

DENSITY



DR 15

Planning Research Programme

The Use of Density in Urban Planning



Department of the Environment, Transport and the Regions
Eland House
Bressenden Place
London SW1E 5DU
Telephone 0171 890 3000
Internet service <http://www.detr.gov.uk/>

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ISBN 1-85112-071-8

Printed in Great Britain on material containing 100% pre-consumer waste (text);
75% post-consumer waste and 25% ECF pulp (cover).
June 1998

Acknowledgements

We would like to record our thanks and appreciation for the help, support and guidance given by the Steering Group. In particular, we are grateful to David Lock who chaired the Steering Group and Michael Bach, and Peter Ellis, Chris Pagdin and Peter Matthew, who acted as the DoE's Nominated Officer at various stages of the study.

Above all, we would like to thank the officers from our case study authorities who participated and assisted with the research.

Study Team

Project Director: Professor Michael P Collins, Bartlett School of Planning
Project Manager: Dr Patrick Clarke, Llewelyn-Davies

Core Teams:

Bartlett School of Planning: Professor David Barister, Gerald Dawe, Michael Edwards, Sarah Loftus, Judith Ryser, Dr James Simmie, Charlotte Smythe, Vilna Walsh, Anne Williams.

Llewelyn-Davies: Richard Brindley, Martin Crookston, Lora Nicolaou, Clare Savage.

Report Design: Bally Meeda.

Thanks are also due to: Stephen Blowers, Iona Cameron, Oonagh O'Connell, Penny Teversham and Edmund Whitehouse.

The views and recommendations expressed in this report are those of the research team and are not necessarily those of the Department of the Environment, Transport and the Regions.

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Executive Summary

BACKGROUND

Residential density has assumed increased importance given the need to plan for sustainable development and the projected increase in the number of households. This research was commissioned to:

- improve understanding of current practice in the use of density;
- improve understanding of the relationships between density and the demand for land and between density and built form; and
- to establish a basis for consistent methods of density measurement and expression.

The study began by reviewing the development of density policy and practice in England and in the USA and Europe, before looking in more detail at current practice in a sample of English authorities. This established the context for a more detailed analysis of four issues:

- density's relationship to other policy objectives;
- density measures and built form;
- density and the demand for urban land; and
- how density should be measured and expressed for different purposes.

The research findings are summarised here.

CURRENT PRACTICE

Housing is the main focus of density policy. Few local authorities have specific policies on the density of non-residential development.

Residential density is used for two purposes: in pursuit of policy objectives such as reducing the need to travel, making efficient use of land, promoting affordable housing, and maintaining the character of existing areas; and as a planning tool to estimate site capacity and land requirements. Dwellings/area is the most commonly used measure except in London where habitable rooms are used, but there is variation in the way densities are calculated.

Other standards, such as for parking, road layout and privacy are more important than density in determining planning applications and appeals.

DENSITY AND OTHER POLICY OBJECTIVES

Density relates to a number of policy objectives:

- *Travel demand*: density is an important variable in influencing trip length and mode, but its significance depends on accessibility to public transport and facilities;
- *Social response*: the response to high densities, and high levels of occupancy, reflects the cultural and social situation and other demographic factors;
- *Bio-diversity*: the intensity of development, the nature of a site and the treatment of un-built space all influence the opportunity for bio-diversity;

- *Design quality*: quality reflects a range of design and management considerations and is not related to density.

DENSITY MEASURES AND BUILT FORM

The research shows that density expressed as either dwellings or habitable rooms/area does not provide as reliable a guide to either built form or the amount of development as plot ratio standards. Planning standards such as overlooking distances, open space and especially parking exert a strong influence over the form and quality of residential development as well as the intensity with which sites can be developed.

OVERALL RESEARCH CONCLUSIONS

i) Density and planning policy objectives

The research concludes that the role and contribution of density in achieving the various policy objectives identified by local authorities is variable. The achievement of objectives such as promoting affordable housing, protecting open space, maintaining character and securing good design may be better served by other more focused policies and approaches, such as by site-specific design briefs.

Authorities should therefore focus their use of density where it has a real role to play: in seeking to reduce travel demand; and in promoting economy in the use of land. However, even here the research highlights some important considerations:

- *influencing travel demand* – density is an important variable but its significance depends on accessibility to public transport and facilities. Where people can walk to facilities and public transport, higher density housing will increase the population with the opportunity to meet their needs on foot or by public transport; but where public transport accessibility is poor or facilities lacking increasing densities may only add to the number of people who are car dependent.
- *promoting economy in the use of land* – increases in net residential density reduces the amount of land needed to accommodate a given number of dwellings, but successive increases in density produce diminishing savings in terms of land required. The most significant savings are to be made by avoiding development at very low densities (i.e. below a net density of 20 dwellings per hectare). This suggests the need for development plans to specify minimum density standards, locating new housing where it can utilise spare capacity in existing facilities and services will tend to reduce the overall demand for urban land.

ii) The measurement and expression of density

A consistent approach is needed to the measurement and expression of density. The

research defines a hierarchy of densities appropriate to different purposes:

- a "town or district density" – where a major mixed use development, such as a new settlement is being planned;
- a "neighbourhood density" – where a residential neighbourhood is being planned;
- a "gross development density" – where development is to take place on a number of adjoining sites which have not yet been precisely defined;
- a "net site density" – where only residential uses are being planned on a site; and
- a "net developable site density" – at the level of detailed site planning and development control, especially where there are areas within a site which are not to be developed.

In terms of density measures the research concludes that:

- dwellings per hectare is the most appropriate measure for estimating development land requirements, making housing land allocations and monitoring completions/take-up;

- dwellings nor habitable rooms is effective in predicting or controlling the form of development on a site. Planning standards or plot ratio (building footprint and height) are more effective;

Whichever approach is used, the approach and the assumptions made must be clearly explained so that users understand the basis of the density figure.

CHAPTER 1

Introduction

WHY DENSITY MATTERS

1.1 Density is a key concept in describing, predicting and controlling the use of land. It is a fundamentally simple concept – how many buildings, how much floorspace, how many people, on a given piece of land? – which in practice is quite complicated to apply.

1.2 Over the last five years or so, the use of density as a planning tool has attracted renewed attention. This has reflected two concerns, both rooted in the heightened environmental awareness of the early 1990s, particularly since the Rio Declaration of 1992: a concern that finite resources, in this case land, should be used as sparingly as possible; and a related wish to create sustainable patterns of development and viable local communities, and to reduce the need to travel especially by private car.

1.3 Achieving higher density development is encouraged as part of this policy thrust. But, planners are by no means agreed about how, and to what extent, this is possible; about consistent ways to express density or its effects on development form; or what is high density development.

ABOUT THE RESEARCH

1.4 These concerns form the background to the research reported here. The Department of the Environment commissioned a team from the Bartlett School of University College London and the Llewelyn-Davies consultancy, with three principal aims:

- to explore current practice in the use of density as a planning tool;

- to provide a better understanding of how density control might lead to more efficient use of land; and
- to establish a basis for consistent methods of density measurement and expression.

1.5 The study started in February 1996, case study work with local authorities was conducted over the early part of the summer, and the report was completed in February 1997.

ABOUT THE REPORT

1.6 The Report is in four main parts:

Contextual: Chapters 2 and 3 summarise the long history of density analysis, and its use in other developed countries, to provide a context for the renewed debate and interest in this country;

Current Practice: Chapter 4 reviews current practice as exemplified in the sample authorities, and provides the basis for the more detailed exploration of four key practice issues in the following chapters;

Key Practice Issues: Chapters 5, 6, 7 & 8 then consider the practical issues to be considered in using density for different purposes and relate density to other policy objectives, looking in particular at the relationship between density and built form and the demand for urban land; and

Conclusions: Chapter 9 presents the conclusions and implications of the research and, where appropriate, recommendations for planning policies and practice.

CHAPTER 2

The History of Density as a Planning Tool

2.1 This chapter reviews the historical origins of density standards in England, their changing role in the twentieth century and how their technical specification developed. It is based on an extensive literature review of original material published between 1918 and 1997, covering policy and practice as far back as 1909. The evolution and changing policy concerns of Government guidance on residential density is summarised in the table overleaf.

2.2 Rapid urbanisation in the 19th century created a legacy of unfit dwellings, poor living conditions, poverty and ill-health. Public concern focused increasingly on the relationship between urban density, overcrowding, unsanitary conditions and crime. Understandably, residential density, housing design standards and layout considerations figured prominently in the early development of town planning legislation and practice. The genesis of the Garden City Movement, for example, stimulated debates about optimum town size, acceptable urban densities and the design, mix and layout of houses. This debate is still relevant today, given the importance that the Government attaches to sustainable patterns of development. It has assumed a new urgency in the light of current projections that an additional 4.4 million households may have to be accommodated in England between 1991 and 2016.

DEVELOPMENT PLANS AND RESIDENTIAL DENSITY 1909 – 1946

2.3 The Housing, Town Planning Etc. Act, 1909 made provision for the exercise of planning control and influence over the location, density, character and height of new development. From this time onwards town planning played an increasingly important role in controlling the location, design,

layout and appearance of residential development. Between 1918 and 1946 Government departments issued guidance on residential site selection, layout, configuration, density, house design, plot, room and garden sizes, the space between buildings and road standards.

The literature review shows, in summary, that:

- for the first half of the century (1909-46), public concern was driven by the legacy of unfit dwellings created by the rapid urbanisation of Victorian times;
- town planning took increasing control over all aspects of development, and density was an integral part of this control from 1909 onwards;
- between 1918 and 1946 Government guidance steadily refined and modified the technical specification of density measurement, on at least four occasions;
- the thrust was very much in support of lower densities;
- under the post-war development plan system (1947-67), the strategic as well as the site-based role of density as a tool came into play;
- technical specification continued to evolve, notably in urban areas with the adoption of habitable rooms as the unit of measure rather than dwellings;
- by the 1960s, there was already stress on making the fullest use of development opportunities in urban and suburban areas;

Continued on page 10.

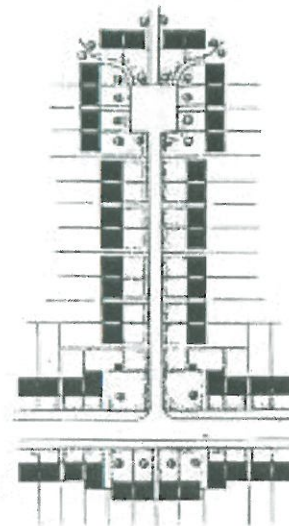
- between 1968 and 1987, the introduction of the structure/local plan distinction tended to distance density control from its potential strategic role;
- less importance seemed to be attached to the practicalities of residential density control;
- the market's judgement of what was acceptable density was given increasing weight;
- since 1988, Planning Policy Guidance Notes (PPGs) have attached increasing importance to sustainability, more intensive forms of development and the provision of affordable housing; and
- although non-residential density has been the subject of planning control since 1909 it barely figures in current planning guidance and development plans.

2.4 A circular issued in 1918 by the Local Government Board (LGB) confirmed that grants would be available for the construction of working-class housing at a density of no more than 12 houses per acre (30 houses per hectare) in urban areas and 8 houses per acre (20 houses per hectare) in rural areas¹. These density standards were also advocated in the Tudor Walters Report², which presented the findings of a major review of site planning, house design and layout. In 1919, local authorities were advised to measure residential density in terms of the number of houses per net acre (i.e. the residential curtilage, including minor open spaces, but excluding any necessary roads, the sites for other buildings and any large open spaces³). This definition of net site area was amended in 1928 to include half the width of adjacent roads up to a maximum of 20 feet (6 metres)⁴.

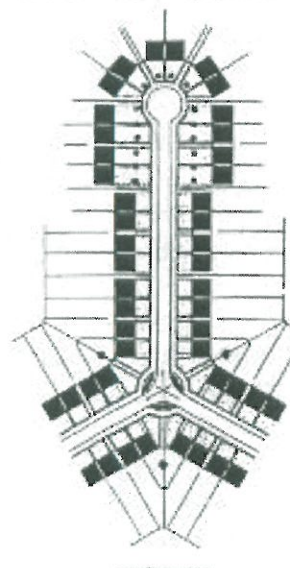
2.5 The 1944 Housing Manual advised that it was considered preferable to measure density in terms of the number of persons for whom the accommodation was being provided.⁵ Residential densities were now to be measured in terms of the number of persons per acre in a neighbourhood, (i.e. gross density), and the number of persons per net acre (i.e. defined as the residential curtilage, minor open space and half the width of adjacent

roads up to maximum of 20 feet). A study group appointed by the Ministry of Town and Country Planning (MTCP) in 1944 concluded that current density practices were unsatisfactory, and that residential density should in future be measured in terms of gross population density, floorspace and observance of daylight, and sunlight standards⁶. The inclusion of daylight and sunlight considerations presaged the use of other design standards to supplement the residential density provisions in development plans.

House Layout & Grouping 1918-1927



Source: Tudor Walters Report 1918



Source: Tudor Walters Report 1918

Housing Planning Density Guidance: 1918-1997		Sustainability	Countryside Protection	Development Briefs	Land Supply	Neighbourhood Planning	Residential Density, Dwelling Types	Site Selection	Layout	House Design, Size, Equipment	Height	Space Between Houses	Garden Size	Road Design	Parking	Open Space, Landscape	Development/Infrastructure Costs	Marketability	House/Building Conversions	Tenant Satisfaction	Affordability	
Date	Sources of Guidance																					
1918	Circular Housing of working Classes (LGB)																					
1918	Tudor Walters Report																					
1919	*Housing Manual (LGB)																					
1927	*Housing Manual (Mof)																					
1928	*Town Planning Model Clauses (Mof)																					
1934	Town Planning Model Clauses (Mof)																					
1944	*Housing Manual (Mof)																					
1944	Dudley Report																					
1944	Site Planning and Housing Layout (MTCP)																					
1945	Pelth Report																					
1948	*Circular No.40 (MTCP)																					
1949	*Circular No.63 (MTCP)																					
1949	*Housing Manual (Mof)																					
1950	*Circular No.87 (MTCP)																					
	MHLG																					
1952	*Density of Residential Areas																					
1958	Flats and Houses																					
1960	Circular 37/60																					
1961	Annual Report 1960																					
1961	Parker Morris Report																					
1962	*Planning Bulletin No.2																					
1963	*Design Bulletin No.7																					
1964	Planning Bulletin No.6																					
1967	Design Bulletin No.10																					
1968	Design Bulletin 14																					
1968	Design Bulletin 15																					
1969	Circular 23/69																					
1969	Circular 77/69																					
1969	D.C. Policy Note 2																					
1970	Development Plan Manual																					
1970	Design Bulletins 19 & 20																					
1970	Circular 10/70																					
	DoE																					
1972	Circular 102/72																					
1972	Design Bulletin 25																					
1973	Circular 122/73																					
1975	Circular 24/75																					
1975	Circular 32/75																					
1976	Dev. Advice Note 1																					
1976	*Dev. Advice Note 2																					
1976	Circular 26/76																					
1976	Research Report 6																					
1977	Design Bulletin 32																					
1977	Dev. Advice Note 3																					
1977	Circular 23/77																					
1978	Circular 44/78																					
1978	Dev. Advice Note 4																					
1979	Circular 4/79																					
1980	Circular 9/80																					
1980	Circular 22/80																					
1981	Circular 12/81																					
1984	Circular 15/84																					
1984	Circular 22/84																					
1985	Circular 1/85																					
1992	PPG 3																					
1994	PPG 13																					
1995	Circular 13/95																					
1997	PPG 1 (Revised)																					

NB* = Detailed guidance on the measurement of Net and Gross Residential Densities

2.6 Guidance on the treatment of density in town planning schemes was limited mainly, but not entirely, to the specification and measurement of residential density. Only occasional reference was made to the possibility of raising densities above the levels advocated by the LGB in 1918. Local authorities were advised that higher densities did not always result in savings of road and sewer costs, and often resulted in cramped gardens and less ample air space. They were also advised that the average density could still be achieved whilst grouping the houses and setting aside part of the site for amenity open space. The reasons given in support of lower densities included improved public health, access to daylight and sunlight, and the provision of large gardens which could be used for domestic food growing.

2.7 The residential density zones in town planning schemes ranged from 4 to 20 houses per acre (10 to 49 houses per hectare). The most common density zone, however, was 9 to 12 houses per acre (22 to 30 houses per hectare)¹¹. These density provisions posed problems when developers proposed to build flats rather than houses. Local authorities were advised that it was preferable to calculate the density in terms of the likely population. In the case of flats it was considered that 100 persons per acre (247 persons per hectare) would be an appropriate maximum density in a 12 houses per acre residential zone, providing that no more than 25% of the site was covered by buildings¹.

2.8 The exercise of public control over the development and use of land stimulated debate about the nature and purposes of town and country planning. There was strong support for the residential density standards advocated by the LGB in 1918, notwithstanding the fact that developers argued that the economic break-even density was 40 houses per acre (98 houses per hectare). Evidence presented to the Dudley Committee confirmed that flats were unpopular with large sections of the community, especially families with children, because of noise, lack of privacy, the absence of back gardens and the prohibitions on pets. There was also a prejudice against terraced housing because of noise, lack of privacy, absence of side windows and rear access problems. The Committee considered that there was a need for

mixed development of houses and blocks of flats which met the needs of smaller households. Although no reference was made to affordability it was recognised that the adoption of improved standards of accommodation and equipment would result in higher levels of economic rent.

2.9 Attention was focused increasingly on two important planning principles which figure prominently today in Government environmental policy. In 1927 local authorities were reminded that the English countryside was a heritage which had to be passed on unspoilt for the enjoyment of future generations¹¹. Later, the Reith Report recommended that dwellings should be located within walking and cycling distance of employment, shopping and cultural centres, thus minimising the need for local transport. Throughout the 1930s, however, the key issues in the determination of residential density appeals included the need for the scheme to conform with the character of the surrounding area and the need for a flexible application of numerical density standards. These issues still assume importance today when determining residential density planning appeals. Later, the Reith Report recommended that dwellings should be located within walking and cycling distance of employment, shopping and cultural centres, thus minimising the need for local transportation¹².

2.10 Government guidance was generally effective in altering the layout of public and private housing estates, and especially in achieving the move towards more open forms of development. These new estates had to observe strict rules governing roads, frontages and the spacing of dwellings. The public estates, however, were usually larger to secure economies of scale, and they were often located on cheaper peripheral land. Suburbanisation developed apace, and the suburban style which resulted constituted a logical evolution of the 'domestic revival movement'¹³. It was not until the 1940s that attention was focused on the strategic role of residential density.

THE DEVELOPMENT PLAN SYSTEM 1947 – 1967

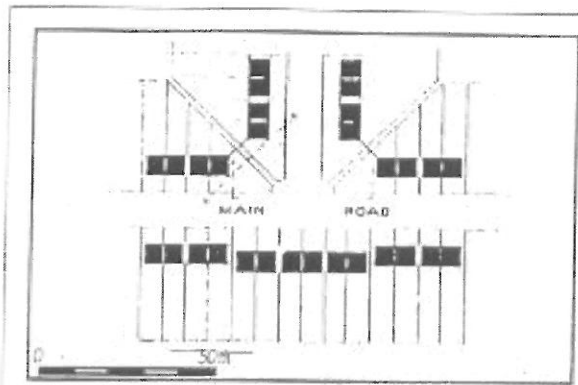
2.11 The development plan system introduced in 1947 attached importance to the strategic as well as the local roles of residential density. The strategic role included:

- meeting population targets;
- establishing redevelopment priorities;
- the assessment of overcrowding;
- securing economy in the use of land;
- estimating future land and infrastructure requirements; and
- making provision for the 'overspill' which would result from the adoption of local density standards.

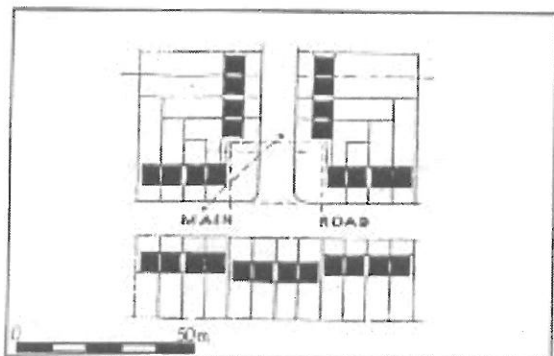
At the local level, residential density was expected to fulfil a variety of functions including:

- the provision of sufficient dwellings;
- securing a range of dwelling types;
- promoting improved living conditions; and
- ensuring that new developments were conveniently located in terms of access to local services, major employment areas and town centres.

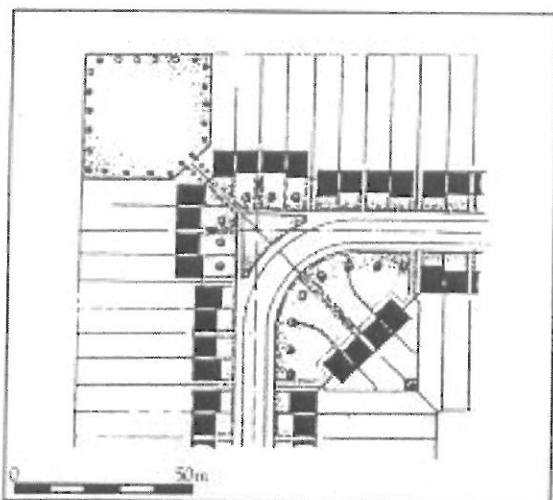
2.12 The guidance issued by the MTCP and the Ministry of Housing and Local Government (MHLG) reflected the enhanced role of development plans in addressing the country's housing problems. Further advice was issued on neighbourhood planning, site layout, house design, room and garden sizes, space between buildings, road standards and the provision of amenity open space. The Parker Morris Report reviewed current standards of design and equipment of family housing and other forms of residential accommodation. Particular importance was attached to improving the setting, design, space standards, equipment levels, parking and access arrangements for new



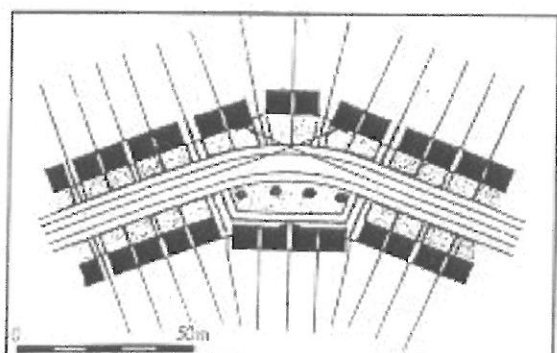
Source: Tucker Walters Report 1918



Source: Tucker Walters Report 1918



Source: Housing Manual 1919



Source: Housing Manual 1919

dwellings¹⁴. Construction costs were now a key issue and Design Bulletin No. 7 advised that the most economic form of residential development, regardless of density, would be that which kept the number of tall blocks of flats to a minimum¹⁵.

2.13 Four important housing trends emerged during this period. First, there was the predicted increase in the number of households that would be seeking accommodation. The South East Study predicted that there would be a population increase of 3.5 million over the next twenty years. This study highlighted the strategic role of residential density in ensuring that sufficient land was allocated to meet the nation's housing needs¹⁶. Second, there was a steady increase in the number of flats that were built. Flats accounted for 27% of all new dwellings in 1965 – 1966 and for 54% of the new dwellings built by local authorities¹⁷. Third, there was a gradual reduction in the actual size of local authority dwellings. The average size of a three bedroom house fell from 984 sq. ft. (91m) in 1952 to a minimum of 894 sq. ft. (83m) in 1959¹⁸. Fourth, there was growing recognition of the scale and severity of the problems posed by the high density inner city areas. A pilot study undertaken by Taylor Woodrow, Fulham Borough Council and the LCC concluded that the existing density of 136 persons per acre (335 persons per hectare) in Fulham would have to be increased to 250ppa (617pph) to attract private sector participation in the redevelopment of the 'twilight areas'¹⁹.

2.14 Various methods of calculating residential density were devised to meet the particular requirements of strategic planning (e.g. overall or town density), and development plans (e.g. gross and net residential density). In 1949 habitable rooms replaced dwellings as the preferred unit of accommodation for measuring net density, because it provided a more accurate estimate of the residential population. The definition of the net site remained unchanged and included the residential curtilage, any small open spaces located therein and half the width of the adjacent streets up to a maximum of 20 feet (6 metres)²⁰.

2.15 The use of residential density to control the population of an area, and hence the likely demand for dwellings, jobs, services and recreational facilities continued to pose problems for local

authorities. Changing household size, including the trend towards fewer persons per habitable room, highlighted the critical role of the occupancy assumptions used by local authorities when preparing development plans and when determining planning applications. Local authorities were advised that gross densities should normally range from 30 to 40ppa (74 to 99pph) where a full range of commercial and social facilities were provided, and that gross densities should not exceed 60ppa (150pph) in congested urban areas. This advice reflected the prevailing view that the largest land savings occurred when 'low' densities were raised to 'medium' densities. Subsequently, local authorities were advised that net densities in excess of 140 persons per acre (345pph) should only be necessary in the most congested areas²¹. Design studies had already confirmed that, given skilful planning, it was possible to provide a proportion of two and three-storey houses for families with children when redeveloping an area at a density of 140ppa (345pph)²².

2.16 The actual densities in approved development plans ranged from an average of 40ppa (103pph) in the county boroughs to 20ppa (49pph) in towns with a population of less than 10,000. In the case of London, however, the residential density zones ranged from 200ppa (494pph) in the central area to 30 ppa (74 pph) in a few areas with high amenity value such as Dulwich, Hampstead and Highgate.

2.17 Throughout the 1960s local authorities were advised to review their housing land allocations, raise densities and ensure that the fullest use was made of development opportunities in urban and suburban areas. Local authorities were expected to adopt a flexible approach to the observance of density standards when determining planning applications, because there was no necessary connection between density, built form and environmental quality²³.

2.18 A subsequent study²⁴ confirmed that the residential zoning and density standards in approved development plans had been very influential in determining the location, type, character and price of new housing. Developers were forced to review their marketing strategies and

decide whether to build 'luxury' low density housing, as opposed to flats, or to adopt a variety of measures such as smaller plots, smaller dwellings and a lower level of equipment and fittings.

STRUCTURE AND LOCAL PLANS 1968 – 1987

2.19 The new system of development plans introduced in 1968 drew an important distinction between strategic and local planning considerations. Structure plans were required to have regard to established national and regional planning policy as explained in White Papers, Departmental Circulars, Regional Strategies and other statements endorsed by the government²⁶. In theory, residential and non-residential density proposals should have played an important strategic role in determining the scale and location of new development. A survey undertaken in 1975 confirmed, however, that there was considerable uncertainty about the housing role, and even the content, of structure plans. Some structure plans included references to proposed density changes without providing any information on the basis and likely effects of the proposed changes²⁷. The Secretary of State, when approving the Greater London Development Plan (GLDP) modified the plan "to include a policy on residential densities with the aim of establishing strategic guidelines"²⁸.

2.20 The nature, role and purposes of local plans was however clearly understood. In essence they were required to apply the structure plan strategy, provide a detailed basis for development control, facilitate the co-ordination of development, and promote public awareness of local planning issues. Particular importance was placed on the provision of positive guidance on the principles and criteria that the local planning authority would apply when determining planning applications. Where appropriate this would include maximum and minimum residential density proposals²⁹.

2.21 The residential density guidance issued first by the MHLG and then by the DoE changed perceptibly in its general thrust during the period 1968 – 1987, reflecting the changing views and priorities of successive governments. For example, in 1975 the Secretary of State expressed his "strong

opposition to high-rise flats for families with children. The high population densities which often produce such schemes could be reduced if very low densities elsewhere were increased to reasonable levels. Families could and should thus be accommodated in dwelling houses, not high or even medium rise flats, in the majority of cases. This would also save time and money in housebuilding. Government policy on this will continue to be made clear. In fact the building of high blocks of flats is now declining markedly"³⁰.

2.22 Less importance was now attached to the need for, and role of, residential density standards. In 1976 local planning authorities and developers were advised to use the definition of net residential density which was first advocated by the MHLG in 1952. This was the last occasion on which guidance was given on the specification and measurement of residential density. From this time onwards, local planning authorities were expected to adopt a more flexible approach to residential density standards because they were not a reliable guide as to either the amount of accommodation that was likely to be provided on the site or its form, character and environmental quality³¹.

THE INTRODUCTION OF PLANNING POLICY GUIDANCE 1988 – 1996

2.23 The Planning Policy Guidance Note (PPG) series was introduced by the Government in 1988. It has devoted comparatively little attention to the strategic role of density standards. This is perhaps surprising in view of the fact that density policies have often been important in settling the pattern of development, particularly in promoting the dispersal of population and employment³².

2.24 Two main themes figure prominently in recent planning guidance. Firstly, there is the relationship between residential density and the willingness of developers to provide an element of affordable housing in their schemes³³. It is considered that this 'requirement' will often involve increasing existing densities, particularly in town and city centres. Secondly, there is the complex relationship between density, mixed use, sustainable forms of development and reduced travel. These themes are essentially complementary and both are predicated on the need to raise densities.

2.25 The principal guidance on residential density is set out in PPG3 Housing. Decisions on local residential densities should have regard to the following considerations:

- the observance of established environmental policies;
- the importance attached to local conditions and the need to conform to the character of what is already there;
- the acceptability of different densities, layouts, dwelling types, internal space standards, the size of private gardens, and the provision of garages are, in the main, marketing considerations which should be left to developers;
- the changing pattern of housing demand in some urban areas; and
- the need to facilitate the provision of 'starter homes' and other forms of affordable housing.

2.26 PPG1 (Revised): General Policy and Principles confirms that future development plan policies should give a greater measure of certainty and predictability to the planning system. Although no reference is made to the specification and role of residential and non-residential density, it is an important consideration when considering the impact of new development on neighbouring buildings and the local area more generally²⁴.

NON-RESIDENTIAL DENSITY

2.27 The density of non-residential development has also been the subject of planning policies and standards over much of the century, though it has rarely attracted the attention devoted to residential densities. This concluding section briefly reviews the treatment of non-residential density since 1909.

1909 – 1946

2.28 Local planning authorities used a variety of measures to control the bulk of non-residential buildings during the period 1909 to 1946. These measures included the provisions of the Building

Acts, height zoning, daylight angles and restrictions on the percentage of site coverage. They tended to determine both the building envelope and its architectural form. In London this method of control was judged by the London County Council (LCC) to have resulted in excessively high building densities, inadequate daylight provision and the over-development of sites in relation to the capacity of the street system²⁵.

1947 – 1967

2.29 A design manual issued by the MTCF in 1947 reviewed the need for building density controls in order to secure good conditions (e.g. light, air, access), prevent over-development, and secure the even distribution of development and activity throughout town centres²⁶. It advocated the use of a floor space ratio (FSR) as "... the simplest means of determining, comparing and controlling the building accommodation contained or to be provided within land areas of any size". The formula to be used to calculate the FSR was:

$$\frac{\text{Total Floorspace}}{\text{Area of Site plus half the width of adjoining roads}}$$

Area of Site plus half the width of adjoining roads

The main aims of the FSR were to secure an adequate street pattern, facilitate the regrouping of buildings on large regularly-shaped plots, ensure good conditions for each building, and secure reasonably compact development within each street block.

2.30 Subsequent MHLG guidance did not give much attention to the exercise of planning control and influence over the density of commercial, industrial and retail development. Only passing reference was made to the need for, and role of, non-residential density standards. In 1962, for example, local planning authorities were advised to 'fix' building densities in a way which would:

- relate the height and massing of buildings to the parking capacity and traffic attracted;
- encourage redevelopment where it was required; and

- result in a scale of development which was in keeping with the surrounding area.

No guidance was given, however, about the appropriate method for calculating building density³⁷.

2.31 The development plans for large towns and cities favoured the use of plot ratio rather than FSI as a means of controlling non-residential building density. It was considered that plot ratio was more flexible in its application, because it did not restrict the form of the building nor did it favour corner sites or sites which fronted on to wide roads. Perhaps of greater importance was the use of plot ratio to estimate the future floorspace potential (and hence jobs and trip generation) of different use zones and areas³⁸. The range of maximum plot standards adopted in development plans ranged from 3.0:1 in Liverpool to 5.5:1 in London. FSIs ranged from 2:1 in Oxford, Plymouth and Swansea, to 3:1 in Bristol³⁹.

1968 – 1987

2.32 Under the new development plan system, local planning authorities were advised that development plans could significantly influence the future pattern of employment and the relationship between labour supply and demand, and that Government policy attached great importance to the promotion of commercial and economic growth⁴⁰. Very little guidance was issued on the specification and measurement of non-residential densities. Only occasional references were made to the need to control the amount and location of retail floorspace and related parking provision⁴¹, the floorspace restrictions set by Industrial Development Certificates (IDCs) and Office Development Permits (ODPs)⁴², the need to monitor the ratio of storage to selling space in new forms of retailing⁴³ and the use of plot ratio to control building bulk and scale of development⁴⁴. The need for employment indices to measure the existing and proposed number of workers per acre or hectare was reviewed subsequently⁴⁵, but doubts remained about the effectiveness of density standards as a means of influencing employment outcomes. It was found, for example, that in the manufacturing industry, observed employment densities ranged from 28 – 132 workers per acre (69

to 325 workers per hectare) and in warehousing from 6 to 64 workers per acre (15 – 158 workers per hectare)⁴⁶. A recent study commissioned by SERPLAN concluded that "... density ratios are at their most accurate, and also their most necessary, when applied to new development or at least modern building"⁴⁷. For the purposes of development plans it was considered that density ratios, based on the weighted average, should be used for offices, manufacturing and warehousing. In London and the South East the weighted floorspace per worker ratios (square metres net) were offices (17.9), manufacturing (29.7) and warehousing (40.1).

2.33 In local authority practice over that period there are only occasional references to numerical density standards for non-residential use, except in Greater London. In general terms, it continued to be seen as important that non-residential development should be well related to its surroundings in terms of its size and scale, and that developments over a certain size should be located in specified locations such as strategic centres. Most noticeably, the strategic importance of non-residential density standards was confirmed by the Secretary of State when approving the Greater London Development Plan (GLDP) in 1976. He modified the plan "to state the strategic significance of plot ratio standards in Central London and Strategic Centres"⁴⁸.

POST – 1988: THE PPGS

2.34 The national and regional planning guidance issued since 1988 has paid scant attention to the strategic role of density standards, irrespective of land use category. PPG 3, on housing and PPG 12, on development plans, provide no guidance on the specification and measurement of density. By inference, the specification of density and other planning standards is a local plan function, especially if non-compliance would result in refusal of planning permission. PPG 13, on transport, and the better practice guide provide limited guidance on the role of density in promoting development which aims to reduce the need to travel, especially by car. Local authorities are advised to concentrate higher-density residential developments near public transport centres and close to local facilities. This advice reflects the view that "the environmental

quality of residential areas is not solely affected by or directly related to, the density of development."⁴⁹

2.35 PPG 1 General Policy and Principles (Revised 1997) confirms that a key role of the planning system is to secure the provision of homes and buildings, investment and jobs, in a way which is consistent with the principles of sustainable development. Particular importance is attached to consistent, predictable and prompt decision-making. Local authorities are expected to provide guidance on, *inter alia*, the overall scale, density, massing and height of new development in relation to neighbouring buildings and the surrounding local area. No advice is given, however, on the need for, specification and roles of, density standards⁵⁰. There is clearly a perceived need on the part of developers, local planning authorities and planning inspectors for clear guidance on the importance of density considerations and their treatment in development plans⁵¹.

REFERENCES

1. Cherry, G.E. (1974) *The Evolution of British Town Planning*, London, RTPL.
2. LGB (1918) *Housing of the Working Classes*, Circular dated 18th March, London, HMSO.
3. Tudor Walters Report (1928) *Report on the Committee Appointed by the President of the Board of Trade and the Secretary of Scotland to Consider Questions of Building Construction in Connection with the Provision of Dwellings for the Working Classes in England and Wales, and Scotland*, London, HMSO.
4. LGB (1919) *Manual on the Preparation of State-Aided Housing Schemes*, London, HMSO.
5. MoH (1928) *Town and Country Planning: Model Clauses for Use in the Preparation of Schemes*, London, HMSO.
6. MoH (1944) *Housing Manual*, London, HMSO.
7. MTCP (1944) *Site Planning and Layout in Relation to House*, Report of the Study Group of the Ministry of Town and Country Planning, London, HMSO.
8. MoH (1936) *Sixteenth Annual Report of the Ministry of Health - 1934-1935*, London, HMSO.
9. Dudley Report (1944) *Design of Dwellings - Report of the Design of Dwellings Sub-Committee of the Control Housing Advisory Committee appointed by the Minister of Health*, London, HMSO.
10. Dudley Report, *op. cit.*
11. MoH (1927) *Housing Manual*, London, HMSO.
12. Reith Report (1946) *Final Report of the New Towns Committee*, MTCP Cmd 6876, London, HMSO.
13. Ravetz, R. and Turkington, R., *The Place of the Home - English Domestic Environments, 1914 - 2000*, London, E & FN Spon.
14. Parker Morris Report (1961), *Homes for Today and Tomorrow*, London, HMSO.
15. MHLG (1963) *Design Bulletin No. 7, Housing Cost Yardstick: For Schemes at Medium and High Densities*, London, HMSO.
16. MHLG (1964) *The South East Study 1961 - 81*, London, HMSO.
17. MHLG (1967) *Report of the Ministry of Housing and Local Government for 1965 - 1966*, Cmd 3282, London, HMSO.
18. MHLG (1961) *Report of the Ministry of Housing and Local Government for 1960*, Cmd 1453, London, HMSO.
19. Taylor Woodrow Report (1963) *Urban Renewal - The Fulham Study*, London, Taylor Woodrow Group.
20. MoH (1949) *Housing Manual 1949*, London, HMSO.
21. MHLG (1952) *The Density of Residential Areas*, London, HMSO.
22. MHLG (1962) *Planning Bulletin No. 2 - Residential Areas: Higher Densities*, London, HMSO.
23. MHLG (1958) *Flats and Houses 1958: Design and Economy*, London HMSO.
24. MHLG (1962) *PB No. 2, op. cit.*

25. Hall, P. Thomas, R. Gracey, H. Drewett, R. (1973). *The Containment of Urban England*. London. Allan and Unwin.
26. DoE (1974) *Objectives in Structure Plan Making/Structure Plans Note 4/74*. London. DoE.
27. PRAG (1977) *Operational Techniques for Structure Planning. Final Report of the Project Sponsored by the DoE*. London. DES.
28. DoE (1976) *Notice of Approval under the Town and Country Planning Act 1972 of the Greater London Development Plan*. London. DoE.
29. DoE (1978) *Form and Content of Local Plans. Local Plans Note 1/78*. London. DoE.
30. HC Debates. Vol. 898. co. 418. March 19th 1975.
31. DoE (1976) *Residential Density in Development Briefs. Development Advice Note 2*. London. HMSO.
32. London County Council (1951) *Administrative County of London Development Plan - Analysis*. London. LCC.
- GOL (1996) *Strategic Guidance for Local Planning Authorities*. London, HMSO.
33. DoE (1996) *Planning and Affordable Housing. Circular 13/96*. London. HMSO.
34. DoE (1997) *PPG1 (revised) General Policy and Principles*. London. HMSO.
35. London County Council (1951) *op. cit.*
36. MTP (1947) *Advisory Handbook on the Redevelopment of Central Areas*. London. HMSO.
37. MHLG (1962) *Town Centres. Approach to Renewal Planning Bulletin 1*. London. HMSO.
38. London County Council (1951) *op. ut.*
39. S McConnell (1968). *Planning Control in City Centres. Official Architectural Planning. Vol 31. No 4 pp. 525 - 534.*
40. DoE (1973) *Structure Plans and Employment. Structure Plans Note 1/73*. London. DoE.
41. MHLG (1969) *Development in Town Centres. Development Control Policy Notes*. London. HMSO.
42. MHLG (1969) *Industrial and Commercial Development. Development Control Policy Note 3*. London. HMSO.
43. DoE (1974) *Warehouses, Wholesale Cash and Carry. Etc. Development Control Policy Note 14*. London. HMSO.
44. DoE (1972) *Hotels. Development Control Policy Note 12*. London. HMSO.
45. PPAG (1977) *op cit.*
46. Debenham, Tewson and Chitnocks (1986) *Employment Densities and Planning Policies Special Report*. London.
47. Roger Tym & Partners (1997) *The Use of Business Space, SERPLAN Report No. SERP 191*. London.
48. DoE (1976A) *op. cit.*
49. DoE (1995) *PPG 13. A Guide to Better Practice, para 5.02*. London. HMSO.
50. DoE (1997) *op. cit.*
51. DoE (1995) *The Effectiveness of Planning Guidance Notes. Land Use Consultants*. London. HMSO.