

## **13.1 Regional Plan - 1973 : Land use Plan**

**13.1.1** The Regional Plan-1973 primarily aimed at containing Mumbai's growth, reducing congestion and overcrowding, and bringing about balanced regional development through dispersal of population and economic activity. The land use plan proposed to achieve this end consists of the following :-

1. Allocation of land on the main land across the harbour for development of Navi Mumbai as a counter- magnet to Mumbai;
2. Designating land for growth centers outside Island City of Mumbai such as Bandra-Kurla Complex to bring about internal restructuring of Mumbai and restricting industrial and office development in south Mumbai;
3. Designating areas for new towns around existing and proposed industrial areas in the Region such as in Kalyan-Ulhasnagar Complex, in Vasai Tehsil and at Rasayani;
4. Designating large part of MMR as Green and Forest-Zones with a view to conserving agricultural, rural and forest areas thereby confining urban growth to well-defined area and preventing urban sprawl.

**13.1.2** The Regional Plan for extended area of MMR (Pen-Alibag area) sanctioned in 1985 was in tune with the Regional Plan-1973. The extended area of MMR was designated largely as conservation area.

## **13.2 The Outcome**

**13.2.1** Although the development efforts have consistently followed the strategic direction, the outcome has been far from intended, for example:

1. Navi Mumbai which was expected to absorb large part of the Region's future increase of population and jobs, siphon off population and jobs from Greater Mumbai and achieve a target population of 21 lakhs by 1991, has not grown as expected and has reached a population of 6 lakhs only. This is largely on account of delayed implementation of Nhava Sheva Port, failure to shift public sector offices, inadequate transport linkages with Greater Mumbai and problems of land acquisition.
2. Although Mumbai's population growth was expected to stabilise around 70 lakhs by 1991, it has reached 99 lakhs.
3. Measures to bring about internal restructuring of Mumbai, such as, restricting growth of industries, offices and warehouses in the Island City, relocating selected wholesale markets from South Mumbai, establishing new commercial centers outside island city, have achieved modest

success. Owing to other factors, though the population of island city has been steadily falling.

4. The new towns in Kalyan-Ulhasnagar area, Vasai Tehsil and at Rasayani, and many new communities envisaged in the Regional Plan-1973 failed to come up. This, together with faster-than-projected growth of urban population in the region and the slower growth of Navi Mumbai has led to rapid unplanned development in Kalyan Complex, Mira-Bhayander and Vasai-Virar area.
5. Fringe areas of the urban centers, areas along the highways and other accessible locations in G-Zone are being increasingly developed for housing, hotels, resorts, motels, restaurants, transport godowns, warehousing, institutions, etc. on a scale not envisaged in the Regional Plan-1973.

Thus, many contradictions have become apparent between the actual growth pattern and the land use plan of 1973.

### 13.3 **Emerging Pattern of Growth**

The foregoing outcome of the Regional Plan-1973 indicates that, though the direction of spatial growth in the past two decades has been right, its pace and magnitude has not been as desired. Mumbai still dominates, but its growth shows signs of tapering off. The urban growth continues to move outwards primarily along transport corridors. In the coming years the emerging pattern of growth will be determined by a number of developments listed in the following :

#### 13.3.1 **Navi Mumbai**

Navi Mumbai, the key element of the Regional Plan's strategy of decentralisation, has had a sluggish growth during the last two decades with population barely reaching 6 lakhs in 1991 as against the target of 21 lakhs. It has now reached a take-off stage in its development and can be expected to grow faster than it did in the past, mainly on account of the suburban railway and the Jawaharlal Nehru Port (J.N. Port/Nhava-Sheva Port). The population target of 2 million proposed by Regional Plan- 1973 for 1991 may now be attained by 2011.

#### 13.3.2 **North Western Urban Corridor**

The development of Vasai-Virar belt has surpassed the expectations of the present Regional Plan. In May, 1990, the Regional Plan was amended to convert about 8500 ha. of land from 'G'-Zone to urbanisable zone and plans are underway to develop the area as a city of 12 lakhs by 2011. Across Vasai Creek, Mira-Bhayander area has also been developing rapidly during the last decade. Together, Vasai- Virar and Mira-Bhayander constitute a strong development corridor.

#### 13.3.3 **Bhiwandi**

Bhiwandi, with 3.78 lakh population in 1991 and a growth rate of 8% p.a. during the last two decades is emerging as one of the important urban centers in the northern part of the Region. Powerloom industry has been growing consistently and, because of its haphazard and unplanned development - often mixed with residential areas - is posing serious health and safety hazards. On the north of Bhiwandi town the 200 ha.

industrial area earmarked in the Regional Plan-1973 has failed to develop. But areas in the southern part of Bhiwandi are developing rapidly. The establishment of Bhiwandi railway station on Diva-Vasai railway line, and the prospects this line being used also as commuter line has greatly enhanced Bhiwandi's potential for growth. On the South of Bhiwandi, just outside the Municipal limit, Purne and Rahanal villages have attracted large scale development of private transport godowns which has turned the area into an informal truck terminal. Developments are also taking place along Bhiwandi-Kalyan Road. Adequate physical planning and development efforts are needed to exploit Bhiwandi's growth potential and avoid possible chaos in its physical developments.

#### **13.3.4 Kalyan Complex**

Kalyan Complex, including Ulhasnagar is another area in the north eastern sub-region to have exceeded its growth targets: 13.82 lakhs population in 1991 against 8 lakhs projected in the Regional Plan. However, because of inadequate planning and development efforts on the one hand and the rampant unauthorised construction activity on the other, opportunity to develop a new growth center has been missed. The land acquisition for the Kalyan Growth Center has been dropped and in the plan of the Kalyan Complex approved in November, 1990, the proposal for new town at Kalyan so far referred to as Kalyan Growth Center, has been deleted. To salvage the situation, new initiatives, in terms of physical planning, infrastructure provisions and housing, are urgently needed for this area.

#### **13.3.5 Thane-Kalwa-Mumbra**

Thane has been one of the fast growing areas in the Region. It had a population of 7.95 lakhs in 1991 as against Regional Plan target of 4.5 lakhs. Thane's growth was induced by the massive industrialisation that took place in its vicinity and role it played as a dormitory of Mumbai. Along with Thane, Kalwa and Mumbra also attracted large scale development, much of it unauthorised and not envisaged in the Regional Plan. Mumbra and other areas on the east of Parsik hills have been experiencing tremendous pressure of growth on account of their proximity to the rail and road corridors. The emergence of these areas as new centers of urban growth has already been recognised in the Draft Development Plan of Thane.

#### **13.3.6 Area Around Panvel**

Panvel which forms the Eastern fringe of Navi Mumbai enjoys a unique locational advantage. It has a direct link with the main railway system of Central and Western railways through Panvel-Diva-Vasai railway line. In near future it will be directly connected to Mumbai through Panvel-Mankhurd railway line and to rest of Konkan through Konkan railway. A new railway line between Panvel and Karjat has also been proposed. For years, Panvel enjoyed a key location on Mumbai-Pune highway. This will be strengthened further as it will be a starting point for the proposed Mumbai-Pune Expressway. Thus Panvel is set to emerge as a major hub of transport network in the future. Apart from this, the new job centres in Panvel's vicinity, namely Kalamboli Iron and Steel Market, Warehousing complex and Tajola Industrial Area have created great potential for urban development, not only for Panvel or Navi Mumbai, but also for areas outside their boundaries on the east and south.

### 13.3.7 Khopta Bridge

The construction of a bridge across Karanja Creek near Khopta Village has brought vast area on the east of Karanja Creek within close proximity of J.N.Port, and port-based industrial area being developed by CIDCO in Navi Mumbai. Hence, despite its being currently situated in 'G'-zone, this area is likely to have good demand for housing, and industrial purposes. A timely plan for developing this area and integrating it with the development of Navi Mumbai is necessary.

### 13.3.8 Rasayani

Rasayani was originally conceived as a captive town for Hindustan Organic Chemical Ltd., and during the '70s, it largely remained so. During the '80s, however, development of Patalganga Industrial Area by MIDC just outside MMR boundary but close to Rasayani has brought in many large and medium scale petrochemical, chemical and pharmaceutical units in this area. This has created need for additional infrastructure, housing and social facilities in this area. However, not much efforts are being made to provide these facilities. With the result, haphazard developments are taking place around gaothans and elsewhere in the 'G'-zone. The HOC has proposed expansion of its capacity which will increase its direct employment from 1000 to 2000. The MIDC has acquired 330 ha. of additional land for industrial development close to its Patalganga Industrial area. Some more industrial areas are also being developed privately as permitted in the Raigad Regional Plan. These developments will have significant impact on Rasayani area. Timely measures are necessary to plan and develop this area as a full-fledged town.

### 13.3.9 Industrial Development Outside MMR

With the setting up of Indian Petrochemical Corporation Ltd;(IPCL)'s petrochemical complex at Nagothane in Raigad District and with the availability of natural gas, many large industrial units are coming up outside MMR's boundary along Mumbai-Goa National Highway. Some of the important projects are given in Table-13.1.

Although located outside the Region, these projects will have direct impact on the Region in terms of added traffic on its roads, added demand for housing and urban infrastructure, and environmental pollution. Many of these projects have been proposed after the preparation of the Raigad Regional Plan in which no provision has been made for the new urban centers in the vicinity of these industrial projects. Hence, it

Important Industrial Projects on the peripheries of MMR				
Company	Product	Capacity	Land (ha)	Cost (Rs.in Cr.)
Nippon Denro	Sponge Iron	7.5 lakh MT/yr	263	500
Kalyani Steels	Sponge Iron	6.0 lakh MT/yr	404	500
Supreme Petrochem	Styrene etc	—	141	175
SWIL Ltd.	Copper,Zinc, Lead Products	—		200
Polychem Ltd.	Styrene etc	—	41	160

Table-13.1

may be necessary to use areas near about Pen and Vadkhal for providing township facilities for these projects.

### **13.3.10 2nd International Airport**

The International Airport Authority of India had selected in 1992 about 45 sq.km. area at Rewas-Mandwa as a possible site for the proposed 2nd International Airport. However, it has been decided in 1997 to take up a fresh detailed feasibility study for this purpose. This study is supposed to examine the possibility of expanding the capacity of Sahar-Santa Cruz airport beyond the year 2005, alternative sites for the new airport including the environmental and rehabilitation implications. Considering the importance of the 2nd International Airport, 5 possible locations need to be reserved in the Regional Plan including the location at Navi Mumbai. Accordingly, four locations in Alibag and one location in Uran and Pen Tehsils and one location in Navi Mumbai are shown on the Plan.

### **13.3.11 Developments Along Highways**

Lands along National Highways and other important roads beyond the boundaries of the urban centers in the region are increasingly brought under variety of developments such as housing (in the name of gaothan expansion), farm houses, holiday resorts, transport godowns, petrol pumps, service stations, restaurants, shops, etc. While some of these developments are legitimate highway amenities, others like housing are a reflection of the high land values and the scarcity of the land prevailing in the existing urban centres. Such growth is to be seen as pointers to possible development pattern.

### **13.3.12 Panvel-Karjat Railway Line**

The Central Railway has carried out a survey of the alignment of the railway line between Panvel and Karjat. It has also decided to notify the land for acquisition. This railway line will reduce Mumbai-Pune distance by about 22 km. and will bring all area between Panvel and Karjat within the commuting distance from Mumbai. It broadly follows the alignment of the existing Mumbai-Pune highway, will attract sizeable urban development all along its route.

### **13.3.13 Quarrying Zone**

Indiscriminate quarrying for building material in MMR has been ravaging the landscape and creating other environmental problems. After a comprehensive study of quarrying activities, which included long-term assessment of demand and availability of building materials, areas have been identified for quarrying purpose (MMRDA & Kirloskar, 1991) and environmental management plan for mitigating the adverse impacts has been recommended. These areas are to be taken into account in deciding quarrying zones in the revised Regional Plan.

### **13.3.14 Coastal Regulation Zone**

The Ministry of Environment and Forest, Govt. of India, by a notification issued under the Environment (Protection) Act, 1986, has notified a belt of 500 meters from the high tide line along sea coast, bays, estuaries, river and backwaters as a Coastal Regulation Zone (CRZ). The developments within the CRZ will be regulated in accordance with the notification and the Coastal Zone Management Plan to be prepared for the CRZ. The notification overrides the provisions of the Regional Plan.

## 13.4 **The Plan**

**13.4.1** The Regional Plan-1973, strongly believes in the planning's ability to contain growth or change its course. It, therefore, set desired population targets for different urban centers in the Region and based on predetermined norms of population and job densities made land use allocation for urbanisable or industrial zones. Since such allocation ignored growth trend or market potential, Mumbai's population could not be contained within 70 lakhs target, or Navi Mumbai could not achieve the population target of 21 lakhs. Similarly, developments taking place outside the defined urban centers along transport corridors could not be prevented. The mismatch between potential for growth and land allocation created artificial scarcity of land in some areas. The experience indicates that a strict correlation between population and its land requirement is not possible because of the variation in the intensity and use caused by changing needs and market demand. For the same reason, a frozen match between future distribution of population and land use as envisaged in the Regional Plan-1973, cannot remain valid over time. The zoning system and land use policies will therefore be guided not strictly by land requirements for development (based on population/density norms) but by the development potential of an area. Under such a system the areas on the periphery of the urban centers and those along transport corridors would play crucial role in absorbing new development.

**13.4.2** The Decentralisation efforts supported by restrictive policies on industrial and office development in the Island City of Mumbai have denied the city an opportunity to renew, adjust and keep pace with the changing technology and changing demands on its products and services. This is reflected (as brought out in Chapter 6 on Industrial policy) in the decline in the industrial employment and stagnancy in the industrial production in Mumbai. The future strategy would therefore be tailored to facilitating Mumbai's economic revival and creating employment opportunities for its growing population. Recycling of land locked under obsolete land uses, such as, industries, warehouses, wholesale markets, ports, etc., encouraging new non-polluting, hi-tech high-value-added industries, and promoting modern office centre for the growth of international trade and business will be essential features of the new Regional Plan.

**13.4.3** Based on the foregoing strategic considerations, the revised Regional Plan proposes a new land use zoning system and a new land use plan after taking into account probable population distribution and potential for economic growth. These proposals are explained in the following paragraphs:

## 13.5 **Population Projection and Distribution**

**13.5.1** For the purpose of revision of Regional Plan, the population of MMR is projected for the period upto 2011(Refer Chapter-3). According to this projection the total population of MMR which was 144.14 lakhs in 1991 is estimated to grow to 182.66 lakhs in 2001 and to 221.99 lakhs in the year 2011. The compound growth rate which was 2.72% during 1981-91 is expected to decline .

**13.5.2** The 1991 census reveals slowing down of growth rate of Greater Mumbai's population significantly, i.e. from 3.28% during 1971-81 to 1.86% during 1981-91. This trend is expected to continue in future due to natural and planned decentralisation efforts.

The population of the Western Sub- Region of MMR comprising Mira-Bhayander and Vasai-Virar areas, which was 1.73 lakhs in 1981 has jumped to 3.89 lakhs in 1991 registering a high growth rate of 8.44%. This trend is likely to continue on account of the presence of the suburban rail system and the attention this area is now receiving to ensure planned growth.

- 13.5.3** The North-Eastern Sub-region encompassing areas of Kalyan Complex and Bhiwandi has registered a growth rate of 5.55% during 1981-91. Bhiwandi, with a growth rate of 8.52% during this period, is the fastest growing town in the Sub- Region. It is likely to grow at a significant pace in future because of the sustained growth of powerloom industry, other job centres developing in its vicinity, and because of the improved accessibility that the Diva-Vasai railway line offers. The overall population of this Sub-Region is therefore expected to increase from 25.68 lakhs in 1991 to 47.55 lakhs by 2011.
- 13.5.4** Navi Mumbai, whose 1991 population was 5.94 lakhs against Regional Plan's target of 21 lakhs is expected to grow rapidly in the 1990s to reach a level of 10 lakhs by the year 2001 and 20 lakhs by 2011. Such a high growth is expected on account of commencement of suburban rail services to Navi Mumbai, housing programmes of CIDCO, shifting of wholesale markets and development of J.N. Port at Nhava-Sheva. Apart from Navi Mumbai, growth is likely to take place at four new urban centres. Of these, Rasayani and Mandwa are expected to have a population of 1.25 lakhs each by 2011 and those near Khopta and pen are expected to have a population of 1.0 and 0.5 lakhs, respectively.
- 13.5.5** Rest of the urban centers in MMR, namely, Alibag, Khopoli, Matheran, Karjat and Neral are likely to follow the past trend. By 2001, the share of rural population in MMR is likely to reduce to nearly 5%. This is largely on account of rapid urbanisation and inclusion of the villages in the boundaries of the local authorities of the urban centres. The projected population and its geographical distribution is given in Table-3.8 in Chapter-3.

## **13.6 Employment Projection and Distribution**

- 13.6.1** The employment projection for MMR for the period upto 2011 is made by projecting the trends in the productivity ratios observed over 1980-90 period. The projected ratios are then applied to the MMR's Domestic Product (DP) for the year 2001 and 2011 which is estimated on the basis of the trends in DP of MMR for 1980-90 period (refer para 4.4 & 4.5, Chapter 4). According to this projection the total establishment employment in the region is estimated to be 41.4 lakhs in 2001 and 54.35 lakhs in 2011. Viewed against the corresponding population projection, these estimates indicate that over the 1991-2011 period, the average employment-population ratio for MMR is expected to vary only marginally, i.e., from 0.2275 to 0.2422. However, there are large variations in these ratios for different Sub-Regions. Depending on the growth of economic activity and population of different Sub-Regions, over time, their employment-population ratios are expected to change. Some of the changes visualised are as follows:

1. The relocation of markets, sickness, and closure of industries and overall decentralisation trends may cause substantial loss of jobs in the Island

City. Although the new industrial policy, new office location policy, and possible recycling of obsolete land uses are expected to help generate new jobs, it is unlikely that the job losses would be fully compensated. Hence, employment in the Island City is assumed to decline. Yet, owing to greater decline in the population, the employment-population ratio may actually show marginal increase in the future.

2. Development of new commercial centres, namely, Bandra-Kurla Complex, Oshiware District Centre, and Kanjur Marg District Centre, possibility of industrial growth under the new industrial policy, and increasing acceptance of the suburban location for offices and shopping complexes will infuse new jobs in the suburbs of Mumbai.
3. In the Western Sub-Region, the availability of commuter railway would continue to support population growth. To avoid excessive strain on the suburban rail system, it would be desirable to create new job centres, such as, industrial areas, wholesale markets, and commercial centres. Some of these proposals have already been incorporated in the Draft Development Plans of Mira-Bhayander and Vasai-Virar area. These proposals would improve employment-population balance in this Sub Region.
4. In the North-Eastern Sub-Region, during 1981-91, the growth of population out-stripped the growth of jobs. This has reduced employment-population ratio from 0.28 to 0.19. The future employment growth in this Sub-Region is constrained by the limited availability of industrial land, and the absence of good infrastructure needed for fostering the growth of jobs in office sector, wholesale trade, and commerce. The employment in this Sub-Region is expected to grow at a moderate rate.
5. Massive investment in industrial and infrastructure projects, planned efforts to relocate wholesale markets, and promote office sector have helped Navi Mumbai to reach a high level of employment relative to population during 1980-90 period. This trend is expected to continue as Navi Mumbai is expected to be the focus of new investment and development efforts for the next two decades.
6. Rest of the Sub-Regions in MMR have rather limited potential for employment growth. In the long run, new employment opportunities are likely to occur in Khopta, Rasayani, Alibag-Rewas-Mandwa areas, where new economic activities are envisaged.

The foregoing employment growth possibilities in different parts of the Region are translated in the Sub-Region wise distribution of employment, which is given in Table-13.2 and shown in Figure-13.1.

## 13.7

### Zoning System

13.7.1 The Regional Plan-1973 divided the Region in five land use zones, namely,

- 1) Urbanisable Zone (U-Zone)
- 2) Industrial Zone (I-Zone)
- 3) Recreational Zone (R-Zone)

4) Forest Zone (F-Zone)

5) Green Zone (G-Zone)

The U-Zone covered existing towns and areas marked for their planned expansion, proposed new towns and other new township areas. In this zone, activities permissible in accordance with the development plans of the respective towns, including industries, are permitted. Large industrial areas outside the existing towns are designated as 'I'-Zone, and rest of the areas as 'F' or 'G'-Zone. In 'G'-Zone, no development except

<b>Employment Projection and It's distribution in MMR</b>								
Region / Sub region	Employment				Employment/Populn-Ratio			
	1980	1990	2001	2011	1980	1990	2001	2011
1. Greater Mumbai	2,199,381	2,425,881	2,795,250	3,393,510	0.2668	0.2444	0.2446	0.2624
1.1 Island City	1,399,312	1,349,367	1,320,000	1,271,250	0.4260	0.4250	0.4400	0.4500
1.2 Western suburb	506,438	637,968	862,750	1,241,100	0.1772	0.1616	0.1750	0.2100
1.3 Eastern suburb	293,631	438,546	612,500	881,160	0.1398	0.1565	0.1750	0.2100
2. Western Region	44,472	91,065	186,041	339,996	0.1338	0.1517	0.1750	0.2100
3. North-East Region	497,107	551,883	813,824	1,109,467	0.2763	0.1881	0.1930	0.2100
4. Navi Mumbai Region	29,516	102,567	268,308	464,992	0.1144	0.1870	0.2300	0.2560
5. Neral-Karjat region	10,387	14,978	19,851	23,050	0.0784	0.0902	0.1100	0.1300
6. Panvel-Uran Region (Outside NM)	9,191	11,774	22,719	42,524	0.0660	0.0687	0.1000	0.1480
7. Pen Region	4,941	8,801	12,942	22,191	0.0670	0.0997	0.1400	0.1600
8. Alibag Region	8,713	16,100	19,817	37,612	0.0879	0.1493	0.1800	0.2000
<b>Total</b>	<b>2,803,708</b>	<b>3,223,049</b>	<b>4,138,752</b>	<b>5,433,342</b>	<b>0.2531</b>	<b>0.2275</b>	<b>0.2239</b>	<b>0.2421</b>

**Table-13.2**

existing development and certain special activities, is envisaged. One of the major objectives underlying this zoning system was to prevent urban sprawl and contain future development within well- defined urban centres.

**13.7.2** The experience indicates that the zoning system has not been adequate to guide and regulate the development satisfactorily. For example, the 'G'-Zone was intended to be a conservation zone, in which some development activities were permitted as exceptions, such as, a) the expansion of existing gaothans or cooperative housing of local villagers within 200 meters, b) bungalows on one-acre plot, c) small scale and resource based industries, d) highway amenities like petrol-pumps, transit godowns etc. However, these provisions were exploited to develop residential complexes around existing gaothans as seen in Vasai-Virar area, warehousing complexes such as in South of Bhiwandi and isolated development of godowns, container, parks, farm houses, holiday homes, small scale industries, shops, restaurants, etc. along the highways. The zoning system also does not specifically deal with issues relating to environmental degradation caused by atmospheric pollution, indiscriminate quarrying activities, reclamation of low lying areas, developments along sea-coast which are the major environmental concerns today.

**13.7.3** In order to remove such inadequacies and to translate the new development strategy into a spatial frame work, it is necessary to modify the zoning system. The new system distinguishes 'development areas' from 'conservation areas' and makes

# MMR Employment

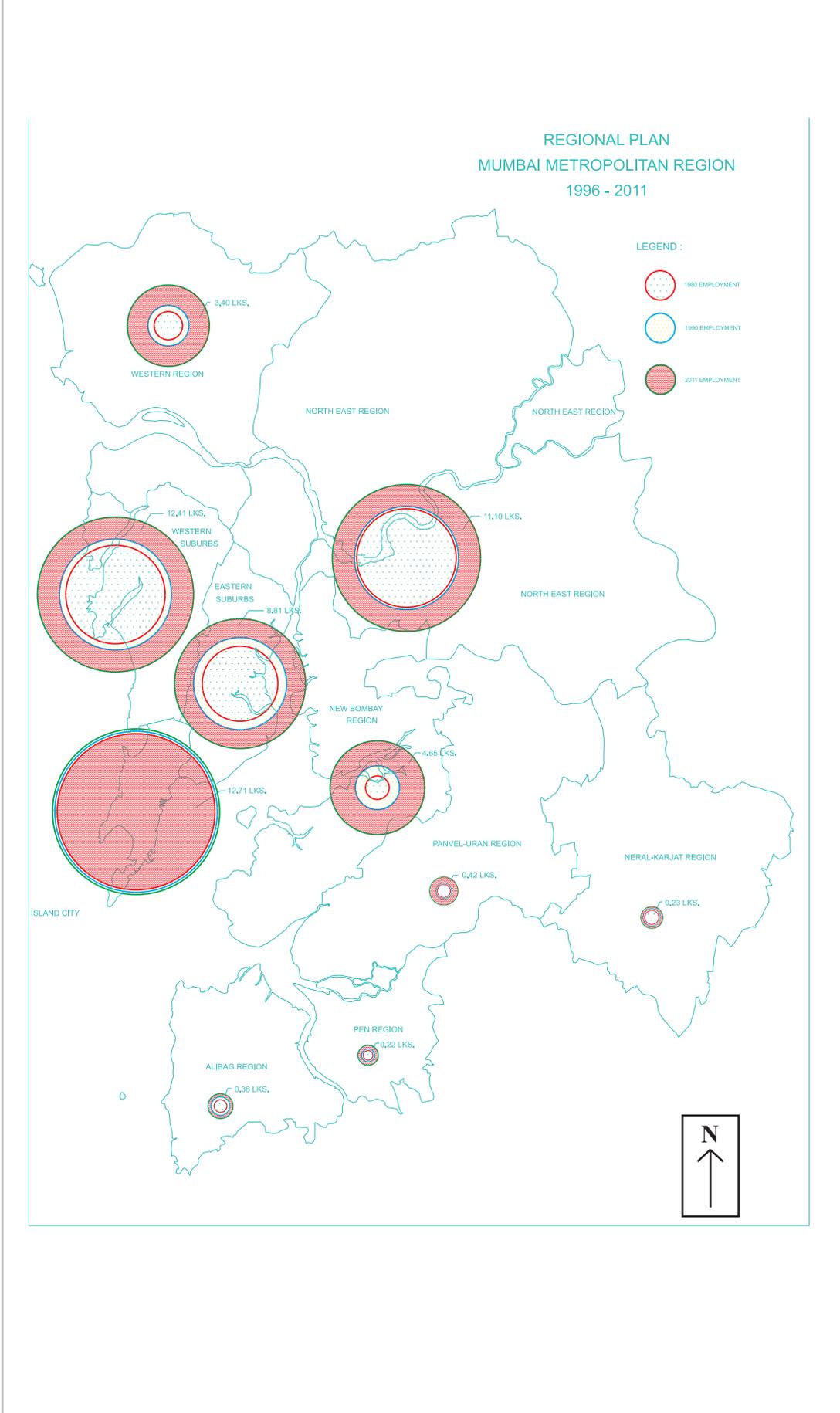


Figure-13.1

appropriate provisions for regulating development under each zone. The various zones proposed under the modified zoning system are as under :

MMR Development areas	MMR Conservation areas
Urbanisable Zone-1	Green Zone-1
Urbanisable Zone-2	Green Zone-2
Industrial Zone	Forest Zone
Recreation & Tourism	National Parks
Development Zone.	Sanctuaries & Heritage Sites

The rationale underlying the above classification, the detailed land use provisions under each of them and the major land use proposals of the revised Regional Plan are explained in the following paragraphs.

## 13.8 Land Use Proposals

### 13.8.1 Urbanisable Zone-1 (U-1)

In the Regional Plan-1973 areas under existing development and those earmarked for future development are zoned as 'U-Zone'. In the Revised Regional Plan, urbanisation is envisaged at two levels, and two separate zones, namely, 'U-1' and 'U-2' are proposed. U-1 zone will primarily cover areas where more intensive urban development and economic activity is expected in the future. It will include all the existing urban centres, areas earmarked for New Towns, growth centres and other areas having potential for urban development. Most of these areas Development Plan need to be urgently prepared in accordance with the framework of the Regional Plan. The concerned Planning Authorities should then regulate the development in accordance with such plans.

In the Regional plan 1973, the prime focus of the new development in 'U'-Zone was on Navi Mumbai which was expected to absorb two-third of the incremental growth of urban population between 1971-91. However, it has grown rather slowly, and as indicated in Para 13.5.4, it is expected to reach a level of 10.00 lakh population by the year 2001 and 20.00 lakhs by the year 2011. Thus it will absorb only about 16% of the future growth of urban population in the Region. It is therefore inevitable that other urban centers, such as, Thane, Kalyan, Bhiwandi, Mira-Bhayander, Vasai-Virar and some new growth centers will play a vital role in absorbing future urban growth. The list of urban centers which constitute the Urbanisable Zone-1 in the revised Regional Plan, and the urban growth expected in these urban centers in terms of population over the next two decades are given in Table-3.8 in Chapter-3.

### 13.8.2 Urbanisable Zone-2 (U-2)

In the revised Regional Plan certain areas beyond the 'U-1' Zone are designated as Urbanisable Zone-2 (U-2). The U-2 Zone, as a general principle, includes lands which have potential for urban development. In particular, it includes lands within 1 km. on the either side of important roads and within 1.5 km. radius from railway stations subject to other physical and statutory constraints. Since the urban growth is just beginning to take place in this Zone, it is considered as an Urbanisable Zone in transition. Hence, most of the urban uses including job centers like industrial areas,

for non- polluting, hi-tech industries, retail shopping, local offices, etc. will be permitted.

Since the 'U-2' zone covers extensive areas outside the existing or proposed urban centers, it is envisaged that the development in this zone will almost entirely depend on the response from the private land owners and developers. No formal Development Plan for these areas will be prepared but the development will be regulated on the basis of broad network of roads and the Development Control Regulations. The owners carrying out development will be required to ensure provision of infrastructure and public facilities at their own cost and maintain them for a specific period. The introduction of 'U-2' Zone will help -

1. to increase supply of land in the outlying areas;
2. to induce private investment in urban infrastructure; and
3. to avoid unauthorised constructions.

The Development Control Regulations similar to those applicable to 'U-2' zone can also be adopted for newly developing areas in 'U-1' zone.

In order to encourage land pooling and organised development of large areas with adequate provision of infrastructure and public facilities, a graded scale of FSI and weightage system allowing additional built-up area is proposed in the new Development Control Regulations. While, for the plots upto 0.5 ha. the FSI is 0.2, it progressively increases with the area of plot, to reach a peak value of 0.34 for a plot of 10 ha. or more. The weightage system proposed also allows additional built-up area ranging between 20 and 40 % if the land owner or developer allocates additional land for public facilities over and above the area stipulated by the Development Control Regulations. Additional built-up area ranging between 10 and 25 percent will also be admissible if a part of the land is used for small plots with area upto 40 sq.m. The details of this incentive scheme and the rationale underlying it are explained in Chapter-9.

### **Important Proposals of Urbanisable Zone (U-1 & U-2)**

The future strategy outlined in para 13.4 implies continued emphasis on decentralisation, visualises emergence of a new core for the growth of population and economic activity and suggests future pattern of growth that matches the development potential of different areas. Translating the strategy into a revised land use Plan implies the changes in the Regional Plan-1973. It also requires identification of new areas for development. Important proposal in this regard are highlighted in the following:

#### **Mira-Bhayander**

This area located on the north-western periphery of Mumbai and served by Western Railway suburban service has significant growth potential. The area covered by the layout of the Mira-Bhayander township was designated in the Regional Plan, 1973 as 'U'-Zone. The Mira-Bhayander Municipal Council has published in December, 1992, the Draft Development Plan for the 88.74 sq.km. area included in its jurisdiction. The development proposals of this plan, which extend over 'G'-Zone of the existing Regional Plan would not be feasible unless the 'G'-Zone is deleted in the revised Regional Plan. Hence, the entire area of the Mira-Bhayander town is proposed to be designated as 'U-1' zone except the areas covered by Reserved Forest, Protected Forest, and areas likely to be included in the Coastal Zone Management Plan, and

Recreation and Tourism Zone.

### **Bhiwandi**

By an amendment to the Regional Plan sanctioned in April, 1992, the 'G' Zone areas of Bhiwandi Municipal Council have been converted into 'U'-Zone. However, even beyond Municipal limits, urban development is taking place. It is proposed to include in 'U-1' Zone area south of Bhiwandi railway station, and area along Bhiwandi-Thane road. Similarly, area between Bhiwandi Municipal Council and Kalyan Municipal Corporation, along Bhiwandi-Kalyan road, is proposed to be converted from 'G' Zone to 'U-' Zone. An area of about 100ha. on the North of Bhiwandi is earmarked as I-Zone and reserved for textile industries and designated as "Textile Industries Zone".

### **Kalyan Complex**

The amendment to Regional Plan covering Kalyan Complex was sanctioned in October, 1990. This included a large area earmarked for future urbanisation. Since a large part of this area is already occupied by developments carried out unauthorisedly, it is necessary to open up new areas for development where private initiative could be encouraged. The Development Plan of the area of Kalyan Municipal Corporation may be prepared within the broad framework of policies laid down in the Regional Plan. The Development Plans of Ulhasnagar, Ambarnath and Badlapur including surrounding areas for which MMRDA is the Special Planning Authority may also be prepared similarly. Area on the north of MIDC's Barvi pipe line road (between Kalyan Octori Post and Badlapur) is proposed to be converted from 'G' Zone to U-2 Zone In addition, 'U-2' zone is also proposed along the Diva-Panvel railway line between Nilje and Talaja railway stations and along the Mumbai-Pune National Highway, between Shil and Talaja. (Figure 13.3).

### **Panvel**

Considering the growing importance of Panvel and the consequent pressure of development experienced in the surrounding area, U-2 zone is proposed near Panvel along NH 4 and NH 17. This stretch of Mumbai-Pune National Highway is already dotted all along its length with developments such as, petrol pumps, holiday resorts, restaurants, transport godowns, etc. In order to channelise such development pressures into planned urban development, it is necessary to prepare a detailed Development Plan for this area by appointing CIDCO as the Special Planning Authority. (Figure 13.4).

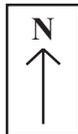
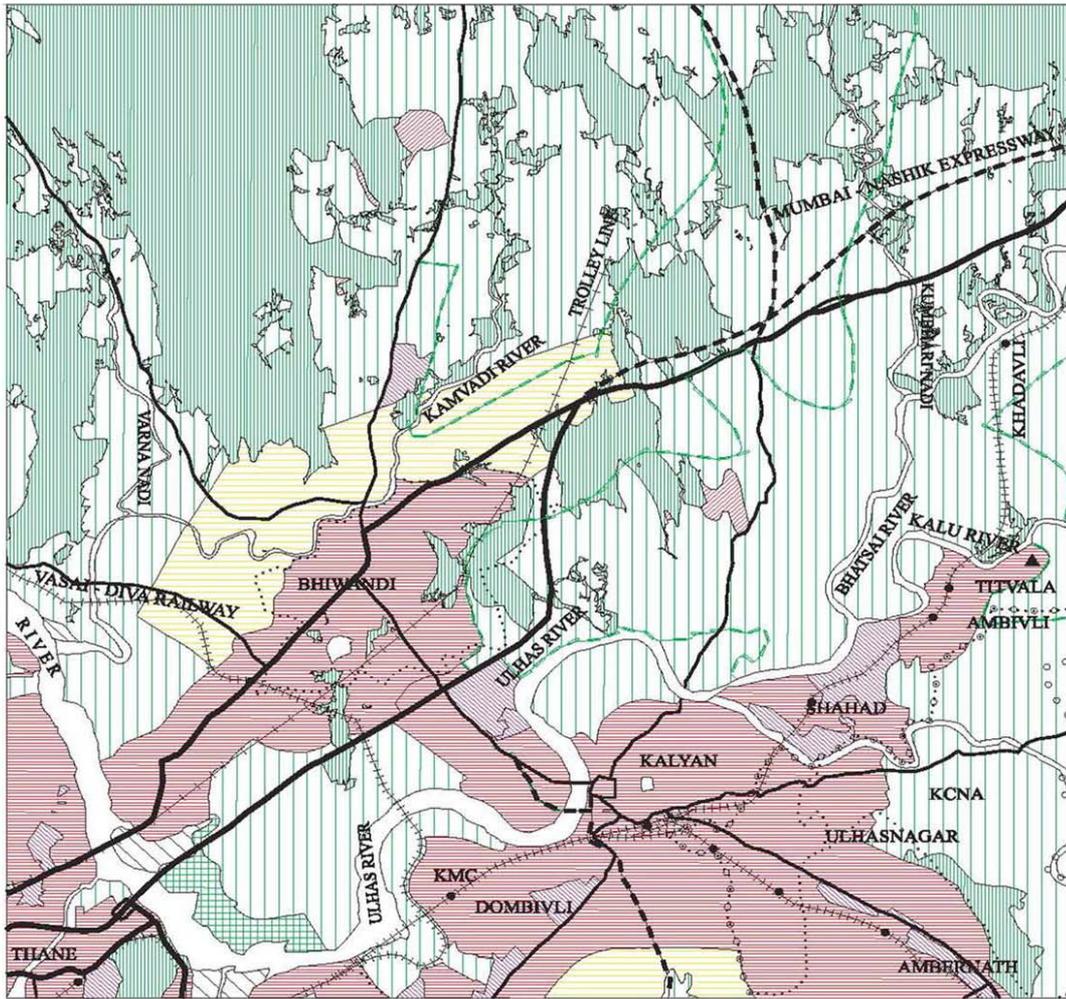
### **Panvel-Karjat Corridor**

Area along the proposed Panvel-Karjat railway will also acquire urban development potential once the railway line is commissioned. The Regional Plan may at that time be suitably amended to provide for such urban development.

### **Khopta**

An area of about 4266 ha. towards the east of Khopta bridge is earmarked in the revised Regional Plan as a site for potential growth centre. (Figure 13.5). Considering

# Development Proposals for Bhiwandi



**LEGEND :-**

URBANISABLE ZONE - U1		URBANISABLE ZONE - U2	
INDUSTRIAL ZONE - I		FOREST ZONE - F	
GREEN ZONE - G1		RECREATION & TOURISM ZONE - RTZ	
GREEN ZONE - G2		QUARRY ZONE - Q	

Figure-13.2

its advantages such as proximity to Jawaharlal Nehru port and the port-based industrial areas of Navi Mumbai, a supporting residential township can develop in this area with some related industrial and warehousing activities. By 2011 a population of about 1,00,000 is expected in this growth centre. However, for the time being U-2 zone is proposed for this area. Given the proximity to Navi Mumbai, CIDCO may be appointed as the Special Planning Authority for this area.

### **Rasayani**

Rasayani and 22 surrounding villages with a total area of about 4161.25 ha. is proposed to be designated as 'U-1' zone, and it is recommended for development as a new growth center with a projected population of about 1.25 lakhs by year 2011. (Figure-13.4).

### **Land Development for Mumbai-Pune Expressway**

For development of Mumbai-Pune Expressway, it is proposed to designate an area of about 800 ha. near village Chowk for the town Mega City Project as proposed by the Public Works Department.

### **Pen**

An area of about 1000 ha. west of Pen and north of Pen-Alibag road is proposed to be converted from 'G'-zone to 'U-2' zone to support new industries coming up along Mumbai-Goa National Highway just outside the MMR boundary. (Figure-13.5). The estimated population of this township by year 2001 is 0.5 lakhs. In due course limits of Pen Municipal Council may be extended to include this area.

### **Mandwa**

A Memorandum of Understanding (MoU) has been signed for carrying out a detailed feasibility study of the new airport in MMR. However, since Mandwa has been considered as one of the most appropriate locations, it has been indicated as one of the five alternative sites for the airport. (Figure 13.6).

### **Development of jetties and warehousing along Dharamtar Creek**

Maharashtra Maritime Board (the erstwhile Commissioner of Inland Water Transport) has given NOC for location clearance to a number of projects involving construction of jetties and warehousing facilities along Dharamtar Creek. Some proposals involve midstream transshipment of chemicals through barges which will be brought to jetties in the Dharamtar Creek. Near the jetties storage facilities are proposed for these goods. From these warehouses, goods will be distributed to the hinterland by road transport. In some cases cement will be brought from Gujarat (Porbunder) in barges to a jetty in Dharamtar Creek where it will be bagged and distributed by road transport.

The developments will turn Dharamtar Creek into a small port requiring maintenance of the draught, navigational aids, etc. The road traffic generated will also require significant strengthening of road infrastructure (including construction of new roads). It is therefore recommended that the MMB should instead of giving NOCs to individual jetties, prepare a comprehensive plan for development of "Dharamtar Port". It should also take care of traditional fishing rights in the creek and facilities for fishing. MMB

## Development Proposals for Ulhasnagar, Kalyan

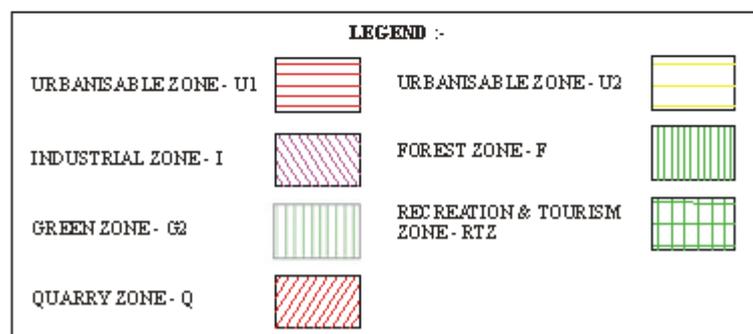
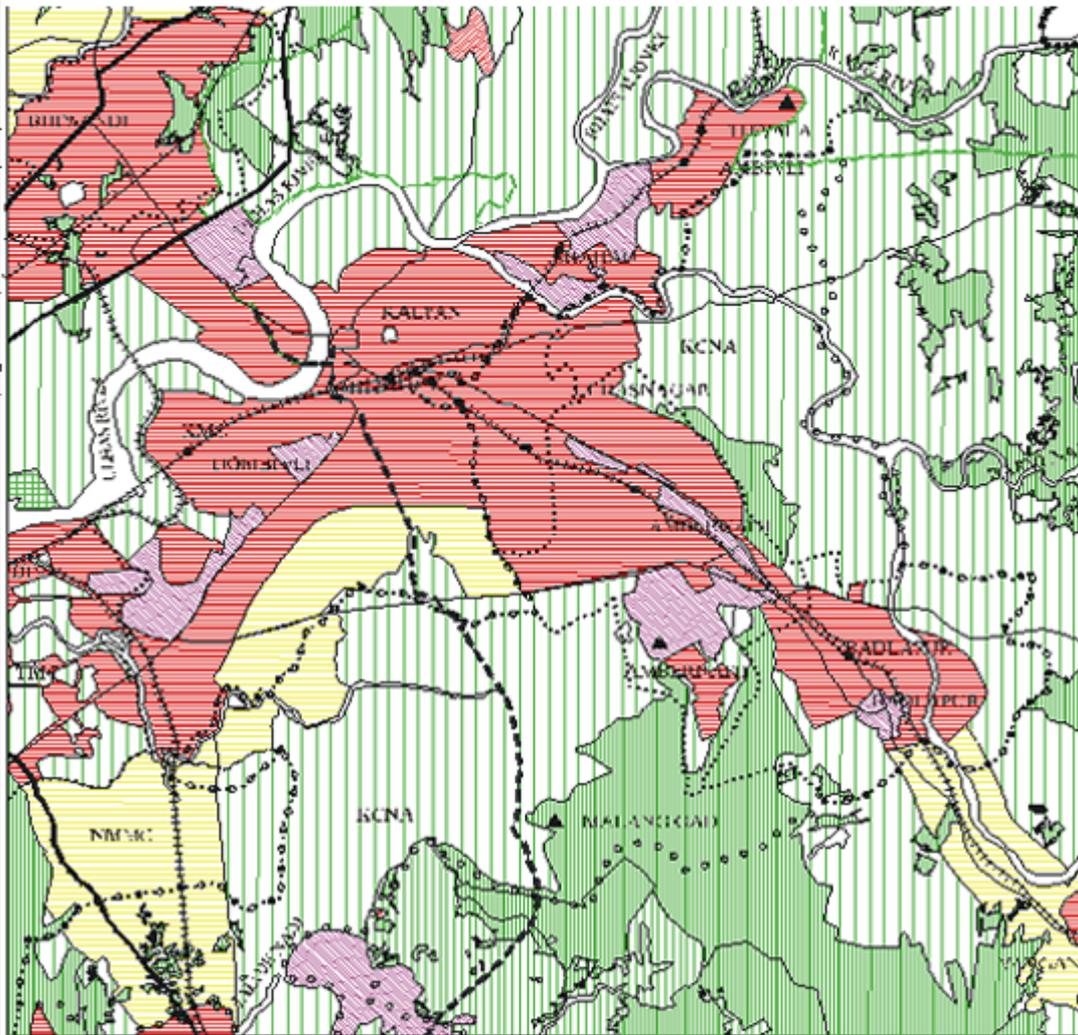
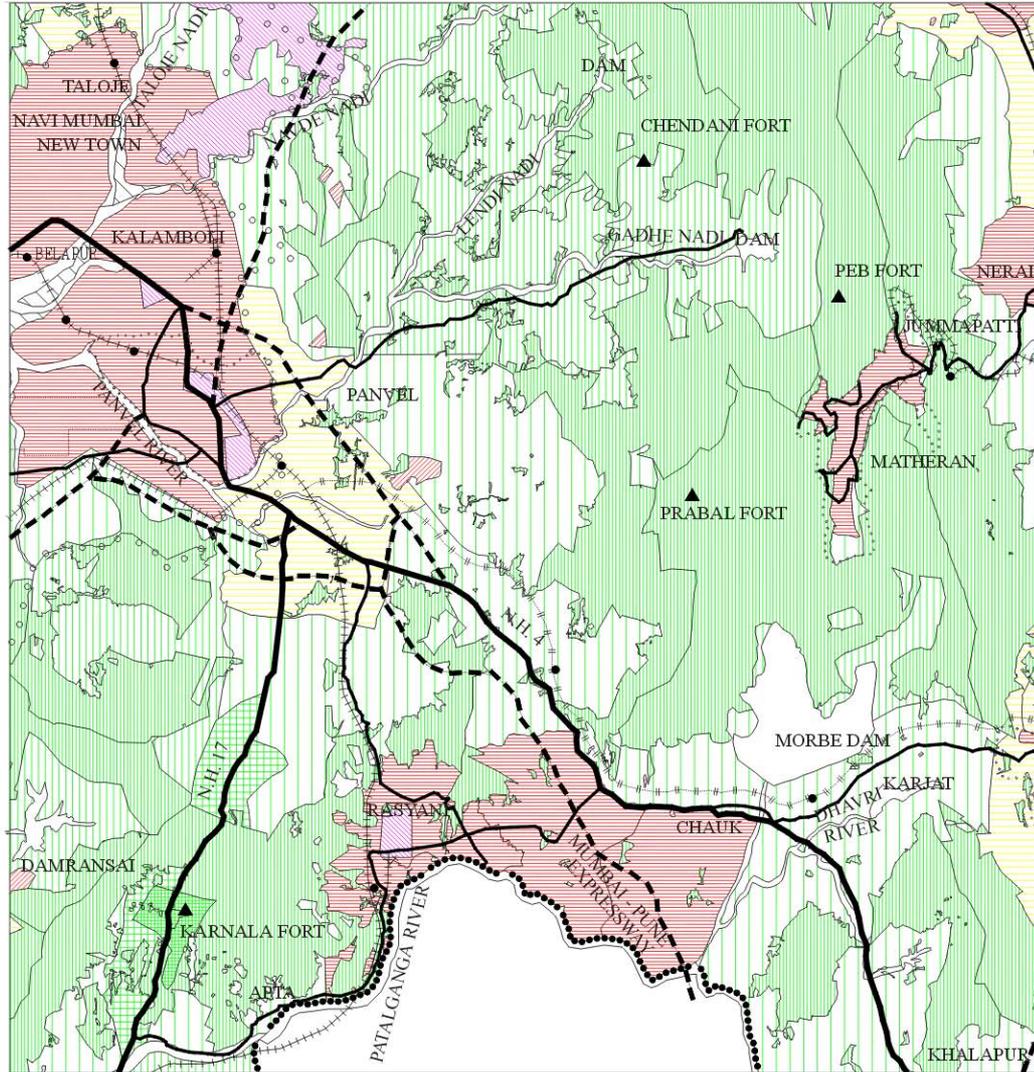


Figure-13.3

# Development Proposals for Panvel



LEGEND :-

URBANISABLE ZONE - U1



URBANISABLE ZONE - U2



INDUSTRIAL ZONE - I



FOREST ZONE - F



GREEN ZONE - G1



RECREATION & TOURISM ZONE - RTZ



GREEN ZONE - G2



QUARRY ZONE - Q



Figure-13.4

should also levy an infrastructure fee while granting permission to construct jetties, the proceeds of which should be used to finance other required infrastructure.

In the Regional Plan both the banks of Dharamtar Creek are included in G-2 Zone. Construction of jetties is permissible in G-2 Zone as well as under the Coastal Zone Regulations. The basic question is of allowing warehousing in the G-2 Zone. However, if development of port as suggested above is not feasible, and there is an urgency to promote water transport, it is recommended that warehousing and related facilities may be permitted within a distance of 750m. from the proposed jetty subject to the sanctioned CZMP and environmental clearance particularly in the case of handling and storage of hazardous chemicals.

### **Jetties and Warehousing along other creeks in MMR**

Development of jetties and warehousing may be permitted along other creeks in MMR as proposed for Dharamtar Creek. Development Plans may have to be amended accordingly.

### **Wangani-Karjat**

Considering the long term development potential of the areas along the railway line between Wangani and Karjat, it is proposed to open up these areas for development. Some of these areas are presently being developed in accordance with the layouts prepared as a part of the Regional Plan-1973. At Wangani, an area of about 266 ha. earmarked in the Regional Plan-1973 for industrial use has been denotified from acquisition by the MIDC. It is proposed to convert this area into 'U-1' zone. The areas covered by the layouts at Wangani and Neral and those covered by the Development Plan at Karjat are earmarked as 'U-1' zone in the revised Regional Plan. Rest of the belt is earmarked as 'U-2' zone. (Figure-13.7). The developments in such U-1 Zone which are outside the jurisdiction of any municipal authority or whose Development Plan is not yet prepared will be regulated in accordance with the regulations for U-2 zones.

## **13.8.3 Industrial Zone (I-Zone)**

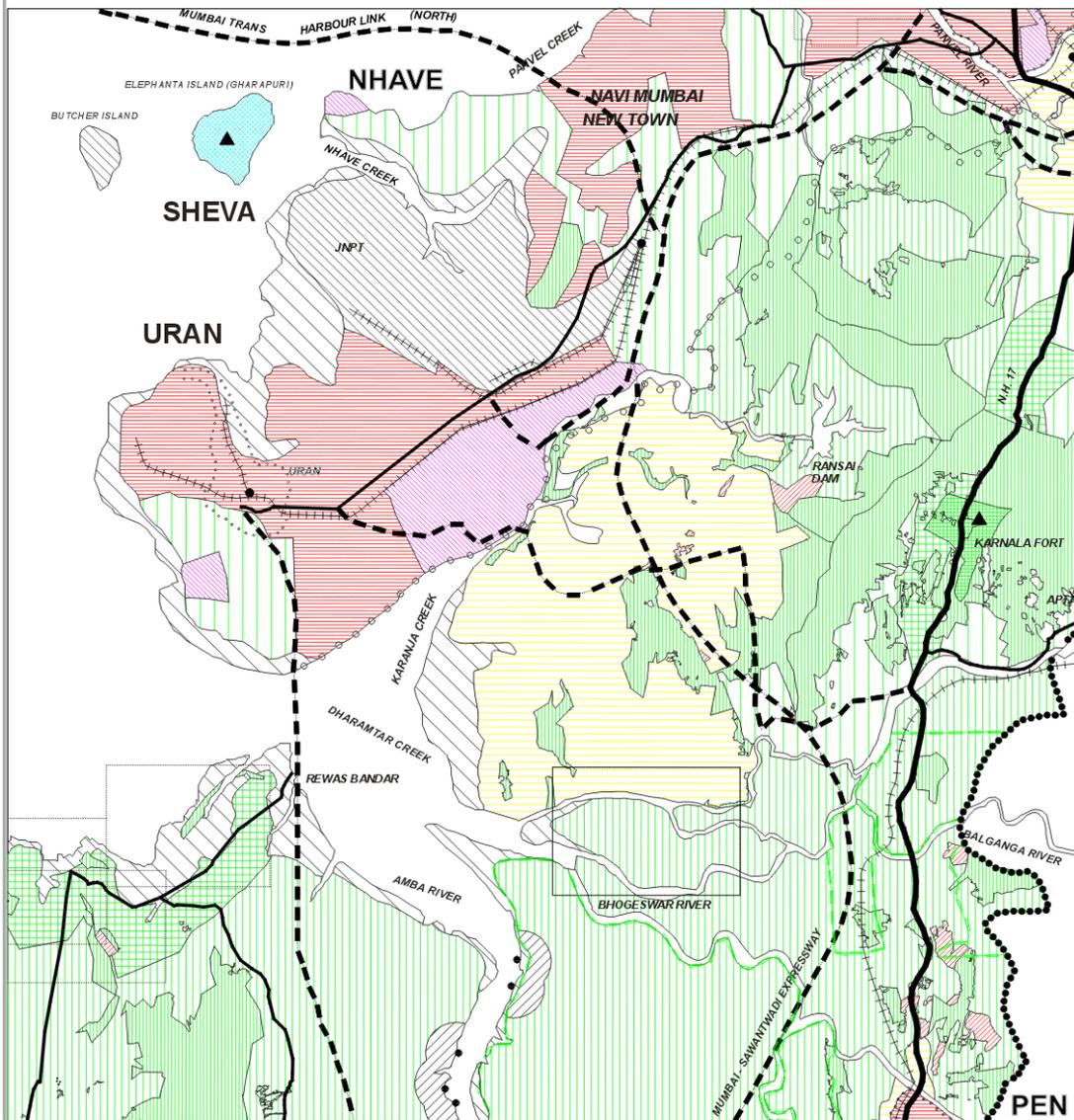
### **Industrial Growth in the Past**

The Regional Plan-1973 estimated that the industrial employment in the Region would increase to 14 lakhs by 1991. Assuming a density of 125 workers per hectare in Greater Mumbai and 75 workers per hectare elsewhere in the Region, an area of 14,000 ha. was allocated for industrial use. This included following new industrial areas recommended by the Regional Plan.

1. Port-based industries near new port in Navi Mumbai. 1,500 ha.
2. Vasai Tehsil. 200 ha.
3. North of Bhiwandi. 200 ha.
4. Near Apte Turade. 100 ha.

The Regional Plan also recommended deletion of about 800 ha. of industrial area in Greater Mumbai. This recommendation has been carried out in the revised

# Development Proposals for Khopta



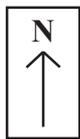
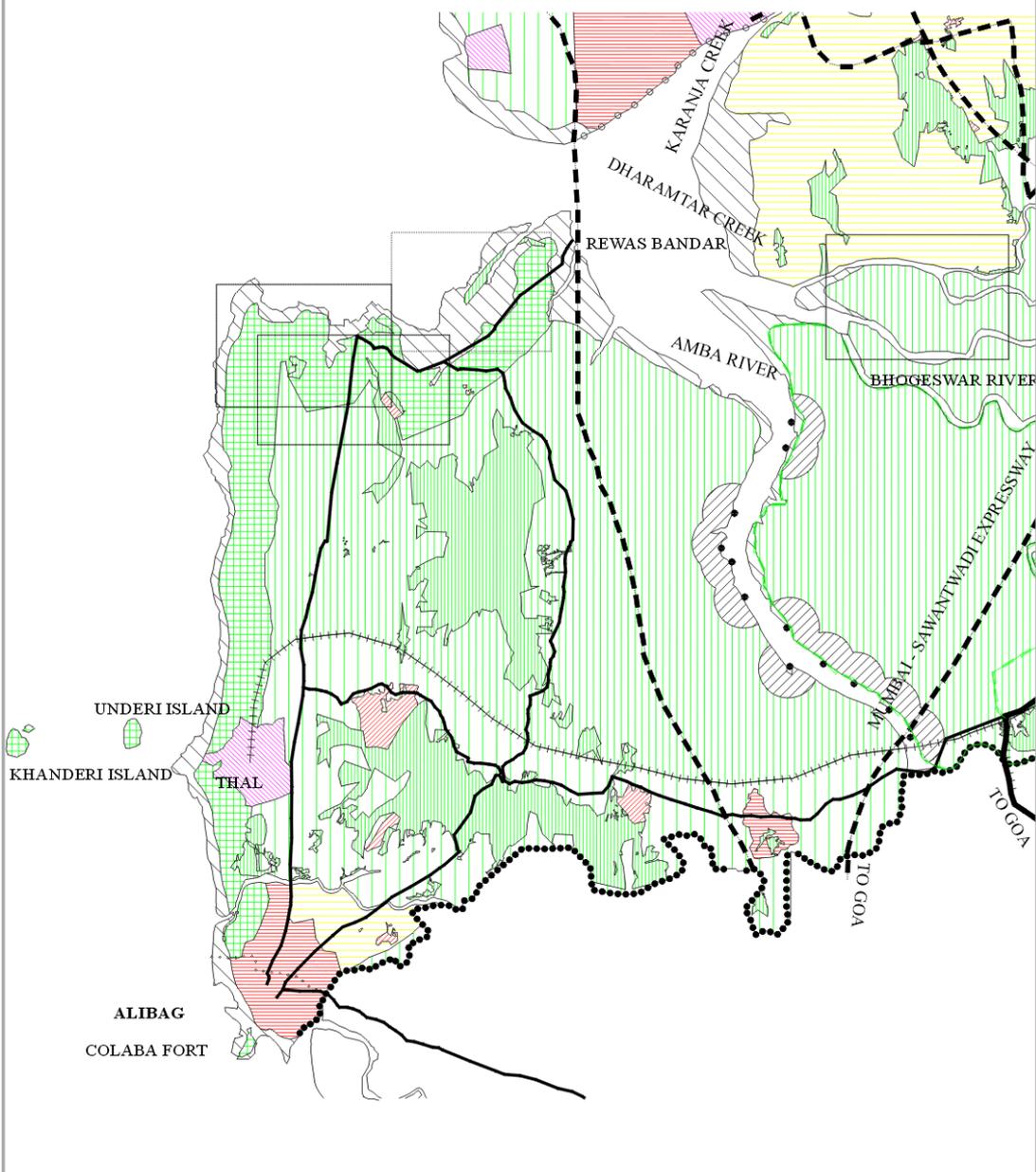
LEGEND :-

URBANISABLE ZONE - U1		URBANISABLE ZONE - U2	
INDUSTRIAL ZONE - I		FOREST ZONE - F	
GREEN ZONE - G1		RECREATION & TOURISM ZONE - RTZ	
GREEN ZONE - G2		QUARRY ZONE - Q	

Airport

Figure-13.5

# Development Proposals for Alibag - Rewas



LEGEND :-

URBANISABLE ZONE - U1		URBANISABLE ZONE - U2	
INDUSTRIAL ZONE - I		FOREST ZONE - F	
GREEN ZONE - G1		RECREATION & TOURISM ZONE - RTZ	
GREEN ZONE - G2		QUARRY ZONE - Q	

Figure-13.6

Development Plan for Greater Mumbai. The Development Plan for Navi Mumbai has provided for 1,600 ha. area near new J.N. port for port-based industries. The industrial area of about 300 ha. at Waliv-Gokhiware in Vasai Tehsil has also been developed in the 1980s. However, 200 ha. industrial area at Bhiwandi could not be developed by the MIDC on account of the difficulties of land acquisition. For the same reason, MIDC also gave up its plans to develop 266 ha. of industrial area at Wangani.

The Regional Plan for extended area of MMR (Pen-Alibag) sanctioned in 1985 included 330 ha. area for the Rashtriya Chemicals and Fertilizer Corporation Ltd. (RCF) Plant at Thal- Vaishet. In addition, it recommended that MIDC could be permitted to set up 300 ha. of industrial area in engineering and other non-polluting industries. The MIDC has however made no proposal to set up any industrial area.

The latest compilation of industrial areas in the Region indicates that a total of 16,372 ha. area is allocated for industrial use of which 10923 ha. has so far been utilised which is much less than the 14,000 ha. estimated in the Regional Plan-1973. The industrial employment has also not grown as expected and has, in fact, been declining since 1971. With the result, the industrial employment in 1988 was only 5.99 lakhs against 14 lakhs estimated for 1991.

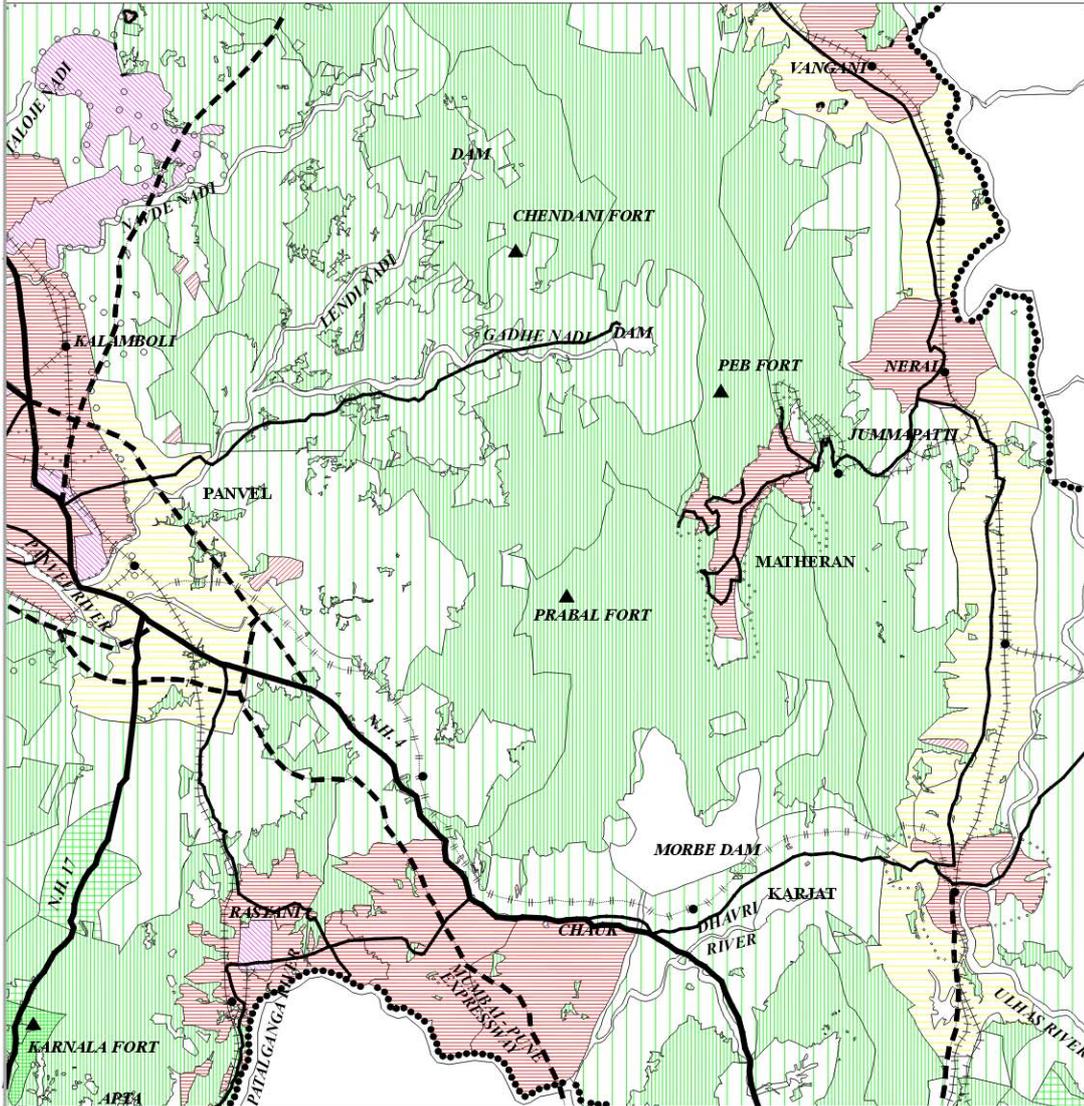
### **Proposals for the Future**

The declining trend in the industrial employment caused by the obsolescence, sickness and closure of existing industries, particularly in Greater Mumbai, and the capital intensive nature of the modern industries, suggest that it is unlikely that the industrial employment will substantially increase in the future. Moreover, about 5450 ha. of land is still presently available. In view of this, far from making additional land allocation in the revised Plan, what is needed is to bring about changes that will facilitate structural changes in the Region's industrial development. Environment-friendly, high-tech, high value-added, export- oriented industries and those for which Mumbai or its proximity is considered essential should be encouraged and fostered. Similarly, old, obsolete and sick industrial units need to be encouraged to revive or make way for other industries. The changes proposed in the Industrial Growth and Location Policy will facilitate such transformation in Greater Mumbai. The revised Industrial Policy will also make it possible to develop Export Processing Zones (EPZ) on a part of the Mumbai Port Trust (BPT) lands near Mumbai port. Similar EPZ may also be developed near J.N. Port in Navi Mumbai and near proposed second international airport at Mandwa. (Please refer to Industrial Growth Policy. Chapter-.6).

### **Technology Park**

The technology based industries in the Region can immensely benefit from the research and experimentation in technology development. A Technology Park combines in a single complex research, development and manufacturing activities and provides right atmosphere for development of higher technology. Good linkages with port and airport, and good living environment for the people engaged in the Technology Park are necessary for successful development of Technology Park. An area of about 4266 ha. on the east of new Khopta bridge across Karanja creek is earmarked for a new Growth Center which could include a Technology Park and advanced research.

# Development Proposals for Karjat



LEGEND :-

URBANISABLE ZONE - U1



URBANISABLE ZONE - U2



INDUSTRIAL ZONE - I



FOREST ZONE - F



GREEN ZONE - G1



RECREATION & TOURISM ZONE - RTZ



GREEN ZONE - G2



QUARRY ZONE - Q



Figure-13.7

### **New Industries in Vasai-Virar**

The Vasai-Virar Sub-Region has about 300 ha. of industrial area capable of generating about 30,000 jobs. It is however too small to provide enough job opportunities for a population of 12 lakhs which is expected in this Sub-Region in the next two decades. It is, therefore desirable to provide additional industrial area in this Sub-Region. The Maharashtra Industrial and Technical Consultancy Organisation (MITCON) has suggested creation of new industrial area for electronic and plastic industries. Accordingly, the MIDC has identified certain locations and proposed 559 ha. of new industrial areas at three different locations. Of these, 162.68 ha. at Gaspada near Virar and 215.18 ha. at Bilapada near Nallasopara are suitable locations. The third site admeasuring 181.19 ha. at Poman is situated in the undeveloped land surrounded by hills and forests. It is therefore suggested that this industrial area should be shifted to a site on the east of Mumbai-Ahmedabad National Highway. Since the precise locations of these three industrial areas are not yet firmed up, it is recommended that the Development Plan for this area being prepared by CIDCO should suitably incorporate these sites.

### **Expansion of Industrial Area on Kalyan-Bhiwandi Road**

The MIDC has developed 48.16 ha. of industrial area on the Kalyan-Bhiwandi road. This area is fully occupied. Originally MIDC had envisaged an industrial area of 116.03 ha. but 68 ha. area is still to be acquired. Considering the fact that the 200 ha. industrial area on the north of Bhiwandi proposed in the present Regional Plan has failed to develop, the revised Plan suggests conversion of entire area between the MIDC's area and the Bhiwandi by-pass into a new industrial zone. (Figure-13.8). If the MIDC is unable to acquire this land, the industrial area should be developed by encouraging private initiative. Development of additional industrial area near Bhiwandi will facilitate diversification of Bhiwandi's industrial base which today is essentially confined to powerloom industry.

### **Land under New Industrial Areas**

The new industrial areas recommended in Vasai-Virar Sub-Region and Bhiwandi and Technology Park at Khopta add upto about 1000 ha. of additional industrial area in the Region. With about 5450 ha. unutilised industrial land, a total of 6450 ha. additional land will be available in the Region for new industrial development in the next two decades. This area together with the land that might be available by recycling of land of the existing industries will provide adequate land for industries for the next two decades. In addition, non-polluting hi-tech, high value-added industries will be permitted in 'U2' Zone. The extent of industrial growth through such industrial area will depend upon the market demand.

### **13.8.4 Recreational and Tourism Development Zone (RTD Zone)**

The present Regional Plan had identified a number of places for Recreational and Tourism activity and a few areas were even earmarked as 'R'-Zone. However, in the absence of planned effort by any public agency, and because of lack of any incentives for private development of these areas, no new major recreational area or facilities could be created in the Region during the last two decades. Over the years, because

of the general increase in income and mobility, the demand for recreational and tourism facility has increased manifold and the existing facilities, particularly the popular ones, like Matheran, are proving to be highly inadequate.

The revised Regional Plan has therefore proposed creation of Recreational and Tourism Zone of 500 m. width around places of recreation and tourism value, such as, archaeological and historical monuments, religious places, places of architectural, natural and scientific interest, wild life sanctuaries, national parks, rivers and lakes, and areas of natural scenery. Some of these areas are identified in the revised Regional Plan.

Sanjay Gandhi National Park at Borivali is the largest National Park/Sanctuary. The present area of this Park is 8616 ha. and it extends upto the southern bank of Vasai River. The forest area across the creek is equally beautiful and has great recreational value. The revised Plan suggests inclusion of this area, admeasuring about 1693 ha. in the National Park. It is understood that the Forest Department has already mooted a proposal to this effect. More such areas can be identified later with the approval of the Tourism Department and MMRDA.

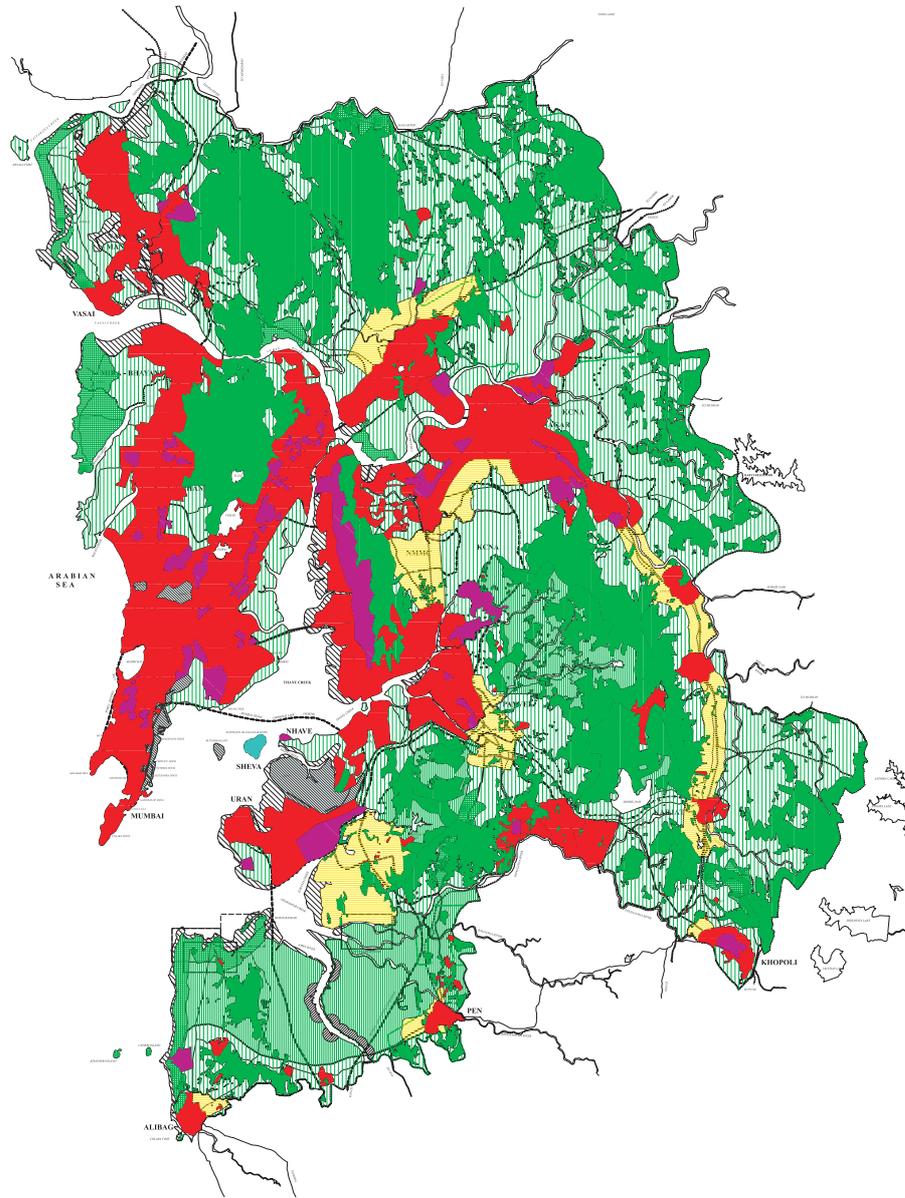
In the RTD Zone, excluding the National Parks, Sanctuaries and the places of archaeological and historical importance and a distance of 100 m from the boundary, a very restricted development intended for promoting recreational activity and tourism, will be permitted. This will include hotels, holiday homes, resorts, club houses, restaurants, shops, swimming pool, camping grounds, water sports facility, etc. The size of the plot in the sub-division plan for holiday homes, resorts, etc. which is within the RTD Zone shall not be less than 500 sq.m. Similarly, an FSI of 0.2 is proposed in RTD Zone as against 0.05 in G-Zone.

The Regional Plan-1973 for extended area of MMR (Pen-Alibag)-1985 has designated a belt of 1 km. width along the coast between Rewas and Alibag as 'R' Zone. This is primarily a conservation zone where only recreational activities are permissible. This zone is further sub-divided into 'R-1' Zone (upto 500 m. from the coast) and 'R-2' Zone (between 500m. and 1000m. from the coast). In 'R-1' Zone only three types of developments are permissible, namely,

1. Expansion of existing goathans;
2. Fishing and allied activities; and
3. Tourists, hotels, one each at the 3 identified sites.

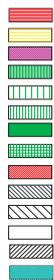
'R-1' Zone also extends along Patalganga and Amba rivers. 'R-2' Zone provisions are somewhat more liberal and allow additional developments. However, by a notification issued by the Ministry of Environment and Forests, Govt. of India, under the provisions of Environment (Protection) Act, 1986, with effect from February, 1991, area covered by 'R-1' Zone is designated as Coastal Regulation Zone (CRZ) and more stringent regulations are applicable to the area. These regulations cover the entire coastal area in the Region including bays, estuaries, backwaters, creeks and rivers.

**Regional Plan Mumbai Metropolitan Region Landuse Plan 1996 - 2011**



**LEGEND**

- URBANISABLE ZONE - U1
- URBANISABLE ZONE - U2
- INDUSTRIAL ZONE - I
- FOREST ZONE - F
- GREEN ZONE - G1
- GREEN ZONE - G2
- NATIONAL PARK / SANCTUARY
- RECREATION & TOURISM ZONE - RTZ
- QUARRY ZONE - Q
- AIRPORT AND HARBOUR
- COASTAL WET LAND
- WATER BODY
- PROPERTIES WITH WAREHOUSING FACIL.
- HERITAGE SITE



- MAJOR ROAD
- OTHER ROAD
- RAIL
- PROPOSED ROAD
- PROPOSED RAIL
- RECREATION CENTRE
- RAILWAY STATION
- MMR BOUNDARY
- LOCAL AUTHORITY BOUNDARY
- PLANNING AUTHORITY BOUNDARY
- IRRIGATION COMMAND AREA
- HILL CONTOUR
- PROPOSED JETTIES - AMBA RIVER
- PROPOSED AIRPORT LOCATIONS



**Figure-13.8**

### 13.8.5 **Green Zone (G-1 Zone)**

In the present Regional Plan, a number of activities such as expansion of Gaothans, housing for co-operative societies of local villagers, holiday resorts, bungalows on 1-acre plot, transit godowns, highway amenities, small-scale industry etc. are permitted in the G-1 Zone. However such developments have concentrated along the important inter-city roads in the Region. Recognising the inevitability of such developments, new areas along inter-city roads have been included in 'U-1' or 'U-2' Zones in the revised Regional Plan. Rest of the area, which includes agricultural land, plantation areas, hilly areas, forests other than the Reserved or Protected Forests, and low-lying areas are designated in the revised Plan as Green Zone (G-1 Zone).

G-1 Zone, much like Forest zone, was once seen as a conservation area. The aim was to protect agricultural activity, preserve area for recreational use and arrest urban sprawl. With agriculture becoming increasingly non-remunerative farmers are keen to convert their land for non-agricultural use. On the other hand, many space extensive activities are no longer possible in urban areas because of high land values. Under these circumstances, certain degree of development in G-1 Zone is inevitable. The proposed D.C. Regulations therefore intend to permit certain selective developments such as farm houses, week-end houses on 2000 sq.m. plots, holiday homes, resorts, large institutions on minimum 2.5 ha. plots, film shooting sites on minimum 5 ha. sites and certain obnoxious or hazardous uses with adequate environmental protection measures. The FSI proposed for such activities is 0.05 which with a view to help minimise adverse impact on the character of the countryside.

However, in certain cases even the limited development of such non-agricultural activities may not be desirable. It is therefore proposed to introduce G-2 Zone where only agriculture and related activities will be permitted. Such zones are proposed in the catchment areas of potential water resources viz. Ransai, Ulwe, Morbe and Gadhi Kasadi rivers. Similarly, areas within irrigation command in Pen Tehsil and agricultural and horticultural areas in Alibag Tehsil are also zoned as G-2.

### 13.8.6 **Forest Zone (F- Zone)**

This is a highly restricted zone consisting of Reserved Forests and Protected Forests under the Indian Forest Act, 1927 and forests acquired under Maharashtra Acquisition of Private Forests Act. It does not include private lands under forests or plantation. Although any activity which is permissible in 'G'- Zone will also be permitted in 'F'- Zone, it will be subject to clearance from the Forest Department. Since the diversion of forest land for non-forest purposes is highly restricted under the provisions of Forest Conservation Act, 1980, no development of the type permitted in G-1 Zone is likely to take place in 'F'-Zone on any substantial scale. The forests account for 1143 sq.km. or 25.8% of the Region's total area. A large part of these forests i.e. about 28% is degraded. Afforestation of these degraded forests lands will be an important step in improving Region's environment.

### 13.8.7 **Quarry Zone (Q- Zone)**

In the Regional Plan-1973, the quarrying activity is permitted anywhere in 'G'-Zone. This has been responsible for the indiscriminate proliferation of quarrying activity

leading to disfigurement of the regional landscape and degradation of the environment. Based on the comprehensive study of the quarrying activities in the region (MMRDA & Kirloskar-1991) , areas suitable for quarrying of building materials have been identified. These areas have been translated in the Revised Regional Plan as Quarry Zone ('Q'-Zone) to the extent possible. It has not however been possible to exhaustively demarcate such quarry zones. It is therefore proposed to allow quarrying in G-1 and G-2 Zone in addition to Quarry Zone subject to environmental guidelines and prior approval of MMRDA given in Annexure A 15.5.

### **13.8.8 Coastal Regulation Zone (CR-Zone)**

The Ministry of Environment and Forests, Govt. of India, under the provision of Environment (Protection) Act, 1986, has issued a notification in February, 1991, declaring an area of 500 m. along the sea coast, bays and estuaries and upto 100 m. from the rivers and creeks as a Coastal Regulation Zone. The developments within this zone are required to be regulated in accordance with the provisions of the notification and the Coastal Zone Management Plan which the State Govt. is required to prepare for this area. The provisions of this notification are far more restrictive than the provisions of present Regional plan and have an overriding effect on provisions of the Regional Plan. The developments within the Coastal Regulation Zone are therefore made subject to provisions of Coastal Zone Management Plans (which are under preparation) and the Regulation contained in the Ministry of Environment and Forests notification.

### **13.9 Land Use distribution**

The various land use zones are indicated on the enclosed map entitled 'Regional Plan for MMR 1996-2011'. A corresponding land use distribution is indicated in Table-13.3 & 13.4. The Table-13.3 also includes existing land use distribution. The comparison of these statements indicates that as against 418 sq.km. of existing built-up area the revised Plan allocates 1194 sq.km. area for future urbanisation, thus facilitating improved supply of land in future. Industrial zone also indicates availability of about 130 sq.km. of land for industrial development. This, includes about 10 sq.km. of land recommended for industrial use but whose precise location is to be decided later as referred in para. 13.8.3.

It appears from the comparison of the existing and proposed land use statements that there is a large reduction of coastal wetlands in the new Regional Plan. This is more on account of the way wetlands are classified in the revised Regional Plan than their real diversion for urban uses. Some wetlands are included in U-1 or U-2 zones. However large part of such wetlands are designated as 'G' zones in the respective Development Plans where they can be preserved in their original state.

The revised Regional Plan does not at this stage indicate any new transport links in the Region except those which are already identified through special studies, such as, Mumbai-Pune Expressway, Mumbai-Ahmedabad Expressway, etc.

## 13.10 The Land Use Plan and Development Control Regulation

**13.10.1** The various land use zones mentioned in the foregoing are distinctly marked on the map ('Proposed Land Use Plan for MMR 1996-2011'). This has to be treated as an indicative plan to be taken into consideration while preparing detailed plans for the respective local areas. A separate plan for the purposes of statutory development control is prepared excluding the areas already in the jurisdiction of Municipal Authorities or Special Planning Authorities. For the operational purpose, the latter plan will be translated on the revenue village maps of larger scale in due course of time. The detailed use provisions and the form of development envisaged under each zone is spelt out separately in the Development Control Regulations. These Regulations also specify the type of development permissible in Gaothans (Village Site) and Gaothan Expansion Schemes. Recognising the need for Gaothans' economic and physical growth and inevitability of their gradual transformation into more complex entities, much like an urban area, the Development Control Regulations have permitted wide range of activities including industries, warehousing, markets in the Gaothan Expansion Scheme.

**13.10.2** The developments along the inter-city roads like Expressway, Highways etc. permitted in the G-1 Zone under the provisions of the present Regional Plan affect road safety, aesthetics and environmental quality of these roads. The Revised Development Control Regulations have therefore proposed to regulate the developments along these roads by specifying setbacks from the highway, tree planting requirements, access restrictions and type of activities permitted along expressways, highways etc. The control on advertising along expressways and highways will also be imposed.

### 13.10.3 Conservation of built heritage

Listing of buildings and precincts for heritage conservation in Greater Mumbai has been completed and a separate set of regulations has been evolved for the development of such areas. Similar exercise needs to be carried out while preparing or revising the Development Plans of Cities and Heritage sites within the MMR. Priority in this regard needs to be given to Gharapuri Island, Alibag, Matheran, Thane and

Comparative Area statement of proposed and Existing Land Use in MMR						
Sr. No.	Existing Landuse Classification	Area	%	Proposed Landuse Classification	Area	%
1.	Builtup, Airport & Harbour	418	10	Urban Zone (U-1) with Airport & Harbour	939	22
				Urban Zone (U-2)	255	6
2.	Industry	105	2	Industrial Zone (I)	130	3
3.	Rocky Outcrop & Dense forest	570	13	Forest Zone (F)	913	22
				Recreational Zone (RTZ)	176	4
4.	Plantation, Agricultur, Scrub Land & Sparce Forest	2707	64	Green Zone (G)	1613	38
				Quarry Zone (Q)	72	2
5.	Groynes & Coastal wet Land	358	8	Coastal Wet Land	69	2
6.	Water Body	78	2	Water body	69	2
	<b>Total</b>	<b>4236</b>	<b>100</b>	<b>Total Area</b>	<b>4236</b>	<b>100</b>

Table-13.3

Region/Sub Regionwise Proposed Landuse Distribution for MMR											(In sq.km.)				
REGION / SUB REGION	Urban Zone U1	Urban Zone U2	IND. Zone I	Forest Zone F	Green Zone G1	Green Zone G2	National Park & Sanctuary	Recreation & Tourism Devl. Zone RTD	Quarry Zone Q	Harbour/ Airport	Coastal Wetland	Water body	Ware housing & jetties	Heritage Zone	Total Area
<b>1. Brihan Mumbai</b>	<b>240.97</b>		<b>34.29</b>		<b>95.70</b>		<b>50.95</b>	<b>22.48</b>		<b>14.80</b>	<b>0.01</b>	<b>7.60</b>			<b>457.80</b>
1.1 Island City	54.58		6.46		1.69					9.69					72.42
1.2 Western Suburb	105.61		10.04		51.47		32.17	22.48		5.10	0.01	7.60			226.88
1.3 Eastern Suburb	80.78		17.79		43.54		18.78								168.50
<b>2. Western Region</b>	<b>95.82</b>		<b>4.15</b>	<b>134.90</b>	<b>155.32</b>		<b>36.74</b>	<b>30.50</b>			<b>50.24</b>	<b>2.38</b>			<b>521.03</b>
2.1 Mira-Bhayander Sub Region	26.02				19.39		21.19	11.99			6.78				85.35
2.2 Vasai-Navghar Sub Region	26.28			1.66	16.45		10.21	1.16			15.38	0.96			72.11
2.3 Nallasopara Sub Region	17.87		3.45	12.26	5.91						9.15	0.17			39.67
2.4 Virar Sub Region	16.83			10.15	17.10			15.36			18.39	0.43			53.37
2.5 VVNA Coast Sub Region	1.32		0.70	59.81	37.79						0.31	0.49			73.28
2.6 VVNA Rural Sub Region	6.81			51.02	42.49			1.99			0.23	0.18			110.59
2.7 Outside VVNA Sub Region	0.89				27.19		5.34								86.66
<b>3. North East Sub Region</b>	<b>225.89</b>	<b>66.58</b>	<b>29.33</b>	<b>403.57</b>	<b>664.65</b>	<b>0.21</b>	<b>24.94</b>	<b>16.87</b>	<b>2.69</b>	<b>24.28</b>	<b>37.03</b>	<b>4.22</b>			<b>388.67</b>
3.1 TMC Sub Region	62.69		7.68	6.05	22.91		24.94				2.32	0.93			127.53
3.2 KMC Sub Region	57.50	14.16	9.74	0.05	22.50						0.04	1.33			105.30
3.3 Ulhasnagar Sub Region	17.11	0.02	0.08	0.57	6.71							0.96			25.44
3.4 Ambarnath Sub Region	21.51	0.03	6.89	2.83	5.55							0.39			37.19
3.5 Badlapur Sub Region	12.17	0.91	1.09	4.48	14.53			4.49			177	2.49			34.14
3.6 Bhiwandi Sub Region	48.04	32.50	3.85	24.89	60.49			12.38			0.29	4.37			178.52
3.7 Bhiwandi Rural Sub Region		0.23		227.88	260.63						0.12	8.47			508.72
3.8 South Kalyan Ulhas Sub Region	6.68	18.73		77.09	135.42	0.21						2.78			246.79
3.9 North Kalyan Tehsil Sub Region	0.19			59.73	135.91										198.67
<b>4. Navi Mumbai</b>	<b>157.02</b>	<b>15.99</b>	<b>52.13</b>	<b>37.85</b>	<b>59.95</b>	<b>0.24</b>									<b>388.67</b>
4.1 NMMC (Excl. 15 Villages)	42.45		28.14	17.78							19.12				107.49
4.2 NMMC ( 15 Villages )	0.05	13.95	0.03	5.60	5.39							0.10			26.10
4.3 Panvel Sub Region	76.87	1.81	11.07	11.58	86.10	0.21				0.16	4.60	2.84			145.22
4.4 Uran Sub Region	37.65	0.23	12.89	1.89	18.46	0.03				24.12	13.31	1.28			109.86
<b>5. Nerai-Karjat Region</b>	<b>27.67</b>	<b>43.01</b>	<b>3.31</b>	<b>172.72</b>	<b>209.79</b>	<b>4.78</b>		<b>5.03</b>	<b>0.52</b>			<b>13.96</b>			<b>480.83</b>
5.1 Karjat Sub Region	16.46	40.59		101.09	144.12			0.57	0.24			5.73			308.80
5.2 Khalapur Sub Region	11.21	2.42	3.31	71.63	65.67	4.78		4.46	0.28			8.23			172.03
<b>6. Panvel-Uran Sub Region (Outside NM)</b>	<b>30.81</b>	<b>82.58</b>	<b>3.09</b>	<b>183.39</b>	<b>102.31</b>	<b>97.92</b>	<b>2.20</b>	<b>7.83</b>	<b>1.96</b>		<b>5.26</b>	<b>12.56</b>		<b>2.68</b>	<b>532.85</b>
6.1 Rasayani-Panvel Sub Region	30.59	15.96	0.93	48.33	52.12	12.44		4.49	0.46			3.88			169.25
6.2 Rest Panvel sub Region	0.20	13.36	2.15	88.17	37.43	73.82			0.59			4.62			220.43
6.3 Khopta Sub Region		53.12	0.01	11.42	2.26	0.37			0.34		5.26	0.95			73.79
6.4 Rest Uran Sub region		0.14		13.85	0.03	11.29			0.56			1.42		2.68	29.98
6.5 Karnala Sub region	0.02			21.62	10.47		2.20	3.34	0.01			1.69			39.40
<b>7. Pen region</b>	<b>5.41</b>	<b>5.34</b>	<b>3.11</b>	<b>11.72</b>	<b>7.17</b>	<b>109.84</b>	<b>0.00</b>	<b>27.99</b>	<b>1.59</b>	<b>24.28</b>	<b>3.10</b>	<b>3.49</b>	<b>5.04</b>		<b>152.77</b>
<b>8. Alibag region</b>	<b>7.46</b>	<b>3.89</b>	<b>3.11</b>	<b>31.64</b>	<b>42.69</b>	<b>89.65</b>	<b>0.00</b>	<b>27.99</b>	<b>2.64</b>		<b>15.77</b>	<b>0.75</b>	<b>3.65</b>		<b>229.32</b>
<b>Total area</b>	<b>791.05</b>	<b>217.39</b>	<b>129.41</b>	<b>975.79</b>	<b>1349.58</b>	<b>302.64</b>	<b>114.83</b>	<b>110.70</b>	<b>9.40</b>	<b>39.08</b>	<b>115.95</b>	<b>67.65</b>	<b>8.69</b>	<b>2.68</b>	<b>4235.59</b>
<b>Area of each category / Total area</b>	<b>18.68%</b>	<b>5.13%</b>	<b>3.06%</b>	<b>23.04%</b>	<b>31.86%</b>	<b>7.15%</b>	<b>2.71%</b>	<b>2.61%</b>	<b>0.22%</b>	<b>0.92%</b>	<b>2.74%</b>	<b>1.60%</b>	<b>0.21%</b>	<b>0.06%</b>	<b>100.00%</b>

Table-13.4

Kalyan. The development permission on the Gharapuri Island shall conform to the 'Heritage Guidelines' to be issued by the Metropolitan Commissioner, MMRDA, with the approval of Government.

### 13.11 **Future Scenario**

- 13.11.1** For decades, Mumbai's spatial development followed a mono-centric, linear pattern of growth: Office and commercial activity concentrated at the southern end of the city, whereas the industrial and residential development spread northwards along the suburban rail corridors. The Regional Plan-1973 sought to alter this pattern by developing Navi Mumbai on the main land across the harbour, and by creating other growth centres, like, Bandra-Kurla Complex and Kalyan Complex. Since then, much efforts and investment have gone into development of these growth centres, relocation of economic activities from the Island City, and creation of new infrastructure, such as, Mankhurd - Belapur railway line and J.N. Port. These efforts, together with large population growth in Thane, Kalyan, Bhiwandi, Vasai - Virar area, and massive industrial investment taken place out side Greater Mumbai have set in motion an irreversible process of spatial decentralisation. The proposals of the revised Land Use Plan reflect a logical extension of this process and are guided by clear pointers emerging from the current development trends. New growth centres and new transport linkages are likely to give rise to a new spatial structure, new pattern. South Mumbai may continue to remain the most dominant centre in the Region and a key element of this structure. Other important elements will be Bandra-Kurla Complex, which is being developed as Mumbai's new International Finance and Business Centre with a potential for 1,50,000 jobs; Vashi, which is acquiring key position in Navi Mumbai's development on account of growing concentration of wholesale trade; CBD of Navi Mumbai, and the area around J.N. Port, which has vast potential for the growth of port-related activities, offices, export processing activities etc. Owing to new investments expected in the these centres and the transport linkages between them, they will become key job centres and areas between them along transport corridors will become new development areas. This structure, which may form an 'Open Pentagon', will emerge as MMR's core of economic activity and population. The possibility of the Mumbai Trans-harbour Link, and second international airport at Mandwa are likely to strengthen the Pentagon pattern further.
- 13.11.2** Beyond the Pentagon, the existing urban centres and the transport corridors joining them form two concentric arcs. The first encompasses Mira-Bhayandar, Thane, Panvel, Pen and Alibag, and second, Vasai-Nalasopara, Bhiwandi, Kalyan, Ulhasnagar, Ambarnath, Karjat and Khopoli. While the urban centres represent concentration of jobs and population, the intervening areas along the transport corridor represent areas prone to low density urbanisation in the future. The resultant spatial pattern of the Region's development, thus, would consist of a core represented by the Pentagon, and rings of urban centres and development areas along the major transport links. This pattern, which is graphically represented in Figure-13.9, would guide the land use strategy in future.

# Emerging Spatial Structure

REGIONAL PLAN  
MUMBAI METROPOLITAN REGION  
1996 - 2011

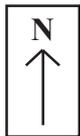
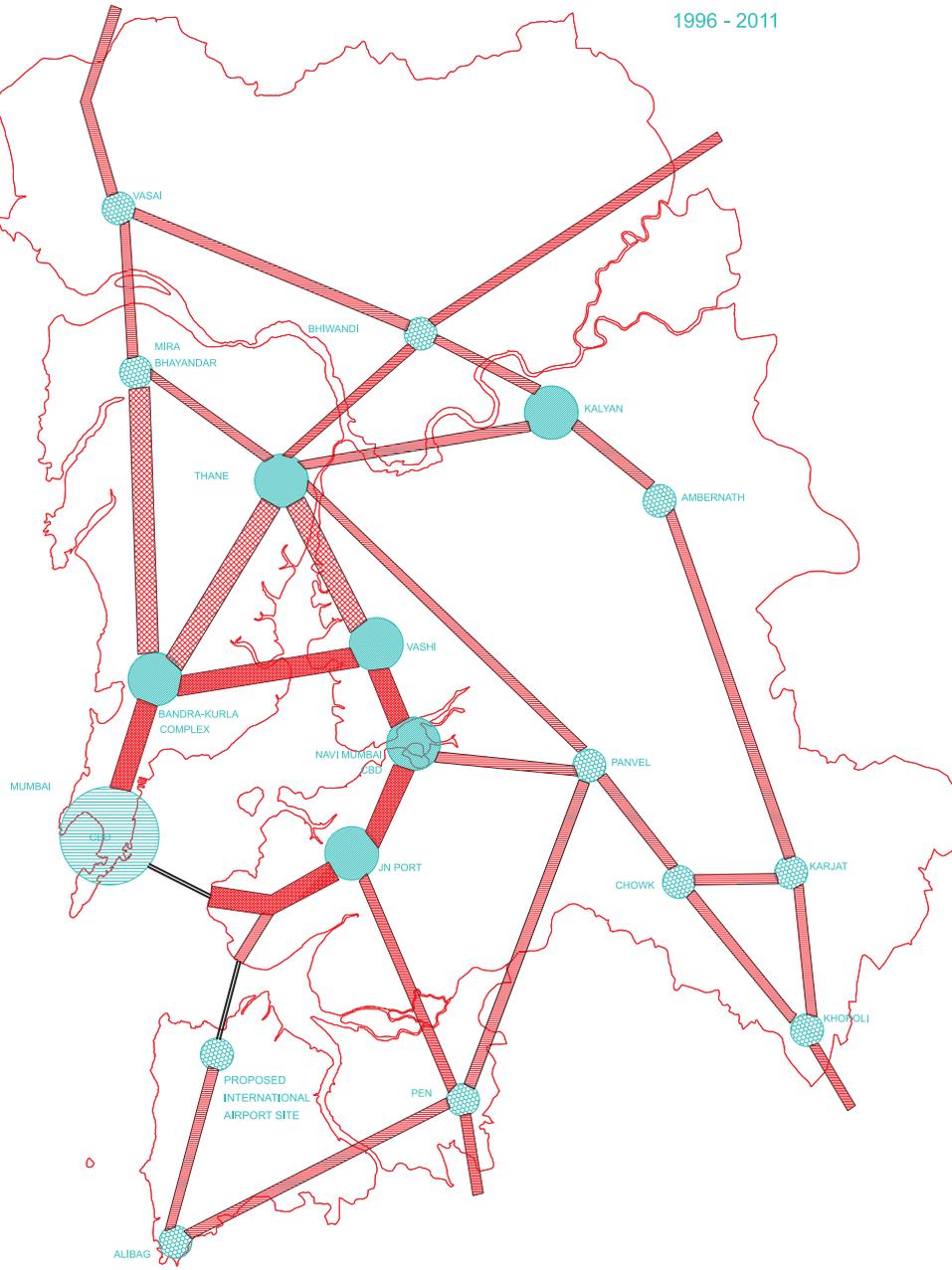


Figure-13.9