

# REPORT OF THE LAND USE SURVEY IN THE REGION

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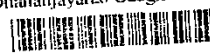
**REPORT OF THE LAND USE SURVEY.  
IN THE REGION**

**BOMBAY METROPOLITAN REGIONAL PLANNING BOARD.**

**H-398(H)(500-9-69)**

# C O N T E N T S

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REPORT OF THE LAND USE SURVEY IN THE REGION

Necessity and Importance of existing land use survey.

1. The importance of existing land use survey as the first step in the Planning process needs hardly to be stressed. The existing land use pattern provides the setting in which all human activities in the region are taking place. Though it is true that the existing form of the earth's surface is itself the result of human activity over a period of centuries, in relatively short spans of time it is the environment, the natural resources, the climate condition, the communication routes and such other things which conditions the activities of men and largely govern the prospects of development of regions. It is therefore, of primary importance to obtain a full knowledge of the manner in which the land in the region is being utilised and is influencing development.

2. All planning involves the arrangement, or more appropriately, the re-arrangements of several known and unknown elements. In most of the cases planning means attempting to change the existing patterns of development for better efficiency, more orderly growth, a functional co-ordination of related sectors, etc. Obviously, this planning does not take place in a vacuum. There is a certain pattern already in existence which has to be modified, changed, or improved upon. It is essential therefore that this existing pattern is studied in the first instance. It is also pretty obvious that practicable planning must take into account the resource potential of the land being planned. Land forms and features, land resources and land uses at the same time indicate the potentialities as well as the constraints for future development. From all these points of view a survey of the existing land uses is therefore very important. According to the provisions of Section 8 of the Maharashtra Regional and Town Planning Act 1966, the preparation of an existing land use map of the region is also a statutory obligation of the Regional Planning Board and an existing land use survey was therefore undertaken in the region as the first of the surveys to be undertaken.

The region - boundaries, area and population.

3. The Bombay Metropolitan Region as constituted by Government under Notification, Urban Development, Public Health and Housing Department, No. EPB-1067-M, dated 8th June 1967 includes all the areas within the following boundaries.

Northern boundary :- Vaitarna Creek and the northern boundaries of Bassein and Ehiwandi Talukas in the Thana District.

Eastern boundary :- Along the eastern boundaries of Ehiwandi, Kalyan and Ulhasnagar Talukas in Thana District and then along Ulhas River upto Kalambol village in Karjat Taluka in Kolaba District, thereafter along the northern boundaries of Ganegaon, Takave, Haliwali, Savle and Khadawali villages in Karjat Taluka and thereafter along the eastern boundary of Karjat Taluka and Khalapur Taluka in Kolaba district upto Hanwaj village in Khalapur Taluka.

Southern boundary :- Along Dharamtar creek and there-  
-after along patalganga River upto Khalapur village in Khalapur  
Taluka and thereafter Ajoshi, Warose tarf Wasrang, along the  
Southern boundaries of Madha Katrang and Hanwaj villages in  
Khalapur Talukas.

Western Boundary :- Arabian Sea.

4. The region includes the whole of the Bombay Suburban District, Thana, Bassein, Ehiwandi, Kalyan & Ulhasnagar Talukas of Thana District and Uran Taluka and portions of Panvel, Karjat and Khalapur Talukas of Kolaba District. In the Karjat Taluka, the eastern boundary of the region reaches upto to the foot hills of Sahyadri ranges. On the southern side it is bounded by Patalganga River and on the northern side it is almost bounded by the Tansa River. The total area is about 1531 sq. miles i.e. about 3965 sq. kms. The region has thus an area which is equal to about 1.3% of the total State area. In addition to Greater Bombay, it contains 18 urban centres as follows :

- |                   |                |               |
|-------------------|----------------|---------------|
| 1. Hayandar       | 2. Thana       | 3. Bassein    |
| 4. Virar          | 5. Sandor      | 6. Ehiwandi   |
| 7. Dombivali      | 8. Kalyan      | 9. Mohone     |
| 10. Kate Manivali | 11. Ulhasnagar | 12. Ambernath |
| 13. Kalwa         | 14. Panvel     | 15. Uran      |
| 16. Neral         | 17. Matheran   | 18. Karjat    |

Of these, however, Kalyan, Katemanivali and Mohone form one town group, i.e. Kalyan Town group and Bassein and Sandor also form the town group viz. Bassein town group. There are 948 inhabited and 66 uninhabited villages in the region.

5. The total population of the Region according to 1961 census was 52.82 lakhs, out of which 41.52 lakhs were accounted for by Greater Bombay alone. The total urban population was 46.43 lakhs and the total rural population was 6.39 lakhs. The urban population living outside Greater Bombay was 4.91 lakhs, excluding Greater Bombay, the urban population was 43.3% of the total population as against 28.2% for the State as a whole. This will show the higher degree of urbanisation reached in the Region. Greater Bombay's population of 41.52 lakhs (which has risen to about 54 lakhs according to 1968 estimates) is very much larger than any single town of the region or for the matter of fact in the whole of the Indian sub-continent, excepting only Calcutta.

## II

### 6. Methodology adopted for collecting information on existing

#### Land uses

The methodology adopted, consisted of -

- (a) Collecting recorded information about land uses in the records of the various Departments and public Authorities.
- (b) Supplementing it by surveys and field inspections.

7. A considerable information about existing land use is recorded in the records of the District Inspector of Land Records, the Superintendent of City Surveys, Municipal Records, Census Records, Records of the Town Planning and Industries Departments and the Revenue Records, principally the various village forms and Taluka forms and extracts maintained by the Revenue Officers. The information on land use in urban areas is also found recorded in the reports and working papers and plans of the Development plans for these towns prepared by the Bombay Municipal Corporation or by the Town Planning Department. Since most of the important information at the urban level required for Regional Planning was obtainable from the Development Plan Reports and plans and working papers, no surveys for this purpose were undertaken. However, frequent inspections of sites were carried out to check up land use information from the Development plan Records and to note changes. Areas peripheral to Bombay have in the last decade undergone tremendous changes in the surface utilisation patterns. Agriculture in these areas is gradually giving way to industries and other buildings. The location of new industrial premises were easy to obtain from the records of (a) Town Planning Department, (b) Industries Department and (c) Collector's office. The industries outside Bombay, of which a complete frame was prepared from the records of the Chief Inspector of Factories, were also requested to send in their site plans and many co-operated in this respect. All this information collected was checked up by site inspections. The points which were not clear from records and plans such as effluent discharge points and effluent channels, etc. were noted at the time of these inspections.

8. In so far as the existing land use for Bombay is concerned the valuable information collected by the Bombay Municipal Corporation, at the time of the preparation of the Development plan for Greater Bombay in 1962 provided considerable useful data. Wilbur Smith and Associates had, for their traffic studies made in 1962 also compiled a table of quantitative land use data for various traffic zones of the Greater Bombay Area. The information collected by the Bombay Municipal Corporation was refined by the Special Consulting Surveyor at the time of the scrutiny of the Development plan in 1965-67 and the information collected by Messrs. Wilbur Smith and Associates was updated by the Traffic Cell for Mass Transportation Studies during 1968-69. The 1968 home interview survey and other surveys carried out by the Traffic Cell provided considerable information on the distribution of land uses in Bombay.

4

9. So far as the rural areas are concerned information was mostly collected on the basis of the village forms as mentioned before and note was taken of the changes in the rapidly developing areas by actual visits and information from other Departments.

10. All possible precautions were thus taken to obtain upto date and accurate information about the existing land use in the urban and rural parts of the Bombay Metropolitan Region.



ASPECTS OF REGIONAL  
GEOGRAPHY

11. The physiological and geographical features constitute in many cases the "raison D'etre" for the different types of land uses. Geographical aspects such as forest, rivers and lakes and water bodies themselves constitute features of land use, while aspects such as valley areas, marches, slopes and reefs, etc. provide the reasoning for particular types of land use and crop patterns which exist in such areas. It would not therefore be inappropriate to describe the principal features of regional geography, geology and the climatology at some length.

12. Geographically speaking, the region forms part of the north Konkan region that lies to the west of the Sahyadries. In this region, the Sahyadri recurves inwards and receds relatively further eastwards and the river Ulhas draining westwards has developed a large alluvial infilled amphitheatre like basin. The region extends from the Patalganga riv. in the south to the Tansa in the north. Westwards, the Arabian Sea bounds the region, while to the east, the bounding limits cutting across the Bhatsai and Kalu river valleys and skirting the upper Ulhas basin is more arbitrary and administrative, being defined by accessibility and economic cohesion to the city rather than natural features.

13. Relief and Aspects : The region consists of the mainland of North Konkan and the two large insular masses of Salsette-Frombay and Bombay that are separated from each other by shallow creeks and tidal marshes that are mostly silted up and filled in. The region on the whole is low land, but not plains. The average elevation of the area above sea-level is below 100 m. but significant local variations are brought about by a series of north-south trending hill-ridges.

14. Towards the extreme east in the southern limits of the Region is the main ridge of the Sahyadri whose steep scarp slopes rise to more than 600 m. above the immediate valley floor of the Upper Ulhas that is itself about 80 m. above Mean Sea Level (M.S.L.). The steep escarpment face of the Sahyadri rises through a series of cliff faces and inbetween structural terraces and rock-debris slopes to finally culminate in high level plateaus with extensive flat tops.

15. Shooting off westwards as a branch spur and forming an almost continuation of the main ridge in a south to north trend is the Matheran outlier. Where it branches off is the Bhor Ghat. This spur forms the eastern limit of the Khalapur Taluka and rises to elevation of about 600 m. above K.S.L. and extends as far north as Neral with the same northerly trend. It is at the northern end of this spur, at a height of about 700 m. lies the small hill station of Matheran, a great summer

attraction to the people of the city. Beyond Neral, this ridge loses in elevation and continues with north-westerly trend as far north as Ambernath. In this part, the ridge comes down to elevation of about 300m. or less.

16. About 20 kms. to the west of the Matheran ridge and running parallel to it lies another ridge, the Panvel-Mumbra ridge that runs fringing the coast of the mainland along the Thana creek. This coastal ridge, a more continuation from beyond the southern limits of the Region, runs with a south to north trend right upto the northern limits and beyond. This ridge, as well as the ridges to its west and immediate east are breached in fairly wide gaps by the lower courses of the swift west flowing rivers such as the Patalganga, the Panvel river the Ulhas and the Tansa. The ridge presents equally steep slopes on either sides and at higher elevations have barren cliff faces. This ridge about a km. wide and rising to heights of about 650 m. near the Parsik Hill to the south of Ulhas valley, widens to 2 kms. or more to the north of the river but retains the equally sloping faces on either side. One of the high peaks of this region is the Ghotara Peak overlooking the Tansa and appearing over the skyline for considerable distances along the Bhiwandi Wada road.

17. Further west of this Panvel-Mumbra ridge is another ridge extending from Mazagon on the easter foreshore of the Bombay island northwards through the Sewri, Koliwada, Kurla Ghatkopar hills. This ridge continues north as the central spine of the Salsette island from Marol in the south to Ghodbunder in the north and carries on its top the high peak of Kaneri rising to about 500 m. and others like the Shendu peak and Avghada. After being breached by the Ulhas to develop its wide estuary, this ridge further continues north in the easter part of the Bassein taluka with the same northerly trend and carries on its top the peak of Tungareshwar and Kamandurg. This ridge on the whole is wider than the Panvel-Mumbra ridge about 4 to 8 kms. wide and the terrain over the region of this ridge is rugged and uneven. In Salsette this ridge encloses within it a horse-shoe shaped valley opening southwards and carrying 3 lakhs in it.

18. Still further west of this ridge is a coastal ridge running all along the western shores of the islands of Bombay and Salsette. This ridge has been eroded and carved in many spots into beaches and coves, while elsewhere it has evolved into jutting headlands and rocky promontaries. From south to north the Malbar and Walkeshwar Hills the Worli hills, the Danda hills and the Uttan Dongri hills from parts of this discontinuous range. This range is of much lower elevation rising to 200 to 250 m. in parts.

19. The Trombay island that lies to the south-east of Salsette has as its core a north south tending ridge with a steep eastern face and a relatively west face. This ridge rises to about 350 m. in height.

20 Apart from these major ridges, there are a number of outliers of resistant remnants forming isolated hills dotting the other lowlying plain or valley floors, such as the Gilbert hill of Andheri, the Ambaoli hills near Jogeshwari & the hills around Kalyan. To the east of the Ghotara ridge and the Bhiwandi road running in a northersterly direction and paralled to the Bhatsai on its right bank are also a series of low hills one behind the other, rising to about 200 m. above M.S.L.

21. In between these north south trending ridges are Flat lands or gently sloping valley floors or coastal plains. Thus between the Sahyadri and the Matheran ridge is the Upper Ulhas river valley while to the west of the Matheran ridge is the Panvel low lands. Converging to the narrow breach in the Mumbra-Bhiwandi ridge and opening out widely in a fan like structure eastwards is the lower Ulhas-Bhatsai-Kalu basin that widens to about 80 kms. width along the eastern limits of this region. Between the Mumbra ridge and the Salsett - Kanheri ridge are extensive marshes, tidal flats and reclaimed low lands facing the Thana Creek on both sides. The low lands are wider and above tidal waters in the Uran Taluka to the east of the Creek. To the west of the Kanheri- Tungar ridge are also found extensive low lands, which tend to become marshy and tidal along the Ulhas estuary.

22. Thus, from the phisiographic viewpoint, the area can be divided into the following divisions:

I. The Hills :

- |                               |                            |
|-------------------------------|----------------------------|
| A. The Matheran Ridge         | B. The Panvel Mumbra ridge |
| C. The Bhiwandi Ghotara Ridge | D. The Bhatsai Hills       |
| E. The Tungar hills complex   | F. The Kanheri ridge       |
| G. The Trombay hills          | H. The Utan hills.         |

II. The Lowlands :

- |  |                           |
|--|---------------------------|
| A. The Patalganga valley   | B. The Upper Ulhas valley |
| C. The Eastern lowlands that lie between the Bhatsai in the north and Ulhas in the south or the Kalyan Bassein | D. The lower Ulhas valley |
| E. The Bassein lowlands  | F. The Bhiwandi lowlands  |
| H. The Thana Creek lowlands  | G. The Salsett lowlands   |
| J. Uran lowlands or Patalganga estuary   | I. The Panvel lowlands    |
|  | K. Bombay island.         |

23. Geology:

Geologically speaking, the entire Region falls in the Deccan lava country. About 60 to 100 million years back,

the whole area was covered by extensive basic lava outpourings. The basalt rocks that have formed as a result of the cooling and solidification of the basic cover the entire region. The successive lava flows have resulted in the horizontal layering arrangement which is generally retained except where subjected to crustal tilting or deformation. These flows attain their maximum width in the entire Deccan Lava country, over this region, the Geologists have estimated that the lava flows reach an approximate thickness of ten thousand feet over this region. Further, it has been observed that unlike the core of the lava country where the rocks are monotonously uniform, horizontal basic lava flows, over this region which is peripheral in location in the lava region, there has been considerable amount of magma differentiation in the lava outpourings of the region. The consequence is the formation of a variety rock groups that may vary slightly in composition but have significant variations in their capacity of resistance to erosion. Thus over this region, a number of rock-groups occur such as the andesitic basalt, doleritic basalt, greenish amigdular basalt which are all basic in nature and trachits, rhyolite and others that are acidic in composition. Besides, near Kanheri peak, there occurs also breccia.

24. Besides these solid igneous formation, volcanic ash beds that were developed during the periods of quiescence between successive lava flows and intratrappean marine sedimentary formations that were developed by marine transgressions over the marginal areas also occur over parts of this region. Of these, the carbonaceous shale formation at the foot of Worli hills are noted for their rich frog fossils.

25. Though the Deccan Lava flows are noted for their monotonously uniform horizontal flows, over this region as a whole, the rock formations are slightly tilted westwards to the Arabian Sea. In general, it is noticed that the rocks have a dip of about  $5^{\circ}$  to the west, though in certain localities locality dips as high as  $10^{\circ}$  have been observed. This westward tilting of the rock formations is particularly found in the rock formations of Bombay, Trombay, Salsette and Bassein and all areas west of Panvel longitude, east of Panvel, the rock formations attain their characteristic horizontality.

26. Since the formation of these lava flows, the rocks have been intruded by dyke flows, different in composition from the country rocks. These dyke rocks have developed into ridges over parts of this region. Also the rock formations have been subjected to crystal faulting. At least, two such lines of faults have been recognised over the region. One line of fault runs north-south through the Tungar, Kanheri, Sewri, Mazagaon hills and the other runs parallel to it along the coastal ridge. In both the cases, the downthrow sides of the faults have been to the east.

27. The existing physical features of the region are clearly related to the rock formations and their lithological characteristics. While the solid basalt, doleritic

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rocks and the hard and resistant dykes have withstood erosion and stand out boldly in the present day relief, the relatively softer ash beds, intratrappean sedimentary formations and acidic lava flows like rhyolite have been denuded to develop into lowlands and flats. So too, wherever the sea level has come to rest against hard rock formations, they have developed into headlands and rocky promontaries, while bays have been carved out in the relatively softer formations.

28. Coastline : The entire coast from north of Bassein to Uran in the south in the mainland presents many interesting features. A scrutiny of the crystal features reveals a curious juxtaposition of features of both submergence and emergence over the region. Raised sea beaches and terraces in the form of impure incoherent mass of calcareous rocks full of shells and corals, known to the geologists as the 'littoral concrete' occur in several parts of the coast on the western side of the Bombay and the Salsette Islands and also in Bassein Taluka at heights of about 4m. above tide water level. On the other hand, the discovery of remnants of a submerged khair forest along the Thana Creek at depths of 6 to 7m below sea level is strongly suggestive of a submergence along this shore. This can be explained perhaps by the faulting and throwing down of the eastern shores while the western shores were tilted up.

29. All along the coast, there are many small creeks, the main ones being the Versova and Manori creeks and the Bhiwandi creek, apart from the larger Thana creek. What is known as the Bassein creek is really speaking the Ulhas estuary. The Panvel creek is also a similar opening through which the Panvel river drains into the Thana Creek. All these creeks except the Thana Creek are not very deep.

30 In between the creeks and their adjoining marshes and the jutting headlands under the protection of the headlands from the surf and the huge waves have developed large bays and sandy beaches with good coconut groves. The main ones among the beaches are the Gorai and Juhu in Salsette, the Dadar and Chaupatty beaches along the western shores of Bombay Island. Amongst the bays, the salient ones are the two crescent shaped ones to the south and north of the Bombay Island. The Backbay in the south and the Mahim bay in the north have both been carved out in relatively soft rock formations.

31. The coast has numerous islands off the shore. In fact, Salsette and Bombay themselves were made up of a number of small islands which were linked up during the last two or three centuries partly by silting up and partly by reclamation after bridging the narrow gaps between the islands. Today, there are a few off shore islands. The islands of Karanja, Butcher island and the Elephanta (Gharapuri) in the Harbour Bay are the major ones.

32. The Ulhas and its tributaries, Bhatsai and the Kalu are the main rivers draining the region. The Patalganga in the south and the Tansa in the north form the limits of the region. The Ulhas about 135 Kms. long rises in the rainy ravines of the Bhor Ghat and flows northwards bound by the steep scarps of the Sahyadri and the Matheran ridge after leaping over a depth of 90m. in two water falls one below the other. The valley opens out steadily as the river flows past Karjat northwards. Near Badlapur, the riverwater is dammed and used for a drinking water reservoir that supplies drinking water to Badlapur, Ambernath and Kalyan. After its confluence with the Kalu and Bhatsai east of Kalyan, the river turns west and flows through the Mumbra ridge, turns north to flow for about 10 Kms. through a picturesquely forest clad hill country and then turns again west to develop a wide estuary, about 3 Kms. wide, joining the sea south of Bassein. An island, namely the Panju island, just east of the estuary on the river is used by the Western Railway bridge to connect Salsette with Bassein. The river is distinctly tidal as far as Kalyan which is reported by historians as a port during the historic past.

33. The Tansa rises in the Shahpur uplands beyond the limits of the region and has a westward flow till it cuts through the Bhiwandi hills whereafter it turns north and joins the Vaitarna before the latter develops its estuary.

34. The Patalganga rises in the steep western scarps of the Matheran uplands where it branches off from the main ridge near Khopoli and has a general westward flow till it joins with a wide estuary the Dhamtar creek along the southern limits of the region.

35. The tailwaters of the Khopoli power project are let into the Patalganga near Khopoli. The Panvel river is a small stream rising in the northern parts of the Matheran hills and flowing through the Panvel flats before joining the Thana Creek west of Panvel.

36. The river regimes of all these rivers clearly shows high waters and heavy floods during the monsoons and the lowest waters prior to setting of the monsoon. The rivers become more trickles soon after the rains are over as the run-off in them is very large during the monsoon.

37. There are no large natural lakes in the region. But in the horse-shoe shaped depression in between the Kanheri ridge of Salsette opening southwards three dammed up lake reservoirs one below the other, namely the Tulsi, the Vihar and the Powai. These reservoirs constructed during the last century are used to supply drinking water to the city and its suburbs. Of the other lakes, one may mention the Nirmal lake in Bassein Taluka, the Vairala lake near Bhiwandi, the Masunda lake near Thana,

the Shenala and Rajala lakes near Kalyan the Vadala and Krishnala lakes near Panvel and Bhivpuri reservoir in Karjat Taluka.

38. Many hot springs are observed along the valley bed of the Tansa near Vajreshwari. The main villages having hot springs are Akloli and Ganeshpuri. These hot springs are visited by people all year on account of the curative properties of the hot water that contains sulphur particularly for skin troubles.

39. There are no mineral resources in the area except for the limited bauxite reserves in the Tungar hill. The ore is found over an area of 80 sq. Kms. and has a mineral content varying between 30 and 58 per cent. Extensive quarries are being worked all over the area particularly in the Gilbert and Amcaoli hills near Andheri, the Marol hills, Jogeshwari and Malad hills and the hills near Bhivandi because the well jointed solid basalt forms a highly durable and very good building stone and road metal. Its pentagonal or hexagonal joint pattern aids in dressing it up as excellent building stone.

40. All along the shores, and particularly around Bassein and Bhandup sea water is being used in the salt pans for manufacturing sea salt.

41. Temperature : The Climate of Bombay and its surroundings is fairly equable since seasonal fluctuations of temperature are not significantly large. The moderating effects of the nearby sea and the fairly high amount of relative humidity in the atmosphere have restricted the variability to within bearable limits. The seasonal variations of temperature follow closely the course of the sun and varies with its zenith distance. January is invariably the coldest month and May the warmest month. With the burst of the monsoon in early June there is a reversal of the temperature curve and the temperature during the period of the monsoons remains very nearly uniform about 27° C. A slight rise in temperature occurs in the month of October which coupled with the high humidity in the air makes October the most sultry month. After October, the temperature falls gradually till it reaches the coldest month in January. In January and February, there are occasional bursts of cold waves, when the temperature drops to about 12° to 14° C, for two or three days as the western disturbance passes over north west India.

42. The main diurnal temperature curves indicate that the coldest hour of the day is at sunrise and hottest part is at about 2.00p.m. These fluctuations are of some importance as it indicates the extent of the range of temperature to which the organic life is subjected to. The flow of temperature from 6.00 a.m. to 6.00 p.m. follows approximately

the law of signs and thereafter the fall is uniform till the early hours when the fall is rapid.

43. The hourly fluctuations of temperature are fairly uniform in character during most of the months of the year except during the dry months when the rise of temperature after sunrise is more accelerated than during the monsoon period. The change of temperature from day to day is least in the month of May which is the healthiest month of the year. Both the daily and seasonal variations in temperatures increase towards the hills and the adjoining plains in the interior. Kalyan is positively colder in winter mornings than Bombay. The hill sides and valleys tend to be foggy till long after sunrise in winter due to the drainage of cold air from hill slopes.

	-T e m p e r a t u r e-			
	Mean of Maximum °C	Mean of Minimum °C	Highest recorded °C	Lowest recorded °C
January	30.5	16.3	36.2	7.4
February	31.2	16.7	39.4	10.0
March	32.6	20.1	41.7	14.1
April	33.1	23.3	42.2	18.3
May	33.1	26.3	38.8	20.6
June	31.8	28.0	36.7	22.2
July	29.5	24.8	34.8	21.8
August	29.1	24.4	31.1	19.4
September	29.8	23.9	35.56	21.7
October	32.3	22.8	37.0	16.3
November	33.1	19.5	36.3	13.3
December	31.8	17.2	35.2	10.6
Annual	31.5	21.8	42.2	7.4

44. Wind system :

Both the seasonal and diurnal wind systems of Bombay neighbourhood are determined by two contrasting sets of periodic atmospheric movements which are dependent upon the reversal of temperature and pressure gradients over land and water.

45. The prevailing direction of the normal seasonal wind during the year is West-north-West. The main wind direction in December oscillates between west-north-West to east-north-east and in June south west is dominant wind direction. Though the direction is subjected considerable diurnal and seasonal variations, there is little fluctuation in the velocity during the dry seasons. The winds are generally light and variable about 5 knots. During the wet season, however the



velocity gradually increases reaching its peak in the month of July with the direction in the mean time having veered round to the west-south-west. In the month of June it is greatly affected by the irregular and abnormal disturbance from the south-east associated with the first break of monsoon. The weather is often equally, and associated with gusty winds during the monsoon. On individual occasions, wind speed spints to 50 km. p.h. or more. After July the reverse movements commence and by September it gradually moves to west reducing in velocity, till it reaches the other limit of North-north-east in December.

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WIND DATA (BASED ON DATA FOR 1954-58)  
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Month	Mean wind speed hr.	Percentage of No. of hours of wind from								
		calm	N	NE	E	SE	S	SW	W	NW
January	8.4	22	18	12	8	4	2	1	12	21
February	9	20	28	10	6	4	2	2	14	24
March	10.3	21	15	7	4	3	3	3	20	24
April	11.3	20	12	5	2	2	5	6	22	26
May	12.4	14	5	2	2	2	8	14	37	16
June	14.2	8	1	1	1	4	21	32	28	4
July	15.9	6	1	1	1	2	10	38	38	3
August	15.1	9	1	0	1	1	8	36	39	5
September	10.5	21	6	4	3	3	6	16	29	12
October	7.6	34	11	14	9	4	4	3	9	12
November	7.4	33	12	18	13	4	1	0	6	13
December	7.4	29	14	14	11	5	2	0	8	17
Annual	10.8	20	9	7	5	3	6	13	22	15

46. Land and Sea Breezes : The diurnal land sea breezes which are superimposed upon the normal seasonal winds have directions west-north-west and east-north-east. Though this occurrence is constant through out the year, it is more noticeable during dry season as the strong monsoon wind, literally wipe them out during the months June to September. The intensity of the diurnal wind is most pronounced in the month of December when there is marked difference of temperature over land and sea. In winter months the maximum land breezes occur at 8.00 a.m. and during the summer months it is earlier. The maximum sea breeze occurs at about 3 p.m. throughout the Year. These breezes are felt over the entire region, although an hour or two later in the interior than their setting in the shores.

47. Seasons : The situation of Bombay causes important seasonal changes in its climate. There are four seasons each extending roughly over a period of 3 months.

48. Cold Season : This extends from December to February and is the most pleasant part of the year, with the mean maximum temperature being 19.8°C and humidity 67%. The coldest month of January. The lowest minimum temperature is 11.7°C though during the period 1949-62 the lowest recorded at Santacruz was 7.4°C. The wind direction is mainly northerly with a speed of 11K.m.p.h.

49. Summer season : This covers the period March to May with a mean maximum temperature of 31.6°C May being hottest month with a mean maximum of 32.8°C. The highest temperature recorded during this season is 40.6°C. The climate is sultry with a humidity of 78%. The direction of wind is north westerly to westerly with a velocity of 11 K.m.p.h. This is a dry period but occasional rains occur. The average rainfall recorded during this season is 7.1 m.m.

50, Monsoon Season : This period extends from June to September. 94% of the rainfall is recorded during this season. The wettest month is July with the normal monthly fall of 742.2 m.m. The heaviest fall ever recorded in a single day is 548.1 m.m. on 10th September 1930. The heaviest annual fall is 3481.6 m.m. during 1954 which is 92% excess over the normal annual fall. The mean wind speed during the monsoon is about 16 k.m.p.h. with the highest monthly mean being 19 k.m.p.h. during July and lowest 11 k.m.p.h. during September June is the warmest month with mean maximum and minimum temperature of 31.4°C and 25.9°C. The mean relative humidity during the season is 83%.

51. Post-Monsoon Season : This extends from October to November. The mean maximum and minimum temperature are 31.7°C and 33.4°C respectively. The mean relative humidity is 73%. The average rainfall during period is 26.3 mm. Wind speed is 10 k.m.p.h. with a direction north-north-west.

52. Cloudiness and Rainfall : As over the rest of the Konkan, the south-west monsoon season extending from June to September is the rainy season, the rest of the year being practically dry with cloudless clear skies. An occasional conventional drizzle in the late afternoons of April-May after exceptionally hot days may bring a little rain, hardly enough to cool the ground. During this period, the development of hot weather thunderstorms on the leeward side of the Ghats may give high winds and some rains in hills in the interior. On the whole, October to March is practically dry. The sky has occasional streaks of high and medium clouds.

53. The monsoon generally sets in round about the second week of June and continues till late September.

July and August are the wettest months all over the region. There is hardly a day without rain particularly in the hills and the Ghats in these two months, although there may be breaks, in between, of clear skies and oppressive sultry hot weather, associated with the high humidity along the coast and towards the later part of the season.

54. The rainfall on an average is over 2000 m.m. all over the area. The coastal spots have in general the first onslaught of the squally winds and rains but however record much less rains than the interior. Stations like Matheran and Karjat, the former at high level, and the latter on the ghats-matheran ridge, are favourably located during the ascending air currents of the monsoon winds, and hence get very heavy rainfall more than double of the plain stations (as can be seen from the graphs of the rainy day and rainfall). At both the places the number of rainy days is longer and so too the amount.

55. Even the plain stations, like Kalyan, Bhiwandi located closer to the hills receive more copices rains than the coastal spots like Bombay (Colaba) Kurla, Uran and Bassein, Kurla (Santacruz observatory) and Panvel owe their slightly higher rainfall to the local relief conditions.

56. Cloudiness on the whole is maximum during the monsoon season. The sky is mostly overcast with rain bearing cumulus clouds of considerable thickness, arriving from the Arabian Sea in quick succession. They hang over the ridge tops throughout the season.

Months	Relative humidity		R a i n f a l l	
	Mean	Maximum	Mean minimum	Average Normal rainfall
January	82		27	57 3.4
February	83		25	55 1.7
March	85		31	60 1.3
April	87		40	65 1.3
May	85		53	69 15.4
June	88		66	78 460.3
July	91		79	85 742.0
August	92		79	86 734.3
September	91		72	83 397.7
October	91		50	73 55.8
November	87		27	62 14.8
December	85		25	59 1.8
Annual	87		48	69 2129.8

IIIA GENERAL PICTURE OF THE URBANISATION PATTERN IN THE REGION

57. Greater Bombay is the single largest urban mass in the region situated on the western side of the region. There are 18 other small and big towns but Greater Bombay dominates and overshadows all these towns. In fact Greater Bombay is not only the largest city of Maharashtra but one of the largest in India.

58. There were only seven million mark cities in whole of India in 1961 and their population were as under:-

1. Calcutta - 29.27 lacs (excluding the population outside Calcutta corporation limits)
2. Greater Bombay - 41.52 lacs.
3. Madras - 17.29 lacs.
4. Delhi - 23.44 lacs.
5. Hyderabad - 12.51 lacs.
6. Bangalore - 12.07 lacs.
7. Ahmedabad - 12.06 lacs.

59. The second and third largest towns of Maharashtra State after Bombay were Poona and Nagpur having a population of 7.37 lacs and 6.90 lacs respectively. It is interesting to note that within one decade from 1941 to 1951 Gr. Bombay added 11.44 lacs to its population and in 1951 to 1961 it added 13.13 lacs to its population. In other words a whole city of the size of Hyderabad or Bangalore or Ahmedabad is being added to Bombay in every decade. (The addition to Bombay's population between 1961-1965 was also nearly 12 lacs).

60. Greater Bombay is undoubtedly a primate city over-shadowing the growth of other towns in the State. It is a strong magnet to which everything is being attracted.

61. This huge population concentration in metropolitan Greater Bombay is the significant land use characteristic in the region.

62. The city of Bombay consists of a closely built up urban mass with very high building and population densities. The population density in the city averages 35,000 per sq. km. while the highest population density which occurs in the 'C' ward reaches upto 1,90,019 persons per sq.kms. The plan at page shows the population densities in the various wards of Greater Bombay.

63. In the suburbs the development is mostly concentrated along the (i) Ghodbunder Road - Western Railway corridor and along (ii) the Agra Road Central Railway corridor. Areas far out on the west from the Western Railway corridor are relatively undeveloped for lack of access and infra-structure facilities, while the wedge between the two corridors is also undeveloped partly because it comprises of hills, lakes and inaccessible areas. The marshy areas along the Thana Creek are still open while the Trombay area in 'M' ward which was mostly agricultural about 15 years ago is now all occupied by the major industries like the refineries and the fertilisers and by the Atomic Energy complex. Suburban population densities are also indicated on the plan mentioned in the above paragraph.

64. The population densities in the other talukas of the region are also shown on plan at page . Plan at page would show the location of the major urban population masses in the Region. It is interesting to note that the major urban settlements in the region, namely Thana, Kalyan and Ulhasnagar are all located almost close to Bombay and along the Bombay Poona railway corridor.

65. If the 18 urban centres in the region, 8 are located along the Bombay Poona railway corridor and these among themselves account for a total of 3,54,120 population, out of the total regional population of 52,82,715. Existence of a pronounced and predominant urban corridor which lies along the railway to Poona is one of the important characteristics of the settlement pattern in the region. The urban settlements which lie along the Western Railway route, viz. Bhayandar, Bassein Sandor and Virar are relatively small and are mostly of a dormitory type. Panvel along the Bombay Poona Road and Bhayandar along the Bombay Agra Road are two other major towns in the region. But by and large urban settlements lying along the automobile routes to Bombay are fairly wider apart than the towns located along the railway route. The three maps mentioned give a clear indication of the characteristics of the population distribution and settlement distribution in the region. The location of population concentration is an important aspect of the regional pattern. Another important characteristic of the population in the region reflecting indirectly and having a bearing on the land utilisation pattern is the proportion between urban and rural population in the various talukas. Map at page indicates this urban rural proportion in the various talukas, as per the 1961 census.

66. The table at page furnishes the same data in a tabular form.

67. Metropolitanisation in Bombay as elsewhere has constantly exhibited a tendency to sprawl and spill. In the process, a huge conurbation has already been formed and is tending to convert the metropolitan mass into an ever enlarging megalopolis. Until 1950 the island of Bombay separated from the rest of the Salsette by the Mahim creek was the limit of the Bombay Municipal Corporation's jurisdiction. Bandra-Khar, Santacruz and Andheri, etc. along the Western Railway corridor and Kurla Ghatkopar, etc. along the Central Rly. corridor existed as independent urban entities having their own municipalities. The ever expanding mass has now engulfed the smaller towns within its limits. And thereafter by 1967, almost the whole of the Salsette, except for Thana and other peripheral areas in the north were brought within the ambit of the Corporation's jurisdiction, which is now known as Greater Bombay. But the boundary between Bombay and Thana is imperceptible and is a thin imaginary administrative boundary. It is impossible to notice on site where Bombay ends and Thana begins except for the existence of the Octroi Post of the Corporation near the boundary. The development in and around Bhayandar Mira is also similarly an expansion of the urbanisation pattern along the Western Railway corridor. Urban Development has been constantly overspilling its limits and the peripheral areas in the Thana Taluka. This overspill was partly started and accentuated by the policy of not allowing any new industries within the limit of Greater Bombay. This policy coupled with high land values in Bombay and the appearance of the scene of the Maharashtra Industrial Development Corporation was highly responsible for the next stage of overspill which was located partly around Kalyan complex in Dombivali, Atale and Ambernath and partly in the Trans Thana Complex. What were a few decades ago, closely spaced little townships having independent existence have been fused into uninterrupted urban corridors and threaten to develop further into a shapeless metropolitan or megalopolitan conurbation. Towns further away, towns along the Western Railway corridor in Bassein Taluka and towns located along the automobile routes to Bombay had been relatively free from the risk of continuous urban development, but the projected bridges across the Thana and Bassein creeks and the vast development which Bhiwandi has been experiencing in its own rights have indicated the beginning of vast changes in the areas surrounding these towns also. One sees therefore in the present urban pattern in the region evidence of a megalopolitan conurbation with Bombay as its core and covering the entire umbral zone on the periphery of the salsette island extending from Virar on the north skirting Bhiwandi and Panvel and including Uran within its limits. The area beyond this umbral zone is relatively free from any trend of intensive urban development, and could be termed to the penumbral rural urban belt.

Details of Different categories of Land Uses.

68. After having described the general urbanisation pattern in the region as above, we will revert to detailed description of surface utilisation pattern in the individual towns in latter paragraphs. It will now be appropriate to describe and analyse the general location of other major categories of land uses such as forests, their locations and types, agriculture and cropping patterns (with description incidentally of the location of minor irrigation works and other irrigation) facilities, salt pans, fishing areas, major industrial locations outside the urban complexes, etc.

69. Summary Table :- The total area of the Bombay Metropolitan Region is 3,846.9 sq. Kms. The area occupied by urban land use is 503.1 sq. Kms. The area occupied by other categories of land use are shown in the following table :-

Category of land use.	Total Area occupied in sq.miles.area.	Percentage of the total
1	2	3
Total area of the region excluding Greater Bombay .....	1,391.5	100.00
Area included within the limits of the existing towns. ....	63.1	4.54
Area occupied by industrial development outside existing urban limits.	5.88	0.42
Forests .....	415.00	29.9
Agriculture .....	530.00	38.1
Salt Pans	23.81	1.71
Culturable waste.	19.55	1.42
Barren lands.	127.30	9.15
Parmanent Pastures and grazing lands.	82.00	5.87
Current fallows.	82.00	5.87
Other fallows	127.4	9.19
Net area sown.	505.94	36.4

Forests.

70. A plan showing the location of different types of forests would be seen at page

71. The most important forest product in the region is timber and the most important species of timber produced is teak. The other species are ain, hed, shisam, titla, Khair, etc. The next important forest product is fuel.

The other commercial forest products are apta leaves, mhow flowers, Khair for ~~Kattha~~, palas for propagation of lac, bamboo, etc. Other minor forest products are hirda, gum, etc. The revenue collected from various forest products in the region during 1967 was nearly ~~Rs.~~ 21 lakhs.

72. The Bassein Taluka is especially rich in forests with nearly 228 sq. Kms. out of the total 521 sq. Kms. being under forests. Nearly half of the timber produce and fuel come from Bassein. The next important from the point of view of forests is Ehiwandi. In fact the forests of Ehiwandi and Bassein are contiguous to each other. The forests in Ehiwandi cover an area of 244 sq. Kms.

73. In Kalyan Taluka there is relatively a smaller area under forests, apart from the area on the Matheran Babamalang range. Forest around Matheran form a continuous belt with forests in Karjat and Khalapur talukas. In Karjat Taluka the forests cover 155 sq. Kms. and form a part of rich forests on the slopes of the western ghats.

74. In Thana Taluka forests are to be found around the Parsik Hill ranges and in continuation of the National Park area in Greater Bombay along Ghodbunder Road.

75. Uran Taluka does not have any major area under forests, except one range along its eastern boundary. In Panvel Taluka in addition to the Matheran Hill ranges there is a continuous belt of forests located to the west of Pen Road along the Karnala Fort. A bird sanctuary is proposed to be established here, where migrating birds from other countries are observed to come over every year.

76. In Greater Bombay forests are located on the north eastern boundary in the catchment areas of Vihar, Tulsi and Powai lakes.

77. The tables on the following pages show :

(i) different types of forest and the area covered by each type within the portions of Thana and Kolaba districts, included in the region,

(ii) Forest areas in different Talukas in the Region.

and (iii) the quantity and value of the different types of major forest produce in the region :-

(iv) Different types of forest and the area covered by each type within the portions of Thana and Kolaba districts, included in the region.



20A

Classification.	District Thana	District Kolaba.	Total
Protected Forest	144.378	65.500	209.878
Tree Forest ....	378.042	124.800	511.842
Minor Forest.	167.373	198.310	365.683
Pasture.	9.660	1.840	11.500
<b>Misc. Forests :</b>			
(A) Bioasthetic.	-	12.800	12.800
(B) Dalhi.	-	34.020	34.020
-----			
Total :-	708.453	437.27	1145.723
-----			

NOTE :-

Protected Forest ..... Mostly on Steep hill slopes.  
 Tree Forest ..... Mostly medium hill sloped and flat area.  
 Minor forest ..... Mostly nearby villages and coastal tracts.  
 Pasture forest ..... Denuded areas which are fit only for growing grass.  
 Bioasthetic ..... Matheran, Karnala.  
 Dalhi ..... Part of reserved forest set apart for Adivasi in Kolaba District.

(iii) The quantity of and value of different types of major forest, produce in the region; (1966.67).

Taluka.	Timber. Cu. M.	Value. Rs.	Fuel tonnes.	Values. Rs.
Karjat (including part of Khalapur).	218.45	47,139	2,772	27,720
Panvel including Part of Khalapur.	1284.67	99,937	1,839	28,000
Thana Salsette.	272.30	42,133	1,054	25,350
Bassein.	3006.04	9,79,766	16,177	1,50,360
Ehiwandi.	877.12	3,39,893.62	5,179.59	1,04,820
Kalyan.	350.76	2,32,141	3,306.45	52,423
Total :-	6009.34	17,41,009	30,327.95	3,89,873.80

78. The region is thus quite rich in forest, the total area under different types of forests being nearly 28% of the region's area. These forests are spread all over the region and are located mostly along the slopes of hills and mountains in the region. The plan shows that there is almost a girdle of forests around the metropolitan conurbation. This is a unique and relieving feature in the Metropolitan region and the forest areas could provide a break to the continuous urbanisation and could offer interesting possibilities and locations for sport recreation facilities and holiday facilities at the regional level. Most of the forests however are located on hill slopes and the surface soil is being gradually eroded. Also due to indiscriminate felling of trees almost all hills in the region are gradually becoming barren. It is necessary to take precautions that forests do not gradually vanish but are carefully nurtured by new plantation.

Please of Interest in the Region :

79. While we are on the subject of forests and their recreational and tourist interests it would in the fitness of things to describe also other places of interest, particularly tourist interests or historical importance in the region. These are as under :-

80. Ambarnath :- Ambarnath in Kalyan Taluka is famous for its old temple of God Mahadeva, which is fairly preserved. The temple is prettily placed on the left bank of Waldhuni river in a hollow shaded by old mango and tamrind trees. The ground rises on all sides. Construction of the temple which is in the Chalukya and Hemadpanti style with out corners with half life sized figures is very beautiful and provides a pleasing appearance.

81. Chanderi Fort :- Chanderi Fort in Damsai village is 10 miles north-east of Panvel stationed on top of the hill near Malangad and Peb. The Fort is visible from a distance and can be approached by a rough path.

82. Elephanta :- The elephanta island is located three miles from Apollo Bunder and is 3 miles south of Pirpal. It has an area of about four square miles at high water and about six square miles at low water. It is also known as Gharapuri (Giripuri). The island is a range of trap hills about 500 ft. high and  $1\frac{1}{2}$  miles long, cleft by deep ravine. Elephanta is one of the important places of tourist interests in the region. It is a cave containing carvings of Trinity. It is a ideal holiday place with plenty of pretty nooks and corners and is a pleasant picnic spot. The elephanta caves provide a fascinating study in the rock architecture and sculpture of India.

83. Kaman Durg. It is located in Kaman village 10 miles east of Manikpur in Bhiwandi Taluka. It is a conical hill, 2160 ft. high- the south end of the Tungar range. The hill is a trigonometrical survey station and is the most striking feature in the range that runs from Bassein creek north to Vaitarna.

84. Kanheri Caves :- These caves are located in north latitude  $19^{\circ} 13'$ , at  $72^{\circ} 59'$  east longitude lie in a wild picturesque valley in the heart of the island of Salsette about 5 miles west of Thana and 20 miles north of Bombay island. The caves consist of Buddhist sculpture.

85. Arnala :- It has two temples Trimbakeswar and Khawani. It is five miles away from virar.

85-A Bassein Fort :- It is chief place of interest in Bassein town at present. It is a coastal fort. It is in ruins at present and is in the charge of the Archaeological Department.

86. Malanggad :- Malanggad is 10 miles south to Kalyan, is strong hillfort, known from the broken outline of its basalt crest as the cathedral rock, is one of the most picturesque and most difficult to climb. On February

full moon (Magh Sudh Purnima) a large fair is attended by Hindus and Muslims from the adjoining areas. The oldest name connected by tradition with Malanggad is that of Nal Raja, who about 700 years ago, is said to have lived on the hill. During his reign an Arab-missionary, Haji-Abdul-Rehman, came with a number of followers. The name Haji is persisted ever since. On a clear day the hill top commands a splendid view, much like the view from Panorama hill on Matheran. The upper fort is very difficult to climb.

87. Nirmal :- Nirmal is six miles north of Bassein and is one of the sacred places in the district, having a much venerated (Ling) and being according to tradition the burying place of one of the Great Shankaracharyas, Here on the anniversary of his death (Kartik Vadya 11) a large fair is held and is attended by many pilgrims of all castes.

88. Parsik Fort : Parsik Fort is just at the entrance of Kalyan river. It stands on an exceedingly steep point of land from 20 to 25 ft. above the water's edge.

89. Titwala : A small village in Kalyan Taluka and a station on the north-east branch of the Central Railway, lies 7 miles north-east of Kalyan. The station is in Manda Village. Titwala being a mile to the north-east, the Kalu and Bhatsai rivers meet near Manda village. The place is famous for the Ganapati Temple visited by a large number of people.

90. Tungar hills :- It is in Bassein Taluka about 30 miles to the north of Bombay and 2,200 ft. high, lies about 10 miles from the sea, north-east of Manikpur or Bassein Road Station. There are six paths up the hill but the only regular road made by Mr. Hope on a gradient, better than the Matheran ascent is about  $9\frac{1}{2}$  miles from the Bassein Road Station to the top, 4 miles on level and  $5\frac{1}{2}$  miles on the way up. Road passes between villages Achola and Rajavli to Gokhivare. Like most Konkan hills, Tungar is trap, capped with a layer of iron clay or laterite from 200 to 300 ft. thick. Top of Tungar hill which is about 3 miles long consists of two parts, a plateau and a ridge. The plateau lies to the north and slopes south and west from Vaitarna point, the highest spot on the hill. The ridge has little flat ground, but here and there it offers lovely sites and is useful extension of the space for walks and rides. At Kaman point about half way along the ridge, a commanding eminence overlooks the Bassein river, while Bellevue and Panorama points have fine views of Kamandurg, Matheran and Sahyadri hills. As the hill top is only 10 miles from the sea and is open to the breeze, the heat is never great. The hill soon cools and the nights are unusually cold. The air appears to derive a special freshness and lightness from

the neighbourhood of the sea. Owing to the light rainfall, there is a comparatively little damp after the monsoon, and the hill is free from fever and other forms of malarial sickness. The hills possess a peculiar advantage as a sanatorium for poor families. The supply of water is fair, including a made reservoir at Vaitarna point and springs on the slope of the hill.

91. Vajreshwari :- Vajreshwari is located near the bed of the Tansa river in the village of Vadazli 12 miles north of Bhiwandi. The place is famous for its hot springs which form one group in a line that appears here and there along about four miles of the river's course. The water does not nearly approach the boiling point. Water is tasteless. There are other hot springs in the neighbouring villages of Akloli to the east and Ganeshpuri to the west. Vajreshwari is a wide pleasant valley, and clustered round a temple of Rameshwar are the Rameshwar hot-springs whose waters are gathered in cut-stone cisterns. The water is at a temperature of 120°F. In Ganeshpuri village, about 3 miles west of Vajrabai, is a very neatly designed temple of Bhimeshwar, with two handsome but little used cisterns in front of it. In the bed of the river, within a mile of the temple, are the two hottest springs of the group, having a temperature of 136°F.

92. Chouk:- In Khalapur peta, It is 12 miles south-east of Panvel on the Bombay-Poona road. Importance of the place lies in its being a workplace of Netaji Palghar one of the close associates of Chatrapati Shivaji.

93. Karnala Fort : or Funnel Hill :- It stands on a hill 1,560 ft. high, a few miles north west of river Patalganga and 8 miles south of Panvel. Its command of the high road between the Bor Pass and the Panvel and Apta rivers must, from the earliest times have made Karnala, a place of importance. The hill has upper and lower fort. In the centre of the upper fort is the funnel, an almost inaccessible basalt pillar from 100 to 150 ft. high. The funnel is locally known as the Pandu's tower. Southwest of the hill is better wooded than the north and commands a beautiful view of the island studded harbour of Bombay and of the sea beyond.

94. Matheran :- In Karjat Taluka, Bombay's nearest and well developed hill-station. It is barely 52 miles away from the metropolis and is 2,200 ft. high. It is simply studded with all varieties of nature's beauties at their best. The hill was originally discovered by Mr. H.P. Mallet who was collector of Thana in the year 1880. Tiny railway made its appearance for the first time in 1907. There are no cars or any other vehicles on the top. Long walks constitute the principal charm of the place. We will revert to detailed description of Matheran when we make detail land use in the Urban centres.

95. Peb :- Otherwise known as Vaikatgad in the village Maldunga stands about 9 miles north-east of Panvel on a hill 1,000 ft. high. Fort can be climbed from Neral Station.

96. Prabal-Fort :- It is in Khalapur taluka. It is on the flat topped hill of the same name about eight miles east of Panvel and 4 miles west of Matheran, stands about 2,325 ft. above the sea level. There are few remains of towers, buildings and gateways etc.

97. Shirdhon :- It is in Panvel Taluka, about 4 miles away from Panvel. This village is the birth place of Vasudeo Balwant Phadke who organised an armed insurrection against the British power during the sixties of the 19th century but was quickly over-powered and transported for life to Aden. A memorial has been erected to his memory by a Committee in Bombay with the co-operation of the inhabitants of Shirdhon and the Government of Maharashtra. It is in the form of a community building constructed at the cost of - Rs. 40,000. The building consists of three spacious rooms one of which houses a maternity ward having two beds and two cradles.

98. A plan showing all these locations is at page

### Fishing-Centre

99. Since the region has a long coast line from Karanja in the south to Agashi in the north, it is natural that fishing is one of the important occupations in the coastal areas. A plan showing the important fishing centres will be found at page Greater Bombay itself is a big fishing centre. There are a number of places in Greater Bombay from where fish is caught, viz. Gaurai, Erangal, Versova, Juhu, Colaba, etc. The total annual fish catch in Greater Bombay is 35,000 tons as against the fish consumption of 45,000 tons. Additional fish is thus imported into Greater Bombay ~~Greater Bombay~~ from nearby fishing centres. Outside Greater Bombay, there are 7 fishing centres. In Bassein Taluka - Arnala, Bassein, Naigaon etc. In Thana Taluka there are four fishing centres, Dongri, Uttan, Balkum and Chandani. In Bhivandi Taluka there are only 2 fishing centres. In Panvel there are 6 fishing centres including Panvel, Ulva, Gavan, Apte, etc. In Uran taluka there are 4 centres, Sheva, Uran, Mora and Karanja. Thus including fishing centres in Greater Bombay there are a total of 43 fishing centres in the region. The total catch is 72,400 tons of which nearly 50% is from Greater Bombay. The table on page shows the fishing centres and the annual catch therefrom. The usual variety of fish found in the sea around the Bombay Metropolitan Region are (1) Bombay Duck, (2) Mandeli, (3) Pomfrets, (4) Halwa, (5) Ghol, (6) Bhing, (7) Pala, (8) Shingala, (9) Wam, (10) Ravas, (11) Sharks, (12) Karli, (13) Karandi, (14) Wagti.

Most of the fishing is shallow sea fishing and if deep sea fishing is developed it would further widen the potential in this respect.

### Salt Pans.

100 Salt production is yet another important industry carried out in the coastal belts of the metropolitan region. The importance of the industry could be understood when it is mentioned that almost all of the annual salt manufacture in the State takes place in the metropolitan region itself. During 1966, the annual production of salt in Maharashtra was 4,58,000 tons out of which 4,52,862 tons was from the Salt works located at various places in the Bombay Metropolitan Region. The total acreage under salt pans in the region is about 20,000 acres, which is about equally distributed in Greater Bombay and the Talukas of Thana, Bassein and Uran with about 5,000 acres in each taluka. In Greater Bombay, the areas under salt cultivation are reducing every year as some of the salt pan areas are gradually diverted for industrial purposes (e.g. Fertiliser Complex) while other salt pan areas are being reclaimed for providing the much needed lands for residential, Commercial and warehousing purposes.

101 The important Salt manufacturing centres in the region are as follows:-

Greater Bombay:-	Sion, Anik, Chembur, Trombay, Kanjur, Mulund, Dahisar.
Thana:-	Mira, Bhayandar, Rai Murdhe, Uttan, Belapur.
Bassein:-	Panju Island, Umela, Manikpur, Diwanman, Aclole, Juhuchandra etc.
Uran:-	Karanja, Nhava, Sheva, Dongri, Uran Jaskhar, etc.

102. Although most of the area under salt cultivation is almost evenly distributed in the four centres, annual salt production in Uran is 1,42,389 tons while in Greater Bombay it is 84,642 tons. Salt production in Panvel is negligible. The important salt producing centres and the production of salt during 1967 is shown in the table below:-

Sr.No.	Name of Centre	Acreage (1967)	Production in metric ton (1967).
1.	Greater Bombay	479	14,454
2.	Bhandup	3200	50,454
3.	Trombay	1089	19,529
4.	Belapur	5150	21,536
5.	Sheva	2698	(not available)
6.	Uran	2235	39,021
7.	Karanja	1232	(not available)
8.	Bassein	4913	(not available)

103. The taluka-wise distribution of salt pan areas and taluka-wise production of salt is shown in the succeeding table.

Sr. No.	Name of Taluka.	Acreage. A. G. As.	Annual production in metric tons (67)	Villages.
1	2	3	4	5
1.	Greater Bombay	4768-0-0	84,642	Matunga, Sion, Anik, Chembur, Trombay, Kanjur, Mulund, Dahisar.
2.	Thana	5150-36-3	1,18,920	Bhayandar, Rai Murdhe, Dongri, Uttan, Belapur, Trombay, Juhu, Marve.
3.	Bassein	4913-33-0	1,05,849	Panju, Juchandra, Umela, Sandor, Saunavghar, Manikpur, Rajavali, Diwanman, Chulne, Gas, Girij, Achola, Brahamapuri.



1.	2.	3.	4.	5.
4.	Uran.	4933-6-8	1,42,389	Uran, Karanja, Sheva, Dongri, Pande, Jaskhar, Bokadvira, Sonari, Boripakhadi.
5.	Panvel	241-39-0	1,076	Panvel, village Waghivali.
Total:-		20,007 -34-11	4,52,876	

The plan on page        would indicate this information pictorially.

#### Agriculture.

104.        Types of soils: A map showing the principal soil types in the region is attached at page        from which it would be seen that a coastal saline soil backed by a coastal alluvium is liable to be met with along the coastal belt. In the eastern portion of the region beyond the coastal belt the soils are coarse shallow or medium black. Soils also vary according to the topography. They are shallow and sandy loam types towards hill sides, while in the salt land areas they are quite deep. The depth of soil varies from 3 inches to 6 feet. Sweet soils along the coast particularly in Bassein Taluka support a variety of garden crops, while the coastal salines support a coarse variety of paddy. Out-crops of lateritic rocks are found along Mathern hills. Here the soils are yellowish red in colour, shallow and coarser in texture.

105.        Agriculture is the most important occupation in the rural parts of the region. Kolaba District is known as the rice bowl of Maharashtra while Thana District is known for Bassein - Bananas. Almost 36.4 per cent of the total area of the region constitutes the net sown area. Of the 6.39 lakhs of the rural population in 1961 nearly 1,83,000 are cultivators and 49,000 are agricultural labourers. Thus nearly 34% of the total population is engaged in agricultural occupation. Paddy is the principal Crop grown in almost all the plains in the region in between the hill ranges. A statement showing taluka-wise cropping pattern would be seen at page        which bears out the importance of paddy in the cropping pattern in the region. The map at page        shows the locational distribution of fallow areas, Bagayat lands and khajans and grass lands. Most of the rich bagayat crops are grown in the coastal belt in Bassein Taluka.

106.        Irrigation:- A very small area of the region enjoys irrigation facilities. The actual percentage of irrigated land is only 3% of the total area. Of this also 53% is under well irrigation. Canal irrigation is available only in Karjat and Khalapur Talukas in the region. Proportion of gross

cropped area to gross irrigated area is highest in Bassein Taluka and is 10.5%. Irrigation in Bassein is almost wholly well irrigation, where the water is lifted by Persian Wheels from shallow pit wells. Recently, the Zilla Parishad, Thana has constructed a small Vasant Bandhara on the Tansa River near Pandhartara and this water is also used for irrigation, Statement showing existing irrigation facilities is given below:-

Taluka.	Gross cropped area. acres.	Irrigated area. total acres.	Govt. canals acres.	Tanks. acres.	Wells. acres.	Other sources. acres.
Bassein	44,800	4,700	-	600	4,100	--
Bhiwandi.	64,200	400	-	--	400	--
Kalyan.	61,400	700	-	--	700	--
Thana.	31,600	400	-	--	400	--
Karjat	34,400	2,200	2,200	--	--	--
Panvel.	59,100	1,800	-	--	1,100	700
Uran.	22,100	200	-	--	200	--
Khalapur.	48,400	600	300	--	--	300

The following table shows the various irrigation schemes in the region:

Sr. No.	Name of Taluka	Name of the irrigation project	Area under irrigation in acres.	Whether completed
1.	Bassein	Palghar	100-00	Completed
		Sativali	70-00	Completed
		Bhatane	700-00	Completed
		Parol	90-00	Completed
		Valiv	60-00	Completed
		Kaman	24-00	Completed
		Pandhartara		
2.	Kalyan	Bhisol	100-00	Work in progress
		Rayte	60-00	Completed
		Kamba	177-00	Work in progress
3.	Bhiwandi	Tansa sangam	60-00	Completed
		Padgha khairiwali	20-00	Completed
4.	Khalapur	Rajanalla	8000-00	Completed
		Patalganga	1000-00	Completed

Irrigation projects under study and preparation:

Sr. No.	Name of Taluka	Name of project	Total Expenditure in lacs.	Type of Work	Area under command	Year of completion
1.	Kalyan	Bhoj project	16.50	Bandhara	340	1972
2.	Bassein	Khanivde project	0.75	Bandhara	300	under construction
3.	Bhiwandi	Kharbav project	--	Bandhara	550	-do-
4.	Panvel	Gulsunde				-do-

II

Distribution of forest areas (in Hactares) in different Talukas in the Region.

Name of Dist.	Name of Taluka	Forest area under protection.	Area under minor forest				Eicase thetic forests	Forests under cultiya- tion. (Dalhi Lands)	Pasture	Hect. sq. Kms.	Total
			Area under free forests	Forest in charge of Forest Deptt.	Forest in charge of Revenue Deptt.						
Kolaba	Karjat	1801.00	6132.80	4914.80	1215.60	137.60	1366.80	--	15568.6	155.68	
Kolaba	Panvel	1803.20	3931.60	8468.40	2911.20	538.40	1696.00	183.60	19532.4	195.32	
Kolaba	Khalapur	2946.80	2415.60	1915.20	406.80	237.20	340.00	--	8261.6	82.61	
Kolaba	Matheran (Tal. Karjat)	--	--	--	--	367.20	--	--	367.2	3.67	
Thana	Bhiwandi	4508.03	12858.95	7035.88	--	--	--	--	24402.86	244.02	
Thana	Bassein	5572.55	14539.49	2587.52	--	--	--	174.12	22873.68	229.73	
Thana	Salsette	2406.64	1476.58	2223.40	--	--	--	172.28	6278.90	62.78	
Thana	Kalyan	1950.68	9829.23	4890.41	--	--	--	619.60	17289.92	172.89	
<b>Total :</b>		<b>20988.90</b>	<b>51184.25</b>	<b>32035.61</b>	<b>4533.60</b>	<b>1280.40</b>	<b>3402.80</b>	<b>1149.60</b>	<b>114575.16</b>	<b>1145.70</b>	

Statement showing percentage of gross cropped area to total area in the various  
Talukas of the Region.

Sr. No.	Name of Taluka	Gross cropped area	Total area under food crops.	Cereals	Pulses	(Other food crops)	Non-food crops.	Oil seeds	Other non-food and fodder crops
1.	Bassein	100	86.51	76.42	3.62	8.51	13.49	1.36	12.81
2.	Bhiwandi	100	77.03	72.97	2.39	1.67	22.97	0.62	22.35
3.	Kalyan	100	56.14	53.10	1.79	1.19	43.86	0.54	43.32
4.	Thana	100	65.86	63.86	0.63	1.37	34.14	--	34.14
5.	Karjat	100	74.18	72.40	1.07	0.71	25.82	--	25.82
6.	Panvel	100	75.01	69.83	2.14	8.04	24.99	--	24.99
7.	Uran	100	84.76	83.23	0.67	0.92	15.24	--	15.24
8.	Khalapur	100	44.60	43.37	0.59	0.64	55.40	--	55.40

107. Industries:

The plan at page shows the distribution of the major industrial areas in the region outside Bombay. A statement showing the extent of industrial acreage at various locations is as follows:-

Sr. No.	Name of the centres	Area of industrial zones in acres	Area under existing industries in acres.
1.	Greater Bombay	14,031	8,015
2.	Thana Municipal limits	1,715	260.40
3.	Kolshet, Balkum, Kavesar, etc.	2,085	691.69
4.	Kalwa	1,300	38.56
5.	Trans Thana Creek Area	4,940	1,870.00
6.	Mira Bhayandar	525	13.50
7.	Dombivali	850	508.69
8.	Kalyan	110	54.36
9.	Bhiwandi	350	55.65
10.	Ulhasnagar	300	35.08
11.	Atale	600	249.15
12.	Ambernath	340	132.30
13.	Hindustan Organic Chemicals	1,050	400.00
14.	Khopoli	900	93.98
15.	Panvel	400	9.02
16.	Badlapur	150	5.67
17.	Wangani	904	(not available)
Total excluding Greater Bombay		16,519	4,348.05
Total including Greater Bombay		30,550	12,363.05

The plan showing the physical locations of these areas is at page.

Areas under principal crops in the region:

Crops	<u>Thana district</u>				<u>Kolaba District</u>			
	Bassein	Bhiwandi	Kalyan	Thana	Uran	Panvel	Karjat	Khalapur
Paddy	22525	44625	31341	10000	7424	16274	12807	7865
Nagli	9694	1774	1187	144	--	--	--	--
Pulses	1701	1408	1178	179	67	614	588	296
Fruits and vegetables.	3851	702	564	112	87	735	43	53
Oil seeds	164	426	302	12	-	-	-	-
Cash crops	60	372	230	50	-	-	-	-
Food crops	5025	13904	26912	1000	-	-	-	-

Note: All the figures are in hectares.

108. Land use pattern in urban centres In studying and analysing the land use pattern in the urban centres in the region it is not necessary at the regional planning level to go down to the details and would be required for tackling microplanning problems of the areas within defined municipal limits. Only a broad knowledge of the predominant characteristics of land uses in so far as they give rise to regional planning problems is sufficient. The general pattern of urbanisation in the region has already been described in preceding paragraphs. It has been noted that urban development in the region exhibits a tendency to grow out from the core city in an uninterrupted form exhibiting an unmistakable trend towards the evolution of megalopolitan complex. Broadly the island city of Bombay forms the core with the eastern and western suburbs and the Trans-Thana area as dense peripheral developments. The entire semi-circular belt from Virar in the north and Uran in the south skirting Bhiwandi, Panvel and Ambernath constitutes the umbral zone with trends of fast urbanisation in an uninterrupted form. The area beyond would constitute the penumbral zone where urbanisation is still not as forceful as in the umbral zone.

109. Greater Bombay:- A major handicap in the description of land uses in Greater Bombay is that the broad features of the city are so well known that any description entails the repetition of features too often stated. Another difficulty is that since the major planning problems at the level of the metropolitan regional plan springs out from the developments within the core, area, there are too many details which are required to be stated and studied.

110. Greater Bombay as was constituted after the last enlargements of the corporations' boundaries in 1957, now comprises of the major part of Salsette island and covers an area of 438 sq.kms. The island city which upto 1950 was the limit of the Corporation's jurisdiction, comprises of about 68 sq.kms. and is bounded by the Mahim Creek in the north and the Arabian sea on the other sides. The island is almost now a peninsula as its physical separation with the rest of L and N wards by the narrow Wadala creek is now only notional. It has a length of about 25 miles from the northern most part to southern most part and has a width ranging from 1 to 12 miles. The eastern shores are mainly occupied by port activity while the most sophisticated residential and commercial complexes have come up along the western shores and mainly in the south western portions. The western and central Railway alignments which penetrate the city upto almost the centre of the southern most ward divide the area of the island into three parts. The portion to the west of the western railway line generally consists of good residential neighbourhoods including the Marine-drive, Malbar Hill and Walkeshwar, the Warden Road, Peddar Road and Khumballa hill localities. Areas beyond Worli constitute middle class residential development mixed with industries. The central portion between the two railways is mostly commercial and industrial mixed with middle and low income group residential localities. This consists of congested commercial and bazaar areas of Bhuleshwar and

Kalbadevi and the textile mill areas in the central Bombay, and the typically middle class residential area of Girgaum. The area to the north of the mill area consists of middle class residential localities of Dadar, Sion, Matunga, mixed with industries. The eastern shores are mostly occupied by port activities ware-houses, wholesale commercial areas of Masjid and Dana Bandar, heavy industries and poor class localities. The southern portion of the island- the Fort area- as is too well known constitutes the hub of big business, big finance and key administrative offices. Southern most tip of A ward is occupied by defence. M Ward which is just to the east of the Wadala creek and is peripheral ward is occupied by big industries like the refineries and the fertilizers and by Atomic Energy. A little portion on the northern side includes the important middle class residential suburb of Chembur. Across the Mahim Creek in the north and along the western railway corridor are located the residential suburbs of Bandra, Khar, Santacruz, Vile-Parle, Andheri, Goregaon, Malad etc. Bandra on the west of the railway line around Linking road and Waterfield road are the happy results of Town Planning undertaken by the Bandra Municipality in the long past. The Pali hill locality is one of the prestige residential localities in Greater Bombay almost competing with the residential localities around Peddar road, Khambala hill etc. Kurla, Ghatkopar, Vikroli, Bhandup and Mulund along the Central Railway Corridor are relatively not as preferred by the middle or upper income groups for residential use as the western suburbs but these areas show a lot of industrial development along the Central railway corridor. A number of new industries, have also come up along the western railway Ghodbunder road corridor beyond Andheri. The wedge of lands between the two corridors is occupied by the Aerodrome and Aarey Milk Colony, industries, the National Park in its western portion and by Tulsi, Vihar and Pawai lakes and their catchment areas on its Eastern part.

111. As can be expected gross population densities in island city are very much higher than in the suburban portions. Higher F.S.Is are also permissible in city than in the suburbs partly because of high land values and the intense pressure on land in the island and partly so as to be in conformity with the predominant pattern of the existing development. The island city in 1968 accommodated 32 lakhs of people showing an average gross density of about 190 people per acre. The highest population density according to 1961 census occurred in the Bhuleshwar, Kalbadevi area where it was about 1500 persons per acre. The lowest population density was noticed in P ward and was about 11 persons per acre. A map showing the gross population densities in the various wards of Greater Bombay will illustrate the general pattern of distribution of population within the island city area. A similar map for the suburbs shows distribution of population in the suburban wards. In the suburbs, population is not evenly distributed in the entire area of the ward but has settled in cluster around suburban stations and the major, large areas of the western suburbs along the sea shore are still in an undeveloped condition for want of infrastructure facilities. In the western suburbs the marshy areas, in N and



Wards lying along the Thana creek are open, and undeveloped. A plan showing the location of marshy areas and salt pan areas in Greater Bombay would be found at page --

112. The centre of gravity of the Greater Bombay area is located near its southern tip where almost all the tertiary sector employment is concentrated. This distorted position of the centre of gravity in relation to the entire metropolitan mass has created an imbalanced structure in which the north-south arteries of traffic become heavily overloaded. The south not only accommodates Government offices, banks and other financial institutions and big business houses, but also the port and ware-houses the goods terminals of railways and even the most celebrated educational institutions in the State like the University of Bombay, Elphinston College and Royal Institute of science, the Sydenham college, the Law college the St. Xaviers' College, K.C. College, Sidharth College, J.J. College of Architectures, etc. Almost 40 per cent of the total employment in Greater Bombay is located within about 2 Kms. of the down town centre which is Flora Fountain.

113. The distribution of various types of land use within Greater Bombay can be seen on the plan at page The most up-to-date data about the quantitative distribution of land uses in the areas of Greater Bombay as collected by the Traffic Cell is also appended to this report. The quantitative land use data was compiled by the traffic Cell, traffic zonewise and a map showing the boundaries of the various traffic zones would be found at page

114. Reclamation Schemes: The acute land hunger in the city necessitated the city limits to be extended successively in 1950 and 1957 as described earlier. But as these steps indicated attempts to extend boundaries other steps were also being taken constantly for more intensive use of lands within the city limits by reclaiming creeks and marshes and low lying areas. In fact, Bombay initially consisted of 7 different islands as is well known by students of geography and the successive reclamations undertaken in the past had converted the area of these 7 different islands into a single insular mass. The insatiable land thirst has prompted several new reclamation projects within the city of Bombay which are as under:-

	Total area acres.
1. Backbay reclamation scheme	576
2. Wadala-Chembur reclamation Scheme	1250
3. Bandra Kurla reclamation scheme including University campus	923
4. Anik Reclamation area	250
5. Napean Sea road reclamation scheme.	100
6. Mahim-Dharavi reclamation area	150
7. Mahim reclamation Scheme (Housing Board)	130

A plan showing the physical locations of all these proposed reclamation areas could be found at page

115. Slums:- Areas of old chavls in and around textile area in Parel and Lalbag, along Delile Road and near about Jacob circle constitute slum areas due to extreme neglect of these buildings and their obsolescence in relation to surrounding developments. Concentrating attention only on the hutment slums in Greater Bombay it is seen that according to the recent enumeration by the Bombay Municipal Corporation there are more than 1,08,000 huts in Greater Bombay area housing a population of over 5 lakhs. A list of these hutment slums which is already attached to the Housing Study Group report is not repeated here, but a plan showing the broad location of the slums in the city and suburbs would be found at page

116. Other minor categories of land uses would be clear from the plan at page and the quantitative data of land uses appended.

117. Thana Thana is the first major town on periphery of Greater Bombay. It is incidentally one of the oldest towns in Maharashtra. It is the Head Quarters of Thana District. Being on the periphery of Greater Bombay and well connected by road and rail it has now practically become a suburb of Bombay. Prior to 1950 however it was only a residential town with its residents mostly depending on Greater Bombay for employment. In 1951 the population of Thana was only 51,155 which rose to 1,01,000 by 1961. There were only a very few industries, about 10 to 15, situated along the Bombay Agra Road. The rapid industrialisation of Greater Bombay especially after the implementation of the five year plans since 1951 and the Government's policy of discouraging further industrial concentration in Bombay led to a hectic industrial activity at Thana both within and outside the municipal limits. The construction of the Express Highway connecting Thana to Bombay by means of rapid communication route also gave an added philip to the industrial development in and around Thana. A very large proportion of the lands in and around Thana was soon either already purchased by industries or was allocated for this purpose in the zoning plans, and a stage was soon reached when there was an oversaturation of industrial areas and steps had to be taken for discouraging further industries in the Thana complex also. The industrial land allocation already become a fait accompli by the time these steps were talked of, had been rather of a chaotic type, and the ultimate zoning as between the two principal users even on a cursory glance on the plan shows that the chaos could not be corrected but in fact increased due to the odd intermixture of residential and industrial areas and the inadequacy of residential areas in relation to the industrial areas, also persisted. The total land allocated for industrial user amounts to almost half of the total area both within the municipal limits as well as in the areas of the northern suburbs i.e. Kolsnet, Balkum, Chitalsar, Manpada etc. Plan at page shows the total distribution of areas between industrial and non-industrial purposes.

118. Another peculiar feature of the land use in Thana is the existence of several small and big tanks and lakes scattered all over the town. There are 17 such tanks covering a total area of 100 acres. The largest of these tanks namely the Masonda tank which covers an area of 13½ acres is located almost in the heart of the town.

119. The following table shows the distribution of lands in Thana amongst major categories of land use.

Land use analysis for Thana.

Use.	Area in acres.	Percentage with total area.
Residential	865	21.50
Industrial	1308	32.39
Commercial	15	0.37
Public purpose.	200	4.96
Railway.	30	0.74
Water bodies	110	2.72
Agricultural.	753	18.60
Forest	525	13.00
Khajan (lowlying).	233	5.72
	-----	-----
Total	4039	100%

120. Slums in Thana:- Rapid industrial development and a fast increasing population almost always gives rise to the most abhorable type of slums. Most of the slums in Thana are located with and around the industrial areas. The major slum areas are (1) near the express highway, near mental hospital, (2) at the rear of Castle Mills, (3) near Raymond mills (4) opposite M/S. Voltas. All these slums are on Government lands and consist of the hutments constructed of theatched or tin walls with manglore tile or country tile roofs. Total number of huts is estimated to be about 6000 and the total population of hutment dwellers is estimated to be about 30000. The Maharashtra housing Board has acquired an area of nearly 120 acres on the periphery of Thana town and has constructed buildings for housing the industrial workers. The colony is known as Vartak nagar. The slum areas in Thana are shown on Plan at page ---

121. Defence areas:- There are two blocks of defence area on the periphery of Thana town which are (a) Akbar Camp admeasuring about 300 acres situated on Kolshet road and (b) rifle range admeasuring about 110 acres. These are shown on plan at page --

122. The land use analysis of the northern peripheral area of the Thana comprising of Kolshet, Balkum Chitalsar Manpada etc. as per plans currently in force is shown in the

following table.

Area laid out	.... ..	3841 acres.
Area zoned for industry		1830 " i.e. 48.2% of laid out area.
Area zoned for Residence		2002 " i.e. 51.8% of laid out area.
Area under existing industries.		1204 " i.e. 31.0% of laid out area.
Existing residential (Gaothan)		39 " i.e. nearly 1% of laid out area.

123. **Kalyan:-** Situated on the Ulhas estuary about 34 miles from Bombay, Kalyan was an important port during the historical times. It is now an important railway junction from where the north east and south east sections of the Central railway bifurcate. It is also the headquarters of the Taluka. The Kalyan Municipality which was established in 1865 is one of the oldest municipalities in Thana District. The population of Kalyan according to the 1961 census was 72,487 souls. The area within municipal limits is 1945 acres. The old gaothan development is located to the north of Shil Road and forms the congested development with old houses and insanitary conditions. Another major residential area is along the Murbad Road and is of recent origin. It is not as congested as the old gaothan development but for want of timely planning it is of a ribbon development type.

124. **Industries:-** Except for small industries like saw mills and rice mills scattered in the gaothan, there are no major industries within the town limits. An area of about 100 acres was zoned by the Municipality for industrial purposes, but is at present only under agricultural use. The major chemical industrial complexes comprising of the Century Rayons, the National Rayons, Amar Dye Stuff, etc. are however located just on the periphery of Kalyan in what is popularly called the Atale Shahad Industrial area.

125. The occupational pattern of Kalyan shows 32% of the workers as being secondary workers and 66% being as tertiary workers. Kalyan itself has no major work centre located within its limits and the workers commute either to the adjoining Atale Shahad Industrial Area or to Bombay. In fact before the establishment of the Atale Industrial Area Bombay constituted the only work place for Kalyan residents apart of course from the Railway workshops and the railway yard at Kalyan. The railways occupy about 263 acres of land in Kalyan, which is nearly 14% of the land within the Municipal Limits. This area is utilised for Railway lines, sidings, railway quarters, offices, railway hospitals, etc. Apart from being a junction of the two important railway routes leading to Nasik and Poona, Kalyan is a very busy station for both passenger and goods traffic. The Chola Power house of the Railways is located at Thakurli very near to Kalyan.

126. Low lying areas in Kalyan frequently suffer from floods. Ulhas which is a tidal river is subjected to tidal

flows right upto Kalyan and when the high tides coincide with the high floods large portions of the Town along the river bank get submerged. Nearly 8% of the land within the Municipal limits is low lying and unsuitable for development in the present conditions. The low lying lands in Kalyan are shown on the Plan on page.

127. Agricultural lands:- Lands on both sides of Adhar Wadi and near about Chikanghar Gaothan on the north are under agricultural use. Almost 40% of the total area within the Municipal limits is still under agricultural use.

128. The major slum area in Kalyan Town is located near about Shenale Tank and the total number of huts is estimated to be \_\_\_\_\_ and the number of hutment dwellers are estimated to be \_\_\_\_\_. A Plan showing the broad localisation of existing land uses within Kalyan is at page \_\_\_\_\_

129. A peculiar feature of Kalyan is that its limits are co-terminus with Ulhasnagar on its south, which is an equally big urban centre and which itself touches the limits of another town Ambernath a big industrial centre.

130. Atale Industrial Area:- The Atale Shahad Industrial Area referred to earlier is to the east of Kalyan and is located between the Kalyan Murbad Road and the Kalu River. The Central Railway line going to Nasik divides this area into two parts. The lands are developed on both sides of the Railway, but a major chunk along the rivers has remained undeveloped because (a) large portions of it are low lying and get submerged in floods and (b) communication and access facilities for the area are not available. The Atale Shahad Industrial Area mostly houses chemical industries having large water requirement. A Plan will be found at page \_\_\_\_\_

131. Ulhasnagar:- Before the partition of the country in 1947, Ulhasnagar was a military camp and consisted of semipermanent ground floor barracks scattered all over the area to house the defence persons. After the partition of the Country there was a very large influx of refugees from Pakistan and the Ulhasnagar barracks which were then lying vacant were assigned for rehabilitation of the refugees. The original barracks were converted into chawl type tenements and the housing Board also constructed some 2000 tenements. All the land in Ulhasnagar still belongs to the Government of India. The displaced persons who occupied these tenements however soon started encroachments, first on the front, rear and side open spaces and thereafter all sewere mainly in areas reserved for public purposes and open spaces. Temporary shops were constructed unauthorisedly along the frontages of roads many of them even within areas proposed as overall road width. The population grew from 80,000 in 1947 to 1,07,706 in 1961.

132. With its old ground floor barracks, with numerous lateral encroachment on all sides and encroachments along roads, lack of an effective drainage and the inevitable overcrowding due to a fast increase in population the entire town is worthy of being categorised as a vast urban slum requiring a very concerted action for urban renewal and reconstruction.

133. As in other towns there are a large number of hutment slums in Ulhasnagar also. The following table shows the location and magnitude of the various slums in Ulhasnagar.

Sr. No.	Location.	No. of families.	Area covered in sq. yds.	Plot No.	Reservation etc.	Remarks.
1.	Near Shahad Rly. station Camp No. I.	300	9,000	4,5,7	Reserved for Possession Sec.7-B	medium scale industries. cannot be given to M/S. Harman Mohata due to huts.
2.	Near Gate of M/S. Herman Mohata, Camp No. I	100	3,000	8 and Road	Sec. B	-do-
3.	Between Barrack No. 11 and 115 Bhimnagar Camp No. I	260	7,800	165	Sec.7-A	For market in Master Plan. Commercial area in Dev. Plan.
4.	Near Lahore Shed Opp. Barrack No. 750 Camp No. 3	350	10,500	513, 515, 516, 517, 518	Sec. 7-B	Residential purposes.
5.	Near Daily Graphic Club, Camp No. 3.	100	3,000	69, 70, 73	Sec. 4-A, Sec. 4-B	Garden and Recreation in Master Plan.
6.	Near Vithalwadi Railway station.	150	4,500	161,	Sec. 4-B	Reserved for Railway goods Yard in Master Plan.
7.	Ulhasnagar Station near Barrack No. 1425, Camp No. 4.	140	4,200	530	Sec. 7-B	Children Playground.
8.	Near Barrack No. 735-H, Camp No. 3	100	3,000	65, 66, 70, 71, 77, 78, 79, 94, 95	Sec. 6-B	Reserved for small scale industries.
<b>Total.</b>		<b>1,500</b>	<b>45,00</b>			

134. The land use features of Ulhasnagar could be described in a summary form as under:-

Area within Municipal limits. 3262 acres.

Land use Analysis.

Use	Area in acres.	Percentage with the total.
Residential	741	22.7
Industrial	355	10.9
Commercial	8	0.02
Public	70	2.15
Railway	9	0.02
Water bodies.	51	1.57
Agricultural	350	10.88
Khajan and low lying.	44	1.35
Vacant.	1634	50.41

---

Total number of open plots	.....	1813
Number of plots occupied unauthorisedly	.....	876
Number of vacant plots.	.....	937

135. Bhiwandi:- is an old town situated on the Bombay Agra Road about 11 miles from Thana. The total area included within its limits is about 1160 acres. The 1951 population which was 25,764 had risen to 47,657 by 1961, thus showing a decade rise of nearly 90%. Bhiwandi is noted for its hand looms and power loom industries and its enormous rise in the population was apparently due to the power loom industry which flourished during this period. All the population is concentrated in the old gaathan area which shows all the signs of congestion and overcrowding and intermixture of conflicting users. Power looms are located in residential houses and even in verandahs. It is estimated that there are nearly 33,000 power looms in the town and almost 90% of the total workers depend upon the weaving industry. Following are the areas where concentration of power looms is found.

- |               |               |                  |
|---------------|---------------|------------------|
| 1. Hamalali   | 2. Bhoiwada   | 3. Bhusarmohalla |
| 4. Kumbharali | 5. Bengalpura | 6. Zaitunpura.   |

136. The typical rattling noise of power looms can be heard all over in the area. This intermixture of users has been largely responsible for insanitation and to the spread of various diseases in the population.

137. The lands to the east of Agra Road show an entirely different character than the gaathan lands to the west. Excepting a few relatively large industries like Dandekar Rice Mills, the rest of the lands are mainly used for agricultural purposes.

Land Use analysis:

Use	Area in acres	Per centage with the total
Residential	96	8
Industrial	402	33.8
Commercial	7	0.6
Public sites	51	4.4
Water bodies	43	3.6
Agriculture	531	49.6
Total	1,130	100.00

Most of the industrial use is of a mixed type, i.e. residential + industrial.

138. Peripheral Development: There is an overspill type of development outside Bhiwandi upto a distance of 1 to 2 miles along the Agra Road and the Kalyan Road and about  $\frac{1}{2}$  mile along the Wada Road. This development is of a ribbon type. Along Agra Road there are mainly saw mills and power looms. New hutment slums are also coming up along the south of Agra Road. The structures being erected along the Wada Road are commercial cum residential type, but hutments are also coming up here and there. Some residential development has also come up in pockets beyond the bridge on the Kamawati river. There is no marked development along Kalyan Road except for a few pockets and some factories. Thus outside municipal limits the lands are mainly under agricultural use unlike Thana and Kalyan where a very intensive and large scale industrialisation has taken place in the peripheral areas. A plan showing the principal land use features of Bhiwandi would be seen at page

139. Bassein is situated about 4 miles west of the Bassein Road Railway station. It is hardly about 25 miles from Bombay by rail but the distance by road is as great as 55 miles due to the non availability of a direct route across the creek. The local trains of the Western Railway provide a regular service for suburban commuters. However, due to the non-availability of direct road access to Bombay and due to the non-availability of water the development of the town has been



relatively slower than the development at Kalyan, Thana, Bhiwandi or Ulhasnagar.

The setting of Bassein is peculiarly beautiful. It has the Arabian Sea to its west and the Bassein Creek to its south. The northern side is mostly used for agricultural purposes and to the west also the lands are mostly open. Bassein is a place of considerable scenic beauty. There are large planted gardens scattered all over the town. These are bagayat lands supporting bannana trees, bettle leaves, etc. for which Bassein is quite famous. The existing residential development is not compact and concentrated, but is located in the old gaothans of (a) Papri on the road leading to the station (b) Bassein proper and (c) Holi on the way to Nirmal. All these areas admeasure about 410 acres, i.e. 20.23% of the total area of the town. The next important land use is agricultural occupying nearly 720 acres i.e. 39.4% of the total area. Due to this greenery in the town, mainly in between the three gaothan blocks referred to, the town is always cool and pleasant. Another major land use in khajan lands mainly to be found in Ghaoli and Malonda villages.

141. The famous Bassein fort which is at the southern end of the town occupies a large area of 125 acres. The area is in charge of the Archaeological Department. The Fort is a historic place and is visited by people of all walks as a picnic spot. The ruins of the Portuguese are scattered over most of the areas of the Fort, while a little part of it has also been brought under paddy cultivation.

142. There are no salt pans within the town itself, but there are plenty of them in the surrounding villages, Umela, Nigaum, Kirovlim Juchandra, etc.

143. The following table would show a broad statistics of existing land use distribution within Bassein town:

Use	Area in acres	Per centage with the total
Residential	410	20.23
Industrial	5	0.02
Commercial	37	1.80
Public Purpose	144	7.00
Water bodies	6	0.02
Agricultural	350	17.50
Bagayat	460	22.40
Low lying	634	31.63
<b>Total:-</b>	<b>2,056</b>	<b>100.00</b>

143 A. Dombivali is a small town and until recently, it was purely a dormitory suburb of Bombay, for the workers mostly depending on white color employment in Bombay. Nearly 44% of the total population consists of commuters. The town area is only 640 acres. The development within the town limits is predominantly of a residential character and there are no industries worth mentioning within the town. The existing land use analysis is as under:-

Total area	:	640 acres
Existing residential area	:	390 acres
Roads and open spaces	:	90 acres
Railway and miscellaneous	:	20 acres
Vacant lands and agricultural lands: 140 acres.		

144. Parts of Dombivali lying to the west of the railway line have started developing recently. Large tracts of agricultural land are available all around and are suitable for development.

145. Development along Kalyan Shil Road: Brick Industrial development has commenced in the lands to the south of Dombivali along the Kalyan Shil Road. The Maharashtra Industrial Development Corporation's estate, the factories of the Premier Automobiles and several other small units, all of which are principally located on the northern side of the Kalyan Shil Road provide the new work centre. The Industrial Development occupies nearly 1,067 acres and being outside the limits of the Civic Authorities' jurisdiction is faced with problems of transport, inadequate housing and other insanitary conditions.

146. Uran : is a small town and is a taluka headquarter in the Kolaba District. It is situated at a distance of only 6 miles across the sea from Gateway of India. By road however the distance from Uran to Bombay is as much as 60 miles. Uran is also non connected to Bombay by rail via Panvel and Diva. Uran is neither an industrial nor commercial town-ship like Thana or Kalyan or Ulhasnagar nor a dormitory suburb like Bassein or Dombivali. It is a small town very little affected by the existence of the metropolitan city across the sea, and its area economy is dependent upon salt pans, fishing, administrative services at the Taluka level and the few industrial jobs which the Grindwell and Industrial Abrasive Company and the few other industries provide. The total area included within the town limits is about 588 acres. Most of the population which was 10,207 according to the 1961 census is concentrated in the gaothans. Development along Mora Road is of a ribbon type and the Hoiwada in Mora is practically a slum. The existing land use map is at page

147. Panvel : The town of Panvel which is situated about 43 miles from Bombay along the Bombay Poona Road is a focal point of communication routes. It is the junction of two principal national highways namely the Bombay Poona Road and the Bombay-Konkan-Gao Road. One State highway namely the Panvel Uran Road also starts from Panvel. It is also a junction of the recently started Dive-Apta and Panvel Uran sections of the railway. It is 20 miles from Thana and 23 miles from Khopoli along the Bombay Poona Road, 18 miles from Pen along the Bombay-Konkan-Goa-Road and 15 miles from Uran. Though the distance to Bombay is 43 miles along the existing Bombay Poona Road, it will be shortened to only 28 miles when the projected bridge across the Thana Creek is completed.

148. Panvel so far has remained a rather small town inspite of its prominent location from the communication point of view. There are only a few industries within the town limits. The existing residential development is mainly within the gaothan and in the town planning scheme area along the Bombay Poona Road. The total municipal area is 3,069 acres out of which only 420 acres is under existing residential use. Large blocks of land especially within the extended municipal limits are still under agricultural use while 278 acres are low lying and khajan areas. The following table shows the existing land use in Panvel.

Use	Area in acres	Per Centage to the total.
Residential	420	13.69
Industrial	11	0.36
Commercial	11	0.36

Public Use	70	2.28
Railway	90	2.93
Water bodies	90	2.93
Agriculture	2.107	68.65
Low lying	270	8.80
-----		
Total :-	3.069	100.00
-----		

149. Ambernath :

Kalyan, Ulhasnagar and Ambernath are contiguous to one another as stated earlier and all these together along with the sizeable industrial development in the non-municipal areas in Atale, Shahad and Kalyan-Shil Road form but one single agglomeration. Ambernath comes at the south-western end of the agglomeration which in fact is tending to continue towards south along the railway line including Kulgaon and Badlapur and Wangni within its ambit. There is a sizeable industrial development within the limits of Ambernath also. Only a decade ago industrial development in Ambernath was restricted mainly to the Ordinance Factory, Dharamsi Morarji Chemicals, and the Wimco factory. Prior to 1950 there were only 4 industrial units but the Maharashtra Industrial Development Corporation has given a considerable impetus to industries in Ambernath and now there are 15 industrial units working and a number of more units are likely to go into production very soon.

150. Ambernath is connected to Kalyan and Badlapur by a road, the condition of which between Ulhasnagar and Ambernath is very bad.

151. Land Use :- The total area within the municipal limits is 3620 acres, out of which nearly 1,139 acres i.e. 31.4% of the total area is under agricultural use and 1,281 acres (35.4%) are under forests. these lands are mostly to the north and south of residential and industrial development. Most of the agricultural lands are however Warkas with patches of paddy cultivation.  
Industrial use ; The ordinance factory is outside the municipal limits and provides a major work centre to this area. The MIDC has established a large industrial estate along the Kalyan Badlapur road and the railway line. This admeasures about 567 acres out of which about  $\frac{2}{3}$ th of the area is within municipal limits. The total area occupied by existing industries is 446 acres. i.e. 4.3% of the total municipal area.

Residential use : Existing residential development is in the vicinity of the station to the South of the railway line and north of Badlapur road. The total area under

residential and commercial use is 586 acres i.e. 16% of the municipal area. Hutment slums have started making their appearance but the problem is still small and within limits.

The D.D. Scheme : Large Government lands to the south of the railway line were in the past laid out for residential use. Number of co-operative societies have been formed in these areas and some plots are developed. Gradually the whole scheme area will be developed upto its southern boundary line.

152. The existing land use map showing the land use features of Ambernath will be found at page The table which follows gives the land use information :

Total area	Residen- tial	Industri- -al	Agricul- -tural	Foreſt	Coömer- -cial	Misc.
3,620	578	446	1139	1281	8	168

153. Karjat : Karjat situated about 50 miles from Bombay by rail is at the foot of Sahyadri hill ranges, from where Bhor Ghat starts. It is also connected to Bombay and Khopoli by road (via : Panvel). Being at the foot of the Sahyadri hill ranges there is heavy rainfall. Ulhas river flows along the southern and western boundaries. It is an important railway station as the Ghat portion starts from here.

154. There are no industries worth the name in the town. One small factory has recently started functioning near the station on east side. Commutation to Bombay for work is very common. Existing residential development is on east of railway line while lands on west upto hills are agricultural and mostly under paddy cultivation. The area of the Karjat township (i.e. the revenue village) is only 216 acres. Residential use is restricted to gaathan and cover about 61 acres i.e. about 28%, Agricultural lands admeasure 124 acres and rest of the area is all under forests and hills on west. 1961 population was only 5,143. By nature Karjat is still more like a village than a town and we see all agricultural (paddy) lands in surrounding areas, as can be seen from the land use plan.

155. Khopoli : Khopoli was not classified in the 1961 census as an urban centre but the area around Khopoli in the Patalganga river valley region is now being increasingly used and developed for industrial purposes during the last few years. The layout prepared by the Town Planning and Valuation Department for this area includes the following villages :

- |                 |             |                |
|-----------------|-------------|----------------|
| 1. Khopoli      | 2. Vihari   | 3. Devlad      |
| 4. Mahatwade    | 5. Vasarang | 6. Shif        |
| 7. Halbudruk    | 8. Katrang  | 9. Shedavli    |
| 10. Chinchvali  | 11. Lavej   | 12. Mulgaon(K) |
| 13. Mulgaon (B) | 14. Ajoshi  | 15. Bhanvaj    |

156. The area lies between the two fork like hill ranges of Sahyadri and forms a strip of about  $3\frac{1}{2}$  miles long and  $1\frac{1}{2}$  miles wide, on an average. Total area is about 2400 acres (excluding hills). It is traversed by the Bombay-Poona Road National Highway and it is also connected by railway to Karjat, about 9 miles away. The valley has a very picturesque scenic setting.

157. Availability of lands, goods communication, water supply from the tail races of the Power station and availability of electricity attracted Industrialists to establish industries in this area.

158. The old development of Khopoli and Devlad gaothans is in the form of ribbon development along the Bombay Poona Road. Industries for which commitments are already made are about 13 occupying total area of 510 acres.

Land use table :

Land use	Area in acres	Per centage with the total
Residential	1,330	55.4
Industrial	900	37.5
Town centre and park	70	2.9
Agricultural	80	3.3
Forests	20	0.9
<b>Total</b>	<b>2,400</b>	<b>100.00</b>

( Railway land, road land, water courses not accounted separately)

The land use plan would be seen at page

159. Matheran : Delightfully cool and bracing climate, beautiful natural scenery all around, its very proximity to Bombay and easy accessibility by the tiny railway from Neral, Matheran has become a very popular hill-station and holiday resort in the Maharashtra State. The tiny railway line from Neral to Matheran was constructed in 1907 and since then the growth of the town started with a rapid pace.

160. The present Matheran Hill Station's Municipal Council has a Jurisdiction over an area of about 7.2 sq.Kms.

161. The Hill Station is situated in the midst of Sahyadri at a maximum height of 2,200 ft. above M.S.L. at latitude 18°-35'north and longitude 73° - 11' east at about 30 miles from the shore of the Arabian Sea. The Hill Station derived its name 'Matheran' from the characteristic existence of thick dense forest on the top of variety of plants such as Ashoka, Jambhul, Asana, Peesa, Mango, Vasaka, Umber, etc. There are several beautiful view points on the Hill Station and as such it has got a great tourist importance.

162. There are no large scale industries in the town. However, the cottage industries like (1) Shoe making (2) making electric lamp sheds from 'Chiman-Chara Grass' which is available locally are flourishing on account of the patronage of visitors.

163. Land use analysis :

The total area within the municipal limits admeasures about 723 hectares (1,788 acres). The existing land use analysis is as under :-

Land Use	Area in hectares	Per centage of developed area	Per centage of total area
Residential	390.00	65.40	21.80
Commercial	107.17	18.00	6.10
Public and semi-Public ...	34.19	5.80	1.98
Parks & Play Ground ...	28.20	4.77	1.60
Transport and Communication	36.00	6.03	2.00
<b>Total developed area ...</b>	<b>596.16</b>	<b>100.00</b>	<b>33.40</b>
Forest and hill lands ...	1182.19	--	66.10
Water bodies	9.15	--	0.50
<b>Total area in Municipal limit ...</b>	<b>1788.10</b>	<b>--</b>	<b>100.00</b>

Note :- Out of the total area of 478.53 hectares under forests and hilly lands, about 40% area could be made available for

Further development of the town as these areas are fairly plain and having thin vegetation.

164. A Plan showing the existing land use of the Matheran town is attached at page no.

C O N C L U S I O N

Synthesis of the land use information described in the previous paragraphs is shown pictorially in the plan at page. The plan shows many more details than have been described in words in the report. The communication routes consisting of the roads and railways have not been described but the system at once becomes clear by a single look at the plan. The land use plan providing a bird's eye view of the urban and rural landscape features in the region, forms as it were the back drop on which to paint the new picture of the emerging regional developments. The raw materials necessary for creating a functionally satisfactory and aesthetically pleasing regional design consisting of land, water bodies, hills and mountains, forests and jungles, communication routes are all presented in the land use plan. The land use plan also pictorially explains at the same time the possibilities as well as constraints to development.



STATEMENT SHOWING PROPORTION OF URBAN : RURAL  
POPULATION FOR EACH TALUKA IN  
THE REGION - (1961 Census).

Sr. Taluka No.	Total Population.	Urban Population.	Percentage.	Rural Population.	Urban/Rural.
1. Thana.	1,86,449	1,16,189	62.3	70,260	1.68
2. Bassein.	1,66,014	37,657	22.7	1,28,363	0.22
3. Bhiwandi.	1,62,700	47,630	29.3	1,15,070	0.41
4. Kalyan.	3,59,898	2,47,250	68.2	1,12,648	2.20
5. Panvel. (pt)	1,07,868	18,130	16.8	89,738	0.20
6. Uran.	56,462	10,229	18.5	46,233	0.29
7. Karjat.	59,124	13,589	23.0	45,535	0.30
8. Khalapur.	32,144	--	--	32,144	--

## STATEMENT SHOWING FISHING CENTRES AND ANNUAL FISH CATCH.

Sr. No.	Village.	Annual Fish catch in Metric tons.	Sr. No.	Village	Annual Fish Catch in Metric tons.
<u>I to the North of Greater Bombay.</u>					
1.	Arnala.		2.	Arnala Fort.	5700
3.	Bassein.	4960	4.	Naigaon	4310
5.	Kochiwada.	1860	6.	Uttan.	4270
7.	Dongri Chauk.	1250	8.	Gorei.	590
9.	Manori.	1720	10.	Rangoon.	110
11.	Kolamb.	60			
Total :-					24,830
<u>II Greater Bombay :</u>					
1.	Malevani.	1560	2.	Varangal Madh.	6670
3.	Versova.	11960	4.	Juhu-Tara	680
5.	Danda.	6190	6.	Chimtai.	2360
7.	Mahim.	2420	8.	Worli.	3690
9.	Chaupaty.	2830	10.	Cooperage.	830
11.	Sassoon Dock.	23970	12.	Mazgaon.	75
13.	Sewree	310	14.	Mahul	700
	including fish landed of Sassoon Dock.		15.	Trombay.	1550
Total :-					65795
<u>REST.</u>					
1.	Chandri Koliwada.	115	2.	Balkum pada.	125
3.	Panvel.	200	4.	Waghwali.	30
5.	Valwa, Moba & Targhar .....	340	6.	Gewan.	370
				including fish landed at Sassoon Dock.	
7.	Kelewanil.	260			
8.	Parije..	30	9.	Dolghar.	10 "
10.	Apte.	290	11.	Sheva.	830 "
12.	Marwa.	30	13.	Uran.	170 "
14.	Mora.	420	15.	Dighade.	160 "
16.	Karanja.	2710			
Total :-					6,090.

Varieties of Fishes :- (1) Bombay Duck, (2) Mandeli, (3) Pomfrets, (4) Halwa, (5) Ghol, (6) Bhing, (7) Pala, (8) Shingala, (9) Wam, (10) Ravas, (11) Sharks, (12) Karli, (13) Karandi, (14) Wagti.