



# *Government Response to Kate Barker's Review of Housing Supply: The Supporting Analysis*

1. The Government recognised that it was necessary to base its response to the Barker Review on analysis of the highest quality. Because of this, ODPM commissioned two major studies to provide the necessary evidence base on the benefits and impacts of various levels of additional housing supply. The two reports are published at the same time as this document. We believe that these represent a major advance in the analysis of housing supply policy and, along with the models produced as part of the projects, combined with further analysis within Government, provide a good basis on which to take decisions.
2. The research has been carried out on abstract scenarios for additional housing supply, based on those assumed in Kate Barker's Review of Housing Supply, published in 2004.
3. ODPM has considered more realistic housing supply scenarios, whereby the rate of housing supply builds up over time. This supporting document provides further information on the analysis concentrating on the Government's ambition to reach a level of 200,000 annual net additions. This will involve fewer net housing additions by 2016 than the levels in all the additional housing supply scenarios modelled in the research.

# Affordability Analysis

## Modelling lower quartile prices to lower quartile earnings

4. The first of the two major projects, *Affordability Targets: Implications for Housing Supply* (the Affordability Study) was research into the relationship between housing affordability and housing supply. The research was carried out by a group of leading housing academics, led by Professor Geoff Meen of the University of Reading.
5. As part of the Affordability Project, a nine-region model was developed to examine the relationship between housing supply and affordability (specified as the ratio of lower quartile house prices to lower quartile earnings). The model consists of three interrelated modules: demographic module, housing module and a labour market module.
6. This model is a step forward from previous analysis, including the Barker Review. For the first time we are able to model, nationally and regionally, the relationship between housing supply and affordability. Previous analyses looked only at prices at national level and were not able to take into account the interactions between the demographics and housing and labour markets.
7. The affordability model includes two sets of equations based on different views of how housing and labour markets operate, in order to produce a range of possible outcomes. Reassuringly both sets of equations produce similar results.
8. The research has been peer reviewed by leading, international housing economists and found to be of the highest quality.
9. The research report, published alongside this document, considered a limited set of housing supply scenarios. All scenarios are set against a base case in which net additions to the housing stock are derived from existing Regional Planning Guidance (RPG) plans. The baseline also accounts for the announced 200,000 extra homes to be delivered in the growth areas identified in the Sustainable Communities Plan. This implies housing supply increasing by approximately 20,000 extra houses per annum in England from 2006 to 2016.
10. The scenarios in the research reports are illustrative only and based on those considered as part of the Barker Review. In developing the evidence base to inform Government decisions ODPM has used the model and extended the analysis in a number of ways, in order to consider the impacts of a range of realistic housing supply scenarios and to understand fully the implications.

## Housing supply scenarios

11. The housing supply scenarios considered by the research are unrealistic in two key respects:
  - i. In the baseline, housebuilding occurs as expressed in current plans i.e. approximately at a constant annualised rate;
  - ii. Scenarios for additional housing supply assume that there can be an instantaneous 'step change' to a higher annual rate.
12. ODPM has considered more realistic housing supply scenarios, whereby the rate of housing supply builds up over time. Scenarios for additional housing supply have been developed based on judgements about how additional numbers could be delivered accounting for how the construction industry would respond and the ability of the planning process to deliver.
13. The implication of this is that it takes time to build to a higher annual rate. This means that, while efforts can be made to increase supply quickly, within a given period of time (e.g. by 2016), inevitably additions to stock are to some extent "back-loaded".

## Increasing housing supply assumptions

14. The affordability model considers the impact of building additional owner-occupied houses. However, within the planning system, the number of additional houses is expressed in terms of net additions to the total stock.
15. The analysis produced to inform Government decisions is based on net additions, i.e. new build less demolitions plus gains in dwelling numbers from conversions, which subdivide properties, minus losses in dwelling numbers from conversions which combine existing properties (or undo previous subdivisions).
16. The impact on affordability depends on how a net additions figure is made up. A net additions figure can be achieved by various combinations of new build, conversions and losses. This is important because different combinations lead to different improvements in the quality (broadly measured) of the housing stock overall – which is an important element in supply better matching peoples' aspirations.
17. The model of the housing market that has been developed for ODPM focuses on the impact of net additions to only the owner occupied stock. As agreed with the academics that produced the model, we have combined the results from the model with cautious assumptions, about the combination of conversions, demolitions and transfers from the private rented sector, to model the overall impact on the housing stock.
18. These are simply modelling assumptions that have to be made. The Government has no role in deciding how planning bodies should deliver net increases in housing stock. Regional Planning Bodies (RPBs) will need to work with the National Advice Unit and other parties to establish how to deliver the net additions in their region. This will depend on local circumstances, such as the need to improve the quality of the stock, the location of housing, the availability of brownfield land and other factors.

## Modelling of 30-34 year olds able to afford

19. In order to help us understand better improvements in affordability, we have carried out further analysis that looks at 30-34 year old households – a key group for whom access to the housing ladder is becoming increasingly difficult. This has been based on the Affordability Model, but has been developed based on a number of assumptions.
20. This analysis takes as a starting point the Affordability Modelling. It then considers how the changes in prices to earnings would impact on households' ability to afford an average flat, based on income alone.
21. The analysis makes a series of assumptions:
  - To be able to afford to buy, a household needs to be able to borrow enough to cover the cost of an average flat. For example, if the price of an average flat is £100,000 then a household with income of £25,000 would need to be able to borrow four times their income ( $4 \times 25,000 = 100,000$ ). Clearly, a higher mortgage multiple allows households to borrow more. But higher borrowing implies higher mortgage repayments, which might not be sustainable. For this analysis, we have therefore assumed household borrowing is limited so that mortgage repayments are no more than 25 per cent of income.
  - We assume a repayment mortgage, with a 25-year term.
  - The Survey of English housing provides us with information on 30-34 households, including their tenure, numbers and incomes. Average house prices are taken from the Survey of Mortgage Lenders.
  - Affordability projections are made on the basis of price and earnings growth estimates derived from ODPM's Affordability Model. We assume price and earnings distributions remain constant over time.
  - "Couples" is shorthand for households where the Household Representative Person (aged 30-34) and spouse (any age) are both working at least part-time.

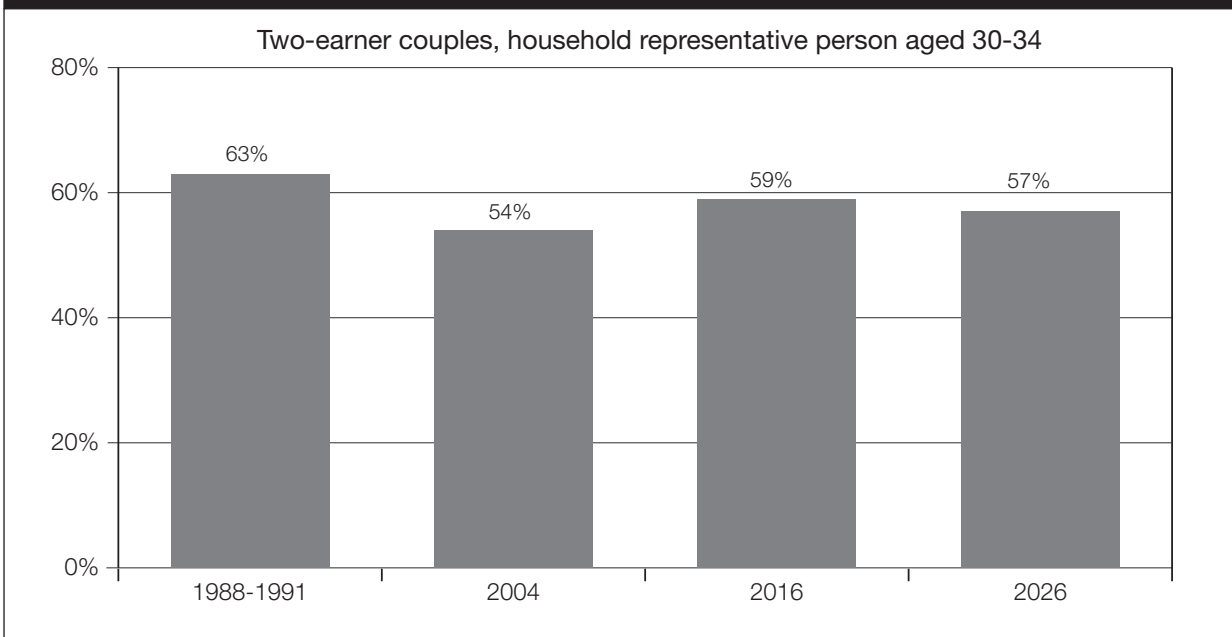
# Key Affordability Results

22. In the baseline the modelling finds that, for England as a whole, prices and earnings grow at a similar rate between 2004 and 2016. Most short-term forecasters expect house prices to grow more slowly than earnings in the next two to three years; the disagreement amongst forecasters is the extent of the dip. The projections that are produced by the Affordability Model suggest that the downturn will be modest. Therefore, the lower quartiles affordability ratio in 2016 is similar to that in 2004 – 6.2 in both years. Beyond 2016 affordability worsens. However, the regional profiles do show some variation in house prices. In some high demand regions affordability worsens markedly over the period to 2016.
23. The modelling suggests that increasing housing supply above the baseline by 100,000 net additions across the South in the period up to 2016 would help to halt this worsening affordability. The England lower quartiles ratio falls only slightly, from 6.2 in 2004 to 6.1 in 2016. Despite the increase in housing supply affordability would continue to worsen in some regions.
24. In order to provide an assessment of the affordability impacts, the analysis needed to make working assumptions on the number and location of new homes. Government has stated an aim of reaching an annual net additions rate of 200,000 in England in the next decade. The rate at which this level is reached will depend on the provision of investment in the infrastructure necessary to support housing growth, reform of the mechanisms by which new housing and infrastructure are delivered and a positive response from the house building industry. ODPM analysts assumed a build level consistent with these parameters. The impacts presented below are all consistent with this scenario.
25. Based on the scenario developed by ODPM analysts, we could see an improvement, from 6.2 to 5.9 in 2016 with improvements in affordability for all the Southern regions.
26. The charts below build on this analysis, to illustrate what this might mean for a typical house-buying couple, aged 30-34. In the baseline, the percentage able to afford to buy worsens significantly in the long term, falling from over a half today to around 35 per cent in 2026. Based on the scenario developed by ODPM analysts, we could see increases in the percentage able to afford to almost 60 per cent.

Figure 1: Ability to afford an average flat based on income alone: baseline  
(current plans including 200,000 additional dwellings by 2016)



Figure 2: Ability to afford an average flat based on income alone under the scenario developed by ODPM analysts above baseline



# Sustainability Analysis

27. Although the Barker Review addressed the implications of supply and prices, it did not assess the environmental, social and broader economic implications of housing supply growth. It was recognised by the House of Commons Environmental Audit report (EAC, 2005)<sup>1</sup> and an earlier Defra study (Entec et al.)<sup>2</sup> that the lack of this information provided an inadequate basis for policy decisions. To fill this gap, ODPM and Defra jointly commissioned a major research project, *A Sustainability Impact Study of Additional Housing Scenarios in England* (Sustainability Study), to consider the environmental, social and economic impacts of additional housing supply.
28. As part of the project a nine-region model was developed to examine the relationship between housing supply and various environmental impacts, including land take, waste production, water use and energy use. In order to ensure consistency, the modelling was based on the same scenarios and inputs as used in the Affordability model.
29. The work highlights two important aspects of the sustainability impacts of additional housing supply. Firstly, the impacts are highly location specific, and will depend critically on not only the scale of development, but also the pattern and distribution of development. Secondly, many of the environmental impacts are created by the people living in the houses, and not by the houses *per se* (occupation versus housebuilding impacts).
30. The report models two categories of environmental impacts – those related to building and those related to people (occupancy).
31. **Housebuilding impacts.** These are the impacts associated with the building of the additional homes.
32. **Occupation Impacts.** These are the environmental impacts created by the people living in the houses. Generally these impacts have a fixed per household element and an additional per occupant element. Which of these two components dominates varies by the type of impact. The observed pattern is that smaller households have a higher average impact than larger households.
33. Since additional housing supply does not create new people, only new (generally smaller) households, there are two effects to be considered. The first is the impact from the new households. The second is the changing impact from existing households (driven by lower average occupancy rates). The research is an advance on earlier work in trying to account for both of these effects.
34. The project was undertaken by a large consortium led by Entec UK Limited, in association with Economics for the Environment Consultancy (Eftec), Richard Hodgkinson Consultancy, Mott MacDonald, and the Cambridge Centre for Housing and Planning Research. These institutions brought together the broad range of skills and expertise required for this project.

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1 House of Commons Environmental Audit Committee (EAC) (2005), *Housing: Building a Sustainable Future*, First Report of Session 2004-05, Volume I

2 Entec in association with Richard Hodgkinson Consultancy and Eftec (2004), *Study into the Environmental Impacts of Increasing the Supply of Housing in the UK*, report to Defra

# Key Sustainability Results

35. Government analysis based on the Sustainability Research estimates that, without mitigation, the environmental impacts of additional housing supply would be marginal. If the package of environmental measures being announced by the Government were taken into account this would reduce the impacts even further.
36. The impacts are marginal for two main reasons. Firstly, the additional housing supply growth needed to reach the Government's ambition of 200,000 annual net delivery will involve fewer net housing additions by 2016 than the levels in all the additional housing supply scenarios modelled in the research. Secondly, impacts related to occupation are primarily driven by population growth which is largely unrelated to housing supply. However, the housebuilding impacts – such as land take required for construction – are directly driven by the level of housebuilding. Key findings are as follows:

## Land take

37. The Government's national target is that 60% of additional housing should be provided on previously developed land and through conversions of existing buildings. The analysis indicates that the national target would be met.

## Domestic CO<sub>2</sub> emissions

38. Currently, domestic sector CO<sub>2</sub> emissions account for 27% of total UK emissions. Based on current design standards and dwelling performance, CO<sub>2</sub> emissions in the base case are estimated to increase to 6.4 million tonnes of carbon equivalents in 2016 (4.2% above current domestic emissions). The analysis suggests that the additional housing supply needed to reach the Government's ambition of 200,000 net additions per annum within a decade would result in a marginal increase in CO<sub>2</sub> emissions. It could produce up to an additional 0.38 Mt of CO<sub>2</sub> in 2016 above baseline emissions. This represents a 0.2% increase in total CO<sub>2</sub> emissions from the domestic sector.
39. The recently announced changes to Part L of the Building Regulations are estimated to reduce CO<sub>2</sub> emissions from buildings by up to 20%. The impact of this new regulation has not been accounted for in the modelling, and as such the actual impacts are likely to be even smaller than those presented.

## Household Waste

40. The analysis suggests that the additional housing supply needed to reach the Government's ambition of 200,000 net additions per annum within a decade would result in a marginal increase in household waste. It could produce up to an additional 0.2 million tonnes of household waste in 2016 above baseline of 28.8 million tonnes. This represents a 0.7% increase in total household waste.

41. Due to data limitations, the research was unable to capture the separate occupancy effects described above. Instead, the estimates are based on average per household waste production and so the impacts presented above are an over-estimate of the likely impacts.

## **Water Use**

42. The analysis suggests that the additional housing supply needed to reach the Government's ambition of 200,000 net additions per annum within a decade would result in a marginal increase in water use. It could produce up to an additional 12 million litres per day in 2016 above the 12,728 mega litres/day in the baseline. This represents a 0.1% increase in total water use. This is because water demand is primarily driven by population, which is largely unaffected by housing supply.

# Further Information

Further information is available in:

*Affordability Targets: Implications for Housing Supply*, ISBN 1 85112 799 2, £12  
*Affordability Targets: Implications for Housing Supply Technical Appendix (ODPM website only)*

*A sustainability impact study of additional housing scenarios in England*,  
ISBN 1 85112 828 X , £15

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