CHAPTER 1

INTRODUCTION

In this first chapter an over view of Development Control is discussed elucidating the objectives of Urban Planning, concept and the International experiences. Also the aim, scope and objectives of the study, methodology have been discussed. The literature survey which is needed as background information for the study forms part of this chapter.

1 URBANISATION

1.1 About 42 percent of the World population is living in urban area and the urbanisation trend is increasing India which is the second most populous country in the World with 855 million population has got 25 percent of its people living in Urban Areas (Census of India 1991). In this context, it may be seen that during the last 90 years (1901-1991) though there is a steady increase in urban population in India, the percentage of urban population to the total population was only 11 per cent in 1901. This has became 25.72% in 1991 (Census of India 1991). However urban population is estimated to be around 35% of the total population by the turn of the century in India (National Commission on Urbanisation 1988). There has been considerable variation between states in the degree of urbanisation in India. The growth of urban population in India is found to be 36.47% during 1981 - 1991 and in Tamil Nadu it is found to be 19.59%. Tamil Nadu, is the third highly urbanised state with 34.15% of its population living in urban areas, during 1991 while the same was only 20.5% in the previous decade (Census of India, 1991). Urbanisation trend nationally and globally is an increasing one which has lead to environmental problems in Urban Area, along with other problems of unemployment and housing. This is true especially in developing countries (National Commission on Urbanisation, 1998). Chennai being the fourth

formerly known as Madras.
largest city in India is also showing similar problems. Today one fourth of the urban population of Tamil Nadu State is found in Chennai Urban Agglomeration.

1.2 OBJECTIVES OF URBAN PLANNING.

Recognising the implication of urbanization, planning of urban areas has gained momentum, and it is among the priority items of both Central and State Governments. The objectives of urban planning, as has been evolved in many countries would be to maintain and improve the economic, social and physical well being of the community in the urban area by ensuring an environment conducive to live, work and leisure, as the city grows; such an environment will basically provide for adequate opportunities for employment and enhancement of income, adequate housing for the different income groups affordable to them with necessary amenities for comfortable living, besides means of transport to work place and home and easy access to the community facilities; The availability of such things will ensure a clean and healthy environment, a sense of belonging, security and pride.

For achieving the above objectives, Town and Country Planning Act have been legislated in many countries to regulate, control and plan the development and use of all lands and buildings within the urban area by preparation of Development Plans - Master Plan, Structure Plan, Detailed Development Plan (DDP) Development control forming a part of such plans are entrusted either to the Planning Authorities or Municipal councils.

1.3 WHY DEVELOPMENT CONTROL - what are the means:

Development control has its origin in the 1870's with the zoning regulations formulated by pioneers like Alfred Betmanns. (Gerekens, 1982) and Edward Bassets (Kruekeberg, 1982). In many parts of the USA even to this day, credence is given to zoning ordinances adopted under a State Law by each city rather than to the Master Plan or Development Plan. However, seven states now adopt a Master Plan before a zoning ordinance can be adopted.
The Development Control Mechanism of the Urban Plan is evolving in nature as one tries to accommodate development requirements at different points of time. To tide over health problems during pre and post world war periods many of the cities in industrialised nations imposed many guide lines to regulate the building size, shape, light and ventilation (Mc Loughlin J B 1973). The first Housing & Town Planning Act was introduced in U K in the year 1909. This is supposed to be the first parliamentary Act of Town Planning (Mc Loughlin 1973), the sequel of the sanitary bylaws being enforced then. The concept of land use was introduced in the year 1932 through Town & Country Planning Act and series of such legislation in 1941, 1944 and 1947 laid strong base for an environmental rationale with a view to prevent nuisance and hazardous nature of uses being instituted in residential areas (Beverley J Poolev, 1960). Similar Acts were introduced in different parts of the world to regulate urban development. These Acts had many commonalities and few differences, as well. The commonalities were two fold. First, there has to be always reference to a Physical Development Plan, the second, some regulatory measures which act upon the development of plan's objectives.

The key elements of the Standard State Zoning enabling Act of USA published by the Department of Commerce in 1926 are its grants of power to municipalities for the purposes of promoting health, safety morals, or the general welfare of the community, and the right to divide the city into districts (Zones) and regulate and restrict the area, use, and density of construction in each district in accordance with a comprehensive plan. The important aspects of the enabling acts were in granting control over height, bulk and area of buildings constructed. Justification for such controls was the need to minimize problems of congestion of people and traffic, fire hazards, or loss of access to sunlight and to provide urban services to promote the general public welfare (Richard H Jackson, 1986).

By and large the land use control regulation on buildings is principally on the city planning Law (Town & Country Planning Act) and the Building Standards Law (Building by Laws). On the basis of the former, areas are divided into 'Urbanisation Control Areas.' Land use zones are designated as a part of the city plan and permits are
required for developments. On the basis of the Building Standards Law, the use, density, configuration and structure of a building are determined.

The concept of 'Development Control' emerged as a tool for regulating development in area designated as Planning and Development Area and formed an integral part of Development Plan. In essence, the Development control viz. zoning regulations and By-Laws are to protect environment by classifications of uses/activities - conforming and non conforming (ii) to relieve congestion by Controlling Density and FSI (iii) and to maintain certain performance standards to ensure proper circulation, ventilation and safety devices.

1.3.1 International Experience

1.3.1.1 European Countries

Development plans in 1947 Act were precise documents prepared by local planning authorities for its entire area, using a standard notation on a topographic base map.

In U.K the Statute, Town and Country Planning Act 1971 covers the entire country and hence a binding universal law (Davies H W E 1988) The development control is the binding procedure that envisages that every proposal either by private or public should necessarily obtain planning permission from local planning Authority.

After twenty years of experience, it was found that many of the assumptions in the original plans were proving wrong. Population was growing faster than anticipated, levels of home and car ownership were rising, and patterns of retailing and leisure were changing. Emphasis in the development process was switching from the public to the private sector, with a consequent rise in the number of planning applications and increasing reliance on Development Control. But Development Control has to work under increasing pressure without the benefit of up-to-date plans, bringing into disrepute the entire planning system (H W E. Davies, 1986).
By and large in U.K. from where India originally adopted the Master Plan concept, a new trend of structure plan began with the launching of Development Plan manual in 1970. Structure Plan emphasises on broad policies and concentrates only on essential component of city development. The concept of Structure Plan puts more emphasis on local plans which would carry forward in more specific detail the policies of the structure plan to provide a frame work for development control, co-ordinate land use planning and to bring issues before the public (Fudge et al., 1982) and the local plan could be simply adopted.

In France, the administrative frame work for Planning has four level of hierarchy, i.e. National Government, the regions, the departments and the commune and all of them play a potential role in decision making process including development control. The planning permit is governed by 4 levels of plans, National Plan, Competent Regional Plan, Strategic Long Term Development Plan and Land Use zoning Plan for local level. (Booth P 1985, Punter J V 1988) In France Planning Permission is considered for building rather for land use. A planning permit is virtually essential for all types of constructions. The application is made on nationally standardized form and the scrutiny is based on nationally prescribed rules. The approval or rejection is within two months. If the Authority does not notify within this period the applicant has a right of deemed permission. Compared to British system the scope for discretion is limited and control rest with politician. The preparation of plan and planning permission are integrated for better decision making process in manipulating physical development.

In Netherlands the Town and Country Planning is based on the physical planning Act of 1965, which consists of 3 tier system of physical planning i.e. local, provisional (Regional) and National (TCPO, GOI, 1995). The local development plan is statutory under which it is obligatory for local authorities to cover the area outside the towns and villages. The local Authorities are empowered to draw up the development plan which is cleared by the local council. Another type of plan is structure plan which focuses all programmes. Building permissions and projects are granted in accordance with the local development plan. There is acceptance of
Structure Plan and detailed development plan which also provide for a range of amenities and services.

In Norway, the state Department of Local Affairs and Works is the highest Authority for planning. The planning and building laws (1965) provide for land use plan for all towns. These plans not only designate development area but also the forest and agricultural zones. (TCPO, GOI, 1995)

In Denmark the growth of urban areas has resulted in extension in existing towns. In Copenhagen planned growth first took place after the Second World war and the so called 'Finger Plan' was published in 1947 in which the basic idea was concentrated on the growth as neighbourhood units along roads, railway lines etc. (TCPO, GOI, 1995) Many good example of physical planning may be seen in Denmark, but regional coordination is lacking.

In Czechoslovakia the aim of land use planning is to create spaces which are capable of further development in which a logical coordination is secured of workplaces, residences, land uses and cultural needs, allied to an efficient transport network. In 1970 an amendment was adopted in Land use Act which included (i) Short term plans of operational character covering actual building schemes (ii) Plans of long term territorial developments for 15 to 20 years ahead. and (iii) Forecasts of territorial development for periods of 50 years and more as a fundamental guide to future development (TCPO. GOI, 1995)

Physical planning schemes are executed by Government Ministries today about 50 percent of population is in towns or cities although regionally dispersed. Czechoslovakia towns and cities melt in to city regions Town Planning is identified with regional planning.

In Poland most city planning schemes provide for gradual reconstruction of major thoroughfare and for the reservation of land to reorganise the traffic system (TCPO, GOI, 1995) Comprehensive transportation studies are being prepared as part
of the Master Plan. As the Regional Planners had to conform to the existing legislative possibilities, new concepts in city planning theory and methods could not be tested.

In Switzerland, after 1970, several regional plans provide necessary guidance for the cantons (sovereign states). The cantons have delegated the powers relating to physical planning to communities to prepare general outline plans and ensuing statutory plans, which include division of areas into zones with different density and different degree of smoke control (TCPO, GOI, 1995).

In Germany, the first "Building Lines Act" was introduced in 1868 (TCPO, GOI, 1995). The regulations under the Act enabled local authorities to guide important aspects of physical development comprising division of street and building lots. Local zoning ordinances became an important branch of planning by the turn of the century. At the same time, it becomes apparent for the plan to be more comprehensive in spatial terms as well as more flexible in legal terms than the Building Line and Land Use Regulations. Density, coverage provision of facilities building permit etc. remaining for a long time as part of the State Building ordinances. The controls have been progressively reduced by amendments for social reasons. Postwar planning has been confined to control of land use by means of local, statutory plans.

In Sweden, the building and planning Acts of 1947 and 1959 paved the way for regulations in Town Planning (TCPO, GOI, 1995). Each municipality shall have a Master Plan showing land use and the communication system. As an immediate basis for development, detailed Plans (town plans) are prepared indicating in detail the size and position of the buildings and road system. The plan restricts prospective builders and the municipality has right to purchase certain land. Before such plan is approved and rectified, it must be presented for public inspection for a specified period. In each municipality, there is a building committee which is responsible for the local physical planning. Some times, the preparation of Master Plan is the direct responsibility of the local government. In 1974 there was a greater emphasis on regional planning.
1.3.1.2 U.S.A.

The 'General Plan' introduced in 1928 under Standard city Planning Enabling Act is being adopted by cities throughout the U.S.A. Subsequent amendments to Act made major changes in the definition of General Plan and three basic elements of the plan were mandatory (i) land use elements (ii) circulation elements (iii) population and density standard. It is a long term, general and comprehensive plan. (Richard H. Jackson, 1986) By and large the General Plan has been adopted by all city/Country planning commission in U.S.A. The General Plan concept has not been conceived on rigid process as it is amenable. For both technical as well as political reasons, it is maintained as an expression of the best current judgement of the city council. The policy formulations are firm and definite but at the same time, are not frozen. The General Plan is subject to annual review prior to action on the financial policy of the city as expressed in its annual budget. The most important feature of the General plan is its use as a guide to policy effectuation by the council, with the assistance of city planning commission and the planning department.

1.3.1.3 AUSTRALIA

Sixty percent of the country's population live in six metropolitan regions. Each has its own system of organisation for planning and administration. There are varying but similar provisions in each state for the exhibition and submission of planning schemes, for the control of interim development, for the public exhibition of planning documents and the hearing of objective to them. Most of the town planning schemes in Australia have a land use zoning map accompanied by an ordinance which sets out those development that may be permitted, those that may be allowed with specific conditions, those over which authorities exercise discretion and those which are specifically prohibited in the particular zones set out on the planning scheme, map (Raymond Bunket 1986) However the current planning process in 1990's emphasises on strategic planning, corporate planning, integrated local area planning etc with main emphasis on sustainable development.
Regional strategic land use planning is felt essential to grapple with and plan for demographic and economic growth and change, which also provide a structure in a regional context within which local planning can take place.

1.3.1.4 African Countries

In Nigeria, initially Master Plan approach was followed to tackle the problem of massive growth of towns and cities. But most of the Master Plans had great difficulties in implementation because of its inadaptability. With the help of World Bank, Short term Plans are tried. The objective of this new approach are thus use and control of public sector investment to stimulate the economy of the city to generate employment and income and improve welfare services (TCPO, GOI, 1995)

Master Plans in Zimbabwe retained a development control approach which comprised a regulatory scheme such as, zoning of areas to be exclusively for specific purpose, including industrial as well as residential areas, building control over the space around the buildings, the regulations of character, size, height, harmony and design, reservation of land for afforestation, open space and cemeteries, reservation of trees and control on display of hoardings etc. Preparation of Master Plan is beset due to lack of finances and technical support and non-commitment by the inter agency departments, preparation of Master Plan in beset. It is increasingly being felt that city planning and development should be less of development control as stipulated in Master Plan but more of an overall strategic planning (G.C. Underwood, 1986). In 1990s, more emphasis is proposed to be given on promoting urban economy and incorporating informal sector into urban planning strategies and solutions.

In Jamaica, development of land was initially on the basis of provisional development order prepared under the provision of state Town and Country Planning Act, 1957 (TCPO, GOI, 1995) By 1988, it was realised that instruments such as Development order must take into consideration the social and economic realities in the country and henceforth, the concept of the planning process had, owed from the static Master Plan of the 1950's towards a more flexible approach to interrupt with economic development.
1.3.1.5 Asian Countries

In Japan being developed in a small geographical area with high concentration of urban and industrial development, the management of growth of urban areas is a real task for urban planners. Japan is divided into 47 `prefectures' large local bodies, with further classified into 23252 small local bodies.

The development and development control is governed by many legislations under city planning law and building standard law. The city planning law derives its strength by designating promotion area and urbanisation control area as well as zoning regulations (Ishida, 1996) City planning law adopts city planning projects with a link to infrastructural facilities The building standard law concerns mainly with individual building, their serviceability and relations with vicinity.

The planning permit is issued by Mayor/Governor and the applicant is consulted before issue of permit The construction is supervised continuously to confirm that the development activities conform to permit requirements. After completion the ownership is transferred to the local Authority The Government has the right to regulate third party transfer of property and acquire for urban development. Planning permits, layout development and infrastructural development are not administered by separate Governmental entities The whole system is integrated and unique in total planning solution and is much stronger in Japan.

In Philippines, the land development activities are looked after by Housing and land use Regulation Board The approval of housing layouts are passed on land use plan and zoning ordinance after collection of processing fee Each developer should also get a license to sell the plot by paying development cost The building permits are governed by National Building Code and operated by Municipal Engineer of the City with the assistance of technical staff and permit issued after collection of building permit fee. Certain concession are given for housing projects for poor (UNCRD & CPR 1991). The development control process for Metropolitan, Manila is linked to the comprehensive zoning ordinance for National capital region and is technically integrated to sectoral plans and development and not merely physical development
In China, Urban Development is managed by local governments and implemented by planning agencies (Ka-IU-Fung, 1986). Local residents do not participate in the planning process. Each City has a Master Plan which focuses primarily on physical development with reference to its spatial implications. The City Master Plan is characterised by Existing land use map, Environmental map, land use constraint map, zoning map for future land use, list of desirable infrastructure and facilities investments and schemes for implementation during the plan period. It is followed with a five year medium term plan containing a list of projects which are made consistent with Master Plan zoning requirements.

The Town and Country Planning Act 1976 is the principal Act which governs the process and form of urban planning in Malaysia (UNCRD and CPR 1991). Among the key features of the Act are (i) the formation of State Planning Committee which is the overall authority for planning policies in the state, (ii) the compulsory preparation of statutory development plans consisting of structure plan and the Local plans by Local planning Authority, (iii) requirement to obtain planning permission before carrying out any development, (iv) enforcement by local authority in cases of contravention of the Act, (v) levy of development charge, (vi) formation of Appeal and, (vii) declaration, acquisition and development of ‘development areas’. In the absence of local plans, planning control is being guided by interim zoning plans.

The Structure Plan deals with the strategic planning framework by setting out the main development policies for the areas for which it is prepared. The emphasis in the structure plan is on the written statement on a reasoned justification of the long-term policies and development proposals of the study area, especially in ensuring the divisibility of the area to cope with the demands of the growing urban population and ensuring a sustained quality of life for its residents.

In Indonesia, efforts were concentrated initially on the preparation of Master Plans, which in many cases were found to be helpful (UNCRD and CPR 1991). Due to lack of flexibility to cope effectively with the dynamics the emphasis gradually shifted to identifying specific strategies relating to land for the urban poor, low cost housing,
employment opportunities, transportation etc. In the process, top-down planning was replaced by local plans and programmes which are more relevant to felt needs of the people and are to be implemented by local governments. During the early 1960s the Master Plan for Seoul was contemplated as a part of the First Five Year Economic Development Plan (1962-66) and became the basis for legitimate function of the municipal government, replacing the City Planning Ordinance of 1930. Subsequent to that, the National Development Plan (1972-81) laid emphasis on regional approach in Planning. The Second Plan (1982-91) focused on redistribution of population from the capital region. The third plan (1992-2001) emphasises national physical development with a macro perspective. This plan envisages (i) decentralised spatial structure, (ii) productive and resource conserving land use, (iii) social welfare and improved environmental quality. Conceptually speaking, the emphasis is laid to reduce regional disparity.

Planning and Development in Singapore is regulated under the Planning Act, where the principle objective of land use planning in Singapore is to foster the growth of key economic sectors. Public sector development is promoted and co-ordinated, and private sector development guided and regulated through Master Plan and a long range strategy plan, which are the chief instruments for optimising Singapore's limited land resources (TCPO, GOI, 1995). Main areas of the work relate to the review of the statutory Master Plan, the development of a process and technique to co-ordinate and expedite development control, the promotion of residential development along condominium principles with the object of conserving limited residential land to create high quality living environment, and the detailing of selective city blocks in the central area to facilitate the implementation of the government's urban renewal programme. The Master Plan as well as the long range strategy plan are not rigid and take into account the dynamic nature of Singapore.

India noted for its ancient civilization has its documents on planned settlements from Vedic era. Existence of distinct areas for shrine, citadel, granary, markets, gardens, grazing grounds clearly indicate the concept of zoning adopted in planning of settlements in those days (Dutt B.B 1977). The development of physical planning and
consequently the development control has great influence in its development in India, since it became a colony under British rule. The first efforts in modern town planning originated with the appointment of sanitary commissions in 1864 in each of the three presidencies of Madras, Bengal and Bombay. Under the Mumbai Municipal Corporation Act of 1888 building regulations were introduced to ensure adequate light and ventilation and limits on the quantum of built space on land. Sir Patrick Geddes, during his visit to India in 1913, recommended implementable town planning schemes through beneficiary participation and within the regional frame works (Doxiadis, CA 1988). Based on the British experience in U K., introduction of Town Planning Act in 1920s has a remarkable change in India. The functions of several Improvement Trusts created in early 1920s have been taken over by the Municipal Corporations and Town Planning schemes have been prepared and implemented. The 'Master Plan' concept introduced in the late 1940s received wide attention in India with the outline Master Plan for 'Greater Bombay' in 1948. The plan offered an umbrella to land use plans of wards that constituted the Municipal Corporation of Bombay and for projects through town planning schemes. The plan had no real legal validity and hence it was outdated by 1953 (E.F.N. Ribiero 1995)

By 1960, most of the trusts were taken over by State appointed development authorities. Enactment of Town and Country Planning Acts in 1970s Master Plans/Development Plans prepared by these authorities. became statute Major provisions of planning legislation include delineation of the planning and development area, preparation of Master Plan/Development Plan, enforcement of the zoning regulations/development controls, preparation of detailed planning schemes, preparation of regional plans, constitution of urban/regional/new town planning and/or development authorities for implementation of plans, and constitution of state town and country planning boards. Almost all states do have a comprehensive Town and Country Planning legislation.

About 1200 Master Plans have been drawn up in the various states for urban settlements having population over 20,000 (Ministry of Urban Affairs and Employment formerly known as Bombay).
1995). The zoning regulations and building bye-laws are the main instruments of development control, which forms an integral part of the Master Plans. These Master Plans are found to be rigid and did not cope up with the dynamics of change of urban area and large scale migration of population to larger cities. Now the search is towards a flexible system and stress on comprehensive development plans for sustainable development. Town Planning including the preparation of Plans for the local area are vested with the local bodies as one of its functions, by 73rd and 74th constitutional amendments.

By and large in each nation there is a plan for cities and Development Control forms part of it. Intracontinental analogies are those common to countries grouped geographically according to continent European countries, USA and Australia are alike in their concerns in planning which is comprehensive and they show increasing concern over environmental issues. Planning of secondary cities, hierarchical plans and public participation are common in African Countries. Asian Countries are characterised by a long tradition in conventional planning due to colonial influence and the present day attempts are towards decentralization in planning.

1.3.2 Evolution of the Development Control System in Tamil Nadu

The scope of town planning in ancient Tamil Nadu include zoning. There were distinct places earmarked for markets, streets and lanes, ditches, temples, royal palaces and public buildings, housing for citizens, recreational centres, water supply for drinking and for cattle, and pleasure gardens. Descriptions of well-planned towns on record today include Vanji (Karur), Kanchipuram and Kaverippumpattinam. These towns were planned in a scientific manner, with specific areas earmarked for different trades and uses, such as markets, handicrafts, professions and the military and were provided with the necessary amenities for town life (Ayyar C P V. 1916).

Development Control in Chennai had its origin in the 1940's when the building rules were first introduced. It was confined to regulation with reference to sanitary considerations, lighting, ventilation and structural stability in respect of the construction rather than the activity of its environmental impact. Later on the
Municipal Acts and the Public Health Act provided for broad designation of areas within the city for residential or industrial purposes and also the prohibition of certain types of uses in particular areas of the city. The Town Planning Act 1920 modeled on the British System made such 'land use' zoning part of the Town Planning Schemes prepared under the Act. All these were restrictive in character and discouraged diversity. However, progressively efforts were made to modify these regulations and make them less rigid.

1.3.3 Town Planning Schemes under the Town Planning Act 1920:

The Town Planning Act 1920 provided for the preparation, publication and sanction of General Town Planning Schemes for the Municipal Areas and Detailed Town Planning Schemes for local areas within the urban centres. Under these provisions, Detailed Town Planning Schemes for various parts of Chennai were prepared. These schemes consisted of two components namely a land use plan which designated uses for different parcels of land and a set of Scheme clause which prescribed the regulations governing each type of development. The categorisation of land covered four uses-residential, shopping and business, open space and industry. The Land Use Plan also had shown the road network, including proposed widening, extension and closure of roads, streets and lanes. Such schemes and the attendant scheme clause were operative when the Master Plan came into force in 15% of the City Area.

Building Rules:

In other areas which were not covered by the Detailed Town Planning Schemes, a set of Building Rules were enforced by the Chennai Municipal Corporation (CMC) under the Chennai City Municipal Corporation Act to regulate development. Likewise in the Municipalities and in the Town Panchayats in Tamil Nadu, a similar set of Building Rules framed under the act of respective local body are in force. These rules are mainly intended to regulate the individual builder being restrained from building to his own advantage. Activity or use to which the development should be put was of secondary and minor consideration.
Betterment Levy:

The 1920 Act included provisions for a Betterment Levy to be collected from each owner of land in the area of a Town Planning Scheme irrespective of whether they developed it or not. The reason behind this was that land owners' would benefit from new services, or an improved environment created from public funds and they should contribute to the cost. The levy was a percentage of the increase in land value as arrived at by the local body. Assessment was difficult and cumbersome, the levy was unpopular with the public, and collection was extremely difficult. Although this remained law until 1971, it contributed only an insignificant amount to the revenue of the Chennai Municipal Corporation.

Shortcomings of the System:

This system of development control was found to be inadequate to cope with the development taking place in the city, because of rapid industrialisation and growth in the 1950s and 1960s. The other reasons for this inadequacy were:

i) Physical planning was given a low priority, in relation to agriculture and industry. Both of which were necessary for the economic development of Chennai and its environs.

ii) Lack of steps to educate the public and consequently apathy, ignorance and lack of participation on their behalf. This may be due to non-availability of information on perception and attitude of residence.

iii) Lack of finance

iv) Length and cumbersome procedures involved in the preparation, publication and implementation of the schemes and in varying them to meet changing circumstances.

1.3.4 The Town and Country Planning Act 1971:

In order to bring a comprehensive and regional approach to planning, and to overcome the several shortcomings of the 1920 Act, the Government enacted the Tamil Nadu Town and Country Planning Act 1971. As required by this Act, the Government enacted the Tamil Nadu Town and Country Planning Act 1971. As required by this Act, the Chennai Metropolitan Development Authority (CMDA) has
adopted a Master Plan for the Chennai Metropolitan Area (CMA) after updating prepared by the Directorate of Town and Country Planning (DTCP).

1.3.4.1 Master Plan for Chennai Metropolitan Area (CMA) - Physical form of development:

After examining the various forms adopted in the metropolitan cities of the world and particularly those of Mumbai, Delhi and Calcutta, the strategy of development of radial corridors linked to satellite towns has been established for the CMA. This concept combines the advantages of the radial corridor type of development and the concept of satellite or ring town. While developments along the radial corridor is permitted, new development is encouraged outside the city in the town along the radial routes by large scale expansion of these towns. These towns are not only be designed as self-contained communities in the matter of employment, commerce and housing but also provide for the requirements of major city facilities for the communities nearer to them along the corridors linking the new towns with the city. It was anticipated that this would prevent congestion in the centre of the city, the main drawback of the radial corridor development. The development of satellite towns simultaneously with the development of self-contained urban communities along the radial corridors as contemplated in the Master Plan would help generate an even tempo of development conducive to proper planning.

The concept of satellite towns linked to radial corridors type of development has been adopted for physical development (Map No 1.1). It has been contemplated for the creation of six major urban nodes at Manali, Minjur, Ambattur, Avadi, Alandur and Tambaram outside the City proper but close to along the three corridors, apart from limited development along Calcutta Trunk Road, Poonamallee High Road and Lattice Bridge Road. Each major node has been designed for a population of 200 to 300 thousand and will be predominantly a self-contained unit providing for a substantial percentage of work places, schooling, shopping and other day-to-day needs. The nodes would be connected with rapid transit rail system and expressway to the City and the nodes would be connected with rapid transit rail system and expressway to the City on the one hand and to the Satellite Towns on the other. Three Satellite Towns one on each of the major corridors at Gummidipoondi, Tiruvellore and
Map No. 1.1 PHYSICAL STRATEGY

Source: Chennai Metropolitan Plan 1971-1991
Maraimalai Nagar north of Chingalpattu Town have been planned. The new urban centres outside the city would have 1.96 million persons by 1991 which the city itself would accommodate 3.60 million persons.

1.3.4.2 Development Control Mechanism in Chennai:

The physical strategy spelt out above have been adopted in the First Master Plan (Master Plan 1991) which apart from providing a policy framework for future development serves as a basis for the regulation of development through a development control mechanism, control over the use of land and building to achieve the goals. The Master Plan was approved by the Govt. and has been enforced by the Chennai Metropolitan Development Authority (CMDA) since August 1975. It consists of two inter related parts, the Land Use Plan designating uses for the entire CMA and the Development Control Rules. Together these are used to regulate development anywhere within the CMA.

In accordance with the above, the residential, commercial, industrial (Small scale & heavy) agricultural green belts etc., are the various zones that have come into existence, as part of the Development Control.

1.4 NEED FOR THE STUDY:

This legal system viz., 'Development Control' established by the development authorities often complained as not actively promoting the creation of a desirable residential environment so much as it assures a certain minimum standard of environment, due to inherent defaults in the system. Sometimes it is felt that the system evolved is not suitable to the local situations and thereby curb developments.

There has been extensive development on the subject 'Development Control' over the past 15 to 20 years in Developed and Developing countries, where this mechanism is in practice as part of the Urban Planning. The subject Development Control, in the context of its efficiency in promotion and regulation of developments has become critical (Keogh 1992).
Development Control, perhaps the most controversial subject agitating the Planners, Architects, Engineers, Builders and a common man who wants to put up a building on his land. For urban Planners, it is the main instrument for directing the growth of the city and for a planned development with regard to physical, social and economic considerations; for the Architects, Engineers and Builders, it is an abnormal regulation curbing the practice of their profession; for entrepreneurs, the culmination or shattering of their dreams to set up an industry; for the common man the threshold between owning a house or the denial of the same. Nothing else generates so much controversy or heat. There are extremely divergent views on this at one end is that there should be more stringent controls, at the other that let there be no controls, we cannot afford to have any controls which will prevent economic development. So the degree of exerting control is a matter of interest for urban planner to study the intricacies of the development control with intention for suggesting pragmatic approach evolving suitable policies and needed changes in the efforts of adopting Development Control. This study also has another bearing that already many Asian Countries measures are taken to simplify the Development Control System and henceforth the solutions already arrived may pave the way for suitable modifications. It may involve those who deal, practice and administer the Development Control as part of their profession, they are planners, builders, architects. Above all, the study may be useful to the community at large to accommodate their requirements within the Planning Norms or get adjusted with that for creating a conducive environment to live, work and recreate.

Fig 1.1 Actual and anticipated development (Source: Sekar, 1997)
The plans prepared with a long term objective perspective plan/master plan are allowed with a set of guidelines. However, the review of plan with actual development at the stage of appraisal of plan show many variations between what is proposed and what is seen/existing on ground (fig 1.1). The reasons for variations are attributed to people's perception, economic, social political conditions prevailed/prevailing (fig 1.2).

**Fig 1.2 Triangulation of spatial. Temporal and actors on the perception and Social, Political and Economic conditions.**
(Source Sekar, 1997)

This country is passing thro' fast phase of urbanization and hence the problems in urban area are becoming complex due to changing needs of the society with regard to Economic, Political and Social Aspects and technological development. Any development has its own impact on the environment and without development there is no prosperity and hence requirements of environment and development must be balanced. In India, the development plans are being implemented for the past two to three decades. A review of Development Control that has got experience in the last two to three decades in our country is felt essential and worth for dissertation. One school of thought is that the system in our country is too rigid to co-up with economic development and the other group's thought is the other way round.
More particularly the first Master Plan for Chennai (Master Plan 1991) is being implemented by CMDA since 1975. More than two decades have passed during which period there are many variations made based on the communities' need. The present mechanism though it includes provision for variation of land use zoning etc., there is no simple and flexible method in land use zoning policy and the development control rules are too complicated. There is a need to evolve a control mechanism based on performance standards so that the system becomes more simple and operational and at the same time flexible to accommodate the changing needs of the society.

1.5 **Aim and Objectives:**

The aim is to understand the perception of various actors dealing with Development Control Rules (DCR) and to identify a system which could create better awareness among the stakeholders on the validity of DCR.

The main objectives of this study are:

(i) To make out a comparative study of Development Control relating to urban/metropolitan region practiced by the major metro Authorities to understand the parameters governing the DCR among them in the Indian Context.

(ii) To analyse the perception and attitude of those concerned in CMA - Planners, Builders, Architects, Engineers and Public from the point of view of its adoption and redefinition.

(iii) To evaluate the nature of violations in relation to development control rules and to suggest a mechanism for improvement at different levels of operation; and

(iv) To evolve suitable model for the suggested Development Control Mechanism in the metropolitan situation

1.6 **Hypotheses:**

The study concentrates on the following hypotheses:

(i) There exists a general ignorance and indifference among the public about DCR's validity in following it, and
(ii) The form and pattern in the Development strategy of the Master Plan and the Development Control are not in consonance with each other.

1.7 Literature Review:

Keeping in mind the problem of the study a review of literature was conducted to understand the key issues of proposed study viz. Environment, Urban pattern, Urban land use model/Spatial allocation models, Zoning System, Economic implication of Zoning present and future, Urban out growth - its implication, System of Development Control/Management, Methodology for Formulation of Control System, Review technic for urban growth, Parameters of Control, Perception by stake holders and the background of the research so as to acquaint with the recent developments in the related fields and to gain knowledge for steering the study. The literature studied related to the work done in various countries in the related fields of research, over a period of more than two decades starting from 1970.

R.A. Waller (1970) expressed that for measurement and control of Environmental quality physical parameters must be established which define the various aspects of the environment which are related to the degree of satisfaction, which the population will enjoy.

E. Werezberger (1975) presented a linear programming model for the formulation of a joint policy for land use and environmental pollution. Based on the residential location model originally suggested by Herbert and Stevens (1960) Environmental policy has been introduced by setting environmental standards which can be spatially differentiated. The model considers the locational choice of the various urban activities as well as the available technological alternatives for residual treatment.

Norman Lee and Raymond Corley (1991) in their article on "Reviewing the quality of environmental statements - Review methods and findings make it clear that successful implementation of EIA requires more than the formal approval of EIA regulations. A minority of the statements reviewed in this article show that good qualityd EIS can be produced and are being produced in particular cases. However the
majority of reviewed statements are not of the required standard. Systematic review of EIS by each of the main parties involved, accompanied by additional guidance training is likely to be the quickest and most effective way of improving EIS quality over the next few years.

K.D. Cocks, J.R. Ive J.R. Davis, I.A. Baird (1983) describe the philosophy and basic features of SIRO Plan land use planning in a procedure developed to suit Australians Institutional arrangements for land use planning. Plans are evaluated in the method in terms of their effectiveness in incorporating guidelines or policies expressing the attitudes of interest groups towards the major issues being addressed by the planning process.

J.R. Ive, K.D. Cocks (1983) in the Article "The land use plan - land use planning package" describe various approaches to implementing the plans evaluation, steps SIRO - Plan land use planning method, including linear and goal programming and the land use plan simplification of the linear programming approach. The computer packages developed to implement the land use plan procedure on micro computers have been discussed.

D. Bammi, R. Paton (1976) advocated an optimizing land use planning model (OPT Plan) which can be used to minimize environmental impact. The models output on application to DU Page country Illinois, has been transferred to maps and compared with a land use plan obtained through conventional natural resource methodology.

J. Odland (1976) introduced a mathematical - programming model that determines simultaneously the locational pattern of employment, residential activity and commuting. The solution conditions lead to a single equation model which estimates the distances between zones in a city on the basis of their residential and employment densities.
Ruth W. Arad, J. Berechman (1978) in their article "A design model for allocating inter-related land use activities in discrete space" proposed a multi-stage planning approach capable of producing and selecting "best" allocation plans.

R.S. Anderson, K.D. Cook and J.R. Ive (1983) illustrate the crucial role played by the generalised upper bounding structure in the linear programme formulation of simple land use allocation problems. As a direct result, this leads to an elaboration of land use plan simplification of such formulation.

Raymond Bunker (1990) describes the importance of urban design in a metropolitan setting. He examines from 1837 of Light's Plan for Adelaide and brings out the strong elements of physical form and character which evoke powerful responses about their visual impact, functional effectiveness and feelings about their nature.

S. Openshaw (1977) demonstrates that the zoning system always check the parameter values. Further he has also indicated that model performance are nontrivial and their magnitude is far larger than what was previously thought.

T.J. Kim (1978) in his paper "A model of zoning for a metropolis" presents a model which leads to an optional zoning policy, developed so as to achieve pareto to optionality. The model is applied to a hypothetical city with a population of one million. The results of a numerical analysis were used as a basis for formulating a zoning map which ensures efficient resource allocation.

B.E. Carpenter and D R. Highly (1981) argues for Flexible zoning which may be implemented for a variety of reasons and flexible zoning may be an effective way to counter the process of urban decentralization. The paper restricted to the analysis of Residential location model. Other forms of zoning flexibility relaxing height constraints broadening land use zoning categories to provide greater mixing of activity etc., may also be attractive to commercial or industrial uses.
H.J. Buttler (1981) has shown how both land use zoning and attributes of housing determine housing rent, land rent, and design parameters in equilibrium.

Robert E. Coughlin (1991) in his article on "Formulating and Evaluating Agricultural Zoning Programmes" reports on data and analyses necessary to formulate effective, politically acceptable, and legally sound desicicultural zoning programmes. The effectiveness of agricultural zoning can be evaluated by examining changes in ownership and sales patterns following adoption of agricultural zoning.

Lawrence Lai Wai Chung (1994) critically reviews on zoning and identifies a number of theoretical issues of the Coasian Paradigm. Propensity to condemn zoning categorically raises a number of fundamental questions. In the first place, why does society choose this institution? Besides, how does this institution relate to Coase's presumption of the existence of the market or, more generally, a private property rights system in his analysis of the trade of pollution rights? What is the position of this approach towards 'non-zoning' in Houston, the British Planning System, which is said to be without zoning other than the British 'enterprise zones', or the Chinese 'special economic zones'? Whether zoning is good or bad, effective or ineffective must be a case-specific, and comparative rather than a general a priori categorical 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; (b) changes in rights assignment within a given professional economists notably the Coasians or planners in their professional practice.

Denis J.B. Shaw (1983) examines the Soviet General Plan and reasons out for its failure to guide urbanisation and urban development because of its dislocation from Economic Planning. This in turn derives from several features of the Soviet Planning system including the priority which is given to economic planning, the different agencies responsible for the two types of planning and the different time spans and control mechanisms employed.
Susan S. Fainstein (1983) in his article on "Promoting Economic Development - Urban Planning in the United States and Great Britain" describe the change from "regulating" to "promoting". As a result of this change in planning has become realistic and flexible but primarily oriented to the needs of private capital. The cases of London's strategic planning guidance, New York's housing plan, Battery Park City and London Dock lands are analysed for argument.

Prakash M. Apte, 1995, advocates for a flexible and evolutionary framework for future development plans. According to him the Master Plan for tomorrow should be facilitators of exploitation of privately held development right for the common goods of the citizens with minimal intervention by way of physical development plans but with maximum guidance of the development through economic, fiscal, taxation, employment and industrial policies, that are quantifiable, area specific and enforceable through motivation rather than compulsion and negotiations rather than control.

K.S. Rame Gowda, 1995 observed that the techniques of preparing urban development plans including land use and zoning, requires review and modification Local Plans (Micro-planning) to be prepared and revised once in five years to coincide with national/state/district plan, and shall contain details of road network and also details upto individual plot level. Zoning of land use is to undergo some changes.

B.M.N. Cholson, I Brinkleyand and A W Evans (1981) seek evidence relating to the hypothesis that the inner city acts as a nursery for new manufacturing firms and shows that there is little direct confirmatory evidence.

K.M. Kulkarni and C. Thangavel, Ahmedabad (1983) portrays the process of spill over of urban population beyond the municipal limit especially in outgrowths which has become a common phenomenon in Indian urban scene. In consequent to this, there is significant changes in the land utilization pattern as well as in the demographic and functional characteristics of these outgrowths. A study of this kind on outgrowth provides much needed base for controlling the future patterns of development in the vast growing urban area.
M.J. Webber (1976) evaluates the role of operational models in urban, physical planning, especially on the experiences of urban development planning in the U.S.A. U.K. It is concluded that physical planning is an institution which controls location and level of public investment in urban infrastructure and which produces plans of the development of urban areas as a means of increasing the profitability and reducing the risks associated with private land development.

E.F.N.Ribero, 1992, while reviewing the case of Delhi, advocated for streamlining Development Control. As a tool to reduce violation of zoning and subdivision rules, he emphasized for simplified zoning regulations, primarily in terms of FAR (FSI), parking and height control.

L.K. Kulshrestha (1993), while observing the impact of the 74th Amendment of the constitution of India on Spatial planning process and system, raises a basic question under what Act these plans will be prepared; Will it be the 74th Amendment Act as adopted by the State Legislature or Town and Country Planning Act of the State? He observes that the spatial planning system will require a re-organisation because of the changes in the functions of the bodies provided for in the Act. The 74th Amendment Act requires integration of spatial plans with investment proposal which was hitherto superficially done. It is a positive step forward towards spatio economic integration.

D.S. Meshram and R.P. Bansal (1992) made an analysis of the legislative framework of the various state Town Planning Acts, relating to Town Planning Schemes (DDP in Tamil Nadu) They viewed that the Town Planning Scheme model shall be ideal as a self-financing mechanism in the planning and servicing of urban areas. It is necessary that excessive delays encountered in processing and implementation and other administrative bottlenecks are to be minimised, as it provide a statutory basis for public participation in planning.

S.I. Gordon (1978) used multivariate statistical technique to classify land areas into groups with similar suitability for urban development. A test was made of one of
these numerical taxonomic techniques on a data set from Medford Township, New Jersey and the results analysed in terms of the pros and cons of these methods. The article illustrates that numerical taxonomy can greatly facilitate the analysis of large environmental data sets but the complexity of the statistical methods limits the wide application of these techniques.

I.N. Williams (1979) illustrates how a link can be forged between the fields of land use modelling and urban economics.

M.J. Webber (1981) in the article evaluates the role of operational models in urban physical planning, experiences of urban planning in U.K. and U.S.A. during the last two decades.

Ian Bracken (1982) describes current research which is seeking to develop a policy classification frame work for strategic land use policies. He identified some potential criteria for classification and methodology for developing a typology from documentary evidence.

S.R. Kshirsagar and E.D. Brill Jr (1984) used a vector-space approach to develop and unified various ideation methods within a formal mathematical framework that provides a geometric interpretation of the ideation process. A hierarchical cluster methods are used to examine the differences between alternative land use plans.

Ernest R. Alexander (1989) states that sensitivity analysis is essential for checking the structures, robustness and outputs of plans and decision models.

James E. Pefers (1990) describes a reassessment of some of the most popular preservation techniques. As a matter of refinement in Agricultural zoning sliding scale system is advocated which reduces the density as parcel sizes increase.

Peter J. Larkham (1990) discusses problems with current uses of development pressure, suggest that a multi variate index would be an ideal approach, but that this
would be difficult to provide for small areas and for every day development control uses. The current, simplistic approaches will probably remain in use and a full understanding of their limitations is necessary.

Glasson (1992) stated that the question of delay in the development control system has been a major preoccupation of both Central and Local Government and of developers, certainly for the last 15 years and possibly from the boom in the property market. Reducing the delays caused by time consuming development control procedures was one of the apparent intentions of introducing enterprise and Simplified Planning Zones and the new Business Use Class (B1) in the 1980s in UK.

Edward M. (1990) observed that Development Control statistics for England and Wales reveal that in the year 1989-1990 the proportion of applications determined within the eight weeks specified in Article (23) of the General Development Order was 46%. This was the lowest figure since quarterly returns were started in 1979 and coincides with a period in which more applications were received. The delay is as many studies have shown, "the channeling of money to promote new urban development is determined not by need or demand, but by the relative profitability of alternative investments - which may be in different sectors, such as industrial equities or in quite different geographical locations. Much private sector development is now driven more by investment demand and suppliers decisions than by final user demand and even less by any sort of final user needs. This widening gap between land use development and needs throws considerable doubt on the adequacy of a planning system which is based on the assumption that land uses can be predicted and appropriate amounts of land allocated for specific types of use.

Jeremy Rowan-Robinson, Andrea Ross and William Walton. (1995) considers the role in delivering land use and the development objectives that are compatible with the aims of sustainable development. He concludes that a dramatic change in the system is not required but that some difficulties could arise. These difficulties focus on the interrelation between the presumption in favour of development and the precautionary approach, the elasticity of the term 'other material considerations', the
'once and for all' nature of development control and the problems of determining whether development will be sustainable.

D.T. Joseph and V.K. Pattak, (1995) advocates that Master Plan should be an integral part of the overall development management, which should define only the broad land use pattern and major transport inputs. It should provide a frame work for development control in conjunction with land policy instruments. They suggested a two-staged development permission procedure particularly for large-scale developments should be followed. Public participation with more informed review shall be facilitated, in planning.

L.D. Hopkins (1977) illustrated that central facility models are likely to be more useful than quadratic assignment models for the design of sub urban land use plans at the scale considered. The results emphasize the importance of the evaluation of models both with respect to representation and with respect to searched procedures.

N. Lichfield and U. Marinov (1977) demonstrate of how environmental impact analysis can move towards planning analysis and how PBSA can be used for just this purpose and give concrete possibility to the converging of the two streams of environmental impact and land use planning.

Pountney and Peter W. Kingsbury (1983) examines the integration between development plans and development control in the context of selected local authority planning departments. The work described in the paper was aimed at exploring the scale and nature of the problems of integration rather than at resolving it.

Roy Precce (1990) outline the main criteria by which the results of investigations into selected policy outcomes which may be evaluated specifically in the field of area based on development control studies. The research uses of development control data multiply three main objectives are important. The first is that the work should be seen to logically vigorous in order that it may be scientifically acceptable. Second the work should address itself to the problems of hypothesis formulation and
operationalisation of the ultimate objectives of planning policies and the third in this respect the work should not concentrate solely on the restrictive and defensive aspects of planning but should equally on positive policy objectives.

Melville T. Pountney and Peter W. Kingsbury (1983) examine development controls from the point of view of selected applicants and illustrate that while applicants are of course a key group in determining what is actually developed, it must nonetheless be recognised that the priorities of the applicants are not the only ones to be considered in the field of planning decisions and the planning process has to operate with reference to a number of conflicting priorities.

In the Indian context, due to rapid urbanization, it is difficult to establish common parameters for measurement and control of environmental quality. Computer aided evaluation methods developed for evaluation of land use planning in Australia and operational model on zoning are interesting and yet to be practiced in India.

Failure of Soviet Planning system is an example for integration of physical planning with Economic Planning. For a plan to be realistic, the concept of "regulating" has to be changed to "promoting". A study of outgrowth provides much needed base for controlling the future pattern of development.

Physical planning is an institution which controls location and level of public investment in urban infrastructure which produces plans of development of urban area as a means of increasing the profitability and reducing the risks associated with private land development. Value judgement of zoning and logical decision making is vital for evolving a Development Control which can ensure sustainable development Stakeholders of course are key groups, but planning decisions and process has to operate with reference to a number of conflicting priorities.

Local area plans are necessary to provide consolidation on flexibility as they ensure public participation and resolve conflicting issues in development control. The
above outcome of the literature survey provide back ground information for steering the study.

1.8 Methodology:

As already indicated the aim of the study is to understand the perception of various actors dealing with DCR and to identify a system which could create better awareness among the stake holders on the validity of DCR. For that purpose primary data was generated by designing questionnaires and obtained the feed back from those who deal, administer and practice Development Control relating to perception and attitude. A cross section of planners in CMDA, and Local Body Officers, Consulting Architects, Engineers, Licensed Surveyors and Builders have been involved in this study on sample basis. Appeal cases of planning permissions which do not comply with Rules received and rejected in CMDA have been taken for investigation. The nature of violations are studied and tested whether there is any possibility by considering them on the ground that there are certain rules relaxable and certain rules are not relaxable. There are eleven planning parameters, viz: 1 Road width, 2. Frontage, 3 Set backs (Front, Rear and Sides), 4. Coverage, 5 FSI, 6 Parking, 7 Land Use, 8 Extent, 9. Height of the buildings, 10. Corridor width and 11. Fire Safety which are specified in Development Control Rules are considered for the study.

Secondary data is collected from Mumbai Metropolitan Regional Development Authority, Calcutta Metropolitan Development Authority, Delhi Development Authority and Chennai Metropolitan Development Authority and other concerned Departments and from published reports to supplement the investigation pertaining to Mumbai, Delhi, Calcutta and Chennai Metropolitan Area.

The users who violated the planning parameters are identified from the sample household survey to understand the operation of Development Control Mechanism. Stratified random sampling techniques have been adopted, as the survey relates to people of different professions connected with Development Control and of different size. As there are on an average 360 cases of appeal (violations of building permissions applications) per annum being received in Chennai Metropolitan Development
Authority, 20% of the cases at random in the stream of flow is taken as sample for investigation, so that the sample is geographically distributed in CMA and represent CBD, City area, Municipal Area and the rest of CMA. The sample also include different kinds of buildings - detached and continuous building, EWS housing, Semidetached, Special Building, Group Development and Multistoried Buildings (MSBs) and also represent uses of Residential, Mixed Residential, Commercial, Institutional and Industrial Zones.

The following sample is adopted for obtaining feed back from the stakeholders who deal with Development Control.

**Table 1.1 Sample size:**

<table>
<thead>
<tr>
<th>Professionals</th>
<th>Sample size</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. Planning Officers in CMDA</td>
<td>43% (14 out of 30)</td>
</tr>
<tr>
<td>ii. Local Bodies</td>
<td>44% (22 out of 50)</td>
</tr>
<tr>
<td>iii. Promoters (consulting Architects, Engineers, Builders, Licenses Surveyors)</td>
<td>3% (49 out of 1633)</td>
</tr>
<tr>
<td>iv. Users</td>
<td>20% (72 out of 360)</td>
</tr>
</tbody>
</table>

The geographical distribution of sample is illustrated in table 1.2.

**Table 1.2 Geographical Distribution of samples in the study area by land use wise.**

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Use/Area</th>
<th>CBD</th>
<th>Rest of city &amp; Municipalities</th>
<th>Rest of CMA</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>%</td>
<td>No</td>
<td>%</td>
</tr>
<tr>
<td>1.</td>
<td>Residential</td>
<td>27</td>
<td>6</td>
<td>33</td>
<td>46</td>
</tr>
<tr>
<td>2.</td>
<td>Mixed Residential</td>
<td>8</td>
<td>10</td>
<td>20</td>
<td>28</td>
</tr>
<tr>
<td>3.</td>
<td>Commercial</td>
<td>6</td>
<td>7</td>
<td>13</td>
<td>18</td>
</tr>
<tr>
<td>4.</td>
<td>Institutional</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>5.</td>
<td>Industrial</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>14</td>
<td>46</td>
<td>72</td>
<td></td>
</tr>
<tr>
<td>Percentage</td>
<td></td>
<td>19</td>
<td>64</td>
<td>17</td>
<td>100</td>
</tr>
</tbody>
</table>
Fig. 1.3 The Sequential Stages of the Proposed Research.
Study on Growth Patterns and land use change is carried out by making use of available sources of informations of maps, charts, satellite imageries and field checks. As Pandata for Chennai is found to be under clouds interpretation is limited to IRS 1C data Frame 13, 15 and 16 (22nd March 1997 Roll#3830 Batch#61). The data so generated have been carefully analysed through appropriate quantitative techniques, especially Principal Component Analysis, maps and charts and finally the results are presented in various chapters.

The sequential stages of the proposed research is indicated in fig 1.3

1.9 Scope and Limitations:

The Chennai Metropolitan Development Authority is responsible for Planning Co-ordination and development of Chennai Metropolitan Area and as well a satellite town, Marimalai Nagar New Town, about 43 km away from Chennai and falling outside CMA, as part of the physical strategy adopted in the Master Plan 1991. The study on “Development Control”, is limited to CMA only which is being covered statutorily by the Master Plan, under section 17 of the Town and Country Planning Act 1971.

The study on Metropolitan cities in India is limited to Mumbai, Delhi, Calcutta and Chennai which are the pioneers in the field of Development Control attained second generation in implementation of Master Plan and have the unique experiences in Metro Planning for sufficiently longer periods and because of geographical distribution on the West, North East and South

Sample survey is restricted to cover those who are in the main field of operation or dealing due to constrain of manpower and time. It is attempted to cover as many planning parameters as possible for quick understanding and comprehension and is restricted to Development Control within the scope of the First Master Plan (Master Plan 1991). Also attempt is made to test the Development Control contemplated in the Master Plan 2011. (Second Master Plan). The land uses of Agriculture, Non-urban, open space and Recreational uses have not attracted the need for planning permission and hence has not been included in the sample.
1.10 **Organisation of the Chapters:**

The study is presented in 7 chapters to fulfill the objectives.

The first chapter being an introduction to the study deals with objective of Urban Planning and evolution of Development Control and Philosophy, the experiences of Developed and Developing countries, the problems in the existing mechanism, the need for this investigation, aim, scope and objectives of the study, major hypothesis on which the study has been concentrated, research design including the methodology, sampling, data sources, field work, analysis and presentation. In this chapter, Literature survey has also been done to crystallise the ideas and concepts on Development Control.

The second chapter under the caption 'Study Area" is devoted to explain, the physical aspects, historical perspectives its growth trend, by population, employment, infrastructures and the major problems and its future prospects for planned development. The Socio-Economic and physical aspects having bearing on Development Control, for the present and future have been traced, so as to evolve policies for an alternative model.

The third chapter deals with components of Development Control adopted in major metropolitan cities of India to understand the parameters governing the DCR among them in the Indian context.

The fourth Chapter, under the caption "Development Control in CMA" as practiced by CMDA have been discussed in detail, present policies, problems in Development Control have been examined and presented for synthesis.

The fifth Chapter deals with "Perception and attitude of the community towards Development Control". Feed back from a cross section of the Planners in CMDA and Officers in local bodies who administer the Development Control have been obtained for getting their understanding in the administration of Development Control. Perception of those who promote development - Consulting Architects.
Engineers, Builders and licensed surveyors by analysis of the data generated through questionnaires, have been presented. User's perception have also been analysed and presented for grasping the situation under which the violations are taking place. Field Survey data has also been used to understand how the development are, under the present control mechanism. The whole analysis in this chapter leads to what changes are needed in the present mechanism.

The sixth chapter seeks remedial measures for overcoming the problems in the present Development Control, by synthesising the findings of the previous chapters. The nature and magnitude of the violations by examining the appeal cases have been deeply probed by applying quantitative techniques. Principal component analysis have been carried out to quantify the violations. An alternative model is attempted in the present context of devolution of powers to Local Bodies under 73rd and 74th Constitutional amendments for Planning and Development.

Principal component analysis is a technique used originally by psychologists but which in recent years has become widely used in the behavioural sciences as a result of the availability of computer facilities. To date, there is a number of geographical applications. Principal Component Analysis is concerned with, for example, identification of regions, identification of areas of economic stress and the classification of cities among others (Lloyd and Dicken, 1972).

There are variables (Road width, Frontage, Front setback, Rear setback, Side setback1, Side setback2, coverage, Floor space index, parking, land use, height of the building) which are qualified in terms of frequency of violations and the percentage of violation from what is required. has to be analysed to understand what are the principal components, retained as major violations vide chapter 1. Para 1.5. objective iii. so as to evaluate the nature of violations. Principal component analysis of variance is more suitable and hence adopted. The aim is to identify significant variable that effectively represents the underlying dimension of the total set of variables. The problem is that it is concerned not just two or three dimensions but with potentially a large number of dimensions.
The technique uses extraction of the eigenvalues and eigenvectors from the matrices of correlations or co-variances. Since the data used here are of different units of measurement, the values of variables are standardised to make them comparable before computing the variance - covariance matrix.

In the analysis, the relationship within a set of 'm' variables is regarded as reflecting the correlations of each of the variables with 'p' mutually uncorrelated underlying factors. The usual assumption is that p = m. Variance of the m variables is therefore derived from variance in the 'p' factors, but in addition a contribution is made by unique sources which independently affect the 'm' original variables. The analysts refer to the 'p' underlying factors as common factors and summarise the independent contribution as a unique factor.

The seventh chapter being the final, summarises the results of the study and important conclusions are made for future guidance and research.