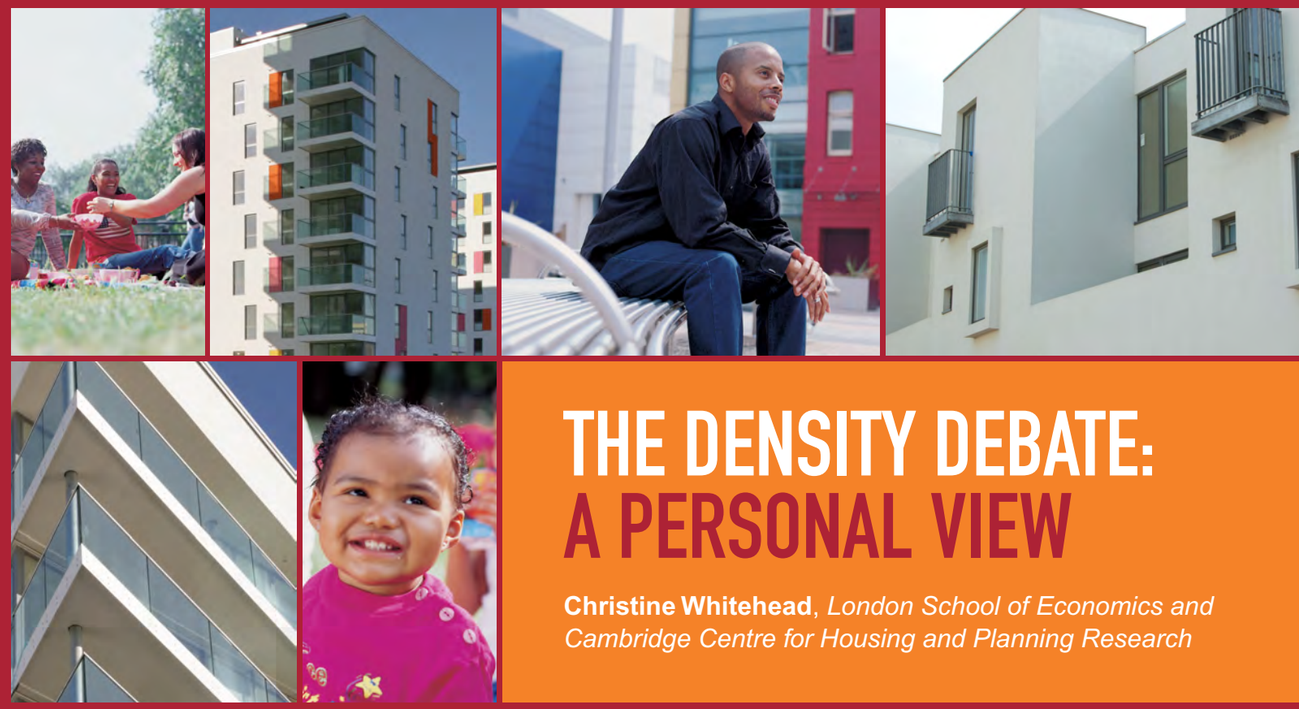

THE DENSITY DEBATE: A PERSONAL VIEW

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CONTENTS

1. INTRODUCTION

Density is an emotive term – but what we mean by density when we start to sound off is often very different from how others are interpreting what we are saying. This is not because everyone else is stupid – but because it is a term with many facets and each of us brings baggage based on our own experience – both professional and personal – to how we understand it.

This paper aims to make transparent one economist's views on density. I start by clarifying different definitions and their relationship to one another – which helps to explain why people have such very different ways of thinking about density.

I then look at the economic principles which lie behind land use planning (rather than the physical, design and social reasons where my only competence is to raise these issues within the economic framework of efficiency and equity). I juxtapose these principles with the arguments for market allocation, concentrating particularly on what people aspire to and are able to demand – and therefore how actual densities are likely to evolve.

Mediating the tensions between planning and market objectives implies understanding:

- on the demand side, what helps determine the densities at which people want to live, the types of homes that meet their aspirations and how people are prepared to trade off prices, densities and locations depending on their personal circumstances; and
- on the supply side, what determined what was produced in the past; what determines the appropriate densities in the current environment; and particularly the role played by regulation and by social provision in encouraging developments which meet social, community and individual objectives.

This analysis links to the current debate on whether planning policy is overly constraining land supply – resulting in lower output levels, higher prices and problems of affordability. But it also sheds light on why current construction is so heavily concentrated on building high density developments often made up of small flats, sometimes in the form of high rise.

The next stage is to look at what is actually happening in terms of trends in densities in England, and the reasons for these trends, including the impact of height and green belt constraints. These are then compared with evidence from other high income and urbanised countries. Here I also look specifically at London and why the urban structure of London differs from other cities. The current density policies that central and regional government are seeking to ensure are then discussed in the light of evidence on what is actually happening. Of importance here is the link between density policy and government policy targets particularly with respect to brownfield sites and mixed communities.

The other major aspect of the debate is building and neighbourhood specific – what is being built and the impact of the particular forms. Of particular relevance here are policy targets notably in relation to overall numbers and the impact of Section 106 on what is being developed. Built form brings with it issues in relation to management and maintenance costs as well as the services which need to be provided with different types of dwellings – and the costs and benefits relating to the different design options. It also leads to questions about the position of social housing providers and their capacity to use and modify stock flexibly in the social sector.

The final section brings together the analysis and my normative views to suggest what is right and wrong with the current position and how policies might be modified to help meet our fundamental objectives of a decent home for everyone at a price they can afford and a housing system which is sustainable into the future to meet increasing aspirations.

2. WHAT DO WE MEAN BY DENSITY?

There are two main definitions of density – one fundamentally about supply in the form of required planning densities and the other about what actually happens on the ground – ie in the form of population living in the housing. The first is a regulatory requirement; the second is the outcome of demand, as constrained by regulation, once the dwellings have been provided.

PLANNING DENSITIES

Specifying planning densities is part of the legally based land use planning system by which the state controls what may be provided. Density is defined either in terms of the number of units or the number of habitable rooms per hectare – usually to include internal roads and ancillary open space. Planning Policy Statement 3 (PPS3) asks local planning authorities to set out a range of densities across their plan area rather than simply to specify one broad density band (DCLG, 2006). It also requires a national indicative minimum of 30 dwellings per hectare (dph) to guide policy development. The draft version of PPS3, on the other hand, was rather more prescriptive and recommended not just a minimum but also average densities up to 55 dph.

The formal requirements are therefore rather less than the previous guidance (Planning Policy Guidance, PPG 3), which both required the avoidance of developments of land below 30 dph, (which were seen as inefficient), and encouraged development which made more efficient use of land up to 50 dph (DTLR, 2000). It also recommended greater intensity of development – including non residential – around transport nodes.

These requirements are very general, not only enabling a range around the average – highly desirable given the heterogeneity of existing development available transport and demand – but also defining density simply in terms of units. Thus a studio flat meets the requirement as much as a four bedroom house, although it must be remembered that the Statement includes further guidance on size and type.

Individual local authorities determine their own density definitions and requirements within the guidance. To take one typical example, Woking Borough Council, in Supplementary Planning Guidance in 2000 (WBC, 2000), before government policy emphasis on increasing densities was implemented, specified:

- high density as 49-74+ dwellings per hectare equal to 173-247+ habitable rooms per hectare
- medium density as 25-50 dwellings, translating into 100-173 habitable rooms; and
- low density is less than 25 dwellings or less than 100 habitable rooms.

Thus dwelling size is related clearly to the number of rooms but the relationship does not vary greatly with density and the emphasis even then is clearly on smaller dwellings.

The London Plan introduced after the change in policy is very much more prescriptive than national guidance and seeks a target of up to 65 dph depending on transport accessibility (Greater London Authority, 2004, 2006). Three types of area are defined:

- central – where very dense developments in larger town centres all over London, and most of central London, are encouraged – with suggested densities up to 435 units per hectare in the centre and even 275 in suburban areas;
- along transport corridors – with suggested densities of up to 150 dph in urban and 80 in suburban areas; and
- in ‘remote’ areas where up to 50 dph is required. In other words throughout the GLA area densities are expected to be at or above the national average and in some central areas the requirement is nearly nine times that average.

Average dwelling size varies in a clearly defined way, with the numbers of dwellings per hectare. The Plan suggests a maximum of 1,100 habitable rooms per hectare in very dense central areas – ie an average of 2.7 habitable rooms per unit; declining to 150-200 habitable rooms in currently remote suburban areas, an average of 4.6 habitable rooms per unit.

The requirements also have direct impact on the types of dwelling that can be provided – as above around 60 dph the development must be mainly or entirely in the form of flats. As the requirement increases the more the need for high rise developments to meet the density requirement while at the same time meeting any outside space requirements. Moreover the suggested average sizes imply a preponderance of one or two bedroom units. The requirements have further implications in terms of the built form – most notably, that many units will not have through ventilation. Most importantly these suggested densities are far higher than anything observed in new building for many decades – and will entail building in ways with which we have little or no experience in the UK.

Planning densities are determined in conjunction with many other regulatory requirements, relating to the use of brownfield sites and Section 106 affordable housing planning obligations as well as site and building design, all of which impact on what can actually be achieved on site. However the one thing that the planning system cannot determine is who actually lives in the dwellings and therefore the actual densities achieved.

ACTUAL DENSITIES

Actual densities of occupation are defined in terms of the numbers of people who live in a defined area or dwelling and therefore use the housing and services provided. This notably includes transport facilities, open space and communal areas as well as schools, health and leisure services etc. Some elements relate to the numbers of households – as it is now assumed that each household will require a separate dwelling; most relate to the numbers of people actually accommodated.

In the planning textbooks there are well specified relationships between planning densities, defined in terms of numbers of units and habitable rooms on the one hand and projected population density outcomes on the other. Indeed these relationships are an important input into planning decisions in that they help determine what is regarded as desirable on a particular site given the nature of the local environment and existing services. In this context, it should also be noted that the major factor taken directly into account is public transport accessibility. It is generally assumed that other local services will be provided in relation to need and demand.

However both the relationship between planning and actual densities and how it should be interpreted are not static. On the demand side, all the empirical evidence on behaviour suggests that the actual densities associated with defined planning densities have been declining quite rapidly over time for two main reasons – first, the average size of household has fallen continuously and is expected to go on falling and second the amount of space both inside and outside the dwelling demanded per person has also been rising. In terms of planning densities in relation to infrastructure and services the evidence is less clear. Economies of scale appear to have increased in some contexts, notably hospitals and schools, implying the need for greater densities of population in general and school aged children in particular. Transport technology has changed in many different ways both enabling more efficient lower density provision and on the other hand suggesting that higher densities can generate more efficient and acceptable public transport.

Densities of occupation vary greatly between different types of occupier in relation to age, household structure, tenure and most notably incomes. In part these variations reflect different preferences with respect to space and location – remembering that location and space per dwelling are highly correlated with one another. In part they relate to supply and allocation constraints, particularly in the social sector; in part, and probably most importantly, they relate to the relationship between income and the capacity to pay.

In understanding the relationship between planning and actual densities it is important to distinguish between existing and new dwellings. Planning densities by definition only directly affect new and regeneration development – which is a tiny part of the overall urban structure. The actual densities at which these developments will be occupied are far more directly affected by the density of the established area – and it is this which is important for determining the overall use of services. Planning decisions in part take this into account when determining appropriate densities, but can only marginally affect outcomes except in the largest developments.

It is also important to clarify the scale at which densities of occupation should be measured. Different scales relate to different aspects of urban living and urban problems. For instance overcrowding is measured in terms of the density of occupation within the dwelling; parking requirements relate to the site or local area; while effective use of local services relate both to administrative boundaries and the technology of and accessibility to provision – and may extend to much broader areas including regions. Moreover, not only is density important at different scales but also the different elements may be in conflict with one another, for instance ensuring that overcrowding standards are met may result in less efficient local services while small units imply a different relationship with schooling and health service standards than larger family units.

The fundamental difference between planning and actual densities is that actual densities are the outcome of demand, as constrained by the relative cost of living in different locations at different densities and sometimes by administrative allocation. Most importantly as incomes and wealth rise it is evident both that people want to live separately, so more households form from a given population and the average size of households falls; and that each household will demand more space per person.

This implies that, in a growing economy which entails increased demand, actual densities will fall. They also suggest that, in a supply constrained system:

(i) house prices will have to rise to constrain demand to the amount of housing and external space available;

(ii) the relative price of larger units will rise as compared to that for smaller units, both because larger use more land which is itself inherently more expensive in a buoyant economy and because demand will increase for units that can provide more space; and,

(iii) given the distribution of income is unequal, affordability for low income households will fall, making it more difficult for them to achieve defined housing standards.

INCREASING TENSIONS

There is thus a fundamental tension between what planning is attempting to achieve based on concepts relating to design, transportation and other infrastructure, and sustainability defined in environmental terms and what people will actually choose to do with the development.

At the present time government and land use planners have put increasing emphasis on raising planning densities. In part this is because of their understanding of the changing relationship between planned and outcome densities and the impact of behavioural responses – which in the main are working to reduce actual densities in ways that can only be offset by higher prices or changing attitudes. But it has other implications – notably that higher densities for new developments are perceived as putting pressure on the services available to established households in the area. This increases the tension between expanding supply and maintaining local community satisfaction.

The role of planners is therefore to try to square a very complex circle which includes:

- using less land for additional development;
- building on often difficult brownfield sites;
- achieving mixed communities – which it is generally agreed tend to generate lower densities than standardised developments;
- providing more space per person to satisfy growing aspirations;
- providing more units to meet demographic change and reduce the rate of increase in house prices;
- ensuring better design and standards so that environmental objectives are achieved and at the same time people are prepared to live at higher densities; and
- improving the quality and availability of services to maintain standards for the established local population.

It is not surprising that planners are feeling the strain. It is therefore important to be extremely clear about the objectives of increasing densities in this context and to understand the trade-offs between the different approaches to achieving these objectives.

3. THE PRINCIPLES INVOLVED IN DETERMINING OPTIMAL DENSITIES

PLANNING OBJECTIVES

The main rationale for land use planning is that markets will generate inefficiencies because individuals do not take account of all the costs and benefits that their decisions impose on others. Planning decisions aim to take these spillover effects, whether positive or negative, into account as well as to address other market failures by providing more accurate information for all stakeholders and ensuring adequate provision of public goods and services – notably public open space and transport networks. Planning also has distributional objectives, notably to ensure adequate residential land for all income groups.

In the context of increasing density the most important issues relate to the benefits of agglomeration and the costs of urban sprawl.[1] There is now general agreement that well organised agglomerations with diverse activities increase productivity and improve the competitiveness of the economy. However the geographical scale of these benefits seems to be closer to the metropolitan regions – around 40 minutes drive time – and larger than say Greater London alone (Rice and Venables, 2004).

There is also a general understanding that private markets, left to themselves, will tend to extend the urban area using easy to develop greenfield sites and leaving more difficult inner urban regeneration sites unused. This both inefficiently adds to demands for infrastructure services in outer areas and leaves existing infrastructure underused. Controlling urban sprawl and helping to maintain the viability of inner areas in the face of change are the main rationales for the restrictive nature of the UK's land use planning system which has concentrated on limiting urban growth through greenbelt and latterly brownfield policies (Hall et al, 1974). The outcomes of this general approach have been to generate less hollowing out of urban areas than is observed in many other less heavily regulated, more market oriented economies – but it has also put pressure on land and house prices and reducing these constraints is a major element of the government's housing numbers agenda (Barker, 2003; 2004; 2007).

A related rationale of government intervention is to mediate adjustment costs – notably those that arise from de-industrialisation – but also to maintain adequate population densities in the face of pressures to live at much lower densities than originally intended when the dwellings were built. This is a matter of increasing concern in the context of the inner suburbs where household size has declined significantly.

The objectives of planning – to ensure that markets reflect the true resources costs and benefits of private decisions; to support the provision of public services and ensure access to these services to housing and to employment – are reasonably well understood. Moreover they generally suggest that there is a case for restricting urban sprawl and maintaining densities at levels which support service and transport provision. However these relationships are complex and the relationships between the different objectives and the reasons for the failures of the market need to carefully analysed and understood before appropriate polices can be implemented. Equally importantly the instruments available to land use planners are very limited. They can only affect development at the margin and are generally restrictive – effective proactive planning requires additional policy instruments and incentive structures. The introduction of a small number of targets – notably with respect to brownfield sites and now increasingly density requirements – have further changed incentives in very broad brush ways which can generate perverse results in some contexts.

[1] It should not be forgotten that in earlier times the policy emphasis was on reducing densities to improve public health and to reduce congestion and pollution.

MARKET PRESSURES

It is inherent that the outcome of land use planning is different from that which would have occurred in an unrestricted market. It is also inherent that market actors will complain. But it is also the case that to be desirable the benefits of regulation and constraint should be great enough to offset the costs to individual consumers. What is the evidence on whether this is the case?

The most important evidence on what the consumer wants relates to demand elasticities (Whitehead, 1999). Measures of income elasticity show clearly that across the world a 1% increase in income increases demand for housing by about 1%. So if incomes rise by 2% per annum over a twenty year period – a relatively low rate of growth over the longer term – the total demand for housing will increase by almost 50%. Obviously this effect is offset by the negative impact on demand of rising house prices – so the net effect is much smaller, and smaller the more house prices increase – but fundamentally if our incomes rise we want more housing. If that housing is not forthcoming house prices will have to rise to ration what is available (Evans, 1999; Monk & Whitehead, 1999).

The additional demand can be satisfied in a wide range of different ways. First the demand to form a separate household is strongly affected by income – in the latest household projections for instance some 20% of the projected increase comes from non demographic factors, mostly related to income. Thus a given population demands more dwellings. Far more importantly from the point of view of density the majority of the additional demand from existing households is reflected in increasing demand for larger and higher quality units – either within the existing unit or by moving up market. This applies as much to smaller households as it does to larger – there is absolutely no evidence that the fact that household size is declining means that people aspire to live in smaller units – the opposite is clearly the case – as incomes rise all types of household want more space. If the built form is fairly flexible much of this demand can be satisfied by extending existing units – and the higher the cost of moving the more likely it is that this will occur. However in many types of built form, notably flats, this is not an option and regulation may restrict such modifications even when they are technically feasible.

Econometric evidence suggests that the income elasticity for internal and external space is very similar – so the demand can be satisfied either through larger or more rooms or by expanding the size of the garden (Cheshire and Sheppard, 2002). However these two elements are in practice often highly correlated with one another – in England larger units tend to mean houses rather than flats and larger gardens go with more rooms. Moreover survey evidence shows that the aspiration among all types of household – including single people and other small households – is to live in a house, suggesting that internal and external space are not wholly substitutes for one another. It also suggests that as incomes rise there is an increased demand for private, as opposed to communal space and separate living.

Further the evidence shows that in England, as in the USA, people as they grow richer tend to want to live away from the city centre and closer to countryside – and that this is a major cause of suburbanisation. This has been less obviously the case in many European cities where there has been a history of central city living among richer households – but some of this can be explained by the importance of second or family homes in the countryside. In France and Germany for instance large proportions of households have family contacts – and access to housing – in the rural areas from which their parents or grandparents migrated to the city; while in Scandinavia many city dwellers have summer houses.

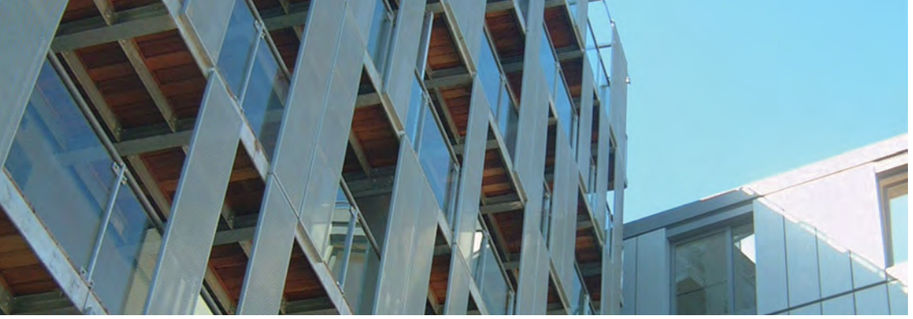
There is of course evidence that some types of household demand less housing and more central locations. The most obvious evidence here is in relation to migration. New migrants, especially those from poorer countries, demand less space than established households with the same attributes. They are also more likely to live in central urban areas often close to their work in service industries and construction. However if they remain in the country their demand for housing and location tends to converge with that of more established households – so that after twenty years their demands are on average indistinguishable from the indigenous population (Gordon et al, 2007).

Econometric evidence shows that urban dwellers value local open space and undeveloped land considerably more than they do greenfield land outside the city – so developing brownfield sites comes at a real cost to the local community as compared to the development of urban extensions. It is here perhaps that the tensions between individual choice and the way that the planning system works especially in the UK are greatest (Cheshire and Sheppard, 2002). As an individual I tend to want to live in locations accessible to the countryside; as an 'established member of that community' I want to maintain my environment (be a Nimby); as a 'member of society' I want to ensure both that the countryside is protected and that the urban area thrives. The role of the planning system is to mediate between these different pressures in the light of the social costs and benefits of development. The instruments for protecting existing use are core elements of the land use planning system since 1947; the brownfield target (which it should be remembered is not 100%) has reinforced these powers. The instruments enabling the costs of urban development to be assessed hardly exist.

A final issue relates to the fact that new development is the main source of change in the total stock. In a growing economy one would therefore expect that the size and standards of new dwellings should be higher than those available in the existing stock. This is mainly because it is more efficient to build higher standards into new dwellings because existing units are relatively inflexible. The textbook assumption is that existing dwellings will filter down the system to others with lower incomes and that ultimately the lowest quality housing will be left vacant and ultimately be demolished. Even though there are many reasons why the market works in a far more complex fashion than this simplistic model implies, at the very least the general supposition is that new dwellings, which will last for many decades, should have the potential capacity to meet the aspirations of later generations.

The evidence on consumer behaviour therefore suggests that, other things being equal, we want to build mainly larger units with higher than average standards. It also shows that there are major costs to consumers in restricting the size of dwellings and lots as well as in building on brownfield sites that could otherwise provide local amenities. These demands are in stark contrast to current policy.

"...evidence suggests we want to build mainly larger units with higher than average standards."



4. THE EVIDENCE ON DENSITIES

LONGER TERM TRENDS

Urban densities in England fell significantly in the first three decades after the war, partly as a consequence of massive job losses but mainly because of the increase in the demand for residential space arising from a growing population but particularly from rising incomes. This process was supported by planning policies, which enabled urban extensions and new towns as well as larger residential dwellings. In the 1980s the process slowed and stabilised in the 1990s with a fall of only 1% in densities across urban areas outside London and a large increase (of about 8%) in the capital. This last largely reflected the rapid growth in net international immigration primarily of people from poorer countries, who, at least initially, occupy dwellings at much higher densities than the settled population. Across the country the slowdown reflects higher house prices and lower housing output levels which have also been more heavily concentrated in urban areas.
Clearly this is partly the outcome of policy but it also reflects major market forces notably with respect to the relative location of declining and growing industries.

Even though urban densities in England have declined, against popular belief they are generally much higher than in most other high income countries. Across the ten UK urban areas with more than 500,000 population, densities average just over 40 per hectare, half as high again as the EU average and comparable to Japan. Smaller urban areas, at 36 per hectare for England and Wales, are well above the EU norm. Estimates of densities in London as compared to other world cities clearly show that London's central areas are far less dense than New York, Tokyo or even Paris in the mid 1990s (Llewelyn-Davies et al, 1996). However since the mid 1990s London's densities have increased and later estimates using much broader definitions of urban areas suggest that average density at 50 plus per hectare is 50% more than Paris, Frankfurt, Amsterdam and above even Tokyo and New York (Gordon, 2007).

At a wider metropolitan scale the picture is somewhat different, in part because of the impact of greenbelts, which have served both to make urban areas more compact and to make functional urban regions less so – as development 'jumps' the green belts (generating additional transportation requirements). However, even taking this into account, the largest British cities are all denser than the EU average. In fact it is probably only in the central areas of cities, particularly London, that urban densities are significantly below those for their counterparts abroad (notably Manhattan, Paris, Berlin and Madrid) (Burdett et al, 2004).

In part, of course this pattern reflects the overall population densities in the UK and England in particular, as compared to those found in other high income countries. The UK's population density is more than double the EU average. In part it is because we have a relatively high proportion of population in major cities. In part it is because of planning constraints. But the most important implication of this general evidence on densities is that, to the extent the UK is atypical, it is because of higher rather than lower densities. This is also reflected in the evidence of the adverse impact of constraint on housing output levels on house prices.

Given the patterns in other countries why are we, and particularly the government, so concerned about increasing densities? One crucial consideration appears to be the level of energy use and the associated carbon emissions from personal transport and to a lesser extent, housing, where there is a strong presumption that higher urban densities can reduce the costs. Another is the sustainability of other local urban services.[2]

In the transport context the evidence in favour of very much higher densities is surprisingly poor. There is one well known international comparison, which appears to support the view that doubling density would halve energy use and emissions (Kenworthy, 2003). However this is a simple correlation in which other factors, such as level of incomes, are not included. Corrected estimates suggest that the effect is still positive but small (7% on one UK estimate by Breheny and Gordon 1997 – which is consistent with other estimates). Most importantly these effects depend on increasing overall densities by very large amounts. To achieve this would require sophisticated policies relating to particular aspects of urban form – notably with respect to workplaces rather than residencies. It cannot be done by simply modifying new development.

Increasing densities at the margin through new residential developments and ensuring these developments are closer to workplaces tends to generate a larger number of trips but over shorter distances. If the latter effect dominates – as appears to be the case, denser regions and sub regions will generate fewer trip miles. However, this depends on the nature of networks and the extent to which these remain local – a topic currently much discussed as peoples' travel patterns change (Jarvis, 2003).

The stronger argument from the point of view of planners has been that denser local concentrations of populations (and jobs) increase the viability of more energy-efficient forms of public transport. The effect is stronger where the urban form allows efficient networks between residential areas and centres of business/social activity (Kochan, 2007). Denser regions could then achieve significantly lower emissions per trip mile.

Commentators agree that there is a minimum density to enable public transport. But Peter Hall, for instance, argues that this minimum is around 25 dph while for light railways it is around 60 dph (LSE London, 2006). In this context he favours a pyramid concentration around transport interchanges and local services but can see little or no argument for significantly higher than the minimum densities away from these amenities. Rather, he argues that the evidence is that people want to live in houses; that living in or near the country is the popular choice among established households, regardless of social status or ethnicity; and that city dwellers are the least satisfied. He therefore suggests that planning should work with demand and manage that demand in ways that will bring planned and actual densities closer together by choice thus taking account of demand as well as relative costs. This involves using greenfield sites at moderate densities down transport lines and with higher densities near to nodes and interchanges.

Anne Power on the other hand argues that it is the government's role to fight against the market pressures that are forcing densities down – and that high-density developments do not have to be low value (LSE London, 2006). She argues that the critical mass of people necessary to support not only transport but also shops and schools requires at least 50 dph. Higher density is also more effective in generating mixed communities; social integration and safety. In particular it better fits an ageing population. This links further to the new government agenda of healthier cities. Again however the evidence, mainly from the USA, is that density alone does not increase walking or other physical activity (Forsyth, 2007). Even if these arguments are accepted, planning for significantly higher densities would have to be based on an argument that large increases in density at the margin could support overall higher densities for the established population. This in turn would depend both on the acceptability of the specific development to a range of household types **and** on providing the additional services necessary to ensure that established households do not suffer.

[2] A further crucial reason for increasing density is that denser urban systems contribute positively to productivity levels, notably through diversification, lower risks and networks. This issue, while of very considerable importance in terms of regional and industrial policy, lies outside the remit of this paper.

INTERNATIONAL EVIDENCE

Table 1: Housing Densities in Europe

Useful floor area per dwelling (M^2)

	YEAR	TOTAL DWELLING STOCK	YEAR	DWELLINGS COMPLETED
Austria	2003	93.9	2002	101.0
Belgium	1991	86.3	2001	119.0
Denmark	2002	109.1	2001	112.4
Finland	2002	77.0	2003	90.2
France	2002	89.6	2002	112.6
Germany	2002	89.7	2003	113.9
Italy	1991	90.3	2000	81.5
Netherlands	2000	98.0	2000	115.5
Sweden	2003	91.6	2003	128.0
England	2001	86.9	1981-2001	82.7

Source: Boverket, 2005

Comparative statistics on dwelling size relate to both numbers of rooms per dwelling and the square metres of useful floor area per dwelling (Table 1). In terms of numbers of rooms, the UK's housing stock appears quite large, although the average size of new units is well below that of the total stock. This pattern is similar across Europe except for Finland, Germany and Belgium where new units have more rooms than the existing stock. However when we look at the average size in terms of square metres, the UK has the smallest average size in Western Europe and indeed the second lowest for the whole of the European Community in terms of new dwellings. Moreover the UK is one of only two countries where new units are smaller than the existing stock – and we know from other evidence that this average size is continuing to decline.

It is not just in comparison with Europe that the UK's current output looks inappropriate. Japan was traditionally regarded as a country where people were happy to live in small flats – but new building is currently far more likely to be in the form of houses with well over 100 square metres of useable space. Even in China where only a decade ago the norm was 7 sqm per person the aspiration with respect to affordable housing is an average of 100 sqm per unit – far above the UK's current standards.

These examples are important because Asian cities are often put forward as exemplars of the future – while to a great extent they are actually leftovers from the past. This is not to say that the norm will move away from high rise flats in major cities across the world – land constraints will make this impossible. But the space per unit that will be provided will undoubtedly increase all the time. And there is also evidence, especially in Hong Kong, that city flat dwellers are looking to purchase second homes in the countryside in mainland China.

Vancouver is probably now seen as the most successful Asian style high rise city in the Western world. But here again the space and service standards are high and opportunities to escape from the city at weekends are readily available. In Barcelona, regarded as the best example of city living in Europe in the late 1990s, the evidence is increasingly of hollowing out and vacancy in the centre as manufacturing jobs either die or move out of the city and incomes rise.

Thus the evidence from across the world is that small, high density units with limited services in central cities are a reflection of low incomes; not of effective and sustainable built form. What will happen is that as incomes rise fewer people will live in each unit – and households will find other ways of obtaining more space, which may be just as bad for the sustainability agenda.

IMPLICATIONS FOR ENGLAND

Thus empirical evidence suggests:

i) there are significant benefits to maintaining actual densities in urban areas at least at their current levels but that UK urban densities are higher than the average for Europe and other higher income countries outside Asia;

ii) the evidence on efficiency and sustainability suggests that new communities should be planned at above 25 dph and that in urban areas and particularly central areas they should be planned at 50 dph and above;

iii) actual densities in line with these planning densities can only be achieved if people living in them are happy with their homes and demand in the established community supports these density levels. In a growing economy this requires that both dwellings and neighbourhood meet household aspirations – including providing better designed and larger space per household as well as a safe and comfortable local environment;

iv) there is probably a case for significant higher densities in the centre of London, but probably hardly anywhere else. However the demand to live in these higher densities will come mainly from those who see specific benefits to living in the central city and will almost certainly depend on continuing immigration of households who initially demand lower space standards; and

v) the most important objective should be to work on maintaining densities in suburban areas where if densities continue to decline the costs of transportation and local services will increase and where it is possible to achieve the types of housing in which people wish to live.

THE POLICY RESPONSE

Planning densities have been rising rapidly across England in response both to government policy and market pressures (Table 2) (DCLG, 2006a). In 2000 the average density of new dwellings was above 30 in only one region, London, where average densities were 56 – more than double the national average. Average densities were around 25 and only one other region, the North West was above that average. By 2005 national average densities had increased by almost two thirds to 41 dph. Densities in London had doubled to 112 dph – almost 175% above that average. Densities in all other regions were at or below the average but the lowest densities were well above the minimum required in PPS3 of 35 dph.

Table 2: Density of new dwellings by region: 2000-05

	2000	2005	PROPORTIONAL INCREASE
London	56	112	100
South East	24	41	71
North West	26	41	56
North East	24	40	67
Yorkshire and Humberside	22	39	77
South West	25	39	56
East Midlands	22	38	81
West Midlands	24	36	50
East of England	22	35	59
England	**25**	**41**	**64**

Source: DCLG, Housing Statistics

The observed increases in density were closely related to the change in the mix of dwellings being produced – both in terms of flats as compared to houses and size of dwellings. The mix of flats and houses in the period between 2000 and 2005 changed enormously across the country, with the numbers of flats completed rising by nearly 150% and the numbers of houses actually declining by over 10% (Table 3). In London one third fewer houses were built but there was an almost 140% in the number of flats. Evidence on planning permissions suggests that these trends are continuing strongly. The proportion of planning permissions for flats has increased from 39% in 2000 to 55% in 2005, and is still rising.

Looking next at the number of bedrooms (Table 3), almost half of all units in England had two or fewer bedrooms in 2004-05 as compared to 35% in 2000-01. The big shift in England as a whole is away from four bed plus dwellings to smaller units – notably two bedroom units – almost certainly mainly flats. In London almost one in four units had one bedroom or less and fewer than 20% have three or more. The big reduction here is in terms of three bedroom units appropriate for smaller families – but often actually lived in by couples. Again planning permission statistics suggest that these trends are continuing.

The reasons for these changes in mix are many in addition to the increasing policy emphasis. First, land prices have been rising even faster than house prices – so developers want to reduce the land per unit. Second, the growing importance of planning obligations means that developers wish to minimise their contributions to affordable housing – small intermediate tenure units are by far the easiest way of doing this. Third, there has been a large shift in development from lower to higher cost regions and from greenfield to brownfield sites both of which will result in higher average densities (Crook et al, 2006).

Table 3: The Changing Make Up of Completions in England

Completions	2000/2001	2004/2005	CHANGE (%)
England			
1 bed	7	10	
2 bed	27	38	
3 bed	34	29	
4 + bed	32	23	
Flats	20 (25,970)	41 (63,920)	+146%
Houses	80 (103,890)	59 (91,980)	-11%
Total	**129,866**	**155,893**	**+20%**
Number of bedroom (est)	400,000	430,500	+8%
London			
1 bed	18	24	
2 bed	48	58	
3 bed	25	12	
4 + bed	9	6	
Flats	58 (8,400)	19,920) 83	+138%
Houses	42 (6,080)	(4,090) 17	-33%
Total	**14,492 (11%)**	**24,063**	**+66%**
Number of bedroom	33,300	48,700	
(est)	(av 2.3)	(av 2.0)	- 0.3

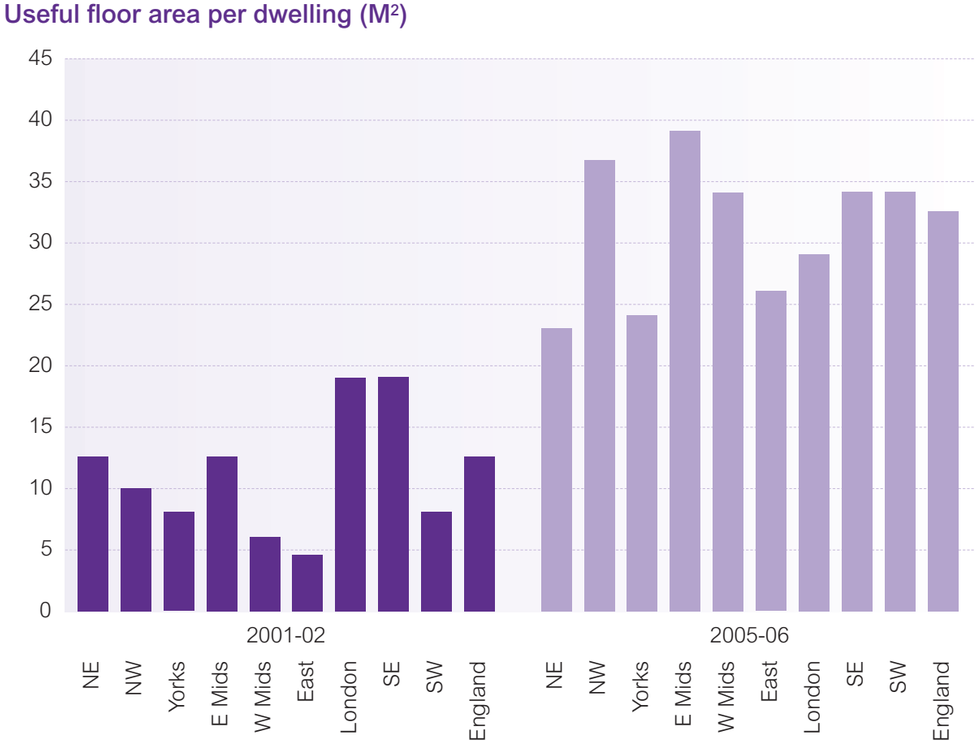
Source: DCLG, Housing Statistics

A final issue relates to what is being provided in the form of affordable housing. The biggest change in provision has come about because of the growing importance of Section 106, which means that the amount and type of housing provided is a matter of negotiation with the developer.

Over the period from 2000-01 to 2004-05 the total output of social housing has hardly changed although there has been significant growth in output over the last two years and the numbers in London roughly doubled. Planning permissions have also been rising very rapidly – so output levels are expected to grow quite significantly – unless there is a market recession. Equally the proportion of affordable homes that are for the intermediate market rather than for social renting has increased very rapidly as shown in Figure 1.

The mix in completions between houses and flats over the period has moved very much towards flats – with 53% flats in 2004-05 as opposed to 37% in 2000-01. The average number of bedrooms has also declined with the big shift being from three to two bedrooms. In London 79% of completions in 2004-05 were flats as compared to 59% in 2000-01 (and 49% the year before). In terms of numbers of bedrooms more than a quarter were one bedroom in 2004-05 and only 15% had three bedrooms down from 24% in 2000. These trends are likely to continue into the future especially because of the growth in intermediate housing – and even though government is now starting to press for more, larger, units to address the problems of crowding.

Figure 1: Shared Ownership as a percentage of all S106 completions



Source: DCLG, HSSA

There are a number of important implications from these figures taken together:

- the rates of increase in densities are quite oddly distributed between regions. The most rapid increases outside London are mainly in generally less pressured regions, East Midland, Yorkshire and Humberside and the North East, where one might have expected that it would be better to be concentrating on meeting aspirations rather than saving land;
- the true increased density story is fundamentally a London phenomenon – with densities across London rising more than 50% more rapidly than in the rest of the country at the same times as there has been some proportional increase in the amount of housing being built in the capital. In this context Table 3 shows that over the period from 2001/2002 completions increased by 20% in England overall and by 66% in London. London therefore provided around 15.4% of completions – just about enough to bring London back into line in terms of completions in relation to population;
- the change in dwelling composition offsets much of the apparent increase in housing provision if the relevant measure is how much additional housing is being provided to meet increasing demands and aspirations – as opposed to how many units are being provided. An estimate of the increase in the number of bedrooms over the period suggests that the 20% increase in numbers across England translates into an 8% increase in bedrooms being provided. If, as is probable there has also been a reduction in room size there may well have been no actual additional housing provided. The position with respect to London is rather better – with the 66% increase in numbers of dwellings generating a 46% increase in bedrooms – but unhappily here the evidence suggests that size has gone down dramatically (with the smallest units being given planning permission less than 30 sqm) so the actual increase in floor space can be expected to be considerably less;
- it could be argued, and indeed is argued by government both national and in London, that there is a gap in the market and in social provision which makes it sensible to concentrate on smaller flatted units because of falling household size and worsening affordability. But in terms of longer term trends there must be concern that this is simply building the slums of the future.

5. WHAT DO PEOPLE WANT?

MARKET DEMAND

Evidence on what people want, or are prepared, to live in comes first from market behaviour and second from surveys about attitudes to housing and density.

The market evidence is pretty strong; densities have been declining rapidly in the owner-occupied sector, partly as a result of aging and household fission but also because people can afford it. At the other extreme, overcrowding in the owner-occupied sector has declined from 1.9% in 1995-96 to 1.4% in 2006-07 – in the face of rapidly increasing house prices (DCLG, 2007). Very few moving owner-occupiers trade down in terms of size even when they are older. Overall they are much more likely to trade up to larger units and particularly to houses rather than flats.

Second, the evidence of market response to the shift towards flats and smaller units has been increasingly slow demand for smaller flats as well as significant increases in the price differentials between larger and smaller units and particularly between houses and flats. It is also suggested that most of the demand for smaller flats has come from the Buy to Let market which has been particularly buoyant this century – and is indeed filling an important gap in the rental market. On the other hand it should be pointed out that in general there is currently a new build premium – suggesting that the demand for 'newness' perhaps associated with low maintenance, more efficient homes is strong even though they may be unit for unit smaller. However this is partially a cyclical phenomenon and it is not possible to predict whether the premium will continue to apply once the newness has worn off.

More 'micro' evidence of who chooses to live in new developments tends to suggest that even initial occupation levels are significantly below planned household size. So a single person may well buy a new property which is built to accommodate a small family – and the guesstimate is that the greater the density the lower the occupancy level.

Third, better off more settled owner-occupiers are likely to move away from inner city and inner/suburban to outer suburban areas or to smaller towns. In particular they move out of Central London to the surrounding regions and this process sets off further waves of households moving further out. Survey evidence shows that important reasons for these moves include space; owning and living in a home rather than a flat; access to countryside; the quality of schools and other local services, and in some cases concerns about safety security and the quality of the neighbourhood from which they are moving. The stylised facts are therefore that as people get more settled, and want to buy their long-term home, have families, have higher incomes, and greater choice, the majority of households achieve a better quality of life at lower densities and further from the centre. One important aspect of this process is increased numbers of journeys particularly commuting journeys (although people do over time change their jobs to work nearer their homes). Adequate densities to enable public transport in receiving areas and to and from the central urban areas are therefore clearly of major importance in supporting this type of pattern.

A further element in this picture, where the evidence is more anecdotal but building, is the two dwelling household where, at the limit, the main wage earner lives in a flat in the centre for part of the week and the family lives some distance away using the better local services available and maintaining a suburban or rural lifestyle. More generally people want to escape at the weekend. In this context second home ownership in England has been rising – by some 20% over the decade although it is impossible to say how much of this reflects a change in urban lifestyles. What is also clear is that the very large increases are actually in ownership of properties abroad which have risen by 115% over the same period. More generally studies of apparently successful central areas, such as Leeds, show an increase in both the numbers of trips that people take because of easy access, and length of trips because of range of activities related to increased density.

What happens at the other end of the age range? In some parts of the USA (notably East Coast cities) and in Austria and Switzerland for example, where densities are very low in more rural areas, there is evidence of older households moving back into the cities to achieve higher standards of security. There is also evidence that prices of larger units in rural areas are declining in relative terms. However this shift in behaviour appears to depend heavily on the availability of high quality spacious apartments where services can be generated – in the USA this often implies living in a gated community.

There is very little evidence of such behavioural change in England – perhaps because of the paucity of appropriate housing and the relative prices of even smaller units in better urban areas; perhaps because overall densities in England are so much higher, so that services are actually more readily available. Most of what evidence there is suggests very little desire to move at all among older age groups and as yet only a rather small niche market for older households with additional services needs. In order to understand the conditions under which such a market might expand, helping to improve efficiency of service provision and support higher densities far more evidence and analysis linking behaviour to both attitudes and costs is required.

In the private rented sector the situation is very different as the sector accommodates more and more households, especially the mobile and those crowded out of both owner-occupation and social housing by prices and availability. Especially in London, there is significant evidence of increased densities of occupation and indeed of increased overcrowding. The latest Survey of English Housing (DCLG, 2007) for instance shows that overcrowding in the private rented sector across the country has risen from 3% in 1995/96 to 5% in 2006/07. Moreover, during that period the size of the sector has increased by about a third – so the growth in overcrowding is significant. In London overcrowding has risen by almost 100% from 5.4% in 1995/96 to 10.5% in 2006/07. These increases reflect the scarcity and cost of available housing especially in London. But most importantly they reflect the rapid increase in immigration over the decade and the extent to which new migrants of all types tend initially to live in the private rented sector (Table 4).

Overall therefore the evidence suggests that in the market place higher densities of occupation are associated with particular types of household – younger, smaller, less established households living in small flatted affordable units, perhaps shared with fellow students or colleagues and with good access to travel and leisure activities is entirely appropriate. However once people are further along their housing careers and as incomes rise they want, and are prepared to pay for more space even though it often means re-locating further away from the centre. To persuade a proportion of such households to remain longer in or return to denser, central areas would require both space and service quality. This is not wholly inconsistent with higher densities – but it is inconsistent with what is currently being produced. Only if it can be shown that there is a shortage of smaller units could such a policy make sense.

Table 4: Tenure mix of London residents by migration origin and time in the UK

	RICH COUNTRIES		ASYLUM COUNTRIES		OTHER POOR COUNTRIES		UK BORN	TOTAL POPULATION
	< 3 YRS	>3 YRS	< 3 YRS	>3 YRS	< 3 YRS	>3 YRS		
Owned outright	1%	24%	2%	6%	3%	16%	21%	19%
Owned with a mortgage	13%	32%	6%	23%	11%	32%	43%	38%
Social Rented	6%	21%	35%	46%	21%	37%	26%	27%
Private Furnished	64%	15%	48%	16%	56%	8%	7%	8%
Private Unfurnished	16%	8%	8%	8%	9%	5%	4%	6%

Source: Gordon et al, 2007

SURVEY EVIDENCE ON ATTITUDES AND ASPIRATIONS

The evidence from surveys is pretty consistent (DCLG, 2007 and earlier years; Clarke et al, forthcoming) and suggests that households generally want to:

- live in houses rather than flats – although some older people would like one storey living and might choose flatted accommodation as long as there is good security, lifts and management;
- have larger rooms – often in preference to a large number of smaller rooms. This is consistent with the evidence from the rest of Europe of larger units being built but often with fewer rooms;
- have flexibility within their home and particularly to have the capacity to extend their living space, e.g. into the roof – again this is consistent with evidence of behaviour in many more market oriented economies such as Australia. In England it is a clear market trend – and many argue that one additional storey per appropriate dwelling could make a major improvement to both density and supply of housing that people prefer. But in the social sector many such opportunities continue to go begging;
- have private gardens, with the vast majority preferring these to communal space. Where the space is communal people often mention how poorly it is designed for use – they also want it well managed and used by people with similar attributes to themselves;
- have good quality and well designed kitchens and bathrooms – with aspirations particularly towards larger kitchens and additional en-suite facilities – in upmarket developments in the private sector it is now the norm to include 2 1/2 baths with 2 bedrooms in better quality developments;
- be close to local or, at the least accessible, shops both for ease of access and for the quality and value of the neighbourhood. Access to public transport tends not to be mentioned specifically although more general accessibility to work and to leisure is clearly important;
- have access to parking, usually including at least one and often two private parking spaces;
- live in energy efficient and environmentally friendly homes for which there is evidence that people are prepared to pay more, even though there is little understanding of the potential energy and running cost savings that can be associated with well designed new units; and finally,
- not live in featureless boxes.

The survey evidence above applies mainly to market housing – and includes aspirations as well as what people actually demand. Turning specifically to the views of social tenants it is not surprising to find that most social tenants want much the same as households living in the private sector want (Clarke et al, forthcoming). Moreover there seem to be few cultural differences in these attitudes. It suggests that social tenants tend to:

- find their homes too small, even if they were not statutorily overcrowded. In particular they need space for non-resident children, for other visitors and to work from home;
- want both larger and more rooms – and particularly larger kitchens. Moreover the better off tenants are more likely to want more of both – and therefore perhaps, given the chance, are more likely to move out of the sector or area;
- want more storage space both inside and outside, and particularly in flats – this is a major area of complaint among existing tenants;
- want to live in houses rather than flats particularly because of noise from other tenants and the lack of adequate sound insulation – noise is THE major issue not heating in this context;
- be concerned about disputes over communal areas as well as the use and management of these areas;
- want private garden space rather than communal space that is often provided;
- regard their homes as poorly designed in terms of how space is used and its flexibility. Particular concerns include rooms without windows and poor ventilation – notably where there is no possibility of through natural ventilation;
- be very concerned about poor maintenance, particularly of lifts and communal space;
- want access to parking;
- want well organised rubbish disposal and do not want the mess which is associated with bad rubbish management;
- want good transport links and access to shops; and
- be concerned about adequate security in and around their homes.

It should of course be remembered when looking at this list of concerns and wants that the majority of social tenants are happy with their homes – even if not as happy as those in the market sector (Hills, 2007). But these concerns are important in determining longer term satisfaction and ultimately the acceptability of what is provided. Moreover almost all of them imply higher costs not just of building but also of maintaining these developments and improving their standards into the future. This has important implications for affordability because of service charges. Quantitative evidence on these issues is quite limited. It is clear however that, even now, service charges rise disproportionately as the height of the building increases. What is less clear is the extent to which higher density low rise developments face higher costs.

The big issues in terms of desirable development therefore relate to size of the home and design of their home particularly in the context of noise; the availability of private space and the use of communal space and facilities; and the quality of management of the dwelling and the neighbourhood. Equally the big issues on the supply side are the costs associated with higher density and particularly with high rise and whether the densities associated with high rise – and more generally, super densities – are worthwhile? And all these issues become increasingly important the higher the density of occupation.

ATTITUDES TO DENSITY

Surveys and case studies specifically addressing the question of density run into real problems about definition and perception (Tunstall, 2002: Kucharek, 2006: Bretterton, 2007). However there are some interesting findings which again tend to separate the issues of internal space and management of the local area as opposed to density per se.

In particular

- people were concerned about internal space and about having defensible space rather than about crowding in the local area. Moreover the extent of crowding within the home impacted adversely on views of the area;
- those who spend relatively large proportions of their time at home or in the neighbourhood were more aware of their living conditions and the impact of high density on these conditions. Thus those outside the labour force and older households were particularly concerned about increasing densities;
- there was a lot of conflation between high density and high rise. High rise still has a very negative image and brings to mind suggests poor quality and maintenance as well as difficulties with neighbours, neighbourhood and noise;
- there was considerable concern about the difficulty of integrating new higher density, and especially high rise, developments into the surrounding area and their potential negative impact on the local community.

The general feel of the surveys suggests that high density per se is not the problem, at least for groups who prefer urban living. Very few regard neighbourhood crowding, in the sense of being able to move around comfortably and use the open space, as a major problem but these types of survey do not ask detailed questions about congestion and pollution. Rather it is lack of space; the design of the home, building and area; the capacity to achieve privacy – and quiet; the management of the housing and the area; and the quality of services which are seen as being of immediate relevance.

However it is implicit in all these responses that the higher the density the greater the need for both internal space and quality of services (HTA et al, 2007). High rise in particular has such a poor image that only a few failures could put all developments at risk – as it did in the 1970s.

Equally important is the fact that large proportions of social tenants have household characteristics which suggest that high rise and probably even high density living is less suitable for them than for those seeking accommodation in the private rented sector. The higher the density therefore the less likely that mixed communities will work – especially if the development is made up of smaller units or involves larger family units significantly above the ground.

6. CONCLUSIONS

The exact meaning and therefore implications of higher density are difficult to determine. Planning densities in particular are often described in different ways and are not easy to compare with one another. The distinction between planning and actual densities is often conflated and the relationship between the two is simply not understood.

Perceptions of density are also unclear – often when people are talking about density they actually mean high rise or overcrowding. Important here is the spatial level under discussion – at neighbourhood level, congestion, air quality and pollution more generally may be seen to be the problem rather than density per se.

England is a country where people live at high densities as compared to other high income, European style cities. However densities in central areas are relatively low in comparison to some other world cities.

The benefits of very high densities have probably been heavily overstated – but the benefits of maintaining densities at levels which support public transport and other local services are significant. This however depends on policies with respect to existing dwellings and lifestyles far more than on new development.

The discussion above does not say that new developments of 50 dph or more are unacceptable – in sensible locations with good design densities well above this level can be made to work to provide more space at the same time as higher density – and thus to meet aspirations with a chance of maintaining population levels.

What it does say is that if higher density implies concentrating on smaller units with smaller rooms this is not building for the future and will not help to ensure sustainable densities and acceptable living standards.

Further, what the evidence almost certainly does say is that super high densities, even in London, are only likely to work well if they accommodate people who have the choice about living in that type of housing. Such households are likely to be younger, aspirant households who will move on to other types of dwellings as their lifestyle changes. Outside London the case for very high density developments hardly exists outside one or two specific sites – particularly because they have higher maintenance charges and higher risks associated with them.

Within London, if these developments can be iconic, all to the good; if they can also be well managed and serviced, even better; if they can be located close to existing open space it is another plus; and if in addition local services can be maintained and improved at the same time, there is a real chance of success.

If not, households in the neighbourhood around will leave, helping to offset any gains in density; the planned high densities will turn out to be lower in actuality; and management and service charges will rise as the community becomes less mixed and more excluded.

For higher density developments to be successful they must be associated with higher quality of services inside and outside the building in order to meet the aspirations not just of today but of the next decades. Nothing will work without better design and greater flexibility of internal space – as well as more space per person. Better management of outside space to meet people's expectations is another major hurdle. All of this costs money – and if these costs are skimped the game will definitely not be worth the candle. It is better to concentrate on working with the market to ensure adequate densities across the total stock.

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