

REGIONAL DISASTER MANAGEMENT CELL



**THANE MUNICIPAL CORPORATION
DISASTER MANAGEMENT PLAN**

RISK ASSESSMENT AND RESPONSE PLAN

INDEX

1.	INTRODUCTION	05
2.	RISK ASSESSMENT AND VULNERABILITY ANALYSIS	37
3.	MITIGATION STRATEGY	51
4.	MITIGATION MEASURES FOR THANE	55
5	NEED OF COORDINATION MECHANISM	67
6	INSTITUTIONAL ARRANGEMENTS	71
7	FUNCTION OF CONTROL ROOM	77
8	NON GOVERNMENTAL ORGANIZATIONS (NGO) AND VOLUNTRARY AGENCIES	85
9	REPORTING FORMATS	93
10.	PLAN DISSEMINATION THROUGH COMMUNITY EDUCATION	107
11	WARD LEVEL RESPONSE	109
12	LIST OF BBREVIATIONS	124

SECTION-1

INTRODUCTION

SECTION-1
INTRODUCTION

1.1 CITY PROFILE

THANE FACT SHEET - 2005

* City Population	-	12,61,615 (2001 Census)
* State Population (Maharashtra)	-	969 million (2001 Census)
* City Area	-	128.23 Sq.km.
* State Area	-	308000 Sq. Km.
* No. of Slums	-	211 Nos / 1,09,955 House holds
* Slum population	-	5,49,775
* Potable Water Supply in Slums	-	98%
* Toilet Facilities in slums	-	78%
* Access roads to Slums	-	87%
* City literacy rate	-	87%
* Installed water capacity	-	362 MLD
* Sewerage System Coverage	-	17% (Geographical)
(Underground)	-	23 % Population
* Solid waste generation	-	500 M.T.
* Road Length	-	280.00 Km.
* Primary School	-	Total - 308
		Aided - 66
		Non Aided - 109
		TMC - 133
* Recreational Space	-	0.51 Sq m
* Municipal Revenue (Rs.in lacs)	-	39206
* Municipal Expenditure (Rs.in lacs)	-	30399

1.2 BASIC INFORMATION

The city of Thane is one of Maharashtra's major industrial town and the district headquarters. The National Decennial Census 2001 pegged the population of the city at 12,61,517. Thane is included in the Mumbai Metropolitan Region and is one of the 18 Urban Centers therein. Being the first urban Center on the periphery of the Greater Mumbai, the city occupies a unique position in the region. The city has been marked by rapid demographic growth and has witnessed ten fold multiplication in the last forty years. However owing to large industrial development and its proximity to the Greater Mumbai, Thane has demonstrated its will to rise to the challenge and exhibit marked improvement in generating increased revenues and convert them into better economic growth, improved services and expanded infrastructure. The geographical jurisdiction of the Thane city spreads over an area of 128.23 sq. km. The city is located at the mean sea level on the northern part of the Konkan region. The city is also known as Lake city because of the 35 lakes encompassing an area of about 40 Ha.

1.3 HISTORY

Historically significant, the city of Thane forms an important urban agglomeration of Maharashtra State. Thane derived its name from "STHAN" or "STHANAKA", then known as the Head Quarter of the Konkan Kingdom of the Shilaharas. The earliest reference of this place was traced as early as in 636 A.D., when the Governor of Bahrain and Oman had sent a plundering expedition. Thane flourished earlier as a port in the period 1094 A.D. Thereafter as a result of Naval defeat in 1529, Thane became a tributary to the Portuguese and it seems, it had then started prospering. In the early 1730, the Portuguese had started construction of the Fort. The Maratha Empire Captured the city in 1737 and completed the construction of the fort. Thereafter in 1774, the British captured the city. Thus around 1800, the town had grown mainly to the west of the Fort with a road leading towards south-west to Mumbai and a road towards north leading to surat via Ghodbunder.



Fig.1.1 Map Showing Thane in MMR



Fig 1.2 Map showing areas of Thane City

Thereafter it became District Head Quarter and came up as an Industrial Town during 1960-70. The major industrial estates like Wagle, Kalwa, Kolshet and Balkum complex were developed during this decade. The city comprise of a number of tanks spread all over. Sir Patrick Geddes, an eminent British Town Planner during his visit to the city in 1915, was impressed by the tanks and had suggested preservation & beautification of tanks. Because of those tanks; Thane is called as "City of Lakes".

The Great Indian Peninsular Railway company started the first railway running between Mumbai & Thane on 16th April, 1853. The first local self government in the form of Thane Municipal Council was formed in the year 1863. The major industrial establishments started there business in the city during the decade 1960-70, which has changed the status of the town as major industrial town in Maharashtra. Thereafter from time to time the boundaries of Municipal limits were extended and today's Municipal Corporation of the City of Thane has geographical area of 128.23 Sq. Km. with its boundaries contiguous with that of Greater Mumbai, Navi Mumbai, Mira Bhyander and Kalyan Municipal Corporation.

1.4 GEOGRAPHY

1.4.1 LOCATION

The city of Thane is located on the North-East of the Salsette Island and on the Northern extremity of Greater Mumbai. In fact

boundaries of Greater Mumbai and Thane are contiguous. The city falls on latitude 720.50' North with longitude 190-10' East. The Central railways main and local lines pass through the city, which connect the city to north-north east and south-south east parts of the India. Recently the Thane-Turbhe local line have connected the city to Navi-Mumbai & Panvel node through the rail network. The Mumbai Agra road and the old Mumbai-Bangalore road, the two important national highways pass through the city which connects the city to all parts of India through road network. Because of this rail & road network, Thane city is well connected to Greater Mumbai. The important national port of Mumbai and Navi Mumbai are at about 25-30 km from the city. The domestic as well as International airports are at the distance of about 15-20 km from Thane. Due to very shallow waters in the creek, during high tides, affording limited navigability, the city has lost its significance of having a historical port for county craft.

In the regional context, Thane Municipal Corporation (TMC) area is included in the Mumbai-Metropolitan Region (MMR) for which there is a regional plan. The important development of region is development of Navi-Mumbai as another satellite city of Greater Mumbai, development of bulk shipping of oceanic harbour with integrated transportation network, development of Bandra-Kurla Complex and development of Kalyan Ulhasnagar - Ambarnath Complex.



Fig 1.3 Thane in MMR

This unique locational and the geographical characterization has also affected the growth and placement of urban structures within the city. The centrality, easy accessibility, existing infrastructure, established market place, civic services, facilities and recent trend of tremendous developmental activities make this place more pivotal in MMR.

2.4.2 TOPOGRAPHY

The city is characterized by high hills on one side and submersible marsh land along the Thane Creek, and Ulhas River bank on the other side. The plain terrain actually forms a wide belt along the foot-hills & away from creek water, Ulhas river banks. Such a situation has also distracted the growth and placement of various activities. The highway runs centrally through the plains and windings along the foot of the hills.

2.4.3 CLIMATOLOGY

CLIMATE – The Thane Climate is typically coastal, sultry and not very hot. The area receives average rainfall of 2500 mm to 3000 mm viz. in rainy season while the dry period is the summer and winter season.

TEMPERATURE – It is observed that the mean maximum temperature varies from 35oC to 40oC during the whole year. The temperature is maximum during the months of March to June. Due to humidity during this period, the weather condition is intolerable being more sultry. The weather is tolerable during the months of December to February with temperature ranging from 25oC to 35oC being minimum out of the year.

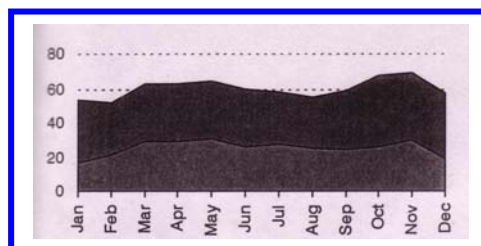


Fig 1.4 Minimum & Maximum Temperature in Thane

RAINFALL – Being in the western coast, the rainfall is usually experienced from beginning of June to end of September with annual mean rainfall of 2500 mm. The average rainfall in the city over the past decade has been calculated to be about 2442.8 mm. Most of the rainfall received is a result of southwest monsoon, though occasionally some rainfall has been reported in the winter months (from the north east monsoon) or in late summer (pre-monsoon showers).

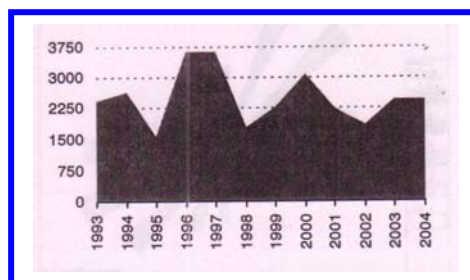


Fig 1.5 Annual Rainfall in Thane since the year 1992

HUMIDITY – The range of variation in humidity is from 40% to 100%. The highest humidity is observed in the month of August. The overall humidity throughout the year in the city is on the higher side. The average humidity throughout the year is 44% and the maximum humidity experienced during the year in the monsoon months is about 98%.

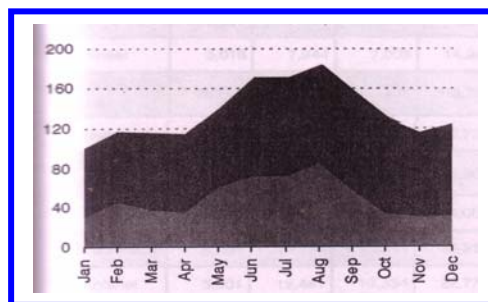


Fig 1.6 Minimum & Maximum humidity in Thane

WIND DIRECTION – The wind direction is predominantly from west and northwest of the town for maximum period of the year. The mean wind velocity is about 11 km/hr. The maximum

velocity varies from 15 to 19 km/hr during June to August. The wind speed and direction for various seasons for the year can be represented in the wind rose diagrams.

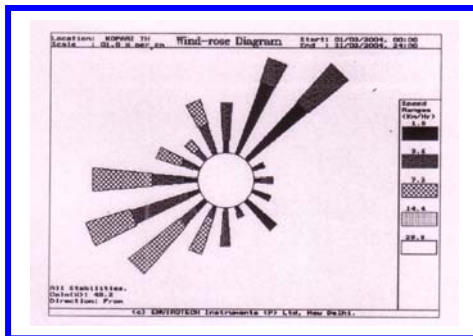


Fig 1.7 Average Wind Rose of March

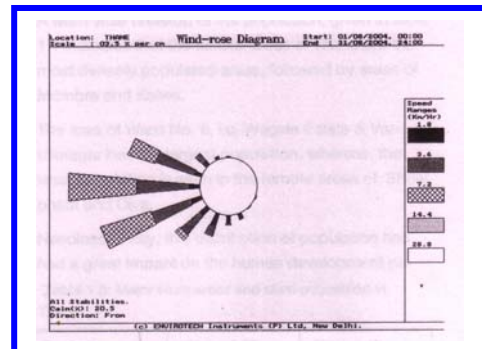


Fig 1.8 Average Wind Rose of August

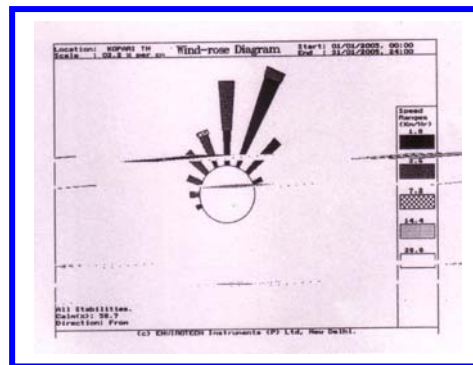


Fig 1.9 Average Wind Rose of January

1.5 DEMOGRAPHY

1.5.1 CURRENT TRENDS

The demographic characteristics i.e. the emerging trend in population growth, its characteristics, spatial distribution are sure to have profound influence on the structure and size of the city. It is therefore essential and interesting to study the dynamics of population growth and structure of city. The analysis is expected to reflect questions such as - is the population growth excessive? by what measure? is it at average or below average? which factors underline the growth? Is it a natural increase in-migration or jurisdictional change? What are the broad terms? What are the characteristics of the in-migrants? What implications does population growth have for shelter, services and infrastructure? What is the social composition of city's population, in terms of

income and in terms of the access to shelter & services? What are the poverty levels in the City? Are they growing or declining? Is the problem of slums a matter of major concern for the city? Is the problem consistently growing or is it the one that is showing signs of stabilization? As population is a key parameter for planning of infrastructure and other activities, a thorough analysis as discussed above shall help the city to take an analytical and holistic approach towards urban management.

The census data reveals that the population of Thane has increased continuously since 1931. The increase was 68.6% during the decade 1941-51 and by 59% during 1951-61. The rate of growth was noticed to be 50.1% during 1961-71. The annual growth rate during the decade 1971-81 works out to be 8.12% which was the highest in the MMR. The rate of growth works out to be 6.78% during the decade 1981-91. While the annual growth rate during the last decade was about 5.85%.

The rate of growth is high during 1941-51 mainly due to considerable exodus of refugee population as a result of country's partition and thereafter the growth is attributable to industrial development. The present trend shows that the city is growing as a suburban dormitory town.

The intra city population analysis shows that the central areas of Thane are the most densely populated areas followed by areas of Mumbra and Kalwa, Wagle Estate and Vartaknagar has the largest population whereas, the least population is seen in the remote areas of sheelphata and Diva.

Table 1.1 - Population growth

Year	1961	1971	1981	1991	2001	2005 Estimated
Population ()	136591	261615	474170	795833	1261517	1544390
Average Annual Growth rate	-	5.25%	6.77%	6.78%	5.85%	4.50%

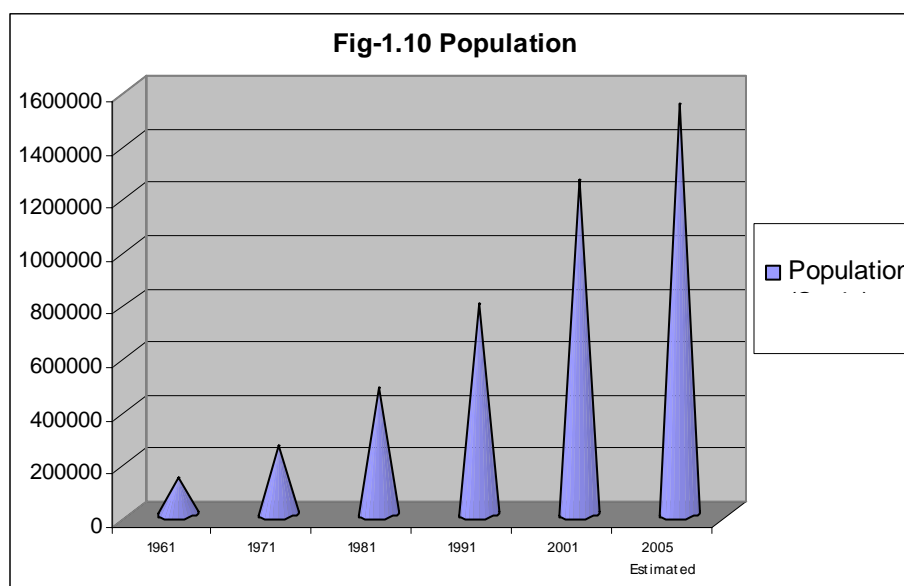


Table – 1.2 - Wardwise Population distribution of Thane City (2001 Census)

Ward	Uthalsar	Naupada	Kopari	Kalwa	Mumbra Diva Shil	Wagle Estate	Railadevi	Vartak nagar	Owle Manpada Kolshet
House holds	32533	22723	12622	39716	39212	70669	38767	9605	17220
Male	76460	50228	28384	90072	103432	171277	91355	22643	41296
Female	68923	47240	26934	74707	95726	142485	78374	18163	34852
Total	145383	97468	55318	164669	199158	313762	169729	40806	76148

Table 1.3 - Literacy Rate in Thane City

	Male	Female	Total
Literate	561086	412109	973195
Nonliterate	123027	165295	288322
Total	684113	577404	1261517

Table 2.4 - Major slum areas & slum population in Thane

Area	Kopari	Kalwa	Railadevi	Vartak nagar	Mumbra	Manpada	Wagle Estate	Uthalsar	Naupada	Total
No. of Households	7479	21828	24998	10253	11717	21804	3430	3306	5140	109955
Population in Slums	37395	109140	124900	51355	58920	109010	17125	16430	25500	549775

From the tables & charts given above , it is seen that the average female to male ratio in the city stands at 870 females per 1000 males. The Maximum ratio of 948 is seen in Naupada area, while

the least ratio of 802 is seen in the areas of Balkum which has large number of migrant labour.

The average number of members per household is 4.45 with maximum 5.14 in Mumbra and minimum of 4.14 in Kolshet.

The overall literacy rate in male population is seen to be more at 93% as compared to that of female population @ 81%. The average literacy in the city has been found to be about 87%

Slums are an unavoidable outfall of the rapid urbanization of cities, as more people migrate in search of livelihood. The slum population in 2005 has been estimated with a marginal increase in slum population as compared to the past estimates. The present estimate of the slum dweller in the city is about 5.49 lacs. But the overall percentage of slum population is consistent @30% to 35% over the last 4 decades. The highly developed & densely populated areas are Naupada, Uthalsar and Industrial Area of Wagle Estate. In the absence of exact data, the migrant population can actually be ascertained by reviewing the ward wise increase in population. This reveals that 40% population increase of every decadal growth can be considered as realistic in-migrant population in the city.

1.5.2 Future Projections

The population figures of the Corporation area have been projected upto the year 2041 taking into consideration the spatial growth of the city. As per the present trend of development the population figures are projected as given below -

Table 1.5 Population projections

Year	2011	2021	2031	2041
Population Projections	19,07,734	26,11,365	33,66,556	41,73,305
Growth rate	51.22%	36.88%	28.92%	23.96%

It can be assumed that the present growth trend will continue at least upto the year 2011 and will slow down thereon over the following three decades. Based on the above projections, the visioning for the land management as well as for the urban management is required to be done.

POPULATION IN SLUMS

The overall population of the city has been continuously increasing but the analysis of the demography of the city reveals that the population in the slums has been consistently increasing over the past decades.

The details of the population in slums has been summarized in the table 1.6

Table 1.6 Population in Slums

Year	Population in Slums	Total Population of the City	Slum Population %
1981	1,41,395	4,74,170	29.8
1991	2,54,290	7,95,833	31.90
2001	4,20,027	12,61,517	33.20
2005	5,49,775	15,44,390	35.50

2.5.4 the facts

The demographic trends as discussed earlier including current trends and future projections, reveals many issues and concerns. These issues and concerns are summarized as –

Over the years even though the total city population, has been increasing continuously, population in slums has remained 30% to 35% of the total population.

The rate of growth in Thane city is much more than rest of Maharashtra and other cities in Maharashtra.

The sex ratio presently indicates 870 female to 1000 males. But it needs to be improved considering the present trends.

The city literacy rate is 87% and is much more than the rest of Maharashtra and other similar cities. But the overall literacy and literacy amongst female needs to be improved.

Various methods of population projection shows the city population continuously increasing and it may be about 41 lakh in the year 2041, But, the carrying capacity of the city needs to be taken into consideration. Present sanctioned development plan and the land available for development shows city can accommodate maximum population of 34.20 lakhs.

According to the planning norms the open spaces and the developed sites for various amenities are not sufficient to cater the need of present population. So considering the future projection of population lot of efforts are required to be made in this regard.

Though the present infrastructure is comparatively better, the population projection reveals the kind of pressure that is going to be imported on the infrastructure in near future.

The information, education and communication (IEC) mechanism needs lot of upgradation for increasing the awareness amongst the people regarding birth control, infant mortality, literacy and health.

URBAN PLANNING

The planning authority for the city of Thane is the Thane Municipal Corporation being established in 1982 by merging the then Municipal Council with adjoining 32 villages which were the part of Mumbai Metropolitan region. In order to cater the metropolitan dimensions rapidly emerging on account of urban growth of these peripheral villages around the main town, the Municipal Corporation of City of Thane has been established. TMC is charged with planning, regulation, control and co-ordination of urban growth within territorial jurisdiction of the city. Zoning and mandating the type of land use over its entire jurisdiction is one

of its key functions. It also has responsibilities to provide basic civic amenities to the citizens along with the preparation and execution of infrastructural development projects. Thus corporation has planning, controlling and implementing role over its entire jurisdiction.

The City has its locational importance in the Mumbai Metropolitan region. The tremendous industrial and developmental activities in the region has its direct impact on such activities within the Thane city. After the independence, the city has developed as a major industrial center in India. The developmental activities within those industrial premises in the corporation area are being controlled by the special planning authority viz; Maharashtra Industrial Development Corporation.

1.7 EXISTING DEVELOPMENT PLAN

GENESIS OF THANE DEVELOPMENT

The Great Indian Peninsular Railway Company was formed in 1849 & the first railway line between Mumbai & Thane was opened for traffic on 16.04.1853. This is considered as one of the most important landmarks in the economic development of the Mumbai Thane Region.

In 1863, the Thane Municipal Council was formed with population of 9000 persons.

In 1916, the railway tunnel, 4326 feet long, under the Parsik hills was opened for traffic forming the shortcut between Thane & Diva to a considerable extent. The Pokharan Road leading towards the water reservoir was also constructed. The Wadia Wollen mill now known as Raymond mill was the first large industry located at Thane.

In 1951, the census showed a substantial increase in population with 63,575 persons which was an increase of 113.69% during the decade 1941 to 1951. During this decade, Thane was at the threshold of Industrialization. Among the industries setup during these years, located

at the west of the Town deriving access from Mumbai-Agra road are the J.K. Chemicals, Cadbury-Fry, Modella Wollen Mills, J.H. Johnson & Co., Bush Radio Company etc.

In 1958, the boundaries of the Municipal Council were extended towards South upto the boundry of Mumbai Municipal Corporation, comprising of Kopri & Chendani Villages & part of Naupada also.

The construction of Express highway was started in 1958-1959. On completion of the project it created considerable transportation in the town structure. All the through traffic destined to & originating from Mumbai has been streamlined through this express highway

In the year 1959, the Municipal Council declared its intention to prepare the Town Planning Scheme Thane No. 1 & published the same in the year 1962. The scheme was undertaken for the area between the old agra road & the pipeline with the Wagle Industrial Estate towards west and bounded by Pokhran road No. 1. towards North for implementation of proposals of sanctioned development plan. The scheme was finally sanctioned by the Government on 18th January 1985 and which came into force in 1st May 1985.

The Thane Borough Municipal Council resolved in 1957 to prepare the Development Plan of Thane through Town Planning & Valuation Department. The Development Plan so prepared and submitted to Government by the Borough Municipal Council was sanctioned in December 1963 by the Government.

In 1961, the Wagle Industrial Estate was started, giving further impetus to industrial development.

In 1961, the zone plan for the area towards Northern & Western sides of the Municipal Council was prepared by the Town Planning & Valuation Department for development of the area in an orderly manner as there was great pleasure of development for various industrial activities because of restrictive policy for industrial developments within the Greater Bombay area.

In 1962, the Thane Municipal Council declared its intention to prepare the Town Planning Scheme No. 2 for part of Naupada area and the entire Municipal Area to the south of railway line. This scheme was subsequently withdrawn and not processed further.

In 1963, Trans-Thane Creek Industrial Area was established along a 20 km strip of land between the Thane Creek & the Parsik Hills which has resulted in the growth of Kalwa Industrial Area. During this period the Kolshet-Balkum Complex, consisting of the villages of Kolshet, Balkum, Chitalsar-Manpada, Majiwada & Kavesar all situated along the Thane-Ghodbunder Road towards North had started developing for industries.

In 1965, Regional plan for the Mumbai Metropolitan Region was undertaken & the same was sanctioned by the government in the year 1973. The plan envisaged the amalgamation of the areas of Majiwade, Chitalsar-Manpada, Kolshet, Balkum, Owale, with the then Thane Municipal Council.

In 1970 the revised Development Plan for the jurisdiction of the then Thane Borough Municipal Council was prepared and published by the council & sanctioned by Government in November 1974.

In October 1982, The Thane Municipal Corporation was formed consisting of the erstwhile Thane Municipal Council and 32 other settlements including the Kolshet-Balkum Industrial Complex & other villages along the Thane-Ghodbunder Road along with Kalwa, Mumbra, Kausa, Diva etc. towards east.

In 1984, Thane Municipal Corporation declared its intention to prepare the draft development plan for its entire jurisdiction including revision of the sanctioned Development Plan under its resolution no. 538 dt. 24.01.1984.

In 1984, as per the Industrial Location Policy contained in the resolution of Government in Industry, Energy & Labour department, the Thane Municipal Corporation has been included in Zone II, as per which industrial units including small scale industries stand curbed and restricted. Only service industries identified under the Development Control Rules are permitted at appropriate locations.

After coming into existence in 1982, TMC initiated the process of preparing the existing land use (E.L.U.) map as first step in preparation of D.P. for the entire Corporation limit. The process of preparation of Draft Development Plan was initiated in the year 1986 & the Draft D.P. was published in the year 1991. The Revised Draft D.P. was again submitted for the approval of the State Govt. in the year 1996. The Govt. sanctioned the part D.P. in the year 1999 & the remaining part was subsequently sanctioned in the year 2003.

According to Development plan, the area of the corporation is 128.23 sq.km. which is divided into eleven planning sectors. Thus the area of the corporation is about 7 times the area of the then Thane Borough Municipal Council. The developed area at the time of publication of Draft D.P. was about 19.14% of the total Corporation area. Review of existing D.P. shows that the performance on the part of actual implementation is not satisfactory. This is mainly due to the following reasons.

- * The time elapsed between preparation and sanction of Development plan gave way to unplanned development.
- * The growth of population is tremendous on account of natural increase & migration. This gave rise to the encroachment on reserved sites.
- * Many reserved sites for various public purpose amenities are affected by the provisions of C.R.Z. stipulations.
- * According to 1991 Ready Reckoner the acquisition cost for 804 reserved sites amounted to be Rs. 139 crores but for now the same for open & developable 407 reserved sites as per present rates amounts to be Rs. 2833 crores. This shows the cost to be incurred for the land acquisition is also one of the major hurdle in implementation of D.P.

1.7.2 Planning Authorities

Thane is an important industrial city and is a district administrative Head Quarter. The land uses and the consequent results in congestion of roads, density of population and fast deteriorating level of services are becoming more and more complex day by day. Prior to the formation of Thane Municipal

Corporation, the developments within the then Thane Municipal Council area had been controlled by the Local Authority as per the zoning proposals of the sanctioned Development Plan of Thane. The land use for the outer area was controlled by the Collector of Thane, as per the zone plan, prepared for the area by the Town Planning & Valuation Department and being the proposals of sanctioned Regional Plan for BMR. The land use in the eastern part viz. Kalwa, Mumbra, Diwa and other villages merged within the Corporation area was also controlled by the Collector Thane as per the zoning proposals of the Bombay Metropolitan Regional Plan.

1.7.3 PLANNING DOCUMENTS

The following Planning Documents had been providing advice for regulating the Development & controlling the use of the land, prior to establishment of the Municipal Corporation –

Sanctioned Development Plan for the area of erstwhile Municipal Council of Thane

Zone Plan for Thane North Industrial Complex forming part of the sanctioned Regional Plan.

Zone Plan for Kalwa-Parsik and Kharigaon area forming part of the sanctioned Regional Plan.

Town Planning Scheme Thane No. 1 – This provides a detailed Planning Scheme finally sanctioned by Government under M.R. & T.P. Act, 1966. This provides a Plan for Infrastructure Development with consequent reconstitution of the plot boundaries etc.

The Bombay Metropolitan Regional Plan for controlling the land use for the area of Thane Municipal Corporation outside the above plans.

Scenes of sporadic and uncontrolled growth of structures in the outlying areas included in No Development zones, unauthorized

industrial sheds and indiscriminate use of road lands and foot-paths by vendors have indicated partial acceptance of the planning policy and approach laid down in the above mentioned planning policy documents. Absence of schemes for wholesale land acquisition and development for pushing the Development in the desired direction, absence of strict control and watch on the Developmental activities does indicate a serious weakness in the development and planning system.

The present planning document in force is the Development Plan for entire area of Thane Municipal Corporation. After establishment of the Municipal Corporation, the process for preparation of Development plan was initiated in the year 1986. The draft development plan for the city was published in the year 1991. The state Government has returned the said plan to the Thane Municipal Corporation on 7th March 1995. Thereafter Corporation has submitted revised development plan on 19th February, 1996 for approval of the State Govt. The State Govt. has accorded sanction to the said development plan partially in the year 1999 and finally in the year 2003. This development plan is the present planning document for the city in force and is valid for twenty years.

1.7.4 Sanctioned Development Plan

Thane Municipal Corporation came into existence on 1st October 1982. Thereafter TMC initiated process of preparing the existing land use map (E.L.U) as first step in preparation of development plan for the entire Corporation area. The previous development plan for the then council area was sanctioned in the year 1974. The Corporation was formed consisting of the erstwhile Municipal Council and the 32 other settlements including the Kolshet - Balkum Industrial Complex and other villages along the Thane-Ghodbunder road along with Kalwa, Mumbra, Diva, etc, on east. So Corporations intention declared on 24th January 1984 for the preparation of development plan for the entire jurisdiction

includes the revision of the sanctioned development plan of 1974. Thus the process of preparation of draft development plan has initiated in the year 1988 & at the end the Draft Development Plan (DDP) was published in the year 1991. After complying all the legal formalities the revised development plan was submitted for the approval of State Government in the year 1986. The Govt. of Maharashtra after making necessary enquiries and consulting with the Director, Town Planning of Maharashtra State (DTP) finally sanctioned the development plan with some modifications on 14th May 2003.

The sanctioned development plan covers the total area of 128.23 sq. km. The Planning authority for the development plan is Thane Municipal Corporation and as per clause 42 of the Maharashtra Regional and Town Planning Act, 1966. It is obligatory for TMC to implement the development plan. The validity of the development plan is for 20 years from the date of final sanction of the plan.

The salient features of the sanctioned development plan are summarized as follows :

The total area of corporation is 12823 Ha, out of which 5930.23 Ha is developable, 3682 Ha is non developable while 3211.77 Ha is the green zone area.

There are 11 planning sectors where 804 are total reserved sites covering area of 1267.65 Ha.

The area under road shown in the development plan is 742.97 Ha..

The area under residential zone is 2665.61 Ha, while that under industrial zone is 1254 Ha.

As per 1991 prices, the cost of acquisition of entire land under reservation was worked out as Rs. 209 Crores.

1.8 ECONOMY

1.8.1 ECONOMIC BASE OF CITY

The city of Thane has been the key center of human activity which are considered as the engines of the economic growth. The city, ever since the establishment of the Thane Municipal Corporation, has been dramatically transformed and is becoming more complex, more competitive and better connected than ever before.

The historical economic indicators show that there has been versatility in the overall economy and the city never had a predominant economic base. The historical indicators imply that the primary sector, the secondary sector and the tertiary sector have been the key sectors to fuel, the economic activity of the city. Whereas the population and employment are the main planks of the economic growth and these have been related to the above key sectors (Primary, tertiary & secondary sectors) that have been the driving force of economic development.

A comparative data as available from the MMRDA presents the population in the administrative units of Thane, Greater Mumbai, MMR and Maharashtra. The comparative population growth data is tabulated as below :

Table 1.7 - Population growth of Thane, Greater Mumbai, MMR & Maharashtra during 1971-2001

SR. NO.	UNIT	1971	1981	1991	2001	CARG		
						1971 to 1981	1981 to 1991	1991 to 2001
1.	THANE	261615	474170	795833	1261517	6.78	5.85	4.50
2.	GREATER MUMBAI	5970575	8243405	9925891	11914398	3.28	1.87	1.84
3.	MMR	6539943	9685090	12791568	16665075	4.00	2.82	2.68
4.	Maharashtra	50412000	62715000	78921000	96752000	4.65	4.39	3.48

OBSERVATIONS :

Share of population of Thane in that of MMR is increased from 2.5% in 1971 to 7.6 % in 2001.

Share of population of Greater Mumbai in that of MMR is reduced from 77% in 1971 to 63% in 2001

Share of population of MMR in Maharashtra is increased from 15% in 1971 to 22% in 2001.

ECONOMIC PROFILE

The contributions from the key sectors to the economy of the city have been varying and the scenario has completely changed today when compared to that prior to the emergence of the Municipal Corporation. After the emergence of the Municipal Corporation, a new form of socio-economic entity heralded, which has been uniquely human. The city then onwards has emerged as a centre of political power. The concentrated environment encourage social contact, the dissemination of information and awaken a certain energy and innovation, which in turn attracted more people and the problem posed by the concentration of human-kind arrived.

Slowly the primary sector has been diminishing and the overall scenario highlights a strong and emerging economy with an increasing contribution of income from tertiary sector and a modest contribution from secondary sector.

The contribution of income from the key sectors at the constant prices (93-94) has been summarized in the table given below.

Table 1.8 District Income at constant prices – 1993-94

(Rs.in.crores)

Years	Primary	%	Secondary	%	Tertiary	%	Total
93-94	585	6.02	4424	45.36	4742	48.62	9752
98-99	698	4.92	6294	44.32	7208	50.76	14200
2003-04	889	4.42	7221	36.22	11552	58.75	19662

The figures given above in the table reflect the contribution of income from key sectors in the total income of the Thane District, while the statistics of population as per the District Statistics Office is as follows.

Urban population	59.02
Rural population	22.29
<u>Total population</u>	<u>81.31</u>

Thane City population = 12.61 lacs

While the per capita income of the Thane district as compared with Mumbai & Maharashtra is as follows

Table 1.9 Comparative Statement of per capita income

Year	(Fig.in Rs.)			
	Mumbai	Thane	Thane City	Maharashtra
1993-94	24,382	17,521	21,376	12,326
1998-99	31,922	23,558	28,741	15,804
2003-04	-	38,568	47,053	-

Analyzing the population and per capita income of the district, the per capita income of the city has been worked out. The overall scenario reveals that the city population is 22% of the total district urban population. Further taking the population as a base and assuming the city per capita income to be 1.22 times of the district per capita income the city per capita income is as follows –

Table 1.10 Per capita Income of Thane City

Years	Rupees
93-94	21,376
98-99	28,741
03-04	47,053

With the above assumptions the GDOP comes to Rs. 6587 crores while the district GDP is Rs. 34,695 crores. The GDP of the city as

compared to that of district GDP is about 19% In the district there are 6 Municipal Corporation, 9 Municipal Councils, 13 Panchayat Samitis, 960 Gram Panchayats, so considering the number of units in the District, & the GDP of District, the city GDP seems to be substantial.

EMPLOYMENT SCENARIO

In the three decades since the 1960's there has been a marked increase in global interconnectedness which has been especially pronounced in the 1990's. This acceleration is directly linked to the rapid technological change, profound cultural shifts, expanding globalization and the ubiquitous impact of modern communications. Expanding globalization has a greater impact on the city's economy which can be seen from the city's population that have chosen a style and class to work and live. The city population, which is a business class or the class working in multinationals and are professionals, have a very high annual income and reside in far better colonies and in upcoming residential complexes, in townships, which become the symbol of status for certain individuals. While 30% of the population that resides in the slums are self-employed and indulge in activities like the carpentry, tailoring, driving, technical jobs etc. Being an industrial area, another major chunk of population are working as casual workers. A summary of employment, as available from the Statistical District Office of the city, is given below.

Table 1.11 Population & Resident Workers (2001)

Population	Main Workers	Marginal Workers	Total Workers
12,61,517	3,93,413	25,891	4,19,304

Table 1.12 Employment available (1998)

Adult Male	Adult Female	Child Male	Child Female	Total
1,50892	24,234	1389	378	1,76,893

Table 1.13 Distribution of Establishment by Employment size class (1998)

	1	2-5	6-19	20-49	50-199	200 +	Total
Establishment	67,267	78,112	17,362	4,955	725	165	1,68,586
Employment	67,267	2,16,560	1,60,876	1,36,059	63,317	1,12,577	7,56,656

Observations : Employment Available

The employment available in the Thane City is 1,76,893 and that available in the district is 7,56,656. Hence the employment available in the Thane City when compared with that of the Urban Thane District is about 23%.

Contributing & Non – Contributing workers

The above tables show that with total number of 4,19,304 workers being in the Thane City and only 1,76,893 number of employment being available it can be said that only 1,76,893 workers of the total number of workers, are deployed in the city area while the remaining 242411 workers travel outside the city and are deployed somewhere in the remaining of MMR. This reveals that only 1,76893 workers contribute directly to the economy of the city while the remaining 242411 workers cannot be identified as non-contributing as they contribute to the income of the city by paying some sort of taxes, fees, charges, rents etc.

The summary of employment available in the urban Thane pertaining various establishments, nature of operations, premises status, type of energy, type of ownership, by number of years of operations are provided in the tables given below.

Table 1.14 Employment in Agriculture & Other Establishment (1998)

	Agriculture	Non-Agriculture	Total
Establishment	2764	1,65,822	1,68,586
Employment	8222	7,48,434	7,56,656

Table 1.15 Employment & Establishments by Nature of Operation (1998)

	Perennial	Non-Perennial	Total
Establishment	1,66,805	1,781	1,68,586
Employment	7,52,490	4,166	7,56,656

Table 1.16 Employment & Establishments with premises status (1998)

	With Premises	Without Premises	Total
Establishment	1,49,142	19,444	1,68,586
Employment	7,21,615	35,041	7,56,656

Table 1.17 Employment & Establishments by type of Energy Used (1998)

	Without Power	Electricity	Petrol/Diesel	Others	Total
Establishment	1,14,069	36,510	8,956	9,051	1,68,586
Employment	3,57,847	3,37,820	18,792	42,197	7,56,656

Table 1.18 Employment & Establishments by type of Ownership (1998)

	Private Non-Profit Institution	Private Others	Co-Operative	Government	Total
Establishment	1,070	1,64,602	580	2,334	1,68,586
Employment	7,369	6,53,817	9,863	85,607	7,56,656

Table 1.19 Employment & Establishments by Number of Years of Operation (1998)

	Less than 1 Yr.	1-5 Yrs.	6-8 Yrs.	More than 9 Yrs.	Total
Establishment	6,173	87,845	21,968	52,600	1,68,586
Employment	17,340	2,53,692	91,638	3,93,986	7,56,656

Table 1.20 Distribution of Private Enterprises according to Social Group and Gender of Owner

Gender of Owner	Social Group of Owner				Total
	ST	SC	OBC	Others	
Male	3,612	7,378	17,834	1,31,527	1,60,351
Female	152	359	882	2,858	4,251
Total	3,764	7,737	18,716	1,34,385	1,64,602

From the above statistics, it can be seen that employment is one of the important indicators of the economic growth. There is a shift in the nature of activities from traditional manufacturing to the service sector. There is a substantial increase in number of establishments as well as employment in finance, banking and service sector.

URBAN POOR

Thane has been one of the foremost Municipal Corporations in India that has tried to implement a sustainable community development programmers for the urban poor. A preliminary survey indicates @35% population of the city of Thane live in slums. TMC has identified a total of 211 slums, with an estimated population size of 5,49,775.

Thane Municipal Corporation is implementing Slum and settlement upgrading, improvement and redevelopment programme successfully over the years. Since the year 2000, TMC has taken a holistic approach in implementing such schemes. These include National Slum Development Programme (NSDP), Integrated Slum Development Programme (ISDP), Improvement in Backward class areas and Leprosy Colony Improvement Schemes. The redevelopment scheme includes WAMBAY and SRD Schemes.

Priorities of these schemes include the project on detailed survey of slums, identification of slum dwellers, land acquisition, listing of existing amenities in the slum, fixing the eligibility criteria, modifications in the Development Control Regulations, IEC mechanism, monitoring mechanism and the Authority. All these priorities are established by involving individual slum dwellers, co-operative housing societies, Developers, the Central & State Govt., MHADA & private contractors.

For implementing improvement programme, the entire financial resources are shared by the Central Govt. and the Corporation

while technical & human resources are jointly made available by the Corporation and the private contractors. The process adopted for implementation of these schemes is formulated by Central Govt., State Govt. & the Corporation. For fund allocation the guidelines of the Central Govt are used to follow while for execution procedure the guidelines prescribed by the State Govt. are usually adopted. The various services and amenities provided in these slums includes pathways, storm water drains, waste water drains, community toilets, water supply, street lights and social infrastructure such as ground, garden, crematory, gymnasium, reading room, social center etc. In the past five years more than 100 slums have been covered under this programme. In the last three years about 268528 sq. mt. of pathways, 49591 Rmt of storm & waster water drains, 283 seats of public toilets, 24261 Rmt of water supply lines and 37 bore wells were provided in these slums.

The Corporation is receiving overwhelming response for the SRD schemes. Uptill now plane table survey of 60 slums has been completed. The TMC has submitted 45 proposals to the state committee which has cleared 38 proposals and Corporation has given commencement certificate to 24 such schemes. Six schemes are on the verge of completion while the work of 18 schemes is in full swing. About 5000 slum dwellers are expected to be benefited from these schemes, out of which 2000 have already been rehabilitated. Other than this, corporation has been able to avail 1300 sq mt constructed market, 1300 sq mt land of garden reservation and 1300 sq mt land under road reservation. These reservations are available to Corporation free of cost.

1.10 APPROACH TO IMPROVING URBAN LIFE

Over the past few years, TMC has made sustained efforts to develop its infrastructure facilities to meet the demands of the rapid growth. In the recent past TMC has completed integrated road development programme

through which 185 km. city roads were widened and a number of infrastructural activities have been carried out. But the great speed of growth and rapid transformation in the character of development has necessitated to look beyond the sectoral policy and to take holistic approach. As the productivity of urban area largely depends upon the efficiency of the urban infrastructure, TMC hence initiated the preparation of City VISION in May 2004. Holistic approach taken by the TMC in VISION Thane, has emphasized on means of improving urban life which can be summarized as –

- Shelter and basic service for all.
- Comprehensive, Integrated planning of urban infrastructure.
- Private sector involvement in providing infrastructure and service.
- Efficient, economic and equitable urban services.
- Greater local participation in management of services.
- Making environmental concerns on integral part of development planning.
- Development of trunk infrastructure and arterial infrastructure.

Cost Recovery in Urban Infrastructure

The principle governing cost recovery assumes that service charges will be levied on all urban services to generate adequate resources to not only cover operations and maintenance expenditure but also the capital costs incurred in providing the service. But practically it is not always possible to ensure full cost recovery particularly in case of services which are non-exclusionary in nature. But when users can be easily identified and their usage of a service is monitored, the principle of full cost recovery partially applies. This is also largely true for TMC as indicated in the table below which essentially measures recovery of revenue expenditure.

Table 1.22 Cost recovery in various services

Service	Cost recovery %	Subsidy %
Education	12	88
Health Care	12	88
Solid Waste Disposal	0.40	99
Fire Fighting	40	60
Water Supply	60	40
Sewage Disposal	6	94

The cost recovery on various services provided by TMC is low, but extremely low in public goods such as fire fighting, solid waste disposal and services like sewage disposal. TMC'S ability to maintain the level of services in the face of such poor cost recovery has been the result of buoyant octroi revenues. But TMC intends to improve the efficiency in the provision of such services like checking water loss, metering, etc., increasing revenues by raising user charges and by outsourcing some of the activities.

1.12 CITY GOVERNANCE

2.12.1 DIFFERENT AGENCIES & RESPONSIBILITIES

There are number of units governing a city. Similarly the Thane city is governed by number of units which conduct and control various function in the city. In the city of the Thane, the basic function of providing civic services, amenities, infrastructure, are controlled by the Thane Municipal Corporation. The function of allotting land, the ULC and other land related provisions are controlled by the Collector office of Thane. There are other units like the Maharashtra Industrial Development Corporation that govern the functioning of the industries in the city area. Thane has a healthy economic base with chemicals, textile, engineering being the key industries. The Maharashtra State Electricity Board (MSEB) controls the functioning of the electric supply and the issues relating to the power supply in the city. The government

has restructured the Maharashtra State Electricity Board into four companies with effect from 6.06.05. The Maharashtra State Holding Co. Ltd., Maharashtra State Power Generation Co. Ltd., Maharashtra State Transmission Co. Ltd., and Maharashtra State Distribution Co. Ltd. There are various telecommunication and networking units but the one major government unit is Mahanagar Telephone Nigam Ltd. The functions and issues relating the traffic and transport are controlled by the Regional Transport Office.

The Corporation, while providing civic services and amenities has to co-ordinate with above mentioned authorities and accordingly control the functioning in the city area. So also the concerned units have to co-ordinate and seek necessary permissions when the above mentioned units have to carry out any works related to their functioning in the Municipal limits. Apart from this, the respective units contribute directly or indirectly to the economy of the city as well as the functions pertaining to the units like MIDC, MSEB, MTNL contribute a major component to the revenues of the Thane Municipal Corporation.

1.12.2 MUNICIPAL FUNCTIONING

The Thane Municipal Corporation that caters to Thane city, is governed by the Bombay Provincial Municipal Corporation (BPMC) Act, 1949. As per this act, TMC is obligated to provide basic infrastructure like water supply drainage, sewerage, road and services such as solid waste management, fire fighting, street lights, education and primary health. The act empowers TMC to levy taxes such as octroi and property tax, user charges for water supply, sewerage and fees on various other services. But besides providing basic services, in addition, the TMC also runs maternity hospitals, medical college, training institutes (like IAS & Nursing), swimming pool, auditorium, stadium, etc. Which are not obligatory under the BPMC Act. On most parameters, such as quality of road per capita water supply and underground drainage

connection, TMC compares favorably with other Municipal Corporations in the Country.

1.12.3 GOVERNANCE AFTER 74TH CONSTITUTION AMENDMENT ACT

As per the 74th Amendment (of the constitutional Act), 1992 the TMC has regularized its functioning in a planned and disciplined manner particularly in respect of the 12th schedule of the 74th Constitutional Amendment Act. The main focus of the 74th amendment is to invite the participation of the common citizens in the day to day functioning of the urban local body. The Corporation has been initiating various activities so that the people can be a part of the functioning of the Corporation and has tried to provide a participatory governance to the city. The other objective of the 74th amendment has been decentralization of the functioning in the ULB. Hence to achieve this objective of decentralization as per this act, the Corporation has constituted nine committees at ward level within the territorial area. The territorial area has been divided into nine major areas viz. Kopari, Naupada, Uthalsar, Kalwa, Mumbra, Vartaknagar, Chitalsar Manpada, Wagle Estate, and Railadevi and accordingly the ward committees have been formed. But there exist relative diversity of various regions within Corporation limits that act as a constraint or pose a challenge to the management of TMC to bring about balanced and sustainable development in the city of Thane.

SECTION - 2

**RISK ASSESSMENT AND
VULNERABILITY ANALYSIS**

SECTION-2

RISK ASSESSMENT AND VULNERABILITY ANALYSIS

2.1 Vulnerable settlements

There are in all 211 slum settlements as per 2001 data in TMC also near about 45 to 50 locations in various wards committees have been identified and are vulnerable to floods.

These slums are considered as vulnerable settlements due to their location and access to infrastructure. The locations include hilltops, slopes, nallahs, low-lying areas (with tendency to flood during high tides), coastal locations, under high tension wires, along highways, along railway lines, within industrial zones, along water mains, along open drainage

The wards having low lying areas is as under :

Sr. No.	Ward Committee	Name of Road	Location
	Kopri		
1		G.M. Koli marg	Chendani Koliwada
2		Chikhaladevi marg	Thanekarwadi
3		Anandnagar/ Gandhinagar road	Anandnagar, Kedareshwar nagar
4		Suryakant Vadhavkar Marg	Sainath nagar
5		Harishchandra Raut marg	Daulatnagar/ Premnagar/ Ghanashyamnagar
	Naupada		
1		Datta Mandir road	Chendani Koliwada, Cidco
2		Pradhan Marg (Stadium Road)	Stadium area
3		Mahamad Ali marg	Mahagiri, Market
4		Shivaji Path	Shivaji Maidan, Bhaji market

Sr. No.	Ward Committee	Name of Road	Location
5		M.G.Road	Chikhalwadi
6		Prashant nagar road	Wadarwadi
7		Vandana Soc. Road	Vandana soc. Area
8		Gururani Nagkanya road	Natraj Soc. Area
9		Madanlal Dhingra marg	Shri.krupa soc. Area
10		L.B.S. marg	Infront of Vandana Bus stop
11		Veer Savarkar marg	Infront of Maharashtra Vidyalaya
12		Ram Maruti Road	Shivaneri soc. Marg
13		Gadkari path	ICICI bank to culvert
14		Kaka Sohani path	Infront of Nandu garage
15		Almeida Road	Right side of signal, Mahapalika Bhavan, Debonar Soc.
16		Tekadi Bunglow road	Sarswati school area
	Uthalsar		
1		Ambedkar road	Ambedkar bridge
2		Casal Mill circle road	Casal Mill bridge
3		Shri.rang soc. To Vrindavan soc. Road	Shri.rang soc, Anandpark , Vrindavan soc.
4		Saket road	Saket soc
5		Rabodi	Krantinagar, Panchaganga soc.
6		Ambedkar bridge to Casal mill circle road	Samantwadi, Gadre wadi, Narwel chawl
7		Main post office to Holi cross highschool road	Near K-villa bridge , Jail taki to naka
8		Casal mill circle to Golden Dyes road	Azadnagar –1 & 2, Muktainagar

Sr. No.	Ward Committee	Name of Road	Location
9		Flower valley to Runwal/ Siddhivinayak soc.	Milindnagar (Rehabilitated area) , Backside of Cosmoss soc.
10		Kattalkhana road, Rabodi	Rahmatnagar, Saanjay Gandhi nagar , nalla area
	Wagle		
1		LBS road	Teen Hath naka Jn. (near Krishna hotel)
2		Raghunathnagar road	Near Sphurti Vyayamshala
3		Hajuri Gautamnagar	Near footbridge (near Rajdhani caterers)
4		Dharmaveer nagar, Sathenagar	Sathenagar/ Dharmaveernagar nalla
5		Wagle main road	22 bay circle
6		Road no. 22	Tree
7		Bhatwadi	Ganesh chowk
8		Bhatwadi	Jagdale sadan
9		Road no. 27	Saibaba peti
10		Road no. 16	Wadarwadi
11		Ratanbhai compound	Jyotirling sadan
12		-	Sairaj Nalla
13		-	Ashar Co. Nalla
14		-	Kisan Nagar Shiv Sena Shakha to BMC pipeline nalla, Gandhi Nagar
15		Bhatwadi Nalla	Bhatwadi Bangarwala, 16 no. road
16		Hajuri Nalla	B.M.C. pipeline, Hajuri, Raghunathnagar, Vidyut Metallic
17		Jai Maharashtra Nagar	Modella Nagar Naka

Sr. No.	Ward Committee	Name of Road	Location
	Railadevi		
1		Shreenagar main road	Opp. Hon. Corporator Shri.. Manoj Shinde office, Culvert opp. hotel Garden
2		Warlipada	Near water tank
3		Road no. 16	(27,22, ITI circle), Culverts
4		Road no. 22	Infront of Datta mandir
5		Ward no. 31,19, 21 border	Emco co. road
6		Rupadevi pada road	Mahakali mandir, Josh Co., Bush Co
7		Valmikinagar	Valmikipada
8		Road no. 21, 32 jn	Ambewadi, Ambewadi market
9		Yashodhannagar , Sawarkarnagar	Snehandan soc, Manisha, Shanti, Saipooja, Rajmata, Sinhgarjana
10		Rajiv Gandhi nagar galli no. 1	Saibaba mandir- Kamgar hospital road
11		Jai Bhavani Nagar	Jai Bhavani Nagar Nalla
12		-	Dyaneshwar Nagar Naka & Rajiv Gandhi Nagar
13		Savarkar Nagar	Ganesh Gulli No. 2
14		Savarkar Nagar	Plot No. 80
15		Savarkar Nagar	Plot No. 15,16
16		Swami Vivekanand Marg	Sai Kripa Soc. to Veer Hospital
17		Savarkar Nagar	M.S.E.B. office to Swami Samarth Chowk
18		-	Zanze Nagar
19		-	Pareirra Nagar

Sr. No.	Ward Committee	Name of Road	Location
20		-	Sawant Chawl to Harisheth Talao, Lokmanya Nagar
21		-	Sulabh Toilet to Rajiv Gandhi Naka
22		-	Lokmanya Nagar Naka, Lokmanya Nagar Pada no. 4 to Mahatma Phule Nagar
23		Azad English School Nalla	Sulabh toilet to Rajiv Gandhi Naka
	Vartaknagar		
1		Service road	Hardas nagar, Chirag nagar
2		Vartak Nagar	Police station
3		Service road	Sambhaji nagar , Kadav chawl
4		Mahatma Phule nagar	Mahatma Phule nagar
5		Tikujiniwadi road	Manpada jn
6		Vasantvihar road	Vasantvihar circle
7		Jaibhavani nagar road	Jaibhavani nagar
8		Nalpada road	Nalpada colony
9		Glady Alwaris road	Infront of Lok hospital, Godrej soc.
10		Siddhanchal Road	Near Jidda School
	Manpada		
1		BMC pipeline bridge, Kapurbawdi road	Nalpada road bridge to Anil colony
2		Majiwada village road	Jai bhavani nagar road, Ganpati workshop
3		Service road	Shivneri soc., Siddhardhnagar area
4		Gautamnagar road	Gautamnagar area

Sr. No.	Ward Committee	Name of Road	Location
5		Majiwada village internal roads	Area behind Lodha builders , Pillai chawl
6		Saket road	Ambedkar nagar, Balkum pada no. 1
7		Dadlani park road	Dadlani area
8		Shruti park road	Yashwi nagar area, near BMC pipeline
9		Manorama nagar	Nirmal Anand nagar, Samrat Ashoknagar, colony near Manoramanagar nalla
10		Manpada road	Manpada market, area near petrol pump
11		Mogharpada road	Garibnagar, Mogharpada area
12		Kasarwadavli road	Shivsena shakha area , Kasarwadavli naka
13		Sainagar Ghodbundar road	Sainagar colony area
14		Anandnagar Ghodbundar road	Anandnagar colony area
	Kalwa		
1		Belapur road	Belo railway bridge
2		Mahatma Phule nagar/ Hanuman Tekdi	Behind Sukur park
3		Sahyadri soc	Near Mumbai- Pune highway
4		New Shivaji nagar	Kalwa railway station – east side
5		Janaki nagar	Manishanagar, near creek
6		Kharegaon	Vitthal mandir area
7		Gaondevi	Gaondevi mandir area

Sr. No.	Ward Committee	Name of Road	Location
	Mumbra		
1			Station to Simla park
2			Kailashnagar
3			Suhana Manjil
4		Mumbra Dumping road	Sonaji Nagar
5			Rashid Compound
6			Thakurpada
7		Achanaknagar Road	Dr. Ambedkar Nagar, Achanaknagar
8		Khadi Machine road	Khadi Machine road

The slums are located on the lands of State Government, MIDC, forest & private lands . The ownership of these lands has implications for intervention strategies.

2.2 Floods

There are underground sections passing in Center Railway which get submerged during heavy rains as given below :

Thane, Kalwa & Mumbra Stations.

There a number of flooding points which result in disruption of traffic and flooding of settlements.

The number of flooding points in each ward is given below.

A ward wise details of all the flooding locations is given in standard operating procedure.

Most of these flooding points have been listed in the ward plans and have a localized impact. However, some of these flooding points have a tendency to disrupt the traffic and paralyze city life.

A number of steps such as de-silting of drainage and clearing of nallahs are taken by TMC and co-ordination with Railways & MSRDC/PWD, MIDC to avoid such flooding. However, a combination of heavy precipitation and high tide may make such flooding unavoidable.

2.3 Fires

THANE is greatly diversified and practically has every type of fire risk. The fire risk can arise from the following sources:

- Large number of closely built building in congested areas.
- High-rise buildings with inadequate fire-fighting facilities
- Commercial activities in all the sectors / ward committees
- Small, medium and heavy hazardous industries in MIDC areas

There are 255 officers and men spread over 6 stations, with machinery given below to fight the fires.

- Fire Station:

1. Aerial Ladder (40 mt.)	01
2. Rescue Tender	01
3. Brontoskylift	01
4. Water Tanker	06
5. Fire engine	11
6. Minifire Engineer	02
7. Emergency tender	03
8. Fire jeep	05
9. Foam Tender	01
10. Ambassador	10

Earthquakes and house crashes

The minor earthquakes that have occurred in THANE region in the last few years .

Therefore, the major risk category of structures is that of the engineered masonry constructions. Many of these are essentially load-bearing structures..

There are approx. 900 censed buildings in THANE are declared as dangerous dilapidated building.

The Engineers of the TMC undertake frequent inspection of these buildings and take all preventive measures to protect the building from any collapse due to its weak structural constitution. Usually dangerous portion of these buildings are propped up and in many cases demolition of dangerous portion also has also been resorted to.

House Collapse is therefore a regular phenomenon and in the absence of adequate transits accommodation, emergency shelters become a major requirement in the event of house collapse.

Thane comes under crismic zone 4. The town planning deptt. is competent authority to look after building permission. The Deptt. follows the Development Control Regulations which has provisions / rules regarding earthquake resistant structure.

2.4 Landslides

THANE also faces the risk of Landslides with pressure on land, many vacant sites on hill slopes or bottoms of hills have turned into inhabited area and thereby become vulnerable to landslides. Most cases of landslides occur during heavy rain associated with high velocity winds. It sometimes results in loss of human lives and damages to structure.

the sites vulnerable to landslides in Thane city are as follows :

Name of ward	Location/site
Mumbra	Slum & habilitated unauthorized structures
Railadevi	Slum & habilitated unauthorized structures

The many sites vulnerable to landslides in THANE are essentially located on or near the hill ranges. These hillside lands are mainly owned by different authorities like the State/Central Government, or the forest dept.

Maharashtra Government has enacted the Maharashtra Slum (Improvement, Abolition and Rehabilitation) Act, 1971 under which slums in specified areas are notified as regularized slums and given protection since 1995, under the slum

improvement programme, these slums are being improved by Vambiyogya, JNNURM,. These slums are being provided with basic amenities through BSUP scheme of TMC.

2.5 Road Accidents

There are major road sections in THANE which are accident prone in THANE city along with fatal and serious injuries are given below :

S.No.	Location
1	Thane- Belapur Road
2	Eastern Express Highway
3	Ghodbunder Road
4	Modella – Teen hath Naka
5	Mumbra By-pass
6	Kalwa Bridgs to Parsik Bunder.

2.6 Industrial and Chemical Accidents

There are approximately 2500 industries either involved in the manufacture and processing of hazardous goods or in the storage of hazardous goods. A comprehensive list of these industries along with fact sheets are given in a separate volume. Many of these godowns are in the close proximity of the residential areas or other storages, thereby increasing the risk of fires and chemical explosions in residential as well as industrial estates.

The major concentration of the hazardous industries is seen in the Kolshet, Balkum Industrial belt, having major chemical complexes, establishment and station. Clustering of various operating units make them highly vulnerable.

Bayer, Sandoz/Clariant, Indofil, Bombay Chemical, Nicholas Piramal etc all have their on-site plans, with manpower and equipment. Industries in Wagle industrial area the region, though handling flammable and toxic liquids and gases, are equipped to take care of minor to moderate emergencies the Settlement, which are in the vicinity of the units increase the risk and require off-site disaster management activities. None of these organizations have the capacity to manage an off-site impact of the emergencies. Therefore, the nature of emergency that can develop may require re-enforcement from THANE Fire Brigade. The detailed fact sheets of these industries in given in the separate volume III.

These fact sheets highlight the specific threat of the hazardous chemicals in terms of the physical consequences and the resources available with these industries to tackle the emergencies. The fact sheet identifies the individuals responsible for co-coordinating the activities with other organizations. In view of the fact that the Pollution control officer / Assistant Municipal Commissioner is responsible for coordinating disaster response at the ward level, it may be necessary that these units establish a direct contact with the Asst. Commissioner in all emergency situations, even when on-site emergencies occur, and keep him posted with the status of the emergency. This will improve the co-ordination and allow for timely reinforcement from fire brigade and at the same time provide standby arrangements, if off-site operations are required.

In additions, piped natural gas supply to household has started in some urban areas and is intended to cover most of the urban. In view of this, the risk of fires due to leakage of gas is an added dimension.

The Details of these List of Hazardous chemicals handling companies and their transportation done through, THANE, with remedies is added in separate volume.

2.7 Cyclones

Being an near to island city onside hilly region the coastal wards (facing the Arabian Sea) are prone to gusty winds and cyclonic impacts.

2.9 RIOTS

As the THANE settlement compromise of maximum of non-local, external settlement from remaining Maharashtra & India, multi-cultural, multi-linguistic , multi-racial settlement is observed in THANE .Generally Harmony is observed during all Cultural, Festival and National programmes ,But there are possibility of misunderstanding and conflicts in opinion in masses which leads to riots.

Leading to insecurity and leaving fear in the minds of the citizen. These riots paralyse the routine works of the commuters and citizen and injured, ill, old, poor and small vendors are most affected. In this condition areas may require evacuation to temporary shelters or identified safe sites.

2.10 Tsunami

In most of these coastal areas, a number of houses have also mushroomed along the coastal area. The quality of housing material used and without premission, this settlement is highly vulnerable and the possibility of their capacity to withstand the Tsunami impact is very limited. Similarly encourage to growth of mangroves can considerably reduce the impact of Tsunami as the warning time is too less for evacuation.

SECTION-3
MITIGATION STRATEGY

SECTION-3

MITIGATION STRATEGY

The assessment of extent of vulnerability of the area, people and property to a hazard or the probability of its occurrence has been undertaken in the earlier chapters on Vulnerability analysis and risk assessment. These are essential forerunners for evolving appropriate preventive measures and mitigation strategies

The analysis shows that various locations in THANE are vulnerable to different disasters in varied degrees. Preparedness and mitigation plans, therefore, will have to be evolved and implementation monitored locally at the ward level to reduce the impact of the disasters. While evolving such area specific preparedness and mitigation plans, types of vulnerabilities will essentially define the levels of preparedness and mitigation strategies. These strategies will have to be concentrated more towards the social and economically backward communities. As against the vulnerability of the overall system.

3.1 Disaster Preparedness

Preparedness focuses on plans to respond to a disaster threat or occurrence. It takes into account an estimation of emergency needs and identifies the resources to meet these needs. It also involves preparation of well-designed plans to structure the entire post-disaster response, and familiarizing the stakeholders, particularly the communities through training and simulation exercises.

The best examples of preparedness activities are the development of local warning and community evacuation plans through community education, evolving local response structures and administrative preparedness by way of stockpiling of supplies, developing emergency plans for rescue and relief.

3.2 Disaster Mitigation

Pre-disaster planning consists of activities such as disaster mitigation and disaster preparedness. Disaster mitigation focuses on the hazards that causes the disaster and tries to eliminate or drastically reduce its direct effects. Examples include strengthening buildings to make them cyclone or earthquake resistant, controlling land-use patterns to restrict development in high-risk areas and diversification of economic activities to act as insurance to offset losses in different sectors.

Structural measures such as the construction of protective works or alterations designed to diminish the vulnerability of the elements at risk, and non-structural measures, such as regulating land use and building codes, and equipping line departments for damage reduction, can all reduce the impact of the disaster on a region or a population. Everything that is done to reduce or prevent the damages that a disaster may cause is called "mitigation of risks" Such mitigation can be integrated with normal inter-departmental coordination.

Mitigation distinguishes actions that have a long-term impact from those that are more closely associated with preparedness for, immediate response to, and short-term recovery from a specific disaster, recognizing that the boundaries are not absolute. Mitigation efforts must not only be a priority for the repair, reconstruction, and rehabilitation of developed areas, but must become a prerequisite for growth in areas that have not been developed.

3.3 Goals of Mitigation Strategy

To substantially increase public awareness of disaster risk so that the public demands safer communities in which to live and work and to significantly reduce the risks of loss of life, injuries, economic costs, and destruction of natural and cultural resources that result from disasters.

SECTION-4

MIGATION MEASURES FOR THANE

SECTION-4

MITIGATION MEASURES FOR THANE

In view of the risk and the vulnerabilities identified in the earlier sections, the mitigation measures proposed have been categorized into three major headings.

- Infrastructure improvement
- Communication and Public Information Systems.
- Land use policies and planning

Based on these, additional requirements for the line agencies will have to be identified keeping in view their future growth requirements as well as specific demands put on them as a result of disaster management plan exercise. It is expected that special procurements and inputs will enhance the capabilities and the quality of service and rationalize efficient contributions of the limited manpower resources available with these agencies. The mitigation strategy also envisages the possibilities of upgrading the quality of human resources, through training, in the long run.

4.1 Infrastructure improvement

Infrastructure improvement for THANE has been examined in terms of transport, services and housing infrastructures. These include road and rails networks, sanitation and sewer disposal system, storm water drainage systems, slum improvement and housing repairs and retrofitting programmes. The dependent lifelines thane which include water supply, electric supply, telecom services, fuel, health, food supply etc. depend very much upon the effective functioning of these infrastructure facilities.

The overall mitigation strategy aimed at. Vulnerability reduction should address issues with respect to institutional arrangements and implementing strategies for these infrastructure improvements. The current effort in detailing the road network water supply etc is the relevant step in the direction of vulnerability reduction.

4.1.1. Transport infrastructure

The requirements of projected passenger traffic rise in vehicular density, and the increase in number of vehicles, both private and public, will put tremendous pressure on the existing transport infrastructure and road network.

For reduction of road accidents, reducing disruptions resulting from floods and increasing the response time of the emergency services, a comprehensive mitigation strategy to improve the transport infrastructure becomes imperative.

However, in the present context, any substantive increase in the infrastructure capabilities would necessitate a large component of resettlement for which an appropriate policy and participatory strategy will have to be worked out. As of now, the Government of Maharashtra, based on the recommendations of the "Task Force on Policy Framework, Institutional Arrangements and Implementation Strategy for MMRDA, Resettlement and Rehabilitation Project, July 1995" has been in a position to come out with a clear statement on urban policy.

Additionally, proposed commuter lines in MMR need to be expedited. Successful implementation of MMR and subsequent phases therefore is essential. Most of these projects have a component of resettlement as well. This project will be

Implemented by different agencies and hence call for coordinated approach of the technical and non-technical component with emphasis on participatory planning and management of resettlement.

In order to reduce vehicular traffic in all wards, the proposal of mass transport to all this area needs to be seriously pursued.

Flyovers

In addition TMC is undertaking the work of construction of flyovers across station region SATIS Project also five flyovers

have been proposed out. The initial surveys Work on majority of them have already started. A comprehensive traffic review will be required once all these projects are completed.

A list of these flyovers which are proposed is given below :

- Three on Ghodbunder Road
- Meenatai Thakare Chowk
- Hariniwas Circle

Road widening

This is one of the major requirements on one of the important arterial roads. Namely creek road. In addition, there are many junction points or flyovers which need improvements.

Additional roads

For clearing the heavy vehicle traffic between Industrial MIDC Zone and the city, the Developing Vartaknagar areas, Ghodbunder Road Truck needs widen. In the same way there is a necessity of Truck terminus in all the ward committee area to avoid heavy traffic congestions due to parking of vehicles.

Provision for Special Corridors

Provision of special corridors for Fire Brigade, Ambulances, and Police, Keeping in view, the location of Municipal and Government hospitals, Fire stations and Police stations, special corridors for the movement of Fire Brigade, Ambulances and Police can be identified and reserved for these services, Plan should be evolved to ensure that no other traffic is allowed to block the movement of these emergency service units, This provision of reserved corridors required identification of inter-connecting small lanes and by-lanes so as to ensure complete north-south and east-west mobility. No parking or any other encroachments should be permitted on such identified corridors. No additional roads are envisaged in this proposal. The traffic police in consultation with fire services and hospitals should be in a position to identify such

special corridors. Under this proposal, additional entrances for casualty may be required in some hospitals.

Provision for Special Corridors

Provision of special corridors for TMT, MSRTC, BEST

In order to ensure that TMT, BEST, MSRTC buses do not slow down the traffic movement and also get a required priority being a mass transport, lanes can be reserved on the main roads for these buses. On such roads with reserved lanes, the left-turn for other traffic should only be permitted at the signals. Proposed for central corridor bus a lane has to be examined in this context.

Non-parking roads

Roads with high vehicular density and the major arterial roads should be non-parking zones. Also, the areas having concentration of chemical storages and processing have a high-risk to fires. Many of these units have settlement in their vicinity which may require evacuation. Roads connecting to these locations should be kept free from parking, this would allow for easy evacuation if necessary. For example (Balkum / Kolshet area) road through declared as no-parking road to facilitate evacuations during emergencies. Main access to all railways stations, Bus depots/Terminal & Highways should be declared as non-parking. The concept of service road should be adopted at this stage. The development of internal road should be considered

This in turn will require implementation of parking demonstration plan and evolving multistoried parking facilities in high-density , station and bus depot areas.

4.1.2 Services and related infrastructure

Sanitation facilities

Although there has been no serious outbreak of any epidemic in the city during the last thirty years except in 2005 where

some diseases like leptospirosis are reported and there has been a daily quality monitoring of water supply. The Slum Sanitation Programme of the TMC may provide some relief, but it has serious limitations to reach out to all the population.

Sewer treatment and disposal facilities proposed under various Sewage Treatment Plants need to be put on high priority and the bottlenecks need to be sorted out at the earliest.

Sanitation infrastructure at places of mass congregation

THANE attracts a large floating population. Also it has a number of locations of mass congregation. It is essential that these mass congregation locations are provided with adequate water and sanitation infrastructure. Mobile sanitation facilities can be one of the options. Alternatively, permanent sanitation infrastructures need to be made available at these locations for the visitors to ensure health safety for the local residents..

Nallah draining, silt removal and cleaning

The settlements along the nallahs are vulnerable to floods. Also, in the absence of draining, silt removal and regular de-silting (cleaning), most of these nallahs have a tendency of flooding and choking. It is necessary that a programme of nallah cleaning, silt removal is undertaken rigorously through the Engineer departments of the TMC. This may require shifting of some of the settlement along the nallahs.

Increasing capacity of storm water drainage

The present capacity of the storm-water drains needs to be augmented to a higher capacity which is under. In keeping with this present concern, care should be taken to ensure that no natural storm-water holding ponds are allowed to be encroached upon and reclaimed. The proposal of de-linking sewer and storm water drainage system would further

increase the capacity of storm water drainage and reduce the coastal pollution. The twin goals of the de-linking need to be re-enforced through early implementation of these project.

Upgrading Emergency Services

The response operations of the emergency services of police, fire brigade and hospitals are often hampered due to inadequate equipments and facilities. These departments are currently engaged in identifying specific items which will help them in their response operations. Helping these services to obtain such identified items would be a part of the mitigation strategy.

Enforcing on-site fighting capability of hazardous industries.

Presently, each hazardous industry is expected to have an on-site disaster management plan supported by adequate fire fighting capabilities. However, it is observed, that the capacities of these industries are limited thereby increasing the pressure on TMCs Fire Brigade. A programme of up gradation though training and guidance on procurements from the Fire Brigade would go a long way in helping these industries to be self-sufficient for on-site disasters as well as be an additional resource available to the civic administration.

4.1.3 Housing infrastructure

Dangerous structures and various encroachments on Govt/Forest land foe a threat. In part; various we buildings collapsed in ward committee like Naupada, Wagle Estate the No. of dilapidated / Dangerous buildings in various ward committee is as under.

S. No.	Ward Committee	No. of Dangerous Structures	No. of Most Dangerous Structures	Total
1	Majiwada	93	-	93
2	Mumbra	122	10	132
3	Kopri	19	4	23
4	Railadevi	6	-	6
5	Naupada	138	6	144
6	Uthalsar	82	4	86
7	Kalwa	53	10	63
8	Wagle	321	5	326
9	Vartaknagar	19	5	24
	Total	853	44	897

Minimum access roads

Settlements with inaccessible roads should be taken up on priority under so as to ensure minimum access roads for brigade and ambulances. Wherever, this is not technically feasible, relocation and safe siting of settlements should be undertaken.

4.2 Communication and Public Information Systems

Public Information System (PIS) demands that people are kept aware and informed in the entire cycle of disaster management from the stage of risk assessment. A lot of community education, awareness building, plan dissemination and preparedness exercises has to precede in a meaningful PIS is made operational. Thus, these tasks have already been listed in the DMP. Involvement of citizen's groups, NGOs and CBOs in plan dissemination and preparedness is going to be one of the crucial elements.

Additionally, familiarity with warning systems and regular drills to respond to such a system and specific do's and don'ts for the community during

the disaster situation have also been suggested. Respective agencies have been assigned to undertake such tasks.

4.2.1 Wireless communication

For efficient co-ordination and effective response, communication amongst line departments such as TMC, Police, Fire Brigade, Municipal/Government hospitals, Meteorological centre and Transport system is essential. This can be ensured by upgrading the present communication system with a more efficient wireless system. The wireless system should be full-duplex and also enable communication with different line departments.

4.2.2 Display Boards

Also, as a part of mitigation measure electronic information display boards should be installed which could be monitored from TMC control room. The messages displayed are essentially instructional during the time of disasters. The information displayed will direct public response and help the administration in localizing the impact. In the normal times, the same display boards can be used for community education on social issues and disaster preparedness messages.

The Traffic Police and TMC have jointly identified locations where these display boards can be put-up. The critical locations are all rail terminus, MSRTC depots, BEST bus, TMT depots and important junctions.

4.2.3 Public Address System in local Trains

In Order to keep the passenger informed about the movement of rail services, BEST & TMT services especially during monsoon & other contingencies public address system needs to be installed in all the rakes. This would also required, a wireless contact between guard and the railway stations Such as system would allow the passenger to take timely decision with respect to there travel

4.2.4 Public Address System at railway station and Bus stations

All railway stations, BEST, TMT depots, MSRTC bus depot within TMC region, should have the facility of public Address System to keep passengers updated on traffic situation.

4.2.25 Cable TV network

Information put on the cable TV Network may help citizen to take decision with respect to there travel. Since cable TV operators have local coverage, a ward wise arrangement will have to be made for information inputs.

4.2.6 GIS

All the infrastructural facilities and utilities in THANE need to be mapped on to a GIS application on a multi-user basis. There is therefore a need to develop a GIS on a scale of 1:1000. This would help the planners, administrators, emergency services and utility provided

4.2.7 Radio Services

Install a THANE city radio station, or get allotted a spectrum frequency for control room which will be used only at the time of emergency&contengency, Since Radio instrument is very cheaply available and can work on for days together on dry cell batteries without need of electricity, similarly it is portable and easy to use, without jamming the service provider as like mobile phones

4.3 Land use policies and planning

The draft Regional Plan from TMC, provides a basic framework for the land use policies and indicates the directions for planning. Within the context of the policy framework incorporated in these document and the priorities listed, the following can be brought within the purview of the mitigation strategy.

The Detail on community preparedness and environmental management for Navi Mumabai has indicated the typology of vulnerable settlements

including pavements dwellers. The current typology of settlement only looks at the ownership and eligibility for regularization. A detailed analysis of the existing settlements in terms of typology of vulnerability would facilitate the preparation of a master plan for safe-sitting of such vulnerable settlements.

4.3.2 Control on land reclamation

All existing water bodies and storm water holding ponds will have to be protected under strict development control rules. Clauses providing for any exceptions should be deleted from the development control rules.

4.3.3 Shifting of storages and hazardous units from residential areas

As a matter of policy, storage and processing of hazardous material in residential areas, is normally prohibited. However, looking at the present situation, a conscious effort to encourage such units to move out from the residential area will need a package of incentive and subsequent enforcement. This exercise will have to be done at the micro-level that is the ward level. A ward-wise inventory of such units is already available with TMC and can form the basis for evolving a phased programme.

4.3.5 Decongestion

THANE being an important urban city, is likely to reached its maximum capacity in terms of Infrastructure. The GOM has been pursuing the policy of guided land development schemes development of new townships as Ghodbunder Road, as strategies towards decongesting the main city. The potentials of regional dispersions in the MMR needs to be further pursued by concerted strategies incorporating job location and infrastructure development.

SECTION-5
NEED FOR CO-ORDINATION
MECHANISMS

SECTION-5

NEED FOR CO-ORDINATION MECHANISMS

5.1 Special Features of THANE

The bifurcation of THANE city and Thane collector is more a revenue administrative arrangement whereas the THANE as a whole has a Municipal Corporation divided into 9 ward committee for managing municipal services.

There exist the following Control Rooms in THANE

- District Control Room for Thane.
- THANE Municipal Corporation Control Room
- Police Control Room
- Fire Brigade Control Room
- TMT control Room
- Railway Control Room
- MIDC Control Room
- MPCB Control Room

In addition, on specific request from the Additional Chief Secretary (Home), help from the armed forces can be sought, especially for evacuation, medical aid, provision of relief and establishment of relief camps communication aid, repair to damaged infrastructure, management of International Relief etc. These activities will be co-ordinated through the Army control room which will form a part of the co-ordination structure

During monsoon, temporary control rooms are set-up at all ward offices./ In addition, the Water Department of TMC maintains a daily surveillance on water quality for epidemics. Water and Sewer Control Rooms also exist within TMC for monitoring internal co-ordination of the services.

The public transport is managed by the Corporation through TMT and the rapid mass rail transport is managed by Central Railway. On an average, about half million commuters use these services. Therefore any disruption in the transport services, can lead to passengers being stranded at various locations; more specifically, at Railway stations, Junctions since are Naupada, Teenhath naka, Mulund Check Naka, Kapurbawadi naka is primarily a business cum commercial centre, the possibility of passengers being stranded at work places is very high and needs special attention. Further, the working population and the labour force is drawn extensively from adjacent area.

Municipal Corporation area which serve as the dormitories of Mumbai city. The authorities from Thane and Mumbai, NMMC are also brought into the co-ordination mechanism by co-ordinating with Thane District Control Room, Thane Municipal Corporation and Greater Mumbai Municipal Corporation.

The experience shows that floods, rail accidents and power failures have mainly been responsible for such disruptions. Therefore, in such cases, there is a need for co-ordination with state and central government agencies and local authorities, particularly, between Central Railway, Police Department and TMC.

THANE city and neighbouring cities experience a number of disasters the frequency and intensity of which has been increasing over the last few years. During the disaster situation various Control Rooms, Municipal Departments and State Departments are actively associated and are simultaneously involved in disaster response from warning to relief and rehabilitation. This creates a situation of multiple authorities and multiple controls and calls for effective coordination mechanisms.

Section-6

INSTITUTIONAL ARRANGEMENTS

Section-6

INSTITUTIONAL ARRANGEMENTS

In cases of disasters of exceptionally large magnitude which requires co-ordination with wide range of lateral agencies including central government agencies, the Additional Chief Secretary (Home) can play a vital role to provide help from various Govt org. to the Municipal Corporation to handle the Disaster of THANE.

Co-ordination arrangements for managing receipt of warning and response operations on occurrence of disaster are given in separate charts.

6.1 THANE Municipal Disaster Management Committee

There will be THANE Disaster Management Committee under the chairmanship of Hon. Municipal Commissioner. The Committee will consist of the following Members

- | | |
|--|------------------|
| 1. Hon. Municipal Commissioner | Chairman |
| 2. Deputy Municipal Commissioner (HQ) | Member Secretary |
| 3. Addl. Municipal Commissioner | Member |
| 4. Deputy Municipal Commissioner (Enc) | Member |
| 5. Deputy Municipal Commissioner (SWM) | Member |
| 6. CAFO | Member |
| 7. City Engineer | Member |
| 8. Dy. City Engineer | Member |
| 9. Dy. Executive Engineer (Ele) | Member |
| 10. Manager TMT | Member |
| 11. Chief Fire Officer | Member |
| 12. DCP | Member |

13. DCP Traffic	Member
14. Deputy Control Civil Defence	Member
15. DY.RTO THANE	Member
16. Regional Officer (MIDC) Wagle Estate	Member
17. Regional Officer (MPCB) Thane	Member
18. Rationing Officer Thane	Member
19. Superintending Engineer MSEDCL	Member
20. GM MTNL Thane	Member
21. NGO Anirudha bapu trust	Member
22. Lion Club (Joint Secretary)	Member

Depending on the type of disaster and its intensity Hon. Municipal Commissioner can appoint the necessary persons in the committee

6.2 Functions of the THANE Disaster Management Committee

The functions of the Mumbai Disaster Management Committee would be to:

- Ensure effective inter-departmental co-ordination between all departments
- Provide policy decisions when required
- Keep the government informed about disaster situation.
- Review disaster related activity reports received from TMC Control Room, Police Control Room and Army Control Room and provide appropriate directions.
- Co-ordinate the activities of lateral, and Central Government agencies like Defence Services, SRP, RPF, coast Guards, CISF ,MTNL, AAI, FCI DD, AIR Meteorology Dept, MPCB.

The Hon. Municipal Commissioner may set-up an informal group (core committee) as a part of preparedness measures and on-going

consultations with respect to disaster management plan. This core group can consist of the following members which can meet more frequently to help in streamlining resource mobilisation particularly specialized equipments (such as given below) for specific emergencies such as gas leakages, house collapses etc, and for better coordination.

Materials/Equipments for resource mobilisation

Ambulances	Mobile X-Ray units
Boats/Rescue Boats	Public address systems
Buses	Pumps diesel and electric
Cranes	Self breathing apparatus
Demolition equipments	Sniffer dogs
Drilling rigs	Tankers
Earthmoving equipments	Tents
Foam Tenders	Toxic gas masks
Generators	Tractor
Ham sets	Trucks
Helicopter service	VHFsetswith batteries
Mobile trauma care vans	Wireless sets

6.3 THANE Municipal Corp. Disaster Management sub Committee

In order to ensure speedy and effective response, the execution of disaster related activities will be undertaken under the direction of the TMC Disaster Management Committee. The Committee will also be responsible for continuous monitoring of such activities. Such a committee will be a permanent committee. The composition of the sub committees will be as follows: -

6.3.1 Committee for Rescue operation.

One rescue operation teams of 36 members each are formed to rescue the citizens at the time of disaster and will comply of following personnels

1. Fire station Officer :- Incharge
2. Firemen :- 9 Members
3. Civil Defence trained TMC employes :- 9 members
4. Home guards residing in THANE :- 9 members
5. police staff :- 9 members

6.3.2 Committee for Structural stability

The purpose of this committee will be to ensure the stability of the structures and monitering the development as per DCR norms

1. City Engineer :- Chairman
2. DMC (Ench) :- member
3. Dy. City Engineer :- member
4. A.D.T.P. :- member

6.3.3 Committee for training and development

The purpose of this committee will be to train and develop employees and citizens for disaster management

1. Add. Commissioner :- Chairman
2. DMC (HQ) :- member
3. DMC (Ench.) :- member
4. Chi. Fire Officer :- member
5. P. O. :- member
6. PRO :- member

SECTION-7

FUNCTIONS OF CONTROL ROOMS

SECTION-7

FUNCTIONS OF CONTROL ROOMS

The control rooms under the jurisdiction of various line departments will be responsible for co-ordinating and facilitating the performance of the services and functions listed against each control room. The Control Rooms would also ensure availability and movement of the staff of their respective departments. Additional assistance of the TMC Control Room may be sought in emergency situations.

7.1 **Police Control Room**

- Co-ordinate with TMC Control Room
- Cordoning of area to restrict movement of vehicular and pedestrian traffic
- Shifting the rescued/affected people to hospitals.
- Providing easy access to rescue and relief personnel/vehicles ,
- Corpse disposal
- Law and order
- Divert traffic on alternate routes as and when necessary in co-ordination with TMT & MSRDC / MSRTC.
- Set-up an information centre to organise sharing of information with mass media and community
- Co-ordinate with TMT & MSRDC Control Room

THANE Disaster Management Action Plan therefore provides for co-ordination of various control rooms, departments of municipal corporation, departments of state government with each other and the state level .

7.2 TMC Control Room

In addition to performing the tasks listed below, the TMC Control Room in its capacity as a nodal control room will be responsible for co-ordinating the support from all other Ward Control rooms for the activities of all line departments and agencies which are involved at the disaster site. The TMC Control Room may seek assistance from the District Control Room for requisitioning of resources such as private transport, temporary shelter and other resources.

The field level/ward level operational functions of TMC Control Room are as follows :

- Emergency supplies of water and cooked food
- Transfer of stranded and marooned persons
- Emergency transport for the seriously injured to hospital
- Setting up temporary shelters
- Salvage Operations
- Corpse disposal
- Assistance to other control rooms for movement/transport of staff including Rescue parties, Relief Personnel and Relief Materials
- Communicate to CONTROL ROOM additional resources required by various control rooms
- Establishing communication links with CONTROL ROOM
 - Mutual Aid and Response Group
 - NGO coordinating committee'
 - Private donors
- Dispatch of Preliminary Information Report to CONTROL ROOM
- Dispatch of all information and any other as asked for by CONTROL ROOM
- Report to CONTROL ROOM on deployment and reinforcements of staff and resources.

- Issue of passes and identification stickers for vehicles on relief duty
- Provide official shoulder bands with TMC emblem to all ward officers and other officers on disaster duty for easy identification.
- Issue of passes and identity cards to relief personnel including the persons from NGOs
- Coordinate NGO activities through necessary support to ensure community participation by Establishing coordination mechanisms among NGOs identify action of NGOs to serve on committees, task force assigning well-defined area of operations and report to CONTROL ROOM assigning specific response functions to specialized NGOs and report to CONTROL ROOM Coordinate supplies distributed directly by NGOs and other organizations including private donors reporting upon procurement and disbursement of relief materials received through government and non-government channels Mobilizing and coordinating work of volunteers ensuring community Participation
- Organize and coordinate clearance of debris and storm water drain
- Temporary Repairs to damaged infrastructure power water transport. Telecommunication roads wharves. bridges canals public buildings.
- Coordination of Transport with Railways MSRTC Private transporters Boat Operators.
- Request for providing access through roads during emergencies for specific time duration and monitor the requirement of such an access.
- Set-up an information centre to organise sharing of information with mass media and community
- Provide all information contained in the Risk and Vulnerability Assessment document of THANE to all the other control rooms and in special circumstances communicate the disaster prone sites to all control rooms.
- Monitor disaster warning or disaster occurrence and communicate the same to CONTROL ROOM and the other control rooms for better

preparedness and effective response in coordination with and on the advise of the following agencies :

Meteorology Department (Heavy Rains, Cyclones, Tidal waves), MERI, BARC, Meteorology Department (Earthquakes), Industries (Industrial and Chemical Accidents), Fire Brigade, Police (Road Accidents, Riots, Bomb threats/blast, Fires, House Crashes, Landslides) Railways (Accidents and Disruptions). Health Department (Government) (Epidemics and Food Poisoning)

- Coordinate with other control rooms
- Keep readily available all the information contained in DDMAP, including Inventory of Resources as given in MDMP
- Office and residence telephone numbers, fax numbers, and mobile numbers where applicable of Chief Secretary and other Secretaries including those of Mumbai Disaster Management Committee, TMC Disaster Management Committee.
- Phone numbers, names, addresses and pager numbers where applicable of the officers from various control rooms
List of people who are organising and co-ordinating the relief activities at the site
Phone numbers, names, and addresses of the TMC ward level officers
Phone numbers, names, and addresses Non-officials (like MPs, MLAS, and Corporators) in the city
Planning Information required including maps incorporated in Thane Disaster Site Map and indications on extent to which other areas may be affected, etc.
Information regarding alternate routes, water sources, layout of essential services which may be affected, etc.

7.3 Fire Brigade Control Room

- Rescue and evacuation
- Salvage Operations
- Communicate to TMC Control Room details of all the above activities
- Communicate to TMC Control Room any additional resources required for performing the above tasks.

7.4 Railways Control Room (Central)

Rescue and Salvage Operations for rail accidents

- Monitor flood situations on railway tracks and co-ordinate with TMC Control Room for mass transport requirements
- Co-ordinate with TMC Control Room for draining of flood waters from the railway tracks
- Co-ordinate medical and first aid with Railway Hospitals and TMC Control Room
- Set-up an information centre to organise sharing of information with mass media and community
- Communicate to TMC Control Room details of all the above activities
- Communicate to TMC Control Room any additional resources required for performing the above tasks

7.5 Thane District Control Room

Acquisition of accommodation, structure, vehicles and equipments for relief
Setting up of transit camps and arranging for food distribution
Arrangements for dry rations and family kits for cooking
Provide gratuitous relief
Set-up an information centre to organise sharing of information with mass media and community
Communicate to TMC Control Room details of all the above activities
Communicate to TMC Control Room any additional resources required for performing the above tasks.

7.6 Health Activities during Disaster (for TMC)

- Emergency Supplies of medicines and first-aid
- Providing emergency treatment for the seriously injured
- Corpse disposal
- Preventive medicine and anti-epidemic actions

- Supervision of food, water supplies, sanitation and disposal of waste
- Assess and Co-ordinate provision of ambulances and hospitals where they could be sent, . (public and private);
- Provide special information required regarding precautions for epidemics
- Set-up an information centre to organise sharing of information with mass media and community
- Communicate to TMC Control Room details of all the above activities
- Communicate to TMC Control Room any additional resources required for performing the above tasks

7.7 Civil Defence Control Room

- Rescue and evacuation
- Communicate to TMC Control Room details of all the above activities
- Communicate to TMC Control Room any additional resources required for performing the above tasks

7.8 Army Control Room

- Maintain liaison with the THANE Disaster Committee for vital inputs during warning period
- Collect information and warn appropriate Army units
- Coordinate movement of men and material as required
- Establish communications till site of disaster and supplement the civil communication set up if required.
- Coordinate all military activity required by the civil administration.

The armed forces can be requested by the Additional Chief Secretary, Home to perform the following activities in the event of a disaster:

- **Infrastructure for Command and Control**
Infrastructure for setting up command and control organisation for relief can be an important task for armed forces. This would include provision of communications (radio, telephone) and specialised manpower.
- **Medical Aid**
Provision of medical care with the help of the medical teams, including treatment at the nearest armed forces hospital.
- **Transportation of Relief Material**
Provision of logistic back-up (aircrafts, helicopters, boats, etc) and vehicles for transportation of relief material to the affected areas.
- **Establishment of Relief Camps**
Setting up relief camps and overseeing their running can be done through the armed forces.
- **Construction and Repair of Roads and Bridges**
Construction and repair of roads and bridges to enable relief teams/material to reach affected areas can be undertaken by army engineers. This will include provision of technical and plant equipment such as cranes, bulldozers and boats etc.
- **Maintenance of essential services**
Repair, maintenance and running of essential services can be undertaken in the initial stages of relief.
- **Evacuation of people to safer areas**
Assist in evacuation of people to safe places before and after the disaster.
- **Management of International Relief**
Management of handling of international relief can be undertaken by the defence services.

SECTION-8

**NON-GOVERNMENT ORGANISATIONS
(NGOS) AND VOLUNTARY AGENCIES**

SECTION-8.

NON-GOVERNMENT ORGANISATIONS (NGOS) AND VOLUNTARY AGENCIES

The non-government organization and voluntary agencies play an important role in disaster management and provide a strong band of committed volunteers with experience in managing the disasters. Their strength lies in the choice of their manpower, the informality in operations and flexibility in procedures. These organizations enjoy a fair degree of autonomy and hence can respond to changing needs immediately.

However, in order to maintain uniformity in operations and effective co-ordination, it is desirable that they follow the standards of services (as given in the Guidelines), information exchange and reporting so as to enable the Municipal Commissioner to have a total picture of resource availability, disbursements and requirement. NGOs therefore have been assigned specific tasks by the Municipal Commissioner to undertake relief work within the overall institutional framework. As and where possible, NGOs may also be improving the quality of delivery of services. In addition, Mohalla Committees have been operating at the community level, especially in times of emergencies like house collapses, fires, and floods. Such committees have been identified at the ward level.

Specific activities in which NGOs/Private Sector can be involved during disaster management operations etc.

- Search and rescue operations
- Information dissemination
- First aid
- Disposal of dead
- Damage assessment
- Management of information centers at temporary shelters.

- Mobilisation and distribution of relief supplies including finances
- Manpower for community mobilisation, crowd control, rumor control, traffic management.
- Specialized services (psychiatric and mental health assistance)
- Management of transit camps.

The following agencies will be associated with relief and rehabilitation activities. Most of these agencies have the capacity to mobilize required resources and have assisted the administration in the past in managing relief and rehabilitation activities. These agencies include:

- Anirudha Bapu Trust.
- YMCA.
- TMA
- TISSA
- Hariyali
- Various Mandal at Ward Level
- Lions Club
- Rotary Club

8.1 Encouraging Community Preparedness

Disasters may result in cutting off essential services and in spite of administrative preparedness it may not be possible for the administration to reach out immediately.

Mitigation efforts and preparation of the disaster management action plan for local areas are essential elements and pre-requisites. Preparedness to a large extent would reduce the impact and the damage. Training and simulation exercises for enhancing the community's preparedness and response capability to identified risks will simultaneously strengthen and enhance the capacity of the administration to undertake necessary preparedness or evacuation measures. The Corporation wants to

encourage and support initiatives towards community preparedness measures.

Private Sector units, NGOs and other organization have been identified as resource groups for involvement in community preparedness measures. These agencies will be able to get the benefit of training for the same from the training activities undertaken by YASHADA. As a part of general preparedness at community level, the NGOs will make the communities conscious about the type of hazard that the community faces. Thus local disaster management action plans for hot-spot areas in the context of specific vulnerability would be developed. For areas with high concentration of industries particularly engaged in production, storage and transport of hazardous materials, Mutual Aid and Resource Groups will be set-up.

8.2 Mutual Aid and Resource Groups (MARGs)

The objective of setting up MARGs is to Make the industrial zone self-sufficient

- Encourage pooling of resources to tackle industrial accidents
- Manage both on-site and off-site industrial accidents.
- Provide for a degree of expertise in managing disasters
- Reduce the response time for managing disasters.
- To integrate the on-site plant of industries with an off-site plan.
- Assist the Corporation in managing disasters.

Private sector institutions which will be associated with the task of undertaking training for member organization include the following:

- TISSA
- TMA

8.3 Area of Community Participation

THANE Municipal Corporation and NGOs at the disaster the site should ensure maximum community participation all stages of operation in order to maintain community morale and confidence maximize the use of local resources and promote a faster recovery. Disaster management situations offer a wide range of choice and demand an immediate decision making. The participation of communities and their representatives would reduce the pressures on the field agencies with regard to the choice and uncertainties of community's response to the decision.

Based on local dynamics, ethos and the experience of THANE, an appreciate strategy to ensure community support has been evolved. Such efforts to enlist community support and participation have gone a long way in reassuring the community about the administration's intent and seriousness about managing the disaster.

Efforts to enlist community participation is being ensured by

- Identifying situational, opinion and position leaders in the community and voicing administration's confidence in their capabilities to undertake the tasks.
- Consultations and dialogues expressly indicating the need for assistance would encourage the community and its leaders to come forward.
- Regular feedback meetings and an open book approach to demonstrate transparency.
- Involving community in decision making at local levels.

The mojar areas of community participation are being identified and include in the separate Volume.

8.3.1 During Evacuation

For appropriate security and law and order evacuation would be undertaken with assistance from community leaders and community based organizations (CBOs). The entire family would evacuate together as a unit. However, to avoid stampede and

confusion and in cases of inadequate transport or limited time, emergency evacuation would be undertaken in the following order:

- Seriously injured and sick
- Children, women and handicapped
- Old
- Able-bodies

In case of evacuation, people would be advised to follow these steps:

- Secure their homes/establishments. Close and lock doors and windows
- Turn off the main water valve and electricity.
- Leave early enough to avoid being trapped.
- Follow recommended evacuation routes. Not to take shortcuts. They may be dangerous.
- Not to move into flooded areas because the authorities may have removed the manholes for efficient drainage and the indicators may get shifted due to water currents.
- Stay away from downed power lines.
- Do not walk on footpath covers may have been dislocated due to current

8.3.2 During the Disaster

Community leaders could be given the responsibility for ensuring the following community behavior:

- People stay calm and panic behavior is not encouraged. Regulate helter-skelter running or crowding of people.
- Encourage people to stay at a secured place and protect themselves from injuries.
- People do not enter damaged buildings or structures

- People do not touch electric poles, utility wires/cables
- People do not use telephones except in life-threatening situations
- Preparedness of community for recurrence of the disaster, increase in severity, or consequential emergencies.
- Check for injuries. Do not attempt to move seriously injured persons unless they are in immediate danger of death or further injury.
- Undertake first-aid activities
- Visually inspect utility lines and appliances for damage.
- If water pipes are damaged, shut off the water supply at the main valve.
- People stay away from damaged areas, unless their assistance has been specifically requested by police, fire or relief organization.
- Mobilize people to put out small fires and people inside are made to evacuate.
- Help police, if requested, to maintain law and order and watch the evacuated property during the disaster.

8.3.3 During Relief and Rehabilitation

Immediately after the disaster, the members of the community may look depressed and helpless, but very soon gets euphoric when they find that after all everything is not lost. Participation of community at this stage helps early recovery and promotes mental health. It is necessary to see that member of the community are continuously engaged in some sort of helping activity to draw them them out of their depression.

Relief authorities at the site would therefore :

- Encourage self-help in every activity of their day-to-day living.

- Encourage assistance for identification of dead, disposal of dead bodies, and disposal of damaged food stocks.
- Encourage contribution of labour (loading, unloading, distribution, temporary, constructions, food distribution etc.)
- Enlist assistance for updating records of damages and losses.
- Enlist assistance in maintenance of law and order.
- Enlist assistance in maintaining sanitation standards and disposal of waste.
- Promote cultural and recreational activities in order to protect the mental health.

SECTION - 9
REPORTING FORMATS

SECTION - 9

REPORTING FORMATS

The institutional arrangements would not be effective unless it is operationalised through reporting formats. Such tools define the direction and the content of information as also the source. The flow of information brings in the dimension of accountability and the source provides the authenticity. Reporting formats have been prepared for the various line departments. These will be consolidated by the TMC control room depending on the nature and extent of the disaster and forwarded to the Hon' Commissioner and DMC (Ench). These formats will also be useful in monitoring the field situation.

9.1 Consolidated Report on the status and action Taken

The DMC (Ench) will send the status and Action Taken Report on a continuous basis to Hon. Commissioner in control room in regard to Dangerous/Dilapidated Buildings.

Items of information	Details and Remarks
i. Nature of event	
ii. Estimates of number of locations affected and names of these locations.	
iii. Overall assessment of impact :	
• Estimated persons stranded/affected :	
• Number of persons needing evacuation from following locations :	
• Estimated loss of lives :	
• Estimated number of injured :	
• Estimated number of house/structure/area damaged :	
II. Damage to infrastructure :	
i. Road transport	
ii. Power supply	
iii. Water supply	
iv. Telecommunication	

Items of information	Details and Remarks
v. Drainage systems	
III. Actions Taken	
i. Communications established with : <ul style="list-style-type: none"> • Fire Brigade • Police • TMT • MSRTC • Civil Defense and Home Guards • District Control Rooms • Railway Station • Meteorology Department Colaba • Government, Railway and THANE hospital 	
IV. Immediate Assistance provided <p>i. Transport arrangement made for stranded passengers</p> <ul style="list-style-type: none"> • Number of TMT buses with capacity • Number of MSRTC buses with capacity • Number of private buses with capacity <p>ii. Transport arrangement yet to be made for stranded passengers at the following locations :</p> <p>iii. Rescue operations going on/completed :</p> <p>iv. Number of persons evacuated from following locations :</p> <p>vi. Emergency water and food arranged at (location and number)</p> <ul style="list-style-type: none"> • Railways stations • Bus stations • Temporary shelters • On-site <p>vii. Names of NGOs assisting at the site :</p>	
V. Public Information System Activated <p>i. Doordarshan</p>	

Items of information	Details and Remarks
ii. AIR	
iii. Cable TV	
iii. Public address system at MSRTC depots.	
iv Public address system at TMT depots.	
v. Display boards positioned for traffic management at following locations :	
vi. Immediate requirements	
i. Assistance for search and rescue	
ii. Food	
iii. Water	
iv. Manpower	

Name :

Designation :

Date :

Signature:

9.2 Status and Action Taken Report for Ward Committee.

The Ward Committee will send the status and Action Taken Report on a continuous basis to Control Room.

Items of information	Details and Remarks
i. Nature of event	
ii. Estimates of number of locations affected and names of these locations.	
iii. Overall assessment of impact :	
<ul style="list-style-type: none"> Estimated persons stranded/affected : 	
<ul style="list-style-type: none"> Number of persons needing evacuation from following locations : 	
<ul style="list-style-type: none"> Estimated loss of lives : 	
<ul style="list-style-type: none"> Estimated number of injured : 	
<ul style="list-style-type: none"> Estimated number of house/structure/area damaged : 	

Items of information	Details and Remarks
II. Damage to infrastructure :	
i. Road transport	
ii. Power supply	
iii. Water supply	
iv. Telecommunication	
v. Drainage systems	
III. Actions Taken	
i. Communications established with : <ul style="list-style-type: none"> • Fire Brigade • Police • TMT • MSRTC • Civil Defense and Home Guards • District Control Rooms • Railway Station • Meteorology Department Colaba • Government, Railway and TMC hospital 	
IV. Immediate Assistance provided <p>i. Transport arrangement made for stranded passengers</p> <ul style="list-style-type: none"> • Number of TMT buses with capacity • Number of MSRTC buses with capacity • Number of private buses with capacity <p>ii. Transport arrangement yet to be made for stranded passengers at the following locations :</p> <p>iii. Rescue operations going on/completed :</p> <p>iv. Number of persons evacuated from following locations :</p> <p>vi. Emergency water and food arranged at (location and number)</p> <ul style="list-style-type: none"> • Railways stations • Bus stations 	

Items of information	Details and Remarks
<ul style="list-style-type: none"> • Temporary shelters • On-site vii. Names of NGOs assisting at the site :	
V. Public Information System Activated <ul style="list-style-type: none"> i. Doordarshan ii. AIR iii. Cable TV iii. Public address system at MSRTC depots. iv Public address system at TMT depots. v. Display boards positioned for traffic management at following locations : 	
vi. Immediate requirements	
i. Assistance for search and rescue	
ii. Food	
iii. Water	
iv. Manpower	

Name :

Designation :

Date :

Signature

9.3 Status and Action taken Report for Police

The Police Control Room DCP Zone-1 will send the Status and Action Taken Report on a continuous basis to the TMC Control Room.

Items of information	Details and Remarks
i. Nature of event	
ii. Estimates of number of locations affected and names of these locations.	
iii. Overall assessment of impact :	
<ul style="list-style-type: none"> • Estimated loss of lives : 	
<ul style="list-style-type: none"> • Estimated number of injured : 	

Items of information	Details and Remarks
<ul style="list-style-type: none"> • Names of roads blocked/congested. 	
III. Actions Taken	
i. Communications established with : <ul style="list-style-type: none"> • Fire Brigade • Police • TMT • MSRTC • Civil Defense and Home Guards • District Control Rooms • Harbour Railway • Government, Railway and THANE hospital 	
IV. Immediate Assistance provided <p>i. Transport arrangements made for standard passengers :</p> <p>Number of private buses with capacity</p> <p>Number of police vehicles</p> <p>ii. Rescue operations going on/completed :</p> <p>iii. Names of roads closed for traffic</p> <p>iv. Number of towing vehicles/cranes pressed into service :</p>	
IV. Public Information System Activated <ul style="list-style-type: none"> i. Doordarshan ii. AIR iii. Cable TV iv. Display boards positioned for traffic management at following locations : 	
V. Immediate requirements	
Assistance for search and rescue	
Ambulances	
Manpower	

Name :

Designation :

Date :

Signature :

9.4 Status and Action taken Report for DCP Traffic

The DCP Traffic will send the Status and Action Taken Report on a continuous basis to the Control Room of TMC.

Items of information	Details and Remarks
i. Nature of event	
ii. Estimates of number of locations affected and names of these locations.	
iii. Overall assessment of impact :	
<ul style="list-style-type: none"> • Estimated loss of lives : 	
<ul style="list-style-type: none"> • Estimated number of injured : 	
<ul style="list-style-type: none"> • Names of roads blocked/congested. 	
III. Actions Taken	
i. Communications established with : <ul style="list-style-type: none"> • Fire Brigade • Police • BEST • TMT • MSRTC • Civil Defense and Home Guards • District Control Rooms • Harbour Railway • Government, Railway and TMC hospital 	
IV. Immediate Assistance provided <p>i. Transport arrangements made for standard passengers :</p> <p>Number of private buses with capacity</p> <p>Number of police vehicles</p> <p>ii. Rescue operations going on/completed :</p> <p>iii. Names of roads closed for traffic</p> <p>iv. Number of towing vehicles/cranes pressed into service :</p>	
IV. Public Information System Activated <p>i. Doordarshan</p>	

Items of information	Details and Remarks
ii. AIR	
iii. Cable TV	
iv. Display boards positioned for traffic management at following locations :	
V. Immediate requirements	
Assistance for search and rescue	
Ambulances	
Manpower	

Name :

Designation :

Date :

Signature :

9.5 Status and Action taken Report for Fire Brigade Officer

The Chief Fire Brigade Officer will send the Status and Action Taken Report on a continuous basis to the Control Room of TMC

Items of information	Details and Remarks
i. Nature of event	
ii. Estimates of number of locations affected and names of these locations.	
iii. Overall assessment of impact :	
Number of persons needing evacuation from following locations	
Estimated loss of lives :	
Estimated number of injured :	
Estimated number of houses/structure/area damaged :	
iv. Damage to infrastructure :	
Power supply	
Water supply	

Items of information	Details and Remarks
III. Actions Taken	
i. Communications established with : TMC Police TMT Civil Defense and Home Guards Government, Railway and THANE hospital	
IV. Immediate Assistance provided i. Fire fighting operations on/completed ii. Number of fire tenders pressed into service : iii. Rescue operations going on/completed : iv. Number of persons evacuated from following locations : v. Number of ambulances pressed into service :	
IV. Public Information System Activated On-site Information Centre established	
V. Immediate requirements	
Assistance for search and rescue	
Ambulances	
Manpower	

Name :

Designation :

Date :

Signature :

9.6 Status and Action taken Report for Medical Assistance activities.

The medical officer of health (MOH) will send the Status and Action Taken Report on a continuous basis to the Control room of TMC of Medical Assistance activities

Items of information	Details and Remarks
i. Nature of event	
ii. Estimates of number of locations affected and names of these locations.	
iii. Overall assessment of impact :	
Estimated persons affected :	
Number Of loss of lives :	
Estimated number of injured :	
II. Damage to infrastructure :	
i. Hospitals	
ii. Power supply	
III. Actions Taken	
i. Communications established with : TMC Control Room Fire Brigade Control Room Police Control Room Railways hospitals Control Room Government, Railway and THANE hospital	
IV. Immediate Assistance provided i. On-site emergency treatment organized <ul style="list-style-type: none"> • Number of doctors • Number of Para-medicos • Number of people treated • Number of Ambulance ii. Received at hospitals <ul style="list-style-type: none"> • names of hospitals • numbers of people received • Persons treated at OPD • Persons admitted • Deaths before admission • Deaths after admission 	

Items of information	Details and Remarks
iii. Number of ambulances pressed into services : iv. Preventive measures undertaken.	
V. Public Information System Activated v. Doordarshan vi. AIR vii. Cable TV viii. Display boards positioned for traffic management at following locations :	
VI. Immediate requirements	
i. Special drugs/medicines	

Name :

Designation :

Date :

Signature :

9.7 Status and Action taken Report for Railway station manager

The Railway Station will send the Status and Action Taken Report on a continuous basis to the Control Room of TMC

Items of information	Details and Remarks
i. Nature of event	
ii. Estimates of number of locations affected and names of these locations.	
iii. Overall assessment of impact :	
Estimated persons stranded/affected :	
Estimated loss of lives (only in case of railway accident) :	
Railway (Harbour line) services fully operational / completely paralysed/ sections paralysed from _____to _____	
II. Outstanding train traffic	
i. Up-trains held up at the following stations :	

Items of information	Details and Remarks
ii. Number of down trains cancelled :	
III. Damage to infrastructure :	
i. Railways power supply	
ii. Signaling system	
iii. Railways tracks	
III. Actions Taken	
i. Communications established with : TMC Fire Brigade Police BEST/TMT Railway H O Meteorology Department Colaba ii. Facilities for setting up emergency food and water supply for stranded iii. Number of additional trains running	
IV. Public Information System Activated i. Doordarshan ii. AIR iii. Cable TV iv. Public address system at railways stations	
V. Immediate requirements	
Assistance for search and rescue	
Medical assistance	
Ambulances	
Fire Brigades	
Manpower	

Name :

Designation :

Date :

Signature :

9.8 Status and Action taken Report for TMT

The TMT Control Room will send the Status and Action Taken Report on a continuous basis to the Control room of TMC

Items of information	Details and Remarks
i. Nature of event	
ii. Estimates of number of routes affected and names of these routes.	
iii. Overall assessment of impact :	
Estimated persons stranded	
Names of roads blocked/congested.	
III. Actions Taken	
i. Communications established with : TMC Control Room Fire Brigade Police Railway	
IV. Immediate Assistance provided i. Transport arrangements made for standard passengers : Number of TMT buses with capacity Number of BEST buses with capacity Number of MSRTC buses with capacity	
IV. Public Information System Activated i. Public address system at BEST/TMT depots	
V. Immediate requirements	
Assistance for search and rescue	
Medical assistance	
Ambulances	
Fire Brigades	
Manpower	

Name :

Designation :

Date :

Signature :

SECTION 10

**Plan Dissemination through
Community Education**

SECTION 10

Plan Dissemination through Community Education

For THANE MDMP to be effective it must be disseminated at three levels :

- Government departments, multilateral agencies (aid agencies), defence services, state level officials.
- To the municipal authorities, district authorities, government department, corporate sector NGOs and other agencies and institutions within THANE and
- Through mass media to the general public.

The content of the plan should be explained through well designed and focused awareness programmes. The responsibility for dissemination of the plan will be vested with PRO of TMC, as well as through awareness programme organized by each of the agencies participating in disaster management. The Municipal Commissioner will also involve NGOs in preparing suitable public awareness material to be distributed to the public.

The awareness programme will be prepared in the local languages to ensure widespread dissemination. Media will be extensively used for public awareness programme. These will include.

- Newspapers
- TV
- Local cable networks
- Radio
- Publicity materials.

Schools, colleges and other public institutions will be specifically targeted.

In additions to dissemination of literature related to the MDMAP, the Municipal Commissioner will ensure that disaster response drills are conducted by the ward officers and other agencies on a regular basis, especially in the disaster prone area to maintain the readiness of communities and departments, as regards operational procedures, personnel and equipments and orderly response.

SECTION 11

WARD LEVEL RESPONSE PLAN

SECTION 11

WARD LEVEL RESPONSE PLAN

This document forms a sub-part of Municipal Disaster Management Plan prepared for micro-level disaster management action plan at the ward level. When the disaster situation is localized at ward level and can be managed locally, the ward level plan will come into operation. However, a disaster situation may cover a major part of the city which would call for co-ordination of activities not only at the city level but also at specific ward level. Under such conditions, the ward level plan in the affected wards would be in operation along with the Municipal Disaster Management Plan.

11.1. Responsibilities of Asst. Municipal commissioner TMC on receipt of warning or occurrence of disaster.

On the receipt of warning or occurrence of the disaster, As the AMC Ward Committee should be in constant touch with DMC(HQ)/Add. M.C./CONTROL ROOM and the field officers of THANE

Police (Law and Order)	: ACP & Senior Inspector police.
Police (Traffic)	: Divisional Police Inspector
Fire Brigade	: Station Officer
Railways	: Station Masters
TMT(Transport)	: Assistant Depot Managers
THANE Hospitals	: RMO
MTNL	: Sub Divisional Engineer
MSEDC	: Sub Station Engineer
MIDC	: Regional Officer
MPCB	: Regional Officer

Every AMC will be required to be in preparedness by undertaking the following measures:

- Prepare and Circulate the Ward Level Disaster Management Plan to all Corporators of TMC & NGOs.
- Survey the Wards ,demark the water in flow and out-flow route flowing from high level to low level in all conditions removing obstructions in water ways and monitoring the water level of the Nallas correlating with High tide, Low tide & in all adverse condition, Maintain vigilance on these routes
- The DMC AMC should ensure that all required officers are ready for on call & use the official shoulder bands with TMC emblem for easy identification.
- Establish a ward control rooms with the following
- Appoint a supervisor of the rank of Deputy Engineer / Ward Officer by making him on call to be in-charge of ward control room at the time of Disaster.
- All Rescue groups can be made on call
- Direct telephone contact with Municipal Control Room
- Labours from sanitation and public health staff to be kept in readiness
- for undertaking any emergency work
- The AMC will report to CONTROL ROOM about the field activities including deployment and reinforcements of staff and resources and communicate additional requirements.
- Set-up Information Centre at the site.
- (Requisitioning of private transport vehicles, temporary shelters can be done through the Dy RTO.)

11.2 Responsibilities of Ward zonal Officer on receipt of warning or occurrence of disaster.

- Coordinating with DMC Zone and ward officer on occurrence of disaster.
- Monitoring the following operations :-
 - Rescue operations during house collapses in co-ordination with fire brigade
 - Ensure transport of injured to hospitals on priority
 - Transport of dead to the hospitals/corpse disposal
 - Anti-flooding operations
 - Clearing of debris
 - Salvage operations
 - Clearing of uprooted trees
 - Repairs to damaged roads, water supply and drainage

11.3. Responsibilities of Ward Officer on receipt of warning or occurrence of disaster.

Disaster management Plan implementing officer on the site of the disaster will be the respective ward officers on the site .The ward officer will be responsible for co-ordination of field activities of various line departments. The ward officer will also be responsible for providing support to line agencies so as to enable them to operate efficiently.. The ward officer will provide all information as given in the ward plan to the field officers of the line departments. The ward officer will be directly responsible for the execution of the following tasks through TMC staff :

- Rescue operations during house collapses in co-ordination with fire brigade
- Ensure transport of injured to hospitals on priority
- Transport of dead to the hospitals/corpse disposal

- Anti-flooding operations Clearing of debris
- Salvage operations
- Clearing of uprooted trees
- Repairs to damaged roads, water supply and drainage
- Transportation/shifting of stranded or affected persons through TMC vehicles, private vehicles and TMT buses
- Temporary shelters with emergency food and water
- Issue of passes and identification stickers for vehicles on relief duty
- Issue of passes and identity cards to relief personnel including the persons from NGOs

The ward officer will ensure through the Medical Officer (Health)

- Preventive medicine and anti-epidemic actions
- Providing special information required regarding precautions for epidemics
- Supervision of food, water suppliers, sanitation and disposal of waste.

Damage assessment will be carried out by Ward Officer

The ward officer will enlist the support of NGOs and private sector for response operations. The NGOs active in the ward along with their expected role is given in the vol II to each ward plan.

Required equipments such as :

- Digging tools
- Choke clearing equipments
- Ropes
- Tree-cutting saws
- Portable search lights
- Batteries
- Megaphones

- Gas cutters
- J.C.B.
- Poclain
- R.C.C. beam cutters
- Generators
- Assisting the AMC in requisitioning vehicles and temporary shelters
- Assessing the requirements for transit camps on the occurrence of disaster.
- Setting up of transit camps and pandals for temporary accommodation.
- Arranging for food distribution.
- Arrangements for dry rations and family kits for cooking
- Arrangements for clothing
- Providing gratuitous relief.
- Enlist support of NGOs and private sector for resources and manpower for transit camps Communicate to district control room details on the field including deployment and reinforcements of staff and resources and communicate nature of additional requirements.

11.4 Responsibilities of DCP/ACP on receipt of warning or occurrence of disaster.

The DCP office will be responsible for the following field activities in co-orientation with the ACP, DMC(Ench) & DMC(Zone)

- Ensure law and order
- Shifting of the injured to the hospitals on a priority and providing bandobast for crowd control at the hospital
- Set up 24 hours control room in THANE area

- Cordoning of area to restrict movement of on-lookers, vehicular and pedestrian traffic.
- Guarding of property/valuables in affected area
- Providing easy access to rescue and relief personnel/vehicles
- Ensuring proper identification, inquest procedure and Corpse disposal
- Panchanamas will be prepared as per police procedure
- Controlling the Crowd especially outside Railways stations, bus station and school
- Police bandobast near railway stations, bus stations and school
- Extensive mobile patrolling
- Arrangements for transportation/shifting of stranded or affected persons through police vehicles and private vehicles.
- Control of anti-social elements
- Use of public address system to provide information to the public. Sign boards may be used to provide information and declare areas out of bounds.
- Enlist support of Mohalla Committees for maintaining peace and for rumor control
- Information centre to organize sharing of information with mass media and community
- Communicate to police control room details on the field activities including deployment and reinforcements of staff and resources and communicate nature of additional requirements.

11.5. Responsibilities of ACP (Traffic) on receipt of warning or occurrence of disaster.

The ACP (Traffic) in co-ordination with the AMC & Ward Officer. will be responsible for the following activities :

- Set up 24 hours control room in THANE area

- Control and monitor traffic
- Extensive patrolling especially covering railway stations, bus stations and schools
- Diversion of traffic on alternate routes as and when necessary
- Provide information about traffic flow along various corridors, especially heavy traffic or congested roads.
- Co-ordination with TMT to ensure additional buses are deployed along desired routes.
- Mobilizing towing cranes and towing of stranded/breakdown or those vehicles obstructing movements.
- Use of Public Address System to provide information and direction to the public
- Setting up of sign-boards and display boards at strategic locations to give information regarding traffic movement.
- Enlist support of
- NCC, NSS, NGOs and voluntary organization for traffic management.
- Provide and co-ordinate arrangements for transportation/shifting of stranded or affected persons through police vehicles and private vehicles.
- Communicate to traffic control room details on the field activities including deployment and reinforcement of staff and resources and communicating nature of additional requirement.

11.6 Responsibilities of Fire Brigade Officer / Station Officer on receipt of warning or occurrence of disaster.

The Fire Brigade Officer in co-ordination with the AMC & Ward Officer will be responsible for the following field activities:

- Fire fighting operations in the affected area
- Rescue operations

- Transport of injured to the hospitals on a priority
- Evacuation of persons from the affected area
- Ensure safety from electrical installations or power supply at disaster site
- Clearing of roads or pathways due to uprooted trees
- Salvage operations
- Co-ordinate with TMC for rescue operations in house collapses
- Communicate to fire brigade control room details on the field activities including deployment and reinforcements of staff and resources and communicate nature of additional requirements.

11.7 Responsibilities of Medical Officer (Casualty) on receipt of warning or occurrence of disaster

The Medical Officer (Casualty) in co-ordination with the Control room will be responsible for the following field activities.

- Set up 24 hours control room
- Providing emergency treatment for the seriously injured at the hospital
- Organizing on-site treatment of injured with tagging and triage and transfer of injured
- Emergency supplies of medicines and first-aid
- Post-mortem and corpse disposal
- Demarcate an area in the hospital for receiving patients, tagging and triage
- If necessary, setting up position centre within the hospital or at disaster site
- Co-ordinate with blood banks for emergency supply of blood
- Setting up an information centre at the hospital

Communicate of CONTROL ROOM details on the field activities including deployment and reinforcements of staff and resources and communicate nature of additional requirement.

11.8 Responsibilities of Railway Station Manager on receipt of warning or occurrence of disaster.

The Railways Station Manager in co-ordination with the Ward Officer will ensure that the following field activities are undertaken:

- Set up 24 hours control room in THANE area
- Crowd control through Railways Police
- Continuous updated information through public address system of the running of trains.
- Information of location of temporary shelters organized TMC for railway passengers.
- Providing facilities at railway station like emergency food and water to passengers.
- Monitoring level of water on the railway tracks under pass and keep CONTROL ROOM informed
- Co-ordinating with engineering branch staff posted at the flood prone locations at railways tracks
- Co-ordination with TMC Control Room and ward officer regarding passenger data and alternate transport. and keep CONTROL ROOM informed

In case of railway accidents:

- Rescue and evacuation
- Shifting of injured to hospitals
- Co-ordination with railways hospitals, TMC hospitals and government hospitals

- Provide information & facilities on alternate travel arrangements for outstation passengers
- Communicate to CONTROL ROOM details of the field activities including deployment and reinforcements of staff and resources and communicate nature of additional requirements.

11.9 Responsibilities of Manager TMT/Ass.Depot Manager Best on receipt of warning or occurrence of disaster.

Responsibilities of Manager TMT/ Ass.Depot Manager in terms of preparedness, implementation in lieu of disaster :

- Set up 24 hours control room in THANE area
- Maintain sufficient stock of diesel in the Depots.
- Keep standby buses in readiness for deployment

On receipt of warning or occurrence of disaster following will be the responsibility of the concern officer:

- Co-ordination with Railways station Master and ACP (Traffic) for information regarding traffic movement and passengers date
- Co-ordinate with MSRTC for transport arrangement of stranded passengers.
- Co-ordinate with TMT/BEST/NMMT/Other Mun. Transport for transport arrangement of stranded passengers
- Deployment of additional buses along certain routes to clear passenger traffic
- Diversion of routes if any when necessary
- Providing information to the public at bus depots regarding the cancellation, re-routing, delays of buses, temporary shelter locations of TMC
- Communicate to TMC control room and CONTROL ROOM regarding details of the field activities including deployment and reinforcements

of staff and resources and communicate nature of additional requirements.

11.10 Responsibilities of MSEDG Sub Station Engineer on receipt of warning or occurrence of disaster.

The MSEDG Station Engineer co-ordination with the ward officer will be responsible for the following field activities:

- Set up 24 hours control room in THANE area.
- Cutting off power supply if necessary
- Alternative arrangements for power supply for lighting
- Illumination of affected area as well as the periphery
- Restoration of power supply
- Keeping emergency gangs in readiness for repair work
- Repairs to damaged power infrastructure.
- Attending to calls of power breakdowns or short-circuits.
- Co-ordinating with the fire brigade in case of fires or short-circuiting.
- Communicate with CONTROL ROOM & respective control rooms the details on the field activities including deployment and reinforcements of staff and resources and communicate nature of additional requirements.

11.11 Responsibilities of MTNL Area Manager on receipt of warning or occurrence of disaster.

The MTNL Area in co-ordination with Ward Officer will be responsible for the following field activities:

- Set up 24 hours control room in THANE area
- Restoration of telephone lines
- Keeping emergency gangs in readiness for repair work

- Repairs to telecommunication infrastructure
- Inform CONTROL ROOM of the activity

Communicate with Head Office the details on the field activities including deployment and reinforcements of staff and resources and communicate nature of additional requirements.

11.12 Responsibilities of MIDC Regional Officer

Responsibilities of MIDC Regional officer on receipt of warning or occurrence of disaster. The MIDC Regional officer in co-ordination with the Ward Officer will be responsible for the following field activities:

Regional Officer would be in constant touch with CONTROL ROOM , Control Room and the field officers

- Set up 24 hours control room in THANE area
- Assessing the requirements for transit camps on the occurrence of disaster.
- Assisting the ward officer in requisitioning vehicles and temporary shelters.
- Setting up of transit camps and pandals for temporary accommodation.
- Arranging for food distribution.
- Arrangements for dry rations and family kits for cooking
- Arrangements for clothing
- Providing gratuitous relief.
- Enlist the Industries having storage of drinking water and ensure that it is made available for affected citizens at the time of disaster.
- Involving active participation of industries in disaster management.

Regional officer will ensure through the Medical Officer (Health)

- Preventive medicine and anti-epidemic actions

- Enlist support of industries of private sector for resources and manpower for transit camps ,supply of food ,water ,shelter etc.
- Communicate to CONTROL ROOM with the details of the field including deployment and reinforcements of staff and resources and communicate nature of additional requirements.

11.13 Responsibilities of MPCB Regional Officer

Responsibilities of MPCB Regional officer on receipt of warning or occurrence of disaster. The MPCB Regional officer in co-ordination with the Ward Officer will be responsible for the following field activities:

Regional Officer would be in constant touch with CONTROL ROOM and the field officers

- Set up 24 hours control room in THANE area
- Immediately take necessary preventive measure for controlling the pollution.

11.14 Responsibilities of Rationing Officer

Responsibilities of Rationing officer in terms of preparedness, implementation in lieu of disaster

- Make necessary list of inventory and resources of essential commodity

On receipt of warning or occurrence of disaster following will be the responsibility of the concern officer:

- To coordinate with the ward officer for supply distribution of essential commodity at the time of disaster.
- To be in constant touch with CONTROL ROOM and the field officers

11.15 Responsibilities of Dy. RTO.

Responsibilities of Dy.RTO in terms of preparedness ,implementation in lieu of disaster :

- To enlist the list of the private bus, truck, dumpers, water tankers , tempos and Transporters, with their names, addresses, contact nos so as to be available in emergency.

On receipt of warning or occurrence of disaster following will be the responsibility of the concern officer:

- Requisition of vehicles required in coordination with Dmc Zone.

11.16 Responsibilities of Colonel on receipt of warning or occurrence of disaster

On receipt of warning or occurrence of disaster following will be the responsibility of the concern officer:

- To assist the ward officer in rescue operation
- To coordinate with police to maintain law and order.
- Shifting of the injured to the hospitals on a priority

11.17 Responsibilities of Deputy Control Civil Defence on receipt of warning or occurrence of disaster.

On receipt of warning or occurrence of disaster following will be the responsibility of the concern officer:

- To assist the ward officer in rescue operation.
- To coordinate with police to maintain law and order.
- Shifting of the injured to the hospitals on a priority

List of ABBREVIATIONS

ACP	Assistant Commissioner of Police
BSUP	Basic Services For Urban Poor.
BEST	Bombay Electric supply and Transport
BARC	Bhaba Atomic Research Center
CBO	Community Based Organisation
CISF	Central Industrial Security Force
CGO	Central Government Offices
DMC	Deputy Muncipal Commissioner
DCP	Deputy Commissioner of Police
DDMAP	District Disaster Management Action plan
JNNURM	Jawaharlal Nehru National Urban Renewal Mission
LCG	Local Crisis Group
LPG	Liquid Petrol Gas
MIDC	Maharastra Industrial Development Corp.
MSRDC	Maharastra state Road Development Corp.
MARG	Mutual Aid and Resource Group
MSEDC	Maharastra state Electricity Distribution Company
MTNL	Mahanagar Telephone Nigam LTD
MPCB	Maharastra pollution Control Board
MMRDA	Mumbai Metropolitan Region Development Authority
MERI	Maharastra Engineering And Rural Irrigation
MLA	Member of Legislative Assembly
MP	Member of Parliment
NGO	Non Government Organization
PA	Public anoucement
SRP	Special Reserve Force
RDC	Residential Deputy Collector
RTO	Regional Transport Office
RMO	Resident Medical Officer
RAF	Rapid Action Force
TMC	Thane Municipal Corporation
TMT	Thane Municipal Transport
TMA	Thane Manufacturer Association
TISSA	Thane Imall Scale Industries Association
YASHADA	Yeshwantrao Chavan Administrative Development Academy