CHAPTER 6
ALTERNATIVE MODEL FOR DEVELOPMENT CONTROL
MECHANISM

6.1 This Chapter evaluates the nature of violations in relation to Development Control Rule and suggest a mechanism for improvement at different levels of operations. The parameters discussed in the third Chapter have been critically examined with reference to the violations noted in the sample survey and the most violated parameters by land use wise have been identified by Principal Component Analysis. Based on the feedback from the stake holders and the results of Principal Component Analysis three alternatives have been examined to suggest a simplified model for reducing the number of parameters for efficient operation in Development Control. Also the land use zones discussed in the fourth Chapter have been deeply probed in the present context of development that are fastly taking up in the Metropolitan Cities outlined in the third Chapter and a model suggested for a flexible approach to cope-up with the present trend of development and for meeting the future needs on the basis of the physical socio economic development presented in the Second Chapter. The simplification process suggested takes care of the perception and attitude of the community and the pros and cons have been analysed with reference to the literatures on Development Control apart from the literature survey outlined in the first Chapter and as well on the outcome of the problems and prospects for development of Chennai Metropolitan Area as focussed in the Second, Third and fourth Chapters.

6.2 Methods: Principal Component Analysis:

The matrix of planning parameters of the 72 samples have been collected from the appeal papers and given in Appendix XI.

Violations with respect to the Development Control Rules of the First Master Plan for the parameters - Road Width, Front set back, side set back, rear set back, Extent, Coverage, FSI, Land use and Height, Parking, Corridor width, Fire safety have
been computed for the 72 samples and principal component analysis have been carried out to identify the significantly violated parameters. Analysis has been made for the parameters in respect of the samples of residential buildings, mixed residential buildings, commercial buildings and industrial buildings and also for all types of buildings constituting the 72 samples. As there are only two cases for institutional buildings and they are almost of the same characteristics the principal component analysis provides only a spurious component matrix, hence interpretation is discarded. The summary of the Principal Component Analysis is given in Table 6.1.

### Table 6.1: Summary of Principal Component Analysis

<table>
<thead>
<tr>
<th>Factor</th>
<th>Eigen Value</th>
<th>Percentage of total variance</th>
<th>Varimax Principal Component Value (Loadings)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All Types of Buildings</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Extent</td>
<td>4.540</td>
<td>34.92</td>
<td>0.912</td>
</tr>
<tr>
<td>2 FSB</td>
<td>1.685</td>
<td>12.96</td>
<td>0.875</td>
</tr>
<tr>
<td>3 SSB1</td>
<td>1.564</td>
<td>12.03</td>
<td>0.846</td>
</tr>
<tr>
<td>4 FSI</td>
<td>1.161</td>
<td>8.930</td>
<td>0.965</td>
</tr>
<tr>
<td><strong>Residential</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 SSB2</td>
<td>3.631</td>
<td>33.01</td>
<td>0.895</td>
</tr>
<tr>
<td>2 Coverage</td>
<td>2.008</td>
<td>18.26</td>
<td>0.953</td>
</tr>
<tr>
<td>3 Extent</td>
<td>1.295</td>
<td>11.77</td>
<td>0.964</td>
</tr>
<tr>
<td>4 FSI</td>
<td>1.189</td>
<td>10.81</td>
<td>0.971</td>
</tr>
<tr>
<td>5 Road Width</td>
<td>1.022</td>
<td>9.29</td>
<td>0.957</td>
</tr>
<tr>
<td><strong>Mixed</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 RSB</td>
<td>4.815</td>
<td>37.04</td>
<td>0.959</td>
</tr>
<tr>
<td>2 Extent</td>
<td>3.316</td>
<td>25.51</td>
<td>0.954</td>
</tr>
<tr>
<td>3 Corridor</td>
<td>1.756</td>
<td>13.51</td>
<td>0.927</td>
</tr>
<tr>
<td>4 Road Width</td>
<td>1.515</td>
<td>11.65</td>
<td>0.918</td>
</tr>
<tr>
<td><strong>Commercial</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 SSB2</td>
<td>7.583</td>
<td>58.33</td>
<td>0.981</td>
</tr>
<tr>
<td>2 Height of Building</td>
<td>2.299</td>
<td>17.69</td>
<td>0.940</td>
</tr>
<tr>
<td>3 Fire Safety</td>
<td>1.130</td>
<td>8.69</td>
<td>0.945</td>
</tr>
<tr>
<td><strong>Industrial</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Coverage</td>
<td>5.714</td>
<td>51.95</td>
<td>0.977</td>
</tr>
<tr>
<td>2 Frontage</td>
<td>3.209</td>
<td>29.17</td>
<td>0.981</td>
</tr>
<tr>
<td>3 FSB</td>
<td>2.077</td>
<td>18.88</td>
<td>0.945</td>
</tr>
</tbody>
</table>
Out of the 72 samples of all types of buildings put together, Extent is the most significant violated parameters with the total variance of 34.92 percent and a loading of 0.912. Only those components with Eigen value greater than 1.0 have been extracted in all cases. 'F' values of individual parameters validates their inclusion in the component matrix. That is greater the 'F' value the more significant it is in the analytical context. The next significant violated parameters are Front set back and side set back (on one side only) and the least is FSI. The violations in respect of the rest of the parameters (coverage, height of the building, frontage, RSB, Road width, Corridor, Fire safety) are not significant. In the case of residential buildings, Extent stands in the third rank and in mixed residential it is in the second place, whereas extent is not a significant violator in commercial and industrial buildings. The reason for 'Extent' to be the most significant violator is due to its ranking in residential buildings (33) and mixed residential buildings (20).

In the case of residential buildings side set back (on one side only), coverage, extent, FSI and road width are the only five parameters which are the significant violators. The rest of the parameters are negligible. The side set back (on one side) is the most significant violated parameter in residential buildings with total variance of 33.01 percent and a loading of 0.895. Hence it is inferred that mostly in residential buildings, people think that side set back on one side is sufficient for light and ventilation and they would like to built on the other side in violation to the side set back requirement.

In the case of mixed residential buildings, rear set back, extent, corridor and road width are the only four parameters which are the significant violators. The rear set back is the most significant violator with the total variance of 37.04 per cent and a loading of 0.959. This may be attributed to the fact that the mixed residential area mostly old built up area, where the frontages are minimum. Further, since these are the shopping areas, the rear set back is also built for gaining additional space. In residential and mixed residential area road width is the last significant violator which needs consideration carefully for prescribing minimum road width taking into account other considerations of intensity of traffic flow, traffic generation and parking.
In the case of commercial buildings side set back (one side only) height of the building and fire safety are the only three parameters, which are the significant violators, in the order. The side set back (one side only) is the most significant violator with the total variance of 58.33 percent and a loading of 0.981. Violation of set back on one side is attributable to the fact that one side, people like to leave space for parking or passage to upstairs and the other set back is built for gaining built up space as it is rewarding. In industrial buildings, coverage, frontage and front set back are the only three parameters which are the significant violators in the order. The coverage is the most significant violator with the total variance of 51.95 percent and a loading 0.977, which is attributable for more covered area for industrial activity.

All these factors are taken into account for evolving a suitable policy for specifying parameters for adoption.

6.3 Planning Parameters for Development Control:

In this part of the Chapter, the planning parameters have been examined critically taking into account the views expressed by the consulting professionals dealing with Development Control Rule (vide Chapter 5, Para 5.6.5) for suggesting an alternate model. The analysis is also to some extent based on the views expressed by the participants in their discussion on “Impact of Development Control Rules on Housing” organized by Regional Housing Development Centre and Institute of Town Planners on 25.10.1991 and “Development Control Rules in CMA” organized by CMDA on 25.11.91.

6.3.1 Frontage: The promoter and the user, who are more cautious in organisation of different functions in the house has taken more care in maintaining sufficient frontage for internal design and for entry and exit from the building. Hence, the frontage is automatically taken care of and no need to stipulate the minimum. In the Second Master Plan this parameter has been deleted. The TRF Study also has not specified to retain this parameter (CMDA and TRF Study 1991).
6.3.2 Minimum Plot Extent: In the Seminar on Development Control Rules, one of the Chief Planners from Chennai Metropolitan Development Authority recommended that in view of the prevailing land market situations and the affordability of the people plot size can be reduced. Minimum plot size of 30 to 40 square meter for residential and commercial use can be adopted and reduction of plot size for other uses may be evolved by making use of the technological advancement. The TRF study also has not insisted upon for adoption of minimum plot extent and in the Development Regulations under Second Master Plan the minimum plot extent has been dispensed with. One of the feed backs obtained from the consulting professionals in building activity is that to relax minimum extent of plot for those properties undergone family partition (vide Chapter 5, para 5.6.5). Planners view in that as long as one can provide the minimum set backs and restrict the FSI under the permissible limits there is no need to prescribe minimum plot extent.

As everyone is interested in having minimum number of habitable rooms and for other household functions, according to his affordability it is needless to prescribe minimum plot extent, when the interest is to reduce the number of parameters for easy adoption.

6.3.3 Coverage. For reducing number of parameters in DCR coverage may not be essential, since set backs and FSI are adopted. Among the three parameters coverage and side and rear set backs only one of them can be dispensed with. If the coverage is only insisted then there is a possibility for constructing the houses upto the boundary which in turn may affect the ventilation and privacy of the neighbour. But the TRF Study recommended to retain coverage (TRF and CMDA 1991) and at the same time suggested to retain set back. In the Second Master Plan, the parameter "Coverage" is eliminated. One of the feedbacks obtained from the consulting professional is to stipulate FSI and plot coverage alone and leave the rest of the parameters to the Architects. (Vide Chapter 5, Para 5.6.5). The Planners' reaction for this is that by virtue of a development in a site, the neighbours should not be affected or
inconvenienced. There are numerous court cases of the neighbours and complaints to Chennai Metropolitan Development Authority, about their easmentary rights to be protected due to non compliance of set backs. Setback spaces are to be specified with reference to the type of the activity proposed in a site and the likely impact that might affect the adjoining area/neighbours. Of course, architects are good designers. The setback spaces specified are only minimum. Architects can show their ingenuity in design by varying the setback spaces provided the site dimensions are adequate enough for such a treatment. The agreement among the Planners are that no need to specify coverage but the FSI and minimum set back spaces have to be invariably specified.

If coverage is specified, while deleting the set backs, there is a chance for construction of building upto the boundary of the plot, leaving a larger open space on the other side and later, the larger open space is likely to be used for building, which ultimately affect the easmentary rights of the neighbours for getting air, light and privacy. Under this score, coverage may be safely eliminated.

6.3.4 Road Width: This is one of the parameters suggested for retention in DCR. Standards on road width would ensure permissibility and extent of an activity with reference to the traffic it may generate and availability of infrastructure to meet the demand which the activity may create. This parameter is required to screen the areas to allow intense developments only in such areas which can accommodate them. It is suggested that for intense developments of public buildings and industries the minimum abutting road width may be prescribed ranging from 10.0 m to 15.0 m and for Multi - storeyed buildings it may be prescribed as 18.0m minimum. (TRF & CMDA 1991)

Also in the Second Master Plan the parameter is retained. As per Second Master Plan, mixed residential buildings with restricted FSI of 1.5 throughout Chennai Metropolitan Area is permissible only along 10.0 m wide roads. Mixed residential buildings are permissible along 10.0 m wide road. Commercial buildings with 1.75 FSI within city and 2 FSI outside city is permissible only on 12.0 m wide road.

The parameter "Minimum Road Width" is required to screen the areas to allow intense developments only in such areas which can accommodate them. It is suggested
that a minimum road width of 10.0 m to 15.0 m for intense development, for public buildings and industries and 18.0 m for multi-storeyed buildings.*

The three of the feedbacks (vide Chapter 5, Para 5.6.5) from the promoters are to: i) permit special buildings (8 kitchens) along 30' road, (ii) do not restrict building units in single building and (iii) do not restrict number of kitchen in a single building. Normally, what happens in the case of flats promoted in small plots is that three kitchens are shown in the plan for approval and later, it is converted into multiple units. In the case of small size plots (EWS/LIG Category) who may not own four wheelers, flats with 8 kitchens may be permitted, when other parameters are adhered. along 30' (9.0 mts) road. This liberalisation also increases the housing stock in CMA (vide Chapter 2, Para 2.51), where acute shortage of housing is felt.

The Flat Promoters Association elucidated that the present DCR curbing creation of small flats of 45 sq.m. to 65 sq.m. is against the enabling concept enunciated by UNCHS (Habitat) in 1990. As per National Housing Bank (NHB) norms 19 residential units can be built on a 2.5 ground plot with the present permissible FSI of 1.5. NHB approves funding when 75% of the units are less than 45 sq.m. and the balance units are less than 65 sq.m. stipulation of 10.0 m. wide road for permitting 4 units is arbitrary, when in Chennai 9.0 m (30') roads are more in common*

It was observed by the Licensed Surveyors Association that the special building clause - building above 300 sq.m. or having more than three dwelling units or having more than two floors - at many number of times leads to self contradiction and confusion. Instead, they would like to adhere to FSI to govern the area of the building, the other parameters such as number of kitchens or floors need not be the governing factor to define special building. Their main arguments are that special buildings have been constructed in roads of less than 30' (9.0m) width. As the government policy is to increase the housing stock it must be left to the builder to

design and construct within the FSI limit, the width of the road must also be well-defined.

For flats of 45 sq.m. to 65 sq.m. multi dwelling units may be permitted along 30’ (9.0 m) wide roads to increase the housing stock, since 7.0 m wide two lane carriageway can be easily formed with pedestrian side walks on 9.0 m wide road (UDPFI, GOI 1996). However, the bigger flats of more than 65 sq.m./unit is likely to cause traffic congestion and strain on infrastructure as it will be difficult to lay the service lines along 9.0 m wide roads. Hence, it is suggested that all special buildings flats/group housing of multi family larger flats and commercial buildings can only be permitted along 10.0 m wide roads.

6.3.5 Set backs: The TRF Study has recommended to retain the setback parameter In order to ensure that encroachments are not made on to the road by way of projections and to facilitate onsite parking space front set back is prescribed. In order to facilitate natural ventilation and lighting and to provide for privacy the side and rear set backs are provided. But considering the cost of land the above objectives can be met by proper design of the buildings. The traditional homes of our ancestors built, accommodated these provisions in a betterway in their design without leaving side or rear open spaces. (TRF CMDA 1991). According to the licensed surveyors, side and rear set back need not be insisted for plots of one ground and less area, since they encourage row housing, cut down the cost of compound wall and increase security and further avoid unauthorised structures for commercial activity and some time used as dumping yard.

It is suggested that for small buildings other than flats/group developments or multi-storeyed buildings or places of public assembly, the minimum side and rear set back may not be prescribed. In cases of major developments such as places of public assembly, hospitals, in order to avoid nuisance to adjoining properties, set back on sides and rear shall be suggested.

Seminar on Development Control Rules. 1991.
Both in the First and Second Master Plan, for continuous buildings side and rear set backs are dispensed with. Only the front set back of 1.5 mts (5') is insisted, whereas in the case of EWS housing minimum of 1.0 m. front set back and 1.0 m. on only one side of the building is insisted. Mostly continuous buildings have central courtyard, which provides light and ventilation, whereas 1m. provision on one side enable light and ventilation to penetrate the single multi purpose room. In all such cases front set back is not dispensed with so as to mitigate noise and air pollution and to restrict encroachment on the streets.

Side and Rear Set backs have functional utility. They provide space for water and sanitary lines, space for parking rainwater harvesting and plantations, especially plantations have got micro climatic effect (vide Chapter 2, Para 2.33). Also sufficient side space of 7.0 mts. required for Snorkel movement in case of multi-storeyed building. There may be arguments against the provision of side set back. Such small pieces of setbacks when combined in cluster housing may provide a better open space with more utilitarian value (HSMI-1996). Such formation of cluster housing is possible where larger plots are available and construction also through co-operation, which is not normally prevailing in Chennai Metropolitan Area.

The setback suggested by the Flat Promoters Association is as follows:

1) setback of 5' (1.5 mts) on all four sides on ground+first floor;
2) setback of 10' (3.0 mts) on all sides above ground + first floor and upto ground + 4 floors.
3) a set back of 20' (9.0 mts) on one side on building above ground + 4 floors for fire fighting engine to move around and the remaining side spaces are as permissible under plot coverage norms.

When the argument is put forth for simple DCR, the above suggestions become questionable apart from there is no mention about set back beyond ground + 4 floors. In view of the functional utility and protect the easementary rights of the neighbours and effect micro climate to make the environment livable, the side on rear set backs cannot be altogether dispensed with. It may be insisted based on the plot size.
6.3.6 **Floor Space Index:** The TRF study indicated that it would vary with reference to the activity and also the area based on the factors of activity, area wherein the site is located and availability of infrastructure facilities. In thickly built up areas, it would be desirable to allow more FSI than in other areas in order to encourage demolition of old buildings and reconstruction. It is suggested that FSI ranging from 1.2 to 3.0 may be allowed for residential/commercial uses and from 1.00 to 2.00 for industries/institutions depending on its locality, subject to satisfying other parameters and on collection of infrastructure improvement charges as may be prescribed (TRF-CMDA 1991). The same view was also expressed by one of the Chief Planners in the Seminar on Development Control, 1991.

In this case, it may be pointed out that of the Institution of Valuers recommended that FSI should be limited to 1.5 within city for decongestion. While pointing out the enhancement of FSI introduced by CMDA in 1995 it is opined by the Institution of Valuers that it would only led to speculation and increase in real estate price. Reduction of FSI only for special buildings and not for multi-storeyed buildings, would have counter effects. Builders would try to reconstitute the adjacent plots and try to go for multi-storeyed buildings to get higher floor area, than that allowed for special buildings. The Institution of valuers recommended that the concept of special buildings could be scrapped and the FSI calculation should be based on road width vis-a-vis height of the building, and not based on the number of units constructed on a plot. Tamilnadu Flat Promoters Association, commented that the FSI 1.5 was adopted by Britishers arbitrarily for large bungalows from 10,000 to 50,000 sq.ft. He suggested the concept of FSI can be scrapped and replace it with design briefs wherein technical specifications such as floor height, light, ventilation, services and access should be prescribed, which will enable the architects and designers greater scope for interpretation and enable reuse and modification for maintaining the cultural continuity in housing. The FSI 1.5 fixed for residential apartment is neither rational nor viable.

The above suggestion of scrapping of FSI will have disastrous effect on building control. In modern age, where, building technology has improved, FSI is an important

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3. Facts gathered from the proceedings of the Seminar on “Development Control Rules, 1991”
tool which governs both building bulk and density. However, limitation of FSI to 1.5 is a subject for argument.

One of the Chief Planners of Chennai Metropolitan Development Authority opined that the present level of FSI ranging from 1.25 to 1.75 compares well with FSI permitted in other metropolitan cities. It is suggested to have a sliding scale of FSI for different uses within the given area depending upon the availability of infrastructure and the feasibility of augmenting infrastructure. Higher FSI can be given for EWS tenemental Housing, Public Housing Projects, Private Slums and to attract private participation for urban renewal projects." Contradictory to the above, one of the Chief Planner’s advocated a uniform FSI of 1.5 for all areas in CMA, which means reduction of FSI in GT and CBA increase of FSI in the rest of CMA. It will help attract development to outside city and reduce density within city, then evening out the demand on services and reduced density in the city which will lessen the strain on the services like water supply, sewerage, traffic etc. It has also been pointed out that in designated urban renewal areas, FSI would be prescribed higher or lower depending on the objectives of the renewal." The above impressions is doubtful whether the difference in decrease of FSI of 0.25 in GT and increase of 0.25 for the rest of CMA will effect dispersal and decongestion from GT as the land value is the highest in GT. (Map No.2.11) Feed back on FSI obtained from the survey from the promoters given in the quotations of subsequent paras and the reactions of Planners are discussed here.

6.3.7 "Restrict FSI based on width of the Road": It is one of the feedbacks from the promoter obtained is vide Chapter 5, para 5.6.5, Existing width of the most of the roads being narrow coupled with the problems related to land use reclassification has resulted in the thinking of uniform FSI for all uses except for multi storeyed buildings which are supposed to be on wider roads of minimum width 60' (18.0 mts). These two standards of 1.5 FSI for ordinary buildings and 2.5 for high rise apartments and for multi-storeyed building appear to be adequate in the given circumstances.

Seminar on Development Control Rules. 1991
6.3.8 "Increase FSI to reduce violations": Proposing increase in FSI for reducing violations is a dangerous and never ending proposition. Violations made by promoters are only for profit making. Unless there are deterrent punishments such as compounding fee, government acquiring the extra flats or making such offences cognisable resulting in punishment along with fine, there is no solution to the violators. Denying water supply and sewerage connection as well as electricity would also prove to be useful, which is being pursued with the Government of Tamil Nadu.

6.3.9 "Exclude Balcony covered areas from FSI": It is not acceptable. If it is not included in FSI calculation, then there will be wide and large balconies, which may not be in proportion to the dwelling area. The Balcony and covered areas are also sold to the purchasers. Developers even charge for open spaces earmarked car parking spaces and open terraces of the adjoining flats. Hence there is no need for excluding balconies and covered areas for FSI calculation.

6.3.10 "FSI should be fixed based on land cost": Land cost varies with time/economy/availability of funds. Market forces always influences the land cost. Moreover it is difficult to arrive at the land cost more scientifically. In some places the guideline value is much lower than the market value. On the contrary in some areas the guideline value is more than market value. Hence, it is not a good proposition to fix FSI based on land value only.

6.3.11 "Higher FSI for GT and CBA": There are two different opinions about allowing FSI in GT and CBA. One view is that since already these areas are congested, higher FSI will further add to the congestion and the existing infrastructure may not be adequate to take additional load.

The other view is that in GT the owners rebuilt unauthorisedly exceeding the allowable FSI. Unless the area is taken up for redevelopment by parts, nothing much could be done. The CBA concept has to be given up because of difficulty in exactly delineating the area. Moreover special concessions are available (no side set back for such buildings).
6.3.12 “Do not differentiate between commercial and residential flats with respect to FSI”. It is an acceptable proposition giving higher FSI for commercial or any other activity tempts the builder to deviate from the approved use. When mixed activities are permitted uniform norm in FSI has a greater importance.

6.3.13 “Relax FSI for Smaller Size Plots”: FSI controls density. If the plot itself is small, by allowing more FSI resulting further densification which will lead to ‘vertical slums’. In the First Master Plan, where the policy, for dispersal of population and decongesting the CBD has been put forth, it has not been decongested. The density in CBD is the highest i.e. above 500 persons/hect. (Map No.2.10) when compared with the rest of the city. Fixation of higher FSI in CBD (1.75) than for the rest (city and metropolitan 1.5 and outside 1.25) has acted against the policy for decongesting the CBD, put forth in the First Master Plan. For decongestion, higher FSI for the outer municipalities would have to be contemplated, but it should commensurate with infrastructure development.

Table 6.2 Height of the Buildings and FSI of the Sample

<table>
<thead>
<tr>
<th>Height (m)</th>
<th>CBD</th>
<th>CITY</th>
<th>Municipality</th>
<th>Rest of CMA</th>
</tr>
</thead>
<tbody>
<tr>
<td>FSI (Existing)</td>
<td>4.90</td>
<td>1.90</td>
<td>1.50</td>
<td>1.50</td>
</tr>
<tr>
<td>FSI (1st M.P.)</td>
<td>1.75</td>
<td>1.50</td>
<td>1.50</td>
<td>1.25</td>
</tr>
</tbody>
</table>

Source: Primary Survey

Based on an analysis of FSI from the sample survey, the FSI as existing is depicted in Fig.6.1 and Table 6.2. The FSI in CBD is as high as 4.9, in city outside CBD it is 1.9, in the rest of CMA is 1.5. The FSI of 1.75 as contemplated in the First Master Plan is far below what is in reality, as well as in the rest of the area the existing FSI is higher than what is enforced. Even, what is contemplated in the Second Master Plan does not match with that existing in CBD. One school of thought is that lower FSI should be prescribed for high density central areas. Simultaneously a high FSI for the suburbs would help in decongesting the core. In areas for new development it is feasible to provide water supply and drainage lines with larger capacity along with wider roads and improved community facilities (S.P. Shorey 1994).
In this context, it is worth to note some of the observations made by World Bank recently. Prescription of uniform FSI for cities of more than \textit{half a million people} is unique in India, no other city has such a regulation. Exceptionally, in Ahmedabad the FSI reaches in the old city area, where there is little demand and in small village enclaves within city. In contrast, the typical variation of the FSI in a down town area should be based on land values and consumer demand. For example, Port land oregon has an FSI which varies between 2 and 15 in the central part of the city, accurately reflecting the price of urban land and the benefit associated with central locations in the area. In spite of the great variation in FSI, the city is very livable, neither highly congested nor very dense, contrary to the indian experiences. The irony of the Indian situation is that extreme congestion has prevailed in most of the CBDs, of Indian Cities as is well illustrated in the case of Chennai (Fig. 6.1), inspite of the low and nearly uniform FSI (World Bank, 1997). The second school of thought is that there is scope for increasing FSI in CBD, where land value is very high, which can be profitably used for revenue generation to provision of needed infrastructure and implementation of traffic improvement and management projects for relieving the prevailing extreme congestion.

Further there are disadvantages in adopting low uniform FSI, since it does not generate uniform population densities. People settle as close to the centre and as close to the jobs. For the poor and near poor this means illegal squatting in open land and ow rise, high density slums. Secondly, the CBD cannot remain the centre of gravity of economic activity, thirdly an uniform FSI, lower than that sought by the market increases the demand for land because it results in a higher land requirement for a given amount of floor space built and unnecessarily expands built up boundaries.
fourthly infrastructure cost rises for a less compact and less efficient city. Finally, the transport requirements of the less efficiently spread city will be greater, which means increased energy consumption, atmospheric pollution, more transport cost due to commuting for jobs and congestion. Lastly, low uniform FSI in the CBD perpetuates inefficient land use. Low FSI would not attract redevelopment. The low FSI in Indian CBDs results in a very high economic cost for the city by preventing the renovation of obsolete buildings in prime locations (World Bank 1997).

FSI is an important parameter, which cannot be dispensed with for a proper development control. From the above arguments, one can visualise that FSI combined with minimum setbacks, minimum road width, height control can yield good results to ensure easemantary rights of the neighbour and to fulfill the objectives of building regulation. Differential FSI with regard to land value can generate revenue to augment infrastructures and to combat traffic congestion. In the above context, it sounds logical to have FSI 3 for high rise buildings and vary upto 1 to 1.5 for low rise structures, depending on road width. This inturn gives incentive for widening the roads, which is an essential for relieving traffic congestion.

6.3.14 “Maximum Permissible Height”: The Tamil Nadu Flat Promoters Association while suggesting minimum number of parameters, recommended to stipulate plot coverage and height which are as follows:

(i) 60% plot coverage - upto Ground + 4 floors.
(ii) 50% plot coverage above ground + 4 floors upto ground + 6 floors.
(iii) 40% plot coverage above ground + 6 floors upto ground + 9 floors.
(iv) 30% coverage ground + 9 floors.

As the height increases there must be sufficient setback spaces all round for ventilation and safety. As the above rule may provide for more flexibility for planning on uneven and odd shape and optimum utilisation space. But this may lead to building on the boundary affecting the easementary rights of the neighbour.

Alternatively, a suggestion was given to restrict set back according to number of floors. According to that Set back of 1.5 mts (5’) on all four sides of the building on ground + 1st floor/set back of 3.0 mts (10’) on all sides for buildings above ground + 1 floor and upto four floors.

Set back of 7.0 m (23’) on one side on building above ground + 4 floors for fire fighting engine to move and the remaining side spaces are as permissible under plot coverage norms.

When the argument put forth is for simple DCR and to reduce number of parameters the above suggestion becomes invalid apart from there is no mention about set back beyond ground + 4 floors. One of the suggestions i.e. allow ground + 2 floors with 1.5 m(5’) set back is acceptable only in cases of old buildings which are in existence more than 20 years. But provision of open space around the building in proportion to the height of the building is a welcome suggestion. One of the Chief Planners of Chennai Metropolitan Development Authority has suggested that upto two floors, the coverage rule could be dispensed with and only set back requirements needed. Set backs can be prescribed relating it to the number of floors, for building with more than two floors. In respect of multi-storeyed buildings, buildings above four floors, it is absolutely necessary to leave a minimum of 7m. to enable movement of Snorkel for fire fighting.

6.4 Second Master Plan:

The Present Development control system being the part of the first Master Plan (Master for Metropolitan Area 1991) suffers from the drawbacks and limitations. The drawbacks outlined are multiplicity of organisations, inadequate expertise in the local bodies, ineffective enforcement, lack of co-ordination, Rigidity of the system, inadequate information, difficulty in enforcing density control and inflexibility of the system(CMDA - Alan Turner and Associates 1991). Chennai Metropolitan Development Authority has prepared a Second Master Plan - Master Plan for Chennai
Metropolitan Area - 2011 in July 1995, which strives to overcome the drawbacks of the first Master and also the Second Master Plan has its base on the findings and recommendations of the series of studies conducted by the Times Research Foundations, in the October 1991. The Government is yet to approve the Second Master.

The Second Master attempts to bring certain simplifications and flexibility in Development Management.

The concept of application of different planning parameters for the three distinct areas viz., CBD, City outside CBD and Municipalities and rest of CMA have been dropped and it is proposed to adopt uniform planning parameters throughout Chennai Metropolitan Area except for FSI, Plot extent, frontage and Coverage are deleted, in the Second Master Plan. The front set back is based on road width, side set back is based on the height of the building and rear set back is based on the depth of the plot and FSI is based on road width. In the case of Multi storeyed Buildings minimum abutting road width and set back around are insisted and powers of issue of planning permission is proposed to be vested with Chennai Metropolitan Development Authority. New clauses and planning parameters for public buildings to serve physically handicapped and for conservation of rain water and garbage disposal have been proposed.

There are certain special distinctions made in the case of special buildings and Group Developments. In the First Master Plan, a special building/Group development is defined as upto Ground Floor plus three floors or to a maximum height of 15.0 mts, whereas in the Second Master Plan a building with floors built above a ground floor on stilts shall also be considered as a special building and the total height of the building shall not exceed 15.5 m and it shall be provided with a lift. In such cases the area under stilt is exempted from FSI calculations. It is also proposed to permit Special Buildings on a 9.0 m wide road provided the minimum extent of plot is 1100 sq m. A comparison of the Development Control Rules of the Second Master Plan is made with that of the first Master Plan in Appendix IV.
6.4.1 First alternative:

As it has been already introduced in Chapter 5, one of its important feedbacks is “Liberalise Rules under Second Master” the proposed new structure in Second Master Plan is taken as the first alternative and the appeal cases of the samples chosen for the study is examined, with reference to the Development Control Rules of the Second Master Plan and compared with that of the DCR of the First Master Plan and presented in Figures 6.2 and 6.3. In Figure 6.2, the parameter versus violations are noted. The Figure 6.2 illustrates the violations in the case of road width, rear set back, side set backs, FSI, Land use are found to be more than that of the First Master Plan. Since frontage and coverage have been dispensed with for ordinary buildings in the Second Master Plan, the first alternative shows a lesser violation than that of the First Master Plan. In the Figure 6.3, the violations are noted against different plot sizes of less than 40 sq.m. (EWS Category), 41-90 sq.m. (LIG Category), 91-180 sq.m. (MIG Category), 181-350 (HIG groups), 351-750, 751-1000 and above, (Flat/Group developments) and above 1500 sq.m. (Multi-storeyed buildings category). Violations found to occur more in the case of plot sizes of 180 sq.m. to 750 sq.meters since a minimum road widths of 10.0 m and above have been stipulated. The first alternative is found to be more violative than the DCR of First Master Plan and hence is more stringent.

6.4.2 Second Alternative:

One of the reactions of the promoters during the perception study is to “Liberalise Rules” and “Allow deviations upto 20%”.

The results of the Principal Component Analysis have been taken into account for evolving the concept that certain rules are relaxable and certain rules not relaxable and certain rules can be dispensed with.

HIG - Higher Income Group  
LIG - Low Income Group  
MIG - Middle Income Group  
EWS - Economically Weaker Section
Fig. 6.2 PARAMETERS AND VIOLATIONS

<table>
<thead>
<tr>
<th>PARAMETERS</th>
<th>First Master Plan</th>
<th>First Alternative</th>
<th>Second Alternative</th>
<th>Third Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROAD WIDTH</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FRONTAGE</td>
<td></td>
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<tr>
<td>F.S.B.</td>
<td></td>
<td></td>
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<tr>
<td>R.S.B.</td>
<td></td>
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<tr>
<td>S.S.B1</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>S.S.B2</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>COVERAGE</td>
<td></td>
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<tr>
<td>FSI/FAR</td>
<td></td>
<td></td>
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<tr>
<td>LAND USE</td>
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<tr>
<td>HEIGHT</td>
<td></td>
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</tr>
</tbody>
</table>

No. OF VIOLATIONS vs. PARAMETERS
Fig. 6.3 PLOT SIZE AND VIOLATIONS

No. of Violations

40 91-180 181-350 351-750 751-1000 Above Above
Plot Size in Sq.m.

- First Master Plan
- First Alternative
- Second Alternative
- Third Alternative
Based on the above reaction, second alternative is developed on the considerations that: certain rules are not relaxable, certain rules are relaxable and certain rules can be dispensed with. To provide safety and protect the interest of public, parameters of Road width, Parking, Corridor Width, splay, fire safety and front set back are not relaxable. In view of varying nature of existing road width it is proposed that the front set back will vary according to road width. To provide flexibility in design parameters of FSI, Side and rear set back and meter room are relaxable. Parameters of Frontage, Coverage and Plot Extent can be dispensed with to reduce the number of parameters in whole system of operation as they do not add for safety and public interest.

The Guide lines will be (i) Front set back varies with abutting road width. (ii) The height is restricted to one and half times to road width, (iii) Side and rear set back depend on the height, more over guided by the type of the building and (iv) FSI is based on the achievable limit, which will not exceed 1.5 in the case of ordinary buildings and there is flexibility in the case of special and multi-storied buildings, (v) All commercial buildings exceeding 1000 sq.meters in plot extent and FSI exceeding 1.5 shall abut on a road not less than 10.0 m Wide. It shall have an alround set back of 3.5 m Front set back shall vary according to the road width. Maximum height shall not exceed 1 and 1/2 times (one and half) the road width, (vi) All institutional and Industrial buildings of plot extent more than 1000 sq.meters will have to abut a road not less than 10.0 m wide. It shall have an alround open space of 6.0 m but FSB shall vary according to road width. The height is restricted to 1 and 1/2 times (one and half) the road width. Maximum FSI shall not exceed 1.5.

The above guide lines which forms the Second alternative is taken to test the sample.

6.4.2.1 ORDINARY BUILDING:

For ordinary building mere public access is sufficient. There is no specific road width prescribed. Ordinary buildings are categorised such as EWS, LIG, MIG and HIG depending upon the plot extent and the norms for FSB, SSB and RSB are
PLOT
EXTENT: 0 to 40 Sq.m- (EWS Category)
ACCESS: Public Access
FSB: 1.0 metres
SSB: Nil on both sides
RSB: 1.50 metres
HEIGHT: G + 1 Floor (6 metres height)

ACHIEVABLE
FSI: 1.46

MAX. ALLOWABLE
FSI: 1.50

MODULE I- ORDINARY BUILDING- EWS

Fig. 6.4
PLOT EXTENT: 41 to 90 Sq.m- (LIG Category)

ACCESS: Public Access

FSB: 1.5 metres (varies from 1.5 to 4.5 M depending on road width)

SSB: 1.0 metre on one side

RSB: 1.50 metres

HEIGHT: 1.5 times road width, restricted to G + 1 Floor

ACHIEVABLE
FSI: 1.20

MAX. ALLOWABLE
FSI: 1.50

MODULE II- ORDINARY BUILDING- LIG
PLOT EXTENT: 91 to 180 Sq.m. (MIG Category)

ACCESS: Public Access

FSB: 1.5 metres (varies from 1.5 to 4.5 M depending on road width)

SSB: 1.5 metres on one side

RSB: 3.0 metres

HEIGHT: 1.5 times road width, restricted to G + 1 Floor

ACHIEVABLE
FSI: 1.20

MAX. ALLOWABLE
FSI: 1.50

MODULE III- ORDINARY BUILDING- MIG

Fig. 6.6
PLOT EXTENT: 181 to 350 Sq.m- (HIG Category)

ACCESS: Public Access

FSB: 1.5 metres (varies from 1.5 to 4.5 M depending on road width)

SSB: 1.5 metres on both sides

RSB: 3.0 metres

HEIGHT: 1.5 times road width, restricted to G + 1 Floor

ACHIEVABLE
FSI: 1.20

MAX. ALLOWABLE
FSI: 1.50

MODULE IV- ORDINARY BUILDING- HIG

Fig. 6.7
prescribed and given in module I, II, III and IV (Fig. 6.4, 6.5, 6.6 and 6.7) The height of the building is restricted to 1.5 times road width with restriction of Ground + 1 floor only. The achievable FSI is about 1.46 for EWS category, 1.20 for LIG, MIG and HIG categories whereas the maximum allowable FSI is fixed as 1.50. This allowance was given considering anticipating the small needs that will arise during construction period due to individual’s option. Further there is some allowance between the achievable and permissible FSI to take into account for the different size of plots in each category as the investigation is limited to a particular size of plot.

6.4.2.2 SPECIAL BUILDING AND GROUP DEVELOPMENT: MODULE V:(Fig.6.8) (Plot extent ranges from 181 sq.m. to 350 sq.m.)

For considering special building the minimum road width is prescribed as 9.0m. As the flats cater to lower MIG and LIG. The 9.0 m road cater only to the LIG who at the maximum may own a two wheeler. The chances of owning a car by the occupants are remote in this category. Hence it has been suggested to allow special building without taking into account the needs of a four wheeler. By allowing special building in 9.0 m Road the housing stock will improve and will be beneficial to LIG and middle income group. Minimum set back of 3.5 m around are prescribed (20% relaxation from 4.5 m which is a desirable norm) for effecting micro climate, rain harvesting and easementary rights of the neighbours. Moreover 20% relaxation is also given in respect of FSI to this category. For group development, a distance of 6.0 m is to be maintained between the blocks for privacy and safety.

6.2.3 SPECIAL BUILDING: Module VI (Fig.6.9), VII (Fig.6.10), and VIII(Fig.6.11): (Plot Extent ranges from 351 sq.m. to 750 sq.m.; 751 sq.m. and above.

The minimum road width prescribed for these categories is 10.0 m. The front set back varies depending upon the road width from 9.0 m to 30.0 m. The minimum of 5 m is prescribed for front set back, side set back, rear set back by restricting the parking under the stilts. For group development, a distance of 6.0 m is to be maintained between the blocks for privacy and safety. The permissible FSI for this category for flats ranging from 351 sq.m. to 1000 sq.m. is 2 and for flats above 1000 sq.m. it is 2.50. But achievable FSI as per the study for the selected category of plot
PLOT EXTENT: 181 to 350 Sq.m

ACCESS: Public Access - 9 metres (min)

FSB: 3.5 metres (varies from 3.5 to 6 M depending on road width varying from 9 to 30 M)

SSB: 3.5 metre on both sides

RSB: 3.5 metres

HEIGHT: 1.5 times road width, restricted to G + 3 Floors

ACHIEVABLE
FSI: 1.5

MAX. ALLOWABLE
FSI: 1.75

MODULE V- SPECIAL BUILDING
## MODULE VI- SPECIAL BUILDING

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PLOT EXTENT</strong></td>
<td>351 to 750 Sq.m</td>
</tr>
<tr>
<td><strong>ACCESS</strong></td>
<td>Public Access- 10 metres (minimum)</td>
</tr>
<tr>
<td><strong>FSB</strong></td>
<td>3.5 metres (FSB varies from 3.5 to 6.0 M depending upon road width varying from 10 M to 30 M)</td>
</tr>
<tr>
<td><strong>SSB</strong></td>
<td>3.5 metres on both sides</td>
</tr>
<tr>
<td><strong>RSB</strong></td>
<td>3.5 metres</td>
</tr>
<tr>
<td><strong>HEIGHT</strong></td>
<td>4 Floors with stilt parking, restricted to 1.5 times road width</td>
</tr>
<tr>
<td><strong>ACHIEVABLE FSI</strong></td>
<td>1.50</td>
</tr>
<tr>
<td><strong>MAX. ALLOWABLE FSI</strong></td>
<td>2.00</td>
</tr>
</tbody>
</table>

*Fig. 6.9*
MODULE VII- SPECIAL BUILDING

PLOT EXTENT : 751 to 1000 Sq.m
ACCESS : Public Access- 10 metres (minimum)
FSB : 3.5 metres (FSB varies from 3.5 to 6.0 M depending upon road width varying from 10 M to 30 M)
SSB : 3.5 metres on both sides
RSB : 3.50 metres
HEIGHT : 4 Floors with stilt parking, restricted to 1.5 times road width
ACHIEVABLE FSI : 1.50
MAX. ALLOWABLE FSI : 2.00

Fig. 6.10
PLOT EXTENT: above 1000 Sq.m
ACCESS: Public Access- 10 metres (min)
FSB: 3.5 metres (varies from 3.5 to 6 M depending upon road width varying from 10 M to 30 M)
SSB: 3.5 metres on both sides
RSB: 3.5 metres
HEIGHT: 4 Floors with stilt parking, restricted to 1.5 times road width

ACHIEVABLE
FSI: 1.50

MAX. ALLOWABLE
FSI: 2.50

MODULE VIII- SPECIAL BUILDING

Fig. 6.11
extents will be in the order of 1.5 and provision for relaxation is made considering the violations/deviations that are unavoidable and being made due to projections such as balconies etc., The extra FSI will allow for developments of the plot extent exceeds 751 sq.m.

6.4.2.4 MULTI-STOREYED BUILDING: Module IX - (Fig.6.12).

In this category the parking is made only as stilt parking and the maximum FSI permissible is prescribed as 3. The achievable FSI works out to 2.25 only. The set backs are 7.0 m all round. The extra FSI will take care of developments in larger plots.

The second alternative based on the above guidelines is formulated and violations with reference to parameters and violations with reference to plot sizes are given in Figure 6.2 and 6.3.

It may be seen from Figure 6.2, that violations in the case of road width, FSB, FSI and height are lesser than that of the First Master Plan, whereas, RSB and SSB are found to violate more. This may be attributed to the fact that a minimum set back of 3.5 m. in the case of special buildings and 7.0 m in the case of multi-storeyed buildings have been stipulated, irrespective of whether for these buildings, for which no side and rear set backs are insisted in the First Master Plan. From Figure 6.3, it may seen that this alternative is better than the First Master Plan and also of the Second Master Plan (first alternative) for plots less than 180 sq.m. For bigger size plots (751 sq.m onwards upto 1000 sq.m.) the second alternative follows the trend of the First Master Plan. For plots of 1000 sq.m. and above, the second alternative is found to be better than the First Master Plan and the First Alternative. But for Multi-storeyed buildings (plot extent more than 1500 sq.m.), the Second Alternative is better than the First Master Plan, but more violative than the First alternative.

6.4.3 Alternate III:

Considering the continuous building area, which is found to be dominated in CBD and the rest of the study area (Fig 5.10.1), where side and rear set back are dispensed with, the third alternative is considered with the rules evolved in the Second
MODULE IX- MULTI-STOREYED BUILDING

PLOT EXTENT : 1500 Sq.m and above
ACCESS : Public Access- 18 metres
SET BACKS : 7.0 metres all around
HEIGHT : More than 4 floors with stilt parking, restricted to 1.5 times road width

ACHIEVABLE FSI : 2.25
MAX. ALLOWABLE FSI : 3.00

Fig. 6.12
alternative. Also the concessions for continuous building areas available under the First Master extended in this alternative and applied. The results are illustrated in Figures 6.2 and 6.3.

The third alternative is found to have lesser violations in respect of all parameters chosen (Figure 6.2) and it is less violative in respect of all size of plots, whether it is ordinary buildings or flats, group development and Multi-storeyed buildings (Figure 6.3). The alternative control mechanism thus evolved has been compared with the sample violation cases to assess how far it helps to qualify the sample cases approvable. Only 4% of the sample cases get qualified for approval. However the modified control system is capable of reducing the violations but at the same time provide for legal developments.

Figure 6.2 depicts the comparative situation arrived at based on the alternative proposals postulated regarding the development control. From the analysis of the data it is quite clear that even with the relaxed Development Control Rules only about 4 per cent of the sample cases would qualify to be classified as legal or approvable. Whereas it is about 2% in the Second alternative. By applying the Second Master Plan regulations (Alternate 1) to the 72 sample cases, it was observed that the regulations are too rigid as far as the plot sizes of 181 sq.m. to 750 sq.m. In the alternative 2, where certain relaxations are made, again it follows almost the regulations of First Master Plan. Not even a single case is qualified for approval. The alternative 3 which is worked out based on minimum parameters, it is found that the EWS and LIG and even upper MIG are getting advantages. This is necessary, because around 65 per cent of the CMA’s population comes under this category. Even in case of plot sizes ranging between 180 sq.m. to 750 sq.m. where large number of flats are coming up also would get the advantage of this regulation given in alternative 3. It is the region where many units are added to the housing stock, in the City and its vicinity where there are certain level of infrastructure is available. The application of alternative 3, will certainly improve the housing situation for MIG and HIG too.
In case of plots where incidence of Multi storeyed Buildings are possible, the different regulations compared could not figure differently. However, the alternative appears to be more reasonable as it brings within its ambit more number of cases as qualified to be given planning approvals. It is pertinent to note that one caution to be observed while implementing this is that while dealing with areas outside City limits, the availability of infrastructure needs to be taken into account.

6.4.4 Parking Standards: Parking is an essential parameter, which cannot be compromised, as it ensures onsite parking, thereby minimising on street parking resulting in reduction in effective road widths. One of the Chief Planners, Chennai Metropolitan Development Authority expressed that the present parking standard, contemplated in the first Master Plan is adequate, which has to be strictly followed so as to avoid on street parking.

In the First Master Plan car parking for residential buildings of units exceeding 100 sq.m., one car parking space for every 100 sq.m., is enforced whereas in Second Master Plan, one car parking space for every 75 sq.m. is stipulated. That apart visitor's car parking is insisted. Parking should be provided after considering the number of units in the building instead of calculating the parking lots by taking into account the area of the plot. When compared with First Master Plan for all category of buildings, the car parking standard is found to be stringent in the Second Master Plan, which has to be deeply investigated for adoption.

Regarding the feedback obtained from the professionals on "(i) use of basement floor for parking to be made mandatory and (ii) set apart basement for parking", it is to be noted that the stilts and basements proposed for car parking in the plan are later being converted for commercial purposes. To encourage for retaining such areas for parking CMDA has excluded stilt areas from FSI calculation, which is a welcome change.

* Seminar on Development Control Rules. 1991.
* Parking lots planned for visitors in commercial complexes "The Hindu". dated 15.6.97.
Eventhough the present parking standards have been arrived after detailed discussions with concerned departments, it is necessary to evolve a practically adoptable parking standards based on factors such as car ownership, visitors/customers parking, in residential/commercial areas and habit of people who use idle parking in places of markets/offices and commercial centres. Violations arising out of splay corridor width, fire safety, land acquisition for public purposes cannot be dispensed with.

6.4.5 Citizen’s Charter: The following feedback from the professionals are well received by the Planners.

1) Multi-storied Buildings (MSB) to be banned in non-Multi-storied Building areas.
2) Sanction of MSB now referred to Government are to be delegated to CMDA since there are qualified personnel in CMDA.
3) Make the rules to be transparent/no scope for interpretation.
4) Adopt practical approach in applying DCR with regard to site conditions.
5) Effect change in rule for those cases received after the date of change in rules.
6) Amendments to DCR should be brought out in a printed form.
7) Do not return papers on flimsy grounds.
8) Do not delay in refund of security deposit for completed construction, otherwise it tempts to violate and get the benefit and forget the security deposit.

Now a citizen’s charter is under preparation in CMDA so as to bring more transparency, which is a welcome change.

6.4.6 Single Window System: "Adopt single window system for expeditious issue of planning permission" and "Delink issuance of planning permission from Metrowater Clearance" are the two feedbacks (vide Chapter 5, Para 5.6.5) from the promoters show their hardship in getting clearance of planning permissions from Plenthora of authorities. It is necessary to find out a way for operation of single window system. It is suggested to establish single window system at three levels. Also it is necessitated
out of 73rd and 74th Constitutional Amendments wherein local bodies are being vested with planning functions. One of the feedbacks from the professionals i.e. "well qualified staff with local bodies necessary" draws our attention here. As it may take time to post well qualified staff to each local body the qualified staff from CMDA can be redeployed for operation of local level single window system - Each urban nodes in CMDA (Alandur, Pallavapuram, St. Thomas Mount, Tambaram, Ambattur, Avadi, Manali, Madhavaram) (Map No. 2.2) may be made as the nodal points for meeting the local body official and CMDA planner and those Department officials whose clearances are needed shall meet on appropriate days and jointly issue clearance. More delegation if possible may be given to these nodal officers so as to expeditious clearance of planning permissions/building permit and whatever other clearances.

At second level, all the zonal offices within Chennai Corporation may be made as the nodal office. Presently all the building permit and planning permissions within the delegated powers of Chennai Corporation are being dealt in Rippon Buildings. Instead, the function may be shifted to the zonal offices (Map No.2.3) where CMDA planner and other connected departmental officials may meet and give clearance. Further, more delegation to these officials at zonal level may be considered.

At third level, CMDA may be nodal office for clearance/issue planning permission, with joint responsibilities of Metrowater, Tamilnadu Electricity Board, Traffic Police, Tamilnadu Pollution Control Board and Chennai Corporation the representative of the concerned local body to which the proposal is related and the representatives of the line departments shall jointly operate the single window system.

The single window system, so established apart from expeditious clearance, may act for check on unauthorised constructions and tighten for enforcement. Further, it may improve the quality of the scrutiny with well qualified staff. What we need today is co-operation of all the connected Departments for such a move. If not, the Government may intervene to establish such single window system. For the sake of certain bureaucrats, public should not suffer!
6.4.7 Innovative Approach: The two feedback viz. “give priority to Licensed Surveyors/Architects and hold them responsible for violation to DCR” and “review DCR with respect to basic requirements of large number of applicants particularly with respect to EWS” are of greater importance where we are marching towards a more liberal system trusting qualified technical experts. As far as EWS is concerned, dispensing with side and rear set back, with minimum front set back is a liberal policy. Planning permission for them need not be insisted and accorded deemed permission if the proposal is certified by registered Architect.

For plots upto 500 sq.m. sanction by registered Architects are sufficient. For group housing, layouts and other schemes, sanction of local authority with planning permission, urban design approval and approval of fire authorities should be necessary. Such controls should offer flexibility and should be indicative rather than rigid and prescriptive (Spatio-Economic Development Record 1997). For plots upto 350 sq.m. for a single family, Registered Architects may be made responsible for planning permission. In that case the concerned Architect should fulfill condition of filing completion certificate with the local/planning authorities.

Taking the same analogy, a graded approach for planning permission is suggested so as to make the system more workable. (Table 6.3).

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Plot size</th>
<th>Deemed approval with architects certificate</th>
<th>Architect's approval with completion certificate to local authority</th>
<th>Approval with local authority</th>
<th>Local Authority + Planning Authority single Window</th>
<th>Single Window (All Agencies Combined)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>40 sq.m. and less</td>
<td>*</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>41 to 180 sq.m. single family houses.</td>
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</tr>
<tr>
<td>3</td>
<td>181 to 350 sq.m. single family houses.</td>
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</tr>
<tr>
<td>4</td>
<td>Tenements: 181-350 sq m</td>
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</tr>
<tr>
<td>5</td>
<td>Multi-storeyed buildings/special buildings on arterial roads.</td>
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</tr>
</tbody>
</table>
EWS buildings of 65 sq.m. and less, it is deemed approval, with the Registered Architects certificate; For buildings more than 40 sq.m. upto 180 sq.m. (single family houses), it is sufficient if the owner produces Architects' approval with a completion certificate to the local authority to the effect that the building is not in violation. For buildings more than 180 sq.m. upto 350 sq.m. (of ordinary buildings) planning permission is necessary from both the local authority. For plots more than 180 sq.m. and special building the local authority will operate through single window system with the planning authority. For all multi-storeyed buildings/special buildings and developments on important arterials clearance from all agencies concerned through single window system is suggested. In addition to the completion certificate from Architects, it is necessary to insist a security deposit from the owners of plots more than 180 sq.mts as it is being insisted in the case of multi-storeyed buildings and special buildings.

6.4.8 Time Limit for issue of planning permission:
"Give planning permission within 30 days": One of the feed backs from the promoter is due to delay (vide Chapter 5, para 5.6.3) steps have been taken to issue planning permissions within 15 days by the Chennai Corporation, by introducing a new system. The new system, a product of the realisation that the blame for delays does not solely lie with those seeking permits, seeks to impart a "customer orientation" to the entire process.* In Metropolitan planning process updating information on development and problems are more critical. Studies related to achieving interface between metropolitan planning and development control suggests that development control process posses vital information. These information source is of information refresher to identify development issues at various spatial scale over variety of planning problem. Specially, if a system is developed rising development control as an input over existing data base of a metropolitan area using a computerized data structure such as GIS it would serve as a powerful planning tool for development authorities (Sekar 1997).

In CMDA, monthly review is being conducted by the Member-Secretary to expedite the clearance of pendency. Monthly targets are being fixed and reviewed in

the next month. In all proposition an attempt, is being made to clear planning permission within 30 working days. On the basis of the discussion with the officials of the Chennai Metropolitan Development Authority, a flow chart (Fig. 6.13) is drawn. As per the flow chart (Fig. 6.13), minimum 30 working days are required. But, it all depends, how many man-month efforts are put for quick disposal. More delegation and establishment of GIS and single window system will ease the operations and deliver the goods in time. In all probability planning permission can be issued within 30 working days.

6.4.9 Planning Enforcement:

The feed back on planning enforcement, obtained from the promoters are:

"(1) Take quick action on unauthorised construction in the initial stage itself"
"(2) Involve Associations and public bodies as informers for checking violations"
"(3) Adopt strict enforcement in locations of industry in the residential area/open space recreational area".

Here, even unauthorised complaints are considered for checking the unauthorised construction. In fact, strict enforcement is necessary on all developments. It is not possible to exclude any development from enforcement.

It is better to take quick action on unauthorised construction in the initial stage itself. But there are practical difficulties. As per the Town and Country Planning Act after issue of demolition notice, 30 days have to be given before demolition. By making use of the time, individuals make appeal to CMDA/Government for relaxation. When appeal is pending demolition cannot be taken up. By that time, constructions are completed. Individuals also can go to court and get stay and thus demolition proceeding gets stuck. In many cases, the individuals whose easementary rights are affected by the building violation, are also afraid of going to court and instead they persuade Chennai Metropolitan Development Authority to pursue action.

Regarding exemptions, public co-operation is very much needed for stopping unauthorised construction. Under section 113 of the Town & Country Planning Act
Admittance in SBC & Land use noting (1 day)

Numbering of PPA in DR & Transfer to the concern Channel (1 day)

Registered in PR, Putting up the back file & referring to PA (1 day)

Sending letter to Metrowater & referring for Inspection (1 day)

**Inspection (5 days)**

- Scrutiny of PPA by PA & AP (4 days)
- Clearance from Metro water (15 days)
- Scrutiny by DP (2 days)
- For Approval/Refusal
  - S.P. (2 days)
  - If Send to MS
    - M.S. (2 days)
    - Dc Advice drafting letter, Approval by AP, Typing & Despatch (3 days)

22 days

Payment of D.C. (8 days)

P.P. issued by 30 working days

**Fig. 6.13 Flow Chart on duration for issue of Planning Permission.**
exemptions are given by the Government. It is reported that an appellate committee consisting of the Housing Secretary, Municipal Administration and Water Supply Secretary and the Director of Town and Country Planning, be constituted to consider the appeals and to make recommendation for invoking section 113 of the Town and Country Planning Act. The Housing Minister could accept it and pass orders, but if the Minister disagrees with the recommendation, the final decision would rest with the Chief Minister. But this is yet to be implemented. An official enumeration showed that nearly three lakh buildings have been constructed in violation of existing development control rules within the metropolitan area is amazing. It is impracticable for demolition of these structures. The research study also indicates that violations are minimal only in case of ordinary buildings of plot size less than 180 sq m. (Figure 6.3)

The consumer action group suggested to delete the provision empowering the state Government to relax any rule in the Town & Country Planning Act which is still pending final approval (Seminar on Development Control Rules, 1991). In an attempt to tighten regulations, CMDA has suggested amendment to the Act to the effect that the structure be removed arbitrarily, if construction goes on in contravention of the demolition notice issued.

CMDA has proposed to levy a "compounding fee" as one time measure for buildings which have a deviation of 30% or less. This will be calculated by taking into account the guideline value of the land, deviations on set back coverage and FSI. In a bid to deter violators, development of buildings/land which have violated more than 30 per cent of the rules will be charged penal property tax, collected bi-annually. This fee will be payable till the deviated construction is rectified to the satisfaction of the Authority. Compounding fee and the penal tax arrears will be collected under the Revenue Recovery Act. The entire enforcement wing of CMDA will have to closely work with corporation and police officials for detection of unauthorised construction. The penalty varies from Re.1 per sq ft. (Rs.13/sq.m.) for ordinary buildings to Rs. 20 per sq ft. (about Rs.225/sq.m.) for special and multi-storeyed buildings, for residential

Law to curb violation of building rules sought: press report from The Hindu, dtd. 29.10.93.

"Government to check unplanned growth" Press Report 'The Hindu', dtd.7.5.97.

use and Rs. 40 per sq.ft. about Rs. 450/sq.m. for non-residential uses, while conversion or shortage of car parking will be charged Rs. 50 per sq.ft. (about Rs. 555/sq.m.). The new strategy also calls for a completion certificate for all buildings, without which service connections for water, sewer and power will not be entertained (CMDA Approach Paper 1997). Unless and until a strong political commitment is made for such a deterrent measures proposed, attempt to curb unauthorised development will be futile.

So far the research focussed on simplification of Development Control Rule and the following section is devoted for evolving a flexible land use zoning.

6.5 The two paradigms of zoning:

There are two competing paradigms of zoning, understood as a kind of Government regulatory measure, in terms of economic theorisation, the Pigovian paradigm developed on the basis of Professor Arther C. Pigion’s book the Economics of Welfare, first published in 1920 on the one hand, and the Coasian Paradigm developed mainly on the basis of Ronald Coases Nobel Prize paper “The Problem of Social Cost” of 1960 on the other (Lawrence Lai WAI CHUNG, 1994)

The Pigovian paradigm refers to the articulation of the concept of ‘external effects’ (neighbourhood effects’ or externalities’). In modern welfare economics, an externality is a kind of market failure. It arises where the cost suffered by a party due to the activities of another is compensated (such as factory producing smoke which impinges upon neighbouring houses) or conversely, where the benefits produced by one party are captured by another without compensation (such as a rose garden which is freely looked at by passers-by). The former is called a negative externality and the latter a positive one. The Pigovian tradition typically describes pollution as a kind of negative externality. Such uncompensated costs and benefits would create economic inefficiency. The reason held by Pigovian economists is that on the market only responds to private costs and benefits, it would fail to equate marginal value and marginal social costs, which is required as a condition for Pareto economic efficiency. They therefore argue that the state or the Government should intervene in the market
to correct the inefficiency. The Pigovian Paradigm is said to be interventionist, perceiving a positive role for government or State regulation of the land market, whereas the Coasian paradigm constantly casts doubts about the cost of such regulation. In Coasian economic texts about the contrasts between the two approaches, it has been said that Pigovians assume zero transaction costs for policy formulation and implementation and treat policies as if they are 'exogenous' or autonomous. What the Coasians are trying to assert is that one should not jump to policy prescriptions when problems are identified in the operation of the unregulated market. Some scholars go a step further to assert market solutions are superior in terms of economic efficiency. In the planning arena, the Pigovian Paradigm is done for zoning, whereas the Coasian Paradigm is against zoning.

The above dichotomy in the economic interpretation of zoning is generally found in American literature. Although British literature Mr. Lawrence Lai Wai Chung (1994) does not discuss zoning as such, a fundamental aspect of this debate emerges under the broader theoretical discussion of town and country planning. In the United Kingdom, most traditional texts on the economics of planning, adopt the Pigovian justification for planning. The equivalent of the Pigovian -vs- Coasian debate in the British literature is the discussion within the planning profession about the Conventional dichotomy of 'plan' versus 'market', 'planning' vs 'price mechanism'.

Mr. Lawrence Lai Wai Chung (1994) critically examines both these paradigms in his article "The Economics of land use zoning" and observes that Coasian economics provides an incisive challenge to Pigovian economics for neglecting transaction costs of government intervention. The Coasian empirical studies of zoning, specifically lend support to the view that intervention in the land market is ineffective in tackling externalities. Taken to its logical extreme, such a picture could become polarised to the extent that zoning as government regulation is dismissed altogether. However this extreme view is unnecessary on a careful reading of Coase's own works and those of other property rights theories.
Weather zoning is 'good' or 'bad' 'effective' or 'ineffective' must be a case specific, content specific, system specific and comparative rather than a general a priori categorial or universal question. In other words, a value judgement of zoning can only be meaningfully evaluated in terms of (a) the differences in the institutional design of different zoning systems; or (b) changes in rights assignment within a given zoning system.

Tony Sorensen (Town Planning Review, 1994) in his article on "Further thoughts on Coasian approaches to zoning" has responded to the above views of Lai wai Chung 1994 and has observed positively that any effective zoning system or other form of development regulation, for that matter must presumably devise a mechanism to filter out the vast proportion of trivial events, ensure that change is not hindered excessively, foster, altruism and social flexibility, avoid sectional manipulation, ensure that benefits at least match costs, and avoid a zero sum game (pp.197-202, Town Planning Review 65(2) 1994).

6.5.1. Prescriptive versus proscriptive zoning

Zoning often takes the form of legally binding schemes. Zoning which specifies what should happen is prescriptive. Proscriptive zoning merely forbids somethings, and leaves to the developer the decision as to what to do. These forms exist under either the imperative or the indicative theory of zoning, but the distinction is much more important under the former. Proscriptive and prescriptive zoning rest on different assumptions. This is illustrated by the history of zoning in the United States. Its origin lies in the law of nuisance. Law empowers the courts to enjoin activities if they interfere with the use or enjoyment of other properties. Court decisions resulted in "judicial zoning" indications as to where particular uses would not be condoned. This "nuisance theory of zoning" led to early zoning classifications into residential, commercial and industrial uses which were cumulative in that residential uses were not barred in commercial zones, and neither residential nor commercial uses prohibited in industrial zones. Later, the "planning theory of zoning" was superimposed. It viewed zoning as an instrument for implementing the comprehensive or master plan. The result is that zoning regulations tend to be more prescriptive (Andreas Faludi, 1987).
It is important in this discussion to distinguish between the nature of measures and their intended effects. Maintaining residential property values might seem a positive effect. The point of proscriptive zoning is that it is achieved by preventing developments that would be detrimental to residential amenity - a negative measure. Of course, in effect, proscriptive zoning creates (Faludi, 1985) positive rights. Everything not prescribed can be done. Australian zoning identifies uses for each zone which can be built "as of right". In some states developers need not bother to apply for approval for such uses, and these areas are designated by reference to the permitted, rather than the prescribed, uses. The difference is more than a matter of wording. It has an effect on flexibility. Consider churches, shops, local parks and the like in residential zones. Under prescriptive zoning, the land for such accessory uses must be designated in advance. Under proscriptive zoning, unless they fall into one of the excluded categories, they can go everywhere. Prescriptive zoning is more demanding than proscriptive zoning.

To achieve flexibility, for a broad brushed land use, proscriptive zoning sounds better. Hence it is proposed to have restricted number of use zones for Master Plan, which will exercise an interim control over development until Detailed Development Plans are drawn.

Association of licensed surveyors expressed that "the land use and zoning restrictions can be adopted for a development on a new site and cannot be operated for an already grown city zone should be a clearly defined geographical area of viable size and shape and not small plots and survey numbers as laid down in D.C. Rules. In this context attention is drawn to the observations of the National Commission on urbanisation on zonal systems".

Based on the collective experience the members of Association of licensed surveyors suggested in the Seminar on Development Control Rules, 1991 to have only from land use zonings, viz., i) Residential cum Commercial, ii) Non-hazardous -

Seminar on Development Control, 1991.
Industrial and Institutional, iii) Hazardous Industrial zone and iv) Non urban. The above suggestion seems to be proscriptive, which may not be adequate to meet the dynamic change.

Quoting the examples of the shop houses of South East Asia which are far more humane and economical than the exclusive zonal system introduced by modern town planning, the Flat Promoters Association expressed that it is essential that our policies are amended to encourage mixed land use on the basis of performance criteria. The entire CMA should be opened up for residential purpose which can co-exist with Institutional, Commercial, light industrial, religious and recreational usages. Hazardous and polluting activities and industries should be banned within CMA limits and no authority should have the power to grant any exemption. This step, will release several hectares of urban land for providing shelter to the economically weaker, low and middle income groups.* Lifting of land use, certain zones cannot really yield the release of lands for shelter for target groups, since there is always competing demands and dependence among the various uses which has to co-exist.

As industries by and large, have great employment potentials which in turn helps to improve the economy it should enjoy privileged treatments in D.C. Rules and so long as they are not special and hazardous industries, industries are to be allowed in large size plots with sufficiently large set back spaces. When exclusive zoning is not a suitable concept for our conditions, the concept of “No Zoning” (Andreas Faludi 1987) is also not advisable for community good, taking into account the National housing policy and objective of urban spatial planning. The approach of broad zoning is an ideal one, in which case many formerly thought to be incompatible uses can be brought in the harmonious relationship by grouping and listing of conditional uses. The modern techniques of zoning advocated are suitably modified to our specific socio-economic culture and physical conditions of Chennai Metropolitan Area keeping the public intervention on private land to a minimum and without sacrificing the objectives of planning and zoning and development regulations.

* Seminar on Development Control Rules. 1991.
One section of Planners felt during Proceedings of Seminar on Development Control Rules, 1991 that for a planned development two major categories viz., Public Intervention areas and General Development zones are sufficient. Public intervention areas include planned housing zone, planned commercial zone, planned industrial zone, public recreational zone and special and hazardous zone. All these developments are newly contemplated and developed or to be developed.

The second category viz., General development zone include the rest of the urbanized area. Activities except special and hazardous industries may be permitted, subject to application of planning parameters that are pertaining to the building use (dominant building use). Different types of rules for different building uses such as residential, commercial, institutional, industrial use are needed.

The third category advocated is `others`, which include Deferred Development Zone and Agricultural Zone. Deferred development zone is introduced to discourage frog leap developments and urban sprawl, areas which are not ripe for development within the plan period and are not contiguous with existing development. All areas where building activity is to be prohibited or discouraged such as areas to be conserved as agricultural areas and area not suitable for development such as swamps, hills etc. However, primary activities such as brick making, quarrying farm house, cattle breeding, rice and dhall mills and incidental uses may be permitted in this zone. The potential area for agriculture horticulture within CMA to be preserved from conversion to ensure supply of vegetables, to the urban area is to be zoned as Agricultural zone.

The zones as enunciated here appear to be reduced, but in practice, it won't be as they have got sub-classifications which are too broad to comprehend.

6.5.2 Land use Zoning in Second Master Plan:

The Master Plan for Chennai Metropolitan Area 2011 (Second Master Plan), which is kept waiting for approval of Government of Tamil Nadu. To get over the short comings of the First Master Plan, a broad based zoning system, which will be flexible, minimise reclassifications and facilitate industrial activity has been adopted in
Map No. 6.2 PROPOSED LAND USE 2011 (CMA)

Source: CMDA - Second Master Plan
the Second Master Plan (CMDA, Second Master, 1995). The proposed land use 2011 as contemplated in the Second Master Plan is given in Map No.6.1 and 6.2.

There were lot of criticism about the Second Master Plan. It is also too clear that the Master Plan of 1974 failed in tackling the problems of congestion and in shifting the development to the periphery: Clear cut policies are required for the Second Master Plan to achieve its objectives. **The Second Master Plan lack in the directions of future urbanization in Tamil Nadu strategies, policies and standards for development of the Chennai Metropolitan Area. The Madras High Court restrained the State Government and the Chennai Metropolitan Development Authority from issuing a final notification in pursuance of the Second Master Plan. In the first Master Plan there are ten land use classifications. Whereas in the Second Master Plan there are nine major classifications viz., Residential, Mixed Residential, Commercial, Industrial, Special and Hazardous Industrial, Institutional, Open Space Recreational, Urbanisable and Non Urbanisable. As such the classifications are not effectively reduced and flexibility for future proposals are aimed to accommodate in urbanizable zone.

On perusal, it may be seen that the land use classifications adopted in the Second Master Plan is more or less similar, except the 'urbanisable zone'. The non urbanisable zone in the Second Master Plan is a combination of classes of open space recreational use, agricultural use and non urban use contemplated in the First Master Plan. Only the 'urbanisable Zone' is a new classification introduced to open up large areas for urban development.

The land use pattern for City and that for Chennai Metropolitan Area excluding City, proposed for the year 1991 (Table 4.2) and existing (Table 2.1), reveals that dispersal from City to CMA as contemplated in the First Master Plan has not taken place. About 41% was proposed for Residential use, about 48% was achieved in 1991 for City. Only about 24% including mixed residential was achieved, whereas 52% was contemplated for residential purposes in the First Master Plan outside City.


About 4% was proposed for Commercial in City, whereas it has grown to about 7% in 1991. Only about 0.45% have been attained as Commercial in 1991. Whereas 3.9% were allocated for outside City. Industrial use more or less remained the same. About 19% have been proposed for industrial use for outside city. Whereas only 4.75% of the land has been under use for industrial purposes outside City in Chennai Metropolitan Area which clearly indicates that the present Development Control has not fostered the growth of industrial development in CMA, outside city. Also there were numerous reclassification for industry from agriculture. It is evidence that the industrial development does not take place in the industrial zone (vide chapter 4, para). Under open spaces about 9% was earmarked for City, which only attained about 6%.

The role of land use planning in directing the development of the City was insignificant before the First Master Plan, when the land use controls were oriented more to serve as mechanisms to preserve residential amenity rather to plan and utilise the available land use resources to the optimum level. While the area of the residential use has increased two times since 1964, the per capita residential use has marginally decreased during the same period. However the percentage of residential use has increased approximately by one and half times. Commercial and institutional are the two uses which have increased in all the three terms, viz., extent in area, per capita land use and percentage of land use. Contrary to the above the open space, the vacant land and non urban have drastically reduced. From the above trend of the land use pattern, it could be inferred that, while residential, commercial and institutional have been concomitant land uses with a nexus and neighbourliness between them, the open space, vacant land and non urban uses have an inverse relationship with the residential, commercial and institutional.

The trend that is observed in the existing land use pattern is not reflected in the proposed land use for 2011, both in the City as well as in the rest of CMA, outside City. Excepting commercial use, all other uses have been proposed with a demanding trend in terms of extent, per capita land and percentage which appears to be unrealistic.
The Second Master Plan makes a tall claim on the Minimally Directed Organic growth strategy (MIDOS). This claim, derives its strength from 'urbanizable zone', where in residential, mixed residential and commercial uses in all locations and non hazardous industries on either side of outer ring road are permitted. Excepting this small change, all other zoning classification under first Master Plan have been retained. One is disappointed to see only two small bits of land have been shown under urbanizable zone within City. However within CMA it accounts for 28.3 per cent of the total land. There is also lot of scope to drastically reduce the number of zoning classification. in as much as there is not much of a difference save limitations on extent, among residential, mixed residential, commercial and institutional zones (Dr. K.P. Subramanian, 1997) Having analysed the various points of view, a flexible approach in zoning is proposed

6.6 PROPOSED LAND USE ZONES: Alternate Model.

Land uses are the keys for development. Especially in urban area it is not possible to denounce the necessity of land use plan for proper environment as it ensures the delivery of its over all objective of securing the most efficient and effective use of land in public interest. In as much almost all towns have got land use planning approach it is better to continue the land use zones and particularly for Chennai the land use plans are in advance stage, new zoning concept may be difficult operationally. However it is important that the future land use plan should be worked out to enhance functionality of the town efficiently, bring visual order and improve and enrich urban areas. To achieve the above objectives, the plan is to be formulated on better understanding of affordability, social equity, maximisation of employment opportunities and efficiency fostering growth, technology etc., It is well known that the land use in urban area is not a static and change rapidly with passage of time. It is already discernible that personal mobility has tremendously increased because of changing patterns in employment opportunities, social demands etc., The personal and professional services are replacing industrial and related jobs as the predominant means of earning living (vide Chapter 2, Para 2.6). The location of new employment centres may not be based on extensive requirements of land (vide Chapter 2, Para 2.3), power (vide Chapter 2, Para 2.524), cheap transportation linkages (vide Chapter 2, para 2.526), as manufacturing and goods distribution have been in the past. Accordingly,
there is a bright chance for creation of greater environmental compatibility between places of work residence and recreation. In this context it is worth noting the existing example of Istanbul, which has almost equal size of population of Chennai. Istanbul is monumental but alive with its vibrant people, cultural heritage and cosmopolitan character. The City covers two continents in Asia and Europe and as it reflects an amalgamation of the east and west. Istanbul witnesses a very high degree of mixed land use. Business and trade are given encouragement and all along the roads there are shops, show rooms restaurants, offices etc., The old city is also acting as a large Central Business District to which the authorities do not object. The City has a compact form which is energy efficient and reduces trip lengths, thus suitable for transportation. Mixed land use all along the streets has developed a heterogeneous pattern with a close relationship between work place and residence. This has also created a strong economic base for the city along with employment opportunities. (A.K. Jain, 1996). Instead of distinctive/regimented land use areas in the built up part of the Metropolitan Chennai, as in the past a mixed use pattern is suggested (vide Chapter 5, Para 5.71 and 5.12).

Mixed use zone is suggested for built up area - City, Urban local bodies and village settlements which will co-exist with the development of the rest of area by proper land use planning. The rest of the area will have land uses of Industrial Zones, Green Belt (Conservation Zone), Floating Zone and Urbanizable zone.

6.6.1 Mixed Use Zone: (M)

The Union Minister for urban Affairs and Employment, Government of India (Sheila Kaul - 1995) during her inaugural address at the National Workshop on "Master Plan Approach - Its efficacy and alternatives" emphasised the need for adoption of 3 mixed land use zone. In this context, a modern approach in Town Planning with totally separated different uses from each other is needed. A review of the whole approach is needed since the first outcome is that everybody needs to commute. This automatically puts the poor at a disadvantage. Secondly, it has led to the proliferation of private transport units and largely inefficient public transport systems. Some of the adverse side effects of these are the time spent in making these
journeys, decreased efficiency, deteriorating quality of air on account of automobile emissions and increased reliance on hydro carbon fuels. Other adverse effects include the fact of peak hour unidirectional traffic and even increased crime since after the residential area totally deserted. In both these scenarios vulnerability goes up. Therefore there is need to find an optional mix which would keep the best of mixed land use without compromising on factors like environmental pollution, etc. It is nobody's case that an industry producing toxic wastes should be located in the heart of the City but only that we can have shops and offices in the lower floors and houses above. Even industries are not something that we should be afraid of, since they are the most important engines of growth. Better implementation of environmental protection laws are needed (Sheila Kaul 1995).

6.6.2 Industrial Zone:

It is a known fact that the growth and expansion of Industries are influenced by proximity to consumer centres, access to market, labour and availability of skills as well as fuel and power which are the obvious advantages provided by large cities and Chennai is not an exception to this. Once industries begin in certain locations and infrastructure facilities become available more industries get attracted. Now Chennai by virtue of its growth and potentials, continue to have its development of special and hazardous industries on the north. The prevailing wind direction, south east to North west further helped for expansion of polluting industries. Expansion of Manali Refineries Limited Aromatic complex and down stream industries have been planned in that direction. This area has been zoned as special and hazardous industrial area both in the First Master Plan and in the Second Master Plan. Because of employment generation by these industries and to cope with market demands for the products, it is but necessary to have a separate area for permitting such special industries to balance the industries and environment. Hence all existing special and hazardous industries and the areas proposed to be acquired and developed by public agencies as special and hazardous industrial estates, shall be segregated and located on the North. The industries classified as 'Red' (Appendix XII), by TNPCB are permissible. To provide flexibility in the system such other industrial activities incidental commercial institutional and residential activities can be permitted.
Green Belts

Green Belts (Conservation Zones) which include one or the other Green Belts, popularly known as "No development zone", is not available for urban development and act as buffer between the urban built. The purpose of this zone is to converse the potential areas for acquifies recharge and to contain and define areas meant for development uses in contiguous pockets and, on the other hand, to provide lung space just outside the urban fence. Important lakes, catchment areas of drinking water sources and places like hills and valleys of high ecological value. Situations may arise for acquiring private lands but major portions are Government lands. All wet agricultural lands with irrigation facilities, horticulture, dairy poultry, farm houses and public utilities like sewage farms etc., Private lands included under this category will be under constant pressure for conversion, which can of course can be taken care at time of preparation of DDP, when there is ample scope for inviting the attention of the owners.

Vast tracts of land along the coastal area, potential area of acquifer recharge zone, (vide Chapter 2, Para 2.31 and 2.32) high value agricultural lands which receive tank and well irrigation (vide Chapter 2, Para 2.23) and areas of potential ground water sources need to be protected from urban development. Vast tract of such country side have been identified and zoned under agriculture and open space recreational zone, which were constantly under pressure for development. Many such areas are reclassified for urban purposes. Also such areas, where it could not get reclassification have under gone unauthorised development (CMDA and TRF Policy Imperatives An Agenda For Action 1991). Agriculture zone, open space and recreational zone and non urban zone as contemplated in the First Master Plan and open space and recreational zone and non urbanizationable zone can be merged into one classification to reduce number of zoning classifications and also to provide more flexible in the system of zoning. Fine tuning may be required at the Detailed Development Plans level, where each and individual properties are covered by detailed survey. Sir Ebenezer Howards' Garden city concept and Abercrombie's plan for greater London (Arthur B.. Gallion and Simon Eisner 1950), where the concept of
Green belts was introduced is still valid in our situation since the expansion of Chennai is taking away the potential lands for conservation.

In the Green Belt zone, valuable agricultural lands (Irrigated from Chembarambakkam tank), catchment areas of Red Hills - Sholavaram lakes and Chembarambakkam and Porur tanks well fields and potential ground water sources (Panjetty-Tamarapakkam, Minjur etc.,) Beach Acquifer zone (Coastal belt designated as CRZ as per the Environmental Protection Act) are to be included. In Green Belt areas lands not suitable for development such as swamps, hills (Map No 2.6) The areas not likely to be taken up for development or not ripe for development within the plan period which are not contiguous with existing development may also be brought under this category. Sewage plants, cemeteries, burning and burial grounds can also be included under Green belts. All river course, water bodies canals and water courses, regional parks are also included. For these uses no reclassification to urban use is permissible.

When Detailed Developments are taken, for these areas, this zone can be classified into two i.e. (a) the area where development has completely to be banned (CRZ) and (b) areas, development can be restricted with suitable regulations. The restriction will regulate developments needed for residential activities of village settlements and incidental uses to agriculture, quarrying and mining (Brick making stone crushing, Farm House, cattle breeding, rice and dhall milling) could be permitted.

6.6.4 Floating zones:

Another device is the floating zone for which regulations are prescribed without saying where the proposed zone would go. So the “zone is permitted to ‘float’ over the municipality until it is attached to a particular piece of land by application of the owner and pursuant to a prescribed procedure” (Rose, 1979).

There may be some activities which may have to permitted due to socio economic and political reasons, which would have not contemplated in the plan and crop up after the notification of the Master Plan or while implementing master plan.
Transport Terminals (Bus, Rail and Air), wholesale market complexes which need to be shifted for decongesting the innercity, public utilities, services (Electrical sub stations, Treatment plants) for which ideas are floating but can be located subsequently can be brought under this zone.

Normally floating zones are established in the text of a zoning regulation but not mapped until a developer proposes. The planning authority/Government adopts such a zone for a particular site (CMDA - TRF 1991 - Policy Imperatives on Agenda for action, Vol.III). The concept of floating zone is judiciously employed to restrict classifications and provide for flexibility in the zoning system. The main advantage of this particular zone is that it prevents unwanted concentration of non conforming uses.

Floating zones have got undermining effects - frequently changes the character of the area and possibly strain the infrastructure. Hence when certain activities are contemplated in floating zone care must be taken to protect the environmental qualities of the area, where such activity is to be incorporated.

6.6.5 URBANIZABLE ZONE:

The concept of urbanizable has been introduced in the Second Master Plan for the purpose of opening up large areas for development without undergoing reclassification, which has been felt as an important drawback in the First Master Plan. As contemplated in the Second Master Plan, the urbanisable zone provides for flexibility in development, in which all urban uses excepting hazardous industrial uses can be permitted. As one step further, for larger industrial and manufacturing activities, which may arise out of new industrial development or dispersal of such of those industries existing in the built up area, needing for expansion may be permitted in this zone. Green, Yellow and Orange industries listed in Appendix XIII, XIV and XV can be permitted. This zone provides both for industry, housing and employment and hence need for public intervention, in provision infrastructure for housing and industries.
### Fig. 6.14 MIGFU - MIPTRAS MATRIX

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<td>All Residential &amp; incidental</td>
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<td></td>
<td></td>
<td></td>
<td>M2</td>
<td>Settlements &amp; Sites on &lt; 18m roads</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>M3</td>
<td>Sites on &gt;18m roads</td>
<td></td>
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<tr>
<td>2</td>
<td>I</td>
<td></td>
<td>I1</td>
<td>All industries upto 50 HP</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>I2</td>
<td>All industries more than 50 HP</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>I3</td>
<td>All special &amp; Hazardous industries</td>
<td></td>
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<td>3</td>
<td>P</td>
<td></td>
<td>P1</td>
<td>Govt/Semi Govt/Public Offices</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>P2</td>
<td>Govt land</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>P3</td>
<td>Educational and Research</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>P4</td>
<td>Medical and Health</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>P5</td>
<td>Special Cultural and Religious</td>
<td></td>
<td></td>
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<td>P6</td>
<td>Utilities and Services</td>
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<td></td>
<td></td>
<td></td>
<td>P7</td>
<td>Cremation and Burial grounds</td>
<td></td>
<td></td>
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<tr>
<td>3</td>
<td>T</td>
<td></td>
<td>T1</td>
<td>Roads (Bus Terminals)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>T2</td>
<td>Railways (Terminals)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>T3</td>
<td>Airport</td>
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<td></td>
<td></td>
<td></td>
<td>T4</td>
<td>Sea Ports &amp; Dock yards</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>T5</td>
<td>Bus Depots/Truck Terminals/Fright</td>
<td></td>
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<td></td>
<td>T6</td>
<td>Transmission and Communication</td>
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<td></td>
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<tr>
<td>3</td>
<td>R</td>
<td></td>
<td>R1</td>
<td>Play grounds/Stadium/Sports Complex</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>R2</td>
<td>Parks &amp; gardens-Public open space</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>R3</td>
<td>Special Recreational Areas</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>R4</td>
<td>Restricted open spaces.</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>R5</td>
<td>Multi open spaces</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>R6</td>
<td>Conservation areas</td>
<td></td>
<td></td>
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<tr>
<td>3</td>
<td>A</td>
<td></td>
<td>A1</td>
<td>Agriculture</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>A2</td>
<td>Forest</td>
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<td></td>
<td></td>
<td></td>
<td>A3</td>
<td>Poultry and Dairy Farming</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>A4</td>
<td>Brick Kiln and Entrance Areas</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>A5</td>
<td>Water Bodies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>S</td>
<td></td>
<td>S1</td>
<td>Heritage &amp; Conservation areas</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>S2</td>
<td>Scenic Value areas</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>S3</td>
<td>Rural settlements</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>S4</td>
<td>CRZ area</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Does not arise

Permissible

Not Permissible
This is in essence a zone where planned housing, planned industries and planned commercial areas are expected to get accommodated. Obnoxious and hazardous industries and activity creating pollution in nature are prohibited. The list of industries is given in Appendix XII.

The five land use zones Viz., Mixed Use Zone, Industrial Zone, Green Belt Zone, Floating Zone and Urbanizable zone termed as 'MIGFU' can be regulated by compatible activities, which can be permitted in the above five zones. These five zones are suggested for adoption in the Master Plan. The compatible activities are grouped under 7 heads and termed as 'MIPTRAS'. Mixed activities, Industrial, Public & Semi Public, Transport and Communication, Recreational, Agriculture including water bodies and Special areas are the activities/areas which will be the sub systems in the system of MIGFU land use zones. The permissible activities in the five zones which provide a flexible zoning system and at the same time safeguard the environmental degradation and also ensure employment are presented in MIPTRAS - MIGFU Matrix (Fig. 6.14). The MIPTRAS-MIGFU Matrix will form the base for land use planning for Detailed Development Plans.

6.6.6. SUB-SYSTEM: Activity/area

The sub-system 'MIPTRAS' forming part of the system MIGFU are detailed out for understanding the whole system of land use zoning concept, advocated as an alternate model for land use planning.

6.6.6.1 Mixed Activity/area(M):

Residential (M-1): All residential and incidental activities which do not cause nuisance. For example, Petrol pumps, house hold industry, bakeries and confectioneries, restaurants and hotels, printing press, bus depots without workshop, Community Halls, markets for retail goods, schools and tutorial institutions.

* 'MIGFU' the term formed by using the initial letters of the use zones of mixed use zone, Industrial zone, Green Belt zone, Floating zone and Urbanizable zone.

** 'MIPTRAS' the term formed by using the initial letters of the activities Mixed activities, Industrial, Public and Semi Public, Transport and Communications, Recreational, Agriculture and Special areas.
Mixed Residential activities (M-2): Village settlements and properties abutting and gaining access from roads of width 10.0 m to 18.0 m

All special buildings and group development with minimum set back of 3.5 all round and shall be increased in proportion to height. The minimum width of the road shall be 10.0 m and FSI permissible is subject to the width of the abutting road. Cinema, Municipal, State and Central Government offices. Minimum set back 6.0 m all round. Multi-storeyed buildings restricted to a height of 15.0 m

Commercial activities (M-3):

Properties abutting and gaining access from roads of width 18.0 m

Retail shopping General Business and Commercial centers, Wholesale, Godowns, Ware Housing and regulated markets, Bus and Truck Depots, motor vehicle repairing workshops/garages, gas installation and gas works, Polytechniques and higher technical institutes, junk yards, water treatment plant, railway yard/stations, sports/stadium and public utility installation, hotel and transient visitors homes, Hospitals and Nursing homes.

M-1, M-2, M-3 are permitted in Mixed use zone and urbanizable zone and are permitted in Industrial zone with restrictions. These group of activities are not formed part of Green belt and Floating zone.

6.6.6.2 Industrial (I):

Service & Light Industry (I-1):

Under this category, we have Service Industries with the restriction of 50 Horse Power (HP) and as well as not producing noxious or dangerous effluents and classified by TNPCB as Green and Yellow industries (Appendix XIII and XIV). All round set back of 6.0 m for the buildings and shall abut on 10.0 m wide road in built up area.
Extensive and Heavy Industry (I-2):

Under this category we have all industries without restriction on H.P. and classified by TNPCB on Green, Yellow and Orange Industries (Appendix XIII, XIV and XV). All industries of this type and light industries shall have a minimum set back of 3.5 m all round and may be increased to 4.5 m in proportion to H.P. Minimum road width shall be 10.0 m and may be increased in proportion to traffic intensity.

Special and Hazardous noxious and chemical Industries (I-3):

Special and Hazardous Industry have to be set apart separately (vide Chapter 6 Para. 6.6.2.). Minimum set back all round shall be 6.0 m Minimum abutting road width shall be 15.0 m and can be increased in proportion to traffic intensity.

I-1 category (Service and Light Industries) shall be permitted in Mixed Use Zone with certain conditions, based on its performance and can be permitted in Industrial and urbanizable zone. I-2 and I-3 are not permissible in Mixed use zone. It shall be permitted in Industrial zone and urbanizable zone. I-3 are permissible with I-1 and I-2 on special conditions or they have to be separated out. I-3 is not permissible in urbanizable zone. None of these industries are permissible in Green Belt zone. The existing industries of these groups can be considered under floating zone and can be fitted in appropriate groups when do they need expansion.

6.6.6.3 Public and Semi Public (P):

Under this category, the permitted activities/area are:

- Government/Semi Government/Public Offices P-1
- Government land (use undetermined) P-2
- Educational and Research P-3
- Medical and Health P-4
- Special cultural and religious P-5
- Utilities and Services P-6
- Cremation and Burial grounds P-7
For the above activities, minimum all round set back of 6.0 m be provided. Minimum accessible road width shall be 10.0 m. The setback space shall be increased in proportion to the height. FSI shall be in proportion to the width of the abutting road width.

Cemeteries shall be away from 500 m from settlements. The above conditions will prevail in all the zones for the activities, P-1 and P-5 shall be permitted in Mixed zone and urbanizable zone; P-2, P-3 and P-4 shall be permitted in Mixed zone on its conditions of its performance and shall be permitted in urbanizable zone. P-6 and P-7 shall be permitted in Mixed and urbanizable zones with conditions of performance and shall be permitted in Green belts, whereas it shall not be permitted in Industrial zone.

When future locations are needed for the activities P-1 to P-7, they shall be considered under Floating Zone for fixing in the appropriate zones without causing environmental deterioration's.

6.6.6.4 Transport and Communications (T):

Under this category the following activities/areas considered.

<table>
<thead>
<tr>
<th>Roads (Bus Terminals/Bus stand)</th>
<th>T-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railways (Terminals &amp; Stations)</td>
<td>T-2</td>
</tr>
<tr>
<td>Airport</td>
<td>T-3</td>
</tr>
<tr>
<td>Sea port &amp; Dock yards</td>
<td>T-4</td>
</tr>
<tr>
<td>Bus Depots, Truck Terminals, Freight Complex</td>
<td>T-5</td>
</tr>
<tr>
<td>Transmission and Communication</td>
<td>T-6</td>
</tr>
</tbody>
</table>

All buildings under this category shall have a minimum set back of 6.0 m all round and shall be increased in proportion to the height. The abutting road shall have a minimum width of 15 m and may be insisted according to traffic requirements. FSI permissible may depend on the abutting road width.

The activities, T-1 and T-2 are permissible in Mixed Use Zone, Industrial zone and urbanizable zone. T-3 and T-4 are not permissible in Mixed zone. T-3 is
permitted in industrial and urbanizable zone, if the uses are compatible. T-5 is permissible in Industrial zone and shall be permissible in urbanizable zone subject to that it is compatible with the uses. T-5 & T-6 are permissible in Mixed use zone and urbanizable zone with conditions of its compatibility/performance and shall be permitted without restrictions in Industrial zone.

The activities, T-3, T-4 and T-5 are not permissible in Green belt zone, whereas T-6 shall be permitted with restriction that it will not deteriorate the environment. All the above activities, which are in reserve under consideration of floating zone shall appropriately be located, in the respective zones of compatibility.

6.6.6.5 Recreational (R):

Under Recreational category, the activities that are considered are as follows:

- Play grounds, Stadium, Sports Complex : R-1
- Parks, Gardens, Public open spaces : R-2
- Special Recreational areas : R-3
- Restricted open spaces : R-4
- Multi open spaces (Maiden) : R-5
- Conservation areas : R-6

The structures shall have a minimum set back of 6.0 m Alround and shall be increased in proportion to height of the buildings. Minimum accessible road width shall be 10.0 m and the FSI shall be in accordance with the road width.

The activities, R-1 & R-2 are permissible in mixed use zone and urbanizable zone. R-3 & R-4 is not permissible in mixed use zone, whereas R-5 & R-6 are permitted with restriction. R-3 & R-6 are not permitted in Industrial zone, whereas R-4 and R-5 are permitted with restrictions. R-1 to R-5 are permitted in urbanizable zone whereas R-6 is permissible with restrictions. R-1 to R-6 are permissible in Green Belt. Regarding R-6, Buildings/areas have to be identified and a policy for preservation shall be formulated.
6.6.6.6 Agriculture and Water bodies (A):

Here the activities considered are

- Agriculture/Horticulture A-1
- Forest A-2
- Poultry and Dairy Farming A-3
- Brick kiln and Extractive Areas A-4
- Water bodies (Tank, Rivers, Canals) A-5

The structures shall have a minimum set back of 6.0 m around and shall be increased in proportion to height of the buildings. Minimum accessible road width shall be 10.0 m and the FSI shall be in accordance with the road width.

A-1 to A-4 are not permissible in mixed use zone. A-1 & A-2 are not permissible in Industrial and Urbanizable zone. A-3 & A-4 shall be permissible in industrial and urbanizable zone with restrictions. A-3 is permissible with restrictions whereas A-4 is not permissible in urbanizable zone. A-1 to A-3 are permissible Green Belt zone whereas A-4 with restrictions. For water bodies, there is no restriction in all these zones.

6.6.6.7 Special Areas (S):

Under this category the following are considered

- Heritage and conservation areas S-1
- Scenic value areas S-2
- Rural settlements S-3
- CRZ areas S-4

The structures shall have a minimum set back of 6.0 m around and shall be increased in proportion to height of the buildings. Minimum accessible road width shall be 10.0 m and the FSI shall be in accordance with the road width.

The area S-1 is permissible in mixed use with restrictions, whereas S-2 and S-4 are not permissible. S-3 is permissible. S-1, S-2 and S-4 are not permissible in
Industrial zone, whereas Rural settlements are permissible with restrictions. S-1 and S-2 are permissible in Green Belt Zone whereas S-3 is permitted with restriction on its growth. S-4 is not permissible in mixed use zone, Industrial zone, urbanizable zone, whereas it is regulated in Green belt zone as per CRZ Rule framed by Government of India.

6.7 Detailed Development Plan:

The land use activities ‘MIPTRAS’ as codified with sub-classes (vide Chapter 6, para 6.6.6) will provide the zoning for Detailed Development Plan, a corollary to the Master Plan which has been proposed to have MIGFU (vide Chapter 6, Para 6 6 1 to 6.6.5) land use classification. The time gap between the Master Plan notification and preparation of Detailed Development Plan gives a chance and time for precipitation of the future use of the properties, by the owners/developers. Thus the approach of broad brush land use zones of the Master Plan, (MIGFU) are subsequently amplified by means of in fill by MIPTRAS activity classes. Flexibility therefore makes the relation between the applicant/owner and the planning authority more symmetrical. The above approach is towards the idea emerging from the Literature Review that plans ought to be comprehensive and specific at the same time.

Even though the Detailed Development Plan prepared is being consulted with the owners/public, there is not much involvement from them, necessarily because 50% of them being illiterate. The public participation gets limited to discussion among a few enlightened and interested councillors whose education levels are not very high.

When the Detailed Development Plan area is notified for preparation of DDP, the Authority must give wide publicity, apart from notifying through the Gazette and news papers, which are part of the statutory requirements. The officer incharge must organise meetings in the local area and explain to the people the various reservations and the amenities that are being planned. The public must also be given opportunities for presenting their view points. The councillors also must be educated on the implications of the plan for improving the area.
As the process of preparation of the plan is fairly detailed it is possible to have a meaningful dialogue with the owners, so that there is commitment from the owners/public about the future of their properties. Thus there is a confidence built among the people for the land use plan more effective.

Public or private institutions do not play much role in implementation of the plan. Given the paucity of funds of the local authorities, it will be difficult for one authority to implement the development plan fully on its own. Possible avenue for generation of funds for implementation is to encourage private initiatives and responses by innovative methods.

Apart from land use zoning the Detailed Development Plan shall have proposals for infrastructure development for the area. The concept of Transfer of Development rights can be utilised for getting the land for development of infrastructure, street alignment proposals, which have remained on paper in the Master Plan (vide Chapter 4, Para 4.2.3) Detailed Development Plan can become reality by making use of the Transfer of Development right. The concept of transfer of Development rights can also be better used for conservation of historical and cultural heritage of Chennai (vide Chapter 2, Para 2.9).

The main reason for non implementation of Detailed Development Plan which and remained as a zonal plan only is that there is no separate fund for implementation of the Detailed Development Plan. If the Detailed Development Plan is to be realistic and make an impact in the development of the City, plan for infrastructure development of the area has to be included in the plan. Once funds are identified the infrastructure development can be taken as project plans in the respective financial years and that too in a phased manner. For mobilising financial resources FSI provides a leverage. If higher FSI are suggested for high value potential land pockets, the extra FSI could be auctioned for revenue generation. Apart from Transfer of Development Rights, Development Charges, there are other innovative methods suggested by World Bank (World Bank Paper, Country operations, Industry and Finance Division, 1997). FSI linked impact fees, use of air rights, density bonuses, performance zoning, urban
growth boundaries, long term leases of public sector holdings, and public private partnerships, which would be mutually beneficial to the City and the private sector.

One of the objectives of the First Master Plan was to disperse the population from City to outer areas. As per 1991 census, the growth rate of City and Chennai Urban Agglomerations excluding City is more or less the same (Table 2.3). Further from Map No.2.10, it is evident that still population is being concentrated within City.

In the first Master Plan FSI of 1.75 has been adopted for CBD, 1.5 for City and Outer municipalities and 1.25 for the rest of the CMA. When a policy of decongesting the central area is adopted, allowing higher FSI in the core area seems to be irrational. If the physical strategy adopted in the First Plan has to be realised, then the FSI would have to be in the other way round. The present Development Control is not able to contain the growth along the radial corridors and to preserve the green wedges in the physical form of finger type of development (Map No.1.1, vide Chapter 4, Para 4.2). But it is evidently proved by Map No.2.7 (vide Chapter 2, Para 2.23) that urban sprawl has fastly eating away the green wedges contemplated in the First Master Plan. Thus the second hypotheses - "Form and pattern in the Development strategy of the Master Plan and Development Control are not in consonance with each other." (vide Chapter 1, Para 1.6) is proved.

6.7.4 Coastal Management:

Here, the most important feedback what has been gathered is “Ban on coastal areas to the width of 500 mts from the sea to be reduced to 200 mts”

A width of 500 mts of the Coastal stretch is covered by the coastal zone management plan prepared as per Government of India notification. Here water bodies like rivers, creeks and canals are also considered under the purview of the Coastal Zone Management Plan. The important thing is that these distances seem to have been fixed arbitrarily without any sound basis whatsoever (P.V. Chandra Mohan 1997). The question of fixing High Tide Line is another hurdle since the entire coastal line has to be surveyed by Hydrographer for fixing HTL. It is pertinent to note that a stretch, 200
mts width of coastal area is quite small, at the same time 500 mts appears to be arbitrary indeed. However for preventing frog leap development minimum 500 mts may be necessary. Coastal Management Plan, which is under preparation in CMDA may go into the details (vide Chapter 4, Para 4.6).

Since CMDA introduced the ban upto Buckingham Canal, which is beyond 500 mts Of Coastal Regulation Zone, the land between the CRZ and Buckingham Canal may provide for passive recreation, with restricted development of beach cottages.

Further Detailed Development Plans are needed for better development and management for this stretch as it is constantly under pressure for development.

6.7.2. Environmental Impact:

The very important aspect that has to be taken more care is environmental impact. All activities/projects bring out a number of significant alterations and modifications in nature through inflicting all the four kinds of stresses viz., eutrophic, disruptive, exploitative, industrial and chemical. In order to incorporate environmental considerations into a decision or a decision - making process, it is necessary to develop a complete understanding of the possible and probable consequences of a proposed action on the environment. It is also necessary to estimate and know the increased costs to society due to environmental risks.

Environmental Impact Assessment is necessary for all new projects and Environmental Impact Statement may be insisted for those existing projects/industries which need environmental considerations. As proposed, all these cases can be dealt through single window system (vide Chapter 6, Para 6.4.6.) to avoid delay and promote industrial activities in appropriate places.

6.8 Findings:

The results of the Principal Component Analysis of the total samples of the present study does indicate that Extent is the most violated parameter. It is then followed by front set back, side set back (on one side only) and FSI. In residential and
commercial buildings side set back (on one side only) have been violated. In the case of mixed residential rear set back is the most violated parameter, whereas in the case of industrial building coverage is the most violated parameter.

Based on the above results feed back of the stake holders of Development Control and from the angle of public interest, it is arrived to consider the parameters of abutting road width, parking, corridor width, splay, fire safety and front set back are the parameters which are to be retained under the concept that rules are not relaxable, whereas FSI, side, rear set back and meter room are to be considered under the category of rules are relaxable. Frontage, Coverage and plot extent can be dispensed with under the category that certain rules are dispensable. Thus numerous applications of parameters are reduced.

With the above considered parameters, the following guidelines are evolved and tested with the sample on different plot sizes of ordinary buildings, special buildings and Multi-storeyed buildings.

The guidelines will be (i) Front set back varies with abutting road width. (ii) The height is restricted to one and half times to road width. (iii) Side and rear set back depend on the height, more over guided by the type of the building and (iv) FSI is based on the achievable limit, which will not exceed 1.5 in the case of ordinary buildings and there is flexibility in the case of special and multi-storied buildings, (v) All commercial buildings exceeding 1000 sq m in plot extent and FSI exceeding 1.5 shall abut on a road not less than 10.0 m wide. It shall have an around set back of 3.5 m Front set back shall vary according to the road width. Maximum height shall not exceed one and half times the road width. (vi) All institutional and Industrial buildings of plot extent more than 1000 sq meters will have to abut on 10.0 m wider roads. It shall have an around open space of 6.0 m but FSB shall vary according to road width. The height is restricted to one and half times the road width. Maximum FSI shall not exceed 1.5.
Here, the three alternative model evolved based on the above assumptions, have been tested. The third alternative is found to be less violative than the other two. The suggested model has the following features.

Front set back will vary with the abutting road width. The height is restricted to one and a half times the road with. Minimum front set backs are prescribed for ordinary buildings, whereas the set backs for all special buildings and Multi-storeyed buildings will be based on the size of plots. Special and Multi-storeyed buildings will have stilt parking for which exemption is given in calculation of FSI. FSI varies with type of buildings and at the same time upper limit is fixed based on the study conducted. Maximum FSI upto 2.75 is permissible based on the road width. The buildings which are located in CBD and continuous building areas, will have the same benefit of dispensing with side and rear set back as it is being followed in the Development Control Rule of the First Master Plan. The third alternative is found to be ideal in the sense that it can improve the housing situation of the target groups.

From the analysis, it is found that only about 4% of the cases qualify for planning approval, with relaxed rules of the third alternative. Hence it is all the more important to tighten the enforcement. Levy of compounding fee for violations will be a good tool to reduce violations. The commercial advantage made by such violations may be made good as a levy to be computed along with property tax and resources shall be generated for infrastructure development.

To reduce the violations, approval of planning permissions can be expedited. It is found that practically planning permission is issuable within two months. To expedite planning permissions single window system with delegations of power is more suitable at different levels of operation. For buildings of 40 sq.m. and less deemed approval with the registered architect is sufficient. For buildings 41 sq.m. upto 180 sq.m. single family houses, Registered Architects approval with the completion certificate has to be filed with the local authority. For special buildings and Multi-storeyed buildings, clearance is needed from the local as well as planning authority.
This function may be operated by single window system with the concerned agencies at local and regional levels.

The physical strategy of the First Master Plan was to disperse the population and activities from the core to the outer. But by adopting a higher FSI in CBD and lower FSI in the outer areas in the Development Control of the Master Plan the desired effect of dispersal from core to outer areas have not taken place yet. It is very slow. This established the second hypothesis viz, 'Form and pattern in the Development strategy of the Master Plan and Development Control are not in consonance with each other'.

A flexible land use planning model is suggested by introducing MIGFU-MIPTRAS matrix. A broad brushed land use plan is suggested for Master Plan. Detailed Development Plans are to be drawn for the areas for which Master Plan is notified. Application of MIGFU-MATRIX eliminates the short comings of the present system especially the rigidity, of land use zoning. It prevents allowing certain non compatible uses to get permitted in compatible zones contemplated in the First Master Plan. It reduces reclassifications. This also gives an opportunity to the owners for crystalising their ideas on the future of their property. By this the Economic Planning and infrastructure Development can be well integrated.

It is found from the study that the average FSI in CBD is 4.9, whereas the permissible limit is 1.75 only. For city outside CBD it is 1.9 and outside City it is 1.5. The FSI achieved is found to be higher than what is permitted. Incidentally it is seen that the height is tapering off from CBD to outskirt of Chennai Metropolitan Area, gives a clue that the sample reflects the reality. The extra FSI more than that achievable can be auctioned or sold for revenue generation for infrastructure building for sites advantageously located from commercial point of view. The concept of transfer of developments rights can be made use of improving heritage areas and for materialising the streetment alignment proposals which are remained only on paper plan.
The suggested concept of flexible zoning relies much on the mixed zoning for built up areas. Hence it is all the more important to identify the activities, which are likely cause environmental hazards. Those developments must go through Environmental Impact Assessment which of course would be processed through single window system, suggested earlier.