1.89 lacs households (families). The average family size in the region thus works out to be 5.24, vis-a-vis the corresponding State figure of 5.12. The average family size in the urban and rural areas of the region as per 1961 census is 5.19 and 5.48 respectively.

The table below gives the population density, sex ratio and average family size of the different areas of the region.

T A B L E NO.3.

Name of the area.	Area in sq.km. (in sq. mile).	Population (in sq. mile).	Density per sq. km. (per sq. mile)	Sex ratio (females per 1000 males).	Average Family size.
1	2	3	4	5	6
1. Poona City.	130.28 (50.3)	597562	4587 (11880)	884	5.14
2. Poona, Kirkee & Dehu road - Cantons.	53.09 (20.5)	143576	2704 (7004)	801	5.82
3. Bhosari Pimpri-Chinchwad.	52.58 (20.3)	27975	532 (1378)	910	4.51
4. Other Urban Areas.	79.77 (30.8)	36625	459 (1189)	766	4.56
5. Total Urban Areas.	315.72 (121.9)	805738	2552 (6610)	864	5.19
6. Total Rural Areas.	1289.04 (497.7)	187016	145 (376)	947	5.48
7. Grand Total.	1604.76 (619.6)	992754	619 (1602)	879	5.24

Occupational Structure :-

3.13 An economic structure of the region is generally reflected in its occupational pattern. Out of the total population of 9.93 lacs, about 1/3rd i.e. 3.33 lacs are workers. A broad occupational classification of workers in the region is given in the Table No.4 (Map 18)

-32 -
TABLE NO.4.

Area :	Workers engaged in.....				Total workers.	Non-work-ers.	Total Populat-ion.
	Agril. and allied activities including household industry.	Manuf-acturing indus-tries.	Constru-ction, trade, commerce, transport, storage and communi-cation.	Other Servi-ces.			
1	2	3	4	5	6	7	8
1. Poona City.	15059 (2.52) (8.44)	44279 (7.40) (24.83)	59709 (10.00) (33.49)	59276 (9.92) (33.24)	178323 (29.84) (100.00)	419239 (70.16)	597562 (100.00)
2. Poona, Kirkee & Dehu road Cantonments.	1479 (1.02) (3.12)	6585 (4.59) (13.87)	6308 (4.40) (13.28)	33105 (23.06) (69.73)	47477 (33.07) (100.00)	96099 (66.93)	143576 (100.00)
3. Khadakwasla town.	4 (0.05) (0.17)	32 (0.44) (1.38)	50 (0.68) (2.16)	2228 (30.29) (66.29)	2314 (31.46) (100.00)	5041 (68.54)	7355 (100.00)
4. Bhosari, Pimpri, Chinchwad.	1924 (6.88) (22.20)	3341 (11.94) (38.54)	1592 (5.69) (18.37)	1811 (6.47) (20.89)	6668 (30.98) (100.00)	19307 (69.02)	27975 (100.00)
5. Talegaon Dabhode.	639 (5.44) (18.76)	495 (4.21) (14.53)	946 (8.04) (27.76)	1327 (11.30) (38.95)	3407 (28.99) (100.00)	8346 (71.01)	11753 (100.00)
6. Other Urban areas*.	887 (5.06) (13.63)	1195 (6.82) (18.36)	1047 (5.98) (16.08)	3380 (19.30) (51.93)	6509 (37.16) (100.00)	11008 (62.84)	17517 (100.00)
*(Dapodi, Lohogaon, and Alandi Dewachi).							
7. Total urban areas.	19992 (2.49) (8.10)	55927 (6.94) (22.57)	69652 (8.64) (28.24)	101127 (12.55) (40.99)	246698 (30.62) (100.00)	559040 (63.18)	805738 (100.00)
8. Total rural areas.	68987 (36.89) (79.44)	6605 (3.53) (7.61)	5243 (2.80) (6.04)	6002 (3.21) (6.91)	86837 (46.43) (100.00)	100179 (153.57)	187010 (100.00)
9. Total for the region.	88979 (8.96) (26.68)	62532 (6.30) (18.75)	74895 (7.54) (22.46)	107129 (10.80) (32.11)	333535 (33.60) (100.00)	659219 (66.40)	992754 (100.00)

Note :- Figures in bracket indicate percentage to total population and percentage to total workers.

3.14 Percentage of workers to the total population in the region is 33.60 vis-a-vis percentage of workers to the total population of Maharashtra State and Poona District which are respectively 47.91 and 42.69. The lower number of workers is the result of the greater number of dependents. This is mainly due to the lesser number of female labourers within the working age-group. In the region out of the total working population of 3,33,535, female workers are 70,495 which constitutes 21.13 per-cent of the total working force. Percentage of workers to the total population in urban areas is about 31. Percentage of workers to the total population in rural areas is about 46. This is due to relatively greater dependence on agricultural occupation in the rural areas in which considerable proportion of women labourers and children of ages between 0 to 14 of both the sexes are also engaged in addition to men.

3.15 About 18.8 percent of the working population of the region is engaged in manufacturing activities. The corresponding percentage of urban area (22.7 percent) is 3 times more than that of rural area (7.6 percent). About 27 percent of the working population in the region is engaged in agricultural and allied activities. The corresponding percentages for urban and rural areas are 8.00 and 79.00 respectively. Persons engaged in activities other than agriculture and manufacturing in the region constitute 55 percent. The corresponding percentages for urban and rural areas are 69 and 13 respectively. The 3 cantonments of Poona, Kirkee and Dehu-road and Khadakwasla town in the region are naturally service towns. The predominant function of Poona City, Logogaon and Talegaon-Dabhade towns according to 1961 census is also 'Services' while that of Alandi is 'Agricultural and Services'. The predominant function of Chinchwad, Pimpri and Bhosari is 'Industrial'.

Estimate of future population :-

3.16 Estimates of future population of an area are based largely on assumptions. The Poona Metropolitan Regional Planning Board decided that the proposals for the Regional Plan should be made for the projected increase in population by 1991. The Study Group on Demography has worked out a set of projections of population by using the method of extrapolation by means of geometric rate of increase. Firstly, the percentage growth -

Rate of population of towns and villages in the region - during 1951-61 was worked out. Some town groups were formed by grouping together certain geographically contiguous urban centres and adjoining villages indicating high growth rates. The town groups so formed are Poona City town group which includes the present Poona Municipal Corporation area and some villages around it, the Pimpri-Chinchwad-Bhosari town group comprising Pimpri, Chinchwad, Bhosari and some surrounding villages like Akurdi, Nigadi, Ravet, Thergaon, Rahatani etc. Village Varsale and the rural part of Talegaon were grouped with Talegaon town as these were bound to get merged with Talegaon town in future. Alandi (rural) was grouped with Alandi town. Similarly geographically contiguous villages in the region having more or less the same growth rates were also grouped together to form suitable village groups.

3.17 The population projections of various town groups and village groups thus formed were worked out by applying the decennial growth rate of population of each such group during 1951-61 and extrapolating the same to 1971, 1981 and 1991. The Study Group on Demography first worked out the population projections for the region on the assumption that the sex ratio and the economic characteristics of the different areas in the region would continue to remain the same as in 1951-61. According to these preliminary estimates the population of the Poona region was expected to increase from 9.93 lacs in 1961 to about 19.36 lacs in 1991. According to the provisional projections worked out by the Gadgil Committee the population of the Poona region was expected to increase to 19.4 lacs in 1991 for the area of the region then defined i.e. excluding Talegaon-Dabhade, Alandi and few villages subsequently included.

3.18 The preliminary projections of population worked out by the Study Group on Demography on the assumption that the economic characteristics of the different areas of the region would continue on the lines of 1951-1961 pattern, however, had to be checked up, particularly for

the areas in and around Poona City wherein substantial industrial activity was committed. On checking up the relevant prospects, demographic projections with employment/and expansion of corresponding industries in the region, it is estimated by the Demography Study Group that the population of the Poona region might increase from 9.93 lacs in 1961 to about 26.13 lacs by 1991. Assuming that during the period of 30 years from 1961 to 1991 there would be a uniform growth in the population in the various areas of the region, the expected population of the region by 1971 and 1981 would be 13.11 lacs and 17.96 lacs respectively. The distribution of the projected population for the various areas in the region as indicated by the Demography Study Group is as under :-

T A B L E NO.5. (Maps 19 & 20)

(Population figure in lacs).

Name of the Area.	1971		1981		1991	
	Population.	Density per sq.km. (per sq. mile)	Population.	Density per sq.km. (per sq. mile)	Population.	Density per sq.km. (per sq. mile)
1	2	3	4	5	6	7
1. Poona City & surrounding areas.	8.48	2436 (6310)	11.14	3200 (8289)	14.62	4200 (10878)
2. Poona and Kirkee Cantonments.	1.44	5284 (13687)	1.66	6107 (15821)	1.92	7060 (18288)
3. Bhosari-Pimpri Chinchwad and surrounding areas.	0.84	1126 (2917)	2.23	2990 (7743)	5.89	7896 (20451)
4. Dehuroad Cantonment.	0.21	829 (2148)	0.24	926 (2399)	0.27	1034 (2678)
5. Talegaon Bakhade and surrounding areas.	0.16	514 (1332)	0.19	619 (1602)	0.23	744 (1928)
6. Anand Town Group.	0.05	345 (894)	0.06	456 (1182)	0.08	603 (1563)
7. Other urban areas.	0.58	418 (1083)	0.67	494 (1280)	1.46	523 (1355)
8. Total urban areas.	11.56	1890 (4896)	16.19	2465 (6384)	24.47	3050 (7924)
9. Rural areas.	1.55	157 (405)	1.77	187 (483)	1.66	204 (534)
10. Total for the region.	13.11	817 (2116)	17.96	1119 (2899)	26.13	1628 (4217)

3.19 The item No.7 of the above table mentioned as 'Other Urban Areas', comprises besides National Defence Academy, Khadakwasla (population 7355) the following 12 rural centres in the region which are expected to cross a population of 7,500 by 1991, and, therefore, emerge as new urban centres. The total population of these emerging centres is expected to be 1.39 lacs by 1991. The table below gives the 1961 and 1991 estimated population of these centres:-

T A B L E NO. 6.

Name of the Centre.	1961 Population	: 1991 Population.
1	2	3
1. Fursungi.	6,346	16,710
2. Loni-Kalbhor.	8,321	21,911
3. Manjri-Bk.	7,547	19,873
4. Charholi Bk.	6,094	9,295
5. Urali Kanchan.	4,997	13,158
6. Dhayari.	2,900	7,648
7. Naigaon.	2,868	7,552
8. Theur	3,193	8,408
9. Urali-Dewachi.	3,547	9,340
10. Wagholi.	4,900	7,770
11. Chikhali.	3,091	8,696
12. Moshi.	2,958	8,322
Total :	56,762	1,38,683

Urban and Rural Population by 1991 :-

3.20 Out of 26,13 lacs of expected population by 1991 about 24.47 lacs or 94 percent is expected to be urban, while the remaining 1.66 lacs or 6 percent is expected to be rural. The Table No.5 also indicates expected density pattern in the various areas in the region. (Maps 21, 22 & 23).

Sex and Age composition -1991:-

3.21 On the basis of assumption that the male, female composition in various urban and rural areas as revealed-

in the 1961 census would remain the same, it is expected that there would be 13.85 lacs males and 12.28 lacs females in the total 26.13 lacs population by 1991. The sex ratio of the projected population in the region is thus expected to be 885 females per thousand males as against 879 observed in 1961. The proportion of population within 0 to 14 age group in the total population is expected to drop down to 38 percent of the 1991 total population from the 40 percent of the total population as observed in 1961. The population within the working age-group (i.e. 15 to 59) is expected to increase to about 15.11 lacs or 58 percent of the total 1991 population as against 5.52 lacs or 56 percent of the total population as observed in 1961.

3.22 The projections for the population within different age-groups by 1991 for the various areas in the region as worked out by the Demography Study Group on the basis of the past trends are given in the Table below :-

TABLE NO.7.

Sr.No.	Name of the Area	Sex	Distribution of 1991 projected population in age-groups (in lacs)			
			0-14	15-59	60+	Total
1	2	3	4	5	6	7
1. Poona City and surrounding areas.		Male	2.92	4.55	0.30	7.77
		Female	2.82	3.72	0.31	6.85
		Total	5.74	8.27	0.61	14.62
2. Bhosari-Pimpré-Chinchwad and surrounding areas.		Male	1.16	1.80	0.12	3.08
		Female	1.16	1.53	0.12	2.81
		Total	2.32	3.33	0.24	5.89
3. Rest of the Urban areas.		Male	0.81	1.27	0.08	2.16
		Female	0.35	1.37	0.08	1.80
		Total	1.16	2.64	0.16	3.96
4. Total Urban Areas.		Male	4.89	7.62	0.50	13.01
		Female	4.33	6.62	0.51	11.46
		Total	9.22	14.24	1.01	24.47
5. Rural areas.		Male	0.36	0.44	0.04	0.84
		Female	0.35	0.43	0.04	0.82
		Total	0.71	0.87	0.08	1.65
6. Total for the Region.		Male	5.25	8.06	0.54	13.85
		Female	4.58	7.05	0.55	12.28
		Total	9.93	15.11	1.09	26.13

Projected occupational pattern - 1991 (Map 24)

3.23 The working population in the region by 1991 would be about 8.38 lacs or 32 percent of the total projected 26.13 lacs population. Amongst workers those engaged in manufacturing activities would be about 2.16 lacs or 26 percent which indicates an increase of about 1.50 lacs over the corresponding 1961 census figure. The population engaged in agricultural activities is estimated to be only about 74,000 by 1991 (or about 9 percent of the total workers). The table below gives distribution of population in broad occupation groups for various areas in the region, according to 1961 census and as estimated for 1971, 1981, and 1991. :-

TABLE NO.8.

(Figures in lacs).

Sr.No.	Name of the area	Year	Workers engaged in			Total work-ers.	Non-wor-kers	Total popu-lation.
			Agric-ult-ure.	Indu-stry (other than house hold)	Other occupat-ions.			
1	2	3	4	5	6	7	8	9
1.	Poona City and sur- -rounding areas.	1961	0.12	0.48	1.37	1.97	4.49	6.46
		1971	0.09	0.63	1.83	2.55	5.93	8.48
		1981	0.11	0.83	2.41	3.35	7.79	11.14
		1991	0.14	1.09	3.17	4.40	10.22	14.62
2.	Bhosari-Pimpri-Ch- -inchwad and surr- -ounding areas.	1961	0.02	0.04	0.04	0.10	0.22	0.32
		1971	0.01	0.11	0.16	0.28	0.56	0.84
		1981	0.01	0.50	0.43	0.74	1.49	2.23
		1991	0.01	0.78	1.17	1.96	3.93	5.89
3.	Poona, Kirkee and Dehu Road Canton- -ment.	1961	0.01	0.07	0.40	0.48	0.95	1.43
		1971	0.01	0.08	0.46	0.55	1.10	1.65
		1981	0.01	0.09	0.53	0.63	1.27	1.90
		1991	0.01	0.10	0.61	0.72	1.47	2.19
4.	Rest of the Urban areas.	1961	0.02	0.01	0.05	0.08	0.16	0.24
		1971	neg- -ligi- -ble.	0.04	0.14	0.18	0.41	0.59
		1981	0.01	0.06	0.20	0.27	0.65	0.92
		1991	0.02	0.13	0.38	0.53	1.24	1.77
5.	Total Urban areas.	1961	0.17	0.60	1.86	2.63	5.82	8.45
		1971	0.11	0.86	2.59	3.56	8.00	11.56
		1981	0.14	1.28	3.57	4.99	11.20	16.19
		1991	0.18	2.10	5.33	7.61	16.86	24.47
6.	Rural areas.	1961	0.54	0.03	0.14	0.71	0.77	1.48
		1971	0.52	0.05	0.15	0.72	0.83	1.55
		1981	0.59	0.06	0.17	0.82	0.95	1.77
		1991	0.56	0.06	0.15	0.77	0.89	1.66
7.	Total for the Region.	1961	0.71	0.63	2.00	3.34	6.59	9.93
		1971	0.63	0.91	2.74	4.28	8.83	13.11
		1981	0.73	1.34	3.74	5.81	12.15	17.96
		1991	0.74	2.16	5.48	8.38	17.75	26.13

Concluding remarks :-

3.24 The total expected agricultural employment in the region by 1991 would be about 74,000 as seen from the table - above. At present the total net cropped area in the region - is 92,035 hectares or 2,27,423 acres. This net cropped area is expected to remain more or less unaltered by 1991. Thus the ratio of the net cropped area per agricultural worker in the region by 1991 works out to be about 1.25 hectares or 3 acres. This indicates that there would be no surplus agricultural labour available in the region which would be eventually absorbed in the industrial field. It would, therefore, be fair to assume that the increase in population from 19.36 lacs (preliminary estimated) to 26.13 lacs (revised after taking into consideration the industrial activities in the region) i.e. 6.77 lacs would be the net migration in the region by 1991.

3.25 The projected population by 1991 of the 38 villages & towns in the Eastern Part of the region (as listed below in the Table No.9) works out to about 1.68 lacs of which about 10,400 would be the expected number of industrial workers. It would be necessary to provide some industrial area in this part of the region to provide local employment to these expected industrial workers.

T A B L E N O . 9 .

Name of the Town/village:	Population:	Name of the Town/:	Population
	by 1991.	Village.	by 1991.
1	2	1	2
1.Urali Dewachi(U)	9340	15.Khangaon Tek.	1342
2.Fursungi(U)	16710	16.Wagholi.(U)	7770
3.Manjari Br.(U)	19873	17.Wadgaon Shinde.	2818
4.Wadki.	6451	18.Bhawadi.	1194
5.Loni Kalbhor(U)	21911	19.Tulapur.	1379
6.Theur(U)	8408	20.Fulgaon.	1550
7.Alandi Chorachi.	3173	21.Lonikand.	3007
8.Naigaon(U)	7552	22.Kesnand.	2615
9.Tarde.	1187	23.Manjari Kh.	1810
10.Koregaon Mul.	2696	24.Kolwadi.	3177
11.Shindone.	2450	25.Sashte.	700
12.Walti.	1637	26.Wadebolai	2264
13.Urali Kanchan(U)	18158	27.Bakori.	1458
14.Bhaurapur.	437	28.Perane.	4251

Name of the Town; / Village		Population	
		by 1991.	
1	2	1	2
29. Wadhu Kh,	760	34. Pimpri Sandas.	3309
30. Dongargaon.	1911	35. Burkegaon.	1095
31. Sirswadi.	1666	36. Nhavi Sandas.	1993
32. Bhivari.	436	37. Hingangaon.	2337
33. Ashtapur.	2741	38. Sangvi Sandas.	1737

'U' means urban area.

CHAPTER IV.

Natural Resources.

4.1 This chapter deals with the information regarding natural resources such as Agriculture, Soil Conservation, Forest, Fisheries, Livestock and Minerals. This chapter does not include information regarding Population, Water and Power Resources, as the same have been discussed separately. The data pertaining to livestock population was collected for the entire area of the region. As regards other items, the data was collected for the areas excluding some urban areas, references to which have been made in appropriate paragraphs.

Agriculture:

Soil Classification:(Map 25)

4.2 As already noted, about 61 percent of the area of the region and about 66 percent of the total non-municipal area of the region is under agriculture. The agricultural land in the region has been grouped into 3 broad categories viz. 'A', 'B' and 'C' indicating good, medium and marginal or poor agricultural land respectively. The data regarding land classification has been compiled only in respect of the agricultural area of the region within the non-municipal territory and the same is presented in the Table below :-

TABLE NO. 1.

Soil Group	Area in Hectres.	Area in Acres.	Percentage
1	2	3	4
A	25880	63950	30
B	34949	86359	41
C	24669	60954	29
	<u>85498</u>	Total: <u>211263</u>	<u>100</u>

4.3 It would be seen from the above table that 30 percent of the cultivable area is good agricultural land, while 41 percent and 29 per cent fall under the categories 'B' and 'C'

...#2/-

respectively. About 34 per cent of the cultivable land from South-Eastern part of the region is class 'A' type i.e. good agricultural land. Large areas of the 'B' type lands are generally located in the North-Western part of the region, whereas substantial portion of the land in the Western part of the region is under the category 'C'. Broadly, the good agricultural lands are located in the plain portion along the river banks, whereas poorer quality lands are associated with the rugged relief and hill slopes. A study of the Land Classification (map 25) will also indicate the existence of the good agricultural land in the South-Eastern plain portion of the region on Sholapur Road and along the river banks.

4.4 All the cultivable land in the region falls under two categories viz. Jirayat (dry crop land) and Bagayat (irrigated land). Dry crop lands on account of their dependence on the monsoon are further divided into Kharif (early monsoon) and Rabi (late monsoon) lands. Kharif crops mature by the rains of South-West monsoon whereas, Rabi crops depend on South-West monsoon, dew and irrigation.

I r r i g a t i o n (Map 26)

4.5 About 7,840 hectares. (19,370 acres) of land in the region was under irrigation, through canals and wells, its percentage to the total cultivable area being 9. It is worth mentioning that about 53 percent of the irrigated area in the region is in the Sub-Region 'E' which covers area between the Satara Road and the Mula-Mutha river. This high percentage of irrigated area in this part of the region is mainly due to the Mutha Right Bank Canal. Next in order are the sub-regions covering areas between the Mutha river and the Satara Road and the Mula-Mutha river and the Nagar Road with percentage of irrigated area to the total irrigated area in the region between 10 to 12.

4.6 An additional area of 100 sq.km. (38.61 sq.miles) is expected to be irrigated under the various major and minor irrigation schemes during the next three or four years, thereby extending irrigation facility to more than double the present irrigated area. Out of 178 sq.km. (68.88 sq.miles) of

irrigable area in the region, the Mutha Right Bank Canal would irrigate nearly 91 sq.km.(35 sq.miles), i.e. nearly 51 percent of the total irrigable area in the region. The Pavana Lift Irrigation Schemes would irrigate 48.25 sq.km.(18.6 sq.miles) i.e. 27 percent of the total irrigated area of the region. The schemes of percolation tanks would irrigate a very small area of about 100 hectares(247 acres),while the existing other sources such as wells, lifts on the rivers would irrigate about 38.25 sq.km.(11.77 sq.miles). Map No.26 indicates the existing irrigated areas as also areas likely to be irrigated due to various irrigation projects envisaged.

Crop Pattern:(Maps 27 and 28)

4.7 As per information from the Season and Crop Report (1966-67), gross cropped area in the region was 99,645 hectares (2,46,227 acres) of which 7,610 hectares(18,804 acres) of land was cropped more than once; hence the net cropped area in the region comes to 92,035 hectares(227423 acres)¹. The percentage of gross cropped area to the total geographical area(1513 sq.km.) of the region worked out to be about 66. As per 1961 census, the working population dependent on 'Agriculture' in the region was about 70,760 or about 21 percent of the total working population. The ratio of net cropped area per agricultural labourer in the region, therefore, worked out to be 1.3 hectares or 3.2. acres.

4.8 The cropping pattern in any region is dependent on a number of factors, such as climate, soil, adaptability of different agricultural practices and technique etc. Crops are broadly classified as food crops and non-food crops. Food crops constitute Cereals, Pulses, Fruits and Vegetables, Sugarcane, Condiments and Spices. Non-Food crops constitute Oil Seeds, Fibres, Drugs, Narcotics and Fodder crops etc.

4.9 Table No.2 gives the area under different food and non-food crops in the region.

1. The agricultural area mentioned in para 2.24 & 4.2 does not tally with this figure which may be because the figure in para 4.7 covers some parts of the municipal areas.

Table No.2 (year 1966-67)

Sr.No.	Name of Crop.	Area(in hectares)	Percentage to total cropped area
1	2	3	4
1.	Rice.	2692	2.70
2.	Wheat.	890	0.89
3.	Bajra.	21543	21.62
4.	Khariif Jowar.	7633	7.66
5.	Rabbi Jowar.	26631	26.73
6.	<u>Total Jowar.</u>	34264	34.39
7.	Other Cereals.	259	0.26
8.	<u>Total Cereals.</u>	59648	59.86
9.	<u>Total Pulses.</u>	5439	5.46
10.	<u>Total Food Grains.</u>	65087	65.32
11.	Sugar cane.	698	0.70
12.	Spices.	517	0.52
13.	Fruits.	471	0.47
14.	Vegetables.	3287	3.30
15.	<u>Total Food Crops.</u>	77060	70.31
16.	Groundnut.	1351	1.36
17.	Other Oil Seeds.	1212	1.21
18.	<u>Total Oil Seeds.</u>	2563	2.57
19.	<u>Total Fibres.</u>	179	0.18
20.	<u>Total Drugs & Narcotics.</u>	23	0.02
21.	Fodder.	2679	26.89
22.	Flowers.	26	0.03
23.	<u>Total Non-Food Crops.</u>	29585	29.69
24.	<u>Gross Cropped Area.</u>	99645	100.00
25.	<u>Area sown more than once.</u>	7610	7.64
26.	<u>Net cropped area.</u>	92035	92.36

4.10 It can be seen from the above Table that about 70 percent gross cropped area was under food-crops as against 30 percent under non-food crops. The main crops of the region are Rabi Jowar and Bajra among the food crops which together occupied 48 percent of the total cropped area and Fodder among the non-food crops which occupied 27 percent of the total cropped area. The areas under Wheat, Sugar cane, Spices, Fruits, Groundnut, Fibres, Drugs and Narcotics were not very significant. Among the food crops, Cereals and Pulses constituted 60 and 5 percent of the total cropped area respectively. The cropping pattern in the region thus shows that the place of non-food crops is not significant in the agricultural economy of the region.

4.11 Jowar and Bajra are the staple crops of the region.

However, Bajra is a Kharif crop while 3/4 of the total Jowar was grown in the Rabi season. It is worth mentioning that nearly 70 percent of the total area under Bajra in the region was located in 'E' and 'F' sub-regions covering areas between the Satara and Nagar Roads along the banks of the Mula-Mutha river. Similarly, almost 50 percent of the area under Jowar was located in these sub-regions.

4.12 Percentage of area under Rice to the total cropped area of the region was only about 3.

This crop is mostly grown in the hilly portion of the region to the South with the help of monsoon and in the area in the East of region along the Mutha Right Bank Canal. Area under Sugarcane was hardly 0.7 percent of the total cropped area and it was mainly grown in the villages of Shivane, Nanded, Hadapsar, Mundhava and Manjri Bk.

4.13 Precise data for calculating agricultural production in the region is not available. However, an attempt has been made in presenting a very rough estimate of production for some crops on the basis of yield rates available for these crops for the Poona District as a whole. Value of production for these crops viz. Paddy and Rabi Jowar is estimated on the basis of the then procurement prices while that for Wheat, Bajra and Groundnut is estimated on the basis of the then prevailing prices in the Poona Market. These estimates of production and their value are presented in Table No. 3 along with corresponding figures for the Poona District. It is thus seen that the total annual value of production for Paddy, Wheat, Bajra and Rabi Jowar crops, which accounted for nearly 52 percent of the gross-cropped area and 87 percent of the area under Cereals was about Rs.1.58 crores.

Table No. 3
(Year 1966-67)

Sr. No.	Name of the Crop.	Poona Region		Poona District	
		Annual production (in Tonnes)	Value of production (in lacs Rs.)	Annual production (in tonnes)	Value of production (in lacs Rs.)
1	2	3	4	5	6
1.	Paddy.	1796	11.14	35300	218.86
2.	Wheat.	420	6.13	10200	148.92
3.	Bajra.	7088	85.76	60000	726.00
4.	Rabi Jowar.	9800	51.83	143500	803.60
5.	Groundnut.	270	12.61	17400	226.20

4.14 Fruits and Vegetables accounted for nearly 4 percent of the total cropped area in the region. Their cultivation is generally centred in the areas where facilities of irrigation are available. It is worth mentioning that more than 75 percent area under Fruits and Vegetables was concentrated in the villages around Poma within a radius of about 8 km. (5 miles). It is significant to point out that area under Fruits and Vegetables was more than about 200 hectares each in the villages of Hadapsar, Manjri Bk. Fursungi, Urali-Dewachi and Charholi Bk., all of which except Charholi Bk., are located in the area between the Satara Road and the Mula-Mutha river i.e. in Sub-Region 'E'.

4.15 The value of Fruits produced in the region was about 47.31 lacs. The principal fruits in the region are (1) Guava, (2) Citrus (Lemon and Mosambi) and (3) Grapes. Table No. 4.14 gives area under different fruits and their value of production in the region.

Table No. 4.

Sr. No.	Name of the fruit.	Area (Hectares)	Value of annual production (in Rs. 000)	Approximate value of annual production per Hectare (in Rs. 000).
1	2	3	4	5
1.	Grapes.	28	1218	43
2.	Citrus.	105	933	9
3.	Guava.	165	866	5
4.	Mango.	57	848	14
5.	Pomegranate.	58	415	7
6.	Custard apple.	39	293	8
7.	Chicku.	5	72	14
8.	Other fruits. (Jack fruit Papaya etc.)	9	81	9
Total:		472	4731	10

4.16 The area under Guava was 165 hectares of which as many as 93 percent was located in the sub-regions 'C', 'D' and 'E' i.e. area to the South of the Mula and the Mula-Mutha rivers. The area under Guava was quite significant (between 15 to 30 hectares) in the villages of Baner, Loni-Kalbhori, Dhayari, Nanded and Lawale. The area under Citrus Fruits like Lemon and Mosambi was 105 hectares in the region of which

75 percent was located in the sub-region 'E', 'F' and 'G' which are to the east of the central core of the region. Grapes are mostly cultivated in the sub-region 'E' i.e. area between the Satara Road and the Mula-Mutha river, where 77 percent area under grapes in the region was located. The area under Grapes was quite significant viz. 10 hectares in the Uralkanchan village. Almost all the area under Pomegranate was located in sub-region 'E' i.e. in the area to the South of the Mula-Mutha river, Alandi Chorachi and Wadki villages were the predominant Pomegranate growing centres in the region with 39 and 8 hectares of land respectively under this fruit. The areas to the South of Mula and the Mula-Mutha rivers are major Custard apple growing areas in the region. At Wadki village area under Custard apple was as high as 20 hectares. Areas under Jack fruit, Banana, papaya and Chicku fruits in the region are not significant. Mango cultivation was mainly observed in the hilly portion of the region in the South-West.

4.17. The area under flowers in the region was quite meagre viz. 26 hectares. Annual Value flowers produced in this area was about 1.05 lacs or about Rs.4 thousand per hectare. Flowers are produced on a very large scale in the villages of Charholi, and Loni-kalbhor. Alandi Chorachi, Baner Uralkanchan, Theur, Chikhali, Dehu and Lonikand villages are also significant flower producing areas.

4.18 The vegetable and fruit production of the region has market all over the region mainly Poona City, in addition to places like Lonavala, Paud, Talegaon, Dhamdhare and Wadgaon. Maval in the Poona District and Bombay outside the Poona District.

Soil Conservation:

4.19 To prevent soil erosion due to the rainfall and run off of the agricultural fields, programme of Contour Bunding and Terracing is being implemented in the State through the Department of Agriculture. Bunding is normally done in an area with moderate annual rainfall below 1270 mm (50 inches), while terracing is adopted for the area with a heavier rainfall. The eastern part of the region covering major portion of Haveli Taluka receives a moderate rainfall and hence in this part of the region programme of bunding has been adopted while

in the western part of the region covering part of Maval, Mulshi and Haveli Taluka with a comparatively heavier rainfall, terracing is normally practised. According to the information collected (1967-68) an area of 8,009 hectares (19,792 acres) in 27 villages had been bunded out of the total surveyed area of 18,976 hectares (46892 acres) while terracing had been done on 82 hectares (203 acres) in 5 villages out of the surveyed area of 355 hectares (878 acres) in the region. In other words, cultivable area in the region surveyed for bunding and terracing programme worked out to be 19331 hectares (47770 acres) which formed about 23 percent of the total cultivable area of 85,498 hectares (2,11,263 acres).

F o r e s t s :

4.20 Area under the forests in the region which is hardly 8 percent of the total area of the region is too meagre. Two type of forests are observed, varying from the dry deciduous where the rainfall is less to the ever-green where the rainfall is heavy. Teak is an important species occurring in dry deciduous and moist deciduous forest. Babul forests occur in scattered patches along the Bhima river. The forests in the region are not of much economic importance. But they have very good potential for maintenance of soils in productive fertility and conservation of water. Besides, the large forest tract extending from Parvati Pachgaon Pura to Sinhgad Fort which is easily accessible from Poona City has a good potential for being developed as a Regional Forest Park for holiday recreation and enjoyment. The Table below gives the value of Forest Produce in the region for the year 1967-68. Table No. 5

Sr.No.	Name of the Produce.	Value (in Rs. 00)
1.	Grass.	991
2.	Firewood.	239
3.	Timber.	2
4.	Babhulpods, Hirda, Chilarsal, Khilkhila leaves etc.	20
Total:		1253

4.21 As per 1961 census the estimated No. of workers in the region dependent on Forests for their livelihood was only 1267 or 0.38 per cent of the total workers, which may be due to inferior quality of forests in the region.

Fisheries:-

4.22 Area under all water sheets in the region account for nearly 34 sq.km. or 2 per cent of the total area of the region. Five tanks, viz. Khadakwasala, Katraj, Peshwe Park, Telco and Talegaon Dabhade in the region are stocked with quick growing fish such as Rohu, Catla and Mrigal. In addition to this there is a fish farm at Hadapsar where experiments of fish breeding are undertaken. As per 1961 census the estimated number of workers depending on fishery for their livelihood in the region was only 537 or 0.16 percent of the total workers. At present there are 4 Fishermen Societies in the region with a membership of about 340. In general fishing activity in the region needs development by introduction of quick growing fishes in large quantities in the reservoirs and tanks, since there is a good demand for the same.

Due to the establishment of new industries along the banks of the Mula-Mutha river and their effluent being discharged in the river, the river water gets polluted resulting in the distribution of fishes. It is suggested that the industries may discharge the effluent after treating it chemically so that it will protect the fishes.

Livestock:

4.23 Livestock has an important place in agriculture. Though much progress is being made now-a-days in the use of mechanical power for Ploughing, Water lifting, Sugarcane crushing etc., Livestock continues to have its own value. Cattle labour represents probably the most important contribution of livestock to agriculture. A pair of bullocks for draught, a cow or buffalo for milk, draught and manure and in addition a few sheep, goats and poultry are quite common to be found with large number of farmers in the region. Further, in rural areas farmer's status is even now judged by the number of cattle he maintains.

4.24 As per 1966 Livestock Census the total livestock population of the region was about 1.5 lacs, while the poultry was about 1.4 lacs Table No.6 gives at a glance the livestock population of the region as per 1956, 1961 and 1966 Livestock Censuses

Table No. 6

Classification.	1956	1961	1966
1	2	3	4
I. Cattle.			
<u>Males over 3 years.</u>			
i) Breeding bulls.	N.A.	N.A.	143
ii) Working bullocks.			30129
iii) Other bullocks.			2682
iv) Total Males over 3 years.	30115	33242	32954
<u>Females over 3 years</u>			
i) In Milk.	N.A.	N.A.	10676
ii) Others.			11776
iii) Total Females above 3 years.	21146	25810	22452
<u>Young Stock.</u>	18392	22658	17456
<u>Total Cattle.</u>	69653	81710	72862
II. Buffaloe :			
<u>Males over 3 years.</u>			
i) Used for breeding	N.A.	N.A.	172
ii) Used for work.			43
iii) Others.			103
iv) Total males above 3 years.	311	481	318
<u>Females over 3 years.</u>			
i) In milk.	N.A.	N.A.	13831
ii) Others.			8164
iii) Total Females above 3 years.	18288	21725	21995
<u>Young Stock:</u>	6335	7134	6736
<u>Total Buffaloes :</u>	24934	29340	29049
III. Total Bovine.	94587	111050	101911
IV. Other Livestock :	45620	55748	47350
V. Total Livestock :	140207*	166798	149261
VI. Total Poultry :	99031*	117372	141534

N.A. means not available.

* Figure exclusive of Talegaon Dabhade area.

4.25 From the figures in table no.6 it can be seen that although there was an increase of 18.6 percent in the live-stock population during 1956-61 period there was a fall of 10.5 percent in this population during 1961-66.

4.26 The total cattle population of the region as per 1966 Livestock Census was 72,862 (Rural 61,342, Urban 11,520) which constitutes 48.81 percent of the total livestock population. The total buffalo population was 29,049 (Rural 20,549 Urban 8,500) which formed 19.46 percent of the total live-stock population. Thus the bovine population of the region was about 68.27 percent of the total livestock population, of which about 71 percent is cattle population alone. Besides the bovine population, the 1966 Livestock Census enumerated 16,437 Sheep, 26,558 Goats, 1946 Horses and Ponies, 699 Donkeys, 1700 Pigs and 10 Camels and Mules. Though these animals do not work on farms they are useful to a farmer for agricultural operations and for milk. Horses, Mules and Donkeys are mainly used for transport work. Sheep and Goats are useful for milk, wool, hides/skin and mutton. Poultry with population of 1.4 lacs in '66' is now developing as an important subsidiary industry in the rural areas of the region.

4.27 As per 1966 Livestock Census, the region had 134 animals per 405 hectares (1000 acres) of gross cropped area among the male cattle over 3 years of age, while among the females over 3 years the region had 20 animals per 1000 persons of estimated human population at 1966. It is noteworthy to point out that in case of the buffalo over 3 years of age the ratio of buffaloes per 405 hectares (1000 acres) of gross cropped area was quite negligible, while the ratio of the buffaloes per 1000 persons of estimated human population was more^{or}/less the same as that for the female cattle.

4.28 The density of Livestock population for the region, the Poona District and Maharashtra State was more^{or}/less the same viz. between 80 to 100 animals per sq.km. This density was comparatively high in the area to the east of the region covering areas between the Nasik Road and the Satara Road, particularly due to comparatively more bovine population in

this part of the region. No. of cows and buffaloes in milk per 1000 human population of the region was about 25. This ratio was more than 100 in respect of sub-regions 'C', 'D', and 'G' covering areas between the Mula river and the Satara Road and the Nasik Road and the Nagar Road. No. of working bullocks per 405 hectares (1000 acres) of gross cropped area in the region was 117 and this ratio was observed to be more or less the same in various sub-regions of the region. Total bovine per 0.4 hectares (One acre) of pasture land was 2. Availability of pasture land per bovine was comparatively more in the sub-region 'C' covering areas between the Mula river and the Mutha river, comparatively low in the sub-region 'B' (between the Pavana river and the Mula river) which was equal to the region's average in respect of other sub-regions.

4.29 The important cattle breeds observed in the region are Gir, Khillar, Red-Sindhi and Nimadi while important breeds in buffaloes are Surti and Murha.

Milk Production :

4.30 The total milk production (cow and buffalo milk together) in the region excluding Poona City, National Defence Academy and Cantonments of Poona, Kirkee and Dehu Road was about 49,000 litres per day or on an average 2.8 litres per bovine in milk. Of the total milk production, about 56 percent was consumed locally while the rest was sold outside for which major markets were Poona City and Cantonments (18,400), Pimpri (1,150), Chinchwad (700) and Dehu Road (500). Only about 300 litres of milk produced in the region was sent outside daily, mainly for marketing at Bebadohol, Bombay and Lonawala. Majority of the milk production (viz. 45 percent) in the region took place in the area to the north of the central core between the Pavana river and Nagar Road, Next to it, was the area lying to the west of the central zone (between the Pavana river and the Satara Road), where 34.2 percent of the total milk production in the region took place. Major milk producing villages in the region are Bhosari, Pimpri, Chinchwad, Talegaon-Dabhade, Lawale, Katraj, Charholi Bk., and Lohogaon. It is worth mentioning that almost all the milk marketed outside from the villages

in the sub-region 'D' covering areas between the Mutha river and the Satara Road was sold in Poona City alone. For sub-region 'C' (area between the Mula river and the Mutha river) and 'E' (area between the Satara Road and Mula-Mutha river) and 'G' (area between the Nasik Road and the Nagar Road) the corresponding percentages were between 90 and 99, while for the rest of the areas it was between 60 and 85. Per capita daily consumption of milk in the surveyed area was about 0.13 litres.

Milk supply to Poona City :

4.31 The present (1969) estimated population of Poona City and Poona and Kirkee Cantonments is about 8.70 lacs. As per information collected from other source it is observed that the per capita daily consumption of milk in Poona City and Cantonments is about 0.14 litre or in other words the total daily consumption of milk in Poona City and Cantonments is about 1.22 lac litres. As already seen above in para 4.30 about 18,400 litres of milk is supplied daily to Poona City and Cantonments from the rest of the area of the Poona region. Another 30,000 litres of milk is supplied daily to Poona City and Cantonments through the Government Milk Scheme. As per 1966 livestock census the cow and buffalo population in milk in Poona City and Cantonments was about 6800, the daily milk production from which would be about 19,000 litres. The remaining requirement of milk for Poona City and Cantonments is thus about 55,000 litres. It is presumed that this requirement of milk is being fulfilled from the sources other than those mentioned above.

4.32 The major demand of milk for Poona City and Cantonments from one single source as seen above is met through Government Milk Scheme. The total daily milk collection by this Milk Scheme except during summer season is about 54,000 litres of which about 30,000 litres is supplied to Poona City and Cantonment while the rest 24,000 litres is sent to Bombay due to limited bottling capacity. Areas from which milk is collected by this Milk Scheme are given in table No.7

Table No.7

Sr.No.	: Name of the Place	: Daily milk collected for Poona Milk Scheme (in litres)
1	2	3
1.	Places in the Poona District. (but outside the Poona Region)	33,000
2.	Miraj.	7,600
3.	Kolhapur.	6,850
4.	Satara.	2,650
5.	Mahabaleshwar.	1,900
6.	Karad	1,900
Total:		53,900

Note:- Figures of milk collection given above are for September, 1969. It is assumed that this trend more or less continues through-out the year except during the summer season.

Egg Production:-

4.33 The total egg production (Hens) in the region excluding the Poona City, National Defence Academy and Cantonments of Poona, Kirkee and Dehu Road was about 2,050 dozens per day or about 2 eggs on an average per hen per week. Of the total egg production about 40 percent (800 dozens) was consumed locally in the villages themselves while the rest 60 percent (1250 dozens) was sold outside for which major markets in the region are Poona City which consumed 760 dozens of eggs and Urali Kanchan (50 dozens). Other major markets are Bombay (240 dozens) and Koregaon Bhima (90 dozens). Major egg producing villages in the region are Pimpri and Warale where daily production of eggs was about 670 dozens or 33 percent of the total egg production in the surveyed region. Daily production of eggs in the villages lying between the Satara Road and Mula-Mutha river was also substantial viz. 34 percent. It is worth noting that as many as 200 dozens of eggs produced in the

Warale village, were marketed to Bombay. Main supply of eggs to Poona was from the villages between the Satara Road and the Mula Mutha river and between the Nagar Road and the Nasik Road.

Marketing of Chickens :-

4.34 The region has one of the largest poultry farms in Asia at Warale known as Arbor Acres. Marketing of about 4,350 chickens took place every month in the region excluding Poona City, National Defence Academy, Cantonments of Poona, Kirkee and Dehu Road. Villages of Parandwadi, Warale, Urali Kanchan, Loni-Kalbhori and Ashtapur are the major places from which major chicken marketing to outside places takes place. Major markets for the chickens reared in the region are Poona and Bombay. Government of Maharashtra has recently started poultry dressing plant at Poona.

Minerals:

4.35 As is common with 'Trap basalts' no minerals of economic importance except building stones are found in the region. Besides this, Sand and Clay are also excavated to some extent in the region.

a) Stone:

4.36 There were (1968-69) 48 stone quarries in operation in the Poona Region of which majority viz. 18 were located in Poona Municipal Corporation limits. The number of stone quarries in the Poona City and surrounding areas (Poona City, Wadgaon Bk., Warje, Katraj and Bavadhan Kh.) was 26 while the same in Bhosari-Chinchwad and surrounding areas (Nigadi, Akurdi, Chinchwad and Bhosari) was 14. The remaining 8 stone quarries were located in the villages of Theur (2 Nos), Loni-Kalbhori (2), Pimple Gurav (2), Chikhali (1) and Narhe (1).

4.37 Twenty-nine stone quarries were on private lands, 17 on Government land and the remaining 2 were owned by the Co-operative Societies. Majority viz. 13 stone quarries on Government land were in the City of Poona, while the remaining 4 were located in the villages of Warje (2) and Loni-Kalbhori (2). Two stone quarries run on Co-operative basis were in the Poona City and Akurdi village. Area under stone quarries

was about 93 hectares (230 acres) of which about 15 hectares was Government land, 71 hectares was private land, while the rest 7 hectares was owned by the Co-operative Societies. A very large bulk of land viz. about 25 hectares under stone quarries was in possession of 3 stone quarries at Chinchwad. Other villages and towns with significant land in possession of stone quarries there, were Poona City (14 hectares), Akurdi (12 hectares) Waggaon Bk. (10 hectares) and Katraj (9 hectares). The area in possession of stone quarries in the Poona City and surrounding areas was about 38 hectares, while the same in case of Bhosari-Chinchwad and surrounding areas was about 40 hectares.

4.38 The average annual production of stone in the region was about 3.32 lacs cu.m. (1.3 lacs brass), value of which was estimated at Rs.20.5 lacs. The distribution of annual stone production according to various categories along with value of the production is given in Table No.8.

Table No.8 (Year 1968-69)

Sr.No.	Type of Stone	Annual quantity produced (cubic metre)	Value (in Rs.)
1	2	3	4
1.	Building stone (9" and above).	47,458	1,64,242
2.	Rubble (6" to 9").	2,97,511	9,47,033
3.	Metal (4" to 6")	22,063	63,929
4.	Metal (1" to 4")	70,923	2,64,964
5.	Crushed Stone.	54,122	6,14,629
Total:		4,92,051	20,54,797

4.39 The average annual production of stone in Poona City was about 2.33 lacs cu.m. (0.8 lac brass), value of which is estimated at Rs.10.5 lacs. The average annual production of stone in the quarries located in Poona City and surrounding areas and Bhosari-Chinchwad and surrounding areas was respectively about 2.44 lacs cu.m. (value Rs.11.2 lacs) and 0.9 lac cu.m. (value Rs.6.6 lacs). The production of stone in the remaining areas of the region was only 0.4 lac cu.m. value of which

is estimated at Rs. 2.7 lacs.

4.40 The stone produced in the quarries at Chinchwad is more suitable for building construction while that from the other quarries in the region is useful as road metal for filling foundation. Major market for the quarried stone in the region was Poona City, consuming about 66 percent of the total stone production in the region. Other markets were Bhosari, Pimpri, Chinchwad, Theur and Loni-Kalhor.

4.41

b) Sand: Sand is used mostly in construction works. Sand in the region is collected by scraping or shallow open pit quarrying in river and nallah beds. So the activity is naturally concentrated in villages along river or big nallah sides.

Reliable data regarding extent of areas under sand quarrying 1,60,000 is not available, however, about (52,000 brass) sand valued at Cu.metre. Rs.4.84 lacs is quarried every year in the rural part of the region. Sand quarrying is concentrated mainly in the sub-region 'G' in the villages of Wadhu Kh., Talapur, Fulgaon, Charholi and Wadgaon Shinde along the bank of the Indrayani river. These villages yield 55 percent of the sand in the region. Another 20 percent comes from villages in the sub-region 'F' which are located along the river Mula-Mutha. Villages on the other bank of the Mula-Mutha river in sub-region 'E' contribute 16 percent to the total sand production.

4.42 Poona City, Poona Cantonments and villages of Loni-Kalhor, Uralikanchan, Theur and Naigaon within the region and Panshet village in the Mulshi taluka of Poona District where at present construction of a big dam is in progress are the important markets for the sand produced in the region.

4.43

c) Clay: Clay is excavated mainly for use in the manufacture of bricks. In the rural part of the region about 13,000 brass of clay is excavated every year, value of which is estimated at about Rs.48,000. Significant quarrying of clay takes place in villages of Kiwale, Warje, Bavdhan Bk., Bhugaon, Kondhave Bk., and Uralikanchan. Brick factories at Aundh, Peshan and Farveti in Poona City and Chinchwad are the main markets for the clay quarried in the region.

4.44 Table No.9 gives the area, annual production and annual value of production for minerals in the Poona Region.

Table No. 9

Sr.No.:	Mineral	Area (Hectares)	Quantity (Cu.metre.)	Value (in Rs.)
1	2	3	4	5
1.	Stone.	93	4,14,000	20,54,797
2.	Sand.	58(*)	1,60,000	4,83,773
3.	Clay.	19(*)	40,700	48,425
Total:		170	6,14,700	25,86,995

* These areas are approximate.

4.45 The estimated number of workers dependent on mining and quarry in the region as per 1961 census was only 480.

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CHAPTER V : INDUSTRIES.

5.1 Industrial activity provides a sound economic base and thereby brings prosperity to an area. As indicated earlier, Poona City was predominantly an important educational, cultural, administrative and military centre prior to independence. After independence, the city and the surrounding region has been developing additional function namely Industrial.

Historical:

5.2 Some of the earliest leading factories established in this region were the Ammunition Factory, the printing Presses like Government Photo Zinco Press, Yervada Prison Press, Arya Bhushan Press, Chitrashala Press, Kesari Press. The Raja Bahadur Motilal Poona Mills, Sathe Biscuits Factory and the Gujrat Metal Factory in Poona City, Government Workshop at Dapodi, Deccan Paper Mills at Mundhwa and the Paisa Fund Glass Factory at Tale-^{Dabhade}-gaon/were the major factories located outside the Poona City limits.

5.3 The holding of industrial conferences, writings in the Press and the establishment of Lord Ray Industrial Museum at Poona, were indicative of the aspirations of the population of Poona to have Swadeshi industries.

5.4 Poona City experienced moderate rate of growth of population and industry till the 40's of this century. The installation of Defence industries near Poona and the setting up of some units by entrepreneurs to supply the civilian needs and Defence stores under favourable conditions created during the Second World War helped the creation of an industrial atmosphere in this region.

5.5 The Establishment of Kirloskar Oil Engines factory at Bopodi near Poona in 1947 gave a real impetus to the growth of industries around Poona. This was a beginning of the era of establishment of a variety of modern sophisticated industries. The Poona Municipal Corporation was established in the year 1950. The development of an Industrial Area at Hadapsar by the Corporation in 1956 coupled with the octroi concessions attracted industries to it.

5.6 With the establishment of Penicillin Plant viz. Hindustan-Antibiotics Ltd. in the public sector at Pimpri, rapid industrial development took place around the factory, in the area on either side of the Bombay Poona rail-road axis.

5.7 The Maharashtra Industrial Development Corporation acquired and developed a large industrial area from the villages of Bhosari, Pimpri, Chinchwad and Akurdi, by providing the necessary infra-structure facilities for the establishment of factories. The efforts of the Maharashtra Industrial Development Corporation have been attracting further industries in that area.

5.8 The industrial growth in the Poona region got accelerated during the current and last decade mainly, due to restrictions that were imposed on the development of industries in the Greater Bombay area by the State Government. Other factors responsible for the industrial growth are, the proximity and accessibility to Bombay, a large commercial and marketing centre, availability of skilled personnel, necessary infra-structure facilities such as water, power, transport etc. Poona city is renowned for its educational institutions including Commerce and Engineering Colleges, Polytechnics and Technical High schools. These facilities have provided skilled and supervisory personnel required for the factory work. Salubrious climate and low local taxation have also contributed to the industrial growth in the region outside the Poona Corporation limits.

5.9 The Poona region is now second largest industrial centre in the Maharashtra State next to Bombay. As per recent statistics, there are about 9500 factories in the Maharashtra State employing about 9.03 lacs workers. Of these, more than 40 per cent are located in Greater Bombay alone, employing over 66 per cent industrial workers. According to a Survey of Industries in the region carried out by the Regional Plan Office in 1966-67, there were 668 factories in the region (excluding Defence factories) which were registered under the Factories Act, employing about 54000 workers and covering an area of about 749 hectares (1852 acres). Besides, the Defence Factories, which were excluded from the scope of the survey, employed about 22,000 workers. The report of the Survey of Industries which was published in August, 1967 deals with a number of aspects relating to industrial development in the region such as growth points for each type of industry, consumption of water and power, labour densities, land utilisation etc. Some aspects of the

Study are briefly summarized below :-

5.10 The factories in the region were grouped in 12 different industrial location centres viz. (1) Chinchwad (2) Pimpri (3) Dapodi (4) Kirkee (5) Poona (6) Kothrud (7) Parvati (8) Aundh-Pashan (9) Yervada (10) Hadapsar (11) Loni-Urali (12) and other areas. These location centres are referred to in the report as industrial centres. A variety of products are manufactured in the factories of this region. For the purpose of analysis the factories are grouped into 9 broad categories viz. (1) Food, Beverages and Tobacco Products (2) Textiles, (3) Wood Products (4) Paper and Paper Products (5) Printing and Publishing, (6) Rubber, Petroleum, Glass and Chemical Products, (7) Basic Metals, their Products, Machinery, Electrical and Transport equipment, (8) Stone Crushing and Brick making and (9) Other Industries.

Growth of factories :- (Map 29 & 30)

5.11 Out of 668 factories covered by the survey, 150 were existing prior to Independence and 518 were started thereafter. Of the latter 518 factories 66 were started between 1947-1951 i.e. prior to the commencement of the First Five Year Plan, while the remaining 452 were started during the period of three Five Year Plans.

5.12 The largest number of concerns (212 out of 668) employing 29,767 workers (56 per cent) in the region were in the category "Basic Metals, their Products, Machinery, Electrical and Transport Equipment". The category of 'Rubber, Petroleum, Glass and Chemical Products' came next with 53 factories employing 7069 workers and the category of 'Food, Beverages and Tabacco Products' was third in order with 87 factories employing 4757 workers. The Table No. 1 gives the distribution pattern of 668 factories in the region in different industrial centres of the region.

T A B L E NO. 1.

Sr.No.	Type of Industry	No. of factories/Employment at the industrial centre.....													
		Chinchwad	Pimpri	Lapddi	Kirkee	Poona	Kothrud	Parvati	Aundh	Yervada	Hadap	Loni	Other	Total	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
									Pashan.		sar.	urli areas			
1.	Food, Beverages, Tobacco Products.	-	-	-	2/604	52/3241	-	1/93	-	2/322	21/340	6/105	3/52	87/4757	
2.	Textiles.	-	1/35	-	-	28/3043	21/240	18/165	-	-	-	-	-	68/3483	
3.	Wood Products.	2/55	-	-	-	23/423	-	-	-	1/46	-	-	-	26/524	
4.	Paper & Paper Products.	-	-	-	-	19/391	1/22	2/77	-	-	1/223	-	-	23/713	
5.	Printing & Publishing.	-	-	-	-	68/2461	-	1/138	1/49	1/316	-	-	-	71/2964	
6.	Rubber, Petroleum Glass & Chemical Products.	2/264	10/3375	-	3/1482	24/555	3/170	2/646	1/117	2/101	6/259	-	-	53/7069	
7.	Basic Metals, their Products, Machinery, Electrical and Transport equipment.	19/6370		10/4138		112/5029		13/1071		8/2438		1/1272	-	212/29767	
			13/2118		5/2593		14/2047		1/89		16/2602				
8.	Stone crushing & Bricks making.	4/239	3/231	2/114	-	9/171	-	19/666	13/416	12/415	2/109	-	1/52	65/2413	
9.	Other Industries.	2/20	1/159	1/31	4/139	42/1204	3/86	1/45	2/60	1/54	2/42	-	4/75	63/1915	
Total :		29/6948		13/4283		377/16618		57/2901		27/3692		7/1377		668/55605	
			28/5916		14/4818		42/2565		18/731		48/3575		8/179		

Joshi/-.

Industrial employment at different centres :- (Map 31)

5.13 Of the total industrial employment of 53605, about 31 per cent (or 16618 employees) was in the Poona centre alone. About 24 per cent of the total employment was in the Pimpri-Chinchwad industrial complex and about 9 per cent was in the Hadapsar, Loni-Urali industrial belt. The factories in Kirkee-Dapodi centres employed about 17 per cent of the total industrial employment in the region. The industrial employment in the factories on either side of Bombay-Poona National Highway and from Kirkee, Dapodi, Pimpri and Chinchwad centres together was about 22000 or about 41 per cent of the total industrial employment in the region.

5.14 The factories in the category 'Basic Metals, their Products, Machinery, Electrical and Transport Equipment' were mainly located at Poona, Hadapsar, Pimpri, Chinchwad and Kothrud centres, whereas those of the category of 'Printing and Publishing' were mostly located at the Poona centre. Factories of 'Rubber, Petroleum, Glass and Chemical Products' were chiefly established in Poona, Pimpri & Hadapsar centres. Gur factories were in the Eastern Part of the region on Sholapur Road. Thus the modern sophisticated industries manufacturing 'Rubber, Petroleum, Glass and Chemical Products', 'Basic Metals, their Products, Machinery, Electrical and Transport Equipment' occupying large areas had grown mostly in the Pimpri-Chinchwad, Dapodi, Hadapsar, Loni-Urali centres, i.e. outside the Poona City or on its fringe.

Size of factories by employment: (Map 32)

5.15 There is a significant difference in the size of factories in the region. Out of total 668 factories, 73 per cent employed upto 50 persons each, accounting for hardly 1/5th of the total industrial employment in the region. About 14 per cent of the factories in the region employed between 51 to 100 persons each and they together had about 14 per cent of the total industrial employment. About 8 per cent of factories were medium size factories employing about 101 to 250 persons each and they together employed about 14 per cent of the total industrial employment. Only 5 per cent of the factories in the region (36 factories) were big factories employing more than 250 persons each. They, however, together employed.

about 52 per cent. of the total industrial employment in the region. Out of 36 factories employing more than 250 persons each, 17 factories employed between 251 to 500, 8 factories between 501 to 1000, another 8 factories between 1000 to 2000 and 3 factories more than 2000 persons each. The 3 factories in the last category are the Raja Bahadur Motilal Poona Mills Ltd., The Hindustan Antibiotics Ltd. and The Kirloskar Oil Engines Ltd. The 8 factories having employment between 1000 to 2000 persons each were from the categories 'Rubber, Petroleum, Glass and Chemical Products' and 'Basic Metals, their products, Machinery, Electrical and Transport Equipment'. The same were located at Chinchwad, Dapodi, Yervada, Hadapsar and Loni-Urali areas. It is worth noting that 18 out of 36 i.e. 50 per cent of the large scale factories employing more than 250 persons were agglomerated in the Kirkee Chinchwad belt along the Poona-Bombay transportation lines.

Size of factories by plot area :-

5.16 Out of 668 factories in the region 528 (79 per cent) were having areas below 3716 sq.m. (40,000 sq.ft. - 1 acre). Most of these were located at Poona, Kothrud, Parnvati, and Hadapsar centres. Eighty one (81) factories were having areas between 3716 square metres to 18580 square metres (between 40,000 sq.ft. to 200,000 sq.ft. each - a little less than 5 acres). More than 50 per cent of these were also located in the above areas. Of the remaining 59 factories, 16 were between area ranges of 20234 to 40468 square metres (5 to 10 acres) each, 14 were between 40469 to 80937 sq. metres (10 to 20 acres) each and 29 were above 80937 square metres (20 acres) each. Of the last 29 factories a majority (18) were located in Chinchwad, Pimpri and Dapodi centres.

Area under factories: (Maps 33, 34, & 34-A).

5.17 At the time of Survey the total area of land put to industrial use by the 668 factories in the region was about 749 hectares (1852 acres). This did not include the area of about 1093 hectares (2700 acres) being allotted for industrial use by the Maharashtra Industrial Development Corporation in the Bhosari-Pimpri-Chinchwad belt. This was also exclusive of the area under Defence factories and the

area devoted to industrial use in Talegaon and Alandi towns, subsequently included in the region. The distribution of the factories according to the area occupied for industrial use and number of employees is given in Table Nos.2 and 3 below :-

TABLE NO. 2.

Sr.No.	Name of the centre.	No. of factories.	No. of work-ers.	Plot area under fact-ories Hectare/ (Acre)	Average plot area per factory Hectare/ (Acre)	No. of workers per hectare/ (Acre)
1	2	3	4	5	6	7
1	Chitichwad.	29	6948	266.17 (657.72)	9.18 (22.68)	26 (11)
2	Pimpri.	28	5918	141.30 (349.16)	5.05 (12.47)	42 (17)
3	Dapodi.	13	4283	58.31 (144.09)	4.48 (11.08)	73 (30)
4	Kirkee.	14	4813	44.83 (110.78)	3.20 (7.91)	107 (43)
5	Poona.	577	16618	43.04 (106.36)	0.11 (0.28)	386 (156)
6	Kothrud.	42	2565	24.16 (59.71)	0.57 (1.42)	106 (43)
7	Parvati.	57	2901	32.07 (79.24)	0.56 (1.39)	90 (37)
8	Aundh-Pashan.	18	731	9.76 (24.13)	0.54 (1.34)	75 (30)
9	Yervada.	27	3692	61.81 (152.72)	2.29 (5.65)	60 (24)
10	Hadapsar.	48	3575	38.50 (95.14)	0.80 (1.98)	93 (38)
11	Loni-Urali.	7	1377	26.82 (66.27)	3.83 (9.46)	51 (21)
12	Other area.	8	179	2.58 (6.38)	0.32 (0.79)	69 (23)
Total :		668	53605	749.35 (1851.70)	1.12 (2.77)	72 (29)

T A B L E N O . 3 .

Sr. No.	Type of Industry	No. of factories	No. of work-ers.	Plot area under fact-ories hect-ares (Acres)	Average Plot area per factory hectares (Acres)	No. of workers per hectare (Acre)
1	2	3	4	5	6	7
1.	Food, Beverages and Tobacco Products.	87	4757	35.76 (88.36)	0.41 (1.02)	133 (54)
2.	Textiles.	68	3483	12.21 (30.17)	0.18 (0.44)	285 (115)
3.	Wood Products.	26	524	11.44 (28.26)	0.44 (1.09)	46 (19)
4.	Paper & Paper Products.	23	713	1.38 (3.42)	0.06 (0.15)	517 (208)
5.	Printing & Publi- -shing.	71	2964	7.53 (18.60)	0.11 (0.26)	394 (159)
6.	Rubber, Petroleum, Glass & Chemical Products.	53	7069	104.94 (259.32)	1.98 (4.89)	67 (27)
7.	Basic Metals, their products, Machinery, Electrical & Transport equipments.	212	29767	507.18 (1253.29)	2.39 (5.91)	59 (24)
8.	Stone Crushing & Brick making.	65	2413	40.53 (100.14)	0.62 (1.54)	60 (24)
9.	Other Industries.	63	1915	28.38 (70.14)	0.45 (1.11)	67 (27)
Total :		668	53605	749.35 (1851.70)	1.12 (2.77)	72 (29)

5.18 The average plot area per factory in the region was 1.12 hectares (2.77 acres). There is a wide variation in the average size of factory at Chinchwad compared with that of Poona centre. The average factory at Chinchwad had a plot area of about 9.18 hectares (23 acres), while the average factory at Poona centre had a plot area of about 0.11 hectares (0.28 acre). The average area per factory was 5.05 hectares (12.47 acres) at Pimpri and 4.48 hectares (11.08 acres) at Depodi..

centres. At Kothrud, Parvati, Aundh-Pashan, Hadapsar and other areas the average area per factory is even lower than the regional average of about 1.12 hectares (2.77 acres). It would be seen that the total area under factories was also maximum at the Chinchwad centre viz. 265 hectares (658 acres) or 36 per cent of the total industrial area of the region. The second in the order was the Pinpri centre occupying 141 hectares (349 acres). The area under industrial use at Yerwada, Dapodi, Kirkee and Poona was between 43 to 62 hectares (110 to 150 acres) each, while the remaining 6 centres had an industrial area below 40 hectares (100 acres) each.

5.19 It is revealed that the factories in the category 'Basic Metal, their products, Machinery, Electrical and Transport Equipment' occupied 507 hectares (1253 acres) or 68 per cent of the total industrial area in the region. 'Rubber, Petroleum, Glass and Chemical Products' was next in order occupying an area of about 104 hectares (259 acres) representing 14 per cent of the total industrial area. 'Stone crushing and Brick making' factories and 'Food, Beverages and Tobacco Products' covered 41 hectares (100 acres) and 36 hectares (88 acres) respectively.

5.20 Although there is wide divergence of products in the factories in the region it is observed that considering the employment provided and the plot area occupied the category of industry group 'Basic Metals, their products, Machinery, Electrical and Transport Equipment' or say 'Engineering' is the predominant type of industry in the region.

Floor area under factories:-

5.21 The floor area per factory in the region was 1504 square metres (16193 square feet). The average floor area per factory at different centres varied considerably. The average factory at Chinchwad had a floor area of 5564.59 square metres (59697 square feet) and employed 240 workers, while the average factory at the Poona centre had a floor area of 553 square metres (5951 sq.ft.) and accommodated 44 employees. Centrewise factory employees and floor area is given in the table overleaf.

TABLE NO. 4

Sr. No.	Name of the Centre.	No. of factories.	No. of workers.	Floor space under factories sq. mt. (Sft.)	Average floor space per factory.	Floor space per sq. m. (sq. ft.) per worker.
1	2	3	4	5	6	7
1.	Chinchwad.	29	6948	161373 (1737000)	5564.59 (59897)	23.23 (250)
2.	Pimpri.	28	5918	97315 (1047486)	3475.54 (37410)	16.44 (177)
3.	Dapodi.	13	4283	94701 (1019354)	7284.69 (78412)	22.11 (238)
4.	Kirkee.	14	4818	72065 (775698)	5147.50 (55407)	14.96 (161)
5.	Poona.	377	16618	208421 (2243430)	552.84 (5951)	12.54 (135)
6.	Kothrud.	42	2565	39557 (425790)	941.83 (10138)	15.42 (166)
7.	Parvati.	57	2901	96755 (1041459)	1697.46 (18271)	33.35 (359)
8.	Aundh-Pashan.	18	731	25399 (273394)	1411.06 (15189)	34.75 (374)
9.	Yervada.	27	3692	98783 (1063296)	3658.63 (39381)	26.76 (288)
10.	Hadapsar.	48	3575	76389 (822250)	1591.44 (17130)	21.37 (230)
11.	Loni-Urali.	7	1377	23027 (247860)	3289.57 (35409)	16.72 (180)
12.	Other areas.	8	179	11158 (120109)	1394.75 (15014)	62.34 (671)
Total.		668	53605	1004943 (10817126)	1504.41 (16193)	18.75 (202)

Labour Density:

5.22 An analysis of the relationship between the number of workers and the land area is used as a guide for assessing land requirement for future industrial use. Generally, ratios used for the purpose are (i) workers per industrial hectare / acre and

(ii) floor space per worker. The former ratio is referred to as labour density in this report. From the above Table No.2 and 3 it is observed that the labour density in the region was 72 per hectare (29 per acre) and it varied between 386 per hectare (156 per acre) and 26 per hectare (11 per acre) in various centres. The labour density for the Poona centre was as high as 386 per hectare (156 per acre) because it contained a majority of small and medium size industries. In the Chinchwad, Pimpri and Dapodi centres it was comparatively low viz. between 26 per hectare (11 per acre) and 73 per hectare (30 per acre.) This is because a majority of factories located in these centres are built on modern lines with large open spaces around them and good many of them are not fully developed. It was further noted that the labour density of some nearly developed existing engineering factories in the region was between 82 to 86 per hectare (33 to 35 workers per acre). The labour density for a few nearly developed Chemical factories was of the order of 54 per hectare (22 workers per acre).

5.23 Average floor space per worker in the region was 18.75 square metres (202 square feet). It varied between 16 to 23 square metres (177 to 250 sq.ft.) in the Pimpri-Chinchwad complex as against 12.54 sq.metres (135 sq.ft.) observed in Poona City. This is because the factories in the Pimpri-Chinchwad complex are generally high users of space. The average floor space per worker for the nearly developed Engineering and Chemical factories in the region was 13.93 sq.metres (150 sq.ft.) and 17.45 square metres (191 square feet) respectively.

5.24 Both the ratios mentioned above viz. Labour density and the floor space per employee can only form a rough guide as a large number of the factories were not being used to full capacity. After considering the fact that the new industrial development outside Poona, Municipal Corporation is taking place on open lines (i.e. with large open spaces around the buildings) and assuming that these trends would continue, the 'Study Group on Industries' felt that it would be reasonable to adopt an average labour density of 49 employees per hectare (20 workers per acre) for the areas outside Poona Municipal Corporation and 74 per hectare (30

per acre) for areas within Poona City for estimating the industrial employment likely to be generated in future.

5.25 The total investment, working capital and production in the factories of the region was observed to be Rs.46.08 Crores, 38.72 Crores and 71.92 Crores respectively. In other words, the Investment, Working Capital and Production per worker in the region were Rs.8596, 7223 and 13417 respectively. The Table below indicates the Investment, Working Capital and Production for factories in the region according to their types.

T A B L E NO. 5 .

(Figures in crores).

Sr.No.:	Type of Industry.	Investment (Rs.)	Working Capital (Rs.)	Annual output (Rs.)
1	2	3	4	5
1.	Food, Beverages and Tobacco.	1.19	2.58	5.32
2.	Textiles.	1.15	1.40	2.99
3.	Wood Products.	0.27	0.41	0.75
4.	Paper & Paper Products.	0.25	0.24	1.29
5.	Printing and Publishing.	1.11	1.09	1.92
6.	Rubber, Petroleum, Glass & Other chemicals.	9.31	7.76	11.42
7.	Basic Metals, their Products, Machinery, Electrical and Transport equipment.	31.50	24.50	45.72
8.	Stone Crushing and Brick making.	0.35	0.30	0.65
9.	Other Industries.	0.95	0.44	1.86
Total		46.08	38.72	71.92

Other Peculiarities of Industries :-

5.26 Besides the Defence Factories, Hindustan Antibiotics Ltd. at Pimpri, is the only major public sector undertaking in the region. The industries in the Poona Metropolitan Region are not on the whole oriented to the local market or resources. Most of the big industries have their Head Offices located in Bombay. Some industrial units have been started with foreign collaboration.

Problems of the Factories:

Following are some of the major problems of the factories in the region.

Water-pollution due to untreated industrial Waste into water courses :

5.27 In the absence of proper drainage system in the Pimpr:-Chinchwad industrial complex the effluent discharged by some of the factories in the area is let out through ad-joining nallahs into the Pawana river. The untreated effluents from such factories have polluted the river water considerably.

Location of factory and residential areas of industrial workers :

5.28 It is observed that 69% of the total 70600 industrial employees in the region (54000 workers in 668 factories and 17000 workers in two defence factories at Kirkee) resided within Poona Municipal Corporation limits, whereas the total factory employment in the Poona Corporation area was only 43 per cent. A study of factory employees in various industrial centres according to their place of residence shows that about 40 per cent of factory employees at Chinchwad centre and 37 per cent at Pimpri centre were local residents. About 34 per cent and 43 per cent respectively were coming to these centres from the Poona City while the rest were coming from other areas. Long distance journeys of the factory workers affect their efficiency and in addition create excessive pressure on the existing communication routes and public transit system during peak hours.

5.29 Inadequate community facilities :

The Bhosari-Pimpri-Chinchwad industrial area is deficient in basic community facilities such as shops, schools, hospitals, ambulance service, fire brigade, tele-phones, police etc.

5.30 Railway loading and unloading facilities:

The position in regard to available facilities of loading and unloading at Railway stations in this region particularly at Chinchwad needs to be improved.

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Small-Scale and Cottage Industries:

5.31 The Bureau of Economics and Statistics, Bombay during 1965-67 conducted a survey of non factory type Small-scale and Cottage Industries in 5 areas in the region viz. Poona City, Lohogaon, Khadakwasala, Dehu-road and Urli-Kanchan. According to this survey the number of cottage and small-scale establishments in the above 5 centres in the region are 2174 provided an employment to about 7300 persons. A majority of these establishments viz. 2054 were located in Poona City and provided employment to about 6750 persons. The major types of Cottage and Small-scale Industries in the region were (1) Metal works (2) Carpentry (3) Engineering and (4) Blacksmithy, providing employment to about 1500, 1400, 900 and 800 persons respectively. Almost all the Cottage and Small-scale Industries covered in the survey depended upon local raw materials and mainly catered to the needs of the local population. The total investment by way of fixed Capital, total Working Capital and the total annual Value of Production in the Small-scale and Cottage establishments at the above five centres were observed to be Rs. 42.5 lacs, 36.4 lacs and 319.4 lacs respectively.

Estimates of present and future industrial employment:

- 5.32
- (i) According to the Survey of Industries carried out in 1966 the industrial employment in the region was about 53,600. Additional employment created in these industries thereafter is not available.
 - (ii) The industrial employment in the factories from the additional area subsequently included in the region (i.e. mainly Talegaon-Dambhade) is 500.
 - (iii) Defence factories in the region employ about 22000 workers.
 - (iv) Some new factories have been started in the region, after the above survey, mainly in the industrial area being developed by Maharashtra Industrial Development Corporation. Present employment in such factories is 3600.
 - (v) Adding together items (i) to (iv) above the total present factory employment in the region is estimated to about 79,700 approximately say 80,000

(vi) As already indicated above in addition there are 7300 persons employed in non factory type Small-Scale and Cottage Industries in the important centres of the region.

5.33 According to the information collected by the Survey, about 65 factories in the region had plans for future expansion in the near future due to which an additional employment for 16000 workers is likely to be created. About 50 per cent of this is likely to be in the Pimpri-Chinchwad complex. In 1962 the Maharashtra Industrial Development Corporation started the development of large Industrial Area by acquiring land from the villages Bhosari, Pimpri, Chinchwad and Akurdi. The total area zoned for industrial use as per the Maharashtra Industrial Development Corporation Scheme is about 1093 hectares (2700 acres). blockwise development of this area is carried out. After excluding the land required for roads, railway-sidings, open spaces, facilities and services, the net area under industrial plots in the Maharashtra Industrial Development Corporation area would be about 688 hectares (1700 acres). About 50 per cent of this has been disposed of for the industrial use. There is a great demand for the plots in this area and it is expected that all the unallotted area would be occupied by factories very soon. The 'Tata Engineering and Locomotive Co.,'. The 'Century Enca' and 'The Swastik Rubber Products' are some of the major factories coming up in this area. The first one is having a plot area of about 121 hectares (300 acres). At present it employs only 1600 workers. The Company expects to increase its activity to employ about 16000 workers eventually. Similarly the latter two concerns which are having a present employment of about 100 workers are expected to employ about 7000 workers in due course. Besides this, there are a few other industrial zones as per Development Plans or Schemes in the other parts of the region. The table overleaf gives the distribution of existing (Year 1969) and committed industrial areas, the existing industrial employment and the estimates of future industrial employment in different areas of the region.

T A B L E NO.6 .

Sr.No.	Name of the area.	Area under existing factories hectares (Acres)	Area in the zone where industrial use is not started. Hectares (Acres).	Total area. Hectares (Acres)	Existing employment in the industrial-ries.	Estimated employment after all the industrial area is fully utilised i.e. in 1991.
1	2	3	4	5	6	7
1.	Poona Municipal Corporation (as per sanctioned Development Plan)	486 (1200)	242 (600)	728 (1800)	38,000	90,000
2.	Area outside P.M.C. just on its peripheries from villages Vedgaon-Sheri Kharadi, Hada-psar and Konchave.	41 (100)	445 (1100)	486 (1200)		
3.	Bhosari-Pimpri Chinchwad (factories outside the M.I.D.C. area).	526 (1300)	-	526 (1300)	14,000	80,000
4.	M.I.D.C. Industrial Area from Bhosari, Pimpri, Chinchwad, Akurdi, Nigadi villages.	-	1093 (2700)	1093 (2700)	3,600	
5.	Talegaon Dabhade.	20 (50)	-	20 (50)	500	1000
6.	Loni-Kalbhori, Theur & Phursungi.	41 (100)	41 (100)	82 (200)	1400	4000
Total :		1114 (2750)	1821 (4500)	2935 (7250)	57500	175000

Note:

i) The areas under existing factories given in this table for the different centres are as measured from the zoning plans/schemes of the centre while those in table No.2 are as per the survey of 1966 which covered only those factories which had actually commenced production then and hence the difference.

ii) The estimates of the future industrial employment are worked out by adopting a labour density of 74 workers per hectare (30 workers per acre) for the industrial area in the Poona Municipal Corporation and its peripheries and 49 workers per hectare (20 workers per acre) for industrial areas outside the Poona Municipal Corporation limits.

iii) The factories in the Maharashtra Industrial Development Corporation industrial area at Pimpri-Chinchwad have started functioning recently. They have secured land on the basis of their future expansion programme and have presently utilised only a very small proportion of the potential plot capacity. The areas in their possession have not been therefore separately shown in the above table but only their approximate present employment is stated.

iv) Factory workers mentioned under columns 6 and 7 do not include 22,000 workers in defence factories.

v) 200 factory workers are employed in factories located in areas other than those mentioned in the table.

5.34 The growth and expansion of industries indicated above is bound to generate a sizable expansion in the employment. It is estimated by the Study Group on Industries that the existing and committed areas in the region when fully utilised will eventually generate an industrial employment of about 2 lacs indicating nearly two and half times increase in the present employment of about 80,000 during the period of next 20 to 25 years. The future growth of industrial employment will have serious implication on the growth of population and consequential requirement of lands for various urban and rural land uses. The distribution of industrial areas in the region will indicate that the same are located in and around the Poona Municipal Corporation limits in the central part of the region and along the Poona-Bombay transportation lines in the North-Western part. There is not much industrial activity in the rest of the region. Suitable industrial areas will have therefore to be provided for setting up industries which would provide employment to the growing population in the Eastern part of the region and Talegaon-Dabhade town in the North while preparing detailed Development Plans or Development schemes of the respective areas.

CHAPTER VI : HOUSING.

6.1 The provision of shelter to the people is one of the basic necessities next to food and clothing. The studies of housing conditions are, therefore, fundamental to the Urban and Regional Planning. Poona City Corporation area has absorbed a population of about 3.2 lacs¹ during the last two decades. The position of housing in Poona City during the past is presented in the table below :-

T A B L E NO.1.

Year	Population of Poona.	No. of tenements in Poona.	No. of persons per tenement in Poona.
1	2	3	4
1881	99622	12271*	8.11
1891	118790	11917	9.96
1911	117256	13511	8.67
1931	162901	15902**	10.24
1941	237560	52076	4.56
1951	501143	106136	4.72
1961	620471	120410	5.15
1967	703035	126172	5.57

*Tenements are for the year 1883.

**Tenements are for the year 1935.

¶ 1951, 1961 and 1967 figures are for the Poona Corporation area as at 1962 while those for other years are for the Poona City Municipality.

Source :-Poona - A Socio-Economic Survey, Part II (1952) by Dr. D.R. Gadgil, Census Books 1941, 1951 and 1961, Annual Report of Poona Municipal Corporation (1965-66) Survey of Housing Conditions in Poona City (1967) by Town Planning & Valuation Department, Poona.

6.2 In interpreting the house (tenement) statistics of different years, one feature of the data which can not be explained is the decrease in the number of tenements during 1881-1891 period. The period from 1891 to 1911 was marked by plague epidemics and no marked increase, in population and tenements, was likely to take place during this period.

The position in regard to both tenements and population -
1. Poona Corporation was established in 1950. Population of Poona Corporation area was about 2.76 lacs in 1941 and 5.97 lacs in 1961.

changed rapidly after 1911. If we consider the position of population and tenements in the present Poona Municipal Corporation area during the period of last 17 years i.e. between 1951 to 1967 it is observed that the average annual additions in population and tenements works out to be respectively about 11900 and 1200.

6.3 The number of tenements gives only a broad idea of housing accommodation available. It is also necessary to examine the qualitative aspect of the housing, such as type of construction, structural conditions etc. A study covering some aspects of housing in Poona City in 1967 revealed the following facts.

(1) According to this survey there were 34646 buildings in the city containing 160426 total tenements. The number of residential tenements was observed to be 126172 occupied by 129982 families.

(2) Year of construction of buildings :- Of the 34646 buildings in the city about 14 percent were constructed in the 19th century. About 58 percent were constructed during 1901 to 1960, while as many as 23 percent were constructed after 1960. (Map 36).

(3) Structural quality of buildings :- The percentage of ³ Pacca buildings in the Poona City was only 16. The percentage of ⁴ Katcha and ⁵ Semi-pacca buildings was 19 and 65 respectively. (Map 37).

(4) Ownership of buildings :- As many as 90 percent of the buildings in the city were owned by private individuals, while the remaining 10 percent were owned by Government (4 percent), Co-operative Societies (2 percent) and trusts, banks etc. (4 percent).

(5) Sanitation and ventilation of buildings :- About 23 percent of the buildings in the city were in bad sanitary

- 1. A building is defined as an independent structure having walls and a roof over it.
- 2. A tenement is defined as a part of building having an independent exit leading to a common verandah or common staircase or a court-yard or a gate leading to a road.
- 3. Pacca Building :- Building with walls of bricks or stone and frame of iron or R.C.C.
- 4. Katcha Building :- Building with walls of material other than stone or bricks and frame of materials other than R.C.C. or iron.
- 5. Semi-Pacca Bldg. :- Building with walls of bricks or stones and frame other than R.C.C. or iron.

condition. About the same percentage of buildings did not get natural light, and suffered from bad ventilation. About 12 per cent of the buildings had congested surroundings. (Map 38).

(6) Mixed use of buildings and tenements :- :- Nearly 64 per cent of the buildings in the city were used exclusively for residential purposes while about 16 per cent were used for commercial purposes along with other uses. About 5.7 percent of the buildings were found to have been put to undesirable mixed use. Of the total 160426 houses or tenements as many as 77 per cent were used exclusively for residential purpose, while about 9 and 8 per cent were exclusively used for services and commercial purpose respectively. It is gratifying to note that hardly 0.2 per cent of the tenements in the city were put to undesirable mixed use.

(7) Unsafe tenements :- About 13 per cent of the tenements were in dilapidated condition.

(8) Amenities available in the tenements :- (Map 39).

i) Bath-rooms :- Of the 1,26,172 residential tenements in the city, 23 per cent were found to have independent bathroom, 37 per cent of the tenements had common bathrooms and the remaining 40 per cent of the tenements had no facility of bathroom.

ii) Latrines :- Only 15 per cent of the tenements in the city had independent latrine, about 64 per cent of the tenements had common latrines, while 21 percent had no facility of latrine.

iii) Separate Water taps :- About 43 per cent of the tenements in the city had a separate tap, about 40 per cent had common taps while 17 per cent had no facility of direct tap..

iv) Availability of Carpet area :- The carpet area comprises the total usable space in a tenement including sanitary blocks. The carpet area per person in the Poona City was observed to be 4.06 sq.m. (43.73 sq.ft.). The carpet area per person was below 1.86 sq.m. or 20 sq.ft. in 26 per cent of the city tenements, which could be considered as extremely overcrowded. In another 33 per cent of the tenements, carpet area per person was between 1.95 to 3.72 sq.m. (21 to 40 sq.ft.) while in 27.5 per cent of the tenements the same was between 3.80 to 9.29 sq.m. (41 to 100 sq.ft.) The carpet area per person was above 9.29 sq.m. (above 100 sq.ft.) in only 13.3 per cent of the tenements. It is

seen that in a ward where mostly per capita income was - above Rs.100/- the carpet area per person was between - 13.00 to 15.79 sq.m.(140 to 170 sq.ft.) Where per capita income was between Rs. 50/- to Rs.100/- carpet area was between 4.18 to 6.04 sq.m.(45 to 65 sq.ft.). In wards - with per capita income between Rs.30/- to Rs.50/- the - carpet area was between 2.32 to 4.18 sq.m.(25 to 45 sq. ft.) per person, while 0.88 sq.m.(9.5 sq.ft) per person carpet area was for the persons having an income less - than Rs.30/- (Map 40).

(9)Family income :- The percentage of families - with monthly income upto Rs.250/- was about 64, while about 25 percent had monthly income between Rs.250/- to Rs.500/-. In respect of only 11 percent families the monthly income was above Rs.500/-.

(10)Families in need of new tenements :- Of the total 129982 families in the city 19809 (15.24 percent) had expressed their desire to have new tenements and most of these families were living in the older part of the city. Of these 19809 families desiring new tenements - 5417 families (27.3 percent) were ready to go for owner-ship Flats.

(11)Index Number of Housing conditions :- On the basis of index numbers worked out by pooling eleven different indicators of housing conditions it was observed that the housing condition was 'Bad' in the older parts of the city and in the villages like Munde, Hadapsar, Yerwade, Wadgaon Sheri, Aundh-Pashan, Lopodi and Dapodi etc./still having a rural character of development. In these areas the living conditions within the tenements were either 'Worse' or 'Bad'. Bundgarden was the only area having 'good' housing conditions, whereas it was observed to be 'fairly good' in Somwar-Rasta, Shaniwar-Narayan, Sadashiv, Shivajinagar, Erandawana-Kothrud and Gulte-kadi-Parvati areas which were mostly occupied by the middle or the richer class. (Map 41).

(12) The total population of the Poona Corporation area as estimated by the Housing Survey in 1967 was observed to be 7.03 lacs as against 6.2 lacs in 1961. It is worth noting that the old city area which covered about 6

percent of the total Poona Municipal Corporation area, contained 69 percent of the total population in the year 1961 representing a gross density of 549 per hectare (222 persons per acre). In this area the residential use was badly mixed up with other uses viz. Commercial, administrative and industrial. In certain wards like Budhwar, Ganesh-Kasaba, Guruwar and Raviwar, the gross density was as high as between 1000 to 1250 per hectare (400 to 500 persons per acre). The housing situation was hardly better in the suburban areas of Poona as the extension of services and basic amenities did not keep pace with the extension of the Corporation area. Most of the village included in the Poona Municipal Corporation limits do not have adequate water supply, standard housing, underground drainage and other civic amenities such as shops, schools, markets, recreation places etc.

Slums in the Urban areas of the Region (Map 42 & 43).

6.4 The slum areas referred to in this report include only the hutment area (Zopadapattis). The rapid growth of population and industries in and around Poona City has given rise to the growth of slum areas. According to a Survey of slums carried out in 1968 in the urban areas of the region a population of 108089 representing 13.5 percent of the 1968 estimated population of the six urban areas in the region where slums existed staying in 303 slum areas in 20552 number of hutments. The growth of hutments in Poona City as recorded in the past surveys is as follows :-

T A B L E NO. 2.

<u>Year</u>	<u>No. of hutments in slum areas.</u>	<u>Remarks.</u>
<u>1</u>	<u>2</u>	<u>3</u>
1937	800	Based on figures given in daily 'Sakal' dated 18th September 1968.
1951	6,300	
1959	9,000	
1961	12,785	
1963	16,000	
1968	17,482	Based on present Survey.

1. Source :- Survey by Poona Municipal Corporation and office of the Poona Metropolitan Regional Planning Board.

It would be observed from the above table that the number of hutments in Poona City is increasing rapidly during the last two decades.

6.5 Considering the area-wise distribution of slum population, it is observed that 13 per cent of the 1963 population of Poona City stayed in slums, while about 10 per cent of the population of Talegaon-Dabhade town stayed in slums of that town. Dehu-Road Cantonment had 17 per cent of its population in slums, while Pimpri-Chinchwad-Bhosari town group had 26 per cent of its population in slums. Within the Poona Municipal Corporation the maximum slum population was concentrated in Shivajinagar, Bhavani peth, Yervada areas accounting for about 38.06 per cent of the total slum population in the city. In general, the slum areas are located in low lying or undulating areas along the water-sources and on the peripheries of the urban concentrations.

6.6 Area under the slums :- Area covered by the slums in the Poona City was 51 hectares (125 acres). Area covered by the slums in other urban areas of the region was about 13 hectares (31 acres) of which about 5 hectares (13 acres) was Government land. Of the 303 slums in the region, majority viz. 242 slums (80 per cent) were on private land, 58 were on Government land, while only 3 slums were on the lands owned by the Poona Municipal Corporation and the Co-operative Societies.

6.7 The information about some of the aspects of the Poona City Slums is summarised below. The enquiry of these aspects was not extended to other urban areas.

a) Duration of Stay :- Of the 92400 slum population in Poona City, about 19 per cent was added very recently during the last two years, while about 23 per cent was added during the last 3 to 5 years. About 17 per cent of the slum population was residing in slums over a period of 20 years.

b) Income of Slum Families :- Of the 17482 slum families in the Poona City, 46 per cent had monthly income of less than Rs.100/-. About 48 per cent had between Rs.101/- to Rs.250/-, while the remaining 6 per cent had monthly

....82/-

income above Rs.250/-.

c) Rent paid by the Slum Families:-About 46 per cent of the slum families in the Poona City were not paying any rent, 24 per cent paid rent between Rs.1/- to Rs.5/- per month, 21 per cent between Rs.6/- to Rs.10/- per month, about 6.5 per cent between Rs.11/- to Rs.15/- per month and about 2.5 per cent paid rent more than Rs.15/- per month.

d) Living conditions in Slums :- In only 118 slums with a population of about 55,000 , water supply was available through public municipal taps. In another 17 slums with a population of about 7500, source of water supply was wells, while about 4300 people living in other 17 slum areas were using water of the nearby river, stream or canal. The remaining slum population of about 25,600 residing in 99 slum areas had no facility of water supply. The facility of latrines was available in only 56 slum areas . of the city which covered a population of about 26000. The ratios of slum population per municipal tap and per latrine where these facilities existed worked out to be about 310 and 75 respectively. The living space available per person in the slums was about 1 sq.metre (10 sq.ft.) as compared to 4.06 sq.metres(43.73 sq.ft.) for the city.

6.8 The general environmental condition in the slum areas was very miserable and water-supply, sanitation and latrine facilities in them were thoroughly inadequate with the result that they created serious health problem to the localities nearby.

Public Housing :-

6.9 The public housing implies dwellings that are constructed by the Government, local bodies and other public agencies. The agencies which contribute directly to the public housing stock in the Poona region are (i) State and Central Governments including Railways, (ii) Maharashtra Housing Board, (iii) Maharashtra State Electricity Board, (iv) Maharashtra State Road Transport Corporation, (v) Poona Municipal Corporation, (vi) Life Insurance Corporation of India and (vii) Maharashtra Industrial Development Corporation etc.

i) State Government:- There are about 31,000 State Government employees working in Poona City of whom only 1845 are provided with Government accommodation.

ii) Central Government:- There are about 42,000 Central Government employees working at Poona. About 360 tenements have been provided by the Central Government for its employees. There is still a large unsatisfied demand. It is learnt that the Central Government is constructing 2510 additional quarters near village Pashan for its employees in the near future.

iii) Railways :- The total employment in railways at Poona is about 3400. The railway authorities have provided housing accommodation to 1924 employees of their total staff.

iv) Maharashtra Housing Board :- The activities of the Maharashtra Housing Board in the region commenced in Poona in 1955 with the construction of colony known as Phule Nagar at Yeravada which was built mainly for industrial workers. The Maharashtra Housing Board is building tenements under the following housing schemes (i) subsidised industrial housing (ii) Low income group housing (iii) Middle income group housing & (iv) Housing for flood stricken persons. The number of tenements constructed by the Board under the above four schemes are 732, 777, 134 & 2904, respectively. Thus the total number of tenements constructed by the housing Board in the region is 4547. About 200 additional tenements would be constructed by the Board in the near future.

v) Poona Municipal Corporation:- The total staff employed by the Poona Municipal Corporation is about 6,000 of whom about 1800 employees are provided with tenements. The Corporation has a programme of constructing 1000 tenements for its employees in the 4th Five Year Plan.

vi) Other Public Bodies :- The number of quarters supplied by the Maharashtra State Electricity Board, Maharashtra State Road Transport Corporation, Life Insurance Corporation and Maharashtra Industrial Development Corporation for their employees in the region is 154, 56, 96 and 57 respectively. The M.I.D.C. has at present a programme

to construct 40 ne tenements in the near future.

vii) Thus the number of tenements constructed in the region so far by the various Public Agencies is about 10850.

6.10 Before 1961 there were only 54 housing co-operative societies in the region. From 1961 the Co-operative housing activity gathered rapid momentum. At present there are 450 co-operative housing societies in the region with a total membership of about 9800. About 4100 tenements have been constructed by the cooperative societies which were formed after 1960 and these societies are likely to construct about 5725 additional tenements in the near future.

Industrial Housing :-

6.11 In the Poona region there are at present about 80000 factory employees serving in about 730 factories. Of these factories only 25 factories have provided 1678 quarters to their employees so far. There are proposals of constructing further about 7000 tenements by these factories in the near future. Some of the factories in Pimpri-Chinchwad areas are contributing indirectly in augmenting the housing stock by encouraging the formation of co-operative housing societies of their employees and by contributing to the construction of tenements by the Maharashtra Housing Board.

Schemes of the Life Insurance Corporation:-

6.12 The Life Insurance Corporation has formulated schemes viz. (i) Loans on Mortgage of immoveable property, (ii) Own your house scheme (iii) Loans to cooperative housing societies of the L.I.C. employees, (iv) Loans to individual employees (v) Loans to housing co-operatives of employees of public limited companies for granting loan for housing construction.

Public, Co-operative and Industrial housing:-

6.13 The number of tenements constructed so far under Public, Co-operative and Industrial Housing in the region works out to about 16600. The number of tenements likely to be constructed under these types of housing in the near future is about 17500. The present picture of Public, Co-operatives and Industrial Housing together with the future

likely increase in housing stock by various agencies discussed above is presented in Table No.3 below :-

T A B L E NO. 3 .

Name of the Agency.	No. of Employees.	No. of tenements constructed so far.	No. of tenements proposed to be constructed (in the near future).
1	2	3	4
1.State Government.	31,000	1845	750
2.Central Government.	42,000	360	2510
3.Railways.	3400	1924	200
4.Poona Municipal Corporation.	6000	1800	1000
5.Life Insurance Corporation.	700	96	-
6.Maharashtra State Road Transport Corporation.	300	56	-
7.Maharashtra State Electricity Board.	2100	154	154
8.Maharashtra Housing Board.	-	4547	192
9.Maharashtra Industrial Development Corporation.	-	57	40
Sub-Total(1 to 9)	-	10839	4846
10.Industries.	80,000	1678	7034
11.Co-operative Societies.	-	4110	5724
Grand Total.	-	16627	17604

Housing Needs :-

6.14 In estimating the housing needs, it is necessary to take into account the requirement of tenements due to various factors such as i)removal of over-crowding in the existing tenements, (ii)rehabilitation of slum dwellers, (iii)rehabilitation of families occupying the delapidated and therefore dangerous buildings,(iv)rehousing of families affected by planning proposals and (v)requirement of additional tenements for the increase in population.

Poona Development Plan Report 1960 :

6.15 The report on the development plan of Poona prepared by the Poona Municipal Corporation estimated that in 1960, there was an immediate need for 56,600 tenements to remove the then existing congestion and about 2200 tenements were required to be constructed every year for the yearly increase in population,estimated at about 10,000 persons per year.

6.16 On certain assumptions made on the basis of available data for the Poona Corporation area, the requirement of tenements due to various factors mentioned in para 6.14 above for the year 1967, works out to be about 66000. The break up of the various items is as follows :-

<u>Item.</u>	<u>No.of families.</u>
i)Excess of families over tenements.	4,000
ii)Housing requirements arising from over-crowding.	29,000
iii)Housing requirements for slum dwellers.	17,000
iv)Estimate of tenements unfit for habitation.	16,000

	Total :- 66,000

6.17 The additional number of tenements required in the urban and rural areas of the region excluding Poona City due to excess of families over tenements and for rehabilitation of slum dwellers is estimated to be 8120 in 1967.

Thus, the total housing need for the Poona Metropolitan Region in 1967 is estimated to be 74,120 tenements.

6.18 Projections of housing demand by 1971,1981,1991.

On the basis of population projections and housing requirements due to various factors mentioned earlier,

the number of additional residential tenements required in the region by 1967, 1971 and 1991 works out to be about 74120, 100825, 213190 and 373510 respectively after making an allowance of 10,000 tenements on account of overlapping. In other words the average rate of annual construction to meet the above housing needs during the period of next 24 years upto 1991 will have to be 15560 tenements per year as against the present annual rate of about 2,000. Of these, about 9500 and 4540 will have to be constructed per annum in the Poona City and surrounding areas and Bhosari-Pimpri-Chinchwad and surrounding areas respectively. This represents the magnitude of problem and the challenge facing the region. Table No.4 gives the requirement of additional tenements by 1971, 1981 and 1991 in different areas of the region.

Housing for different income groups :-

6.19 Income distribution noted in the Housing Survey conducted in 1967 for the Poona City was considered applicable for the region. This showed that the lowest 20 per cent of the families earned less than Rs.100/- per month. Assuming rent income ratio to be 15 per cent, this category of families could afford not more than Rs.15/- towards monthly rent. Another 44 per cent of the low income group families earned between Rs.101 to Rs.250/- per month and could afford a monthly rent between Rs.15 to 37. Other 25 per cent families earned a monthly income between Rs.251 to Rs.500/- and could afford a monthly rent between Rs.37 to 75. The remaining 11 per cent of the families earned a monthly income above Rs.500/- and could afford a monthly rent above Rs.75/-. Table No.5 below gives the income distribution of families, capital cost per tenement and living accommodation (plinth area) corresponding to the rent paying capacity of various income.

Area-wise Projections of Housing Demand for the Poona Metropolitan Region (Excluding Cantonments & Pimpri-Chinchwad N.D.A.)

Sr.No.	Name of the Area	Additional Tenements required on account of	Y E A R				Annual rate of construction required upto 1991.		
			1961	1967	1971	1981		1991	
1.	2.	3.	4.	5.	6.	7.	8.	9.	
1.	Poona City & surrounding Areas.	i) Excess of households over tenements.	2710	5660	5660	5660	5660		
		ii) Overcrowding.	-	29000	29000	29000	29000		
		iii) Slum Clearance.	-	17000	17480	17480	17480		
		iv) Unsafe condition.	-	16000	16000	39000	46000		
		v) Planning Proposals.	-	-	1500	3000	6000		
		vi) Population increase.	-	-	16670	67440	133850		
		Sub Total :	2710	67660	86310	161580	237990	9500	
2.	Ghosari-Pimpri-Chinchwad & surrounding Areas.	i) Excess of households	890	890	890	890	890		
		ii) Slum Clearance.	-	1860	1860	1860	1860		
		iii) Population increase.	-	N.A.	9980	36500	106350		
		Sub Total :	890	2750	12730	39250	109100	4540	
3.	Talegaon & surrounding Areas.	i) Excess of households over tenements.	70	70	70	70	70		
		ii) Slum clearance.	-	190	190	190	190		
		iii) Population increase.	-	N.A.	510	1120	1860		
		Sub Total :	70	260	770	1380	2120	90	
4.	Alandi & surrounding Areas.	i) Excess of households over tenements.	10	10	10	10	10		
		ii) Population increase.	-	N.A.	220	520	910		
		Sub Total :	10	10	230	530	920	40	
5.	Other Urban Areas.	i) Excess of households over tenements.	-	-	590	660	1330		
		ii) Population increase.	-	-	1615	5090	15630		
		Sub Total :	-	-	2205	5750	16960	710	
6.	Total Urban Areas.		3680	70680	102245	208490	367090	14880	
7.	Rural Areas.	i) Excess of households over tenements.	3440	3440	2850	2780	2110		
		ii) Population increase.	-	N.A.	5730	11920	14310		
		Sub Total :	3440	3440	8580	14700	16420		600
		Sub Total :	7120	74120	110825	223190	383510	15560	
8.	Total Region.								

- Notes : 1) The figures given above are rounded and do not take into account the new constructions of residential tenements during the period 1961-67 except for Poona City.
- 2) Additional tenements for increase in population are calculated on the basis of one tenement per family (Average family size is taken as 5.24).
- 3) There is certain amount of overlapping between the individual items viz. i), (ii), (iv) and (v) in respect of Poona City in the above table, while estimating the requirement of new tenements in the Poona City by 1971, 1981 and 1991 an allowance of 10,000 tenements is, therefore, made (This overlapping has already been accounted for in the figures for 1967).

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TABLE NO. 5.

Income distribution, Rent paying capacity and accommodation to match rent paying capacity.

1	2	3	4	5
Monthly income of families. Rs.	Percentage of families.	Monthly rent* - city. Rs.	Total capital** - cost of housing Rs.	Plinth area per tenement to match rent paying capacity in sq.m.(sq.ft.)
Below 100	20	Below 15	Below 1500	Below 5.11 (55)
101 to 250	44	15 to 37	1500 to 3700	5.11 to 14.86 (55 to 160)
251 to 500	25	37 to 75	3700 to 7500	14.86 to 30.66 (160 to 330)
Above 500.	11	Above 75	Above 7500	Above 30.66 (330)
Total.	100	-	-	-

* Rent paying capacity is assumed @ 15 per cent of family income.

**Economic rent is assumed @ 12 per cent of the total capital cost.

6.20 It would be observed that the last two categories of families viz. with income above Rs.251/- per month which represent 36 per cent of the total families may not need a public fund housing. The next 44 per cent of the families within the income category between Rs.101 to 250 per month will need certain amount of subsidies in rent for providing them some standard permanent type of housing under low income group housing scheme with a minimum carpet area of about 18.58 sq.mtrs.(200 sq.ft.) . For the remaining 20 per cent of the lowest income group families with a monthly income below Rs.100/- different schemes like development/land with basic sanitary facilities, provision of cheap transitional housing may have to be thought of taking into account their income level, stability of income and place of work.

6.21 The Study Group on Housing has made certain estimates of the cost of housing at current prices at Pochana and the same are presented in Table No.6 below to give an idea of unit cost of housing for different types of tenements :-

T A B L E NO.6.

Cost of dwelling unit according to its size and building/type

Carpet area including sanitary blocks sq.m. (sq.ft.)	No. of Rooms	Single story building type			Block of flats		Semi-tary block shared between
		Detached	Semi-detached	Terrace	No. of storeys Two	Three	
1	2	3	4	5	6	7	8
(Cost per dwelling unit = Rs.)							
11.15(120)	One	-	-	2340	-	-	Rs 4 families.
11.15(120)	One	-	-	2920	-	-	- 2 families.
18.58(200)	Two	-	-	4300	5530	5360	4 families.
18.58(200)	Two	-	6750	5040	6340	5950	2 families.
18.58(200)	Two	-	7260	6640	7720	7360	Independent.
29.73(320)	Three	11830	10530	10430	12480	11900	-do-
40.88(440)	Four	15210	13790	13600	14350	13690	-do-

6.22 It would be seen from the above table that the cost per dwelling unit for providing subsidised permanent new housing with a minimum carpet area of 18.58 sq.metres(200 sq.ft.) per family to about 44 per cent of the lower income group families having income between Rs.101 to 250 would vary from Rs.4300 for terrace type of accommodation to Rs.7700 for a tenement in a two storeyed block of flats. For the lowest income group families with monthly income below Rs.100, the construction of 3.7 m x 3 m(12' X 10') plinth called 'OTA'(with a space for 25 per cent extension) which would permit these families to build their own dwellings thereon is estimated to cost about

Rs.2000/- per unit as given below :-

T A B L E NO.7.

Cost of Different Development Items per Family.

Sr.No.:	Item of Development	Cost per family (in Rs.)
1	2	3
1.	Developed Land(Density put at 600 persons per acre)	Rs. 600-00
2.	Sanitary Block(Shared between five families)	Rs. 250-00
3.	'Otta', i.e. Plinth 3.7 m X 3 M. (12' X 10')	Rs. 330-00
4.	A.C.Sheet roofing.	Rs. 300-00
5.	Walls.	Rs. 350-00
6.	Doors, windows etc.	Rs. 170-00
Total :-		Rs. 2000-00

6.23 The foregoing analysis would indicate the magnitude of housing problem in the region. Taking into account the above housing deficiency in the region, a large scale coordinated housing programme is essential. This also calls for a suitable Land and Housing policy for the region.

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CHAPTER VII.

TRANSPORT AND COMMUNICATIONS.

7.1 Transport facilities for the region need to be developed to bring about a coordinated development of its various areas. In order to assess their adequacy and analyse the various problems they pose at present and are likely to pose in future, a few essential surveys were conducted to supplement the already available data. The proposals envisaged by the various development agencies in the region such as building and communication department, railway authorities etc. , have also been taken into account.

R A I L W A Y S

7.2 The region has a fairly good network of railways (Map 44). It is linked with Bombay by a broad gauge double line electrified railway track. This section falls in the Central Railway Zone. It is linked with Madras by broad gauge single line track and with Bangalore by metre gauge single line track. These two sections fall in the South-Central Railway Zone. The section of last railway track between Poona-Miraj is being converted into broad gauge and the work is likely to be completed by 1970-71. The section of Bombay-Poona track between Poona and Lonavala (64 km.) is also served by local trains. There are in all 19 railway stations in the region. The total length of the railway tracks is 102 km. representing an average of 6.74 km. per 100 sq.km.of area. The railways serve mainly the areas in the North-Western and South-Eastern parts of the region. The North-Eastern and South-Western parts of the region have a poor accessibility to the present railway lines.

RAILWAY TRAFFIC

7.3 Goods Traffic by rail: The facility of booking and delivery of goods is available only at 6 stations viz. Talegaon Dabhade, Dehu Road, Chinchwad, Kirkee, Poona and Ghorpadi. The data collected by the Regional Transport Survey Unit of the State Government in 1965 is utilized for the purpose. This data gives information regarding import and export of goods handled at the above 6 railway stations. The figures of transit goods traffic are not available.

(1) The total inward and outward goods traffic operated at the above 6 stations in the year 1963-64 was of the order of about 9.59 lac tonnes of which as much as 5.47 lac tonnes or 57 per cent and 2.27 lac tonnes or 24 per cent was cleared through the Poona and Ghorpadi railway stations respectively.

(2) Of the total goods traffic of 9.59 lac tonnes, 4.45 lac tonnes or 46 per cent was destined to stations within the region while 5.14 lac tonnes or 54 per cent was destined to places outside the region. In respect of Ghorpadi station all the goods traffic which mainly consisted of coal was destined to out stations. Similarly, in the cases of Talegaon Dabhade, Dehu Road and Kirkee stations the percentage of outgoing goods traffic was as high as between 65 to 90 per cent. Only in the cases of Chinchwad and Poona stations the percentage of incoming goods traffic was substantial viz. 64 and 72 respectively.

(3) Coal was the major commodity in the total goods traffic of the region with a significant percentage of 28. For commodities like food-grains, mineral oil and building materials the corresponding percentages were 11.2, 17.6 and 15.5 respectively. Major portion of the total incoming goods traffic of 4.47 lac tonnes in the region was commodities like i) building materials and machinery (136200 tonnes), ii) food-grains (96950 tonnes), iii) mineral oil (68900 tonnes), iv) coal* (49600 tonnes) v) wood-unwrought (29100 tonnes) and vi) fodder (15300 tonnes). Major portion of total outgoing goods traffic of 5.14 lac tonnes was commodities like i) coal (219100 tonnes), ii) mineral oil (100500 tonnes), iii) fruits and vegetables (14200 tonnes), iv) building materials (13000 tonnes) and v) food-grains (10600 tonnes). Almost all the goods traffic of commodities like cotton (2000 tonnes), oil seeds (2100 tonnes), solid fuel (7800 tonnes), wood-unwrought (29100 tonnes), paper (5700 tonnes) and beedi leaves (5700 tonnes) was destined to stations in the region while that of items like live-stock (3000 tonnes) and brass and copper wares (3000 tonnes) was destined to stations outside the region.

(4) Railway trackwise analysis of the total incoming and outgoing goods traffic data for the region indicated

* The figure of coal imported at Ghorpadi railway station is not available.

that the maximum total traffic (viz 38%) was operated on the Dhond-Poona direction track. Traffic on the Bombay-Poona and the Miraj-Poona directions constituted 31 per cent each of the total goods traffic. It is noteworthy to state that the incoming traffic from the Miraj side to stations in the Poona region was quite negligible while the outgoing traffic consisting mainly of mineral oil & coal in the same directions was as high as 56 per cent of the total outgoing traffic from the region. Total incoming mineral oil by rail to the region was 68,900 tonnes while 105,000 tonnes were despatched by rail towards Miraj direction. This was so because a large quantity of mineral oil is generally brought to Poona by road and then transported by rail on Miraj Line. The percentage of incoming traffic from the Dhond-Poona direction to the total incoming traffic in the region was quite high viz. 63 per cent, mainly on account heavy import of building material, machinery, coal, wood-unwrought and food-grains. The incoming and outgoing goods traffic in the region from the Bombay-Poona direction was more or less the same. It was, however, seen that the traffic in food-grains, mineral oil, building materials and machinery was quite heavy on this track.

Passenger Traffic by Railway Main Lines (Map 45):

7.4 As already stated there are 19 railway stations in the Poona Metropolitan Region. An Origin and Destination Survey of Passengers of 23 railway stations was carried out in 1966-67 which include all the above 19 stations and in addition 4 more railway stations viz. Vadgaon, Kamshet, Malavali and Lonavala on the Poona-Lonavala railway track. Out of the above 23 railway stations, 15 are on Poona-Lonavala section, 3 on Poona-Sholapur track and 5 on Poona-Bangalore track.

(1) The total incoming and outgoing passenger traffic from these 22* railway stations was 19,321 per day of which as many as 13,938 or 72 per cent pertains to the Poona railway station alone.

(2) Of the above 13,938 railway passengers as many as 53 per cent were coming from or destined to stations

* The data for Guroli railway station is not available.

towards Bombay side beyond the region between Lonavala and Bombay V.T. The distribution of major to and fro traffic at the Poona station coming from and going to various directions is indicated below:-

Table No. 1.

S. No.	Station between	To & fro traffic at the Poona Stn.	% of Col.2 to total to & fro traffic at the Poona station viz. 13,938
1.	2.	3.	4.
1.	Poona-Lonavala	246	1.76
2.	Lonavala-Bombay V.T.	7470	53.60
3.	Poona-Sholapur	2436	17.47
4.	Poona-Miraj-Sangli-Kolhapur	1435	10.36
Total		11587	83.13

(3) The major to and fro main line passenger traffic at the railway stations on the Poona-Lonavala track originated from or was destined to stations towards Bombay. As compared with the traffic on Poona-Bombay line, the traffic on Poona-Sholapur and Poona-Miraj track was very small. The Poona-Bombay track is, therefore, a major railway corridor in the region.

R O A D S

7.5 Poona is connected with Bombay, Nasik, Hyderabad and Bangalore by National Highways. The region has nearly 444 Kms. (275 miles) of National Highways, State Highways, Major District Roads and Other District Roads. This works out an average of about 29 kilo-metres for 100 sq. kilo-metres or 47 miles per 100 sq. miles and 45 kilometres or 28 miles for every lac of persons in the region. The road length per 100 sq. kilometres (per 100 sq. miles) for the Poona District and the Maharashtra State is 15 (25) and 18 (11) respectively. The ratio of road length per lac of population in the Poona District and the Maharashtra State is about 162 kms. (101 miles) and 155 Kms. (96 miles) respectively. The length of the roads classified under major categories is given on the next page.

Table No. 2 (Map 45).

National Highways km. (Miles)	State Highways km. (Miles)	Major Dist. Roads. Km. (Miles)	Other Dist. roads. Km. (Miles)	Total Km. (Miles).
1	2	3	4	5
93 (58)	26 (16)	163 (101)	162 (100)	444 (275)

The National Highways formed 21 per cent, the State Highways 6 per cent, the Major District Roads 37 per cent and the Other District Roads 36 per cent of the entire regional road system (excluding municipal roads and village roads). The National Highway No.4 Bombay-Poona-Bangalore is of 3 lane width, National Highway No.9 Poona-Hyderabad and National Highway No.50 Poona-Nasik are of 1 and 2 lane width respectively. In 1965-66, 3 municipal towns in the region viz. Poona, Talegaon Dabhade and Alandi (Devachi) had 284 kms. of roads within their limits of which Poona accounted for 266 kms., Talegaon Dabhade 10 kms. and Alandi 8 kms. () The length of village roads in the region is of about 193 kms. (120 miles). Adding up the length of all the roads of different types viz. National Highways, State Highways, Major District Roads, Other District Roads, village roads and Municipal Roads, the total road length in the region (excluding local roads of 3 cantonments) was about 921 kms. (571 miles).

Road Traffic.

7.6 Goods Traffic by road:- An analysis of goods traffic by road revealed that the total inward, outward and transit goods traffic in 1965 for the Poona focal point was of the order of 46 lac tonnes. Of this, nearly 21 lac tonnes was recorded on Bombay-Poona road. Traffic on Poona-Bangalore, Poona-Sholapur, Poona-Nagar and Poona-Nasik roads was 11.62, 7.66, 4.95 and 1.13 lac tonnes respectively.

7.7 Traffic counts: The traffic counts taken by the Buildings and Communication Department on important

National Highways indicated that the average daily traffic was maximum on Poona-Bombay road with 32510 vehicles. The Poona-Sholapur road with 3620 vehicles and Poona-Bangalore with 2420 vehicles came next in order. Breakup of the above traffic according to type of vehicles was as follows :-

Table No.3 (Map 46)

S.No.	Name of the Road	Average Daily Traffic			Total. (PCUs)
		Light	Heavy	Slow-moving (Excluding cycles.)	
1.	Bombay-Poona Road.	6790	18060	7660	32510 (106930)
2.	Poona-Nasik Road.	273	913	149	1340 (3911)
3.	Poona-Nagar Road.	490	966	344	1800 (5452)
4.	Poona-Sholapur Road.	548	2306	766	3620 (12062)
5.	Poona-Bangalore Road.	540	1426	454	2420 (7542)
		8646	23671	9373	41690 (135897)

PCUs = Passenger Car Units
 1 Light Vehicle = 1 PCU
 1 Heavy Vehicle = 3 PCUs
 1 Slow moving vehicle = 6 PCUs

According to the 16 hour traffic count conducted by the Board's Office on Bombay-Poona Road in 1968, it was observed that the flow of cyclists on this Highway was also very heavy viz. about - 26000 cycles or 1625 cycles per hour of which it was 4700 cycles at peak hours between 7.00 to 8.00 a.m. and about 3600 cycles between 6.00 p.m. to 7.00 p.m.

By-passable Traffic by road. (Map 47)

7.8 The main regional traffic routes entering Poona City from all sides at present pass through the city. An origin and Destination survey conducted in 1968 for the purpose of estimating by-passable traffic by road revealed the following:
 (1) Out of 5994 vehicles which entered Poona City from all survey points (10 in number) 2153 i.e. 36 per cent were by-passable. It was found that there were 698 by passable vehicles between Bombay-Satara route in both the directions and 482 vehicles between Bombay-Sholapur route in both the directions. Converting this traffic into Passenger Car units (P.C.U.s., - 1 heavy vehicle is equal to 3 light vehicles) the total traffic on

the Bombay-Satara and Bombay-Sholapur sections was 1900 and 1425 P.C.U.s. respectively. This traffic is expected to be doubled during the course of 10 years and it would be necessary to divert the existing highways from outside the developed area.

(2) The Buildings and Communication Department of the State Government has carried out a preliminary survey in regard to the alignment of a possible diversion of Bombay-Bangalore Road from the Western periphery of the Poona City and has suggested the inclusion of the project in the Fourth Five Year Plan.

(3) In view of a large volume of by-passable traffic in the Bombay-Sholapur direction the Study Group on Transport and Communication has also stressed the necessity of a new diversion road linking the existing Poona-Bombay and Poona-Sholapur roads so as to run along the Northern and Eastern periphery of the Poona city and its surroundings.

Air Transportation:

7.9 There is a Defence Airport to the North-East of the Poona City at Lohogaon which is at present catering to the scheduled flights of Indian Airlines Corporation to and from Bombay and Belgaum. The average incoming and outgoing passenger traffic of these flights is about 2400 per month.

Analysis of Major Traffic Movements within the Region.:

7.10 The problem of transportation is essentially related to location of work centres and residential areas and pattern of transportation facilities available in the City. There are several means of transportation such as buses, trolleys, helicopters, sub-ways, elevated rail-roads, suburban rail-roads etc. So far as the Poona Metropolitan Region is concerned, the main transportation system operates through the suburban railway, the Poona Municipal Transport buses and State Transport buses.

7.11 The traffic in general within the Poona region is heterogeneous in character. There is an overwhelming number of cyclists (there is one cycle per 10 persons). The table over ^{leaf} indicates the number of vehicles in the Poona City as in 1967 and its projections for the next 20 years.

Table No.4.

S. No.	Category of Vehicles.	No. of vehicles as on	
		1957	1987
1.	Motor Cycles, Scooters.	6316	37030
2.	Motor Cars	3634	19020
3.	Auto-Rickshaws.	1000	5800
4.	Taxi-Cabs.	375	1150
5.	Buses	464	1370
6.	Goods vehicles (including D/vans)	2969	11410
7.	Ambulances	14	54
8.	School buses	9	37
9.	Private Service	77	205
10.	Trailors.	285	530
11.	Tractors.	84	120
12.	Sub-Totals (1 to 11)	15727	76726
13.	Bicycles.	65227	150000

7.12 It was not possible for the Board to undertake all the comprehensive traffic and transportation studies in the region for preparing an overall transportation plan. In order to investigate the movements on major traffic routes, the Board only undertook the following two Surveys viz. (i) Commutation of industrial workers and (ii) traffic on Poona-Lonavala railway local lines. An analysis of traffic movements within the Poona Municipal Corporation area was not done by the Board. Similarly an analysis of traffic movements between Poona City and the other areas of the region for other types of employment, except industries was also not undertaken. It is, however, felt that since the major employment centres outside the Poona Corporation area are the factory areas, the Survey of commutation of industrial workers would be indicating the major corridors of traffic movements.

Commutation of Industrial Workers:(Map 48 and 49)

7.13 As stated in the earlier Chapter on Industries, a major industrial area in the region admeasuring about 1619 hectares(4000 acres) is located in the Bhosari-Pimpri-Chinchwad industrial complex on the Bombay-Poona axis and is 11 to 19 km.(7 to 12 miles) away from the densely populated areas of the Poona City. There are 63 factories employing about 17600 workers in this belt. The Defence factories in Kirkee Cantonment, Dehuroad Cantonment and some factories in Bopodi, Dapodi and Talegaon Dabhade areas located on the same axis employ additional about 30500 workers. Thus the total number of factory workers serving in factories located on the Bombay-Poona rail road axis between Kirkee and Talegaon Dabhade is about 48100 as against total factory employment of about 80000 in the entire region.

7.14 The location of large factories away from the residential areas of the main city without provision for workers' housing has resulted in large number of factory workers commuting a long distance between their residence and work place and in the growth of slums. Some salient points of the survey of Plight of Industrial Commuters(1966-67) are summarised below 1.:

.....
1. In this Survey 668 factories covered in the Industry Survey - 1966 and two Defence factories at Kirkee are considered. These 670 factories employ about 70,600 workers.

Mode of Transport of Industrial Commuters :- (Maps 50 & 51)

1) The major mode of transport of the industrial workers was the cycle. The buses and the railways came next. The following table gives the details of the type of conveyance used by the factory workers in the Poona Metropolitan Region.

T A B L E NO. 5.

Sr.No.:	Mode of Transport.	No. of Factory workers.	Percentage.
1	2	3	4
1.	Railway.	6174	8.75
2.	Bus.	7524	10.65
3.	Cycle.	28487	40.35
4.	Self propelled i.e. automobiles.	672	0.95
5.	On foot.	27748	39.30
6.	Total.	70605	100.00

a) Cycles: It would be observed that a majority (40 per cent) of the factory workers used cycles, while about 9 per cent and 11 per cent used railway and bus respectively. Cycle would naturally be a major mode of transport for factory traffic within the Poona Municipal Corporation limits. But it was also observed to be a major mode of transport of the workers in the factories outside the Poona Corporation. Out of 39000 factory workers in the Kirkee-Chinchwad belt about 16,700 or 43% used cycle for journey to work of which about 8850 were from Poona City. About 10,600 workers from the above 16,700 were employed in defence factories at Kirkee and about 5000 of them were from the residential areas of Poona City. Such a heavy cyclist traffic at the peak hours in the morning and evening on the Poona-Bombay road obstructs the other fast moving local and through traffic which is also of considerable magnitude and creates a serious problem on the highway. One reason, why about 8850 workers residing in Poona City and working in factories outside Poona City used cycle, is the absence of rapid suburban local train service on the lines of Bombay suburban service, lack of suitable timings and the location of large number of factories away from the railway stations. Introduction of a new railway station at Bhosari in between the existing Dapodi and Pimpri.

railway station might however, influence more factory employees in the region to use railway, as a good number of factories are located in the Bhosari-Pimpri area.

b) Railways :- About 6200 i.e. hardly about 9 per cent of the total factory workers in the region used railway for their journey to work and almost all these workers were from factories in Kirkee-Chinchwad belt and about 56 per cent of these were residing in Poona City.

c) Buses :- About 7500 factory workers or 11 per cent used buses as their mode of transport for the journey to work. One-half of these workers were employed in factories in the Kirkee-Chinchwad belt, while about 15 per cent were employed in a factory at Loni-Kalbhori village. The number of factory workers residing in Poona City and going to factories in the Kirkee-Chinchwad belt and Loni-Kalbhori village by buses is respectively about 3290 and 1080.

d) Distance travelled, Time and Money spent for commutation:

The average distance (one way) a factory worker had to travel was 6.9 km (4.3 miles). The average time (one way) spent on this commutation worked out to be 33 minutes while the average monthly expenditure for to and fro journey to work was about Rs.7/-

7.15 Railway Passenger Traffic on Poona-Lonavala Local Line (Map 45)

About 8,000 local train passengers travel daily to and from Poona railway station. The corresponding figure for the Shivajinagar railway station which is nearer to a major portion of the residential parts of the City was about 11,600 i.e. a majority of local train passengers preferred Shivajinagar railway station. To and fro daily passengers traffic was as heavy as 20 to 21 thousand between Shivajinagar-Pimpri railway track. The details of such ^{traffic} between various sections on Poona-Lonavala

local rail line is indicated below :

T A B L E NO. 6 .

1	2
1. Poona-Shivajinagar.	8,140
2. Shivajinagar-Pimpri.	20,563
3. Pimpri-Dehuroad.	14,669
4. Dehuroad-Talegaon- Dabhade	6,318
5. Talegaon-Lonavala.	2,642

1) There are at present about 24 local trains plying up and down on the Poona-Lonavala railway track. The average daily railway passenger traffic travelling up and down by local trains between Shivajinagar and Dehuroad railway stations was between 15,000 and 21,000. The average passenger carrying capacity of the trains running on this local track is about 600 and 24 local train (leaving aside the question of peak hours) can carry a maximum of 14,400 passengers daily without over-crowding. Obviously there is a heavy pressure of traffic on these local trains during peak hours.

7.16 Intra-Regional Bus Transport by City Buses:-(Map 52):

The Poona Municipal Transport (P.M.T.) is an agency operating city buses in the region. Its area of operation extends beyond the Corporation ^{limits} to Loni in the East, Katraj, Wadgaon Shivane in the South, Nigadi in the West and Bhosari, Dighi in the North. The Undertaking has about 250 buses plying on 47 routes. The daily average number of passengers travelling in the P.M.T. buses is about 2.55 lacs. The major bus routes in the order of passengers carried are the following :-

1. Deccan Gymkhana - City Post - Camp- Poona Station.
2. City Post - Rasta Wada - Poona Station.
3. Swar Gate - Deccan Gymkhana - Poona Station.
4. Deccan Gymkhana - Fule Market - Ganj & Nana peth - Camp - Poona Station.

5. Deccan Gymkhana - Corporation-Dapodi-Pimpri-Chinchwad
-Nigdi.

6. Swar Gate-City Post-Corporation-Tanaji Wadi.

7.17 State Road Transport Corporation:-(S.T.Buses):-

The data collected in a survey carried out by the Regional Transport Survey Unit of the State Government in 1965 was analysed only to know the movement of S.T. passengers on different routes in the areas within the Region. The information obtained is given in the following table :-

T A B L E NO.7. (Map 53)

Sr.No.	Name of the Road.	No. of passengers per day.
1.	Poona-Alandi.	1034
2.	Poona-Panshet.	582
3.	Poona-N.D.A.	170
4.	Poona-Sholapur.	119
5.	Poona-Ahmednagar.	119
6.	Poona-Mulshi.	85
7.	Poona-Nasik.	76
8.	Poona-Saswad.	49
9.	Poona-Bombay.	42
10.	Total.	2276

It would be observed that out of the 2300 passengers who travel daily by S.T.buses from Poona to other places in the Region, those on Poona-Alandi road were maximum (45 per cent) and Poona-Panshet was the next with 25 per cent, while the other routes together accounted for the remaining 30 per cent. Comparatively large No. of persons travel by S.T.buses on Poona-Alandi Road as Poona Municipal Transport buses are not available on the route. It was further observed that the number of persons who travel daily by S.T.Buses from Poona to places within and outside the region was about 13,100. The detailed analysis of this traffic has not been carried out.

7.18 Estimated Transport requirement on Railway Line :

As already noted the existing railway facilities on the Poona-Bombay railway line are found to be inadequate to cope up with the increased volume of heavy traffic created by the establishment of a good number of industries in the Pimpri-Chinchwad Industrial complex. The Maharashtra Industrial Development Corporation (M.I.D.C.) has developed an area of about 1093 hectares (2700 acres) for industrial use in the said industrial complex. Some factories have started their production in the M.I.D.C. industrial area. However, the same are in the initial stage of development. It is estimated by the Study Group on Industries that the present factory employment of 48100 in Kirkee-Talegaon belt would increase to about 1,11,500 during the course of next 20 to 25 years and the same will sustain a very large population. The distribution of expected industrial employment in the various industrial centres in the Kirkee-Talegaon belt is given below :-

T A B L E NO. 8.

Sr.No.	Name of the Urban centre.	Urban population. 1961	Present industrial employment.	Projected industrial employment by 1991.	Projected Population. 1991
1	2	3	4	5	6
1.	Kirkee Cantonment.	58496	17000	17000	90000
2.	Bopodi-Dapodi.	9215*	8000	8000	N.E.
3.	Bhosari.	6049			
4.	Pimpri.	15611	17600	80000	589000
5.	Chinchwad.	6315			
6.	Dehu-Road Cantonment.	19242	5000	5000	27000
7.	Talegaon Dabhade.	11753	500	1500	23000
Total.		126681	48100	111500	729000

*Population of Dapodi is given here since population of Bopodi is not seperately available.

N.E. - Not estimated seperately.

It would be seen from the above table that the 1961 population of all the towns viz. Dapodi, Bhosari, Pimpri, Chinchwad, Dehuroad and Talegaon Dabhade on the Kirkee-Talegaon section together was about 1.27 lacs. The estimated 1991 population of these towns together will be about 7.29 lacs. In other words, out of the anticipated urban population of about 9.85 lacs outside the Poona Corporation limits and its surrounding area, about 7.29 lacs i.e. 74 per cent would be in the Poona-Talegaon Dabhade belt. A large continuous agglomeration would, therefore, be developed within the 32 km. (20 miles) belt from Poona to Talegaon. Such a large urban growth in continuation of Poona City on the Poona-Talegaon Dabhade section is bound to develop a strong daily interaction amongst its different areas for exchange of goods and services, movement of people for social, educational and cultural purposes or movement of retailers for transacting business in the markets provided by larger city centres. It would therefore be essential to introduce a rapid railway suburban service on the Poona-Lonavala section on the lines of Bombay suburban train service for which the quadrupling of railway lines and introduction of automatic signalling system are the basic prerequisites.

2) The railway authorities have chalked out a phased programme for improving the Local train service in the Poona-Lonavala section. In the first instance electric multiple unit trains are proposed to be introduced on the section so that each train will carry about double the number of passengers carried at present. This will relieve overcrowding considerably. The second stage will be to provide automatic signalling between Poona and Talegaon which would enable increase in the No. of trains. The third stage will be to quadruple the lines.

7.19 Estimates of future goods traffic:

Commoditywise inward and outward goods traffic in an area is governed by factors like human population, the size of economic activities like commerce, industries, agriculture etc. Taking these into consideration the future goods traffic in the region by rail and road is worked out separately. In the case of railways, the information about the present transit traffic could not be

obtained. The same was, however, available for goods traffic by road. It is also assumed that the ratio of transit traffic to the total of inward and outward traffic as observed in case of goods traffic by road will more or less remain the same in the case of transit traffic by Railways when compared to its corresponding inward and outward goods traffic figures for the region. The estimated inward, outward and transit traffic for rail and road by the year 1991 will be as shown in the table below :-

T A B L E NO. 9.

Goods Traffic by	GOODS TRAFFIC (in lac tonnes)							
	Present				1991 (estimates)			
	I.	O.	Tr.*	Total.	I.	O.	Tr.*	Total.
1.	2.	3.	4.	5.	6.	7.	8.	9.
Rail	4.45	5.14	16.65	26.24	10.51	7.06	30.52	48.09
Road.	10.51	6.31	29.22	46.04	24.67	12.18	63.98	100.83
Total.:	14.96	11.45	45.87	72.28	35.18	19.24	94.50	148.92

* Estimated.

- Note :- 1) I - Inward O - Outward Tr. - Transit.
 2) Present traffic for railways is for the year 1963-64
 3) Present traffic for road is for the year 1965 & is only for the Poona focal point.

1) It would thus be seen that the existing goods traffic of 72 lac tonnes in the region would increase to 149 lac tonnes by the year 1991. Such a large increase in the goods traffic will therefore necessitate a radical improvement in the present rail and road system. The necessity of quadrupling railway line between Poona-Lonavala has already been indicated in the previous paragraphs. The Study Group on Transport and Communications is of the opinion that doubling may also become necessary along the Poona-Dhond section as goods traffic on that section is quite substantial.

2) At present the industries developed in the M.I.D.C. area at Bhosari-Pimpri-Chinchwad do not have a facility of rail siding. A new railway link from Chinchwad to Lohogaon through the M.I.D.C. area has been suggested by the industrialists on a priority basis. This will facilitate the movement of heavy goods to and from the factories in the area and thereby increase their efficiency.

3) The anticipated increase in the volume of goods traffic on the major highways also demands the diversion of these highways along the peripheries of the developed parts of the city.

7.20 Village accessibility by Roads (Map 54):

1. The 20 Year Road Development Plan for the Poona District (1961-81) proposed by the Buildings and Communication Department envisages that in the District no. village should be at a distance of more than 2.5 km. (1.5 miles) from a Katcha (unmetalled) road and 5 km. (3 miles) from a Pucca (metalled) road.

2. The table indicates number of villages in the region directly abutting on the National Highways, State Highways, Major District Roads and Other District Roads.

T A B L E NO.10.

Type of Road.	No. of villages directly abutting.
1	2
1. National Highways.	9
2. State Highways.	2
3. Major Dist. Roads.	32
4. Other Dist. Roads.	35
	78

It would be seen from the table that 78 villages are directly abutting on good roads. Of the remaining 49 villages, 33 villages are within 3 km. (2 miles) of any of the good roads of the above categories. Other 10 and 6 villages are respectively between 3 to 5 km. (2 to 3 miles) and more than 5 km. (3 miles) from the above categories of roads. (List of villages according to the present accessibility is given in the appendices). On examination of proposals of 1961-1981 Road Plan of the Poona District, it is noticed that the number of villages directly abutting on ^{the} above 4 categories of roads would increase from 78 to 91. The table below indicates accessibility of villages by roads according to existing position and proposals made in the

Road Plan 1961-1981.

T a b l e No. 11 .

Distance from N.H.,S.H. M.D.R. & O.D.R. in km.(miles)	No.of villages according to	
	Existing pōsition.	Proposals in Road Plan.
T	2	3
i) 0 (0)	78	91
ii) 0-1.6 (0-1)	13	17
iii) 1.6 - 3.2 (1-2)	20	11
iv) 3.2 - 4.3 (2-3)	10	5
v) Above 4.8 (Above 3)	6	3
	<u>127</u>	<u>127</u>

3. The Study Group on Transport and Communications has proposed that in the Poona Metropolitan Region which is rapidly developing, the present village roads and other District Roads in the 1961-1981 Road Plan should be upgraded to the standard of Other District Roads and Major District Roads respectively. Such upgraded Other District Roads should be provided with full cross drainage works and all the Major District Roads should be blacktopped throughout their length. The Group has also suggested improvement of existing bridges, provision of a few new bridges to improve the road accessibility of the various parts of the region.

Necessicity of overbridges at Chinchwad and Hadapsar level crossings.

7.21. The railway tracks of the Central and the South Central (Miraj Section) Railways cut the area of the region diagonally and there are at present only three overbridges and three underpasses on the city roads and two more underpasses in Kirkee Cantonment. There are 22 railway level crossings on the other roads in the region. Due to rapid industrial activities in the region the traffic on these roads has considerably increased. In order to assess the traffic held up due to frequent closure of railway crossings in the region, a survey in respect of four important level crossings on main roads in the region at Chinchwad, Pimpri, Dapodi and Hadapsar was conducted in 1968 by the office. According to the results of the survey, the railway crossing at Chinchwad remained closed for

nearly nine hours on the survey day causing thereby an interrupt-
-tion to nearly 2000 vehicles (1550 slow, 450 fast). The maximum
number of vehicles held up at the particular closure of railway
gate was 110) (21 fast, 89 slow). Similar analysis for the railway
gates at Pimpri, Dapodi and Hadapsar is indicated below :-

Table No. 12

Item	Railway Gate At		
	Pimpri.	Dapodi	Hadapsar.
i) Total hours of closure	9½ hours.	7½ hours.	2½ hours.
ii) Total No of vehicles held up.	F: 200 S: 1500 T: 1700	304 2648 2952	317 1005 1322
iii) Maximum vehicles held up at single closure.	F: 9 S: 104 T: 113	39 598 637	15 153 168

Note- F - Fast moving, S - Slow moving, T - Total Vehicles.

The above figures would indicate that considerable incon-
-venience is caused due to the traffic held up very frequently at
the two railway level crossings at Chinchwad & Hadapsar & constru-
-ction of overbridges at an early date is necessary at these points
in the light of future development in those areas. The concerned
authorities are understood to have been dealing with the problem.

Water Transport:

7.22 Water transport (ferry service) plays relatively an in-
-significant role in the transport system of the region. The total
number of passengers using ferry service daily in the surveyed
region ^{excluding Poona City area.} is about 3250. Significant number of passengers using ferry
service between villages or group of villages is indicated in
Table No. 13.

Table No. 13

From crossings at	To crossings at	Approximate No. of passengers using ferry service per d
1. Manjari Kh.	Manjari Fk.	588
2. Wadgaon Sheri-Kharadi.	Mundhawa.	514
3. Pimpri Waghere.	Rahatni-Pimple-Saudagar.	440
4. Kivale-Ravet.	Jambe-Punawale.	420
5. Kolwadi-Sasate.	Loni-Kalbhori-Turkhat.	366
6. Ashotpur-Hingangaon.	Koregaon Mul. Bhawarapur-Khamgaon	298
7. Mandvi Pk. - Afalambe.	Khadakwasla-Khanapur.	- Tek. 90

CHAPTER VIII : PUBLIC UTILITY SERVICES.

I : WATER SUPPLY

Urban Water Supply :

8.1 As per 1961 census there are 12 urban areas in the Poona region viz. Poona City, Dapodi, Lohogaon, Khadakwasla (N.D.A.), Bhosari, Pimpri, Chinchwad, Talegaon, Alandi and Cantonment Boards of Poona, Kirkee and Dehu Road. The two urban areas of Dapodi and Lohogaon are now included in the Poona Municipal Corporation. At present the facility of piped water supply exists in all the above urban areas having a population of about 8.06 lakhs or 81 percent of the total 1961 Region's population of 9.93 lakhs. The position of water supply in respect of each of the above areas is described in the following paragraphs:-

Poona City :

Historical Background:

8.2 The rivers and wells were the only principal sources of water supply for the town till 1750 when water supply through earthen pipes was started for the city from the Katraj Lake. To augment this water supply, Parvati lake was built in 1755 in the southern end of the town. Ambil Odha was diverted into this lake. Two more aqueducts were built around 1799, one by Sardar Raste at Kondhave and another by Nana Fadanavis at Narhe-Ambegaon.

8.3 The Britishers and local inhabitants tried to augment this water supply to cantonment and city areas of Poona by harnessing & storing combined flows available from the Mutha, the Mula and the Pavana rivers by constructing a low level impounding masonry bund known as Jamshetji Bund at Bund Garden across the Mula-Mutha rivers in 1846. After completion of the Khadakwasla reservoir in 1879, water was being supplied to the city from that lake through its canal system. In 1882-83, the daily water supply was of the order of 6.82 million litres (1.5 million gallons) indicating the daily average of 68.20 litres (15 gallons) per head for the then population of about one lac. The British Government constructed a highly protected water works known as Poona Cantonment Water Works in 1848.

8.4 The first scheme of piped water supply of Poona City was undertaken by about 1908 and completed by about 1915. The water was brought by the Mutha Right Bank Canal into Swargate Water Works. The original scheme was designed for a population of 1,21,000 at 90.92 litres (20 gallons) per capita.

In the year 1929, the distribution system was remodelled for a population of 1,77,000 at 181.84 litres (40 gallons) per head per day. Three storage tanks were constructed to supply water to high level zones. In 1941, the population of the city increased to 2,38,000. The original water supply scheme was found to be inadequate to cope up with the increased population. Panshet floods in 1961 and consequent dispersal of population to residential areas and growth of city due to industrialisation etc. created a grave problem of water supply. Before the Panshet disaster, in 1961, the total daily supply for the population residing in Poona Municipal Corporation limits and Cantonments limits and the military areas round about was approximately 147 million litres (32.3 million gallons) per day as under :

- | | |
|---|------------------|
| 1) Poona Municipal Corporation Water Works | 77.3 ml(17.0 mg) |
| 2) Poona Cantonment Water Works | 38.6 ml(8.5 mg) |
| 3) Holkar Bridge Water Works. | 6.8 ml(1.5 mg) |
| 4) M.E.S. main taken off the Mutha Right Bank Canal near Empress Garden. | 13.6 ml(3.0 mg) |
| 5) 18 inches M.E.S. main taken off the Mutha Right Bank Canal near Empress Garden for Yeravada H.E.S. | 4.5 ml(1.0 mg) |
| 6) Katraj system(Poona Municipal Corporation) | 3.7 ml(0.8 mg) |
| 7) Pashan lake (Government Water Works) | 2.3 ml(0.5 mg) |

Total : 146.8 ml(32.3 mg)

8.5 During the period of emergency, created in 1961, due to breach of Khadakwasla and Panshet dams, the State Government introduced the emergency water supply scheme by constructing a pump house upstream of Aundh village on the Mula river to supply per day 81.8 mld (18 mgd) of raw water to Poona City and 54.6 mld (12 mgd) to Poona Cantonment area. The required flow in the Mula river at Aundh village was obtained by diverting a part of storage from the Mulshi lake. This source of water supply

on Mula river at Aundh was continued till 1968, when the original storage at Khadakwasla was restored.

8.6 Present Contition: At present the Poona Municipal Corporation is not in a position to supply adequate water to the growing peripheral areas such as Hingane, Kothrud, Chatushringi, Dapodi and high level areas such as Bibwewadi, Dhankavadi etc. The existing water works of Poona Municipal Corporation and cantonments supply water to the following areas :

Old city area, Shivajinagar, Erandvana, Chatushringi, Parvati and Gultekdi areas; suburban areas such as Kondhava, Hadapsar, Mundhawa, Wanjari, Yerawada, Bopodi, Dapodi; Poona and Kirkee Cantonments including the Kirkee Ammunition Factory and other Defence installations.

8.7 A New water works with filtration and chlorination treatment, having a total capacity of 341 mld (75 mgd) has been recently designed and planned by the Public Health Department of the State Government on behalf of the Poona Municipal Corporation. This water works will cater for an ultimate population of approximately 12.15 lacs and will have under its command the following areas : (Map - 55)

- 1) Existing water supply zone including Poona City.
- 2) Shivajinagar and Erandvana areas.
- 3) Parts along Poona-Satara Road including Bibwewadi, Dhankavadi etc.
- 4) Hingne, Kothrud, Chatushringi etc.

8.8 The entire scheme is proposed to be implemented into three stages. The first stage which includes the construction of 109.1 mld (24 mgd) filtration plant has already been completed. This plant is sufficient to supply the requirement of low level zone of the city, which consists of old gaon and a portion of the left bank area of Mutha river for an allocated population of this zone of 4,80,000 and with a water supply at the rate of 227.3 litres (50 gallons) per head per day, the daily requirement works out to 109.1 million litres (24 million gallons). Since the present water demand has already outstripped the ultimate capacity of the first stage, the Corporation has decided to complete the second stage by 1992 to double the present capacity. This will meet the requirements of middle and high level zones of the remaining area of the Poona Muni-

-cipal Corporation. In the third and final stage, the capacity of water works will be increased to 75 mgd so as to ensure adequate water supply for the future increase in population.

8.9 Side by side, with the construction of Corporation's water works at Parvati, the Public Health Department has also plans for the augmentation of Cantonment and Holkar bridge water works from their present capacity of 45.5 mld (10 mgd) to 72.7 mld(16 mgd) and from 9.1 mld(2 mgd) to 27.3 mld (6 mgd) respectively. The projects pertaining to the augmentation of the water supply schemes have already been included in the Fourth Five Year Plan. Thus the total water supply from the Poona Municipal Corporation Water Works and the Cantonment Water Works would be about 459.1 mld (101 mgd) as follows:

- | | |
|---|-------------------|
| 1) Ultimate capacity of Poona Municipal Corporation Water Works. | 340.9 mld(75 mgd) |
| 2) Maximum capacity of Cantonment Water Works after extention | 90.9 mld(20 mgd) |
| 3) Maximum capacity of Holkar Bridge Water Works after extention. | 27.3 mld(6 mgd) |

Total : 459.1 mld(101 mgd)

8.10 Estimated Water Demand -1991 : Poona City and surrounding area:

It is estimated that the population of Poona City and surrounding areas and Poona and Kirkee cantonments together would increase to about 16.54 lacs by 1991. The domestic water supply needs for this population at 181.84 litres (40 gallons) per capita would be 300 mld (66 mgd). The industrial area of about 1214 hectares (3,000 acres) zoned in and around the Poona Municipal Corporation limits would need about 40.9 mld (9 mgd) at 33,700 litres per hectare (3000 gallons per industrial acre). The total demand, both

for domestic and industrial use by 1991 for the Poona Corporation area, surrounding villages and the two cantonments would be 341.0 mld(75 mgd). The future designed capacity of 459.1 mld(101 mgd) is therefore, considered to be adequate till 1991. A reservation of 151 Mcm (5318 Mcft) has been made from the storage at Khadakwasla for the water supply purposes. This represents about 418 mld(92 mgd) as against the requirement of 341 mld (75 mgd) and is therefore adequate to meet the future estimated requirement (of Poona City and surrounding areas) upto 1991.

8.11 Pimpri-Chinchwad Industrial Area : The area around Pimpri-Chinchwad is at present served by 2 existing water works on Pavana river, viz. 1)M.I.D.C. Water Works and 2)Hindustan Antibiotics Water Works.

8.12 M.I.D.C. Water Works : The Maharashtra Industrial Development Corporation Water Works at Pimpri near Pimpri Railway Station has a present capacity of 16.4 mld (3.6 mgd). Filtered and chlorinated water is at present supplied to the industries and residential areas in this complex through this Water Works. The present sources of water supply are the Pavana and the Mula rivers. Due to absence of the flow in the Pavana river, after the Monsoon season, the M.I.D.C. is required to pump water from the Mula river to make up the daily requirement. This source of water supply from the Pavana is highly polluted and even with its full treatment by the M.I.D.C., the quality of water is not quite satisfactory.

8.13 Hindustan Antibiotics Water Works : This water works also draws its water from the Pavana river. The present capacity is 5.5 mld (1.2 mgd). This water works provides for the daily requirement of the factory and the domestic requirements of the colony having a population of about 3,500.

8.14 Proposed Water Works of M.I.D.C.: The M.I.D.C. Authorities have already designed a new water works just upstream of Chinchwad and it is expected to draw about 56.8 mld (12.5 mgd) of water from the Pavana river. After completion of the Fagane dam, the M.I.D.C. will draw about 0.71 cubic metre per second (25 cusecs) of water for distributing to villages and industries in this area. (Map - 56)

8.15 Estimated Water Demand 1991:Pimpri-Chinchwad area:

An area of 1619 hectares (4000 acres) has been zoned for industrial use in this industrial complex. This would need about 54.6 mld (12 mgd) of water at the rate mentioned above. The population of this complex when all the industrial areas are fully utilized is eventually expected to increase to about 6 lacs by 1991. This would need a total supply of about 109.1 mld (24 mgd) at 181.8 litres (40 gallons) per capita. The total water requirement for Pimpri-Chinchwad industrial complex by 1991 would therefore be about 163.6 mld (36 mgd). As against this, ultimate capacity of the proposed water works of the M.I.D.C. is only 56.8 mld (12.5 mgd) and the existing water works of Hindustan Antibiotics Ltd. would deliver about 5.5 mld (1.2 mgd). A scheme to augment the water supply by about 100 mld (22 mgd) to meet the estimated water requirements of 1991 would be necessary.

8.16 Talegaon Dabhade and Surrounding Areas : The 1961 population of this town was about 12,000. The present water supply made available through the tank by Municipal Council is 1.4 mld (0.3 mgd) and is not sufficient for the growing population. High level areas of the town get very little water since the capacity of the pumping machinery and the distribution system is low. The Public Health Department has recently studied the feasibility of augmenting water

supply to this town through the source of the Pavana river by pumping the river water to a high level ground service reservoir and providing a supplementary elevated reservoir. If such a scheme is undertaken, it would be possible to provide adequate water to a population of 50,000 by 1991. The required capacity of the water works would be of the order of 11.91 mld (2.62 mgd). (Map -57)

8.17 The Pavana project which is likely to be completed by 1970-71 contemplates a storage at Fagane to the extent of 283.16 Mcm (10,000 Mcft) usable water, out of which about 32 Mcm (1134 Mcft) has been exclusively reserved for the water supply to Pimpri-Chinchwad and other urban concentrations. This represents about 118 mld (26 mgd). The Pimpri-Chinchwad area and Talegaon-Dabhade town together however require provision of about 175.5 mld (38.6 mgd) and so it would be necessary to increase the present reservation of 32 Mcm (1134 Mcft) for urban water supply from the Pavana storage to 46.8 Mcm (1654 Mcft).

8.18 Alandi : The Alandi town with a population of 3,000 in 1961 is a sacred place of religious importance. It is estimated to grow to a size of 8,000 by 1991. The present source of water supply to Alandi is the Indrayani river. Water is pumped from a storage created by a barrage across the river. The present daily water supply potential is about 409140 litres (90,000 gallons). During the fair, however, it is required to be increased to about 18.18 lacs litres (4 lacs gallons) or 1.8 mld (0.4 mgd). It would be possible to meet the present and future water supply requirements of this town from the present source.

8.19 Conclusion : To summarise the above observations, the total water requirements of the major urban centres of the region would be about 709 mld (156 mgd) as given in Table No.1, Map No.58 shows the existing and proposed water supply facilities in the various urban areas of the region.

T A B L E NO. 1

Name of the Area.	1991 Estimated population.	Requirements of domestic water supply at 182 litres (40 gallons) per capita.	Industrial Area Hectares/Acres	Industrial requirement at 33700 litres/hectare (3000 gallons per acre)	Total water requirement mld/mgd.
-1-	-2-	-3-	-4-	-5-	-6-
1. Poona Municipal Corporation & surrounding area Poona & Kirkee Cantonment.	14.62 lacs 1.92 lacs	265.85 mld. (58.48 mgd.)	1214 Hectares (3000 acres)	40.91 mld. (9 mgd.)	306.76 mld (67.48 mgd.)
2. Bhosari-Pimpri-Chinchwad and surrounding area.	5.89 lacs	109.10 mld. (24 mgd.)	1618 Hectares (4000 acres)	54.55 mld. (12 mgd.)	163.66 mld. (36 mgd.)
3. Dehuroad Cantonment.	0.27 lacs	4.91 mld. (1.08 mgd.)	-	-	4.91 mld (1.08 mgd.)
4. Talegaon-Dabhade Town.	0.50 lacs	9.18 mld. (2.02 mgd.)	81 Hectares (200 acres)	2.73 mld. (0.6 mgd.)	11.91 mld. (2.62 mgd.)
5. Alandi Town	0.08 lacs	1.45 mld. (0.32 mgd.)	-	-	1.45 mld. (0.32 mgd.)
6. Emerging urban centres. (12 in number)	1.39 lacs	25.28 mld. (5.56 mgd.)	231 Hectares (570 acres)	7.77 mld. 1.71 mgd)	33.05 mld (7.27 mgd)
<u>Total :</u>					556.29 mld (122.37 mgi)
Say ...					556 mld. (122 mgd.)

Total water requirement for domestic and industrial use.	556.00 mld.	(122.00 mgd.)
1) Water requirements for Railway, Public utilities at 8%	44.22 mld.	(9.75 mgd.)
2) Water drawn by National Defence Academy and Central Water and Power Research Station, Khadakwasla.	25.00 mld.	(5.50 mgd.)
3) Leakage 15 percentage.	83.19 mld.	(18.30 mgd.)
Total :-	708.51 mld.	(155.55 mgd.)
Say	709 mld.	(156 mgd.)

8.20 It may be noted that the Poona Municipal Corporation and surrounding areas, Poona Cantonment and Kirkee Cantonment would come within the range of Khadakwasla storage works while the Pimpri-Chinchwad industrial complex, Talegaon Dabhade town could be served through the storage at Fagane on the river Pavana.

8.21 The provision of water supply would not be a problem for absorbing the expected growth of population and industrial expansion in these areas provided the schemes for augmentation of water supply are undertaken in advance, for which, adequate water resources exist in the region.

mention
8.22 A special/may however, be made of the fact that the contemplated water works of the Poona Municipal Corporation cannot feed water to the areas above 610 metres (2000 ft.) contours, situated in the Southern part of the city. A separate high level reservoir may have to be constructed for making piped water supply available to the areas around Katraj and Dhankavadi from the Katraj lake or the new water works at Parvati.

RURAL WATER SUPPLY :

8.23 Drinking water is a basic need of a human being. The provision of safe drinking water supply in villages is the most important among the rural amenities. It has been the policy of the Government that every village in the State, with no public source of drinking water should be provided with facilities of safe drinking water. Villages with no public source of drinking water have to depend either on distant sources of water like a flowing river or stream or on private wells within the villages. The primary responsibility for provision of this amenity has now to devolve on rural local bodies and accordingly programmes for rural water supply are being taken up by rural local authorities, i.e. Gram Panchayats on public participation basis.

8.24 It is observed that at the time of survey (year 1968-69), 46 villages out of the total 125* in the region had drinking water supply through wells only, either private or public. Population of these 46 villages was 73,507 as per 1961 census or 39 percent of the total rural population of the region. Of these, 46 villages 15 were having only public wells, 2 were having only private wells and the remaining 29 villages were having both public and private wells. Villages having only private wells were Mundhawa (population 622) and Urali Dewachi (population 3,547).

* Two villages viz. Kothrud and Kondhave Kh. have insignificant population and are therefore not considered here.

8.25 In 23 villages in the region the source of drinking water supply was through nearby rivers only. Population of these 23 villages was 19,887 which constituted 11 percent of the region's total rural population. List of these 23 villages alongwith their population is presented in Table No.2

TABLE NO.2

Sr. No.	Name of the village	Population (1961 census)	Sr. No.	Name of the village	Population (1961 census)
1	2	3	1	2	3
1.	Chikhali.	3091	13.	Baner.	1805
2.	Gahunje.	533	14.	Kudje.	835
3.	Parandwadi.	318	15.	Nande.	562
4.	Shirgaon.	359	16.	Shivane.	1671
5.	Warale.	424	17.	Bhivari.	269
6.	Chande.	398	18.	Sangvi Sandas.	660
7.	Mulkhed	618	19.	Bhavadi.	629
8.	Pimple Nilakh.	1726	20.	Dudulgaon.	519
9.	Punawale.	1093	21.	Nirgudi.	409
10.	Rahatni.	831	22.	Tulapur.	847
11.	Tathwade.	791	23.	Wadhu Kh.	415
12.	Balewadi.	979			
				Total :	19887

8.26 There were 10 villages with source of drinking water supply as river and private wells and canal and private wells. Population of these villages was 11,399 which constitutes 6 percent of the total rural population of the region. Names of these villages with their respective population are enlisted in Table No.3.

TABLE NO.3

Sr. No.	Name of the village	Population : (1961 census)	Sr. No.	Name of the village.	Population (1961 census)
1	2	3	1	2	3
1.	Ravet.	1205	6.	Ashtapur	1190
2.	Somatne.	475	7.	Dongargaon	988
3.	Pimple Soudgar	1126	8.	Hingangaon	930
4.	Thergaon.	510	9.	Khadakwasla.	2723
5.	Wakad.	1585	10.	Wadgaon Kh.	567
<u>Total :</u>					11399

8.27 There were two villages in the region viz. Sangvi Haveli and Alandi Dewachi with source of drinking water supply as taps only while in another 12 villages tap water was available alongwith other sources of drinking water supply viz. well or river or both. The population of these 14 villages with tap as source of drinking water supply was 41,854 (For Kiwale village tap water ^{was} available only to a private party in that village). In respect of remaining 32 villages, the source of drinking water supply was either well and river; well and Nala; well and canal; well and tank; Well, river and canal, and well, canal and nala.

8.28 From the above paragraphs, it can be seen that there is a necessity of providing public wells in 35 villages covering a population of 35,455, where source of drinking water supply was only river or private well or river and private well or canal and private well. In addition to this, the public wells in the following 37 villages viz. Hinjawadi, Kopare, Mahalunge, Pashan, Kasarsai, Kondhave Dhawade, Warje, Ambegaon Bk., Ambegaon Kh., Dhayari, Donje, Kirkitwadi, Nanded, Nondoshi, Wadgaon Bk., Katraj, Koregaon Mul, Lonikalbhor, Mahamadwadi, Naigaon, Theur, Wadki, Kesnand, Kharadi, Kolwadi, Manjari Kh., Nhavi Sandas, Perane, Wadebolai, Wadgaon Sheri, Bopkhel, Charoli Bk., Kalas, Lohogaon, Moshi, Wadgaon Shinde and Wagholi were inadequate on the basis of one

public well for at least a population of 500 in the absence of adequate public tap-water.

8.29 Table No.4 gives the distribution of 125 villages in the region according to the source of drinking water supply as per survey as against the corresponding position in 1961.

TABLE NO.4

Sr. No.	Source of drinking water supply	No. of villages		Population (1961 census) of villages in Col.
		1961	1968-69	
1	2	3	4	5
1.	Tap only.	2	2	3072
2.	Well only.	44	46	73507
3.	River only.	32	23	19887
4.	Canal only.	2	-	-
5.	Well and tap.	3	9	31267
6.	River and tap.	-	1	1024
7.	Well, tap and river.	-	2	6491
8.	Well and river.	29	33	36963
9.	Well and nala.	7	1	1250
10.	Well and canal	2	4	4693
11.	Well and tank	2	2	2681
12.	Well, river and canal	1	1	3193
13.	Well, canal and nala.	1	1	2900
Total.		125	125	186928

8.30 It can be seen from Table No.4, that during the period of 8 years from 1961 to 1969, piped water supply facility was made available to 9 villages for

which in 1961, source of drinking water supply was well only (6 villages), river only (1 village) and well and river both (2 villages). Similarly, in case of another 4 and 2 villages for which source of water was river only and canal only respectively in 1961, have been provided with additional facility of well water supply during the above said period.

8.31 Position of drinking water supply (during 1968-69) by various sources in the different parts of the region is presented in Table No.5 and Map 59.

TABLE NO. 5

Name of the Sub-Region.	NO. OF VILLAGES HAVING SOURCE OF WATER SUPPLY AS Total.												
	Tap only.	Well only.	River only.	Well and tap.	River and tap.	Well, and river.	Well, and river.nala.	Well, and canal.	Well, and tank.	Well, and river canal.	Well, and canal nala.	Well, and canal nala.	Total.
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
1) Between the Nasik Road and the Pawana rivers(A)	-	2	5	2	-	2	2	-	-	-	-	-	13
2) Between the Pawana and the Mula Rivers(B).	1	5	6	1	-	-	4	-	-	-	-	-	17
3) Between the Mula and the Mutha Rivers(C).	-	5	5	-	-	-	9	-	-	1	-	-	20
4) Between the Mutha river and the Satara Road(D).	-	8	-	-	-	-	4	1	4	-	-	1	18
5) Between the Satara Road and the Mula-Mutha river(E).	-	12	-	5	1	-	2	-	-	1	1	-	22
6) Between the Mula-Mutha river and the Nagar Rd.(F).	-	7	2	-	-	-	9	-	-	-	-	-	18
7) Between the Nagar Road and the Nasik Road(G)	1	7	5	1	-	-	3	-	-	-	-	-	17
Total :-	2	46	23	9	1	2	33	1	4	2	1	1	125

...125/-

8.32 It is revealed that in 59 villages with a population of about 93,250, water supply was not adequate throughout the year due to the sources getting dry during the summer season in the months of April, May and June or inadequacy of the water sources. About 50 percent of such villages were located to the North-East of the Central core of the region between the Nasik Road and the Mula-Mutha river. To meet the requirements of water in these 59 villages where source of drinking water supply gets dry in summer season, alternative arrangements viz. digging pits in river beds and bringing water from irrigation wells in the agricultural fields were generally made. The list of these 59 villages alongwith their population is given in Table No.6.

TABLE NO.6

Sr. No.	Name of the village.	Popula- tion (1961 census)	Sr. No.	Name of the village.	Popula- tion (1961 census)
1	2	3	1	2	3
1.	Chikhali	3091	18.	Mandavi kh.	367
2.	Gahunje.	633	19.	Ambegaon Bk.	1030
3.	Somatne.	475	20.	Ambegaon Kh.	974
4.	Talvade.	947	21.	Dhanakwadi.	436
5.	Varale.	424	22.	Dhayari	2900
6.	Hinjawadi.	972	23.	Donje.	1124
7.	Kasarsai.	979	24.	Ghera Sinhagad.	1250
8.	Marunji.	715	25.	Kirkitwadi.	785
9.	Pimple Sauda- -gar.	1226	26.	Nandoshi.	733
			27.	Wadgaon Kh.	567
10.	Sangvi Haveli	2611	28.	Hadapsar.	5461
11.	Wakad.	1585	29.	Khamgaon tek.	678
12.	Agalambe.	1569	30.	Kondhave Bk.	2227
13.	Ahire.	1690	31.	Lonikalbhor	8331
14.	Balewadi.	979	32.	Undri.	877
15.	Baner.	1805	33.	Wadki.	2450
16.	Bhugaon.	1406	34.	Bakori.	562
17.	Mandavi Bk.	466	35.	Burkegaon.	640

Sr. No.	Name of the village.	Population (1961 census)	Sr. No.	Name of the village.	Population (1961 census)
1	2	3	1	2	3
36.	Dongargaon.	988	48.	Bhawadi.	629
37.	Kesnand.	1811	49.	Charholi Bk.	6094
38.	Kharadi	817	50.	Dhanori.	1005
39.	Kolwadi.	1746	51.	Dighi.	1408
40.	Manjari Kh.	1005	52.	Fulgaon.	789
41.	Nhavi Sandas.	809	53.	Lohogaon.	3764
42.	Parane.	1786	54.	Lonikand.	1642
43.	Pimpri Sandas	1303	55.	Moshi.	2958
44.	Sangvi Sandas.	660	56.	Nirgudi.	409
45.	Saste	206	57.	Tulapur	847
46.	Wadebolai.	1424	58.	Wadgaon Shinde.	1341
47.	Wadgaon Sheri.	1946	59.	Wagholi.	4900
				Total.	93,242

8.33 According to the information collected from the Zilla Parishad Poona, regarding provision of water supply it is understood that the work of piped water supply was in progress in the case of Mulkhed, Chande, Nande, Man, Hin-jawadi and Lavale villages while in the case of two villages viz. Bavdhan Bk. and Bavdhan Kh., proposal for a piped water supply scheme has been submitted to the Government for approval. In case of Bhugaon, Tathwade, Dighi, Gorhe kh., Mandvi Bk., Mandvi Kh., Wadebolai and Nandoshi villages work of construction of drinking water wells was in progress. It is expected that all these works would be completed by the end of 1969. In the case of 16 villages viz. LoniKalbhor, Manjari Bk., Ahire, Akurdi, Dhanori, Kiwale, Kondhave Dhawade, Kondhave Bk., Kopre, Baner, Dhankawadi, Shirgaon, Somatne, Gahunje, Varale and Parandwadi, proposals for the construction of drinking water wells have been sanctioned and the work would be taken up soon.

II DRAINAGE

Poona city :

8.34 With the introduction of Water supply through pipes in 1875, an underground system of drainage on modern lines became necessary. From 1875 to 1910, different schemes were invested. However, the first underground drainage scheme was introduced in Poona only in the year 1910. According to this scheme the town was divided into six zones. Sewerage from this area was collected at the Central Pumping Station and pumped to Hadapsar septic tank. About 1.19 lacs population was served by this scheme. The scheme served only a portion of the city and very soon the pumping and disposal works were found to be insufficient for the growing requirements.

8.35 In 1929, a joint scheme with outfall sewer and pumping station common to all the then existing urban local bodies viz. Poona City Municipality, Poona Suburban Municipality, Poona Cantonment Authority and the local Railway Administration was prepared and the same was completed in 1931. The original system has undergone improvements from time to time to cope up with the requirements of the growing population. The area on the periphery of the city and certain areas which are separated from the main centre by some geographical barriers do not have a connected drainage system. Septic tanks are put up to treat the sullage of such areas. At present the sewage is collected at suitable low points, from where after suitable dilution by canal water, it is discharged for irrigation purposes. The area covered by such sewage absorption is 1760 hectares (4350 acres)

Poona Cantonment :

8.36 The existing underground water borne sewage system is limited to the area of Sadar Bazar including Military Hospital, Napier Road, Chest Disease Hospital and Queen's Garden. The remaining bulk of the Military area entirely depends on the local system of sewage treatment such as septic tank etc. Thus, it appears that 70 percent of the Cantonment area is without any centralised sewage system. Of the total water supply of 36.37 mld.(8 mgd.), only about

13.64 mld. (3 mgd.) is made to areas which drain the sullage towards the Bahiroba Pumping Station.

Alandi:-

8.57 The Alandi Town is partially provided with underground drainage system. This consists of 6" diameter home pipe sewer previously intended to carry the sullage water. It is drained into two nallas flowing through the town and is taken through the closed drain along the river bank and finally discharged into the river. This is very unhygienic. It is necessary to provide a complete underground drainage system for the town. The Alandi Municipal Council has proposed a suitable scheme for this purpose.

Besides the Poona Corporation, Poona Cantonment and Alandi, no other areas of Poona Metropolitan Region have underground drainage.

Pimpri-Chinchwad Industrial Area :-

8.58 The existing factories in the Bhosari-Pimpri-Chinchwad industrial complex discharge a large amount of untreated sewage and sullage in the adjoining nallas. This area ^{was at till recently} is present administered by the Village Panchayats. The Pimpri Refugee Camp is administered by the Collector of Poona and a large industrial area is under the jurisdiction of M.I.D.C. There is no proper drainage system for the disposal of industrial effluents as also other sewage and sullage discharged by the residential colonies. In the absence of underground drainage system, the sullage, the sewage and the factory wastes are discharged into open nallas which carry the same to the Pawana river, thereby polluting the river water. In view of the rapid industrial development in the Pimpri-Chinchwad industrial complex, an independent sewage system and purification works will have to be provided early for this area. In order to discharge the treated effluents, sufficient land will have to be reserved for agriculture in this area. Similar schemes would also be necessary for the major urban areas of Dehu-Road and Talegaon.

III ELECTRICITY :

8.39 Electricity is now a days a pre-requisite for the development of industries and agriculture. It also plays an important role in the domestic life. Electricity was first introduced in the region in the City of Poona in 1920 by the Poona Electric Supply Company through their own thermal station. In 1930, this Electric Company started supplying electricity through the Khopoli Power House. This Company management was taken over by the Maharashtra State Electricity Board in the year 1963. Electric supply to the villages and towns in the region was being made by the Maharashtra State Electricity Board on grid system through the Khopoli Power House and the Koyana Power House, in the absence of any power generating stations in the region. There were three main electric sub-stations in the region at Chinchwad, Poona City and Fursungi. The Poona City sub-station supplied power to Poona City and Cantonments of Poona and Kirkee, while sub-stations at Chinchwad and Fursungi supplied power to the remaining areas of the region. The present installed capacity at Chinchwad Substation is 200 M.V.A. Allowing for stand-by, a firm capacity of 125 M.V.A. may be assumed. The present peak demand at Chinchwad sub-station is 75 M.V.A., out of which 55 M.V.A. is for power and 20 M.V.A. is for lighting.

8.40 All the 12 urban areas and 72 villages out of total 127 villages were electrified upto 31.3. 1968. In 4 areas of the region viz. Poona City and Cantonments of Poona, Kirkee and Dehuroad, the facility of electricity was available since long. These areas were electrified during 1920 to 1942. Thereafter, during the period of fifteen years from 1942 to 1957 no progress was made in the region in this respect. The programme of electrification gathered momentum only after 1960 and it is reported that in about 60 urban and rural settlements of the region, facility of electricity was made available during 1961-68. Table No. 7 gives the distribution of electrified villages and towns in the region according to the period of electrification. (Map 60)

TABLE NO. 7

	Period of Electrification						Total
	Upto 42:	43-55	56-60	61-63	64-65	66-68:	
No. of villages & towns.	4	Nil	9	21	18	20	128
N.A. means not available.							

8.41 The total annual consumption of electricity in the region was about 298.5 million KWH (Year 67-68) of which consumption for industrial use was as high as 75.9 percent. The corresponding percentages in respect of agriculture, commercial and domestic uses were respectively 1.2, 8.4 and 12.9. The remaining 1.6 percent of electric consumption was used for street lighting and other public purposes. Per capita consumption of electricity for the region as a whole worked out to be 301 KWH viz-a-vis state figure of 146 KWH.

8.42 Electricity for industrial purpose was made available in 68 villages and towns in the region, its annual consumption being about 227 million KWH. Major consumption of electricity for industrial use viz. 91 percent was in the sub-regions 'A' and 'H' covering areas between the Pawana river and the Nasik Road and the central core of the region, where major industrial area in the region was located.

8.43 Electricity for agricultural purpose was made available in 61 villages and towns in the region, its annual consumption being about 3.6 million KWH. Major consumption of electricity for agricultural use was observed in the sub-regions 'E' and 'H' covering areas between the Satara Road and the Mula-Mutha river and the central core of the region, its respective percentage being 54 and 20.

8.44 Annual consumption of electricity for commercial purpose was about 24.9 million KWH. Major commercial area in the region was concentrated in the central core of the region and quite naturally a very large bulk of electricity for commercial purpose viz. 98 percent was absorbed in this area.

8.45 Electricity for domestic purpose was made available in 73 villages and towns with 9.34 lacs population in the region, its annual consumption being about 38.5 million KWH or 41 KWH per capita. The per capita consumption of electricity was as high as 48 and 35 KWH respectively in the central core of the region

comprising Poona City and Cantonments of Poona and Kirkee and in the area between the Pavana river and the Nasik Road which also included significant urban population in the region. For other sub-regions in the region it was only between 1 to 9 KWH per capita.

8.46 Population of Poona Metropolitan Region as per 1961 census was 9.93 lacs. Benefit of electricity for domestic purpose was made available (upto March 68) to about 94 percent of this population. Table No.8 (on next page) gives the distribution of population as per 1961 census and population benefited so far with domestic electric supply in different parts of the region.

8.47 It can be seen from table No.8 that for quite a large proportion of population residing in sub-regions 'A', 'E', 'G' and 'H', facility of domestic electric supply was available while in respect of sub-regions 'B' and 'F' the same was available to only about one third of the population.

Estimated Requirement of Power by 1991.

8.48 Additional power demand for industrial use will be 68,000 KW or 68 M.V.A. Additional domestic demand will be 20,000 KW or 20 M.V.A. Thus the total estimated increase in demand would be about 88 MVA, making the total net demand of about 163 M.V.A. for the region by 1991. Allowing for 25 M.V.A. load for some near about areas beyond the region, the total estimated load would be 188.M.V.A. As this load of 188 M.V.A. cannot be borne by the Chinchwad Receiving Station, it is essential to have a second similar Receiving Station in M.I.D.C. area by taking the 220/132 KV lines from Chinchwad to the new station.

TABLE NO. 8

Sub-Region :	Description of sub-region	Total population of the sub-region	Population benefited with domestic electric supply.	Percentage of Col.4 to Col.3
1	2	3	4	5
A.	Area between the Nasik Road and the Pawana river.	76322	74906	98.14
B.	Area between the Pawana river and the Mula river.	18554	6460	34.81
C.	Area between the Mula river and the Mutha river.	22890	11202	48.93
D.	Area between the Mutha river and the Satara Road.	26755	17183	64.22
E.	Area between the Satara Road and the Mula-Mutha river.	58468	49804	85.18
F.	Area between the Mula-Mutha river and the Nagar Road.	18852	6483	34.38
G.	Area between the Nagar Road and the Nasik Road.	34687	31461	90.69
H.	Poona Municipal Corporation, Cantonments of Poona and Kirkee, Ichogaon & Dapodi areas.	736226	736226	100.00
Total		992754	933725	94.05

CHAPTER IX

COMMUNITY FACILITIES IN RURAL CENTRES.

9.1 Out of 127 villages and 12 towns in the region a survey of community facilities was carried out for 125 villages and 5 towns of rural character. This survey was carried out mainly with a view to studying the catchment areas in relation to various facilities and division of various parts of the region outside the major urban centres into suitable micro-regions. This aspect has not been studied and analysed in respect of large size urban centres of Poona City including Dapodi and Lohogaon, Cantonment Boards of Poona, Kirkee and Dehu Road and N.D.A. Khadakwasla as the same would be attended to by the respective Local Bodies in preparing their detailed Development Plans. Rural parts of two settlements viz. Kothrud and Kundhave Khd lying outside the Poona Municipal Corporation limits were also excluded from the purview of the survey as they had insignificant population. According to 1961 Census, of the total population of 9.93 lakhs in the region only 2.30 lakhs i.e. 23 percent lived in the above surveyed area.

Population size of settlements in the surveyed area:

9.2 Of the 5 towns included in the surveyed area viz. Pimpri, Talegaon, Chinchwad, Bhosari and Alandi, the first 2 were in the population size group between 10000 to 20000, the next 2 were between 5000 to 10000, while the remaining 1 viz. Alandi was less than 5000. Of the 125 rural settlements in the region for which the above survey was carried out, 61 i.e. 49 percent had a population below 1000 each. Another 39 villages or about 30 percent had a population between 1000 to 2000 each, 13 villages had a population between 2000 to 3000, while only 12 villages had a population above 3000 each. Of the last 12 villages only 5 had a population over 5000 each.

Functional classification:

9.3 As already noticed in Chapter No. III on population, of the 5 urban settlements mentioned above Chinchwad, Pimpri, and Bhosari are industrial, Talegaon-Dabhade is a service town and Alandi Derachi is a Religious place. Functionally, rural settlements in the region can be divided

into 3-categories viz. Agricultural, Industrial and Others (services etc.). The largest number of villages viz. 115 exhibited agricultural character, only 4 villages viz. Nigadi, Kondhave Khd., Wadgaon-Sheri and Bopkhel^{were} industrial, while the remaining 8 villages did not exhibit any predominant character.

Presentation of data :

9.4 As in the case of survey of Natural Resources, (Chapter IV) the data regarding Community facilities is presented in this chapter for the sub-regions mentioned earlier and indicated on map No.10. This data covers the items such as education, medicine, banking, co-operation, veterinary, communications etc. as discussed below.

EDUCATION : (MAP - 61)

A) Primary Education:

9.5 For presenting the results here, education imparted in I to VII standards is termed as Primary Education. As per information collected (1968-69) the facility of primary education was available in 122 villages and 5 towns of the total 124 * villages and 5 towns covered under the Survey. Facility of primary education was not available in the villages of Hingane Kh. (Population 286) and Malkhed (Population 244). It is noteworthy to point out that of the total villages with the facility of primary education majority viz. 75 had schools with teaching upto VII standard. Table No.1 gives the distribution of villages/towns in the region covered under the survey according to the standards of teaching available.

* Information regarding Alandi (rural) was not separately available and the same is included with the information for Alandi (Devachi) town. And hence 124 villages instead of 125 mentioned before.

TABLE NO. 1

Sr.No.	Teaching available upto.	No.of villages:	No.of towns.
1.	IV Std.	30	-
2.	V.Std.	10	-
3.	VI Std.	7	-
4.	VII Std..	75	5
5.	No facility.	2	-
Total.		124	5

9.6 The total No.of primary schools in the above area of the region was 223 where education to 47,660 students (46,331 local and 1,329 from outside places) was being imparted by 1,104 teachers.

9.7 Of the 223 schools about 29 per cent were with student population upto 50 each only, while 10.5 per cent were with student population over 500 each. Table No.2 gives the distribution of primary schools according to their student population.

TABLE NO. 2.

No.of students (in ranges).	No.of primary schools.	% of col.2 to total.
1	2	3
Upto 50	63	28.77
51 - 100	35	15.98
101 - 200	45	20.55
201 - 500	53	24.20
501 - 1000	19	8.68
Above 1000	4	1.82
Total...	219	100.00

Note:- For 4 Primary Schools this break-up was not available.

9.8 Population per Primary School in the surveyed area was about 1030. This ratio varied between 500 to 1600 in the various sub-regions of the region. The ratio of students

per teacher worked out to be 43 as against the State figure of 37. This ratio was about 60 in respect of 11 villages viz. Marunji, Nere, Balewadi, Wadgaon Sk., Mahmawadi, Pisoli, Walti, Kolwadi, Kalas, Nirgudi and Wadgaon Shinde.

9.9 Of the 223 primary schools referred to above only 123 and 67 schools were having their own building and facility of play grounds respectively.

B) Secondary Education :

9.10 The facility of secondary education in the surveyed area was available in 16 villages and 5 towns vis-a-vis the 1961 census figures of 8 villages and 4 towns. In respect of 10 villages and 4 towns facility of Secondary education was available upto XI standard. Table No.3 gives the distribution of villages/towns according to the standards of teaching available.

TABLE NO. 3

Sr.No.:	Teaching available upto.	No.of villages	No.of towns
1.	2	3	4
1.	VIII Std.	1	1
2.	IX Std.	3	-
3.	X Std.	2	-
4.	XI Std.	10	4
5.	No facility.	108	-
Total		124	5

9.11 The total number of Secondary schools was 25 only, in which 8,012 students (5,975 local and 2,037 outsiders) were getting education through 305 teachers. Six of the 25 secondary schools had student population upto 100 each only, while in respect of 5 schools student population was over 500 each. No. of schools with student population between 101 to 200 and 201 to 500 was 7 each.

9.12 Population per secondary school worked out to be about 9,200. In the sub-region 'F' covering area to the

east of the region between the Nagar Road and the Mula-Mutha river with 18 villages and 18,852 population there was no secondary school. In the area to the south of the region between the Pavana river and the Mutha river also, the facilities of secondary schools were inadequate. Only sub-regions 'A' and 'E' covering areas between the Pavana river and the Nasik road and the Satara road and the Mula-Mutha river respectively, had comparatively better facilities of Secondary schools imparting education upto XI Standard. The ratio of student population per teacher was 26 as against State figure of 28. This ratio varied between 10 to 45 in different secondary schools.

9.13 About 50 per cent of the secondary schools in the surveyed region had their own buildings and play-grounds.

C) Higher Education :

9.14 The facility of general higher education in the surveyed area of the region was available at Talegaon Dabhade town only, where education in the faculty of Arts and Commerce upto the First Year degree course was being imparted to 45 students.

9.15 The facility of vocational higher education was available at Talegaon Dabhade and Urali Kanchan where courses for Electrician, Welder, Moulder etc. were run.

D) Other Educational facilities :

9.16 In addition to the above, there was a Training Centre for the Gramsevaks at Manjri Bk. and an institution imparting basic training to the teachers at Loni Kalbhor.

Medical: (Map - 62)

A) Hospitals and Maternity Homes :

9.17 In the surveyed area of the region, facility of hospital i.e. medical institution admitting indoor patients was available in 4 towns and 12 villages at the time of Survey vis-a-vis 2 towns and 4 villages as per data of 1961 census. The total No. of hospitals in these villages/towns was 17 which included three primary health centres, eight primary health units, one leprosy hospital and five other general hospitals. The first three type of 12 hospitals

were public owned while the remaining 5 hospitals were private. Amongst the hospitals, the hospitals at Talegaon Dabhade, Kondhave Bk. (leprosy hospital) and Urali-Kanchan ("Mahatma Gandhi Nisargopachar Ashram"), are wellknown. The facility of hospital was not at all available in the sub-region 'C' covering area between the Mula river and the Mutha river. In addition to 17 hospitals mentioned above there were 8 maternity homes in the surveyed region in 5 villages and 2 towns.

9.18 The total number of beds in these hospitals and maternity homes was 684. Of these 684 beds, 142 were general beds, 162 beds were reserved for maternity, 300 beds were for treating leprosy patients and the remaining 80 beds were available in the "Nisargopachar Ashram" at Urali Kanchan. The ratios of population per general bed and maternity bed were respectively about 1,620 and 1,420.

9.19 There were 29 doctors and 51 nurses in the above maternity homes and hospitals (excluding Leprosy Hospital and Nisargopachar Ashram) who treated about 360 indoor and 24780 outdoor patients every month (this data separately for hospitals and maternity homes was not available). Thus, the ratios of monthly total patients treated per nurse and per doctor worked out to be about 490 and 870 respectively.

9.20 Of the total No. of patients treated in these hospitals and maternity homes (viz. 25,141) 72 per cent were local residents while 28 per cent came from outside.

B) Dispensaries :

9.21 The facility of dispensary was available in 5 towns and 27 villages vis-a-vis 4 towns and 14 villages at 1961 census. The total No. of dispensaries in the villages/towns was 107, run by 147 doctors. The ratio of population per doctor was about 1,560. The total No. of patients treated in these dispensaries was about 24,490, of which 79 per cent were local inhabitants, while the rest came from outside.

C) Visiting Doctors :

9.22 The facility of either a hospital or a dispensary was not available in 95 villages from the surveyed area. It is, however, observed that 11 such villages were visited regularly by outside doctors. It is also observed that many places with a facility of either a hospital or a dispensary were too visited by outside doctors. Number of such visiting doctors was 47.

9.23 The total No. of doctors whose services were available in the surveyed area was thus 223. Ratio of population per doctor in this case worked out to be about 1,030.

Communications:

9.24 Modern Communications like postal, telegraph and telephone services are a great help in the promotion of industry, trade and agriculture. They also play an important role in the private life of individuals.

A) Post.

9.25 The facility of post office was available in 39 villages and all the 5 towns in the surveyed areas as against 33 villages and 5 towns as per 1961 census. In the sub-region 'B' covering area between the Pavana river and the Mula river with a population of about 18,500 the facility of post office was available at only one village viz. Man. Majority of the villages (viz. 13) with facility of post office were located in the sub-region 'E' covering area between the Satara Road and the Mula-Mutha river.

B) Telegraph.

9.26 The facility of telegraph office in the surveyed area of the region was available at 6 places only viz. Chinchwad, Pimpri, Telegaon-Dabhade, Loni Kalbhor, Urali Kanchan and Alandi Dewachi.

C) Telephone.

9.27 The facility of telephone office in the surveyed area was available at 7 places only viz. the 6 places mentioned in para 9.26 and Manjri Bk. village. The areas of Chinchwad, Pimpri, Manjri Bk. and Loni Kalbhor were within the jurisdiction of the Poona Telephone Exchange, while the remaining places had

separate telephone exchanges. The Poona exchange had supplied about 10,400 telephones upto October 1969.

Banking and Co-operation:

A) Commercial Banks:

9.28 In the surveyed area of the region there were 15 commercial banks, located in 2 villages and 4 towns only. Concentration of this banking activity was mostly in the towns of Pimpri, Chinchwad and Talegaon Dabhade where rapid urbanisation was taking place due to the industrial activity. Number of depositors in these banks was about 14,400 of which as many as 87 per cent were in the above stated three towns. The percent^{age} of de-
-sitors^{residing} in the same village/town, where this type of banking facility was available was 82, while the rest 18 per cent were from outside the concerned village/town.

B) Postal Saving Banks:

9.29 The facility of postal savings bank was available in 33 villages and 1 town in addition to villages and towns with the facility of commercial banks. The total No. of depositors in the postal savings banks was about 8,730 of which 91 per cent were local residents.

9.30 Total No. of depositors in both commercial and postal savings banks was about 23,130 of which 85 per cent were local inhabitants. The percentage of total depositors in these banks to the total working population of the surveyed area worked out to be about 23.

C) Service Co-operative Societies:

9.31 Service co-operative societies are mostly rural societies having an area of operation as far as possible restricted to a village. These societies provide short term finance to agriculturists in cash and kind for the purpose of agricultural operations. As per data collected, facility of service co-operative societies was available in 59 villages and 4 towns out of 124 villages and 5 towns covered under the survey. The total membership in these societies was about 10,350 of which 67 per cent were from the local village/town and the

remaining 13 per cent were from outside. The percentage of members in these societies to the total khatedars in the surveyed area was about 30.

Veterinary Facilities:

9.32 In the surveyed area of the region the facility of Veterinary dispensary/Artificial Insemination centre was available in 18 villages and 4 towns. Almost all these dispensaries except that at Bhosari were in the public sector. The ratio of bovine population per veterinary dispensary, of Artificial Insemination centre in the surveyed area was about 3900. This ratio was comparatively as high as about 9,690 for sub-region 'D' covering the area between the Mutha river and the Satara Road. This facility was not available in the sub-region 'F' covering the area between the Nagar Road and the Mula-Mutha river, where about 12,200 bovine population was located as per 1966 census.

Weekly Market:

9.33 The facility of weekly market was available in only 8 areas of the surveyed region at Dehu, Talegaon Dabhade, Kondhave Dhawade, Lonikalbhor, Theur, Urali Kanchan, Fulgaon and Lohogaon.

Police Station/Out-Post:

9.34 The facility of Police Station/Out-Post was available in only 12 areas of the surveyed region at Chinchwad Pimpri, Talegaon Dabhade, Sangvi Haveli, Kondhave Dhawade, Khadakwasla, Loni Kalbhor, Urali Dewachi, Urali Kanchan, Alandi Dewachi, Lonikand and Moshi.

Community Hall:

9.35 The facility of Community Hall was available in only 14 areas of the surveyed region at Dehu, Pimpri, Lavale, Alandi Chorachi, Fursungi, Mahamadwadi, Manjri Bk., Pisol, Shindawane, Undri, Urali Dewachi, Urali Kanchan, Alandi Dewachi, and Talepur. Majority of these areas viz. 9 were located in sub-region 'E' covering portion of region between the Satara Road and the Mula-Mutha river.

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CHAPTER X.

LOCAL BODIES IN THE REGION AND REGION'S ECONOMY

I) LOCAL BODIES:

10.1 Local Self-Government in the Poona Metropolitan Region is conducted by various Statutory Bodies enjoying local autonomy in different degrees. These institutions consist of (1) Village Panchayats (2) Panchayat Samitis of Haveli, Maval and Mulshi Talukas (3) Zilla Parishad, Poona (4) Poona Municipal Corporation (5) Municipal Councils of Talegaon-Dabhade and Alandi-Devachi* and (6) Cantonment Boards of Poona, Kirkee and Dehu-Road. Since the people associate with Government through these institutions they assume some functions of Local Self Government. The jurisdiction of Local Bodies at Sr. Nos. 2 and 3 extends even beyond the boundaries of the Poona Region and as such data pertaining to these Local Bodies is not presented here.

A) VILLAGE PANCHAYATS:

10.2 Village Panchayats form local units of administration for villages. At present (as on 31st March 1969) there are 108 Village Panchayats in the Poona Region which covered about 2.12 lacs population of the region (or 21.4 per cent of the total region's population) in 122 villages and 3 urban areas viz. Bhosari, Pimpri-Waghire and Chinchwad. Non-Municipal areas of Alandi-Devachi and Talegaon-Dabhade and villages of Mundhawa, Pashan and Hadapsar were not covered by any Local Body in the region. It is interesting to note that the villages of Lonikalbhor, Shivane, Fursungi and Naigaon were governed by two Village Panchayats each in their respective village areas, 20 Village Panchayats covered more than one village or are Group Village Panchayats while the remaining 80 Village Panchayats had Single Village Panchayats. The Villages of - Somatane and Parandwadi in the Poona region come under the administrative control of Dhamane and Urse Group Village Panchayats respectively which are located outside the region, while the Village Panchayats of Gahunje, Varale and Malkhed located in the Poona region had the administrative control over villages of Sangvad Nanoli and Waddera respectively which are located beyond the Poona region.

10.3 Of the 108 Village Panchayats in the Poona region only 12 were established prior to Independence, 56 during the data presented in this Chapter was collected before the creation of New Township Municipal Council for the Pimpri-Chinchwad area.

1951-1960 and 37 after 1960 (this data is not available for 3 Village Panchayats.) The total membership in these Village Panchayats was 995 of which 208 were female members (this information is not available for 2 Village Panchayats.)

10.4 The income of Village Panchayats in the region for 1968-69 was about Rs.10.45 lacs, of which Rs.4.94 lacs or 47.3 per cent was from taxes and fees. The total self-raised income from all sources during this period was Rs.5.46 lacs or 52.3 per cent of the total income. The share of Government grants for this period was about Rs.4.07 lacs or 39 per cent of the total income. The major sources of revenue among the taxes and fees was House and Land tax having income therefrom about Rs.2.71 lacs or 46.8 per cent of the total income from taxes and fees and 22.1 per cent of the total income. It is significant to note that of the total self-raised income of Rs.5.46 lacs of the Village Panchayats in the region during 1968-69 as much as 55.5 per cent was derived by 13 Village Panchayats located in the Sub-Region 'A' (covering an area between the Nasik Road and the Pavana river) alone, which must be mainly due to major industrial development in this part of the region. Next in order were the Sub-Regions 'E' (Covering an area between the Satara Road and the Mula-Mutha river) and 'G' (covering an area between the A'nagar Road and the Nasik Road) with 16 and 12 Village Panchayats respectively, having corresponding figures of percentage as 17.6 and 13.2 respectively.

10.5 The per capita self-raised income of the Village Panchayats in the region for 1968-69 was about Rs.2.6, while that for taxes and fees and total income were respectively Rs.2.3 and Rs.4.9. A majority of the Village Panchayats in the region viz.63 had per capita self-raised income as low as below Rs.1/-. For only 7 Village Panchayats the same was above Rs.5/-. Table No.1 gives the distribution of the Village Panchayats in the region according to ranges of per capita income from Taxes and Fees, self-raised income, Government grants and total income.

T A B L E NO.1.

Sr. No.	Range of per capita income.	No. of village Panchayats according to per capita income figs. for			
		Taxes & Fees.	Self-raised income.	Govt. grants.	Total income.
1	2	3	4	5	6
1.	Below Rs.1/-	70	68	8	3
2.	Rs.1/- to Rs.2/-	20	20	56	26
3.	Rs.2/- to Rs.5/-	8	9	34	55
4.	Rs.5/- to Rs.10/-	4	4	6	15
5.	Rs.10/- to Rs.15/-	1	2	-	3
6.	Rs.15/- and above.	1	1	-	2
Total :		104	104	104	104

Note:-4 Villages were having two Village Panchayat each.

10.6 Total income of Village Panchayats from various sources for the year 1967-68 was about Rs.8.98 lacs which indicates that during the period of one year the increase in the total income of the Village Panchayats was by 16.4 per cent.

10.7 The total expenditure of the Village Panchayats for the year 1968-69 was of the order of Rs.10.89 lacs as against the corresponding figure of Rs.7.06 lacs during the period of 1967-68. The major items of expenditure of the Village Panchayats were Construction or Repairs to Roads, Drainage and Water-Supply which consumed about 51 per cent of the total expenditure of Village Panchayats during 1968-69. The per capita expenditure of Village Panchayats for 1968-69 was Rs.5.15. This ratio was below Rs.2/- for 45 Village Panchayats, between Rs.2/- to Rs.5/- for 39 Village Panchayats, while the same was above Rs.5/- for the remaining 20 Village Panchayats.

B) POONA MUNICIPAL CORPORATION.

10.8 The Poona Municipal Corporation was established in 1950. The total membership of the Corporation as on 31st March 1968 was 73 of which 4 are female members.

10.9 The total income of the Corporation for the year 1967-68 was about Rs.10.5 crores (excluding that of Poona Municipal Transport). Income derived by the Corporation by way of Taxes during the said period was about Rs.3/- crores ...146/-

or about 28 per cent of the total income. Income from 'fees and properties' and 'Government grants and Subsidies' for this period was about Rs.0.9 crore and Rs.0.06 crore respectively. Sources of major income for the Corporation were 'House and Land tax' and 'Octroi' with income therefrom about Rs.0.9 crore and Rs.1.7 crores respectively. The per capita income of the Corporation during this period from 'Taxes' and 'Fees and Properties' worked out to be about Rs.63/- whereas for the total income this ratio was about Rs.170/-.

10.10 The total expenditure of the Corporation for the period 1967-68 (excluding that of Poona Municipal Transport) was Rs.9.56 crores. The major items of expenditure were Water Supply and Public Works Construction, expenditure on which for 1967-68 was about Rs.0.9 crore and Rs.1.17 crores respectively. It is worth while to note that the Corporation had spent about Rs.10.6 lacs on Slum-Clearance during the above period. Per Capita expenditure for 1967-68 worked out to be about Rs.154/-.

C) Municipal Councils of Alandi-Devachi and Talegaon-Dabhade.

10.11 The Alandi Devachi Municipality was established in the year 1869, while the Talegaon-Dabhade Municipality was established in 1884. The membership in these two Municipal Councils as on 31st March 1968 was 16 each with 2 female members each.

10.12 The total income of these two municipal Councils for the year 1968-69 was about Rs.8 lacs, of which income from 'Taxes and Fees and Properties' was about Rs.4.9 lacs and that from 'Government grants and Subsidies' was about Rs.1.13 lacs. The major sources of self-raised revenue for Talegaon-Dabhade Municipal Council were 'House and Land Tax' and 'Octroi' from which income for the year 1968-69 was about 0.8 lac and 1.47 lacs respectively. Such sources for Alandi-Devachi Municipal Council were 'House and Land taxes', 'Pilgrim Tax' and 'rent from properties', income from which for the year 1968-69 was about Rs.0.21 lac, Rs.0.93 lac and Rs.0.25 lac

respectively. The per Capita income of these municipal Councils for this year from 'Taxes, Fees & Properties' worked out to be about Rs.33/- whereas for the total income the same was about Rs.54/-.

10.13 The total expenditure of these two municipal Councils for the year 1968-69 was about Rs.7.9 lacs. The major items of expenditure was Water-supply, Medical facilities and Public works construction, expenditure on which for the year 1968-69 was about Rs.0.5 lac, Rs.0.3 lac, and Rs.1.2 lac respectively. Per Capita expenditure for the above period worked out to be about Rs.53/-

D) CANTONMENT BOARDS OF POONA, KIRKEE AND DEHURROAD.

10.14 The Cantonment Boards of Poona and Kirkee were established in the 19th Century, while that of Dehurroad was established only recently in 1958. The membership in these Cantonment Boards was 14 each of which 50 per cent were elected members, while the remaining members were nominated by the Government.

10.15 The income of these Cantonment Boards for the year 1968-69 was about Rs.78.8 lacs which had recorded an increase of 14.4 per cent over the corresponding last year's figure. Income of these Cantonment Boards for this period from Taxes, Fees and Properties was as high as Rs.70.0 lacs which forms about 89 per cent of the total income. Income from Government grants and subsidies for the said period was only Rs.5.4 lacs. The major sources for self-raised revenue were 'House and Land Tax' and 'Octroi' from which income for 1968-69 was about Rs.46.3 lacs or 59 per cent of the total income. The per Capita income of these Cantonment Boards for the same period from 'Taxes, Fees, Properties' worked out to be about Rs.49/-, while this ratio for total income was about Rs.55/-.

10.16 The total expenditure of the Cantonment Boards for 1968-69 was Rs.70.0 lacs. The major items of expenditure were Medical Facilities and Public Works Construction, on which expenditure for 1968-69 was respectively Rs.9.1 lacs and Rs.10.5 lacs. Per Capita expenditure for this year worked out to be about Rs.49/-.

E) POOLED PICTURE OF INCOME AND EXPENDITURE:

10.17 A Pooled picture of Income and Expenditure of the Local Bodies described above is presented in Table No.2 on page No.151 for the periods 1967-68 and 1968-69 from which it can be seen that the total income of all the local bodies in the region for 1967-68 was about Rs.11.42 crores, of which income of Poona Municipal Corporation alone was Rs.10.55 Crores. The per Capita income of all these local bodies for 1967-68 for 'Self raised income' and 'total income' worked out to be Rs.47/- and Rs.115 respectively. This ratio for total expenditure for the same period was about Rs.105/-.

II) ECONOMY OF THE REGION:

10.18 Study of the economic base of a region is very important in the process of Regional Planning from the point of view of understanding its growth potential. There are different units of measurement of economic base, such as employment, pay rolls, value added, physical production, income and expenditure account etc.

10.19 The differentiation of existing earning members into basic and non-basic workers is essential for understanding the power of growth of a region. Basic workers bring income to the region from outside. Non-basic workers are paid out of this basic income and they arrange the comforts of the basic workers. Unfortunately, precise data on this aspect is not readily available. Information regarding employment available in the Census Hand Book is of little use in this respect. Instead, the employment figures for individual establishment are required, the collection of which involves a great deal of field work.

10.20 A broad analysis of economic base of the Poona Metropolitan Region has been attempted in a dissertation submitted to the University of Poona by Shri.D.A. Pavagi, a student of M.E.Town Planning in 1969. The basic, non-basic ratio for Poona City for 1961 as estimated in the above dissertation is 1:2.01. For 1937, this ratio worked out to be 1 :4.46 while for 1956, it worked out to 1:2.48, The decreasing basic, non-basic ratio from 1937 to 1961 therefore shows the increasing basic employment and

improvement in the economy of the region. This is obvious since Poona which was an educational, cultural, military and administrative centre until independence, has been rapidly growing in the industrial sector in the post independence era.

10.21 Economy of any area is also measured in terms of net value of goods and services produced by that area within a specified period which are available either for consumption or for additions to wealth. Thus area income is a measure of money value of the net sum-total of commodities and services becoming available to the area from the economic activities of individuals, business firms and social and political institutions that make up that area.

10.22 The fact that the concept of area income covers all the economic activities taking place within it signifies the need of obtaining detailed statistical information on the various economic activities taking place in that area. Such detailed information is being collected for the calculation of State-Income or National-Income by the concerned Statistical organisations. For the Poona Region, however, such detailed information as necessary for the calculation of Region's income is not available and as such to have at least a rough idea regarding Region's income calculated on this basis is presented in Table No.3 for the period 1966-67.

T A B L E NO.3.

<u>NET DOMESTIC PRODUCT BY INDUSTRY OF ORIGIN 1966-67.</u>			
		<u>(at current prices) (figures in lacs)</u>	
<u>Sr. No.</u>	<u>Industry</u>	<u>Poona Region.</u>	<u>Maharashtra State.</u>
<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
1.	Agriculture.	399.3	76842.0
2.	Animal Husbandary.	87.8	14975.0
3.	Forestry.	4.7	2307.0
4.	Fisheries.	6.9	885.0
	<u>Sub-Total:</u>	<u>498.7</u>	<u>95009.0</u>

Table No.3 contd.....

(at current prices)(figures in lacs)			
Sr. No.	Industry	Poona Region	Maharashtra State
1	2	3	4
5.	Mining and Quarrying.	5.1	574.0
6.	Large Scale Manufacturing	4212.9	49482.0
7.	Small Scale Manufacturing	284.3	18178.0
8.	Construction.	639.4	12459.0
9.	Electricity, Gas & Water supply.	100.8	2528.0
	<u>Sub-Total:</u>	<u>5242.5</u>	<u>83221.0</u>
10.	Transport.	804.1	17249.0
11.	Communication.	141.9	2420.0
12.	Trade, Storage, Hotels and Restaurants.	1474.6	32120.0
	<u>Sub-Total.</u>	<u>2420.6</u>	<u>51849.0</u>
13.	Banking and Insurance.	349.6	9571.0
14.	Real Estate & Ownership of dwellings.	525.8	6059.0
15.	Public Administration and Defence.	891.3	7726.0
16.	Other Services.	1191.7	22535.0
	<u>Sub -Total:</u>	<u>2958.4</u>	<u>45891.0</u>
----- Total net Domestic Product.		11120.2	275370.0

10.23 Rough estimate of the Region's income for the year 1966-67 at current prices as seen from Table No.3 works out to be Rs.111 crores vis-a-vis about Rs.2760 crores for Maharashtra State. The per capita income for the Poona Region for the said period works out to be about Rs.985 as against Rs.606 for the Maharashtra State naturally due to predominant urban and industrial character of the region. Main contribution to the Region's income is from the Large-Scale manufacturing industries, income from which accounts for nearly 38 per cent of the Region's income. In other words the economy of the Poona Region is mainly industrial. Contribution from agriculture and allied activities is quite meagre which accounts for only 4.6 per cent of the total Region's income.

T A B L E N O . 2 .

(Figures in lacs)

Year	Item.	L O C A L B O D I E S					Total Local Bodies.
		Village Panchayats.	Poona Municipal Corporation.	Talegaon- Dabhade & Alandi- Devachi Municipal Councils.	Canton- ment Boards of Poona, Kirkee & Dehuroad.		
1	2	3	4	5	6	7	
	<u>A) Income</u>						
1967-68	i) Self raised income.	4.74	391.54	3.66	61.76	461.70	
	ii) Govt. grants and Subsides.	3.29	5.89	0.61	3.53	13.32	
	iii) Others.	0.95	657.62	4.28	3.63	666.48	
	<u>Total Income.</u>	<u>8.98</u>	<u>1055.05</u>	<u>8.55</u>	<u>68.92</u>	<u>1141.50</u>	
	<u>B) Expenditure.</u>	<u>7.06</u>	<u>956.42</u>	<u>8.44</u>	<u>70.55</u>	<u>1042.47</u>	
1968-69	<u>A) Income</u>						
	i) Self raised income.	5.46		4.88	69.97	80.31	
	ii) Govt. grants and Subsides.	4.07		1.13	5.47	10.67	
	iii) Others.	0.92		1.99	3.41	6.32	
	<u>Total Income.</u>	<u>10.45</u>	<u>N.A.</u>	<u>8.00</u>	<u>78.85</u>	<u>97.30</u>	
	<u>B) Expenditure</u>	<u>10.89</u>		<u>7.93</u>	<u>70.00</u>	<u>88.82</u>	

*Excluding Poona Municipal Corporation.

Joshi/-

CHAPTER XI

SUMMARY OF FINDINGS, CONCLUSIONS AND IDENTIFICATION OF MAJOR PROBLEMS.

11.1 The Poona Metropolitan Region comprises an area of 1513 sq.km. and is situated between 18°-20' and 18°-45' North latitude and 73°-39' and 74°-13' East longitude at the Gateway of Deccan. The area is bounded in the South by hill ranges ; in the West partly by hills and partly by Western municipal limits of Talegaon-Dabhade; on the North by the flow of the Indrayani and the Bhima including Alandi town and in the East by the administrative limits of Haveli Taluka.

11.2 The area of the region consists of uplands and plains with an elevation varying between 549 metres (1800 feet) to 1317 metres (4320 feet) above M.S.L. The area covers partly the basins of 5 rivers viz. the Mulā, the Mutha, the Pavana, the Indrayani and the Bhima in the broader Krishna drainage system.

11.3 The region is endowed with an excellent climate and setting of much scenic beauty with abundant water resources for urban development and irrigation purposes. An area of about 169 sq.km. (65 sq.miles or 16905 hectares) in the region would be brought under irrigation facilities by 1971.

11.4 About 14 per cent of the area of the region (216 sq.km. out of 1513 sq.km.) is at present under the administrative jurisdiction of 7 urban local bodies viz. the Poona Municipal Corporation, 3 Cantonment Boards and the Pimpri-Chinchwad, Talegaon and Alandi Municipal Councils.

11.5 The physiography has influenced the development pattern of the region. The hills in the South and West restrict the development on those sides. The communication facilities and availability of plain waste land in the North-Western direction on Bombay-Poona axis have attracted a large industrial development. Fertile agricultural land and irrigation facilities by canal have facilitated extensive agricultural development in the South-Eastern part of the region on Sholapur Road. Extensive defence areas in the region have also restricted the availability of land for developmental purposes.

11.6 Nearly 92000 hectares representing 61 percent of the area of the region was under crops. Of this, only about 9 percent is presently irrigated. A majority (more than 50 percent) of the present irrigated area is situated in the South-Eastern plains on Sholepur Road.

11.7 An extensive area admeasuring about 15312 hectares (37837 acres) within the region is under the Defence Ministry. This area includes the 3 Cantonment Towns covering about 6462 hectares (24.95 sq.miles), some Military Dairy Farms and other establishments with a vast open area within them. Some area is also used for residential purpose.

11.8 The population of the region grew from 7.99 lacs in 1951 to 9.93 lacs in 1961 representing an increase of about 24 percent. The population increase between 1941-1951 was very abnormal viz. 64 percent. According to 1961 census the urban population of the region which was 81 percent (8 lacs) was concentrated in 12 urban centres including Poona City. The remaining 19 percent rural population lived in 127 villages.

11.9 With the inclusion of Dapodi and Lohegaon Towns in the Poona Municipal Corporation in 1962, there are 9 towns in the region outside the Poona Corporation area. According to 1961 census, none of these 9 towns had a population more than 70,000. The 2 Cantonments adjacent to Poona City had a population between 50,000 to 70,000. The population of Talegaon-Debhade, Dehu-Road Cantonment and Pimpri was between 10,000 to 20,000 while that of Bhosari, Chinchwad, Dapodi and Khadakwasala was between 5,000 to 10,000. Alandi was the smallest urban centre with a population of only 3000. The present Poona Corporation area had a population of 6.2 lacs in 1961.

11.10 The central core of the region consisting of Poona City and Cantonments of Poona and Kirkee contained about 75 percent of the total and 90 percent of the urban population, although it occupied about 10 percent of the total area of the region. The population density in the region was 619 persons per sq.km. (1602 persons per sq.miles). For the

urban and rural area in the region it was 2552(6610), and 145 (376) persons per sq.km.(sq.mile).

11.11 Out of 9.93 lacs persons in the region, about 33.6 percent or 3.34 lacs were workers as per 1961 census. Female workers constituted only 21 percent of the total workers. - About 12 percent of the workers were engaged in manufacturing, about 27 percent in agriculture and allied activities and the remaining 54 percent in other activities.

11.12 The Demographic projections indicate that the rate of growth of population would be accelerated due to committed industrial activity in the region. It is estimated that taking into account the employment prospects on the basis of committed schemes for the expansion of industries, the population of the region would increase from 9.93 lacs in 1961 to 26.13 lacs by 1991, of which about 24.5 lacs i.e. 94 percent will be in urban areas. There is likely to be an immigration to this region because of employment opportunities.

11.13 For the purpose of presenting results in this report the region is divided into 8 sub-regions on the basis of natural features and communication routes,

11.14 Thirty percent of the cultivable area is good agricultural land, while 41 percent and 29 percent fall under the categories of medium and marginal or poor agricultural land respectively. All the cultivable land in the region falls under two categories viz. jirayat (dry crop land) and bagayat (irrigated land). Dry crop lands are further divided into kharif (early monsoon) and rubbi (late monsoon) lands,

11.15 Of the total cultivable area, about 9 percent i.e. about 7840 hectares (19370 acres) of land was under irrigation through canals and wells. An additional area of 100 sq.km. (38.61 sq.miles) is expected to be irrigated under the various major and minor irrigation schemes during the next three or four years.

11.16 Of the total gross cropped area about 70 percent area was under food crops and 30 percent under non-food crops. The main crops of the region are rubbi Jawar and Bajra among the food crops. The place of non-food crops is not significant in the agricultural economy of the region.15/-

11.17 Fruits and vegetables accounted for nearly 4 per-cent of the total cropped area in the region. It is worth mentioning that more than 75 percent area under fruits and vegetables was concentrated in the villages around Poona - within a radius of about 8 km (5 miles), having easy access-ibility for marketing at Poona.

11.18 Out of the total cultivable area of 85498 hectares (211263 acres) surveyed in the region for bunding and terra-cing programme, about 23 percent or 19351 hectares (47770 acres) had been bunded and terraced.

11.19 The area under forests is very meagre i.e. 8 percent of the total area of ^{the} region. About 7 percent of forest land is concentrated in the hill slopes on the south-ern boundary of the region. The forests in the region are not of much economic importance but they have very good po-tential for maintenance of soils in productive fertility and conservation of water. Sinhagad Fort which is easily accessible from Poona City has a good potential for being developed as a Regional Forest Park for holiday relaxation and enjoyment.

11.20 Area under all water sheets in the region accou-nts for nearly 2 percent of the total area of the region. The estimated number of workers depending on fishery for their livelihood in the region was only 0.16 percent of the total workers.

11.21 The total livestock population of the region was about 1.5 lacs, while the poultry was about 1.4 lacs as per 1966 livestock census. The important cattle breeds observed in the region are Gir, Khillar, Red Sindhi and Nimadi while important breeds in buffaloes are Surti and Murha.

11.22 Of the total milk production of about 49,000 litres per day, about 56 percent was consumed locally while the rest was sold outside for which major markets were Poona City and Cantonments (18400), Pimpri (1150), Chinchwad (700) and Dehuroad (500). The major demand of milk for Poona City and Cantonments is met with by the Government Milk Scheme. Except

during summer season about 54000 litres of milk is collected by Milk Scheme out of which 30,000 litres is supplied to Poona City and cantonments (in addition to 18,400 litres supplied directly by private milk dealers in the region) and about 24,000 litres is sent to Bombay.

11.23 Out of the total production of eggs of about 2050 dozens per day, 40 percent was consumed locally in the villages themselves while the rest 60 percent was sold outside for which major markets in the region are Poona City, Uralkanchan, Bombay and Koregaon Bhima.

11.24 The region has one of the largest poultry farms in Asia at village Varale known as Arbor Acres. Major markets for the chickens reared in the region are Poona and Bombay. Government of Maharashtra has recently started a poultry dressing plant at Poona.

11.25 No minerals of economic importance except building stones are found in the region. Besides this, sand and clay are also excavated to some extent in the region.

11.26 The Poona region has attracted a large industrial growth mainly during the last two decades. It is at present an important growing industrial centre having a number of modern sophisticated factories manufacturing a variety of products. 'Engineering' is the predominant type of factories in the region. The factories in the region at present (1969) provide an employment to about 80,000 workers. With the expansion of existing factories and setting up of new factories in the region, it is expected that by 1991 about 1.20 lacs additional industrial jobs would be created.

11.27 A major portion of the existing and committed industrial activity is concentrated at Pimpri-Chinchwad Industrial Complex outside the Poona Municipal Corporation limits on the Bombay-Poona rail-road axis, where the Maharashtra Industrial Development Corporation has developed a large industrial area. It is, therefore, imperative to develop adequate housing area adjacent to this industrial area in the form of a self contained township. Development of suitable

industrial areas in the eastern part of the region to attract new growth and reduce pressure on Pimpri-Chinchwad complex and Poona City appears necessary.

11.28 In the absence of proper detailed planning / for the Pimpri-Chinchwad Industrial Area, a haphazard development is being taking place. The discharge of factory wastes and the sullage from the residential areas in the adjoining nallas finds its way to the Pavans River. As a consequence of this, the environmental conditions in the area are deteriorating and river pollution has become a serious health problem. The area is devoid of basic utility services and amenities as also the community facilities much needed to a rapidly developing industrial area.

11.29 The problem of housing in the region is also of very complex magnitude, as more than 2/3rd of the houses are of very poor quality. According to a slum survey in 1968 about 13.5 percent of the region's urban population lived in 303 slums. As in 1967, about 29,000 tenements are estimated to be needed to remove overcrowding in the Poona Municipal Corporation area. The future housing need in the region for the projected 1991 population is estimated to be about 3.74 lacs, additional tenements, which means about 15,500 tenements per annum during the next 24 years.

11.30 The prices of land within the Poona Municipal Corporation limits have shot up due to speculative activities in the private sector. A proper housing and land policy is, therefore, necessary to accelerate private and public housing in the region.

11.31 The region is served by a fairly good network of roads and railways and is also accessible by air. At present the heavy lorry traffic moves day and night on the sections of the National Highways passing through the city. It is observed that 36 percent of the incoming traffic was by-passable which needed diversion from outside the developed areas.

11.32 Rapid development of factories in the Pimpri-Chinchwad area away from the residential areas of the main city and lack of good transportation system has created serious -

traffic problem on the Poona-Bombay road and railway lines. A large volume of cyclists' traffic (about 26,000) recorded in 16 hours on an important National Highway viz. Bombay-Poona road which is already overloaded beyond its capacity results in traffic jams and loss of time.

11.33 The growth of industries at Pimpri-Chinchwad has also given rise to a typical ribbon development along the Bombay-Poona National Highway resulting in the obstruction of smooth flow of traffic on the Highway.

11.34 Overbridges at Chinchwad and Hadapsar level crossings are necessary because as per the results of the survey conducted it was observed that railway crossing at Chinchwad remained closed for 9 hours on the survey day causing thereby an interruption to nearly 2000 vehicles. Water transport (ferry service) plays relatively an insignificant role in the transport of the region as total number of passengers using ferry service daily in the surveyed region ^{excluding Poona City} is about 3250.

11.35 There is no shortage of water resources in the region as a whole. It is, however, necessary to undertake suitable schemes for the augmentation of water supply for the projected water demand, which is estimated at about 709 mld (156 mgd) by 1991.

11.36 As regards rural water supply the position is not satisfactory because facility of public well is not available or inadequate in case of 35 and 37 villeges respectively. The people of these villeges are still dependant on nearby river as a source of drinking water supply.

11.37 The present position as regards electric supply is also satisfactory. There would be no difficulty in meeting the future estimated demand of electricity in the region by 1991.

11.38 Out of 127 villeges and 12 towns of the region a survey of community facilities was carried out for 125 villeges and 5 towns of rural character excluding large urban centre of Poona Corporation area and Cantonments.

11.39. As per survey facility of primary education was available in 122 villages and 5 towns of the surveyed region. The facility of secondary education in the surveyed area in the region was available in 16 villages and 5 towns. Higher education facility was available at one town (Talegaon-Dabha-de) only.

11.40. Facilities of hospitals, maternity homes and dispensaries were available to almost all the towns and to about 30 villages of the surveyed area of the region. Out of 95 villages, where either a facility of a hospital or a dispensary was not available, 11 villages were visited regularly by outside visiting doctors.

11.41. Modern communications like postal, telegraph and telephone services are a great help in the promotion of industry, trade and agriculture. Postal facility was available in 5 towns and 39 villages, telegraph facility was available in 4 towns and 2 villages and telephone facility was available at 4 towns and 3 villages of the surveyed area of the region.

11.42. In the surveyed area of the region there were 15 commercial banks located in 4 towns and 2 villages which had also the facility of postal savings bank. Besides, the facility of only the postal savings banks were available in 1 town and 33 villages. Service co-operative societies, providing short term finance to agriculturists for the purpose of agricultural operations, were available in 4 towns and 69 villages out of 5 towns and 124 villages covered under the survey.

11.43. In the surveyed area of the region the facility of veterinary dispensary/Artificial Insemination centre was available in 4 towns and 18 villages. Amongst all these dispensaries except that at Bhoseri were in the public sector.

11.44. Facilities of weekly markets, Police Station/ Outpost and Community hall were available in 8 settlements, 12 settlements and 14 settlements of the surveyed area of the region respectively.

11.45 In this region there are 108 village panchayats, 3 panchayat samities (some portion of each), zilla parishad (some portion), 3 municipal councils, 1 municipal corporation and 3 cantonment boards are functioning as local bodies. Total income of all the local bodies in the region for 1967-68 was about Rs.11.42 crores of which income of Poona Municipal Corporation alone was Rs.10.55 crores.

11.46 Rough estimate of the region's income for the year 1966-67 at current prices worked out to be Rs.111 crores. Large scale manufacturing industries contributed nearly 38 per cent of this region's income. Therefore, it can be very well said that the economy of the Poona region is mainly industrial.

11.47 In conclusion it could be summarised that a number of problems in the region have arisen because the level of public amenities, utilities and services such as Civic transport, Communications, Housing, Water supply and Drainage etc. has not kept pace with the rapid industrial growth and the consequential growth of population.

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appendices

APPENDIX A.

LIST OF TOWNS AND VILLAGES IN THE POONA METROPOLITAN REGION.

(1961 Census)

Sr.No.:	Name of the village: or Town.	1961 Census Code No.	Sr.No.:	Name of the Village: or Town	1961 census code No.
1	2	3	1	2	3
<u>TOWNS.</u>					
<u>I) HAVELI TALUKA.</u>					
1.	Bhosari.	II	7.	Ashtapur.	112
2.	Chinchwad	VII	8.	Bakori.	84
3.	Dapodi.	IV	9.	Balewadi.	20
4.	Lohogaon.	VI	10.	Baner.	23
5.	Pinpri	III	11.	Bhawadi.	75
6.	Khadakwasla.	V	12.	Bhiwari.	96
7.	Dehuroad Canton- ment.	I	13.	Bhawarapur.	113
<u>II) POONA CITY TALUKA.</u>					
8.	Kirksee Cantonment	I	14.	Bopkhel.	85
9.	Poona Cantonment.	III	15.	Burkegaon.	79
10.	Poona City	II	16.	Charholi Bk.	69
<u>MAVAL TALUKA.</u>					
11.	Talegaon Dabhade.	II	17.	Chikhali.	5
<u>KHED TALUKA.</u>					
12.	Alandi (Dewachi)	I	18.	Dehu.	1
<u>VILLAGES:</u>					
<u>I) HAVELI TALUKA:</u>					
1.	Agalambe.	32	19.	Dhanakawadi.	102
2.	Ahire	30	20.	Dhanori.	82
3.	Akurdi.	11	21.	Dhayari.	55
4.	Alandi (Chorachi)	122	22.	Dighi.	81
5.	Ambegaon Bk.	52	23.	Dongargaon.	78
6.	Ambegaon Kh.	109	24.	Donje.	38
			25.	Dudulgaon.	6
			26.	Fulgaon	72
			27.	Fursungi.	100
			28.	Gorhe Bk.	34
			29.	Gorhe Kh.	36
			30.	Hadapsar.	98
			31.	Hingane Kh.	48
			32.	Hingangaon	114
			33.	Kalas.	86
			34.	Katraj.	160
			35.	Kesnand.	88

1	2	3	1	2	3
36.	Khanggaon Tek.	115	72.	Pimple Saudagar.	17
37.	Kharadi.	91	73.	Pisoli.	106
38.	Khanapur.	39	74.	Rahatani.	16
39.	Khadakwasla.	57	75.	Ravet.	12
40.	Kiwale.	9	76.	Sangvi Haveli.	21
41.	Kblwadi.	95	77.	Sangvi Sandas.	110
42.	Kondhave Bk.	104	78.	Sashte.	93
43.	Kondhave Kh.	99	79.	Shindawane.	124
44.	Kirkhitwadi.	56	80.	Shivane.	28
45.	Kondhave Dhavade.	29	81.	Shirswadi.	89
46.	Kopre.	54	82.	Ghra Sinhadadh.	45
47.	Koregaon Mul.	117	83.	Talwade.	3
48.	Kothrud.	25	84.	Tarade.	121
49.	Kudje.	33	85.	Theur.	116
50.	Lohogaon.	83	86.	Tulapur.	71
51.	Lonikand.	76	87.	Undri.	105
52.	Lonikalbhor	120	88.	Urali Kanchan.	119
53.	Mahanedwadi.	101	89.	Urali Dewachi.	103
54.	Mandvi Bk.	37	90.	Wadgaon Bk.	49
55.	Mandvi Kh.	35	91.	Wadgaon Kh.	50
56.	Malkhed.	42	92.	Wadgaon Sheri	92
57.	Manjri Bk.	97	93.	Wadgaon Shinde.	74
58.	Manjri Kh.	94	94.	Wadhu Kh.	73
59.	Moshi.	7	95.	Wadki.	108
60.	Naigaon.	118	96.	Walti.	123
61.	Nanded.	51	97.	Wadebolhai.	90
62.	Narhe.	53	98.	Wagholi.	87
63.	Nandoshi	58	99.	Varje.	27
64.	Nhavi Sandas.	111		<u>II) MULSHI TALUKA.</u>	
65.	Nigdi.	10	100.	Bavdhan Bk.	92
66.	Nirgudi.	70	101.	Bavdhan Kh.	93
67.	Pashan	24	102.	Bhugaon.	96
68.	Perne.	77	103.	Bhukun.	95
69.	Pimpri Sandas.	80	104.	Chande.	85
70.	Pimple Gurao.	18	105.	Hinjwadi.	69
71.	Pimple Nilakh.	22	106.	Jambe.	49

- III -

1	2	3	1	2	3
107.	Kasarsai.	55	III)	POONA CITY TALUKA	
108.	Lawale.	91	120.	Mundhava.	1
109.	Mahalunge.	79	IV)	MAVAL TALUKA.	
110.	Man.	77	121.	Gahunje.	174.
111.	Marunji.	63	122.	Parandwadi.	162.
112.	Mulkhed.	88	123.	Shirgaon.	169
113.	Nande.	81	124.	Somatane.	166
114.	Nere.	51	125.	Talegaon-Dabhade.	170
115.	Punawale.	52	126.	Warele.	160
116.	Sus.	86	V)	KHED TALUKA.	
117.	Tathawade.	58	127.	Alandi (Dewachi.)	154.
118.	Thergaon.	64			
119.	Wakad.	70			

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APPENDIX - B

LIST OF VILLAGES ACCORDING TO THEIR PRESENT ACCESSIBILITY
BY ROAD.

I) Names of Villages directly abutting on....

Sr. No.	National Highway No.	Sr. No.	State Highway No.	Sr. No.	Major Dist. Road.	Sr. No.	Other Dist. Road.
1.	Akurdi.	1.	Wagholi.	1.	Peshan.	1.	Ravet.
2.	Nigdi.	2.	Loni Kand.	2.	Bavdhan Bk.	2.	Kiwale.
3.	Talegaon-Dabhade.			3.	Bavdhan Kh.	3.	Dehu.
4.	Dhankavadi.			4.	Kothrud.	4.	Talwade.
5.	Katraj.			5.	Warje.	5.	Chikhali.
6.	Hadapsar.			6.	Shivne.	6.	Wakad.
7.	Loni Kalbhor.			7.	Bhugaon.	7.	Thergaon.
8.	Urali Kanchan.			8.	Bhukum.	8.	Tathawade.
9.	Moshi.			9.	Kondhave Dhavade.	9.	Punawale.
				10.	Kopre.	10.	Mahalunge.
				11.	Kudje.	11.	Hinjawadi.
				12.	Ahire. (within N.D.A.)	12.	Man.
				13.	Hingne Kh.	13.	Kasarsai
				14.	Wadgaon Bk.	14.	Lavale.
				15.	Wadgaon Kh.	15.	Ghera-Sinhgad.
				16.	Kirkitwadi.	16.	Kondhave Bk.
				17.	Khadakwasla.	17.	Kondhave Kh.
				18.	Donje.	18.	Manjri Bk.
				19.	Gorhe Kh.	19.	Theur.
				20.	Khanapur.	20.	Alandi Chorachi.
				21.	Malkhed.	21.	Bhawarapur.
				22.	Mundhwa. (within P.M.C.)	22.	Manjri Kh.

Sr.:National Highway: Sr.:State Highway: Sr.:Major Dist.: Sr.:Other Dist.
No. No. No. Road. No. Road.

23.Urali Dewachi.	23.Perne.
24.Wadki.	24.Dongargaon.
25.Shindone.	25.Burkegaon.
26.Kesnand.	26.AshtaPur.
27.Lohogaon.	27.Pimpri-Sandas.
28.Dhanori.	28.Nahvi-San-das.
29.Kalas.	29.Sangvi-Sandas.
30.Bopkhel.	30.Hingangaon.
31.Dighi.	31.Charholi.
32.Alandi(Dewachi)	32.Dudulgaon.
	33.Tulapur.
	34.Phulgaon.
	35.Wadhu Kh.

II) Names of villages within three kilometers (two miles) from any of the good roads.

1.Shirgaon.	1.Wadgaonsheri.	1.Warale.	1.Gahunje.
2.Somatane.	2.Kharadi.	2.Agalambe.	2.Sanghvi-Haveli.
3.Parandwadi.		3.Nanded.	3.Pimple-Gurav.
4.Ambegaon Bk.		4.Dhayari.	4.Pimple-Sa-udagar.
5.Ambegaon Kh.		5.Narhe.	5.Pimple-Nil-kh.
6.Naigaon.		6.Nandosni.	6.Rahatani.
		7.Gorhe Bk.	7.Chande.
		8.Phursungi.	8.Nere.
		9.Walti.	9.Jambe.
		10.Shirswadi.	10.Baner.

Sr.: National Highway: Sr.: State Highway: Sr.: Major Dist.: Sr.: Other Dist.
No. No. No. Road. No. Road.

11. Nande.
12. Undri.
13. Pisoli.
14. Koregaon Mul.
15. Nirgudi.

III) List of villages within three to five kilometres (two to three / of the miles) from any/good roads.

- | | | | |
|---------------|---------------|-------------|-----------------------|
| 1. Mehraiwadi | 1. Sus. | 1. Bhawadi. | 1. Khangaon-
-Tek. |
| 2. Tarade. | 2. Mandvi Kh. | | |
| | 3. Mandvi Bk. | | |
| | 4. Kolwadi. | | |
| | 5. Wadbolhai. | | |
| | 6. Bakori. | | |

IV) List of villages above five kilometers (3 miles) from any of the good roads.

- | | | |
|--------------------|---------------|--------------|
| 1. Wadgaon Shinde. | 1. Mahalunge. | 1. Mulkhed. |
| | 2. Sashte. | 2. Balewadi. |
| | | 3. Bhivari. |