

## Zoning within Plot—An Approach to Land Sub Division to Control Violation of Development Control Rules

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### Abstract

*Population explosion, high demand of urban infrastructure and limited availability of land resources is a global concern. When the inner part of a town becomes more and more congested, it expands towards municipal limits. Effective development control rules in such situation is imperative to tackle the important issues such as slum formation, overcrowding, congestion due to buildings in contravention to development control rules, narrow streets having no further scope for widening, buildings devoid of proper light and ventilation due to violation of setback rules and tendency to utilize FSI fully by covering entire plot area. Such situations affect the systematic development. The reason may be either the legal structures under which existing development control rules enforced are too weak and inappropriate in addressing the problems of physical development or they are outdated and not suit to the present socio-economic context. Due to lack of law enforcement and monitoring by development authorities, people always trying to violate the rules during the construction stage itself. As such some innovation is necessary in development control rule (D.C.R.) so that administrative control and monitoring can be minimized. Authors recommend “zoning within plot”- an approach to land sub division to tackle the violation of development control rules and there by requirements of sustainability can be achieved.*

**Keywords:** Land sub division, Zoning, Building regulations, set back rules, Development control rules, Floor space index, Violation, Sustainability.

### 1. Introduction

Municipal council is the statutory authority which prepare, implement and control land use plan; and manages the growth of town. The main aim is to create a healthy urban environment, reduce congestion and crowd, and prevent development of conflicting land use, to control violation of development control rules during constructions, etc. and to ensure a sustainable development of a town.

During the last decade, urban areas in India experienced an unprecedented rate of growth. With this rapid growth, land use & building bye-laws conflicts have become increasingly numerous, resulting in a haphazard growth of towns and adjoining Grampanchayats. Different rules are made applicable with reference to plot size, road width, location of construction (congested and non congested area) thus creating haphazard growth.

The existing development control rules govern the zoning, sub-division of land, building permission, etc. The four basic steps involved in development process are shown in Table 1.

However, it is observed that from zoning to building construction process, the available guidelines in terms of development control rules are violated due to various reasons and thus affecting the sustainable development.

According to Brundtland commission, sustainable development is defined as “Development which meets the need of the present without compromising the ability of the future generations to meet their own needs and aspirations”<sup>[1]</sup>.

For sustainable urban development Houghton (1999), recommended a strong support for a compact city approach which needs strong planning norms and development control rules including innovative approach rather than conventional approach to sub division lay-out design<sup>[2]</sup>.

B.K. Chakarbarty (1991), outlined the land subdivision design on economic consideration by considering two deterministic nonlinear programming model<sup>[3]</sup>. Peter W. Newton (2013), outlines two pathways to urban regeneration, viz. compact cities and technological innovation, both are integral to transitioning to more sustainable and resilient cities<sup>[4]</sup>. Milda Viteikiene et al (2010),

**Table 1:** Steps involved in development process

S.No.	Step	Activity	Agency involved
1	Zoning	Legal provision for land use provided in development plan of city / comprehensive plan of region	State government
2	Sub division	Allowing to convert agricultural land to non- agricultural land by individual land owner. During town planning scheme and neighborhood planning, land can be sub divided .	District Collector, S.D.O. of Tahasil.
3	Site	Such converted small lots /plots can be developed by public, semi public authority or private owners	Public, semi public authority, Individual owner
4	Building	Construction of building by public, semi public authority or private owner having control of municipal council.	Individual owner , municipal councils, grampanchayat,etc.

pointed out that the most sustainable residential area will be area which is architecturally nice looking, having lovely surrounding with a lot of green zones and well organized infrastructure solutions <sup>[5]</sup>.

In last five decades, provisions for planned development have been violated and those entrusted with the task of ensuring development have miserably failed to perform their duties. Court repeatedly cautioned the concerned authorities against arbitrary regularization of illegal constructions by way of compounding and otherwise <sup>[6]</sup>.

Boob and Rao (2012), observed that 68.27% and 67.86% of violation in case of left and right side margins and 56.60% and 63.83% violation in front and back side margins in the plots respectively. Authors also observed that 75% of land owners violated the “floor space index” in “B” and “C” class municipal councils of Yavatmal district. Another interesting observation pointed out is that for smaller plots up to 150 m<sup>2</sup> violation of setback rule is 80% and it gradually decreased to 60% in case of larger size plots. They suggested real time information and control system based on computer, electronic gathering, transmission and storage of data <sup>[7]</sup>.

In case of illegal or unauthorized constructions, the officers of the municipal and other regulatory bodies turned blind eye either due to the influence of superiors or other extraneous reasons. If it is required to demolish the illegal constructions, no compensation will be paid to neither the land neither owner nor they be regularized by imposing penalty <sup>[8]</sup>.

Sustainable environment is possible by an assortment of standards and regulations. Regulations for the sustainable environment are as old as Indian civilization. Instances of violation of development control rules are no doubt just as old <sup>[9]</sup>.

M. Subhash Chandra (2007), argued that building bye laws and regulations of municipal bodies are outdated. The codes and bye-laws lacked uniformity and they are neither ‘specification oriented’ nor ‘performance oriented’ <sup>[10]</sup>.

Due to lack of law enforcement and monitoring, land owners violated the plans during the construction stage itself. Success of any law depends on its proper implementation <sup>[11]</sup>. The state government of Karnataka

amended Section 76 F of the Karnataka town and country planning (KTCP) Act to hold the officials who sanctioned building plans responsible for any violations. <sup>[12]</sup>. Lack of statutory authority to initiate action against officers erring in sanctioning illegal plans seems to be one of the detriments in checking building bye-law violations. According to the officials in the municipal councils, the blame for such violations cannot be put on a single person <sup>[13]</sup>.

At present Public bodies like municipal councils are managing to control the rapid development with conventional methods. However, it is necessary to adopt uniform and sound D.C.R applications, new practices and technologies like geographic information system for better and timely control <sup>[14]</sup>.

As per the provisions in different sections and sub-sections of the Maharashtra municipalities act 1965 <sup>[15]</sup>, Maharashtra regional and town planning act of 1966 <sup>[16]</sup>, the planning authority is empowered to guide the development of a town and to strictly implement the building bye-laws and development control rules. In spite of such a strong legal frame work available with planning and development authority, development control rules are found to be violated at large scale.

Subdivision of land, transfer of land rights and provision of public facilities and control of illegal developments are important and urgent tasks which must be administered in order to keep pace with the urban growth.

By exploring above mentioned problems, attempts have been made to propose “zoning within plot” model within the constraints of the bye-laws. The objective to suggest an alternative is to minimize the monitoring and control over construction activity by municipal council in controlling violation trends.

In this paper it is intended to provide guidelines,

- To attain sustainable development of town,
- To optimize the use of land and
- To promote the mutual interests of society by reducing violation of setback / side margin rules for the purpose for which they are provided.

**Table 2:** Subdivision designs pattern

S.No	Design pattern	Design principle
1	Grid	Streets are generally laid in the cardinal directions and fairly uniform rectangular lots.
2	Curvilinear	Curved streets adapted in the terrain of various lot sizes and shapes facing on loop and cul-de-sac streets.
3	Cluster	Lots clustered around loop and cul-de-sac streets separated by open space.
4	Coving	Curving streets with large front yards abutting the street.

## 2. Theory of land division design

Land division design comprises both an art and a science requiring a high of technical skills, imagination and creativity as well as adherence to sound principles of land planning, engineering practices and sound development standards. Such land division design must create the requirements of modern living. Building sites should be so arranged in relation to the rest of the community in order to provide a good environment for living, working and recreating.

Once the land has been divided into blocks and lots, streets constructed, schools and parks created, utilities provided, the development pattern is firmly established and is unlikely to be changed.

Land sub division design has far-reaching impacts, particularly upon municipal and county government. Many problems which communities face such as traffic congestion, poor drainage, flooding, street and utility maintenance costs, inadequate parks and school sites, rural and urban deterioration may be directly attributable to the manner in which the areas of the community concerned were originally subdivided. The viability of agricultural areas may also be destroyed through scattered land division and development. More over due to instances of violation of development control rules in such layout create haphazard and unplanned development <sup>[17]</sup>.

As such the designer may face one of the following three situations which will determine the manner in which the land sub division design must be approached:

- That has not adopted a comprehensive plan;
- That has adopted a comprehensive plan, but that plan does not include detailed neighborhood unit, development plans or plotting layouts;
- That has adopted a comprehensive plan and that plan includes detailed neighborhood, development plans or plotting layouts.

There are four basic subdivision designs in use now which are shown in Table 2

However, most popular and traditional method of land sub division is Grid pattern.

Thus the land division regulation is intended to accomplish the following purposes;

1. Ensure that it will fit harmoniously into the existing land use pattern and thereby an attractive and efficient environment results;

2. Ensure that sound standards for the development of land are met,
3. Provide a basis for clear and accurate property boundary line records;
4. Ensure the stability of the community, minimizing the cost of public facilities and services <sup>[18]</sup>.

Thus, it is very clear that, with reference to different situations, choice of different pattern of layouts & to ensure intended purposes, very high technical expertise is required for land sub-division.

At present avoiding or minimizing the tendency of encroachment and constructing permanent structure on the front, rear and side margin within the plot boundary, thus violating building bye-laws and development control rules are not controlled by any of the available conventional sub division layout.

## 3. Methodology

The aim is to design suitable model of land sub division there by suggesting modifications in existing development control rules and regulations. For this purpose, land sub division layouts of the last 25 years (1986-2012) sanctioned by the concerned authorities were studied. This study was conducted in 7 municipal councils of Yavatmal district of Maharashtra state (India). Random field survey was conducted in selected layouts of the town both in congested and non congested areas. Personal interviews of layout owners (70), plot owners (818), chief officers (7), councilors (115), municipal engineers (7) and eminent personalities (125) were conducted. Expertise used in preparing sub-division layout map was also verified.

Information was collected regarding adoption of development control rules, their violation and consequent impact on over-all development of the town. Based on survey, opinions of experts and own findings from primary and secondary surveys, hypothetical model layout and rules based on the model are suggested.

## 4. Over view of existing land sub division norms <sup>[19]</sup>.

Land sub division norms and development control rules which are framed for 'B' & 'C' class municipal councils of Maharashtra state and adopted by the councils are mentioned below.

### Rules for land sub- division layout and open spaces in layout (Rule 19).

**Table 3:** Roads/ streets in land sub-division or layout

Length of Road, m	Minimum width of road, m	
	Residential area	Commercial and industrial area
Up to 75	6	12
Above 75 and up to 150m	9	13.5
Above 150 and up to 300	12.0 to 15.0	15.0 or more.
Above 300	More than 15.0	15.0 or more.

**Table 4:** Regulation for Development outside & within congested area <sup>[19]</sup>

Regulation for Development outside congested area.							
S. No.	Category & Road width	Minimum size of plot (sq m)	Minimum set-back (m)	Minimum marginal distance(m)		Maximum built up area	No. of Floors
				Rear	side		
1	National Highways, State Highways, Major District Roads	450	25m. from the C/L of the road or 4.5 m. from the road boundary whichever is more	4.5	3	1/3	3
2	Other road above 18 m.	Above	4.5	3	2.25	1/3	3
		300					
3	Below 18 m.	Above	3	1.5	1.5	½	2
		150					
4	Below 18 m.	Above 100	3	1.5	1.5 (only one side)	½	2
5	Row housing below 12 m.	Above 50	2.25	2.25.	Nil	½	2
6	Row housing LIG	30	..	..	..	¾	2
7	Group housing Scheme	..	5 m. from main road	3	2.25	1/3	2
			3 m. from path way.	3		1/3	3
					3		
Regulation for congested area.							
1	7.5 m. to 12 m.	--	1.0 m.	--	--	75 %/60%	02-Mar
2	12 m & above	--	1.5 m.	--	--	75 %/60%	02-Mar
3	Less than 7.5 m.	--	No set back	--	--	75 %/60%	02-Mar

Minimum width of layout roads or internal roads in subdivision proposal are shown in Table 3.

**Open spaces(19.2).**- In any layout or sub-division of land admeasuring 0.4 ha or more for residential purpose and 0.8 ha or more for industrial purpose, 10 per cent of total area of land reserved for open space as far as possible shall be located at one central place.

**Regulation for congested and non congested areas as specified in the development plan (Rule20.2 and 20.3)**

Rule 20.2 and 20.3 represents the side margins to be provided with respect to plot size and width of road in congested and non-congested area shown in Table 4.

**Exemption to open spaces (Rule20.7)**

The following exemptions to open spaces are permitted:-

a) Projections in open spaces:-

No cornice, chajja, roof or weather shade more than 0.75 m wide shall overhang or projected over the open space so as to reduce the width to less than the minimum required.

- b) A canopy or canopies each not exceeding 5 m in length and 2.5 m in width in the form of cantilever or supported and unenclosed, over the main entrance/entrances, providing a minimum clear open space of 1.5 m from the plot boundary to the canopy.
- c) A balcony or balconies at roof level of a width of 0.9 m over hanging and this shall be subject to a maximum of 1/3 length of perimeter of building.

As per rule 20.7.2 the following are not included in covered area for built-up area calculations:-

- a) Head room over staircase on top floor.
- b) Basement floors used for parking space, store room, air conditioning plant room, etc.

**Table 5:** Proposed land use <sup>[20-26]</sup>

S. no	Municipal town under study	Total no. of sectors for planning by zoning			Existing area under residential zone	Proposed area under residential zone
		Congested Sector	Non Congested Sector	Total		
1	Wani	2	2	4	112.81	271.39
2	Darwha	1	1	2	69.694	145.66
3	Ghatanji	1	2	3	125.24	207.3
4	Digras	1	3	4	186.25	317.7
5	Pusad	1	5	6	107.42	378.44
6	Umarkhed	1	2	3	61.57	182.94
7	Pandharkawda	1	2	3	61.13	396.6

**Table 6:** Success rate of sub division layouts for intended purpose

S.no	Intended Purpose	Wani	Darwha	Ghatanji/ Digras	Pusad	Umarkhed	Pandhakawda
1	Produce an attractive & efficient environment results.	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
2	To meet standards Norms and thought to storm water management, etc.	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
3	Provide a basis for accurate property boundary line records	High	High	High	High	High	High
4	To minimizing the cost of public facilities and services.	Moderate	Low	Low	Moderate	Low	Moderate

## 5. Data collection, analysis and observations

From the study of 10 sub-division layouts per municipal town sanctioned in the last 25 years (1986-2012) selected randomly, it is observed that the purpose for which these layouts sanctioned and developed were failed in providing sustainable development of municipal towns. For framing and implementing the planning policies, development plan is one of the planning instruments. To accommodate future population residential zones are proposed in development plan. Proposed area under use of residential zone of various municipal towns of Yavatmal district are shown in Table 5.

It is very clear from Table 5 that while preparing development plan the agriculture land available within municipal council jurisdiction has been made available for residential use by way of zoning proposal. This has given a lot of opportunities to the land owners, builders and developers to develop the lands by converting them into sub- division of lands. These land use change orders are approved with certain mandatory conditions.

A random field survey was conducted to evaluate the implementation of mandatory conditions mentioned in 'land use change orders' and a very significant and violation of conditions were found. Ten non agriculture orders from each municipal town passed during the period between 1986 and 2012 in Yavatmal district have been considered for this survey. The mandatory conditions found violated are:

- The roads, drains, culverts were not constructed by the owners / developers as per the standard specifications of the local authorities and they vested

with the local authority for further maintenance. 70% (average) violation was observed in this survey.

- 75 % of open spaces in such layouts were not developed as required.
- Some open spaces were found deviated from their desired use and encroached by hawkers, slum dwellers and few became waste disposal sites. Some are in use for religious activities.
- 35% of the sanctioned layouts are found fully occupied. 65% of layouts/ plots are still hold by investors particularly in non congested area.
- These layouts are mostly prepared by diploma, graduates in civil engineering and very few by qualified architects and sanctioned by the district Collector as per prevailing procedure of sub division of land (N.A. order). For preparation of sub division layout there is no provision of licensed engineer from town planning and valuation department of respective district.
- Importance of storm water management was not given while sub division. The owners have constructed the drainages of size 0.30 m x 0.45 m or even less and the councils have given approval.

As such the success rate in terms of its four intended purpose of subdivision of layout in all the towns under this study is measured as low, moderate and high and shown in Table 6.

### 5.1 Violation of setbacks and FSI

In such sanctioned layouts, a major problem of plan violation has been found in the residential buildings in

congested and non congested areas in all the towns of the district.

818 houses had selected randomly in all the 7 municipal councils and physically verified the actual constructions with the approved plans.

Findings of the study are very surprising:

- 1) Road side, side and rear margins are found violated in layouts located both in congested and non congested areas.
- 2) Floor space index has also been found violated because of excessive coverage on the ground floor
- 3) At road junctions or corners, 100% curved area has been found encroached by plot owner by constructing compound wall or regular construction.
- 4) Basement floor which were exempted from built up area calculation are found using for commercial purpose.
- 5) Taking benefit of rule 2.7.1, the owners have extended their porch/balconies to all four sides.

### 5.2 Causes of violation

Standard building bye-laws and development control rules are framed and made applicable in Maharashtra state(India) since 2<sup>nd</sup> April 1974 and thereafter minor modifications made from time to time in general.

- 1) Different rules are framed for congested and non congested areas.
- 2) Rule provides minimum size of the plot and no restriction on minimum width of plots. Many combinations of length and width of plots are possible there by different widths of plots along such roads makes haphazard's growth along highways and other roads. In some cases, smaller widths of plots were fully covered the entire frontage.
- 3) Plot facing road width less than 18 m has different provisions of side margins with reference to plot size. This provision also allows haphazard growth. Though the ground coverage on such plot is 50%, the height of the building restricted is only two floors. This disparity within same layout allows the human tendency to violate the building norms.
- 4) Coverage on the ground floor permitted is only 33% for plot facing road greater than 18 mt. This provision makes the owner to violate the norms & occupy more ground area.
- 5) In case of smaller size plot facing road width less than 12 m, does not provide any side margins makes the development shabby within the same layouts.

A detailed discussion was held with the present chief officers and municipal engineers of all the seven municipal towns under study. They opined that lack of monitoring machinery and the shortage of technical manpower at the municipal level are the major concern to control and avoid such violations from its occurrence. Some also feel that the political influence is the factor in

controlling such violations. Static nature of development control rules for a longer period is also another factor for violation. This creates a situation to grow the town in haphazard manner. The people living in such towns missing the quality and comfortable life they desire.

Provision of exemption in open space in rule no. 20.7.1 and 20.7.2 promote violation of set back in one way or the other. Thus, the existing development control rules including land sub-division rules are observed to be largely supports the violation trends due to;

- 1) Provision of smaller size plots.
- 2) No specific subdivision layout norms.
- 3) Different rules for different plot sizes in the same location.
- 4) Static nature of existing development control rules
- 5) Non awareness of rules applicable to the plot.
- 6) F.S.I. provision not revised since long period.
- 7) Poor monitoring over construction activity by development authority.

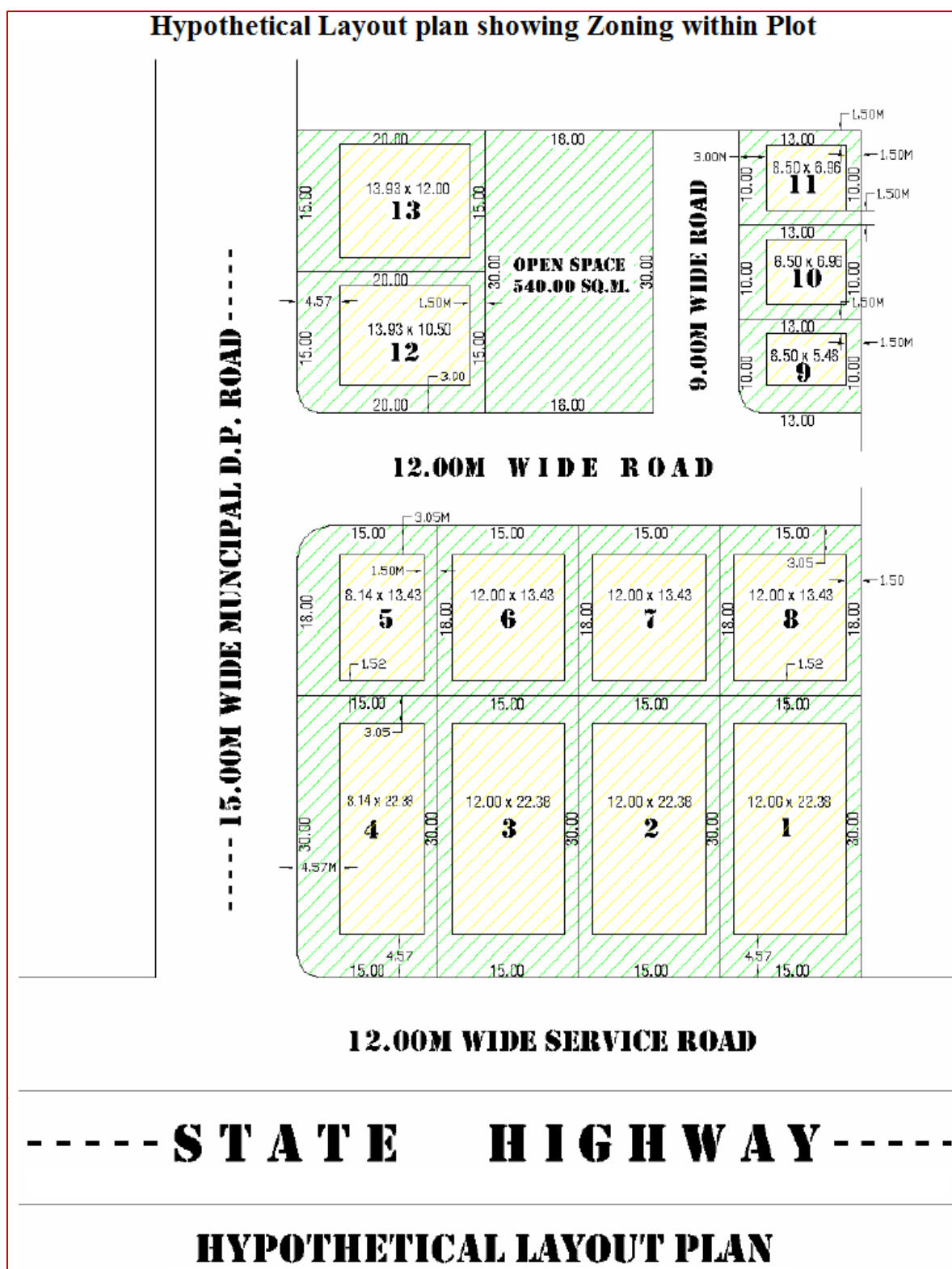
### 6. Concept model: "Zoning within plot –an approach to land sub division".

Considering the above facts and violation at stages 2,3 and 4 in land development process shown in Table 1, a conceptual model in the form of hypothetical layout is designed, which is based on following assumptions.

- 1) Uniform front (road) side margin irrespective of plot size & width of road.
- 2) Minimum margin between two adjacent plots shall be 3.00mt.
- 3) The rules for A , B and C class municipal councils and their adjoining Grampanchayats shall be uniform.
- 4) No different rules for congested and non congested areas within the town.

### Concept

An approach in the form of providing green belt to all sides of plot equal to the minimum margin as recommended in building bye-laws and control rules is suggested. This is to be introduced while sub dividing the land into small plots. Green belt to the four sides of plot and making provision of no development zone as envisaged in M.R.&T.P. act 1966, restrict the plot owner from encroaching this green belt and as such, the trend of violating side margin norms can be restricted. The owner be allowed to construct compound wall on gross area and allowed to use this green belt for laying underground plumbing, drainage line etc. The hypothetical layout showed in Fig. 1 wherein gross plot is divided in to green zone (as side margins) and yellow zone (as development zone). It is suggested that the plot owner is allowed to construct only on the yellow zone. The details of gross plot area, area under yellow zone, green zone, TDR generated and total FSI permitted as per IJTDR model <sup>[27]</sup> is shown in Table 9. Since every plot owner has to surrender set back area as green belt it is recommended



**Fig 1:** Hypothetical layout showing zoning within plot

to compensate in the form of T.D.R. By this equivalent TDR receivable on this plot, total built up area permitted shall be governed by the following formula.

*Total Built-up Area = (Area under yellow zone of a plot x No. of storey permitted as per D.C.R) + T.D.R. as per IJTDR. ....(1)*

As such if this green belt approach is adopted, the allowable FSI can be worked out as below

*FSI = Total built up area as per formula (1) / Gross plot area\**

*\* Gross plot area = Area under (yellow zone + green zone)*

**Table 7:** Hypothetical Layout Plot Area, are under Green Zone, FSI Permitted

Plot No.	Area of Each Plot in Sq. M.	Curve Area	Total Net Area of Plots In Sq. M.	Area Under Yellow Zone	Area Under Green Zone	Built-up Area Permitted	No. of Floors Permitted
1	450.00	-	450.00	268.56	181.44	631.44	G+3
2	450.00	-	450.00	268.56	181.44	631.44	G+3
3	450.00	-	450.00	268.56	181.44	631.44	G+3
4	450.00	9.91	440.09	182.17	257.92	698.01	G+3
5	270.00	9.91	260.09	109.32	150.77	410.86	G+3
6	270.00	-	270.00	161.16	108.84	378.84	G+3
7	270.00	-	270.00	161.16	108.84	378.84	G+3
8	270.00	-	270.00	161.16	108.84	378.84	G+3
9	130.00	6.05	123.95	46.58	77.37	201.32	G+3
10	130.00	-	130.00	59.16	70.84	200.84	G+3
11	130.00	-	130.00	59.16	70.84	200.84	G+3
12	300.00	9.91	290.09	146.25	143.83	438.92	G+3
13	300.00	-	300.00	157.16	132.84	432.84	G+3
• Area of Lay out As Per 7/12					5400.00 Sq. Mt.		
• Area Under Residential Plot					3870.00 Sq. Mt.		
• Area Under Open Space					540.00 Sq. Mt.		
• Area Under Road					990.00 Sq. Mt.		
* As per IJTDR Model if the Layout falls in TDR receiving zone additional FSI of maximum 25 % over FSI Allowed in the above table shall be permitted							

**Table 8 :** Proposed Regulation for development outside & within congested area for "A", "B" & "C" class municipal councils & adjoining Grampanchayat

S.No	Category & Road width	Minimum size of plot facing road (sq. m.)	Minimum width of plot (inmt.)	Green belt				Maximum built up area	No. of floors
				Front Side (inmt.)	Rear Side (inmt.)	Left Side (inmt.)	Right Side (inmt.)		
1.	National Highways, State Highways, Major District Roads	450	15.00	4.57	3.05	4.57 for corner plot else 1.50	1.50	As per yellow zone shown on approved layout map	G+3
2.	Other roads above 18 m.	Above 300	15.00	4.57	1.50	4.57 for corner plot else 1.50	1.50	As per yellow zone shown on approved layout map	G+3
3.	Below 18 m.	Above 100 -299	10.00	3.05	1.50	3.05 for corner plot else 1.50	1.50	As per yellow zone shown on approved layout map	G+3

**Advantages of approach**

- Administrative control of municipal council authority shall be reduced to a greater extent.
- FSI permitted on a given plot and number of floors permitted is known to the purchaser while purchasing the plot.
- This model is also providing uniform front margin irrespective of plot size, also improves aesthetic appearance on the street and help in bringing some urban form to the town.
- Help in controlling the set-back violation there by sustainable development can be achieved.

**7. Recommendations**

Based on literature survey, opinions from experts and

own findings from primary and secondary surveys, following recommendation are suggested.

- An approach in the form of providing green belt to all sides of plot equal to the minimum margin as recommended in building bye-laws and control rules is suggested. This is to be implemented while subdividing the land into small plots.

The minimum side margin, minimum plot size along with minimum width of plot and maximum built up area permitted with number of floors have been proposed to stream line the building bye-laws and development control rules for sustainable development. The proposed regulation to be made applicable to class A, B, C and adjoining grampanchayats are show in Table 8.

- Provision of rule 20.7.1 and 20.7.2 shall be replaced with the following;



- Any projection in the form of chajja, balcony, canopy or porch shall be within the yellow zone as suggested.
  - Basement, store room, A-C room, power control room, electric sub station cabin, watchman room and stair case head room shall be included in built up area calculation.
- c) The rules, regulations and bye-laws are made by the councils or development authorities in view of public interest and it is the bounden duty of the citizens to obey and follow such rules which are made for their benefits. If possible, the citizens of the town should participate in the process of development of town.
- d) The present development control rules should also be made dynamic by changing at par with the urban development requirement and its validity must be verified periodically.

## 8. Conclusions

Land being a scarce natural resource for its optimum use, number of development control mechanisms have been developed and implemented. However, these development mechanisms failed to control violation of development control rules at municipal towns. Land use planning i.e., zoning and accordingly the land sub division design laws that dictate the development of the city needs to be revised to reduce administrative control of the authority and ultimately the sustainable development. Zoning within Plot- An approach to land sub division to control violation of development control rules shall definitely reduce the burden over councils of monitoring the construction. The suggested model is more transparent in the rules and hence plot purchaser will get all the details of layout.

Recommended model will inspire new initiatives & stimulate debate in the often neglected area of urban development control rules & regulations for sustainable development.

## References

- [1]. World commission on environment and development, 1987, [www.regjeringen.no/.../1987/Address\\_at\\_Eighth\\_WCED\\_Meeting.pdf](http://www.regjeringen.no/.../1987/Address_at_Eighth_WCED_Meeting.pdf)
- [2]. Graham Haughton, (1999), "Environmental justice and the sustainable city, Journal of planning education and research, Vol. 18, (1999) pp. 233 -243.
- [3]. B. K. Chakarbarty, (1991) Optimization in residential land subdivision", Journal of Urban planning and development, volume 117, No.1 (1991) pp: ISSN 0733-9488/91/0001-0001.
- [4]. Peter W. Newton, (2013), Regenerating cities: Technological and design innovation for Australian suburbs, "Building research and information, 41.5 pp. 475-588, published by Rutledge, UK. DOI-10.1080/09613218-2013-803921
- [5]. Milda Viteikiene, Edmundas Kazimieras Zavadskas, "Evaluating the sustainability of vilnius city residential areas", Journal of Civil Engineering and Management <http://www.tandfonline.com/loi/tcem20>
- [6]. G.S. Singhvi, Judge, A Court Judgment, "Esha Ekta Apartments Co-op. Housing Society versus Municipal Corporation Mumbai and other", Supreme court of India, C.A. no. 7934/2012
- [7]. Boob T.N., & Rao Y.R.M., (2012), "Violation of Building Bye-Laws and Development Control Rules : A Case Study", IOSR Journal of Mechanical and Civil Engg. (IOSRJMCE) ISSN: 2278- 1684 Volume 2, Issue 4 (Sep - Oct 2012), [www.iosrjournals.org](http://www.iosrjournals.org) Indexed in Cross ref (Article DOI No. is 10.9790/1s684-0244859)
- [8]. Shanti Sports Club V. Union of India (2009) 15 SCC 705
- [9]. Eran Ben Joseph, "Innovating regulations in Urban Planning and development", Journal of Urban Planning and Development ASCE/December 2005/Pg. 201.
- [10]. M. Subash Chandira (2007). "Development control rules and byelaws in Tamilnadu", ITPI Journal 4:1(2007) Pg. 37-43.
- [11]. [www.joburg.org.za](http://www.joburg.org.za).
- [12]. Karnataka town and country planning act (Sec.76F)
- [13]. Sandeep Moudgal, (News paper editor) Bangalore, (Oct.4-2011, Deccan Herald News)
- [14]. Mahmud M.A., (2007), "Sound planning permission process as pre requisite for development control in the urban areas, a case study on Dhaka city", Jahangirnagar planning review, Vol.5, (2007), pp.15-26
- [15]. Maharashtra Municipalities Act. of 1965.
- [16]. Maharashtra regional and Town Planning Act. 1966
- [17]. Land division control guide," Southeastern Wisconsin Regional Planning Commission, Waukesha, Wisconsin second edition July-2001.
- [18]. Guideline for Human settlement planning and design, Published by CSIR Building and Construction Technology, Pretoria, 0001 Report No. BOU/E2001 Reprint 2005, ISBN 0-7988-5498-7
- [19]. "Standardized Building Bye-laws and Development Control Rules for 'B' and 'C' Class Municipal Councils of Maharashtra 1978". Published in govt. gazette.
- [20]. Development Plan of Wani, 1991
- [21]. Development Plan of Darwha, 2005
- [22]. Development Plan of Ghatanji, 2002
- [23]. Development Plan of Digra, 1987
- [24]. Development Plan of Pusad, 1998
- [25]. Development Plan of Umarkhed, 1999
- [26]. Development Plan of Pandharkawda, 1997
- [27]. Boob T. N., Dr. Y. R. M. Rao (2013), " Transferable Development Right-An Effective Inter Jurisdiction Model to Implement Development Plan Proposals", International journal of sustainable building technology and urban development, 2013, Taylor & Francis, U.K. <http://dx.doi.org/10.1080/2093761X.2013.817361>