Population Growth and Housing Expansion in the UK

Some preliminary considerations

January 2013

A report undertaken on behalf of Population Matters during 2012

Population Matters is the leading population charity in the UK. We campaign to change the way people think about population. Our aims are to campaign, educate and carry out research on how population size affects sustainability, the environment and our quality of life. We are committed to ensuring a sustainable future for humanity and the environment.
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Population Growth and Housing Expansion in the UK: some preliminary considerations

A report undertaken for Population Matters during 2012

Summary

The reason for undertaking this report was to understand better the relationship between UK population growth and housing expansion, and the impact that increased housing has on the community and its environment. The report comprised a review of literature together with data analysis, and was undertaken by volunteers.

Background

With the introduction of the National Planning Policy Framework (NPPF) in March 2012, and the abolition of Regional Development Agencies, planning is becoming less centralized. The NPPF seems to be growth orientated and supportive of house building in areas of economic growth and high housing demand, which may contribute to a greater environmental challenge for London and the South East in particular.

Population growth is determined by natural change (births minus deaths) and net migration (immigration minus emigration). Although births increased during 2000-2009, fertility remains below replacement level. UK net migration exceeded natural change by 44,000 a year on average between 2000 and 2009.

Looking at housing development in the last twenty years, it is difficult to verify that tower blocks and brownfield site regeneration were the consequence of a response to population increase. On the other hand, while house sizes remained relatively constant during this period, the number of rooms per dwelling increased by 20% on average, with a concomitant reduction in room size.

Housing and Population Relationships

The population of England in 2008 was c. 52 million with c. 22 million households. Although in general both people and houses share an upward trend, their rates of growth may differ. Between 1990-2010, population growth accelerated while the annual number of completed dwellings fell, probably reflecting changing economic circumstances, and potentially creating housing shortages. A variety of projections to 2035 and later years, based on different assumptions for life expectancy, fertility and net migration, have been prepared by the Office for National Statistics (ONS). The principal projection for England shows a 19% increase 2010-2035, almost twice as much as the percentage growth in Scotland, Wales or Northern Ireland. By contrast, the England Net Zero Migration projection (where immigration does not exceed emigration) only indicates a rise of 6%. It is suggested that if a policy of net zero migration was fully introduced in England by 2022 the principal population projection at 2035 would be reduced by at least 3.5 million.

Turning to sub-national aspects, growth across England is very uneven. The populations of five of the nine English Regions are projected to grow by 20% by 2033. London market house prices are 70% higher than the country as a whole while 350,000 families in London are on social or affordable waiting lists. New home starts in London dropped from 25,000 in 2004 to around 10,000 in 2010. London is generally
acknowledged to be in a housing crisis which is likely to worsen with projected population growth. By some estimates, only 20% of inner London neighbourhoods will be affordable to housing claimants by 2016.

Housing shortages have significant social implications. In 2008/09, 3% of houses in England were overcrowded with the risk of impairment of quality of life, health outcomes and life chances for their occupants. Building to high density standards is likely to result in more overcrowding, compounded by increased housing demand from a rising population. Long waiting lists for social housing may result in only priority groups being accommodated, and in more households living in temporary accommodation.

**Housing Impacts on the Community and Environment**

In the 10 years 1999-2008 some 27,000 ha of greenfield land were acquired for housing development in England, about half of the total area earmarked for all residential development. Agricultural land accounted for 75% of the greenfield land used for residential purposes. Nevertheless only 0.4% of agricultural land was lost to development. There has been a general decline in biodiversity over the last 25 years, attributable in particular to intensified agriculture for food production and, in urban areas, to higher housing densities and reduced green space.

There is little doubt that housing expansion, both by its structures and the lifestyles of people living in them, has the potential to reduce community sustainability. Data for England and Wales shows the overall trend in total household water use has been upward between 1998 and 2008, although there has been some reduction after 2005. UK total household waste has however started to reduce, and the proportion of waste which is recycled has increased fivefold since 1999 to 39% in 2010.

In respect of climate change mitigation, if residential emissions are confined to domestic heating, cooling and lighting, then 1.44 tons CO2e were emitted per person in the UK in 2010. Although it is thought residential emissions will fall c.20% by 2020, it is estimated that the projected increase in UK population by 2020 would contribute c. 5 MTCO2e to the predicted total UK residential emissions of c. 66 MT CO2e in that year. In terms of adaptation, population growth may exacerbate potential problems with water supply, while urban building may increase town centre temperatures.

Housing for most people represents a substantial emotional and financial investment. The results of an online public opinion survey in 2010 suggested that c.75% of respondents would support more houses being built in their local area if the quality of local services did not suffer, development was accompanied by the necessary infrastructure, and the houses were well designed and in keeping with the local area. The extent to which these precepts are met in planning proposals remains to be seen. The root cause of most planning conflicts is of course the need for more houses, for which population growth is a major cause.

**Conclusion**

‘More people need more houses’ is a truism which is supported by the findings of this Report. More houses and the lifestyles of people living in them inevitably have impacts on the community and its environment, some of which are adverse. Alterations in fertility and net migration are the only feasible ways to reduce population growth, and to reduce housing demand in the long term. Change will only occur if population levels and the adverse effects of continued population growth can be propelled from their obscurity to become a high profile issue for the community, with government facilitation of the debate.
About the Authors

Seven members and supporters of Population Matters volunteered to undertake this report.

The seven authors, in the order of their chapters, are:

- R. Swann (Chapters 1,3,5,12, Edit.)
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Chapter 1

Introduction

Purpose

The reason for undertaking this report was to understand better the relationship between UK population growth and housing expansion, and the impact that increased housing has on the community and its environment. The subject is highly topical as housing plans for the next twenty years are currently being consulted on across the country.

Content

The report is in three parts:

1. The first part provides some background information - recent planning policy, the components of population growth, and a description of some housing changes over the last 20 years.

2. The second part looks at housing and population relationships which are explored both nationally and sub-nationally in two very different but complementary chapters, followed by an examination of the social impact of housing shortage.

3. The third part examines housing impacts on the community and the environment including the potential effects of housing expansion on greenfield space, sustainability and climate change mitigation and adaptation. Finally some examples of attitudes in the community towards new housing development are given.

Information retrieval

Authoritative numerical and textual data about the topics were sought. Initial scoping was undertaken by all the authors, following which individual authors scoped and sought data for specific chapters. The method adopted for the Report is a review of literature together with additional analysis and representation of some numerical data. The seven authors communicated by email and telephone with one member acting as co-ordinator and editor. Following collation of the individual sections, the resulting draft was reviewed by all the authors.

Attention is focused on areas of comparatively high population density, for example England and London.

Projected data are generally limited to 2033, or 2035, as more future projections become increasingly uncertain. Projections are of course not forecasts but rather an indication of future population/housing given specified assumptions.

Please be aware that the report was prepared and written in the spring and summer of 2012 and therefore does not take account of subsequent or impending legislation or policy changes. The Report does not contain any information from the 2011 Census.
Report format

Chapters in the report, except the introduction and conclusion which are ‘editorial’ in nature, are structured so that the first part of the chapter provides a fully referenced account of the findings pertinent to the chapter, and this is followed by a discussion section where the author may elaborate particular aspects. This separation is intended to enable the reader to readily distinguish the core findings from views expressed by the author.

References are listed by chapter at the end of the document.

Interpreting the Report

This is a multi author report undertaken within a limited timeframe and by volunteers with backgrounds of varying experience and skills. As such it can only provide the reader with a preliminary consideration of the issues, some of which would benefit from more in-depth study (See some examples in ‘Recommendations for further enquiry’).

The Report concerns the subject of UK population growth, how this relates to increased housing, and the impact on community and environment. While the scope is wide, the limited timescale necessitated a very focussed approach so that it was not possible to investigate for example the economic contributions to housing expansion, or the reasons for increased immigration. Such a narrow emphasis may lead to concerns of selective use of the information. Ultimately the reader must reflect on the quality and reliability of the sources used and the analyses presented, and decide whether or not a case, albeit a preliminary one, has been made for the views expressed in this Report.

The Report’s summary, introduction and conclusion have the support of all the authors, but otherwise the view of one author may not always necessarily reflect those of other authors. The views expressed in this report may not necessarily be those of Population Matters.

Readers wishing to use numerical or textual data from the Report should first validate this information by reference to their source.
Population growth and housing expansion in the UK
Some preliminary considerations

PART 1
BACKGROUND
(Chapters 2 to 4)

With the introduction of the National Planning Policy Framework (NPPF) in March 2012, planning is becoming less centralized. There are only four mentions of population in the NPPF document and little acknowledgement of the infrastructure and services necessary to support housing expansion.
(Recent Planning Policy - Chapter 2)

Over the decade to 2010, UK population increased by almost 3 million, of which net migration accounted for more than half (55%)
(Components of UK population growth – Chapter 3)

Smaller houses, tower blocks and regeneration of brownfield sites may have been responses to increased housing demand.
(Some changes in UK housing style and tenure – Chapter 4)
Chapter 2
Recent planning policy

(This article was researched and written in Spring 2012 and therefore does not take account of subsequent or impending legislation or policy changes).

In order to facilitate an increase in the supply of housing to support population and household growth, either more land is required for development, or development needs to occur at higher densities – or a combination of both. The 2012 National Planning Policy Framework (NPPF), which sets out the requirements for local planning authorities to develop local and neighbourhood plans and to determine planning permission in the context of a rising population which is living longer and wants to make new choices, is discussed below. Some current Coalition Government initiatives to meet housing growth targets are also identified.

The planning policy context

Post-war planning law in the UK started with the Town & Country Planning Act 1947, which aimed to balance the need for economic development with the need to mitigate adverse environmental impacts in land use planning by requiring all proposals for land use change to obtain planning permission. Local and unitary authorities had to produce plans to outline what kind of development would be permitted, and where, whilst counties produced structure plans that set broader targets for their wider area.

The planning framework underwent a number of alterations over the decades, which were consolidated in the Town and Country Planning Act 1990. In 2004, partly as a response to English devolution, regional spatial strategies were introduced. These became the main strategic planning document, setting targets for housing, employment and development for districts in the nine English Regions. Local authorities no longer had to produce plans as such, but worked to local development frameworks.

The post-war housing shortage and the poor housing conditions prevalent in urban areas were a spur for the New Towns Act (1946). This allowed central government to direct some housing development towards designated ‘new towns’. Development control functions were passed to Development Corporations, which had powers to compulsory purchase land for building. In the 50 years since 1946, the UK built 28 New Towns with a combined population of some 2,254,300 at the time of the 1991 census - around 3% of the country’s population (Dept. for Communities and Local Government (CLG) July 2006).

The concept of New Towns fell out of political favour in the 1970s onwards, and the Development Corporations were abolished - in many cases prematurely, before housing targets were met (Bennett, 2005). However, by the 1990s the idea of creating new communities reappeared on a much smaller scale with the concept of the ‘urban village’. In 2007, ‘carbon-neutral eco towns’ made a policy appearance in the last Labour Government (CLG July 2007), but so far have not made significant
progress for a number of reasons, including lack of support at the national policy level (Tomozeiu & Joss 2012).

The National Planning Policy Framework (NPPF)

After a period of consultation, the final NPPF was announced in March 2012. As a result of submissions during the consultation stage, the Government accepted the need to strengthen the document’s commitment to sustainable development – generally described as ‘development that meets the needs of the present without compromising the ability of future generations to meet their own needs’ (UN: World Commission on Environment and Development, 1987), and to reference the UK’s Sustainable Development Strategy, which sets out the five guiding principles for sustainability: living within the planet’s environmental limits; ensuring a strong, healthy and just society; achieving a sustainable economy; promoting good governance; and using sound science responsibly (Defra 2005).

In the final NPPF, however, the Government undertakes its own definition of ‘sustainable development’ which is firmly growth-oriented:

“The purpose of planning is to help achieve sustainable development. Sustainable means ensuring that better lives for ourselves don’t mean worse lives for future generations. Development means growth. We must accommodate the new ways by which we will earn our living in a competitive world. We must house a rising population, which is living longer and wants to make new choices”. (NPPF 2012, p ii)

The NPPF abolishes the Regional planning tier (excluding London, where the London Plan will continue as a Regional strategy), and re-establishes the requirement for local authorities to make a plan specific to their area. There are also provisions for local communities to get more involved in neighbourhood plans (Localism Act 2011).

To ‘boost significantly’ the supply of housing, local planning authorities need to ensure the Local Plan has a housing needs assessment in place, has identified sites sufficient to provide five years’ worth of housing, with locations for growth for years 6-10, and if possible 11-15, a housing implementation strategy, and an approach to housing density which reflects local circumstances. Affordable housing must be provided on site “unless off-site provision or a financial contribution of broadly equivalent value” can be obtained (NPPF, p12-13).

The NPPF contains a strong presumption in favour of allowing sustainable development. Guidance published by the Planning Inspectorate on 19 April 2012 to planning authorities offers the following wording:

“The Council ... will always work proactively with applicants jointly to find solutions which mean that [planning] proposals can be approved wherever possible, and to secure development that improves the economic, social and environmental conditions in the area. Planning applications that accord with the policies in this Local Plan (and, where relevant, with polices in neighbourhood plans) will be approved without delay, unless material considerations indicate otherwise. Where there are no policies relevant to the application or relevant policies are out of date at the time of making the decision then the Council will grant permission unless material considerations indicate otherwise...” (www.planningportal.gov.uk)
On the other hand, the NPPF retains some key policies, including the retention of the ‘Brownfield first’ policy for building land, and continues to safeguard Green belt land. There are also stronger policies for retaining town centres and new protection for playing fields and sports pitches.

The NPPF simplifies and summarises existing planning policy in an attempt to cut red tape for planning permissions. Whilst this has been generally welcomed by organisations, some feel that useful detailed guidance has been lost in the very significant reduction in wordage (see www.guardian.co.uk/housing-network/2012/apr/06/top-tips-nppf-housing-crisis).

Of course, UK planning policy remains subject to a number of EU directives, for instance, on the protection of endangered species of plants or animals, which need to be adhered to, unless a development can demonstrate ‘overriding public interest’, and much environmental legislation.

**How will the NPPF be implemented?**

The policies in the NPPF are effective immediately. Local authorities with a post-2004 local plan that is broadly in line with the NPPF will be able to use those policies for 12 months from now. For local authorities with no up to date plan, the NPPF is in force with immediate effect.

Local planning authorities are exhorted to collaborate with neighbouring authorities on cross boundary issues, particularly in terms of housing and infrastructure matters (a recommendation of the Royal Commission on Environmental Pollution, and others).

There is widespread acknowledgement in the planning sector that the NPPF will put a huge burden on local planning authorities in that they must put a plan in place within a year at a time of reductions in local authority spending, and that lack of a regional strategic framework, especially for infrastructure, may cause problems (e.g. Harris 2012).

The new Framework is acknowledged to be so broad that much of the detailed policy will have to be clarified by being contested on a case by case basis. In this sense, those organisations and individuals with the greatest resources will be favoured as they will be able to employ experts, for example, to conduct evidence-based reviews (BBC Radio 4 2012).

**Potential impact of the NPPF**

To date, there has been muted support for the NPPF’s guidance on safeguarding the environment from most of the interest groups and organisations involved in the consultation process. However, there are a number of potential impacts and consequences for green space from the NPPF, which have been publicly discussed (e.g. www.guardian.co.uk 2012).
Firstly, the ‘brownfield first’ policy is likely to result in greater density of new development in existing urban areas where there is a risk that existing unprotected and potential green and amenity space will be lost. Secondly, the strong protection given to green belts and the designated countryside means that pressure for development will fall on those areas of the countryside that do not have designations. Thirdly, protection of the highest grade agricultural land firmly puts development pressure towards land which may currently be used for other purposes, and which might have higher biodiversity value. Clearly, the pressure on the environment will be greatest in areas of high housing demand.

The impact of the NPPF will be less pronounced in London, which has the greatest pressure on housing, where the London Plan will act as a continued Regional tier of planning policy (which will not exist elsewhere). This is discussed in chapter 6.

**Other policy impacting on housing growth**

The Government has accepted the need to develop new towns to support housing and economic growth. It will later in 2012 launch a consultation process on how to apply ‘the principles of garden cities to areas with high potential growth, in places people want to live’ ([www.politics.co.uk/comment-analysis/2012/03/19](http://www.politics.co.uk/comment-analysis/2012/03/19)).

However, the Coalition Government is taking a local, market driven approach to development. The 2010 White Paper *Local Growth: Realising Every Place’s Potential* emphasised the role of Government as being to create conditions for growth rather than drive growth itself. It is not for government to drive regeneration, define what it should look like, or decide what measures should be used to implement it ([Centre for Cities, November 2010](http://www.regenandrenewal.regen.net: 24 Feb 2012]). A potential facilitator organisation, therefore, might be the Homes & Communities Agency (HCA) established in 2008 with assets from the abolished Regional Development Agencies, which has a national role as the investment vehicle for social housing and regeneration ([www.homesandcommunities.co.uk](http://www.homesandcommunities.co.uk)).

**Discussion**

‘Few politicians want to tackle the [population] debate, preferring to take a laissez-faire approach’ noted the Forum for the Future ([2010](http://www.politics.co.uk/comment-analysis/2012/03/19)) in its report on population and sustainability in the UK.

The NPPF, with its presumption in favour of growth, seems to support this statement. There are four mentions of population in the entire document, and little acknowledgement of finite resources, the strategic requirements for water and transport infrastructure to support growth, the costs of development, or the need to move towards a more carbon neutral economy. The impact of increased urbanisation and housing density of the health and wellbeing of the population is also not addressed.
The Royal Commission on Environmental Pollution (2011, p.86) concluded that it was not the total size of the UK population which was the problem, rather ‘it is how and where people choose to live which presents the main environmental challenge from demographic change’. The NPPF with its emphasis on supporting house building in areas of high economic growth and high housing demand, has largely ignored this recommendation, and may contribute to a greater environmental challenge for London and the South East:

“But in their current state, these plans seem to be about making it easier to develop land in London and the South East rather than creating a coherent and effective planning process for the entire country. We’re concerned that some of the proposals could have the unintended effect of actually hindering Greater Manchester’s ability to deliver sustainable economic growth.” - Response to draft NPPF from Leader of Manchester City Council (www.agma.gov.uk/latest news/nationalplanningpolicyframework/index.html).

Will the housing target be met as a result of the NPPF? The evidence from other countries suggests that a more relaxed planning system on its own does not necessarily deliver higher levels of house building, and that wider land market and housing market issues play a role (Centre for Comparative Housing Research, 2009).

Proactive policy-driven land assembly and land supply processes in the Netherlands, Germany and France contrast with a more passive and reactive approach in England, and it will be interesting to see, given the Conservative Party’s distaste of ‘command and control’ policies, whether the Government’s proposals for ‘garden cities’ have any teeth. If so, there will be a deep tension between the Government’s commitment to local community empowerment, and neighbourhood plans, and central government decisions on big developments and infrastructure projects enacted by primary legislation or taken by the Secretary of State.
Chapter 3

Components of United Kingdom population growth

UK population growth stems from two processes. The first is Natural Change, the result of the sum of Births and Deaths. The second is Net Migration, the sum of Immigration and Emigration. Combining these two processes determines whether the population of that year increases or decreases. To consider these components in more detail:

Births

The number of births may be expressed in various ways, often as the Total Fertility Rate (TFR). This 'measures the average number of children that a group of women would each have if they were to experience the age-specific fertility rates of the year in question throughout their childbearing lives' (Office for National Statistics (ONS) 2012a).

'The 'replacement level 'family size of 2.075 represents the number of children per woman needed for the population to replace itself in the long term (in the absence of migration), (ONS 2012a). Although births have risen during 2000-2009 (Table 3.1), the TFR remains below replacement level, having been so since the early 1970s.

Deaths

Life expectancy at birth has steadily increased over the last century as has life expectancy at age 65 (ONS 2012b). Deaths have fallen during 2000-2009 (Table 3.1)

Table 3.1 United Kingdom Components of Population Change (annual) 2000-2009

<table>
<thead>
<tr>
<th></th>
<th>Live births</th>
<th>Deaths</th>
<th>Natural change</th>
<th>Net migration &amp; other changes</th>
<th>Total population change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid-year to Mid-year</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000-2001</td>
<td>674</td>
<td>599</td>
<td>74</td>
<td>153</td>
<td>227</td>
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<tr>
<td>2009-2010</td>
<td>797</td>
<td>554</td>
<td>243</td>
<td>227</td>
<td>470</td>
</tr>
<tr>
<td>Annual average</td>
<td>731</td>
<td>584</td>
<td>147</td>
<td>191</td>
<td>338</td>
</tr>
</tbody>
</table>

Source: Data from ONS 2011 Table C Mid-1991 to Mid-2010 Population estimates:

Components of population change for the United Kingdom and constituent countries
Net Migration

Since the mid 1990s immigration has risen faster than emigration (ONS 2012c), with a resultant increase in net immigration especially during 2000-2009 (Table 3.1)

Discussion

Rising births and falling deaths combined to produce a three to fourfold increase in natural change which averaged 147,000 a year over the period 2000-2009. Net migration also increased with an average of 191,000 a year (Table 3.1).

Over this period the UK population increased by almost 3 million. Net migration was the largest component of change, contributing in the order of 55% to UK population growth.

Attention is drawn to the important demographic effect of ‘Population Momentum’. If life expectancy remained the same, and leaving aside net migration, it might be expected that after fertility falls below replacement levels population size would soon start to reduce. This is not necessarily the case because the population has a ‘momentum’, resulting from its existing age structure consequent upon previous fertility levels. This means that a population may continue to grow for years after fertility has fallen below replacement levels, as the increased number of babies born in previous years grow up and contribute to future childbearing.

Although the total fertility rate has been below replacement level since the 1970s, UK population has continued to rise due to population momentum, increasing life expectancy and net immigration.
Chapter 4

Some past changes in UK housing style and tenure

The aim of this chapter is to review information which might suggest that there has been a change in style or tenure of houses as a result of planners and builders responding to increases in population, for example by building more flats, or on brownfield sites relieving pressure to spill over onto greenfield sites. The focus of the enquiry was particularly on the last two decades. It proved however very difficult to definitely attribute changes to population growth, and the findings have therefore been categorised as ‘suggestive’, ‘equivocal’ and ‘not supportive’ of population growth being the reason for the change.

‘Suggestive’

Size of dwellings

A typical house built today is much smaller than one built in 1920. Although house sizes have remained relatively constant for the last 20 years they now contain on average 20% more rooms. England and Wales are the only countries in the European Union which have no minimum space standards for housing (Royal Institute of British Architects (RIBA) 2007). The current average floor space for new dwellings in the UK is 76m² compared with 92m² in Japan and 115m² in Holland. RIBA now recommend that minimum space standards should be introduced for all new homes in England and Wales.

‘Equivocal’

Land usage and building size

a) The building of “new towns”

These include for example Crawley, Milton Keynes, Cumbernauld, and East Kilbride. A more recent example is a proposed new town in Devon. East Devon District Council (EDDC) is currently supporting the building of a new town, Cranbrook, on 300 hectares Grade 1 agricultural land to the NE of Exeter. Currently this is for 2,900 dwellings but the eventual plan is to increase the size of Cranbrook to 7,500. In addition, EDDC has proposals for a second build of about 4,000 houses in The Pinhoe/ West Clyst or Clyst St Mary regions of East Devon, adjacent to Exeter City Boundary. If this development is approved a further 160 hectares (minimum) of grade 1 agricultural land will be lost. According to the latest development plan from EDDC (May2012) the main stimulus for the increased housing build at Cranbrook and East Devon’s west end is to provide affordable, sustainable dwellings for the projected increase in population resulting from projected increased migration largely from elsewhere in England, and due to forecast increased growth in jobs locally.

While the new town(s) are a response to increased population locally secondary to migration, it may be that the stimulus for the emigration from other parts of the country is the result of population growth increasing population density and competition for employment there.
b) Regeneration of brownfield sites.

Recent examples of the regeneration of brownfield estates in London include Stonebridge Estate, Harlesden and Abbot Wharf, and Tower Hamlets (CABE, 2011).

The master plan for regenerating the Stonebridge Estate included replacing 1,775 flats in a rundown 1960s high-rise estate with mixed-tenure housing in low- or medium-rise units. Of the 1,903 new homes, 59 per cent were available at affordable rents, 8 per cent through shared ownership and 33 per cent for private sale. The development is tenure blind (no visible difference between affordable and market dwellings).

Local residents were involved in the design of Stonebridge Hillside Hub, which provides – in one building – community, health and commercial facilities, together with 59 mixed-tenure apartments. Thus this major regeneration of a brownfield site has seen replacement or improvement of rundown high-rise flats, together with significant upgrading of the local street scene and overall quality of the neighbourhood.

In the Abbotts Wharf housing regeneration project, four residential blocks housing 201 units varying in storey height abut the Limehouse Cut Canal providing views for each unit. The canal is brought into the heart of the site, surrounded by a café and commercial units on the ground floor. Pedestrian and cycle paths across the site provide good access to courtyards. All these facilities help to create an inclusive community in this brownfield development.

It is unclear whether these examples of brownfield regeneration were only the result of local residents pressure or development marketing, or whether it also reflected population growth.

c) High rise flats

These were initially largely based on the French experience of Le Corbusier (For a very readable account see Kynaston, (2007, 2009), also Dunleavy (1981) and Hanley (2007). In many cases tower blocks were seen as a "quick-fix" to cure problems caused by crumbling and unsanitary 19th century dwellings or to replace buildings destroyed by wartime aerial bombing. Initially, they were welcomed, and their excellent views made them popular living places. Later, as the buildings deteriorated, they gained a reputation for being undesirable low cost housing. In addition rising crime levels and the partial collapse of Ronan Point in 1968 increased the unpopularity of tower blocks. Thus the experience of local authority high rise flats has been almost uniformly bad.

More recently, new high-rise flats are once again being built with accommodation seemingly targeted at young professionals. There appears to have been some slight increase in the number of blocks of flats in England between 2000/04 and 2005/06 rising from 438,000 to 454,000. In addition, the number of blocks with 50 or more flats rose by 50% from 4,000 to 6,000 (Table A4.1 appended). However, as reported by Trevor McDonald (17.04.2009), only approximately half were occupied in Leeds and Manchester (perhaps the cities that had seen most development).

Overall, population growth’s stimulus to the building of high rise flats is uncertain, especially recently when development marketing appears to be a major factor.
‘Not Supportive’

Changes in tenure

Quite marked changes in tenure have occurred especially in the last 20-30 years, notably in the doubling of home ownership from 30% in 1951 to 60% in 1991 (CLG c2008/2009) Population growth seems unlikely to have been contributory to this change.

Changes in household size.

The number of households in England increased from 20.25M in 2001/2 to 21.41M in 2008. During this time there was no appreciable change in the overall percentage of people in single or larger households up to 7 plus. Thus the percentage of single households remains at 28-29% and those of 7 plus at 1% (Table A4.2 appended. Thus in spite of an increase in number of households of 5.7% (which may reflect the increase in population), overall the distribution of the population between household sizes remains constant. There is nothing to suggest larger household formation as a response to population growth.

Discussion

A study by Pretty and Hacket (2009) drew attention to the serious shortfall in housing facing the UK, as did an earlier RIBA study (2007) which recommended that a building programme of 250,000 houses a year should be in place by 2016 to meet the housing shortfall. Pretty and Hacket estimated that there would be a shortage of approximately one million houses by the end of 2010. Although no specific mention is made of population, part of this increase in housing is likely to be to meet the increase in population projected to occur over the next 20 years. Clearly to meet this increase in the number of houses either more land will be used or land already used for building will have to be used more efficiently, and in either case increased density of housing may need to be considered.

While it is difficult to find incontrovertible evidence that previous changes in housing have been due to population growth, it is hard not to conclude that this growth has been at the very least a major contributor.

Some of the information in this chapter provides useful pointers for the future:

- The **High rise flats** section examples show that properly maintained and managed high rise flats, both private and local authority, are an asset to the housing stock. Thus, with sufficient resource, high rise flats could be part of the solution to the need for more houses without loss of prime agricultural land or areas of natural beauty.

- The **Regeneration of brownfield sites** section provides two examples of how it is possible to use brownfield sites to provide attractive and desirable housing. Further examples are provided on the CABE (2011) web site. The continued development of brownfield sites is to be encouraged so as to decrease the spread of building into green spaces.
• The Changes in occupancy section showed little evidence for changes in housing occupancy during the last 10 years. However, recent projections from ONS suggest that there will be a 54% increase in single occupancy by 2033. If this occurs, then the case for providing adequately resourced flats, including high rise, will be strengthened.
Population growth and housing expansion in the UK
Some preliminary considerations

PART 2
HOUSING AND POPULATION RELATIONSHIPS
(Chapters 5 to 7)

Population growth is the major contributory factor for housing expansion. In one planning model the population level accounted for 72% of projected household growth in England from 2008-2033. If net zero migration had been introduced in England in 2010, projected population growth by 2035 is 3 million compared to the principal projection of 9 million, with a potential 2 million reduction in the increase of households over this period.

(Population growth and housing expansion interdependence: national aspects - Chapter 5)

London is generally acknowledged to be in a housing crisis. The population is steadily increasing. New home starts fell between 2004 and 2009 although they are now increasing a little. Market prices in London are 70% higher than the country as a whole, while the rents of privately rented accommodation (comprising 20% of London households) are 64% higher. A third of a million families are on social or affordable housing waiting lists. Social trends such as adult children remaining at home, fewer children and multi-generational families may accelerate.

(Population growth and housing expansion interdependence: sub-national aspects - Chapter 6)

One million children were estimated to live in overcrowded homes in 2008/9, and this figure is likely to rise with an increasing population and decreasing house sizes in the future. New build size is already among the lowest in Europe. Children’s quality of life, health outcomes and life chances are all affected by overcrowding.

(Housing expansion: The social impact of insufficient provision - Chapter 7)
Chapter 5

Population growth and housing expansion interdependence: national aspects

Preliminary information

When considering the relationship between population growth and housing expansion, this chapter of the report will focus on England and the UK. England has 84% of the UK’s population and a population density of 401 people per square kilometre, compared to that for Wales 145, Northern Ireland 133 and Scotland 67 (ONS 2012a).

The Office for National Statistics (ONS) provides data for the UK, its constituent nations and sub-national areas. The Department for Communities and Local Government (CLG) provides housing data mainly for England, with other UK nation’s data held by the individual countries. CLG and ONS both hold 2008-based projections to 2033 which will generally be used for population/housing comparisons, but additionally ONS has now produced 2010-based projections to 2035 and beyond, which will be used when considering specific population aspects.

It may be thought that ‘houses’ and ‘homes’ are unambiguous terms but they embrace considerable variety of definition. CLG defines ‘households’ and ‘dwellings’ for statistical use, the definitions being subject to a number of caveats. In general terms, a ‘household’ comprises either one person living alone, or a group of people living at the same address with common housekeeping (sharing a living room or at least one meal a day). A ‘dwelling’ either contains a single household space or several household spaces sharing some facilities. With some exceptions communal establishments are not counted in overall housing supply (For further elaboration of these terms the reader should refer to CLG – Housing – ‘Definition of general housing terms’). Households are used in projections but dwellings are generally not.

Recent and contemporary population/housing relationships

The number of dwellings is very similar to the number of households, exceeding it slightly, and both are approximately half the England population. Thus in 2008 there were 22,398,000 dwellings, 21,731,000 households with an England population of 51,547,000. In calculating the average size of households and dwellings occupancy, the private household population should be used – 50,534,000 in 2008 – giving 2.33 persons per household (CLG2010) and 2.26 persons occupancy (CLG 2011).

Population and dwellings do not bear a constant relationship to each other. While it is difficult to know what temporal gap there should be allowed for between population increase and building new houses, Table A5.1 (appended) details five year periods of growth for England between 1990 and 2010, showing a marked decrease in the rate of building over the period, using the rate of new dwellings built per thousand increased population in each 5 year period as an index.
Another way of demonstrating this changing relationship is to compare the year on previous year annual rates of growth of the population and dwellings, as shown for England in Figure 5.1 below. The growth lines on the graph are certainly not parallel. This difference may reflect the extent to which building has to meet housing backlogs as well as immediate future demand, and the effect of the economic constraints of the period.

Apart from housing backlogs, empty houses contribute to housing shortages. There were 280,000 homes vacant for six months or more across the country at the beginning of 2012 (CLG 2012).

**Projected future relationships**

CLG data *(Table A4.3 appended)* predict a 27% expansion in the number of households in England between 2008 and 2033, with 5,805,000 additional households. The predicted increase in population was 18%, an increase of 9,355,000 persons, over the same period *(ONS 2009)*.

The 2008-2033 projections indicate the average household size in England will steadily decrease from 2.33 in 2008 to 2.16 in 2033 *(CLG 2010)*. One of the reasons for a possible future decrease in average household size is the projected large rise in the number of single households of 54% between 2008-2033 *(Table A4.3 appended)*. Such a projected change may in part be a consequence of the likely substantial increases in the over 65 yrs population, projected to rise from 16.5% of the total England population in 2010 to 22.9% in 2035, a 5.5 million increase *(ONS 2011)*. It is suggested this rise will be accompanied by more widows/widowers living alone. Another reason for more people living alone might be an increase in the divorce rate - in this case it is thought the proportion of the population who are divorced will not change between 2008 and 2033 *(ONS 2010)*. However the number, as against the proportion, may rise in line with population increase.

There are many factors which influence housing expansion, altering the directness of its interdependence with population growth. Thus a report by the National Housing and Planning Advice Unit (NHPAU - now subsumed by CLG) refers to factors such as mortgage levels, backlog of housing need, affordability, income growth and demand for second homes, as well as demographic trends *(CLG -
The overall direction of population growth and housing increase is however jointly upward, and population remains a major determinant of housing requirement. Reviewing the components of a 2008-2033 household growth model for England, CLG estimated that the population level contributed 72% of household growth, age structure 20%, and household formation behaviour 16% (CLG Table 415).

ONS 2010-based population projections

The range of projected England populations will clearly have a direct bearing on planning for future housing expansion. ONS have published an extensive series of projections, and the next two appended tables are derived from some of these.

The first (A5.2) compares the principal projections for the UK and constituent countries. England is projected to grow by almost a fifth by 2035, almost twice the increase in the other nations. The second table (A5.3) looks at the principal projection and eight of the 22 variant projections for England. In both tables the years selected, apart from 2010 and 2035, are the most recent year (2012) and 10 and 20 years hence. The extent of growth projected from 2010 is shown for these years in population numbers and as a percentage to facilitate comparison.

The percentage growth for the nine projections shown in the second table is graphically compared in the chart below, Figure 5.2.

The chart shows a striking difference between the principal projection and that for net zero migration projected growth by 2035, of 19% and 6% respectively.
The ONS principal projection growth is the middle bar of the three (HP, PP, LP) on the left. The fertility assumption for this is just below replacement level until 2015, then slowly declines to 1.85 in 2026 at which level it remains for the rest of the 25 year period (ONS 2011). Despite this projected low fertility and 30 years of previous below replacement fertility prior to 2010, this projection suggests the population of England will continue to rise until 2050 and beyond - mainly because of the contribution of net immigration, projected at 173,000 pa, and increasing life expectancy.

The net zero migration projection has the same fertility and life expectancy assumptions as the principal projection. By contrast the NZM projection indicates a slow increase to 55 million by 2035 with the addition of only 500,000 in the last 10 years, and with the beginnings of a population decline after 2050.

Some details of the other projections shown in the chart are given in note (1) below

CLG produced a summary table (Table 416) showing the projected number of England households for 2008-based variant projected populations – this indicated the Net Zero Migration projection would result in 2,081,000 less households by 2033 compared to the number which might result from the principal projection. It seems likely that a policy of Net Zero Migration would have a substantial effect on population growth and housing expansion.

One inevitable consequence of slower population growth is the increase in the ratio of the retired population over 65yrs to the working population. This change is happening in any case because of rising life expectancy with the number of over 65 year olds projected to increase in England by 65% from 2010 to 2035 (ONS 2012a). The definition of pensioners and working age will change over the 2010-2035 period and when this is allowed for the principal and NZM projected levels in 2035 are 344 and 401 pensioners per 1000 persons of working age respectively (compared to 315 in 2010) (ONS 2011, 2011e).

Note (1)
The high (HP) and low (LP) population growth projections are on the basis of high or low values respectively of the three components of growth – fertility, life expectancy and net migration (ONS 2011a). The low population projection suggests the beginning of a fall in population around 2050.

The three fertility related projections (HF, RF, LF) all have a rising life expectancy, and a positive net migration of 173,000 from 2016 onwards. The Total Fertility Ratio (TFR) of the replacement projection is 2.08 throughout the period. The low fertility projection has a TFR of 1.65 from 2018 onwards. The high fertility projection has ten years of TFR above replacement falling to TFR 2.05 from 2025 onwards. None of the three projections show any decline in population by 2050 (ONS 2011 b, c, d).

All the three migration projections (HM, LM, NZM) have the same fertility and life expectancy assumptions as the principal projection, while the high and low migration projections have assumptions of net immigration from 2016 of 233,000 and 113,000 respectively. For both these projections the population continues to grow until 2050 and beyond.
Discussion

There seems little doubt that there is a causal link between population growth and housing expansion. If this is the case, housing need may be lessened in the long term by reducing population growth. Increasing or static life expectancy is a given in current population projections, so that slowing population growth depends on changes in fertility and migration.

Fertility has been below replacement level for c.30 years in England and is projected to remain so. It is likely that c.78% of births are to mothers of first and second babies, while 22% of births relate to third or more children. If the proportion of mothers having more than two children is to change, and bearing in mind that average family size has already been smaller than before for some while, then a long period is likely to be necessary to enable attitudes to family size to change even more. If it took 20 years for the proportion of mothers having more than two babies to fall by a half or as much as two thirds, it is suggested there would be between 1 and 1.4 million fewer births respectively by 2035 in England, compared to the ONS principal projection (*For assumptions for this calculation please see appended Estimate A5.1*).

The data for the effect of the ONS net zero migration projection given in the previous section are calculated as though it had existed from 2010. A possible scenario is for a gradual reduction in net migration until zero net migration commenced in 2022, continuing until 2035. On this basis it is suggested that there would be at least 3.5 million less population growth in England by 2035 as a result, compared to the ONS principal projection (*For Assumptions for this calculation please see appended Estimate A5.2*). While altering migration will have no effect on global population levels, it will almost certainly reduce housing demand in England, as well as providing other benefits related to population density.

It should be stressed that while ONS data contribute in part to the calculation of the above scenarios, the results have not been endorsed by ONS; they are unofficial estimations intended to provide a pragmatic view of what might be achieved to reduce growth, both population and housing, by 2035 (*Please see ‘Recommendations for further enquiry’ No 1*).

Net zero migration provides a unique possibility to reduce and eventually stabilise population growth, with the flexibility of a variable period to enable net migration to fall before implementing a net zero migration policy. Both migration and fertility require public support for change, but once change is agreed reducing migration has the advantage that it is implemented by a legislative process. The subject of migration is already in the public domain but much more detailed debate is required to properly elucidate the pros and cons of net zero migration. It is essential to assess any disadvantages against the background of the damage caused by continuing population growth, and its associated housing issues (*Please see ‘Recommendations for further enquiry’ No 2*). This is an opportunity for the community to explicitly consider and influence future UK population levels.
Chapter 6
Population growth and housing expansion interdependence: sub-national aspects

The sub national picture

Population projections 2008-2033 show uneven growth across England in both total and percentage increase. For example, five English Regions are projected to achieve over 20% population growth during the period, whilst two Regions project growth over the period of less than 10%. In absolute terms, some Regions are predicted to experience population growth of over one million people more than other regions by 2033. (Royal Commission on Environmental Pollution (RCEP) 2011a)

Factors influencing housing demand and supply

Housing demand is related to real income and number of households. Housing expansion is likely to be uneven across England because of differing rates of economic growth, population growth and changes in household composition, and these in turn are dependent on social, economic and political factors. In terms of economic growth, the Office for National Statistics (ONS) Regional data indicate that those areas in and surrounding London have grown significantly faster than the rest of the country. The increase in imbalances ‘seems to have been a continuation of trends that began in the 1970s and 1980s, as the UK economy began to adapt to international economic trends such as globalisation and technological progress’ (Department for Business, Innovation and Skills 2010).

Housing demand, prices and real incomes

In economic terms, there is an established correlation between real incomes and demand for housing. If real incomes rise by 1%, then demand for housing rises by more than 1% (Nickell, 2011). The evidence also suggests that over the long-term, a 1% rise in real incomes increases house prices by 2% if the housing stock remains unchanged (Nickell 2008).

House building and residential land prices

Residential land prices vary greatly across England. For instance in 2007, residential land in most of London was over £6 million per hectare, in the Home Counties surrounding London between £4-6 million, with most other residential land in England much lower, between £1.25-4 million a hectare (CLG Property Market Report July 2007, quoted in Nickell 2008). Expectations of future trends in housing demand and constrained land supply policies have in the past inflated the price developers are prepared to pay for land to stay in a certain market (see, for instance, Gillan and Fisher 2002).

Government economic stimulus

The Chancellor announced £30 billion of spending in a new National Infrastructure Plan over a decade (HM Treasury 2010). If London and the South East are considered together they account for 84% of planned spending as compared to just 6% in the North of England. The London Development Agency remains the only Regional Development Agency not abolished by the Coalition Government.
Government incentives

The new Affordable Rent model gives housing associations the flexibility to raise rents for new tenants at anything up to 80% of local market rents to provide funding for new affordable homes, now that government grant has been reduced (Department for Communities and Local Government 2011). However, in areas of the country where rents and affordable housing needs are already very high, the Government’s rent cap\(^1\) for housing benefit claimants will make setting rents at levels people can actually afford very difficult.

The New Homes Bonus, which from April 2011 has offered local authorities an incentive to stimulate housing development by match-funding additional Council Tax for each new home completed for the next six years, is viewed by industry bodies to have very limited impact on the number of new homes built, particularly in areas of high market prices (e.g. Royal Institute of Chartered Surveyors 2011). A number of bodies are calling for a more radical range of incentives, including supporting economic growth in the former regeneration areas (e.g. Town and Country Planning Association (TCPA) 2010).

Affordable housing\(^2\)

There has been little change in affordability levels, despite the recession. In 2011, while house price to earnings ratios were below their peak in all regions, the North remains the most affordable English Region, using the house price to earnings measure, at 4, whilst the least affordable Region remains London, with a rise in house price to earnings ratio from 7.2 to 7.4 (Nationwide House Price Index Q 4, 2011).

Market prices in London are 70% cent higher than in the country as a whole, 31% higher than in the South East region and 50% higher than in the East of England (p.89, London Plan 2011).

Affordable housing is generally acknowledged to be a politically sensitive policy area. Total affordable housing completions in the financial year 2010/11 was 55,860 units, of which 12,870 were for London (23%) (Home and Communities Agency 2011). A YouGov poll (17 Feb 2012), commissioned by the National Housing Federation, found that 4 out of 5 (81%) parents with children living at home were concerned about them being able to afford to live in London in the future. In the run up to the London Mayoral elections in 2012, London authorities offering people living in the capital the possibility of relocating to affordable housing in the Midlands or the North hit the headlines (e.g. www.guardian.co.uk/commentisfree/2012/apr/24/london-vulnerable-families-forced-north).

\(^1\) From April 2011 the Government removed the five bedroom Local Housing Allowance rate so that the maximum level is for a four bedroom property, and introduced absolute caps so that Local Housing Allowance rates cannot exceed: £250 for a one bedroom property; £290 for a two bedroom property; £340 for a three bedroom property; £400 for a four bedroom property.

\(^2\) Affordable housing is the sum of social rent, intermediate rent and low cost home ownership. Affordable homes are defined in line with Planning Policy Statement 3: Housing (published June 2011) as housing units (or bed spaces) provided to specified eligible households whose needs are not met by the market.
The Government’s Local Decisions: A Fairer Future for Social Housing (Department for Communities and Local Government 2010) consultation paper suggested that residency criteria might be appropriate to allocate affordable housing. Proposed changes to the definition of the homelessness duty may have a similar impact, with the ability to discharge the duty via an offer of private rented accommodation without the tenant’s consent reducing the apparent scale of local homelessness.

Greater South East versus ‘the rest’

As McCarthy, Pike and Tomaney point out (Smith Institute 2012), the UK is marked by persistent spatial inequalities that are exceptionally wide by international standards. Current policy-makers and planners have largely adopted the economic geography models, and focus on one major economic agglomeration, situated in London and the South East: ‘It is rather like moving from a nine-region model of England under Labour to a two-region model under the Coalition,’ Hildreth and Bailey suggest (Smith Institute 2012 p29).

The Greater South East (comprising the old government office regions of London, the East of England and the South East) accounts for 30% of England’s electorate, and 40% of its national output and tax-generating capacity (Smith Institute 2012). This region is the powerhouse of the English economy, and is where pressure for new homes is the greatest. The London Plan (Mayor of London 2011) supports the continued economic growth of the region.

The London picture

Population profile

The London plan notes a straight line population growth projection to 2026. However some economic commentators expect that the upwards trend will taper off due to political pressures, capacity constraints, and the UK’s relegation in the economic prosperity leagues (e.g. Walavat 2010).

London has been the most popular destination for incoming migrants to England since at least 1991. There has been, however, a noticeable decrease in the share of migrants going to London (down to 31% in 2010) when compared with the peak in the late 1990s (48% in 1998), (Migration Observatory 2012).

New homes

With more than 350,000 families on social or affordable housing waiting lists and 237,000 families living in overcrowded conditions, London is generally acknowledged to be in a housing crisis.

The London Plan notes the number of existing homes in the Region as 3.1 million (Mayor of London 2011 p.102). There is a broad requirement between 2007-2017 for an additional 326,000 homes (144,000 more market homes and 182,000 more affordable homes), but the Plan notes this is a ‘minimum’ and to some extent ‘will depend on factors like household formation and out-migration rates’.

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New home starts in London dropped from around 25,000 in 2004, bottoming to around 10,000 in 2009 and 2010, and now increasing a little. Whilst there were 214,825 units with planning permission in London in 2011 (Knight Frank 2011), only around 43,000 units were currently being built. Contributing factors for the decline have included the withdrawal of social housing grant for developers, issues with planning applications, and subdued financing due to the economic climate.

From May 2012, the London Development Panel, set up by the Greater London Authority, will use land and property assets handed over to it from the Homes and Communities Agency (for instance former hospital sites and further education colleges) to accelerate development in the capital. This amounts to some 500 hectares (1.2 million acres).

Tenure mix

Almost one in five London households is in a privately rented home. In London, average houses prices are 51% higher while private rents are 64% higher than the rest of England (Greater London Authority (GLA) 2011). The GLA also says first time buyers are paying an average deposit of 28%, about £97,000.

The London Plan identifies a number of places for housing developments, either as Opportunity areas or Areas of intensification. Opportunity areas include ‘corridors’ running out from central London through inner and outer London to beyond the city boundaries, and include:

- Thames Gateway to the east of London – a national priority area for regeneration, and one with relatively high levels of deprivation.
- Western Wedge, where growth opportunities surround Heathrow. The potential for regeneration offered by this east-west axis is one of the main drivers behind plans for Crossrail.
- Lea Valley, leading to the London-Stansted-Cambridge-Peterborough growth corridor – another national priority area, and home to around 20% of London’s population and housing growth potential.

It also identifies areas for ‘intensification’ of housing density such as Dalston in Hackney and Holborn.

Discussion

The Royal Commission on Environmental Pollution (2011b) commissioned Professor Fothergill of the Centre for Regional Economic and Social Research at Sheffield Hallam University, to review the prospects for promoting regional economic growth. His evidence suggests that it should be possible to ease the population pressure in the south-east of England by promoting regional economic development in the rest of the UK – although such a policy would not be cheap. But it is important to compare the costs of achieving change in regional population distribution with the costs of accommodating the environmental consequences of a continued concentration of population in certain parts of the UK, most notably the south-east.’
The pressure for more affordable homes in the Greater South East, and the possibility of rationing housing subsidised by the public purse through cuts in housing allocations, or in more indirect ways, may cause significant social and economic dislocation, social segregation and political furore.

A recent report commissioned by Shelter (Cambridge Centre for Housing and Planning Research) showed that by 2016 only 20% of inner London neighbourhoods will be affordable to housing benefit claimants. In outer London, the percentage falls from 79% in 2010 to 44% by 2016.

Moreover, people requiring subsidised housing are often vulnerable, and locating to ‘cheaper’ housing in other areas of the country, away from family and friends, may have a detrimental effect on their well-being (blogs.lse.ac.uk/healthandsocialcare/2012/05/04/moving-people-out-of-borough-at-what-cost).

In the longer term, it may be that people themselves make some adjustments in their living habits to match their household size to affordability. We may see the acceleration of social trends such as more adult children remaining in the home for longer, fewer children, and more multi-generational households.\(^3\)

In the meantime, population growth and associated housing expansion in parts of the country will almost certainly exacerbate social and other problems.

\(^3\) See for example, Guardian 6 December 2011

(This article was researched and written in Spring 2012 and therefore does not take account of subsequent or impending legislation or policy changes)
Chapter 7

The social impact of insufficient provision

There are a range of social impacts resulting from the mismatch between population growth and housing supply. For many of these issues there is not a direct linear correlation as there are many other factors involved. Barker quotes Martin Wolfe ‘We cannot have a rising population, spacious housing for each household and an unchanged quantity of undeveloped countryside’ (Barker 2004). The number of households in the UK is expected to rise to 33 million by 2031 (HM Treasury 2010). The Government has recognised that this presents a number of challenges with regards to the provision of housing. ‘We face significant long term demographic pressures from a growing and more mobile population’ which will make the Government Housing Policy objective of ensuring that everyone has a decent home more challenging (HM Treasury 2010).

Households and Overcrowding

The most significant change in household composition in the next 20 years is likely to come in the form of 5 million single person households. 42% of this 5 million is expected to be made up of people over 65. (HM Treasury 2010). The average household size is therefore likely to decrease from 2.32 people per household as it was in 2006, to 2.13 people by 2031 (Communities & Local Government Department (CLG) 2009). The numbers of households containing married or cohabiting couples and all other household types look to remain fairly constant within the current predictions (CLG 2009).

The size of new build properties in the UK is among the smallest in Europe, with average floor space at 76m\(^2\) while in France it is 113m\(^2\) (British Broadcasting Corporation (BBC) News Magazine 2009). A survey of people living in houses built between 2003 – 06 found that ‘almost half claimed they did not have enough room for their furniture, while more than a third said there was not enough space in the kitchen for appliances’ (Koster 2009). These reducing size standards also relate to new Social Housing where there are often already issues of overcrowding due to the number of people living in the property. In Social Housing, the bedroom standards for assessing housing requirements of households are that no-one has to share a bedroom unless they are a couple, or are children under 10 or aged 10 – 21 and are the same sex (Hughes & Lindsay 2011). Using this measure one million children live in overcrowded conditions and 3% of houses were overcrowded in 2008/9 (Hughes & Lindsay 2011). With increasing population pressures and decreasing house sizes in the next 20 years, the rate of overcrowding is likely to increase.

Studies of overcrowding indicate that an individual’s quality of life, health outcomes and life chances are all affected by overcrowding. Children suffer more health problems when they live in overcrowded conditions, particularly respiratory conditions such as asthma and bacterial infections notably meningitis (Hughes & Lindsay 2011). These findings are backed up by a literature review into the subject conducted by the Office of the Deputy Prime Minister (ODPM) (2004). Overcrowding in childhood has also been shown to have an impact on the physical health of those children in adulthood. There is also an identified impact on the mental health of children living in overcrowded conditions and their parents (Reynolds 2005). Harker (2006) identifies that a child’s development is affected by overcrowding, both socially and educationally. From an educational perspective children may not have room to study and do their homework which will affect their success at school. They may also be affected by increased incidence of illness which causes them to take more time off school. Sleeping arrangements are usually
less than satisfactory in overcrowded households and therefore children are more likely to suffer from sleep disturbance which also affects their ability to learn and concentrate at school (Harker 2006). The increased tension that overcrowding causes can impact on family relationships (Reynolds 2005).

In Reynolds study, respondents identified that there were often no safe places for the children to play outside, further compounding the effects of overcrowding. These issues associated with overcrowding and lack of outside space could increasingly impact on owner occupiers now living in the smaller new housing that has been built in the last 10 years. A study of housing in London carried out for the Mayor of London (2006) identified a lack of safe, private outdoor space as an area for concern in new housing developments. Children who do not have places to play within sight of their parents may be more likely to find more public places to socialize, which may increase the chances of their being subject to undesirable influences.

Social Housing

There are currently 1.8 million households on Local Authority waiting lists for Social Housing (Shelter 2012). Social Housing stock has been lost through the ‘right to buy’ scheme and has not been replaced through the building of new social housing. The number of new social houses being built declined from 42,000 per year in 1994/5 to 21,000 per year in 2002/3 (Barker 2004). The past 30 years have seen a record low level of social house building (Shelter 2012).

The number of people waiting for housing has led to an increase in the amount of households accommodated in temporary housing. Between 1995 and 2003, the number increased from 46,000 households to over 93,000 (Barker 2004). Since then, government policies seem to have helped reduce this figure to 49,390 in December 2011, although this was a 1% increase on the 2010 figures (Wilson 2012). The waiting times related to the increases in the waiting lists are also significant. A study by the National Housing Federation identified that there were 589,000 households on the Social Housing waiting lists in the North of England in 2011 (Bury 2011). Those households have to wait an average of 4.4 years to get housed, which is 3 times longer than it was a decade ago (Bury 2011). Newham Borough Council publishes its waiting times on its website. The figures for 2011 range between a wait of 7 years for a ground floor bedsit to nearly 14 years for a 4 bedroom house (Newham Borough Council 2012). The number of new lettings of Social Housing decreased from 250,000 in the 1990’s to 170,000 in 2005 (Hills 2007).

Local Authorities have to let Social Housing to households against a fair and transparent set of criteria. The criteria is based on an assessment of Housing need, which will relate to issues such as overcrowding and the suitability of the housing for someone’s health needs, the length of time they have been waiting and their family circumstances. The lack of social housing and the application of priority criteria tend to mean that it is the most vulnerable groups in society who get allocated the housing which can lead to a concentration of people from these groups in certain areas. Of the total, 60% are economically inactive which includes 31% of people who are retired, and 6% of people who are unemployed. 44% of the people living in social housing have an income of less than £10,000 per year (Shelter 2012). People in the qualifying categories may have other vulnerabilities such as disabilities and mental health problems.

There were 4 million people living in social housing in 2006, 80% of those tenants will have been there for more than 10 years (Hills 2007). Half of all social housing is in the poorest neighbourhoods and new social housing continues to be built in these poorer neighbourhoods (Hills 2007). This may increase the
potential for social problems associated with social housing which could be mitigated to some extent if housing was more mixed. The vulnerability of groups such as the elderly and disabled who need social housing may also be increased if they are living in areas of high deprivation.

Single homelessness has generally decreased over the past decade. Statutory figures show a decline, although accurate data are very difficult to get as some types of homelessness are hidden. Homelessness occurs for a complex variety of reasons not only because of an absolute lack of housing provision. Current economic conditions, changes to welfare and reduced investment in social housing and the changes to Housing Benefit and Local Housing Allowance seem likely to contribute to an increase in rent arrears, evictions and therefore potentially to homelessness (Jones & Pleace 2010).

Private Housing

68% of households are owner occupiers (Communities and Local Government 2010). Prices remain high despite current economic conditions. The average house price in England and Wales in January 2012 was £161,545 (Land Registry 2012). The area with the highest house prices is London with an average price of £351,305, and the lowest prices are in the North East at £102,066. House prices overall have increased by 161% between January 1995 and July 2011 (King 2011). The Centre for Economics and Business Research has predicted that ‘house prices will rise by 15% over the next 5 years as a shortage of homes counteracts economic gloom’ (Lambert 2012). Average house prices are 6.5 times greater than the average earnings of a single person (Office of National Statistics 2012).

The disparity between incomes and house prices may make it difficult to get on to the housing ladder, particularly for young people. The average age that a person buys their first house is 29 years old, according to a Halifax report from September 2011. In London, this increases to 34 years old (King 2011). The Post Office Mortgage research suggests that the average age of a first time buyer is likely to be 40 by 2020 (Dutta 2011). The number of adults returning to live with their parents has increased to 3 million, 4 times higher than the level in 1979 (Dutta 2011). These Adult Children in the UK, ‘cite lack of affordable housing as a key reason for not moving out’ (Hughes & Lindsay 2011).

The Private rented sector currently accounts for 14% of housing provision. Currently there are 3.6 million households privately renting, which includes 1 million families with children: this is double the number that there was 5 years ago (De Santos 2012). Privately renting continues to provide a relatively insecure housing option. Nevertheless, about 3 million adults expect to be renting for at least 5 years although the typical term of an Assured Shorthold Tenancy is 6 to 12 months. Families who are privately renting are 10 times more likely to have moved in the last year then families with a mortgage (De Santos 2012).

Current Benefit reforms are likely to further impact on the private rented sector. Changes in the Local Housing Allowance which is aimed at reducing the cost of Housing Benefit is likely to clash with an increased demand for private rented accommodation from middle income households who cannot afford a mortgage. This will further exacerbate the shortfall in housing as house building rates remain much lower than the growth in the number of households (Pawson & Wilcox 2011).
**Discussion**

It is clear that house sizes are reducing as developers try to meet Government density standards for new housing and maximise the amount of housing that is built on any piece of land. The effects of overcrowding within social housing have been well researched and are shown to have impacts on the physical and mental health of family members particularly children. These effects could start to be felt in the Owner Occupied sector as house sizes reduce. The effects of overcrowding are set to remain a problem in the social housing sector.

The waiting times for social housing seems set to remain long for the foreseeable future with ever rising numbers of people requiring housing and no increase in the amount of provision being made. The situation will continue to lead to the necessity to focus all available social housing on the most vulnerable groups causing the concentration of different, and not necessarily compatible, vulnerable groups in the same areas.

House prices are likely to remain many times greater than average earnings forcing young people to remain living at home with their parents for longer. The idea of secure housing is gradually being eroded as more people enter the private rented sector through their own means or through the receipt of Housing Benefit. Recent changes to Housing Benefit make a relatively insecure housing option more insecure.

While homelessness is usually caused by many complex factors, there is a risk that homelessness could become increasingly prevalent because of factors directly related to housing.
Population growth and housing expansion in the UK
Some preliminary considerations

PART 3
HOUSING IMPACTS ON THE
COMMUNITY AND ENVIRONMENT
(Chapters 8 to 11)

Between 2000 and 2009, only 38% of housing developments were built on greenfield land. During this period, all development, including non residential, reduced the amount of agricultural land by 0.4%. Whether these levels of greenfield development continue will depend on recent changes in planning legislation and the availability of suitable brownfield land. (Housing expansion: its effect on greenfield space – Chapter 8)

One of the options available to address the impact of housing expansion on sustainability is to reduce future population and housing growth, while staying on course in reducing resource consumption. In time, this should result in a level of sustainability whereby the community may be able to live with sustainable resource provision in equilibrium with their environment. (Housing expansion: its effect on sustainability – Chapter 9)

There are problems in defining what should be included in both residential and total UK carbon emissions, so that projecting these data is difficult. Nevertheless, it is probable that for any given per capita level, the more people and houses there are the greater the total residential carbon emissions. (Housing expansion: the effect on climate change mitigation and adaptation – Chapter 9)

Concern for adequate future services, appropriate infrastructure provision and the construction of well designed homes in keeping with the local area are fundamental when considering planning applications. Failure to address these satisfactorily is likely to generate opposition from all or part of the community to the application. The primary cause of planning conflicts concerning new homes relates to continuing population growth. (Attitudes towards new housing developments – Chapter 11)
Chapter 8
Housing Expansion: its effect on greenfield space

The Scale of Housing Development on Greenfield Land

Greenfield land is land that has not been developed before. However, it includes land with farm buildings, and excludes gardens and allotments, and buildings associated with outdoor recreation (Department of Communities and Local Government (CLG) 2011a). In the ten years 1999-2008, some 27,000 ha of greenfield land was acquired for residential development, about half the area earmarked for all residential development (Table 1) and about half the total greenfield area acquired for all developments, including industry and commerce, transport and utilities etc., (CLG 2011b). New houses were actually built on rather less – about 19,000 ha – during the same period, suggesting about a third of the land acquired was ‘banked’ for future development (CLG 2011c).

Table 8.1. Gross annual average change in previous uses to residential use in England, 1999-2008. (including land on which no dwellings were built). (CLG 2011b)

<table>
<thead>
<tr>
<th>Undeveloped Land</th>
<th>Area (ha)</th>
<th>%</th>
<th>Developed Land</th>
<th>Area (ha)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>2,070</td>
<td>76</td>
<td>Minerals and landfill</td>
<td>40</td>
<td>1</td>
</tr>
<tr>
<td>Forestry, open land and water</td>
<td>190</td>
<td>7</td>
<td>Defence</td>
<td>20</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Outdoor recreation</td>
<td>100</td>
<td>4</td>
<td>Residential</td>
<td>1,130</td>
<td>40</td>
</tr>
<tr>
<td>Urban land not previously developed</td>
<td>350</td>
<td>13</td>
<td>Transport and utilities</td>
<td>70</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Industry and commerce</td>
<td>370</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Community services</td>
<td>230</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Vacant and Derelict</td>
<td>940</td>
<td>34</td>
</tr>
<tr>
<td>All Undeveloped Land</td>
<td>2,710</td>
<td>100</td>
<td>All Developed Land</td>
<td>2,800</td>
<td>100</td>
</tr>
</tbody>
</table>

Almost two-thirds of the greenfield area developed for residential use was in East Midlands, East of England, South East and South West regions (Table 2). Some 31% was provided on the edge of towns and about 20% within the urban area, being partly accounted for by the loss of land for outdoor recreation, especially playing fields (Bibby 2009). The National Playing Fields Association calculated that, between 1992 and 2005, the number of pitches declined from 78,000 to 44,000 and number of sites from 26,000 to 21,000 (MacLeod 2005). The conversion of barns in areas of dispersed settlements close to centres of population has been a significant route for developments in rural areas. Between 1998-2003, dwellings in isolated farmsteads increased by 5–6%, and in hamlets by almost 9% (Bibby 2009).

Table 8.2. Regional distribution of greenfield land developed for residential use in England, 2000-2009 (CLG 2011d)

<table>
<thead>
<tr>
<th>Region</th>
<th>North East</th>
<th>North West</th>
<th>Yorks &amp; Humber</th>
<th>East Midlands</th>
<th>West Midlands</th>
<th>East of England</th>
<th>London</th>
<th>South East</th>
<th>South West</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area (ha)</td>
<td>963</td>
<td>1,701</td>
<td>1,836</td>
<td>2,830</td>
<td>1,527</td>
<td>2,659</td>
<td>170</td>
<td>2,519</td>
<td>2,775</td>
<td>16,939</td>
</tr>
<tr>
<td>%</td>
<td>6</td>
<td>10</td>
<td>11</td>
<td>17</td>
<td>9</td>
<td>16</td>
<td>1</td>
<td>15</td>
<td>16</td>
<td>100</td>
</tr>
</tbody>
</table>
Impact on Farming and Food Production

Over the ten years 2000-2009, about 39,000 ha of agricultural land in England was approved for all development purposes, or c. 0.4% of the total agricultural area (CLG 2011e) and considerably less than the area converted to farm woodland (i.e. 60,000 ha, 1998-2008, Bibby 2009).

In 2009 the UK was 59% self-sufficient in all foods and over 72% self-sufficient in foods that can be produced in this country. This is relatively high by historical standards but self-sufficiency has been in steady decline since the mid 1980s, falling by 15% since 1995, or 1% p.a. (Department for Environment, Food and Rural Affairs 2010). Past productivity gains of up to 2% p.a. were achieved under the Common Agricultural Policy and more than compensated for the loss of agricultural land and population growth, but for a variety of reasons such productivity gains are unlikely to be achieved in the future (Bibby 2009; Pollack 2011).

By 2030 food self-sufficiency will have fallen to 51% for all food and 62% in foods that can be produced in this country, assuming: Office of National Statistics (2011) population projections are correct; no farming productivity gains; no significant loss of agricultural land; and no significant change in diet. The decline in food self-sufficiency may be further exacerbated by the loss of ‘brownfield’ allotments and large gardens taken for new housing. The number of allotments fell from 1.4 million in 1943 to 0.3 million in 1996 (allotment.org.uk 2012).

Impact on Biodiversity

Over the past 25 years, populations of once common species such as hedgehogs, house sparrows and common toads have declined by more than half, with the extinction of many species in some areas (Royal Commission on Environmental Pollution 2011). Plants have fared no better. For example, one species of vascular plant was lost every two years on average from each English county during the 20th century; rates of loss were highest from southern and eastern counties where land use pressures are greatest. There have also been major declines (> 80%) in farmland birds since the 1960s. Butterflies have also suffered; thus 93% of habitat specialist butterflies and 76% of all butterflies have declined since the 1970s. Overall, across our best known groups, about one in four species is at an historically low population level or significantly threatened.

The Commission concluded these dramatic changes are due to demographic change and caused mostly (but not exclusively) by changes in land use, particularly for agriculture. More people imply more households, more roads, more cars and more journeys, and more infrastructure in general, which ultimately contribute to the loss of biodiversity through habitat loss, habitat deterioration, intensification of agriculture, commercial forestry and nutrient enrichment.

The severe decline of wildlife on farmland and in farmsteads due to agricultural intensification over the past 50 years is well documented (Boatman et al., 2007), but the impact of other changes less so. While some greenfield development sites may have little value for wildlife, the impact of development can extend well beyond the site. Thus a study in Breckland found that new housing development and trunk roads adversely affected the distribution of stone curlews for a distance of at least 1,000 metres, and maybe up to 2,000 metres, while non-trunk A-roads had a similar effect for up to 500 metres (Sharpe et
al. 2008). Similarly, with new homes come more domestic cats, which in one study were estimated to have killed at least 92 million animals nationwide in just five months, including 57 million mammals, 27 million birds and 5 million reptiles and amphibians (Woods, McDonald and Harris 2003).

**Impact on Amenity**

The impact of new development on amenity is already the subject of a Population Matters statement ‘Space and amenities’ (Population Matters 2011). Public concern for the loss of amenity is further illustrated by the case studies in Chapter 11, and by support for organizations such as the CPRE, an influential pressure group with 70,000 members that campaigns for a beautiful and living countryside. Key points in their housing manifesto (CPRE 2012a) include:

- A strong planning system that favours urban regeneration and brownfield site development before the use of greenfield land is needed;
- A national target for new homes built on ‘brownfield’ land of at least 75%, at a minimum density of 50 dwellings per hectare;
- Decisions on the location and scale of new housing should be based on robust assessments of environmental capacity and local need, tested and agreed through the local development plan process;
- Better use of the existing housing stock, including under occupied homes, should be made and a national target for reducing the number of empty homes should be set.

The CPRE endorses the National Housing Federation’s report on affordable housing to meet the needs of locally-connected people in rural areas by, if necessary, building houses on ‘rural exception sites’ on greenfield land outside the village envelope.

**Discussion**

Over the ten years 2000-2009, only 38% of housing developments were built annually, on average, on greenfield land (CLG 2011d), consistent with government policy to prioritise the redevelopment of brownfield sites. Moreover, 20% of the greenfield area lay within urban areas (Bibby 2009). Thus adverse impacts of new housing developments on amenity and wildlife have not been restricted to greenfield land. Higher housing densities in urban areas and villages have often been achieved through ‘garden grabbing’, or the development of playing fields and other urban green space. Loss of urban amenities accompanied by higher housing densities has led to increased traffic congestion, pavement parking, and pressure on schools, health facilities and other local services. Wildlife have also suffered. Conservation organisations tend to assess development on a ‘case-by-case’ basis, recognising brownfield and derelict sites can also provide important wildlife sites (e.g. Environment Agency 2003). Many such sites have been lost to development and once common urban species such as bats and the house sparrow and swift have significantly declined (British Trust for Ornithology 2012).

The extent to which the past is any guide to the future has recently been thrown into doubt, not only because the supply of brownfield land may now be exhausted in some areas but also because of new legislation and planning guidance. The Localism Bill devolves planning powers to local authorities and ‘neighbourhoods’, while the National Planning Policy Framework (NPPF) provides the framework within which local people and their councils can produce local plans that reflect the needs and priorities of their communities. The NPPF (CLG 2012) contains several guiding principles that councils must adopt
regarding the use of greenfield land, and the protection of biodiversity, agricultural production and amenity, *inter alia*:

- Plans should allocate land with the least environmental or amenity value, where consistent with other policies in the Framework;
- Planning policies and decisions should encourage the effective use of land by re-using land that has been previously developed (brownfield land), provided that it is not of high environmental value. Local planning authorities may continue to consider the case for setting a locally appropriate target for the use of brownfield land;
- Local planning authorities should take into account the economic and other benefits of the best and most versatile agricultural land. Where significant development of agricultural land is demonstrated to be necessary, local planning authorities should seek to use areas of poorer quality land in preference to that of a higher quality;
- Local planning authorities should set criteria based policies against which proposals for any development on or affecting protected wildlife or geodiversity sites or landscape areas will be judged. Distinctions should be made between the hierarchy of international, national and locally designated sites, so that protection is commensurate with their status and gives appropriate weight to their importance and the contribution that they make to wider ecological networks.

Doubts have been expressed as to how well these principles will be adhered to, but many amenity and wildlife conservation groups are cautiously optimistic (*e.g.* *Campaign to Protect Rural England 2012b; Royal Society for the Protection of Birds 2012*).
Chapter 9
Housing expansion: its effect on sustainability

This chapter looks at the effects of population and housing growth in the UK on sustainability, in terms of domestic services required for households, as well as the general infrastructure required for the people living in them.

Population growth drives the demand for housing, infrastructure, and commerce (Natural England 2009). The UK’s population is expected to increase from 2008 to 2033 by 10.2 million people, roughly the equivalent of an additional four more Greater Manchester Metropolitan Areas. To meet this additional demand, provision will have to be made for a substantial additional infrastructure such as roads, a higher capacity rail network, shops, places of work, parks and other facilities. Facilities supplying domestic services such as sewage disposal, water, and energy will also need to be scaled up to meet the growing demand.

Energy

Between 1970 and 2011, the number of households in the UK increased by 35% and the population by 11%. However domestic energy consumption rose by 32% reflecting higher per capita consumption (Department of Energy and Climate Change (DECC) 2011). Higher disposable income means that there are now many more domestic appliances, and more energy is used for lighting homes. Interior temperatures have risen significantly despite external temperatures also rising in the same period. These factors, tied in with a higher number of people, have contributed to an increase in energy consumption (DECC 2011).

The rise in consumption can also be attributed to a rise in the number of single person households, possibly led by higher income levels, as well as higher life expectancy. In 2008 there were 22 million households in England, and of those around 7 million were one-person households. These are projected to rise to 11 million of a total of 28 million households by 2035 (Appended table A4.3), which, unless this increase is offset by significant energy efficiency programmes, is likely to continue to increase our domestic energy usage.

Water

The water that is pumped into homes is one issue which is receiving much attention due to its current scarcity. At the time of writing (early 2012), there are water shortages around much of England due to two dry winters. The Midlands, South and East Yorkshire, East Anglia, the South West and the South East of England are officially in drought, necessitating hosepipe bans from seven water company providers which may last up to 2013. (Environment Agency (EA) 2012)

Currently, there is significant pressure on water supplies, and it seems that this will not change in the long term. This may also be highlighted by the opening in 2011 of a desalination plant in East London, at
a cost of £250 million which, because it is so energy intensive to use, will be used mainly at times of drought, and may damage the possibility of sustainable water supplies in the future.

Figure 1 below shows household water usage has been increasing since 1999-00, spiking in 2003-2004 and 2005-2006. Since 2005-2006, water consumption in England and Wales seems to have reduced slightly, although the 2008-2009 level was still higher than in 1999-00.

Current household water usage in England stands at 145.6 litres per person per day (EA 2011). The Department for Environment, Food and Rural Affairs has a target of 130 litres per person a day by 2030. However, even if this is met, as the number of people using water continues to increase, so will overall water usage. Targets need to reflect total as well as per capita usage.

**Fig 1 Total Household Water Use Per Day England & Wales**

(tens of thousands, litres)

<table>
<thead>
<tr>
<th>Year</th>
<th>Water Use (thousands, litres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999-2000</td>
<td>7,500</td>
</tr>
<tr>
<td>2000-2001</td>
<td>7,600</td>
</tr>
<tr>
<td>2001-2002</td>
<td>7,700</td>
</tr>
<tr>
<td>2002-2003</td>
<td>7,800</td>
</tr>
<tr>
<td>2003-2004</td>
<td>7,900</td>
</tr>
<tr>
<td>2004-2005</td>
<td>8,000</td>
</tr>
<tr>
<td>2005-2006</td>
<td>8,100</td>
</tr>
<tr>
<td>2006-2007</td>
<td>8,200</td>
</tr>
<tr>
<td>2007-2008</td>
<td>8,300</td>
</tr>
<tr>
<td>2008-2009</td>
<td>8,400</td>
</tr>
</tbody>
</table>

Source: ENVIRONMENT AGENCY/ONS

Notes: Chart data begins at 7,500,000 litres per day.
For source details see ‘Chart details’ in chapter 9 references.

Even at a stable population level, an urban to rural demographic shift may produce environmental disruption and an increase in energy use. If people move to rural and possibly remote areas, water will
be needed to be pumped to reach those higher distances, requiring more infrastructure and higher energy use to do so.

**Sewage & Waste**

The water industry is the fourth most energy intensive industry in the UK, using a high amount of energy to service the water cycle. Tied into water usage is sewerage. As water usage increases so does the energy required in order to treat it and return it back into the system.

One gain is that in recent years sewage treatment is better, with around 75% of rivers now of good biological standard (RCEP 2011). However, if there is demand for more as well as cleaner water in the future, the energy demands and economic costs of sewage treatment will continue to rise.

Figure 2 shows the annual total amount of household (non-sewage) waste in the United Kingdom from 1999-00 to 2008-09. Household waste levels peaked in 2006/07 but are now reducing. Another gain is that the amount of waste that is recycled is increasing year on year, an increase from 10% in 1999-00 to 37% in 2008-09.

![Fig 2 Total Household Waste United Kingdom](source: DEFRA/ONS)

**Transport Links**

Like energy usage, transportation is a difficult area to quantify. Much of what drives people’s transport choices is tied in with factors like income, proximity of destinations and people’s willingness and ability to use alternatives forms of transport, such as buses, rail, cycling or walking.
There were over 34 million licensed motor vehicles in the UK in 2010 (Department for Transport (DfT) 2011). The total area of land used for transport-related infrastructure in England is 2.4%, amounting to 25% of developed land (Government Office for Science (GOFS) 2010). Transportation plays a major part in our national emissions, contributing 21% of greenhouse gas emissions. Between 1990 and 2009 transport emissions increased by 13%, despite the rise in fuel efficient cars and alternative fuel sources. Traffic levels were also 20% higher in 2010 than in 1990 (DfT 2011). As the amount of people using the road as well as the rail network increases, so infrastructure will probably have to increase in order to meet the higher capacity. This may take away undeveloped land which can lead to biodiversity loss, as well as using energy and resources to produce that infrastructure. There is information to suggest that within the next decade there will also be substantial overcrowding on our rail network (GOFS 2010). More transport usage is likely to result in more emissions (including particles, nitrogen oxides and carbon monoxide) contributing to pollution in our atmosphere, and to climate change.

Tied in with domestic amenity usage above, if people shift from urban to rural areas (even in the absence of population growth) this can then lead to an increase in transport related pollution due to higher car use and a lack of rural public transport options (RCEP 2011). Coupled with population increases, the environmental damage is likely to be higher.

More people choosing cleaner forms of transport, for example walking or cycling locally including local commuting, could produce a reduction of 5% in urban car journeys, alleviating pressure on roads and traffic, as well as pollution and energy use. However barriers such as convenience or safety and comfort when considering using a bicycle instead of a car can deter people from adopting a greener form of transport (DECC 2011)

**Infrastructure**

In the Royal Commission on Environmental Pollution report ‘Demographic Change and the Environment,’ it is stated:

“More people and more households mean more roads, more cars and more journeys, and more infrastructure in general, all of which ultimately contribute to the loss of biodiversity. The pathways are often long and not immediately obvious, but the negative impacts on wild plants and animals are nevertheless real and very significant.” (2011 p.52)

As the population increases, so does the need for infrastructure; such as hospitals, cafes, work places, schools and shops, potentially taking up further space, and so contributing to a loss of undeveloped land, and in turn biodiversity. As densification continues, higher service use then impacts on that infrastructure as well as on communities, in terms of higher usage, diminishing capacity, and degradation (GOFS 2010).

Land use for recreation is important for our lifestyles, as well as for the economy. Recreation and tourism contributes £52 billion per year to the UK economy (GOFS 2010). The need for green spaces such as parks, recreational facilities and other outdoor spaces will become increasingly important to the wellbeing of inhabitants (GOFS 2010). However, as population densities increase in urban areas, there is a risk that these necessary spaces could be lost, as a result of providing more room for more people to live in and more infrastructure to provide for them. In fact in some areas, there is information to
suggest that there are ‘environmental limits,’ where developing in these areas is making it difficult to maintain environmental resources (RCEP 2011).

The cost impact of maintaining housing expansion can also be of some concern. For example, it is cited that in order to maintain growth at 33,400 houses per year during the London Plan – Greater London’s spatial development strategy over the next 20-25 years – the necessary infrastructure would cost £3 billion (RCEP 2011). The cost of additional infrastructure to support new housing across the country is likely to be very substantial.

**Discussion**

There is little doubt that housing expansion, both by its structures and the lifestyles of people living in them, has the potential to reduce community sustainability.

It will probably cause a significant increase in the overall energy consumption for the UK (domestic energy use currently accounts for 32% of total energy consumption).

If current trends in housing build policies continue, water usage may increase by 5% by 2020, driven by population growth and the related higher use of water in food production, making water resources even scarcer.

Government commitments on the reduction of landfill should continue. However it will only be when a significantly higher amount of total waste is recycled that this may begin to be called sustainable.

Although transport is not always included when considering the impact of housing growth, there is little doubt that new housing and how close it is to the work place will predicate the extent of car use. The government will need to strongly address the future alleviation of increased environmentally unfriendly transportation, and its concomitant infrastructure growth and environmental pollution.

Housing expansion will require the building of further infrastructure, with the continuing maintenance and upgrades that infrastructure will need, with its associated environmental and economic costs.

There seem to be three main options available to the community to address the issue of housing expansion and sustainability.

- The first one is to maintain current policies, and so maintain growth whilst continuing to try and become more sustainable - not an easy combination.

- A second one is to become fully sustainable, whilst still maintaining current and progressive growth levels. At the moment this seems to be impossible, as in order to be fully sustainable there would need to be significant reductions in water use, wastage, infrastructure build and energy usage.
• A third option is to reduce future population growth and housing expansion whilst staying on course in reducing resource consumption. This should in time result in a level of sustainability, whereby the community may be able to live with sustainable resource provision and in equilibrium with their environment.

It seems highly likely that only the last option offers any real prospect of achieving sustainability.
Chapter 10

Housing expansion: its effect on climate change mitigation and adaptation

No Problem?

A reported drop of 25% in UK emissions between 1990 and 2011 (DECC 2011a), despite population and housing growth, might suggest carbon emissions are beginning to be controlled. Missing from this estimate are imports, with the environmental impacts of consumption being transferred abroad (Jorgenson & Clark 2010, Murtaugh & Schlax 2008). Adding imports gives greenhouse gas (GHG) levels 41% above the 2011 figure (MacKay 2009a). Greenhouse gas levels are inextricably linked with population numbers, housing and living standards (Jorgenson & Clark 2010). How figures are constructed and presented matters, not least in considering carbon emissions from houses.

Housing and Population

Total numbers of dwellings in England have risen over the last 20 years: 1991 - 19.6 / 2000 – 21 /2010 - 22.6 million dwellings. Household numbers, 2008 to 2033, are projected to have a 26% increase, with a rise in the number of one person households of 54%. (Department for Communities and Local Government (CLG) Tables 104 and 420) Per capita GHG levels tend to be higher with lower occupancy of dwellings (Bibby 2009). In responding to climate change, the extent of housing expansion is clearly important.

Residential greenhouse gases

The greenhouse gases referred to here are UK totals. The Department for Energy and Climate Change (DECC) converts the gases involved into carbon dioxide equivalents (CO2e), giving a base line to work from. DECC define residential GHGs as domestic heating, cooling and lighting emissions only. Additions for other infrastructure, such as transport or for lifestyle are not included. Mackay argues very effectively that this is a limited definition and easily distorts conclusions (MacKay 2009a).

What do we mean by domestic use? DECC have used two energy inputs – ‘Traded’ (electrical energy) and ‘non-Traded’ (fossil fuels) - in the make-up of residential figures. DECC forward projections suggest a fall from 88 million tons GHGs in 2010 to 66MT in 2020 followed by a rise to 73 MT in 2033 (DECC). The 2020 savings are some 20-25%. These figures are for non-traded emissions. DECC admit the need to add “traded” emissions to get the full GHG level. The total for 2010 then becomes 155 MT, some 76% higher. While these projections take into account population numbers, the calculation is very complex, dependent on minimum immigration figures, Office for National Statistics data, and using the number of houses, not raw population numbers. Domestic consumption is 23 to 31% of the UK energy usage (Utley & Shurrock 2008).

The chart below shows the effect of projected population growth on residential emissions, using the DECC UK per capita emissions rate for 2010 of 1.44 tons CO2e per year. This rate is also used for 2020 and 2033 as well in view of the uncertainty of future rates. The effects of both the UK principal and the
Net Zero Migration projections on emissions in 2020 and 2033 are compared. Both years show the effect of potential future population growth on increasing carbon emissions, and the potential reduction in carbon emissions with the smaller populations of the Net Zero Migration projection.

It must be stressed that the chart is based on unchanged 2010 per capita emissions. Although uncertain, it is thought residential emissions may fall c.20% by 2020, equivalent to a new rate of c. 1 ton CO2e per person, taking into account the principal projection for 2020 population. Overall, the projected increase in UK population in 2020 compared to 2010 would contribute c.5 MTCO2e to the predicted total UK residential emissions of c.66 MT CO2e in that year.

**Greenhouse gas residential mitigation plans**

A number of methods for reducing the carbon footprint of housing are being pursued or under consideration:

- By energy efficiencies on domestic items e.g. boilers, lighting etc. *(DECC 2011c)*. Domestic appliance use (1970 to 2006) rose from 4 to 12% of household energy despite increased energy efficiencies *(DECC 2011b)*;
- Reducing GHGS from fuel for example moving from coal to gas. However the potential to claim these reductions is reducing as the change occurs *(DECC 2011d)*. Another example is the development of “sustainable” sources of energy, i.e. non fossil fuels – currently, sustainable energy comprises 3% of UK energy consumption *(MacKay 2009b)*. A different approach is to reduce GHG at the energy supply source e.g. Carbon Capture Sequestration, seen as a major mitigating factor in GHG reduction post 2020. The actual effects are questionable. *(MacKay 2009c)*;
• Reducing consumer demand e.g. using water metering. Water is fundamental to housing. Population expansion increases the GHGs associated with supply;

• Reducing losses by house insulation. Housing stock with full insulation at 3.4% in 1987 has increased to 16.3% (2010) (DECC 2011d);

• By improving new building standards. By 2027 buildings’ emissions should be between 24% and 39% lower than 2009 levels. By 2050, all new buildings will need to have an emissions footprint close to zero (DECC 2011a). However 75 per cent of the homes that will exist in 2050 have already been built (DECC2011b) and older stock is less efficient and harder to modify. Additionally the GHG efficiency of many new buildings is not as great as may seem. (Mackay2009d)

There remains uncertainty over the effectiveness of housing mitigation measures.

Adaptation to Climate Change

Adaptation has been taken increasingly seriously over the last 10 years, culminating in the publication by HM Government (January 2012) of the UK Climate Change Risk Assessment (CCRA). In the Buildings and Infrastructure section, the CCRA identifies flooding in the short term and heat problems in the longer term. Potential interruptions to energy and water supply problems could have major impacts. Population growth may exacerbate pressure on water supplies. Climate resilience should be considered when building new homes. Where building is necessary in flood risk areas, it is required to be safe and resilient to flooding. Green spaces can help reduce excessive urban temperatures, but the report notes that increases in urban populations and building on green space would increase the Urban Heat Island effect (this effect occurs in large towns when the centre is several degrees hotter than surrounding rural areas, and is most noticeable at night).

Discussion

Research for this chapter has showed how complex information on carbon emissions is. There is not only dispute on what emissions constitute total UK emissions, but also debate on how residential emissions are defined. Even when defined, some part of the contributing emissions may be left out. Looking to the future it is hardly surprising how tentative projections must be, raising questions as to how the projected 20% drop in emissions between 2010-2020 is to be achieved and why emissions rise again by 2033. Figures are very difficult to construct and those presented may give a seriously misleading view.

Looking at mitigation it is difficult to find any reference to increased population size as a prejudicial factor. There is a need for detailed analysis of GHG causes and mitigation that uses clearer methods and more accessible conclusions. The difficulty of this should not be underestimated.
Considering adaptation, the effect of increasing population numbers may be offset if they are housed in new accommodation which has been built to be resilient to climate change hazards. On the other hand, there will be more residents at risk of water shortage and interruptions to energy supplies, and building on urban green space to provide new housing may exacerbate urban centre heat problems. Overall, it seems that increasing the number of houses and their occupants will add to the adaptation load.

The views above can only be regarded as an initial outline. Nevertheless, using the DECC 2010 rates for residential carbon emissions, the bar chart above gives some indication of the impact of population growth and resultant housing expansion in increasing carbon emissions and making mitigation more difficult. The need for adaptation is also going to increase.
Chapter 11

Community attitudes towards new housing developments

NHPAU survey: Public Attitudes to Housing 2010

Research carried out for the National Housing and Planning Advice Unit (CLG - NHPAU 2010) found that attitudes to house building vary across England, with higher levels of support in the North of England than in the South. The NHPAU has been working with local authorities and others to help make housing more affordable and address the problem of people not being able to get onto the property ladder. The unit was subsumed by the Department for Communities and Local Government in 2010. The survey found:

- More than three out of four adults in England (76%) would support more houses being built in their local area if the quality local services like GP surgeries, hospitals, and schools did not suffer. Seven out of 10 (70%) would also be in favour if homes were accompanied by the necessary infrastructure like roads and utilities. (p.2)

- The design and quality of the development is also important. Just under three out of four (73%) said they would support more homes if they were well designed and in keeping with the local area. (p.2)

- Opposition to new housing is higher in the south and the areas around London than in the north. Only 8% of people in the North East, and 11% in the North West have opposed a local planning application for new homes, compared with 20% in the South East, 19% in London and 18% in the South West and the East of England. (p.3)

This was an online survey. Whether it was only directed to respondents who had experience of a local planning application, or more widely, is not clear and may affect interpretation.

Three brief case studies now follow – two rural and one urban. They cannot be representative but they do indicate some of the strength of feeling that planning applications for additional housing may engender.

Bridge, near Canterbury, Kent (2012): ? 300 new houses

(2005): ? 8 new houses

Bridge is a village of about 1,600 people and 700 houses, lying some 5 km South of Canterbury on the old A2 trunk road to Dover. The City Council is now examining the suitability of three sites on the edge of the village for inclusion in the new Local District Plan (due Autumn 2012). The three sites would be capable of taking c. 300 houses. Given the strong opposition of residents to new housing in the village, which in recent years has suffered “garden grabbing” for the construction of about 20 new houses, the Parish Council has already begun work on a Neighbourhood Plan.
A sense of the strength of opposition to new housing was apparent in 2005 when the Parish Council identified the need of some local residents for affordable housing in the village. A proposal was made to develop eight new homes to be built on a ‘Rural Exception Site’, 0.319 ha of greenfield grazing land lying outside the village envelope. A consultation exercise on the proposal revealed villagers’ concerns. Ninety five percent of residents expressing an opinion were opposed to the development, mainly on the grounds that they feared it would increase traffic and the pressure on local services, and would reduce the visual amenity of the village conservation area and surrounding Area of Outstanding Natural Beauty. Canterbury City Council accepted that development would adversely affect the character and appearance of the conservation area, the Special Landscape Area and Kent Downs AONB, but granted planning permission on the grounds that it promoted affordable housing and would sustain the village community. The Parish Council was emphatic that only people with strong connections to the village would be allowed to occupy the development and published their selection criteria. A similar attempt by a nearby village failed to abide by similar but less stringent conditions for the occupation of its affordable housing scheme and the outcome in Bridge remains unclear.

**Ringmer Parish, East Sussex (2012): ? 200 or 600 new houses by 2030**

Ringmer is a large village centred around an extensive green lying adjacent to the South Downs National Park, with a population of around 4500. Lewes District Council has indicated as part of the emerging Core Strategy of their Local Development Framework that between approximately 176 and 647 new houses should be built by 2030 in Ringmer. Many residents oppose such a big development because it risks turning Ringmer into a town with loss of its village character, because building would mainly be on greenfield land and because the proposed scale is far above what is necessary for the village’s development needs. Using the previous Regional Spatial Strategy target of around 4000 houses required by 2030 for Lewes Local Authority (Population c. 95000), the pro rata figure for Ringmer might be about 200. Ringmer Parish Council have held a number of public meetings, while, in the area where most of the proposed building sites were, a Residents’ Group was formed. Both the Parish Council and the Residents’ Group opposed the proposal, and the content of Lewes District Council’s Proposed Submission Document is awaited, pending Formal Submission and Examination.

**Shoreditch, East London (2012): ? Tower block**

Jago Action Group - a member of OPEN Shoreditch which is a coalition of people who live or work in Bethnal Green and Shoreditch in East London - is opposed to the development of the Huntington Estate & Fleet Street Hill by a proposed estate which would include a 25-storey tower block in the heart of Shoreditch.

Currently the area, a vibrant and mixed community bordering and contrasting with the nearby financial district, contains existing buildings of 2-4 storeys in height, and so a tower of 25 storeys would be out of keeping with the current scale of the area.

The Group says that the development proposal includes no social or affordable housing on the estate, and so would not contribute to the continuing development of a mixed and sustainable community. It maintains that the development would cause great harm to the character of the Redchurch Street, South Shoreditch and Boundary Estate Conservation Areas.
All of the social or affordable housing that is proposed would be at Fleet Street Hill, half a mile away from the development located on a site that is close to two busy railway lines, serving nearby Liverpool Street Station and the London Overground. The main development with its private residential apartments would thus be kept separate from the affordable housing.

**Discussion**

Housing remains for most people something of substantial emotional and financial investment. 

*82% of English adults see owning as the ideal long term tenure (NHPAU 2010, p.1).*

It is hardly surprising that planning applications are so controversial. Looking at the NHPAU survey findings above, the three local examples above do seem to broadly reflect the concerns for services, infrastructure and well designed homes in keeping with the local area. In practice, one or more of these areas may not be satisfactorily accounted for in the planning proposal, generating opposition from all or part of the local community.

*Those who... already own their own homes are also more opposed (to house building), hinting at an ‘I’m all right Jack’ mindset, and older generations pulling up the drawbridge of homeownership from younger generations. (NHPAU 2010,p.4)*

These rather pejorative terms reflect the use of ‘nimbyism’ by some developers to castigate opposition to local change. Faced by an application which threatens to substantially change a person’s surroundings, it is hardly surprising that an initial reaction may be to oppose it – ‘place attachment’ better describes the situation. There will always be a tension between those who are homeowners and, usually indirectly, those who are not yet homeowners but wish for building to take place to facilitate their aspirations. Resolution of this dilemma is often difficult and may be painful.

The primary cause of these perennial planning conflicts is rarely referred to, but relates to continuing population growth.
Chapter 12

Conclusion

The finding that population growth is a major cause of housing expansion is perhaps an obvious one. The study was worthwhile however as apparent causation should always be investigated rather than assumed. While it is uncertain that tower blocks and brownfield regeneration reflected concerns about population density during the last twenty years, most planners would acknowledge a major causal relationship between population increase and housing need/demand. The 2008-2033 projections for England indicate that an increase of 9 million in the population by 2033 might be accompanied by an additional 6 million households to be accommodated, including a large increase in single households. Where a mismatch between population and housing growth occurs, it is likely that a housing shortage will eventually occur with potentially serious social consequences from overcrowding and long waiting lists for social housing. These problems are especially acute in London’s high population density environment compounded by high market prices and a building slump 2004-2010.

It remains to be seen how well the new National Planning Policy Framework will both enable sufficient development to meet housing demand, and prevent further loss of greenfield land to development with loss of agricultural and amenity land, and diminished biodiversity. Meanwhile, the latent effect of housing expansion on reducing sustainability and increasing residential carbon emissions continues. While there may be local resistance to housing expansion, in general there seems little explicit recognition nationally of its harmful aspects.

Changes in fertility and/or migration, both controversial, seem to be the only feasible way to reduce population growth and resultant housing expansion in the long term. Projections for 2010-2035 population growth range from ‘High Population’ 27% to ‘Net Zero Migration’ 6% (‘Principal’ projection 19%). Fertility in England is already below replacement level and is projected to continue so. While around 20% of mothers have 3 or more children (c.f. around 2 for replacement level), changing attitudes to family size will take a long time. Reducing immigration levels is already being discussed and a policy of net zero migration might be acceptable in time to the Government and supported by the community. Changing to net zero migration has no effect on global population levels but is likely to have a very substantial effect on housing need and its environmental consequences in the UK.

The report found little evidence of any general recognition of the importance of population growth as a cause for housing expansion and its potential adverse effects. It would seem that population increase is accepted as almost inevitable and a ‘given’ by government and the community. Addressing really long term issues is difficult for governments - nevertheless they need:

- to be persuaded of the seriousness of the situation and the need to actively support discussion in the community about population levels, identifying explicitly the many latent damaging impacts of population growth including those related to continuing housing expansion;

- to agree on behalf of the community an appropriate course of action in response to the issues of population growth, and implement it in a timely fashion.

‘More people need more housing’ is a truism which is supported by the preliminary findings of this Report. It is hoped the Report may stimulate debate and further elaboration.
**Recommendations for further enquiry**

1) To seek projections from the Office for National Statistics in respect of the fertility and net zero migration scenarios in chapter 5.

2) To investigate the advantages and disadvantages of a policy for net zero migration, providing an evidence-based account, including in particular a full evaluation of:
   - The effects that the associated reduction in population growth would have.
   - The potential problems that have been raised such as the inflow of expert individuals for industry, students from abroad or EU nationals’ inflows.

3) To assess how well UK Government housing policy is reconciled with their responsibility for effectively engaging ongoing social and environmental challenges such as climate change and sustainability.
### Table A4.1 England: Estimated number of blocks of flats, by number of flats in block or building, 2003/04 to 2005/06

<table>
<thead>
<tr>
<th>Number of flats in block or building</th>
<th>Blocks (Thousands)</th>
<th>2003/04</th>
<th>2004/05</th>
<th>2005/06</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 5</td>
<td></td>
<td>317</td>
<td>313</td>
<td>321</td>
</tr>
<tr>
<td>6 to 9</td>
<td></td>
<td>69</td>
<td>77</td>
<td>84</td>
</tr>
<tr>
<td>10 to 19</td>
<td></td>
<td>33</td>
<td>33</td>
<td>30</td>
</tr>
<tr>
<td>20 to 49</td>
<td></td>
<td>14</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>50 or more</td>
<td></td>
<td>4</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>438</td>
<td>441</td>
<td>454</td>
</tr>
</tbody>
</table>

Source: data from Table S191, Department for Communities and Local Government: Survey of English Housing

Flats include maisonettes. In a few cases the "blocks" are buildings mainly in non-residential use that contain some purpose built flats.
Table A4.2 Number (thousands) and percentage of households by number of people in household: All Tenures, 2001/2-2008

<table>
<thead>
<tr>
<th>No. of persons in household</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7+</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001/2</td>
<td>5,582</td>
<td>7,292</td>
<td>3,170</td>
<td>2,837</td>
<td>990</td>
<td>270</td>
<td>113</td>
<td>20,254</td>
</tr>
<tr>
<td></td>
<td>28%</td>
<td>36%</td>
<td>16%</td>
<td>14%</td>
<td>5%</td>
<td>1%</td>
<td>1%</td>
<td>100%</td>
</tr>
<tr>
<td>2003</td>
<td>5,889</td>
<td>7,296</td>
<td>3,158</td>
<td>2,855</td>
<td>968</td>
<td>279</td>
<td>119</td>
<td>20,564</td>
</tr>
<tr>
<td></td>
<td>29%</td>
<td>35%</td>
<td>15%</td>
<td>14%</td>
<td>5%</td>
<td>1%</td>
<td>1%</td>
<td>100</td>
</tr>
<tr>
<td>2004</td>
<td>5,892</td>
<td>7,242</td>
<td>3,194</td>
<td>2,876</td>
<td>1,001</td>
<td>261</td>
<td>117</td>
<td>20,586</td>
</tr>
<tr>
<td></td>
<td>29%</td>
<td>35%</td>
<td>16%</td>
<td>14%</td>
<td>5%</td>
<td>1%</td>
<td>1%</td>
<td>100</td>
</tr>
<tr>
<td>2005</td>
<td>5,872</td>
<td>7,328</td>
<td>3,325</td>
<td>2,830</td>
<td>943</td>
<td>273</td>
<td>115</td>
<td>20,686</td>
</tr>
<tr>
<td></td>
<td>28%</td>
<td>35%</td>
<td>16%</td>
<td>14%</td>
<td>5%</td>
<td>1%</td>
<td>1%</td>
<td>100</td>
</tr>
<tr>
<td>2006</td>
<td>5,923</td>
<td>7,433</td>
<td>3,271</td>
<td>2,804</td>
<td>961</td>
<td>296</td>
<td>112</td>
<td>20,798</td>
</tr>
<tr>
<td></td>
<td>28%</td>
<td>36%</td>
<td>16%</td>
<td>13%</td>
<td>5%</td>
<td>1%</td>
<td>1%</td>
<td>100</td>
</tr>
<tr>
<td>2007</td>
<td>5,973</td>
<td>7,359</td>
<td>3,281</td>
<td>2,845</td>
<td>966</td>
<td>283</td>
<td>124</td>
<td>20,831</td>
</tr>
<tr>
<td></td>
<td>29%</td>
<td>35%</td>
<td>16%</td>
<td>14%</td>
<td>5%</td>
<td>1%</td>
<td>1%</td>
<td>100</td>
</tr>
<tr>
<td>2008</td>
<td>6,154</td>
<td>7,554</td>
<td>3,428</td>
<td>2,855</td>
<td>986</td>
<td>298</td>
<td>133</td>
<td>21,407</td>
</tr>
<tr>
<td></td>
<td>29%</td>
<td>35%</td>
<td>16%</td>
<td>13%</td>
<td>5%</td>
<td>1%</td>
<td>1%</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Table S109 Number of people in households by tenure, England 2001/2-2008, Office for National Statistics Labour Force Survey
Table A4.3 England households (thousands) to show household types contributing to projected 2008-2033 increase

<table>
<thead>
<tr>
<th>ENGLAND</th>
<th>One person no other adults</th>
<th>Couple, one or more adults</th>
<th>Lone parents</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>7,316</td>
<td>9,411</td>
<td>2,008</td>
<td>21,731</td>
</tr>
<tr>
<td>2033</td>
<td>11,279</td>
<td>10,792</td>
<td>1,481</td>
<td>27,536</td>
</tr>
<tr>
<td>2008-2033 increase</td>
<td>3,963</td>
<td>1,381</td>
<td>-527</td>
<td>5,805</td>
</tr>
<tr>
<td>% increase on 2008 level</td>
<td>54</td>
<td>15</td>
<td>-26</td>
<td>27</td>
</tr>
</tbody>
</table>

Data from Dept for Communities and Local Government, Table 420

Table A5.1 England, Completed Dwelling numbers c.f. Population increases 1990-2010

<table>
<thead>
<tr>
<th>5 year population increase</th>
<th>Midyear dwellings</th>
<th>5 years completed increase</th>
<th>Dwellings per 1000 persons</th>
</tr>
</thead>
<tbody>
<tr>
<td>684,000</td>
<td>1990.94</td>
<td>764,820</td>
<td>1118</td>
</tr>
<tr>
<td>850,000</td>
<td>1995.99</td>
<td>739,390</td>
<td>870</td>
</tr>
<tr>
<td>1,233,000</td>
<td>2000.04</td>
<td>699,520</td>
<td>567</td>
</tr>
<tr>
<td>1,768,000</td>
<td>2005.09</td>
<td>757,610</td>
<td>429</td>
</tr>
</tbody>
</table>

Source: CLG Table 213
ONS estimates and projections
Table A5.2, Principal population projections for the UK and constituent Nations 2010-2035 selected years to show growth.

(Thousands)  
<table>
<thead>
<tr>
<th>Year</th>
<th>Mid year</th>
<th>Population growth since 2010 (Nos.)</th>
<th>% growth since 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>62262</td>
<td>0</td>
<td>0.0</td>
</tr>
</tbody>
</table>
| United Kingdom  
2012  | 63,244   | 982                                 | 1.6                 |
| 2022  | 68,092   | 5,830                               | 9.4                 |
| 2032  | 72,133   | 9,871                               | 15.9                |
| 2035  | 73,208   | 10,946                              | 17.6                |
| 2010  | 52234    | 0                                   | 0                   |
| England  
2012  | 53107    | 873                                 | 2                   |
| 2022  | 57428    | 5194                                | 10                  |
| 2032  | 61088    | 8854                                | 17                  |
| 2035  | 62078    | 9844                                | 19                  |
| 2010  | 5,222    | 0                                   | 1                   |
| Scotland  
2012  | 5,282    | 60                                  | 1.1                 |
| 2022  | 5,532    | 310                                 | 5.9                 |
| 2032  | 5,716    | 494                                 | 9.5                 |
| 2035  | 5755     | 533                                 | 10.2                |
| 2010  | 1,799    | 0                                   | 1.3                 |
| Northern Ireland  
2012  | 1,823    | 24                                  | 1.3                 |
| 2022  | 1,928    | 129                                 | 7.2                 |
| 2032  | 1,992    | 193                                 | 10.7                |
| 2035  | 2,005    | 206                                 | 11.5                |
| 2010  | 3,006    | 0                                   | 1                   |
| Wales  
2012  | 3,032    | 26                                  | 1                   |
| 2022  | 3,204    | 198                                 | 7                   |
| 2032  | 3,337    | 331                                 | 11                  |
| 2035  | 3,369    | 363                                 | 12                  |

Source: ONS National Population Projections, 2010-based projections for the UK, England, Wales, Scotland and Northern Ireland
### Table A5.3: Principal and eight variant 2010-based projections for England, 2010-2035 selected years to show growth *(page 1)*

<table>
<thead>
<tr>
<th>(Thousands)</th>
<th>Year</th>
<th>Mid year Population (Thousands)</th>
<th>Population growth since 2010</th>
<th>% growth since 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Principal projection</strong></td>
<td>2010</td>
<td>52234</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>2012</td>
<td>53107</td>
<td>873</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>2022</td>
<td>57428</td>
<td>5194</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>2032</td>
<td>61088</td>
<td>8854</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>2035</td>
<td>62078</td>
<td>9844</td>
<td>19</td>
</tr>
<tr>
<td><strong>High Population projection</strong> (HF,HLE, HM)</td>
<td>2010</td>
<td>52234</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>2012</td>
<td>53229</td>
<td>995</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>2022</td>
<td>58985</td>
<td>6751</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>2032</td>
<td>64544</td>
<td>12310</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>2035</td>
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(1) **Abbreviations** for variant components: L-Low, H-High for 3 components - F-Fertility, LE-Life Expectancy, M-Migration

(2) **Selected years**: 2010 and 2035 are the 25 year projection base and end years, 2012, 2022 and 2032 are the current year and 10 and 20 years after this.

**Source**: Data for principal, high and low population, high and low fertility, and high and low migration projections from ONS 'National Population Projections (NPP), 2010-based projections' respectively Tables A1-4,H1-4,1-4, B1-4, C1-4, F1-4 and G1-4. Data for net zero immigration, replacement fertility from ONS, NPP, 2010-based extra variants, respectively Tables U1-4, O1-4.
### Table A5.3: Principal and eight variant 2010-based projections for England, 2010-2035 selected years to show growth

**(Thousands)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Mid year population</th>
<th>Population growth %</th>
<th>Year</th>
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<tr>
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<td>62,318</td>
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**Replacement Fertility projection**

(Constant TFR 2.08)

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**Ave. Ann. Births 759**

2011-2035

**High Fertility projection**

Ave. Ann. Births 761

<table>
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**Low Fertility projection**

Ave. Ann. Births 617

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**High Migration projection**

(Net migration 233,000 p.a.2016-2035)

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<th>Year</th>
<th>Mid year population</th>
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**Low Migration projection**

(Net migration 113,000 p.a.2016-2035)

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<td>7,930</td>
<td>2035</td>
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</table>

Please see page 1 for notes and source information.
**Estimate A 5.1 An estimation of the potential effect on population growth if the proportion of all births that are third or subsequent decreased 2012-2035**

Note: This section provides the assumptions on which the estimate in chapter 5, page 33 is based.

**Assumptions:**

1) In England and Wales the proportion of births within marriage/civil partnership to mothers with 2 or more previous live births remained constant between 2002 and 2010 at 22% per year (c. 80 -84,000 of a total of c.350-384,000 births) (*Office of National Statistics, Birth: Characteristics of mother.2, England and Wales*). It is assumed for this calculation that this proportion is the same for all births i.e. including those outside marriage and civil partnership, and that England has the same proportion as England and Wales.

2) It assumed that this proportion is unlikely to fall below 7% allowing for multiple births and persistent views on ideal family size, and that it might take 20 years for such a change in attitudes to family size to occur.

3) The estimation is for a decrease of half (to 11%) or two thirds (to 7%) of the ‘current’ estimated level of 22% between 2012 and 2032, then continuing at the new lower level to 2035.

4) Such a reduction would imply 11 or 15% less total births per annum (over time the reduction would be more than this as some mothers would potentially have more than 3 babies), and achieving this reduction of births over 20 years would be linear for the purpose of calculation, reflecting a gradually increasing change in attitudes to family size. Annual decrements would be calculated on the basis of the annual births in the ONS 2010-based principal projection i.e. 2013 total births 723,000 less 0.75% (one twentieth of 15%) – 5000 births less. 2014 total births 721,000 less 1.5% (two twentieths of 15%) – 11,000 births less 2015 total births 719,000 less 2.25% (three twentieths of 15%) – 16,000 births less And so on until 2032 when total births are projected to be 688,000 with 103,000 (15%) births less.

A similar calculation may be done for the 11% reduction.

*On the basis of taking 20 years to reduce the proportion of births to mothers with 2 or more previous live births from 22% of all births currently to 11% or 7%, and this level, once reached, continuing, there might be around 1 and 1.4 million less births respectively over the 2012-2035 period.*

It is stressed that this is an unofficial estimation utilizing the ONS data referred to above, but the results have not been endorsed by ONS. It is not an ONS projection
Estimate A5.2 An estimation of the potential effect on population growth which the gradual introduction of a net zero migration policy might have in England, commencing in 2012 with full implementation from 2022-2035

This section provides the assumptions on which the estimate in Chapter 5, page 33 is based.

Assumptions:

1) The annual net migration data in the Office for National Statistics principal projection are used as the basis for the reduction in population growth aimed for by 2035.

2) During the period between 2012 and 2022 there would be a gradual reduction from 205,000 annual net migration in 2012 to net zero migration in 2022, with net migration of, say, 180,000 in 2013, 160,000 (2014), 140,000 (2015) and so on. The total net migration 2013-2021 would be 900,000 compared to the principal projection figure of 1,621,000, a reduction of 721,000.

3) In 2022 and thereafter the principal projection for migration is 173,000 a year, so that the implementation of net zero migration would result in a reduction of 2,422,000 over the period 2022 – 2035 inclusive.

This produces an overall reduction of 3,143,000 on the principal population projection between 2012 and 2035.

4) This total does not include the associated reduction in births related to the fall in net migration which is suggested might be around 500,000 over the period. No adjustment has been made for any change in deaths that might occur.

On the basis of a gradual reduction in net migration from 2012 to 2022, and net zero migration from 2022-2035, it is suggested that this would result in c. 3.5 million reduction of the 2010-based principal projection for the 2035 population of England.

It is stressed that this is an unofficial estimation utilizing the ONS data referred to above, and the results have not been endorsed by ONS. It is not an ONS projection.
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**Chapter 3**


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Chapter 9 (References & charts)


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Chart details


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Chapter 11
