



Meeting the housing requirements of
an aspiring and growing nation: taking
the medium and long-term view

Advice to the Minister about the
housing supply range to be tested
by Regional Planning Authorities

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Dear Caroline

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MEETING THE HOUSING REQUIREMENTS OF AN ASPIRING AND GROWING NATION: TAKING THE MEDIUM AND LONG-TERM VIEW.

Last year's Green Paper on housing – *Homes for the Future: More affordable, more sustainable* – commissioned the NHPAU to provide the Government with advice about the supply ranges to be tested by Regional Planning Authorities in future Regional Spatial Strategy (RSS) reviews. I attach our first advice.

As you know, we are at the beginning of a period of adjustment in the housing market, which reached the top of the price cycle last year. While inevitably there is now a focus on short-term prospects and some uncertainty arising from this, for the sake of communities and future generations it is vital that planners and decision makers are focused on the medium and long term.

There have always been ups and downs in the housing market, but the trend in prices is relentlessly upwards - real house price growth has averaged 2.8 per cent a year over the past 30 years. This cycle and trend will not be moderated until we have properly addressed supply, delivering the right number of new homes, of the right type, in the right place and at the right time.

In developing our advice, we have been mindful of the obligation on planning authorities to consider matters of affordability. We also recognise the more traditional demographic based approaches to planning for new homes. In deriving our advice we have therefore tried to synthesise these approaches. Given the difficult immediate outlook for the economy and the housing market, we have also been cautious about the assumptions which underpin our analysis, for example about earnings growth, interest rate prospects and levels of future household formation.

Our advice is not a target. It is a proposed supply range to be tested – we have provided the 'bookends'. These should provide sufficient flexibility for Regional Planning Authorities to deal with a range of outcomes reflecting regional priorities and circumstances. For example, how far and how fast should the backlog of housing need and demand be addressed? What are the likely prospects for future demand? What would be required to stabilise affordability? What contingencies should be provided for? And how are housing markets related between linked regions?

Cont'd.....

Caroline Flint
Minister for Housing

I believe our advice is a step forward in helping Regional Planning Authorities to consider housing requirements. It should ensure a more transparent debate about the trade-offs being made between providing more homes and competing objectives. It should also provide the basis for a more consistent approach across the regions.

Following your consideration of this advice and decision about how it should be incorporated into the Department's Guidance to the Regional Planning Authorities about the RSS reviews; the NHPAU will be available to discuss its work in detail with the regional partners. As they move through the coming review process we can also work with them to help develop their affordability analysis further.

More formally we expect to engage with the future RSS reviews, for example in providing evidence to Examinations in Public, not only to explain this supply advice, but also to provide a view about the implications of emerging and preferred regional planning authority supply proposals as they move through the process.

I would like to record my thanks to officials from all of the Regional Assemblies, Development Agencies and Government Offices who over the past few months have helped to shape our methodology and inform this advice. In the final analysis I believe that together with councillors, local authorities and industry we are all working towards the same goal - that everyone in England should have the opportunity of a decent home at a price they can afford.

All Best Wishes

Steve

Stephen Nickell
Chairman of the Board
National Housing and Planning Advice Unit

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About this advice

We are required to provide independent advice to the Government about the housing supply range to be tested by the Regional Planning Authorities in the next round of Regional Spatial Strategy (RSS) reviews.

Our advice has been developed against the backdrop of relevant elements of the Government's strategic and policy framework on housing.

We recognise the difficult short-term outlook for the economy in general and the housing market in particular – we have given this proper weight, but will not be distracted by it. Fundamentally our advice is based on available evidence about medium and long-term affordability, demographic and economic trends.

Summary

The aim of the Government's housing policy is that everyone should have the opportunity to buy or rent a decent home at a price they can afford. A key element of this is securing improvement in affordability prospects (paragraphs 1-8).

The Government's chosen affordability indicator is the ratio of lower quartile house prices to earnings – in 2000 this stood at 4, by 2007 it had deteriorated to 7.25.

Based on analysis in this advice, all things being equal, emerging RSS plans would lead to a further worsening of affordability prospects, with the lower quartile ratio deteriorating to 8.6 by 2026.

To put this into context, the difference between the Government's PSA baseline and the projected effect of regional plans would be to increase the mortgage and/or deposit required by first-time buyers in 2026 by about £23,000 at today's prices.

The Government's commitment to increase supply to 240,000 net additions a year by 2016 is an important step towards stabilising affordability. But in considering the most up to date evidence, Regional Planning Authorities may want to go further.

This advice to Government sets out the housing supply range that we believe should be tested by the regional partners, as early as possible, through the planning process.

Our advice provides sufficient flexibility for Regional Planning Authorities to deal with a range of outcomes. It should facilitate a transparent debate about the choices to be made that will affect local communities and future generations.

For example, how far and how fast should the backlog of housing need and demand be addressed? What are the likely prospects for future demand? What would be required to stabilise affordability? What contingencies should be provided for? And how are housing markets related between linked regions?

This is not just about delivering the right numbers, as important is that new homes are of the right type and in the appropriate location to meet demand (paragraphs 70-75).

In developing our advice we have used two methodologies:

- The first utilises the CLG Affordability Model, which integrates information about the labour and housing markets, and demographic trends. The Model enables us to understand the effect of supply on affordability prospects (paragraphs 39-75), and
- The second is a traditional demographic approach which draws on household projections and makes an allowance for constrained need and demand, vacancies in new supply and the demand for second homes (paragraphs 76-98)

We have worked closely with officials from the Regional Assemblies, Development Agencies and Government Offices (the regional partners) in developing our advice. Taking into account their feedback, we have been cautious in our approach and with underpinning assumptions. For instance:

- When modelling the impact of housing supply on affordability we have been conservative in our assumptions about the key drivers of house price growth. Specifically for income we have assumed 1.5 per cent growth in real terms until 2026. For average mortgage interest rates we have assumed 6.25 per cent over the same period, and
- In our demographic analysis we have based our range on the latest official household projections – the Revised 2004-based Household Projections – rather than uplifting for the increases implied by the 2006-based Population Projections

For the purposes of proposing a supply range we have drawn on analysis of the results from both the affordability and demographic methods.

Table 1: NHPAU Recommended Regional Supply Ranges 2008-2026

Region	BOTTOM OF THE PROPOSED HOUSING SUPPLY RANGE				UPPER END OF THE PROPOSED HOUSING SUPPLY RANGE			
	Average annual net additions to 2026	Minimum delivery point by 2016	Total net additions by 2016	Total net additions by 2020	Average annual net additions to 2026	Projected delivery point by 2016	Total net additions by 2016	Total net additions by 2020
North East	6,700	6,600	61,500	87,800	7,500	7,600	66,800	97,300
North West	26,600	27,600	228,900	339,300	29,500	31,300	247,700	373,000
Yorkshire & Humber	23,800	25,100	202,100	302,500	26,400	28,300	218,300	331,700
East Midlands	23,400	23,700	207,000	301,900	24,600	25,300	214,500	315,500
West Midlands	19,000	19,800	164,100	243,200	22,600	24,300	186,600	283,700
East of England	30,600	32,100	259,600	388,000	39,200	43,000	314,300	486,300
London	33,800	35,500	286,600	428,500	42,600	46,700	342,400	529,100
South East	37,800	38,700	331,500	486,200	49,700	53,800	407,200	622,500
South West	29,800	31,000	255,600	379,600	34,800	37,400	287,400	436,800
England	231,500	240,100	1,996,900	2,957,000	276,900	297,700	2,285,200	3,475,900

The remainder of this paper sets out how the supply range advice has been derived. It provides the context for our work, a detailed description of the approach we have taken and the judgements we have had to make. It also identifies next steps.

Background to developing our advice

The strategic and policy context for our advice

1. Our advice has been developed against the backdrop of relevant elements of the Government's strategic and policy framework on housing.

2. The main stated aim of government policy is that everyone should have the opportunity to rent or buy a decent home at a price they can afford, in a place where they want to live and work.

3. From April 2007 a new national policy framework, Planning Policy Statement: Housing (PPS3) took effect. The four strategic objectives are:

- to improve affordability across the housing market, including by increasing the supply of housing
- to achieve a wide choice of high quality homes, both affordable and market housing, to address the requirements of the community
- to widen opportunities for home ownership and ensure high quality housing for those who cannot afford market housing, in particular those who are vulnerable or in need, and
- to create sustainable, inclusive, mixed communities in all areas, both urban and rural

4. The Housing Green Paper *Homes for the Future: More affordable, more sustainable* (July 2007), included measures aimed at tackling the affordability problem. The Spending Review settlement for 2008-2011 set the resources available to support this programme.

5. Of greatest significance is the commitment to deliver 2 million more homes by 2016 and 3 million by 2020. This would mean achieving 240,000 net additions to stock a year by 2016, of which at least 70,000 would be social and low cost homes by 2010/11.

6. Public Service Agreement 20 (PSA 20) was published in October 2007. This set out the high level targets for increasing long-term housing supply, and affordability as measured by the ratio of lower quartile house prices to earnings.

7. New delivery targets are to be reflected throughout the planning system by 2011. This requires the Regional Assemblies, Development Agencies and Government Offices (the regional partners) to embark now on reviewing their strategic housing plans, and working closely with local authorities in doing so.

8. In this regard, last year's Green Paper set out the following role for the National Housing & Planning Advice Unit (NHPAU):

We propose to strengthen the evidence base for those early reviews by issuing formal guidance at the beginning of the RSS preparations on the ranges of housing provision required over a 15 to 20 year period. This guidance will be based on the independent advice of the NHPAU.

We will expect Regional Planning Bodies and Examination in Public Panels to test these options so that the Secretary of State can be fully informed when taking the final decisions about appropriate levels of housing provision in approving the RSS.

It is Government's role to set the overall housing ambition for the country and for the regions, acting upon the advice of the independent NHPAU and considering the national interest in the round.

What our supply range advice is and what it is not

9. Our advice to Government sets out the housing supply range that we believe should be tested by the regional partners, as early as possible, through the planning process. *It is not a supply target.*

10. Housing plans are of considerable importance to existing communities and future generations. In developing our advice we have taken a demonstrably cautious approach. Our advice is focused on the medium and long term.

11. Our advice should provide flexibility to deal with a range of outcomes. It should facilitate a transparent debate about the choices to be made that will affect local communities, within the context of the Government's strategic and policy framework.

12. How far and how fast should the backlog of housing need and demand be addressed? What are the likely prospects for future need and demand? What would be required to stabilise affordability? What contingencies should be provided for? And how are housing markets related between linked regions?

13. Consideration of how different housing outcomes relate to wider regional objectives, including on communities, regeneration, the economy, sustainability and infrastructure, as well as the delivery challenge, are for detailed regional consideration and public scrutiny.

14. The challenges for regions and for housing market areas are far from uniform. A supply range must enable the regional partners to cater for these differences.

15. In 2000 the ratio of lower quartile house prices to earnings was about 4, by 2007 it had leapt to over 7. Housing market affordability has deteriorated rapidly across all regions. And there are other indicators of stress across the housing sector, for example households living in overcrowded conditions, people sharing when they would prefer not to be and increases in waiting lists for social housing.

16. However, it is important to understand that some local areas still contend with the specific challenges of lower demand markets. Here the concern is that unfocused growth could undermine renewal efforts.

17. In many cities and towns there is a focus on urban regeneration, where the priority has been to bend new supply to this end. Here there have been concerns that increasing supply will inevitably lead to development outside these areas and undermine the strategy.

18. And there is a need to recognise the pressing housing situation of many rural communities. Prices for many local aspiring first-time buyers and renters are beyond their means.

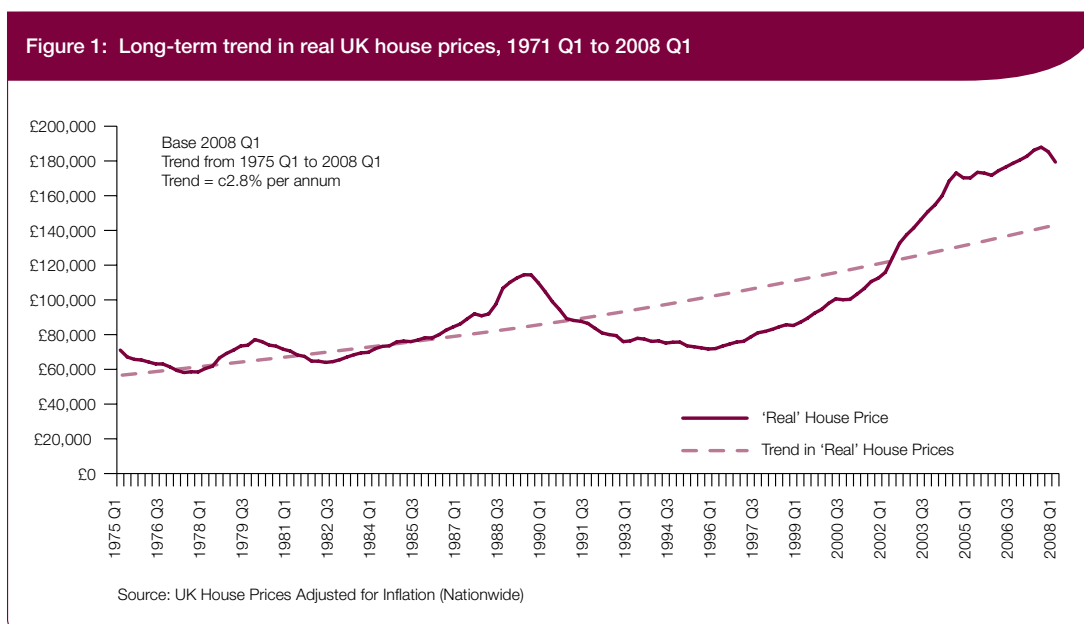
19. Our advice must also provide flexibility in dealing with the outcome of inter-regional deliberations. For example, the answer to the currently open question of capacity constraint in London and the extent to which this might limit the capital's ability to plan fully to meet its own growth or whether some of this will have to be accommodated in regions such as the South East and East of England.

20. We have tried to provide a degree of future proofing by building into our analysis long-range economic forecasts, and while we have used the latest available official household projections we have been conscious of the potential for uplift following the publication of the 2006-based National Population Projections last year. So, the upper end of our supply range should not be viewed as a cap and some Regional Planning Authorities may wish to test plans for a higher level of housing provision.

Delivery and the short-term versus long-term outlook

21. We note that the Callcutt Review¹ recently indicated confidence that the building industry could deliver the Government's housing supply targets, although sentiment and recent data on new build starts indicates a big test in the short run. Whilst not blind to the delivery challenge, these matters – along with areas such as the impact on local economies, sustainability and infrastructure – are for detailed consideration by Regional Planning Authorities and for Examination in Public by independent planning inspectors.

¹ The Callcutt Review of Housebuilding Delivery (November 2007).
See http://www.callcuttreview.co.uk/downloads/callcuttreview_221107.pdf



22. Another matter currently in the minds of planning authorities and decision makers will be the immediate outlook for the economy in general and the housing market in particular. We have given these matters a great deal of consideration.

23. Our work is based on a medium and long-term view of economic and demographic trends, informed by the latest independent forecasts. The time horizon for our analysis is from 2008 to 2026. We have taken a cautious approach to settling on the key underpinning assumptions for our advice.

24. Of course, it is important to recognise that house prices have always moved up and down in the past, but over the last 30 years the long-term trend has been relentlessly upwards. Therefore, while there may be a short-term downturn, prices will not permanently stagnate (see figure 1). Any easing in prices in the next year or two will do little to help the affordability problem because falls are effectively being driven by mortgage rationing for first-time buyers.

25. The price volatility we observe in England's housing market has in part been caused by the under-supply of new homes over decades. Recent work, for example the Barker report of 2004, has shown that housing supply is particularly price inelastic. Short-term price falls are as much a symptom of this lack of responsiveness to underlying demand as is long-run worsening affordability.

26. It is vital that planning authorities and decision makers take a medium and long-term view. For example moving quickly to identify up to 15 years of developable land for homes, and ensuring realistic plans in terms of numbers, type and location. These actions will provide more certainty for the building industry.

27. Indeed, an important factor in achieving a less volatile housing market cycle in England, where house price inflation is moderated and risk reduced, is to ensure a proper supply of new homes. Preparation and action today will help to achieve this.

Working with the regional partners

28. We have held several working meetings with all regional partners in each region. The objectives of these sessions were to:

- initiate dialogue, share the analysis behind our response to the Green Paper and to explain our new role
- achieve a good understanding of each region, for example particular circumstances, progress with RSS delivery, Strategic Housing Market Assessments and Local Development Frameworks
- discuss and seek feedback about the methodology we would be using to develop our supply range advice, and the evidence emerging from our work

29. As will become apparent, contributions made by the regional partners during the past few months have had a significant bearing on our final advice.

30. We have also been able to take stock of progress with embedding affordability analysis in housing plans. It is of note that in the first round of RSSs there has not been an effective consideration of affordability prospects for local communities over the medium and long term.

31. In no region has there been a comprehensive assessment of the impact of supply plans on affordability, nor a transparent consideration of the trade off being made with other important environmental and social objectives (areas which are given much fuller analysis in the process). The most comprehensive work considering affordability at a regional level, of which we are aware, was commissioned by the South East Regional Assembly and completed in May this year².

32. Some might argue that this deficiency is understandable, for example PPS3 was not published until November 2006 and the tools to make these long-run assessments are not widely available. Nevertheless, affordability has been a key issue since the publication of the Barker report of 2004 and this gap, which is also reflected in key management tools like the regional Annual Monitoring Reports, is significant.

33. Our analysis of the impact of current regional plans on housing market affordability is set out in our report *Developing a supply range for the supply of new homes across England*, which was published in October 2007. This report concluded that, all other things being equal, current RSSs will lead to worsening affordability prospects.

34. Important work has begun across many regions to identify sub-regional housing markets. The NHPAU is engaged across the regions with this process and over time aims to help develop tools to enable partners to analyse affordability at this level.

35. Discussions and the status of ongoing work with the new planning arrangements and housing market assessments have informed our approach to developing the supply range. We look forward to continued close working arrangements.

Developing our advice

36. In developing our advice about a supply range to be tested by the regions, we initially explored three different methods to understand potential requirements. In brief these were the:

- **Affordability Model**, commissioned by CLG and developed by Reading Business School, relates data about the housing market, labour market and demographic trends. The starting point for analysis is to understand what level of supply would be required, all other things being equal, to achieve stabilisation of affordability, over the RSS time horizon, in each region

² Housing and Affordability in the South East, Christine Whitehead, London School of Economics (May 2008).

- **Demographic Method** – based on household projections, this traditional approach used by planning authorities, is expanded to take into account other factors, such as planning to tackle constrained demand over the RSS time horizon, for example as exhibited through overcrowding or sharing. In addition, allowance is made for factors such as vacancies and second homes, and
- **Economic Growth Model** – Regional Development Agencies have used a variety of econometric models to gauge the impact of different economic outcomes on demand for housing via rates of household formation and projected employment growth. Seven of the nine regions have used the services of Experian so we commissioned them to run various scenarios for us³

37. After consideration of the detailed methodologies, we have decided not to proceed with the Economic Growth Model. Whilst the Experian Model is a well regarded macroeconomic forecasting tool – we draw on its outputs in our sensitivity testing of affordability results – it is not as comprehensive as the alternatives in deriving a housing supply range. For example, it does not take into account constrained need and demand and it builds in a constraint related to the operation of the planning system.

38. Detailed technical appendices for the Affordability Model and the Demographic Method are attached. These set out data sources and provide a step-by-step guide to our approach, including underpinning assumptions made and scenarios considered. The following sections of this paper focus on the main findings and considerations.

³ Experian's Report for NHPAU will be made available alongside our Supply Range Advice.

Affordability analysis

39. The evidence for under-supply of housing over decades is strong and this has been a factor in long-term house price growth. This is what Kate Barker said in 2004 in her Review of Housing Supply:

For many people, housing has become increasingly unaffordable over time. The aspiration for home ownership is as strong as ever, yet the reality is that for many this aspiration will remain unfulfilled unless the trend in real house prices is reduced. This brings potential for an ever widening social and economic divide between those able to access market housing and those kept out.

40. Affordability was a real concern in 2004, and of course since that time the position has got far worse. One of the main reasons for this is that we fail to plan for and deliver sufficient numbers of new homes.

Baseline affordability results

41. The starting point for our analysis was therefore to understand what level of supply would be required to stabilise affordability, all things being equal, over the long term and in each region. The Government's chosen indicator in PSA 20 is the ratio of lower quartile earnings to house prices. The baseline measure for England is 7.25 recorded in the first quarter of 2007.

42. Based on analysis in this advice, we project that emerging RSS plans could lead to a ratio of lower quartile earnings to house prices of 8.6 by 2026⁴. To put this into context, the difference between the PSA baseline and the projected effect of emerging regional plans would mean an increase in the mortgage and/or deposit required by first-time buyers in 2026 by the equivalent today of about £23,000⁵.

Table 2: Net additions to supply in 2007, Emerging RSS Plans and Revised 2004-based Household Projections, annual average change to 2016, by region

Region	Net additions to stock 2007	Emerging RSS Plans ⁶	Revised 2004-based Household Projections annual average change to 2016
North East	7,170	7,585	7,000
North West	22,750	23,114	27,800
Yorkshire & Humber	19,160	22,260	24,900
East Midlands	22,070	21,758	23,400
West Midlands	16,300	18,280	19,500
East of England	24,800	25,400	30,800
London ⁷	27,290	27,597	33,700
South East	34,560	32,008	36,800
South West	25,150	28,475	29,700
England	199,250	206,477	233,600

⁴ In *Developing a target range for the supply of new homes across England – October 2007* our assessment was that RSS plans could result in the lower quartile ratio exceeding 10. The difference between this and our new analysis is accounted for by the different assumptions made about economic prospects (paragraphs 50-61 of this paper).

⁵ It is estimated that emerging RSS plans would increase the lower quartile house price to earnings ratio to 8.6 compared with the PSA 20 baseline of 7.25. The difference implies that house prices would increase by 1.35 times lower quartile full time earnings. In 2007 the Annual Survey of Hours and Earnings showed that average lower quartile earnings were £17,299. In today's terms, for the affordability ratio to increase to 8.6, house prices would be £23,000 higher.

⁶ Housing numbers as at April 2008 and subject to change as the process is ongoing in most regions. The number used for each region is the annual average housing number in the most recently published stage (as at April 2008) of the RSS review process, including draft RSS, panel report, Secretary of State proposed changes or final RSS as appropriate.

⁷ For consistency non-conventional supply, for example increases in hostel accommodation, is excluded.

Table 3: Stabilise affordability consistent with PSA 20 baseline, in each region by 2026 (net additions). Revised 2004-based Population Projections, nominal income growth 5% p.a, mortgage interest rates fixed at 5.75%.

Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	7,094	7,128	7,110	135,092	5.34
North West	5.69	22,750	34,473	29,263	32,005	608,099	5.69
Yorkshire & Humber	5.72	19,160	32,453	26,545	29,654	563,434	5.72
East Midlands	6.57	22,070	24,330	23,325	23,854	453,228	6.57
West Midlands	6.30	16,300	25,117	21,198	23,261	441,953	6.30
East of England	7.83	24,800	53,298	40,632	47,299	898,674	7.82
London	8.90	27,290	48,067	38,833	43,693	830,159	8.90
South East	8.48	34,560	64,010	50,921	57,810	1,098,389	8.48
South West	8.71	25,150	46,136	36,809	41,718	792,641	8.71
England	7.23	199,250	334,978	274,654	306,404	5,821,669	7.27

43. The results from the baseline version of the Affordability Model indicate that net additions would need to average more than 306,000 per annum and reach a peak of 335,000 by 2016 to stabilise affordability at around the PSA 20 baseline level.

44. As we have set out in previous publications, a market led approach to determining the distribution of housing growth would suggest that increased supply should be focused in those regions where affordability is worst.

45. Results from this baseline run illustrate the point, for example indicating that in the South East an average of nearly 58,000 new homes would be required each year to stabilise affordability at its current level by 2026. Responding to price signals in this way not only addresses the problem in the South, but because of the widely acknowledged house price 'ripple effect' it also benefits other regions.

46. Some caution is required here. The re-balancing of supply implied by these results could conceivably have effects not captured in the Model. For example, a step change of this magnitude could have an impact on prices through moderated expectations. Also the ripple effect could be weaker than exhibited under current conditions.

47. We have run dozens of scenarios in the Model with sensitivity testing incorporated. These include adjustments to the timing and regional distribution of new housing supply. Results and accompanying explanatory notes for selected scenarios can be found in Appendix A to this advice.

48. The most significant work flowed from our liaison with the regional partners. One of the main areas of discussion was about the assumptions made in the Model in terms of the key drivers of house price inflation, namely population, household and earnings growth, and mortgage interest rate prospects⁸.

49. To simplify – the effect of lower earnings growth, lower population numbers or higher interest rates could be to reduce house price growth, and vice-versa.

⁸ Research on UK house prices shows that, in the long run, if real incomes rise by 1% then house prices will rise by 2%; if mortgage rates rise by 1 percentage point, then house prices will fall by around 3%; if housing stock increases by 1%, then house prices will fall by about 2%; and if the number of households increases by 1%, then house prices will increase by about 2%.

Household and population projections

50. Household projections are produced by CLG and run until 2029. They are derived from the Office for National Statistics (ONS) Revised 2004-based Population Projections. In September 2007 the ONS published national 2006-based projections. These represented an increase in average annual population growth for England of around 65 per cent when compared to the revised 2004-based projections.

51. We have calculated what the rough order of magnitude effect of the new population projections might be on household numbers. However the official CLG 2006-based Household Projections will not be available until later this year. And there is debate about whether the 2006-based National Population Projections will be realised.

52. Much of the debate surrounds migration data. A recent report by the Treasury Committee was critical of current methodology at a local authority level⁹. And Home Office Ministers have indicated that recent policy developments such as the new points based system will reduce immigration¹⁰. The international economic outlook will also impact both on outward and inward migration.

53. Of course, population projections capture more than migration. It is of note that the overall projections for 2006, even where these incorporate a low migration assumption (net annual average inflow of 111,000), are higher than the central population projection for 2004 (net annual average migrant inflow of 130,000). Natural change is important, for example between 2001 and 2006 the total fertility rate has increased from 1.63 children per woman to 1.86.

54. In the absence of the official 2006-based Household Projections until later in the year, on balance we have taken the cautious approach. The Affordability Model therefore incorporates the lower revised 2004-based projections. Regional Planning Authorities will however want to consider the potential impact of future projections on their plans – it may be one factor to influence where they start to focus along our proposed supply range.

Table 4: Average annual household change by household projection type, 2008-2026¹¹

	Official 2004 revised	NHPAU 2006 derived	NHPAU 2006 derived low migration
North East	6,100	9,200	7,700
North West	25,700	30,100	25,900
Yorkshire & Humber	23,300	32,100	28,700
East Midlands	22,100	29,200	26,400
West Midlands	18,400	22,800	19,700
East of England	29,900	35,300	31,800
London	33,000	36,200	30,900
South East	36,000	40,700	35,900
South West	28,800	33,000	29,900
England	223,300	268,600	236,900

⁹ House of Commons Treasury Committee report Counting the Population (May 2008)

¹⁰ Home Office indicates that in the 12 months to last September, 65,000 skilled workers from outside the EEA were allowed into the UK, but under the new rules there would have been almost 8,000 fewer.

¹¹ NHPAU derived household projections are unofficial. They are based on the ONS 2006-based Subnational Population Projections with the 2004-based institutional population removed, and 2004-based household representative rates applied. The official CLG 2006-based Household Projections are expected at the end of the year.

Growth in earnings

55. The baseline Affordability Model assumes that average earnings will grow in nominal terms by around 5 per cent per annum, and in real terms by 2.5 per cent over the whole period i.e. until 2026. Because earnings are used as a proxy for the broader measure of household disposable income, this assumption will be viewed by many as reasonable.

56. However, in the context of earnings growth over the past few decades, and current uncertainties about the global economy, it is not unreasonable to test a more modest outlook. For example, some forecasters are assuming that nominal earnings will grow at around 4 per cent and in real terms by 1.6 per cent each year over the same period^{12,13}.

57. While some will argue that a reduction in the assumption for earnings growth does not properly account for broader income growth, and is therefore conservative, we have decided to use this cautious outlook in our central modelling.

Mortgage interest rates

58. The baseline Model assumes that mortgage interest rates will be 5.75 per cent. Some argue that this is optimistic because it doesn't take account of the recent 'credit crunch' that has seen mortgage interest rates rise above 5.75 since July 2007, with the average rate rising to 5.87 per cent by early 2008¹⁴.

59. Mortgage rates have averaged around 5.75 per cent since 1993¹⁵ and some independent forecasters anticipate rates falling over the medium to long term to around 5.4 per cent¹⁶. It is of note that in a recent report¹⁷ the Bank of England indicated that credit markets may be over compensating in the face of losses on US sub-prime loans. For example, a simple measure of the risk-neutral annual implied loss rate on UK prime loans has risen to around 2.7 per cent, from 0.6 per cent in July 2007. The report comments that 'there is little evidence to support such an increase in projected loss rates'.

60. However, it is of note that the 10 year risk free rate on government bonds is 5.17 per cent. This reflects the average of expected shorter term rates over the next 10 years. We should then expect that banks will be charging customers above this rate to cover for risk and profit. And taking into account factors such as a degree of rationing of mortgage finance, a rate of 5.75 per cent may be a little optimistic.

61. On balance, for the time being, we have decided to assume mortgage interest rates average 6.25 per cent for the whole period modelled. In Appendix A we have also modelled scenarios with interest rates at 6.75 per cent.

Main affordability results

62. In considering the above factors we have been cautious in our assumptions. Our principal scenarios use the Revised 2004-based Population Projections, assume nominal earnings grow at 4 per cent per annum and that mortgage interest rates average 6.25 per cent until 2026.

63. We make one further adjustment to the baseline run. As noted previously, a market led approach to determining the distribution of housing growth suggests that increased supply should be focused in those regions where affordability is worst. Under some assumptions this can lead the Model to derive supply numbers below basic household projections in the North and Midlands.

¹² The Experian UK Macroeconomic Forecast (April, 2008) projects that nominal earnings will grow by 4.3 per cent and by 1.6 per cent in real terms

¹³ The National Institute of Economic and Social Research forecast average earnings growing at 3.9 per cent between 2008 and 2016 and in real terms by 1.9 per cent (NISER, January 2008; see <http://www.niesr.ac.uk>).

¹⁴ Council of Mortgage Lenders statistics, Table 1ML5, February 2008 (<http://www.cml.org.uk/cml/statistics>)

¹⁵ The average mortgage interest rate was 5.79 per cent from 1993Q1 to 2007Q4 (CML data)

¹⁶ The Experian UK Macroeconomic Forecast (April, 2008) for the average mortgage interest rate was 5.38 per cent between 2008-2026. This is in line with NIESR 10 year interest rate forecasts at 2016.

¹⁷ The Bank of England Financial Stability Report (April 2008) (<http://www.bankofengland.co.uk/publications/fsr/2008/fsrfull0804.pdf>)

Table 5: Stabilise affordability consistent with PSA 20 baseline, in each region by 2026 (net additions). Revised 2004-based Population Projections, nominal income growth at 4% p.a, mortgage interest rates fixed at 6.25%.

Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	6,600	6,853	6,720	127,679	5.01
North West	5.69	22,750	27,600	25,444	26,579	505,000	5.47
Yorkshire & Humber	5.72	19,160	25,100	22,460	23,849	453,139	5.26
East Midlands	6.57	22,070	23,700	22,976	23,357	443,781	6.13
West Midlands	6.30	16,300	19,800	18,244	19,063	362,198	6.04
East of England	7.83	24,800	43,016	34,920	39,181	744,442	7.82
London	8.90	27,290	35,500	31,851	33,772	641,661	8.73
South East	8.48	34,560	53,802	45,250	49,751	945,265	8.48
South West	8.71	25,150	37,351	31,928	34,782	660,866	8.71
England	7.23	199,250	272,469	239,926	257,053	4,884,016	7.03

64. It is appropriate to note that while historically there has been a strong relationship between house price movements in the South and those in the Midlands and the North – the so called ‘ripple effect’ – if supply were to increase by the scale set out then it is reasonable to assume that the relationship might weaken. That would imply higher levels of supply would be required in the North and Midlands to stabilise affordability.

65. We do not believe it appropriate to plan for fewer homes in any region than the basic official projections indicate. We have therefore introduced a minimum requirement for average net additions over the period based on the official Revised 2004-based Household Projections.

66. We ran this set of assumptions through the Model. Again the aim is to stabilise affordability, both nationally and regionally, at the PSA 20 level by 2026. Results and accompanying explanatory notes for selected scenarios can be found in Appendix A to this advice.

67. Under the above assumptions net additions would need to average around 257,000 over the period to 2026, reaching a peak level of supply of 273,000 by 2016 to stabilise affordability at around the PSA 20 baseline level.

68. From our affordability analysis, we believe that all things being equal, the results in table 5 provide a reasonable approximation of the right number of new homes that would be required to stabilise affordability by 2026. These results have been incorporated into the upper range of our advice.

69. Our assessment is based on a conservative view of growth in household numbers and long-term economic prospects. Should earnings grow more strongly than forecast, and if average mortgage interest rates are lower, then the number of homes required to stabilise affordability would increase.

70. A final important consideration is the effect on affordability of building the right type of homes to cater for demand. As people become more prosperous they demand more housing services i.e. bigger (more space internally and externally) and better homes (for example, higher environmental standards).

71. A distribution of new supply that better accounts for future demand, including from existing homeowners, is likely to have a more significant impact on overall affordability. For example, an under-supply of larger homes means higher prices at this level and increased competition for properties at lower levels in the chain from those unable to move up.

72. Recent experience suggests – for example the significant proportion of new supply being flats concentrated in city centre locations – that we have some way to go to ensure the right profile of new homes. Regional partners are at present considering this matter as part of their Strategic Housing Market Assessments (SHMA).

73. In the Affordability Model we can explore the implications of altering the supply mix. The Model draws on basic hedonics – an analysis of the characteristics of homes that drive prices. To simplify, the higher the quality of housing services delivered, measured by proxy in the model in terms of location, size, type and age, the better the pay off in terms of an improvement to affordability.

74. The baseline model assumption is that the number of rooms in new dwellings will mirror the regional mix in existing stock. We amend this assumption to eliminate the delivery of any dwellings with 4 rooms or less. The effect, layered onto the analysis already undertaken at paragraphs 48-68, is shown in table 6. Further runs isolating the effect of this adjustment are provided in Appendix A.

75. Whilst we have not incorporated this analysis into our supply range, in the absence of better evidence, it would not be unreasonable for Regional Planning Authorities to make an assumption based on our work and drawing on emerging details from SHMAs. We will do more research into this area to understand better the impact of housing quality on affordability.

Table 6: Illustrative impact of delivering ‘bigger and better’ homes on housing supply requirements 2008-2026.

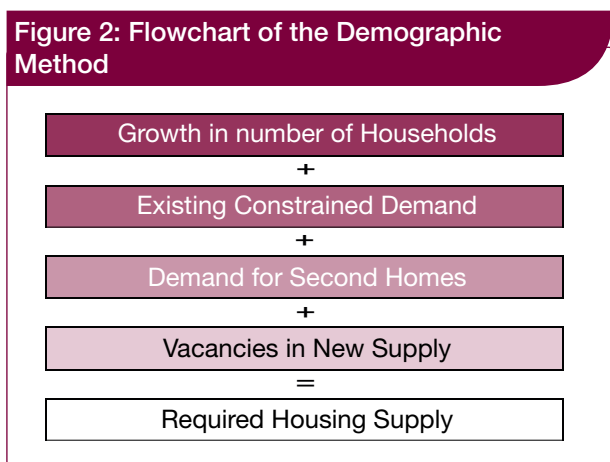
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	6,600	6,854	6,720	127,681	4.93
North West	5.69	22,750	27,600	25,445	26,579	505,000	5.39
Yorkshire & Humber	5.72	19,160	25,100	22,460	23,849	453,139	5.13
East Midlands	6.57	22,070	23,700	22,976	23,357	443,780	6.04
West Midlands	6.30	16,300	19,800	18,244	19,063	362,200	5.95
East of England	7.83	24,800	39,759	33,110	36,610	695,582	7.82
London	8.90	27,290	35,500	31,851	33,772	641,660	8.40
South East	8.48	34,560	51,376	43,902	47,836	908,885	8.48
South West	8.71	25,150	35,638	30,977	33,430	635,175	8.71
England	7.23	199,250	265,073	235,818	251,215	4,773,084	6.93

Demographic method

Base household projections

76. The Demographic Method, which is based on household projections, is the traditional approach used by planning authorities when developing their housing plans. This so called ‘project and provide’ method does not directly account for economic factors or changes in policy.

Figure 2: Flowchart of the Demographic Method



77. Household projections are trend based. They estimate the number of households that will form in the future through assumptions based on current trends, for example in migration, mortality, fertility, separation and the age at which non-dependent children leave home.

78. CLG released the Revised 2004-based Household Projections in February, incorporating an improved migration methodology developed by ONS. These projections form the main building block for our Demographic Method. Appendix B sets out in more detail how they are derived, and in particular the effect of assumptions about key drivers such as migration.

79. Our recommendation at the present time is that the minimum number of homes to be considered in the next wave of RSSs should be based on the Revised 2004-based Household Projections with appropriate adjustment to ensure that the Government’s targets are satisfied. The Revised 2004-based Household Projections are shown in table 7 with totals consistent with the Government’s housing supply delivery targets of 2 million more homes by 2016 and 3 million by 2020.

Table 7: Revised 2004-based Household Projections

	Annual Average change, 2004 – 2026	Total in 2016	TOTAL 2007 – 2016	TOTAL 2007 – 2020
North East	6,200	7,000	62,500	88,500
North West	25,600	28,200	246,600	355,400
Yorkshire & Humber	23,400	25,200	221,900	319,500
East Midlands	22,100	23,500	209,300	301,000
West Midlands	18,400	19,900	174,000	251,600
East of England	29,800	31,800	274,300	399,100
London	33,400	34,900	301,100	439,100
South East	35,800	38,400	325,700	477,500
South West	28,600	30,600	263,300	384,400
England	223,300	239,500	2,078,600	3,016,000

80. While we have based our advice on the latest official Revised 2004-based Household Projections, the 2006-based National Population Projections released by ONS in September 2007 indicate a significant rise in population. This increase is likely to be reflected in the 2006-based Household Projections when they are published towards the end of 2008.

81. Planning authorities should therefore not see our supply range advice as set in stone, but should review the advice in light of the latest round of household projections. Failure to take account of new projections when reviewing regional plans could result in an under-estimate of newly forming households, which if fed through into supply would result in worsening affordability, and increase the backlog of need and demand for housing.

Backlog of constrained need and demand

82. Growth in projected households has consistently exceeded housing supply over the last decade, and for decades previously. This has resulted in constrained need and demand. Therefore in addition to household projections, we have also considered the backlog that has built up to derive a required level of housing supply going forward.

83. Given the Government's objectives it would seem appropriate to set an expectation that the housing backlog will be dealt with over the period of an RSS, say 20 years. A shorter time frame is unlikely to be realistic and a longer time frame would be inconsistent with the policy framework.

84. The elements which make up our consideration of existing constrained demand include: sharing households; overcrowded households; concealed households; the homeless, including those in temporary accommodation; changes in one-person and multi-person households; and changes in non-dependent children living with their parents.

85. Care is required in deriving estimates here. For example, it is important to identify involuntary sharing and concealment as not all families and sharing households want to live separately; some prefer to live as part of an extended family for social or cultural reasons; and some one-person households choose to live in shared accommodation as a lifestyle choice.

86. The methodology we have used is set out in Appendix B. We have taken a cautious approach and on balance it is likely we have underestimated need and potential demand from these groups.

Table 8: Estimate of average annual constrained need and demand by region, 2008-2026.

	Average annual net additions required across the period 2008-2026
North East	1,100
North West	2,800
Yorkshire & Humber	2,100
East Midlands	1,600
West Midlands	3,300
East of England	2,900
London	7,800
South East	3,700
South West	2,200
England	27,500

Additional demand for second homes

87. Regional Planning Authorities rarely include an allowance to cover the demand for second homes. This is a contentious area, and so by excluding second homes from consideration the issues raised are left to one side.

88. In reality a lack of planning for second homes does not deter purchase. There is no law or policy that discourages second home ownership. A lack of planning actually bites on first-time buyers and those at the margins of home ownership due to under-supply in the market.

89. As the existing population gets richer they demand more housing. Consequently we have seen an increase in the number of second homes in recent years. An estimate of the projected demand for second homes needs to be included in housing plans¹⁸.

¹⁸ A second home is defined as a property owned by a household member, which is not the household's main residence. Properties which are the main residence of someone else, or which the owner intends to sell because they have moved are not counted.

90. Second homes made up approximately 1.1 per cent of England's housing stock with 240,000 homes located across the nine Government Office Regions in 2006. A simple projection has been made to estimate the number of second homes between now and 2026 (table 9).

91. We have taken a cautious view about the projected number of second homes assuming that the proportion in the housing stock will not change from its current rate. The rate could increase as the population becomes more prosperous.

Expected vacancies in new supply

92. The vacancies in new and existing stock also need to be considered. Vacancy rates in existing stock are relatively stable, with some reduction noted in recent years. Although some regions have considered reducing their vacancy rates further as part of the RSS process, recent Panel Reports¹⁹ suggest that this should not be assumed in the calculation of housing numbers. Indeed, international evidence indicates that vacancy rates in the UK are low compared with other countries²⁰.

93. Some interest groups say that there are 1 million empty properties and that by implication we can use these and build less. But if we strip away second homes and short-term transactional vacancies the figure is nearer 300,000. Of course it makes sense to utilise as many of these dwellings as possible, and local authorities are active in trying to achieve this. But some properties are simply not fit for habitation and will be in the wrong place for working people. At a national level bringing empty homes back into use will not contribute significantly to supply requirements.

94. To allow for likely vacancies in new housing supply a three year average of vacancy rates for each region was applied to new stock. This approach is considered robust given the stable levels observed and that the level of vacancies is below the vacancy rate calculated using the Affordability Model²¹.

95. However, for the North East, North West, Yorkshire & Humber, and the East and West Midlands, we have capped rates at 3 per cent to reflect the fact that the vacancies in new stock may be lower than the overall rate because of a greater difference in quality between new and old supply in these regions²².

Table 9: The annual allowance for second homes and vacancies 2008-2026

	Second Homes	Vacancies
North East	90	230
North West	220	890
Yorkshire & Humber	200	790
East Midlands	120	740
West Midlands	190	680
East of England	340	850
London	600	1,230
South East	500	1,020
South West	620	860
England	2,870	7,280

¹⁹ For example, East Midlands RSS Panel Report, paragraph 4.19.

²⁰ At 3.4%, vacancy rates in Britain are low by international standards. This is to be expected, because with high property prices, the opportunity cost of leaving dwellings vacant is also high. Evans and Hartwich (2005) estimate that Germany has a vacancy rate of 8.2% and France 6.8%. In Italy, the rate is almost 20%. In the US, the vacancy rate for rental units is approximately 10% – US Census Bureau (2005).

²¹ Simulations run by Reading University on the Affordability Model suggest that the market housing vacancy rate for England could increase to 4.5% by 2016 (range 3.8 to 5.9%) for the addition of 100,000 homes (Goody, Kasparova, Meen, Pryce and Whitehead, unpublished report, June 2007).

²² The Home Builders Federation (HBF) also stated a vacancy rate of 3% in new supply in evidence they presented to a Parliamentary Select Committee <http://www.publications.parliament.uk/pa/cm200203/cmselect/cmmodpm/77-ii/77m18.htm>

Total supply range derived from the Demographic Method

96. Table 10 sets out the level of supply required in each region in order to meet the Revised 2004-based Household Projections, to clear the assessed backlog of need and demand by 2026 and to allow for second homes and estimated vacancies. The results from the Demographic Method have been reshaped to peak in 2016 (there being no prospect of jumping immediately to delivery of higher numbers from 2008).

97. The Affordability Model inevitably focuses growth in the least affordable regions. But those regions will properly weigh many factors in deciding what level of supply to plan for. If this is below the top end of our range then the outlook for affordability in the North will also be less positive because they would not benefit to the extent implied in the Model from the ripple effect. We have also already noted that the relationship between house price movements across the regions could weaken if supply were to increase by the scale set out.

98. The Demographic Method provides an important flexibility for the northern regions. It will provide headroom in considering broader economic ambition and demographic pressures.

Table 10: Housing supply trajectory for 2008-2026 using Revised 2004-based Household Projections, including constrained need and demand, demand for second homes and estimated vacancies

	Projected delivery point by 2016	Annual Average 2008-2026	Total by 2016	Total by 2020
North East	7,600	7,500	66,800	97,300
North West	31,300	29,500	247,700	373,000
Yorkshire & Humber	28,300	26,400	218,300	331,700
East Midlands	25,300	24,600	214,500	315,500
West Midlands	24,300	22,600	186,600	283,700
East of England	36,400	34,000	281,200	426,800
London	46,700	42,600	342,700	529,600
South East	43,000	41,200	353,300	525,300
South West	34,400	32,500	272,700	410,300
England	277,300	260,900	2,183,800	3,293,200

Synthesis

99. As we have set out, housing is of considerable importance to existing communities and future generations. In developing our advice we have taken a cautious approach. Our advice is focused on the medium and long term.

100. Our advice needs to provide sufficient flexibility to deal with a range of outcomes. It should facilitate a transparent debate, both intra and inter-regional, about the choices to be made that will affect local communities, within the context of the Government's strategic and policy framework for housing.

101. For example, how far and how fast should the backlog of housing be addressed; what are the likely prospects for future need and demand; what would be required to stabilise affordability prospects; what contingencies should be provided for; and what is the nature of the relationship between housing markets in linked regions?

102. For the purposes of developing our supply range advice we draw on affordability and demographic analysis. In both cases we have been cautious in our assumptions.

103. For instance, when modelling the impact of housing supply on affordability we have been conservative in our assumptions about earnings growth and mortgage interest rates, which are key drivers of housing demand.

104. In our demographic analysis we have based our range on the latest official Revised 2004-based Household Projections but recognise that there is likely to be uplift in the projections because of stronger than expected population growth.

Bottom end of the range

105. The bottom of our supply range is informed by the latest official household projections, 2007 net additions and government targets for the supply of new homes. The starting point for the housing supply trajectory is 2007 net additions rising to the Government's targets of 240,000 annual net additions by 2016 with the distribution between regions informed by the latest household projections. The trajectory must also satisfy two other commitments, delivery of 2 million net additions to stock by 2016 and 3 million by 2020. Delivery is assumed as held constant after 2020.

106. It should be noted that there are a number of alternatives to creating the trajectory for delivery based on the Revised 2004-based Household Projections. We have adopted a relatively simple approach whilst ensuring delivery of the Government's commitments. It would not be unreasonable for Regional Planning Authorities to consider alternative approaches to developing their trajectory, for example taking into account recent performance and delivery forecasts for the next few years, so long as these were based on the latest official household projections and ensured the right contribution to government targets at key delivery points.

Upper end of the range

107. We have drawn on our demographic analysis of backlog, and the results from our affordability modelling to give an upper supply range. These numbers should not be viewed as a maximum and some Regional Planning Authorities may wish to test plans for a higher level of housing provision.

108. The affordability results in table 5 are the number of new homes required to stabilise the lower quartile house price to earnings ratio at the level it was at in the first quarter of 2007. This is the PSA 20 baseline level.

109. The Demographic Method is another way of looking at housing pressures, and the one most commonly used by planning authorities. It differs from the affordability analysis in that it doesn't directly consider the economic drivers of housing demand, like earnings and interest rates.

110. In the Demographic Method we have used household projections and made allowance for constrained demand, vacancies in new supply, and demand for second homes. At the England level, despite the differences in methodology, the numbers produced by the Demographic Method are similar to those generated from the affordability analysis, with average annual net additions to 2026 being around 260,000.

Table 11: NHPAU Supply Ranges for the period 2008-2026

Region	MINIMUM OF THE PROPOSED HOUSING SUPPLY RANGE			UPPER END OF THE PROPOSED HOUSING SUPPLY RANGE					
	2008-2026 trajectory to meet HMG Green Paper targets			2008-2026 Revised 2004-based Household Projections plus backlog			Stabilising affordability at PSA20 baseline by 2026		
	Average annual net additions to 2026	Minimum delivery point by 2016	Total net additions by 2020	Average annual net additions to 2026	Projected delivery point by 2016	Total net additions to 2020	Average annual net additions to 2026	Projected delivery point by 2016	Total net additions to 2020
North East	6,700	6,600	87,600	7,500	7,600	97,300	6,700	6,600	87,600
North West	26,600	27,600	339,300	29,500	31,300	373,000	26,600	27,600	339,300
Yorkshire & Humber	23,800	25,100	302,500	26,400	28,300	331,700	23,800	25,100	302,500
East Midlands	23,400	23,700	301,900	24,600	25,300	315,500	23,400	23,700	301,900
West Midlands	19,000	19,800	243,200	22,600	24,300	283,700	19,000	19,800	243,200
East of England	30,600	32,100	388,000	33,900	36,400	426,600	39,200	43,000	486,800
London	33,800	35,500	428,500	42,600	46,700	529,100	33,800	35,500	428,500
South East	37,800	38,700	486,200	41,200	43,000	525,100	49,700	53,800	622,400
South West	29,800	31,000	379,600	32,400	34,400	410,100	34,800	37,400	436,300
England	231,500	240,100	2,957,000	260,700	277,300	3,292,100	257,000	272,500	3,248,700

111. However, the national totals mask important regional dynamics. For example, in the North East under the Demographic Method average net additions are estimated to be 7,600 per annum, but an unconstrained Affordability Model analysis would suggest that only 4,300 homes are required to stabilise affordability. Conversely, in the South East around 50,000 homes are required to stabilise affordability but only 41,000 net additions are required to meet demographic demand.

112. The backlog of housing demand that has built up over recent years and the prospect of housing becoming less affordable in the future are problems which are linked and *both* need to be considered in the next wave of RSSs.

Table 12: NHPAU Recommended Regional Supply Ranges 2008-2026

Region	BOTTOM OF THE PROPOSED HOUSING SUPPLY RANGE				UPPER END OF THE PROPOSED HOUSING SUPPLY RANGE			
	Average annual net additions to 2026	Minimum delivery point by 2016	Total net additions by 2016	Total net additions by 2020	Average annual net additions to 2026	Projected delivery point by 2016	Total net additions by 2016	Total net additions by 2020
North East	6,700	6,600	61,500	87,800	7,500	7,600	66,800	97,300
North West	26,600	27,600	228,900	339,300	29,500	31,300	247,700	373,000
Yorkshire & Humber	23,800	25,100	202,100	302,500	26,400	28,300	218,300	331,700
East Midlands	23,400	23,700	207,000	301,900	24,600	25,300	214,500	315,500
West Midlands	19,000	19,800	164,100	243,200	22,600	24,300	186,600	283,700
East of England	30,600	32,100	259,600	388,000	39,200	43,000	314,300	486,300
London	33,800	35,500	286,600	428,500	42,600	46,700	342,400	529,100
South East	37,800	38,700	331,500	486,200	49,700	53,800	407,200	622,500
South West	29,800	31,000	255,600	379,600	34,800	37,400	287,400	436,800
England	231,500	240,100	1,996,900	2,957,000	276,900	297,700	2,285,200	3,475,900

113. Therefore, drawing again on the examples of the South East and North East, the latter should test a level of housing supply up to 7,600 in order to meet the backlog of demand, and allow for vacancies and second homes. This would also ensure the affordability outlook was safeguarded. In the South East a level of supply up to 49,700 would be required to stabilise affordability, and as a result the region would have addressed the backlog in constrained demand, and allowed for growth in second homes and vacancies.

114. In our supply range advice we have therefore synthesised the findings from the demographic and affordability analyses to produce a bottom and upper level of net additions to be tested by each region. The upper end of the range is the number of net additions we consider necessary to meet the backlog of demand (making allowance for second homes and vacancies) and to stabilise affordability. The results of this synthesis are set out in table 12.

Next steps

115. The Minister for Housing will consider our advice against the backdrop of the Government's broader strategic and policy objectives. She will decide how our advice is incorporated into formal guidance to be issued about the next round of RSS reviews.

116. The NHPAU will be available to discuss in more detailed terms its full advice with regional partners and other stakeholders over the coming weeks. As they move through the coming review process we can also work with them to help develop their affordability analysis, for example the impact of a more modest aspiration on long-term affordability, or to generate data beyond 2026 where these are required and where this is feasible.

117. More formally we expect to engage with the future RSS review processes, for example in providing evidence to Examinations in Public, not only to explain this supply advice, but also to provide a view about the implications of emerging and preferred regional planning authority supply proposals as they move through the process.

Technical Appendix A

AFFORDABILITY MODEL

Model summary

Background

A1. The *Barker Review of Housing Supply* has become one of the most important documents for housing policy in recent years and the Government quickly adopted many of its recommendations. One of the important recommendations was to understand affordability at national and regional levels.

A2. A team of economists from different universities and research institutes were asked to derive an appropriate methodology whereby national affordability targets could be translated into regional housing targets. This methodology had to be consistent across the regions. Therefore, regional targets had to reflect the national target and changes in house prices and migration flows in one region, for example, had to be consistent with changes in other regions. The central indicator of affordability in the project was *the ratio of lower quartile house prices to lower quartile incomes*. The modelling project was designed to quantify, at a regional scale, the relationship between affordability and construction.

A3. Details of the model were published in *Affordability Targets: Implications for Housing Supply* in 2005²³. The results used in this publication are from a more recent version of the model, where the basic structure remains the same with additional improvements.

Model structure

A4. The Affordability Model is an econometric model developed to target affordability based on the market demand for housing. The model consists of three interrelated modules:

- a demographic module
- a housing module
- a labour market module

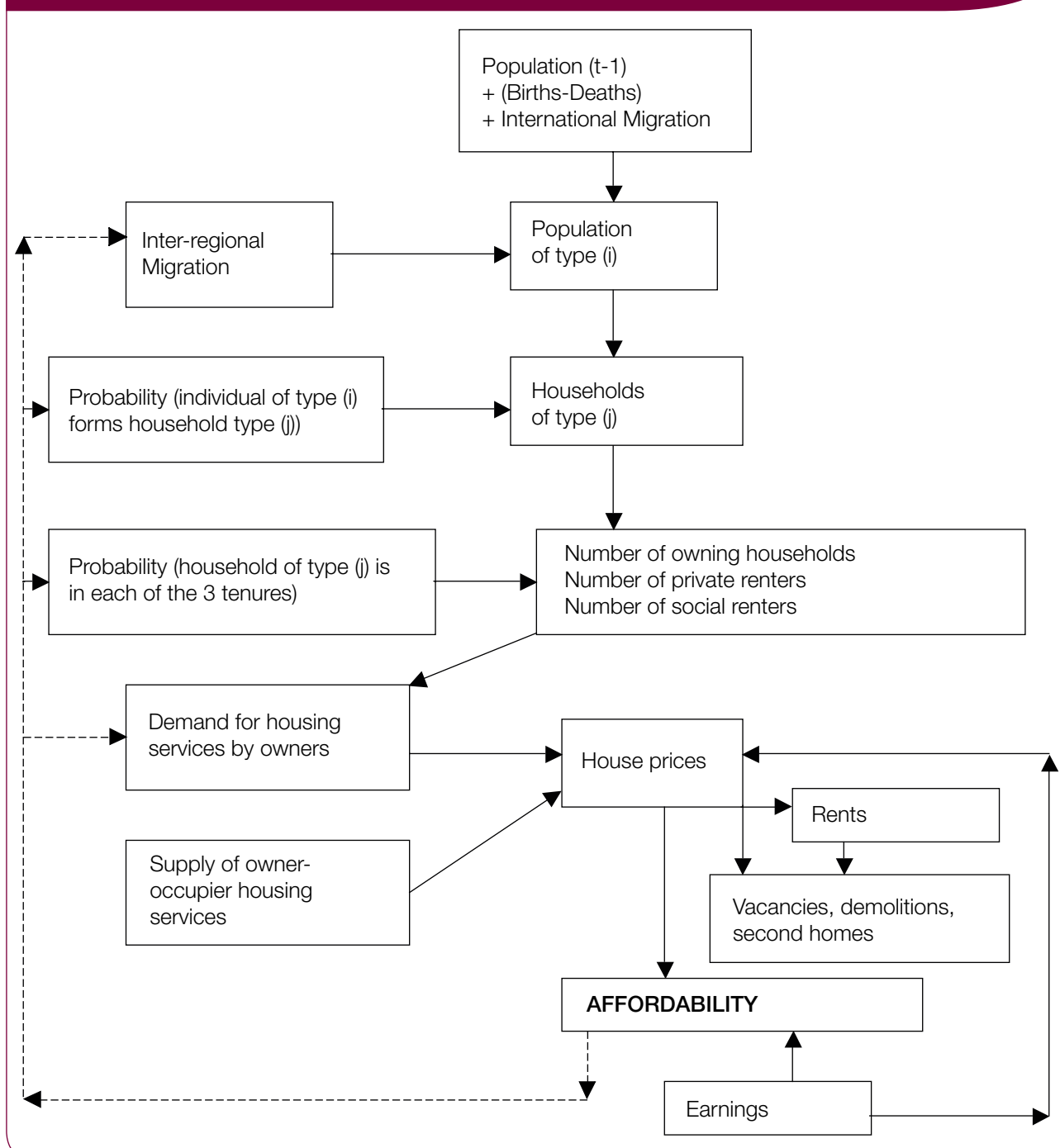
A5. The modules are constructed for all of the English Government Office Regions, including London. The regions are linked, primarily through migration flows and through relative house price movements. But, in addition, the model takes into account spatial contiguity. For example, earnings in any region are related to earnings in adjoining regions. Commuting flows, would be expected to produce earnings contiguity even in the absence of migration. In the context of the house price equations, a ripple effect provides another example of spatial relationships between areas that can be captured by including contiguity terms into the equations.

A6. The model captures the relationship between housing supply and affordability through the interplay of demographic trends, incomes, the labour market and the housing market. The results from the model are housing decisions determined by market processes.

A7. A simplified flow chart of the model is presented in figure A1. In the figure, the econometric relationships in the model are given on the left-hand side. The right hand side indicates the central aggregate outcomes. Whilst the arrows indicate the primary direction of the actions, in some cases there can be a two-way effect.

²³ The publication is available online at www.communities.gov.uk – most of this appendix is based on the document, as well two recent papers: 1. “Recent Developments in the Communities and Local Government Affordability Model” (2007) Meen, Geoffrey, Mark Andrew, Michael Ball, Jennifer Goody, Diana Kasparova, Gwilym Pryce, Christine Whitehead and Gavin Wood. International Centre for Housing and Urban Economics, Department of Economics, The University of Reading Business School, December. And 2. “Planning for Housing in the Post-Barker Era: Affordability, Household Formation, and Tenure Choice” (2007) Meen, Geoffrey and Mark Andrew. Paper presented at the conference organized by *Oxford Review of Economic Policy*, Saïd Business School, Oxford, 12 September.

Figure 1A: Flow Chart of the Model



Key elasticities and equations

A8. An important aspect of the model is that it works through a number of equations and elasticities. Elasticities measure the responsiveness of one variable with respect to changes in another variable.

A9. The key elasticities in the model are presented below.

- *Income Elasticity:* The elasticity of house prices with respect to real incomes is approximately 2.0 (= *income elasticity/price elasticity* = 1.0/0.5). In other words, a 1 per cent rise in real incomes would increase house prices by 2 per cent, holding all other influences constant.
- *Interest Rate Elasticity:* If interest rates rise by one percentage point, house prices will fall by around 3 per cent, holding all other influences constant.

- *Housing Stock Elasticity*: The long-run elasticity of house prices with respect to the housing stock is estimated as minus two. That is if housing stock increases by 1 per cent, house prices will fall by about 2 per cent.
- *Household Elasticity*: If the number of households increases by 1 per cent, then house prices will increase by about 2 per cent.
- *Migration Elasticity*: The elasticity of gross inter-regional migration flows with respect to relative regional house prices ranges from -0.003 to -0.021.

A10. The model also works through numerous estimated equations based on historic data and standard econometric techniques. Details of these equations are available in the technical appendix of the CLG publication “Affordability Targets: Implications for Housing Supply”²⁴.

Data inputs

A11. The data used in the model are from ONS and DCLG. Each region in the model has 9 excel worksheets. The sources of data used in each worksheet are presented below.

Worksheets in the Model	Data	Source
Summary	Private Starts	DCLG
	Lower Quartile Earnings	ONS
	Lower Quartile House Prices	DCLG
International Migration	Gross Inflows and Outflows	ONS
	Gross Inflows and Outflows	DCLG
	National Proportions by Age	ONS
Interregional Migration	Gross Inflows and Outflows	ONS
Natural Population Increase	Conception Rates	ONS
	Total live births	ONS
	Conception/Birth ratio	DCLG
	Male/Female Death Rates	DCLG
Population	Male/Female population	ONS
	Male/Female population	DCLG
	Male/Female population	DCLG
	Dependent Children Rate	DCLG
	Couple Rate	DCLG
House	Right to Buy Discount	DCLG
Tenure	Right to Buy Sales	DCLG
	Total Demands for Each Tenure	DCLG
	Total Supply for Each Tenure	DCLG
	Stocks by Age	DCLG
Labour	Average Full-Time Earnings	ONS
	Lower Quartile Earnings	ONS
	Median Earnings	ONS
	Unemployment Rate	ONS
Prices	Regional House Price	DCLG
	National House Price	DCLG
	Mortgage Interest Rate	ONS
	Regional Owner-Occupier Housing Stock	DCLG
	Consumers Expenditure Deflator	ONS
	Private Starts, 2000	DCLG
	Median Regional House Price	DCLG
	Private Completions	DCLG
	Unemployment (England)	ONS
	Lower Quartile House Prices	DCLG

²⁴ The publication can be downloaded from: <http://www.communities.gov.uk/publications/housing/affordabilitytargetsimplications>.

Key exogenous variables, model equations and influences

A12. Key exogenous variables in the model are:

- population
- births/deaths
- international migration
- mortgage rates
- consumers' expenditure deflator
- household projections, although the model also produces its own endogenous household forecasts

A13. Population data is used to project household formations. The households formed are the outcome of a market based housing system; this is in contrast with the official household projections which do not consider economic factors. Mortgage interest rates in the model work through the user cost of housing. Labour demand is also assumed to be exogenous and works with labour supply from the model to determine earnings.

A14. The key equations and their influences in the model are summarised below.

How official population estimates and household projections are used

A15. A region's annual population growth or decline depends on both natural change (through births and deaths) and migration (inter-regional and international). Of these components, birth rates, death rates and net international migration (including migration from Scotland, Wales and Northern Ireland) are taken from ONS projections. Inter-regional migration is endogenously determined by the model and depends on relative house prices, earnings, and employment. In other words housing and labour markets affect a region's population by generating migration streams.

A16. Nevertheless, what matters for housing demand is not population but households, although the latter obviously depends on the former. The other important factor is the household formation rate, that is, people's propensity to form households. This is expressed in the model as the probability that an individual will form a separate household and it depends on the following variables:

- a) income
- b) housing cost (depending on house prices and mortgage rates)
- c) marital status
- d) age
- e) gender
- f) number of dependent children
- g) regional unemployment rate

Key Equations	Influenced by
Demand for Housing Services (or house prices)	Number of households, the stock of dwellings, real earnings, interest rates.
Probability of Household Formation	Marital status, age, gender, children, real housing costs, real incomes, previous household status.
Tenure	Tenure costs, real incomes, credit conditions, previous tenure, marital status, age, children, gender.
Inter-regional Migration	Relative house prices, housing availability, relative earnings, unemployment.

A17. Some of the above variables are demographic (marital status, age, children) while others (income, housing cost, unemployment) are economic, either determined within the model or exogenous to it. Therefore, housing and labour markets affect the numbers of households in a region through two streams. Firstly they generate inter-regional migration flows. Secondly they affect the numbers of households in each region, given its population. Households in turn need houses, affecting the demand for housing services and through it regional house prices, thus completing the circle of interdependence between the housing market and the population.

A18. The model-based household forecasts, which are based on both economic and demographic variables, are inevitably different from official household projections which rely on demographic trends alone. This difference partly reflects a conceptual difference between housing “demand” and “need”. Household projections constitute housing need; people form households according to particular demographic patterns (age, marriage, etc), and they need houses. On the other hand, model based households are households that will be able to *afford* a home, that is, they constitute the housing *demand*.

A19. The model assumes that need will be met, or in other words that the households expected by the official projections will indeed form and they will have a place to live. It therefore allocates houses to those households which constitute need but not demand (the household projections above the model’s own household forecasts). This it achieves by suppressing vacancies and demolitions to levels lower than their market equilibrium level – also estimated within the model. It must be emphasised that although this adjustment overwrites the market outcome for vacancies and demolitions, this does not affect house prices or the affordability ratio in the model. Rather it prevents the demolition and renewal of old or less desirable housing stock. Official Revised 2004-based Household Projections are therefore used in the model, but they have a limited effect.

Key assumptions

A20. The key assumptions in the model are as follows.

- Average earnings and inflation: at the national level, average earnings, which are used as a proxy for household income, are assumed to grow by 5 per cent per annum in nominal terms. The model assumes a consumer expenditure deflator (or inflation) to be 2.5 per cent per annum. Thus earnings in real terms are expected to grow by 2.5 per cent over the projection period. Household disposable income is an important factor in housing demand. The growth in real household disposable income has averaged approximately 2.5 per cent per annum over a long-run period (2.67 per cent since 1971; 2.63 per cent since 1981; 2.58 per cent since 1991; 2.44 per cent since 2001). For this reason the earnings growth assumption is kept in line with it. Regional earnings growth rates are endogenously determined within the model based on the national level.
- Mortgage interest rates are assumed to be fixed at 5.75 per cent for the whole projection period.
- The type mix of new build housing, which determines effective stock, is assumed to remain the same as is found in existing stock.
- Earnings distributions are assumed to remain the same as in the past, such that the growth rate in lower quartile earnings is the same as that for upper quartile earnings.
- An income multiple constraint for mortgage approvals varies regionally from 2.32 in the North West, North East and Yorkshire & Humber, to 3.07 in London, the East and South East. This is based on past data.
- A loan to value constraint for mortgage approvals varies regionally from 87 per cent in London and the South West to 93 per cent in the North East. This is based on past data.

Using the model

A21. The modelling we carry out has the aim of finding the level of supply required to stabilise affordability, all other things being equal, both nationally and within each region. Supply is defined in terms of net additions to stock.

Defining stabilisation

A22. In order to establish housing supply levels that will stabilise affordability over the medium to long term, we first have to define what we mean by stabilisation. There are several different ways that stabilisation can be defined. Affordability is defined in terms of the ratio of lower quartile house prices to lower quartile earnings.

A23. Generally speaking, the lower the ratio we stabilise at, and the faster we aim to get there, the higher the level of supply required. We have modelled many stabilisation variants in arriving at those we now base our analysis on.

A24. For this advice we aim to bring affordability back to its 2007 level as estimated by the model, and we target this to be achieved by 2026. The model estimates the national affordability ratio in 2007 to be 7.2.

A25. When we target national stabilisation we find that, although at a national level affordability is stabilised, there are some regions where affordability is not controlled.

A26. In the medium and long term, we do not find it acceptable to allow affordability in some regions to deteriorate and therefore target stabilisation in all regions.

A27. The target level of affordability in each region is that estimated by the model in 2007, as outlined in table A1.

Table A1 – Regional target affordability ratios

	Targeting 7.2 by 2026
North East	5.3
North West	5.7
Yorkshire & Humber	5.7
East Midlands	6.6
West Midlands	6.3
East of England	7.8
London	8.9
South East	8.5
South West	8.7
England	7.2

Achieving stabilisation targets

A28. Having set regional affordability targets, we now use the affordability model to answer the question: How many housing net additions are required in each region to achieve them?

A29. Obtaining a solution is not as simple as adjusting the number of net additions in each region until the target is met. Each region is interdependent. For example, housing provision in one region affects the affordability ratio in others and impacts upon inter-regional migration. In addition, there are strong contiguity effects in the housing market. This can be characterised by the ripple effect seen in the last decade, with strong house price growth in the south reflected in subsequent price growth elsewhere. This interdependency means that the optimum solution cannot be obtained for each region in turn. The problem must be solved in all regions simultaneously.

A30. The affordability model does not work with affordability targets. Input to the model is in the form of private and social starts. The model then determines the number of conversions, changes of use and demolitions as market outcomes. These components together determine net additions, which in turn determine the affordability ratios.

A31. Our analysis has been arrived at using an iterative trial and error procedure. Discrepancies between target and modelled affordability ratios are minimised using an Excel macro until the procedure converges on a solution that satisfies all targets.

A32. The 2007 Housing Green Paper laid out the Government's ambition for affordable housing, split in terms of whether that housing is to be for social rent or low cost home ownership. By 2011 a total of at least 70,000 affordable homes should be delivered per annum, 45,000 of which should be social rented. This ambition is incorporated into the model for all trajectories and scenarios, with a maximum figure of 50,000 social rented starts held constant once reached.

A33. Trajectories for net additions between the latest published figures and the number required to achieve our solutions have been set simply as a straight line between 2007 and 2016. Net additions in 2016 are then maintained for all subsequent years.

A baseline case

A34. As a starting point for further analysis we firstly establish a baseline case. This baseline uses the normal model assumptions as laid out in paragraph A20.

A35. All model results are given at the end of this appendix. The baseline case is labelled 'Run 1A'. To achieve stabilisation in every region by 2026, using our straight line trajectory of year on year increases in net additions to 2016, a total of just under 335,000 must be achieved and maintained for England as a whole.

Sensitivity testing

A36. Key assumptions in the baseline version of our model can be amended to determine some 'what if' scenarios. We have carried out a number of such sensitivity tests as follows:

1. what if nominal earnings growth is lower over the period modelled, or part of the period modelled
2. what if mortgage interest rates are higher over the period modelled, or part of the period modelled
3. what if an independent forecast (Experian) of income growth, an expenditure deflator and interest rates is applied to the model²⁵
4. what if the type of housing delivered is more geared towards families and away from one or two bedroom dwellings
5. what if combinations of these scenarios are layered up

A37. Incomes and interest rates are the basis of key elasticities within the model. Our publication in response to last year's Housing Green Paper also established that the model reports the type of housing built as affecting affordability.

A38. The baseline model assumes national nominal earnings growth of 5 per cent per annum as a proxy for household income. The sensitivity tests reduce this to 4.5 per cent per annum, 4 per cent per annum, and 2.5 per cent per annum until 2010, but maintain the baseline consumer expenditure deflator at 2.5 per cent. Given the national growth in earnings, the model determines regional variations endogenously.

A39. By reducing earnings growth in the model beyond a short-term adjustment, we are starting to move beyond the limits of what the model is designed to do. The affordability model is not a macroeconomic model. If the long-term assumption for earnings growth is reduced permanently without some compensating rise in employment, it is likely to mean that the share of company profits in GDP rises permanently. If we were to believe this it would imply a likely increase in dividends, which could also generate a compensating increase in housing demand.

A40. Whilst it is necessary to carefully consider these implications, it is also of interest to model the effect. The results of modelling lower earnings growth are found in Runs 1B to 1E.

A41. The baseline model assumes generally available mortgage interest rates to average 5.75 per cent for the whole projection period. The Bank of England base rate is currently below this level, but in the current climate of illiquidity in credit markets, available mortgage rates have been decoupled from it. Whilst fluctuations in interest rates are to be expected over the time period modelled, in our sensitivity tests we raise the average rate to 6.25 per cent and to 6.75 per cent for all or part of the period modelled.

A42. An increase in interest rates does not fully reflect the impact of a credit crunch. Formally a credit crunch is a form of rationing that raises the user cost of capital as a shadow price. The problem is that it is almost impossible to put a number on it. In this case we take the approach of raising the mortgage interest rate as a proxy.

A43. As this is not a macroeconomic model there is no effect on incomes or employment as a result of raising interest rates. There is an effect on prices, however, and also an impact on household formation rates until prices adapt to the rate change over time. The results of modelling higher interest rates are found in Runs 1F to 1H. The results of modelling combinations of lower earnings growth and higher interest rates are found in Runs 1I to 1M.

²⁵ Experian UK Forecast – April 2008

A44. An alternative scenario for earnings and interest rates is taken from Experian's latest national forecasts. These forecasts run to 2026. We have applied their projected growth rate in household disposable incomes, household income deflators, and mortgage interest rates. They project real household income growth to be generally lower than the baseline model, but mortgage interest rates to also be lower. The results are labelled Run 1N.

A45. The type of housing delivered also impacts house prices. We have modelled this by altering the supply mix. This is effected in the model by changing the number of rooms in new build dwellings. Generally speaking, the higher the quality of housing delivered, measured by proxy in the model in terms of the number of rooms, the better the pay off in terms of an improvement to affordability. It should be noted that the model calculates a mix adjusted lower quartile house price. The underlying model assumption is that the number of rooms in new dwellings will mirror the regional mix in existing stock. We amend this assumption to eliminate the delivery of any dwellings with 4 rooms or less.

A46. Recent trends in new build have seen an increase in the number of flatted developments, and so this change moves even further away from current delivery. It essentially models a return to delivering a preponderance of family housing. The results are labelled Run 1O. The results of combining this change in the housing mix delivered with lower earnings growth and higher mortgage interest rates are labelled Runs 1P and 1Q.

Setting regional constraints

A47. Although evidence for the ripple effect is strong, there is some uncertainty as to whether it will continue to have the same influence in future if the level of housing provision is much higher than that seen in recent years. This is important, as a strong ripple effect from south to north implies that affordability targets in the north can be achieved largely by additional provision in the south. This would not support the regional economic growth agenda of PSA7 and would risk a future supply of housing that failed to keep up with potential household growth and backlog demand in those regions.

A48. To guard against an unbalanced solution we have, therefore, re-run some scenarios with the addition of a minimum constraint on the level of housing provision in all regions. The constraint we impose is that of our recommended minimum supply range by 2016 (see table A2). This constraint ensures that housing provision during the period 2008-2026 cannot fall below the projected growth in households during the same period (based on the CLG Revised 2004-based Household Projections). In our analysis, whenever this constraint is binding, the level of build in that region is higher than it would be and the affordability ratio is better (lower) than the target.

A49. The baseline scenario (Run 2A) remains unchanged when setting this constraint, as all regions in Run 1A are already above these minimum levels. The results for other scenarios are labelled Runs 2B to 2G.

Table A2: minimum constraints

	Minimum constraint from 2016
North East	6,600
North West	27,600
Yorkshire & Humber	25,100
East Midlands	23,700
West Midlands	19,800
East of England	32,100
London	35,500
South East	38,700
South West	31,000
Total	240,100

A50. We also consider it necessary to ask the question; what if regions in the south are unable to deliver the level of housing indicated by the baseline model as being required to stabilise affordability? This will not only have an impact on affordability in southern regions. In the absence of the same level of supply in the south driving the ripple effect, it will also mean that supply levels in the midlands and the north will need to increase to stabilise affordability in those regions. We model the likely scale of these effects by setting maximum constraints as shown in table A3.

Table A3: maximum constraints in the South

	Maximum constraint from 2016
East of England	38,100
London	38,600
South East	42,400
South West	35,100

A51. The maximum constraints are derived from an analysis of the 2006-based Subnational Population Projections. As noted in Annex B, these derived 2006 household projections cannot be considered as robust as official household projections, which are released by CLG. This analysis assumes the same household representative rates for age cohorts as those used in the Revised 2004-based Household Projections. Whilst the NHPAU derived household projections should not be preferred to the official household projections, they provide a useful insight into what those 2006 based projections may look like when released in late 2008 and provide useful ranges for testing. As with all of our trajectory building, a straight line of growth in net additions is applied from 2007 to 2016. This trajectory is constructed in such a way that net additions from 2008 to 2026 equal the growth in household projections for the same period.

A52. As the baseline case requires a level of delivery in the south far in excess of these maxima, the result of applying them is dramatic. The results for all scenarios are labelled Runs 3A to 3G.

A53. We then consider it necessary to ask the question: what if regions in the midlands and north are unable to deliver the levels of housing required to stabilise affordability in the absence of high delivery in the south? This will have an impact on affordability in those regions. We model the likely scale of these effects by setting maximum constraints as shown in table A4.

A54. The maximum constraints for southern regions are the same as those applied above. The maxima set for the northern and midlands regions are derived in the same way, from 2006-based Subnational Population Projections. The ranges that result in these regions are quite wide, and useful for testing. The results for all scenarios are labelled Runs 4A to 4G.

Table A4: maximum constraints in all regions

	Maximum constraint from 2016
North East	9,800
North West	32,000
Yorkshire & Humber	35,600
East Midlands	31,100
West Midlands	24,500
East of England	38,100
London	38,600
South East	42,400
South West	35,100
Total	287,200

A55. Finally we model the impact on affordability of a number of fixed scenarios. The first of these takes the latest RSS plans. The second takes the bottom of our recommended range. The third takes output from our demographic method. And the last takes the combined maximum of our recommended ranges. All of these fixed scenarios are analysed in terms of the model's baseline assumptions, with earnings growth reduced by 1 per cent, and with a reduction in earnings combined with an increase in mortgage interest rates. The results are labelled Runs 5A to 5L.

2.6 Model results

The following model runs are presented:

Set 1	No constraints
1A	Standard model
1B	Real earnings growth down to 2% p.a. for the whole period
1C	Real earnings growth down to 1.5% p.a. until 2016
1D	Real earnings growth down to 1.5% p.a. for the whole period
1E	Real earnings growth down to zero until 2010, then to 1.5% p.a. for the rest of the period
1F	Interest rates up to 6.25% until 2016
1G	Interest rates up to 6.25% for the whole period
1H	Interest rates up to 6.75% for the whole period
1I	Real earnings growth down to 1.5% p.a. for the whole period and interest rates up to 6.25% until 2016
1J	Real earnings growth down to zero until 2010, then to 1.5% p.a. for the rest of the period. Interest rates up to 6.25% until 2016
1K	Real earnings growth down to 1.5% p.a. and interest rates up to 6.25% for the whole period
1L	Real earnings growth down to zero until 2010, then to 1.5% p.a. for the rest of the period. Interest rates up to 6.25% for the whole period
1M	Real earnings growth down to 1.5% p.a. and interest rates up to 6.75% for the whole period
1N	Experian's projections for income, a consumer expenditure deflator, and interest rates
1O	Family houses
1P	Family houses, real earnings growth down to 1.5% p.a for the whole period
1Q	Family houses, real earnings growth down to 1.5% p.a. and interest rates at 6.25% for the whole period
Set 2	Minimum constraints in all regions
2A	Standard model
2B	Real earnings growth down to 1.5% p.a. for the whole period
2C	Real earnings growth down to 1.5% p.a. for the whole period and interest rates up to 6.25% until 2016
2D	Real earnings growth down to 1.5% p.a. and interest rates up to 6.25% for the whole period
2E	Real earnings growth down to 1.5% p.a. and interest rates up to 6.75% for the whole period
2F	Experian's projections for income, a consumer expenditure deflator, and interest rates
2G	Family houses, real earnings growth down to 1.5% p.a. and interest rates at 6.25% for the whole period

Set 3	Minimum constraints in all regions and maximum constraints in Southern regions only
3A	Standard model
3B	Real earnings growth down to 1.5% p.a. for the whole period
3C	Real earnings growth down to 1.5% p.a. for the whole period and interest rates up to 6.25% until 2016
3D	Real earnings growth down to 1.5% p.a. and interest rates up to 6.25% for the whole period
3E	Real earnings growth down to 1.5% p.a. and interest rates up to 6.75% for the whole period
3F	Experian's projections for income, a consumer expenditure deflator, and interest rates
3G	Family houses, real earnings growth down to 1.5% p.a. and interest rates at 6.25% for the whole period
Set 4	Minimum and maximum constraints in all regions
4A	Standard model
4B	Real earnings growth down to 1.5% p.a. for the whole period
4C	Real earnings growth down to 1.5% p.a. for the whole period and interest rates up to 6.25% until 2016
4D	Real earnings growth down to 1.5% p.a. and interest rates up to 6.25% for the whole period
4E	Real earnings growth down to 1.5% p.a. and interest rates up to 6.75% for the whole period
4F	Experian's projections for income, a consumer expenditure deflator, and interest rates
4G	Family houses, real earnings growth down to 1.5% p.a. and interest rates at 6.25% for the whole period
Set 5	Fixed net additions
5A	Emerging RSS – standard model
5B	Emerging RSS with real earnings growth down to 1.5% p.a. for the whole period
5C	Emerging RSS with real earnings growth down to 1.5% p.a. and interest rates up to 6.25% for the whole period
5D	NHPAU minimum range – standard model
5E	NHPAU minimum range with real earnings growth down to 1.5% p.a. for the whole period
5F	NHPAU minimum range with real earnings growth down to 1.5% p.a. and interest rates up to 6.25% for the whole period
5G	Demographic method results – standard model
5H	Demographic method with real earnings growth down to 1.5% p.a. for the whole period
5I	Demographic method with real earnings growth down to 1.5% p.a. and interest rates up to 6.25% for the whole period
5J	NHPAU maximum range – standard model
5K	NHPAU maximum range with real earnings growth down to 1.5% p.a. for the whole period
5L	NHPAU maximum range with real earnings growth down to 1.5% p.a. and interest rates up to 6.25% for the whole period

Where constraints are applied they are as follows:

Region	Minima (from 2016)	Maxima (from 2016)
North East	6,600	9,800
North West	27,600	32,000
Yorkshire & Humber	25,100	35,600
East Midlands	23,700	31,100
West Midlands	19,800	24,500
East of England	32,100	38,100
London	35,500	38,600
South East	38,700	42,400
South West	31,000	35,100
Total	240,100	287,200

Set 5 uses the following fixed net additions:

Region	RSS (to be applied from 2008)	NHPAU min (from 2016)	Demographic method (from 2016)	NHPAU upper (from 2016)
North East	7,585	6,600	7,600	7,600
North West	23,114	27,600	31,300	31,300
Yorkshire & Humber	22,560	25,100	28,300	28,300
East Midlands	21,758	23,700	25,300	25,300
West Midlands	18,280	19,800	24,300	24,300
East of England	25,400	32,100	36,400	43,000
London	27,597	35,500	46,700	46,700
South East	32,008	38,700	43,000	53,800
South West	28,475	31,000	34,400	37,400
Total	206,477	240,100	277,300	297,700

Set 1: no constraints

Run 1A: Standard version of the model							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	7,094	7,128	7,110	135,092	5.34
North West	5.69	22,750	34,473	29,263	32,005	608,099	5.69
Yorkshire & Humber	5.72	19,160	32,453	26,545	29,654	563,434	5.72
East Midlands	6.57	22,070	24,330	23,325	23,854	453,228	6.57
West Midlands	6.30	16,300	25,117	21,198	23,261	441,953	6.30
East of England	7.83	24,800	53,298	40,632	47,299	898,674	7.82
London	8.90	27,290	48,067	38,833	43,693	830,159	8.90
South East	8.48	34,560	64,010	50,921	57,810	1,098,389	8.48
South West	8.71	25,150	46,136	36,809	41,718	792,641	8.71
England	7.23	199,250	334,978	274,654	306,404	5,821,669	7.27

Run 1A is our baseline case utilising the standard affordability model assumptions. It should be noted that the projected net additions level from 2016 for this and all subsequent scenarios assumes a straight line trajectory in the growth of net additions from the latest published figures for 2007. In the North East, this number is actually slightly lower than the 2007 level.

Run 1B: Real earnings growth down to 2% for whole period							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	6,346	6,712	6,519	123,866	5.34
North West	5.69	22,750	30,835	27,241	29,133	553,522	5.69
Yorkshire & Humber	5.72	19,160	29,266	24,775	27,139	515,636	5.72
East Midlands	6.57	22,070	21,059	21,509	21,272	404,171	6.58
West Midlands	6.30	16,300	21,540	19,211	20,437	388,296	6.30
East of England	7.83	24,800	49,164	38,336	44,035	836,665	7.83
London	8.90	27,290	42,780	35,895	39,519	750,857	8.90
South East	8.48	34,560	59,433	48,379	54,197	1,029,741	8.48
South West	8.71	25,150	42,390	34,728	38,760	736,448	8.71
England	7.23	199,250	302,813	256,785	281,011	5,339,202	7.27

Run 1B incorporates a reduction in nominal earnings growth from 5 per cent to 4.5 per cent for the entire projection period. As the growth in earnings is reduced, so is the growth in house prices. The impact of modelling this scenario is a reduction in the requirement for average annual net additions from 306,404 to 281,011 in the period 2008 to 2026.

Run 1C: Real earnings growth down to 1.5% until 2016							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	5,527	6,257	5,873	111,584	5.34
North West	5.69	22,750	25,767	24,426	25,132	477,512	5.69
Yorkshire & Humber	5.72	19,160	25,345	22,596	24,043	456,809	5.72
East Midlands	6.57	22,070	17,859	19,730	18,745	356,161	6.57
West Midlands	6.30	16,300	17,943	17,213	17,597	334,350	6.30
East of England	7.83	24,800	48,518	37,977	43,525	826,968	7.83
London	8.90	27,290	42,216	35,582	39,074	742,406	8.90
South East	8.48	34,560	58,608	47,920	53,545	1,017,358	8.48
South West	8.71	25,150	41,690	34,339	38,208	725,949	8.71
England	7.23	199,250	283,473	246,040	265,742	5,049,098	7.27

Run 1C incorporates a 1 per cent reduction in annual nominal earnings growth until 2016, from 5 per cent to 4 per cent. The annual growth rate returns to 5 per cent from 2017.

Run 1D: Real earnings growth down to 1.5% for whole period							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	5,373	6,172	5,752	109,280	5.34
North West	5.69	22,750	25,013	24,007	24,536	466,191	5.69
Yorkshire & Humber	5.72	19,160	26,080	23,004	24,623	467,839	5.72
East Midlands	6.57	22,070	17,534	19,550	18,489	351,291	6.58
West Midlands	6.30	16,300	17,479	16,955	17,231	327,390	6.30
East of England	7.83	24,800	44,247	35,604	40,153	762,902	7.83
London	8.90	27,290	37,146	32,766	35,071	666,354	8.89
South East	8.48	34,560	54,668	45,731	50,435	958,260	8.48
South West	8.71	25,150	38,416	32,520	35,624	676,847	8.71
England	7.23	199,250	265,957	236,310	251,913	4,786,355	7.26

Run 1D incorporates a 1 per cent reduction in annual nominal earnings growth for the entire projection period, from 5 per cent to 4 per cent. A further significant reduction in the requirement for net additions is reported for all regions, with the 2008 – 2026 national annual average dropping to 251,913.

Run 1E: Real earnings growth down to zero until 2010, then to 1.5% for the rest of the period							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	3,777	5,285	4,491	85,332	5.34
North West	5.69	22,750	19,805	21,114	20,425	388,071	5.69
Yorkshire & Humber	5.72	19,160	22,247	20,875	21,597	410,352	5.72
East Midlands	6.57	22,070	14,288	17,747	15,926	302,603	6.57
West Midlands	6.30	16,300	13,795	14,908	14,322	272,121	6.30
East of England	7.83	24,800	41,300	33,967	37,826	718,699	7.83
London	8.90	27,290	33,821	30,918	32,446	616,479	8.90
South East	8.48	34,560	51,687	44,075	48,081	913,542	8.48
South West	8.71	25,150	35,694	31,008	33,474	636,015	8.71
England	7.23	199,250	236,414	219,897	228,590	4,343,216	7.25

In Run 1E we drop the annual growth rate in nominal earnings to 2.5 per cent until 2010. It then rises to 4 per cent for the rest of the period. With this pessimistic economic scenario, the national average requirement for net additions between 2008 and 2026 drops further, to 228,590. However, high levels are still required in the southern regions. Levels in the northern and midlands regions have dropped to levels significantly below household projections. This is as a result of households being unable to form and out migration.

Run 1F: Interest rates up to 6.25% until 2016							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	7,169	7,169	7,169	136,210	5.34
North West	5.69	22,750	34,701	29,389	32,185	611,511	5.69
Yorkshire & Humber	5.72	19,160	31,768	26,164	29,114	553,159	5.72
East Midlands	6.57	22,070	24,635	23,495	24,095	457,811	6.58
West Midlands	6.30	16,300	25,362	21,334	23,454	445,629	6.30
East of England	7.83	24,800	53,338	40,655	47,330	899,275	7.83
London	8.90	27,290	48,275	38,948	43,857	833,286	8.90
South East	8.48	34,560	64,337	51,103	58,068	1,103,292	8.48
South West	8.71	25,150	46,169	36,827	41,744	793,135	8.71
England	7.23	199,250	335,754	275,085	307,016	5,833,308	7.27

Run 1F sees mortgage interest rates raised from 5.75 per cent to 6.25 per cent until 2016. The result is a slightly higher annual net additions requirement than in the baseline scenario. Whilst prices are suppressed following the first rate rise, they more than recover once the interest rate returns to 5.75 per cent in 2017.

Run 1G: Interest rates up to 6.25% for the whole period							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	6,341	6,709	6,516	123,795	5.34
North West	5.69	22,750	29,892	26,718	28,388	539,373	5.69
Yorkshire & Humber	5.72	19,160	27,652	23,878	25,864	491,424	5.72
East Midlands	6.57	22,070	20,334	21,106	20,700	393,291	6.57
West Midlands	6.30	16,300	20,714	18,752	19,785	375,907	6.30
East of England	7.83	24,800	52,194	40,019	46,427	882,113	7.83
London	8.90	27,290	43,462	36,275	40,058	761,094	8.90
South East	8.48	34,560	62,881	50,294	56,919	1,081,454	8.48
South West	8.71	25,150	45,096	36,231	40,897	777,040	8.71
England	7.23	199,250	308,566	259,981	285,552	5,425,492	7.27

In Run 1G the rise in interest rates is maintained for the whole projection period. In this scenario the national average requirement for net additions from 2008 to 2026 drops to 285,552 compared to 306,404 in the baseline scenario. It should be noted that the effect on housing requirements of an interest rate rise for such a long-run period may be over-emphasised in the northern and midlands regions.

Run 1H: Interest rates up to 6.75% for the whole period							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	4,906	5,912	5,383	102,269	5.34
North West	5.69	22,750	23,824	23,346	23,598	448,353	5.69
Yorkshire & Humber	5.72	19,160	22,871	21,221	22,089	419,700	5.72
East Midlands	6.57	22,070	16,473	18,961	17,651	335,378	6.57
West Midlands	6.30	16,300	16,351	16,329	16,341	310,471	6.30
East of England	7.83	24,800	51,085	39,403	45,551	865,476	7.83
London	8.90	27,290	38,397	33,460	36,058	685,109	8.90
South East	8.48	34,560	61,647	49,608	55,945	1,062,946	8.48
South West	8.71	25,150	44,040	35,645	40,063	761,204	8.71
England	7.23	199,250	279,594	243,885	262,679	4,990,907	7.27

Run 1H sees mortgage interest rates raised further, to 6.75 per cent. The national average requirement for net additions from 2008 to 2026 drops to 262,679. Again it should be noted that the effect may be over-emphasised in the northern and midlands regions.

Run 1I: Real earnings growth down to 1.5% for the whole projection period and interest rates up to 6.25% until 2016							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	5,470	6,226	5,828	110,732	5.34
North West	5.69	22,750	25,484	24,269	24,909	473,267	5.69
Yorkshire & Humber	5.72	19,160	25,282	22,561	23,993	455,875	5.72
East Midlands	6.57	22,070	17,864	19,733	18,749	356,240	6.57
West Midlands	6.30	16,300	17,884	17,180	17,551	333,467	6.30
East of England	7.83	24,800	44,298	35,632	40,193	763,670	7.83
London	8.90	27,290	37,375	32,893	35,252	669,789	8.90
South East	8.48	34,560	54,992	45,911	50,690	963,115	8.48
South West	8.71	25,150	38,391	32,506	35,603	676,465	8.71
England	7.23	199,250	267,041	236,912	252,770	4,802,621	7.26

In Run 1I we start to combine a reduction in real earnings growth with rises in interest rates. As the interest rate rise is reversed midway through the projection period, the results are very similar to those in Run 1D.

Run 1J: Real earnings growth down to zero until 2010, then to 1.5%. Interest rates up to 6.25% until 2016							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	3,878	5,341	4,571	86,845	5.34
North West	5.69	22,750	20,149	21,305	20,696	393,229	5.69
Yorkshire & Humber	5.72	19,160	21,539	20,482	21,038	399,726	5.71
East Midlands	6.57	22,070	14,567	17,902	16,147	306,791	6.57
West Midlands	6.30	16,300	14,114	15,086	14,574	276,915	6.30
East of England	7.83	24,800	41,320	33,978	37,842	718,993	7.83
London	8.90	27,290	34,047	31,044	32,624	619,859	8.90
South East	8.48	34,560	52,019	44,260	48,344	918,530	8.48
South West	8.71	25,150	35,637	30,976	33,429	635,149	8.71
England	7.23	199,250	237,269	220,372	229,265	4,356,036	7.25

For the same reason, the results in Run 1J are also very similar to those in Run 1E.

Run 1K: Real earnings growth down to 1.5% and interest rates up to 6.25% for whole projection period							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	3,531	5,148	4,297	81,646	5.34
North West	5.69	22,750	19,191	20,773	19,940	378,862	5.69
Yorkshire & Humber	5.72	19,160	21,472	20,444	20,985	398,718	5.71
East Midlands	6.57	22,070	13,870	17,514	15,596	296,323	6.57
West Midlands	6.30	16,300	13,303	14,635	13,934	264,743	6.30
East of England	7.83	24,800	43,071	34,951	39,225	745,269	7.82
London	8.90	27,290	33,836	30,926	32,458	616,693	8.90
South East	8.48	34,560	53,795	45,246	49,746	945,167	8.48
South West	8.71	25,150	37,300	31,900	34,742	660,102	8.71
England	7.23	199,250	239,368	221,538	230,922	4,387,523	7.26

With the rise in interest rates maintained for the whole projection period, we can see the impact of amending two of the key model assumptions start to layer up. The national average requirement for net additions reduces to 230,922, but again the impact is strongest in the northern and midlands regions, suggesting economic decline.

Run 1L: Real earnings growth down to zero until 2010, then to 1.5%. Interest rates up to 6.25% for whole projection period							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	2,084	4,345	3,155	59,944	5.34
North West	5.69	22,750	14,385	18,103	16,146	306,777	5.69
Yorkshire & Humber	5.72	19,160	17,915	18,468	18,177	345,365	5.71
East Midlands	6.57	22,070	10,906	15,868	13,256	251,865	6.57
West Midlands	6.30	16,300	9,974	12,786	11,306	214,814	6.30
East of England	7.83	24,800	40,199	33,355	36,957	702,178	7.83
London	8.90	27,290	30,771	29,224	30,038	570,723	8.90
South East	8.48	34,560	50,691	43,522	47,295	898,604	8.48
South West	8.71	25,150	34,286	30,226	32,363	614,892	8.71
England	7.23	199,250	211,211	205,895	208,693	3,965,162	7.25

Run 1L layers up our most pessimistic earnings growth scenario in tandem with interest rates at 6.25 per cent.

Run 1M: Real earnings growth down to 1.5% and interest rates up to 6.75% for whole projection period							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	1,803	4,188	2,933	55,729	5.34
North West	5.69	22,750	13,587	17,660	15,516	294,807	5.69
Yorkshire & Humber	5.72	19,160	17,046	17,986	17,491	332,332	5.71
East Midlands	6.57	22,070	10,370	15,570	12,833	243,833	6.57
West Midlands	6.30	16,300	9,356	12,442	10,818	205,540	6.30
East of England	7.83	24,800	41,865	34,281	38,272	727,174	7.83
London	8.90	27,290	30,432	29,035	29,770	565,638	8.90
South East	8.48	34,560	52,799	44,693	48,959	930,228	8.48
South West	8.71	25,150	35,964	31,158	33,687	640,059	8.71
England	7.23	199,250	213,223	207,013	210,281	3,995,338	7.25

With a 1 per cent rise in interest rates for the whole projection period layered on top of reduced earnings growth, the national average requirement for net additions reduces to 210,281.

Run 1N: Experian's projections							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	6,486	6,790	6,630	125,977	5.34
North West	5.69	22,750	32,048	27,915	30,090	571,716	5.69
Yorkshire & Humber	5.72	19,160	31,595	26,068	28,977	550,565	5.71
East Midlands	6.57	22,070	22,080	22,076	22,078	419,479	6.58
West Midlands	6.30	16,300	22,700	19,855	21,353	405,698	6.30
East of England	7.83	24,800	48,283	37,846	43,339	823,442	7.83
London	8.90	27,290	43,300	36,184	39,929	758,657	8.90
South East	8.48	34,560	58,395	47,802	53,377	1,014,172	8.48
South West	8.71	25,150	41,671	34,328	38,193	725,663	8.71
England	7.23	199,250	306,558	258,865	283,967	5,395,368	7.26

Run 1N builds in Experian's latest national macroeconomic forecasts to 2026 for year on year growth in household disposable income, year on year projections for a household income deflator, and annual mortgage interest rate projections. By applying changes to the baseline model assumptions for these variables, real earnings growth is generally reduced, as are mortgage interest rates. The combined effect of these changes is a reduction from the baseline case in terms of average annual net additions from 306,404 to 283,967 in the period 2008 to 2026.

Run 1O: Family housing mix for whole projection period							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	6,726	6,924	6,820	129,574	5.34
North West	5.69	22,750	32,721	28,290	30,622	581,821	5.69
Yorkshire & Humber	5.72	19,160	30,369	25,387	28,010	532,181	5.72
East Midlands	6.57	22,070	22,544	22,333	22,444	426,437	6.58
West Midlands	6.30	16,300	23,183	20,124	21,734	412,949	6.30
East of England	7.82	24,800	50,595	39,130	45,164	858,121	7.83
London	8.89	27,290	42,476	35,727	39,279	746,306	8.90
South East	8.48	34,560	61,156	49,335	55,557	1,055,575	8.48
South West	8.71	25,150	44,452	35,873	40,388	767,381	8.71
England	7.22	199,250	314,223	263,124	290,018	5,510,346	7.27

Run 1O takes its assumptions from the baseline case, but alters the type of housing delivered as new net additions. The baseline case assumes on a regional basis that delivery will mirror the existing housing stock. Scenario 1O reallocates all housing comprising 4 rooms or less, again on a regional basis. In calculating a lower quartile house price, the model uses a mix adjusted house price index. The lower quartile price is calculated as a proportion of the mix adjusted price. This proportion does not change as we deliver a higher preponderance of family housing. This, along with a filtering effect as households are more able to trade up (thus releasing housing further down the chain), explains the effect seen in terms of a reduction in the number of net additions required to stabilise affordability.

Run 1P: Family housing mix and real earnings growth down to 1.5% for whole projection period							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	4,555	5,717	5,105	96,998	5.34
North West	5.69	22,750	22,102	22,390	22,238	422,527	5.69
Yorkshire & Humber	5.72	19,160	24,119	21,915	23,075	438,426	5.72
East Midlands	6.57	22,070	15,771	18,571	17,097	324,845	6.58
West Midlands	6.30	16,300	15,468	15,838	15,643	297,226	6.30
East of England	7.82	24,800	41,269	33,949	37,802	718,232	7.82
London	8.89	27,290	33,038	30,483	31,828	604,733	8.90
South East	8.48	34,560	52,451	44,499	48,684	925,002	8.48
South West	8.71	25,150	37,035	31,753	34,533	656,129	8.71
England	7.22	199,250	245,808	225,116	236,006	4,484,118	7.26

In Run 1P we change the housing mix delivered and layer up a long-term reduction in annual real earnings growth.

Run 1Q: Family housing mix, real earnings growth down to 1.5% and interest rates up to 6.25% for whole projection period							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	2,803	4,744	3,722	70,723	5.34
North West	5.69	22,750	16,535	19,297	17,844	339,028	5.69
Yorkshire & Humber	5.72	19,160	19,775	19,502	19,645	373,262	5.72
East Midlands	6.57	22,070	12,296	16,640	14,353	272,713	6.57
West Midlands	6.30	16,300	11,579	13,677	12,573	238,880	6.30
East of England	7.82	24,800	40,143	33,324	36,913	701,340	7.82
London	8.89	27,290	30,256	28,938	29,632	562,999	8.90
South East	8.48	34,560	51,545	43,996	47,969	911,413	8.48
South West	8.71	25,150	35,770	31,050	33,534	637,150	8.71
England	7.22	199,250	220,700	211,167	216,185	4,107,508	7.26

Run 1Q includes an increase in mortgage interest rates to the long-term projection.

Set 2 – minimum constraints in all regions

Run 2A: Standard version of the model							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	7,094	7,128	7,110	135,092	5.34
North West	5.69	22,750	34,473	29,263	32,005	608,099	5.69
Yorkshire & Humber	5.72	19,160	32,453	26,545	29,654	563,434	5.72
East Midlands	6.57	22,070	24,330	23,325	23,854	453,228	6.57
West Midlands	6.30	16,300	25,117	21,198	23,261	441,953	6.30
East of England	7.83	24,800	53,298	40,632	47,299	898,674	7.82
London	8.90	27,290	48,067	38,833	43,693	830,159	8.90
South East	8.48	34,560	64,010	50,921	57,810	1,098,389	8.48
South West	8.71	25,150	46,136	36,809	41,718	792,641	8.71
England	7.23	199,250	334,978	274,654	306,404	5,821,669	7.27

There is no effect to the results of the baseline model through the introduction of a minimum constraint for all regions. In the baseline case all regions already need a peak level of net additions above this constraint. The results for Run 2A are, therefore, exactly the same as those for Run 1A.

Run 2B: Real earnings growth down to 1.5% for whole projection period							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	6,600	6,853	6,720	127,679	5.14
North West	5.69	22,750	27,600	25,445	26,579	505,001	5.62
Yorkshire & Humber	5.72	19,160	25,100	22,460	23,849	453,138	5.55
East Midlands	6.57	22,070	23,700	22,975	23,357	443,779	6.30
West Midlands	6.30	16,300	19,800	18,244	19,063	362,199	6.21
East of England	7.83	24,800	44,313	35,641	40,205	763,895	7.83
London	8.90	27,290	36,940	32,651	34,908	663,254	8.90
South East	8.48	34,560	54,730	45,766	50,484	959,193	8.48
South West	8.71	25,150	38,462	32,546	35,659	677,529	8.71
England	7.23	199,250	277,246	242,581	260,825	4,955,681	7.17

When reducing nominal earnings growth by 1 per cent, all midlands and northern regions hit their minimum constraints. As a result, net additions remain above the level necessary to achieve stabilisation in the affordability ratio in these regions. The affordability ratio in 2026 thus shows slight improvements compared to the 2007 level. Results in the southern regions remain very similar to those reported in Run 1D.

Run 2C: Real earnings growth down 1.5% for whole projection period and interest rates up to 6.25% until 2016							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	6,600	6,853	6,720	127,681	5.16
North West	5.69	22,750	27,600	25,444	26,579	505,000	5.63
Yorkshire & Humber	5.72	19,160	25,100	22,460	23,849	453,140	5.53
East Midlands	6.57	22,070	23,700	22,975	23,357	443,779	6.31
West Midlands	6.30	16,300	19,800	18,244	19,063	362,200	6.22
East of England	7.83	24,800	44,349	35,660	40,233	764,433	7.83
London	8.90	27,290	37,184	32,787	35,101	666,925	8.90
South East	8.48	34,560	55,055	45,946	50,741	964,070	8.48
South West	8.71	25,150	38,441	32,534	35,643	677,219	8.71
England	7.23	199,250	277,831	242,906	261,287	4,964,453	7.17

Results in the southern regions in Run 2C remain very similar to those reported in Run 1I.

Run 2D: Real earnings growth down to 1.5% and interest rates up to 6.25% for the whole projection period							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	6,600	6,853	6,720	127,679	5.01
North West	5.69	22,750	27,600	25,444	26,579	505,000	5.47
Yorkshire & Humber	5.72	19,160	25,100	22,460	23,849	453,139	5.26
East Midlands	6.57	22,070	23,700	22,976	23,357	443,781	6.13
West Midlands	6.30	16,300	19,800	18,244	19,063	362,198	6.04
East of England	7.83	24,800	43,016	34,920	39,181	744,442	7.82
London	8.90	27,290	35,500	31,851	33,772	641,661	8.73
South East	8.48	34,560	53,802	45,250	49,751	945,265	8.48
South West	8.71	25,150	37,351	31,928	34,782	660,866	8.71
England	7.23	199,250	272,468	239,926	257,053	4,884,016	7.03

Results in the southern regions in Run 2D remain very similar to those reported in Run 1K.

Run 2E: Real earnings growth down to 1.5% and interest rates up to 6.75% for the whole projection period							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	6,600	6,853	6,720	127,680	4.88
North West	5.69	22,750	27,600	25,444	26,579	504,999	5.32
Yorkshire & Humber	5.72	19,160	25,100	22,460	23,850	453,141	5.00
East Midlands	6.57	22,070	23,700	22,976	23,357	443,779	5.97
West Midlands	6.30	16,300	19,800	18,244	19,063	362,201	5.88
East of England	7.83	24,800	41,544	34,102	38,019	722,354	7.82
London	8.90	27,290	35,500	31,851	33,772	641,661	8.48
South East	8.48	34,560	52,683	44,629	48,868	928,490	8.48
South West	8.71	25,150	35,908	31,126	33,643	639,214	8.71
England	7.23	199,250	268,435	237,686	253,869	4,823,518	6.89

Results in the southern regions in Run 2E remain very similar to those reported in Run 1M.

Run 2F: Experian's projections							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	6,600	6,853	6,720	127,681	5.32
North West	5.69	22,750	32,055	27,920	30,096	571,830	5.69
Yorkshire & Humber	5.72	19,160	30,094	25,235	27,792	528,057	5.72
East Midlands	6.57	22,070	23,700	22,976	23,357	443,782	6.50
West Midlands	6.30	16,300	22,664	19,835	21,324	405,155	6.30
East of England	7.83	24,800	48,290	37,850	43,345	823,553	7.83
London	8.90	27,290	43,291	36,180	39,923	758,530	8.90
South East	8.48	34,560	58,404	47,806	53,384	1,014,294	8.48
South West	8.71	25,150	41,671	34,328	38,193	725,661	8.71
England	7.23	199,250	306,770	258,983	284,134	5,398,555	7.25

In Run 2F, only the North East and East Midlands hit their minimum constraints and show very slight improvements in affordability.

Run 2G: Family housing mix, real earnings growth down to 1.5% and interest rates up to 6.25% for whole projection period							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	6,600	6,854	6,720	127,681	4.93
North West	5.69	22,750	27,600	25,445	26,579	505,000	5.39
Yorkshire & Humber	5.72	19,160	25,100	22,460	23,849	453,139	5.13
East Midlands	6.57	22,070	23,700	22,976	23,357	443,780	6.04
West Midlands	6.30	16,300	19,800	18,244	19,063	362,200	5.95
East of England	7.82	24,800	39,759	33,110	36,610	695,582	7.82
London	8.89	27,290	35,500	31,851	33,772	641,660	8.40
South East	8.48	34,560	51,376	43,902	47,836	908,885	8.48
South West	8.71	25,150	35,638	30,977	33,430	635,175	8.71
England	7.22	199,250	265,073	235,818	251,215	4,773,084	6.93

Results in the southern regions in Run 2G remain very similar to those reported in Run 1Q.

Set 3 – minimum constraints in all regions maximum constraints in South only

Run 3A: Standard version of the model							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	13,711	10,804	12,334	234,352	5.34
North West	5.69	22,750	59,491	43,162	51,756	983,365	5.69
Yorkshire & Humber	5.72	19,160	31,851	26,211	29,180	554,411	5.72
East Midlands	6.57	22,070	43,007	33,702	38,599	733,385	6.57
West Midlands	6.30	16,300	43,518	31,421	37,788	717,967	6.30
East of England	7.83	24,800	38,100	32,189	35,300	670,700	10.17
London	8.90	27,290	38,600	33,573	36,219	688,160	9.77
South East	8.48	34,560	42,400	38,916	40,749	774,240	11.43
South West	8.71	25,150	35,100	30,678	33,005	627,100	11.14
England	7.23	199,250	345,779	280,655	314,931	5,983,681	8.20

Run 3A introduces a maximum constraint in the southern regions. The effect compared to the baseline case (Run 1A) is that the affordability ratio gets significantly worse in these regions. In the midlands and northern regions the reduction in supply in the south stems the ripple effect. For affordability to be stabilised in these regions significant increases in net additions are required. Average annual net additions are higher nationally than in the baseline case, whilst the national affordability ratio deteriorates to 8.2.

Run 3B: Real earnings growth down to 1.5% for whole projection period							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	8,681	8,009	8,363	158,889	5.34
North West	5.69	22,750	40,898	32,832	37,077	704,467	5.69
Yorkshire & Humber	5.72	19,160	25,100	22,460	23,849	453,140	5.72
East Midlands	6.57	22,070	31,016	27,040	29,132	553,514	6.57
West Midlands	6.30	16,300	29,719	23,755	26,894	510,983	6.30
East of England	7.83	24,800	38,100	32,189	35,300	670,700	8.68
London	8.90	27,290	38,415	33,471	36,073	685,386	8.90
South East	8.48	34,560	42,400	38,916	40,749	774,240	9.90
South West	8.71	25,150	35,100	30,678	33,005	627,100	9.36
England	7.23	199,250	289,428	249,349	270,443	5,138,420	7.59

Run 3B reduces the impact seen in both the affordability ratio in southern regions and the level of net additions required to stabilise affordability in the midlands and northern regions.

Run 3C: Real earnings growth down to 1.5% for whole projection period and interest rates up to 6.25% until 2016							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	8,840	8,098	8,488	161,274	5.34
North West	5.69	22,750	41,422	33,123	37,491	712,332	5.69
Yorkshire & Humber	5.72	19,160	25,100	22,460	23,850	453,142	5.69
East Midlands	6.57	22,070	31,406	27,257	29,441	559,376	6.57
West Midlands	6.30	16,300	30,215	24,031	27,286	518,426	6.30
East of England	7.83	24,800	38,100	32,189	35,300	670,700	8.69
London	8.90	27,290	38,600	33,573	36,219	688,160	8.90
South East	8.48	34,560	42,400	38,916	40,749	774,240	9.94
South West	8.71	25,150	35,100	30,678	33,005	627,100	9.36
England	7.23	199,250	291,184	250,324	271,829	5,164,749	7.59

Run 3D: Real earnings growth down to 1.5% and interest rates up to 6.25% for the whole projection period							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	7,554	7,383	7,473	141,988	5.34
North West	5.69	22,750	36,546	30,415	33,642	639,194	5.69
Yorkshire & Humber	5.72	19,160	25,100	22,460	23,850	453,141	5.52
East Midlands	6.57	22,070	27,495	25,084	26,353	500,705	6.58
West Midlands	6.30	16,300	26,637	22,043	24,461	464,750	6.30
East of England	7.83	24,800	38,100	32,189	35,300	670,700	8.51
London	8.90	27,290	35,500	31,851	33,772	641,660	8.84
South East	8.48	34,560	42,400	38,916	40,749	774,240	9.70
South West	8.71	25,150	35,100	30,678	33,005	627,100	9.14
England	7.23	199,250	274,432	241,017	258,604	4,913,477	7.49

Run 3E: Real earnings growth down to 1.5% and interest rates up to 6.75% for the whole projection period							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	6,600	6,853	6,720	127,680	5.30
North West	5.69	22,750	31,078	27,377	29,325	557,172	5.69
Yorkshire & Humber	5.72	19,160	25,100	22,460	23,849	453,138	5.30
East Midlands	6.57	22,070	23,700	22,976	23,357	443,779	6.48
West Midlands	6.30	16,300	21,779	19,344	20,625	391,878	6.30
East of England	7.83	24,800	38,100	32,189	35,300	670,700	8.30
London	8.90	27,290	35,500	31,851	33,772	641,661	8.57
South East	8.48	34,560	42,400	38,916	40,749	774,240	9.48
South West	8.71	25,150	35,100	30,678	33,005	627,100	8.90
England	7.23	199,250	259,357	232,643	246,703	4,687,348	7.34

Run 3F: Experian's projections							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	11,160	9,387	10,320	196,082	5.34
North West	5.69	22,750	50,205	38,003	44,425	844,079	5.69
Yorkshire & Humber	5.72	19,160	30,927	25,697	28,450	540,543	5.72
East Midlands	6.57	22,070	37,279	30,520	34,077	647,470	6.57
West Midlands	6.30	16,300	36,461	27,501	32,217	612,117	6.30
East of England	7.83	24,800	38,100	32,189	35,300	670,700	9.37
London	8.90	27,290	38,600	33,573	36,219	688,160	9.43
South East	8.48	34,560	42,400	38,916	40,749	774,240	10.64
South West	8.71	25,150	35,100	30,678	33,005	627,100	10.16
England	7.23	199,250	320,233	266,463	294,763	5,600,491	7.88

Run 3G: Family housing mix, real earnings growth down to 1.5% and interest rates up to 6.25% for whole projection period							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	6,600	6,853	6,720	127,680	5.33
North West	5.69	22,750	32,104	27,947	30,135	572,559	5.69
Yorkshire & Humber	5.72	19,160	25,100	22,460	23,849	453,140	5.43
East Midlands	6.57	22,070	23,700	22,975	23,357	443,779	6.52
West Midlands	6.30	16,300	22,867	19,948	21,485	408,209	6.30
East of England	7.82	24,800	38,100	32,189	35,300	670,700	8.11
London	8.89	27,290	35,500	31,851	33,771	641,658	8.47
South East	8.48	34,560	42,400	38,916	40,749	774,240	9.41
South West	8.71	25,150	35,100	30,678	33,005	627,100	8.85
England	7.22	199,250	261,472	233,817	248,372	4,719,065	7.33

Set 4 – Minimum and maximum constraints in all regions

Run 4A: Standard version of the model							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	9,800	8,631	9,246	175,680	6.00
North West	5.69	22,750	32,000	27,889	30,053	571,000	7.14
Yorkshire & Humber	5.72	19,160	35,600	28,293	32,139	610,640	6.14
East Midlands	6.57	22,070	31,100	27,087	29,199	554,780	7.61
West Midlands	6.30	16,300	24,500	20,856	22,774	432,701	7.79
East of England	7.83	24,800	38,100	32,189	35,300	670,700	10.15
London	8.90	27,290	38,600	33,573	36,219	688,160	9.85
South East	8.48	34,560	42,400	38,916	40,749	774,240	11.40
South West	8.71	25,150	35,100	30,678	33,005	627,100	11.10
England	7.23	199,250	287,200	248,111	268,684	5,105,000	8.88

Run 4A introduces a maximum constraint in all regions. This constraint is reached in all regions, with a worsening in affordability also therefore seen.

Run 4B: Real earnings growth down to 1.5% for whole projection period							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	8,671	8,004	8,355	158,751	5.34
North West	5.69	22,750	32,000	27,889	30,053	571,000	6.14
Yorkshire & Humber	5.72	19,160	25,100	22,460	23,849	453,137	5.72
East Midlands	6.57	22,070	31,014	27,039	29,131	553,483	6.57
West Midlands	6.30	16,300	24,500	20,856	22,774	432,700	6.71
East of England	7.83	24,800	38,100	32,189	35,300	670,700	8.68
London	8.90	27,290	38,600	33,573	36,219	688,160	8.90
South East	8.48	34,560	42,400	38,916	40,749	774,240	9.89
South West	8.71	25,150	35,100	30,678	33,005	627,100	9.35
England	7.23	199,250	275,485	241,603	259,435	4,929,272	7.72

Run 4C: Real earnings growth down to 1.5% for whole projection period and interest rates up to 6.25% until 2016							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	8,833	8,094	8,483	161,181	5.34
North West	5.69	22,750	32,000	27,889	30,053	571,000	6.17
Yorkshire & Humber	5.72	19,160	25,100	22,460	23,849	453,137	5.71
East Midlands	6.57	22,070	31,100	27,087	29,199	554,779	6.60
West Midlands	6.30	16,300	24,500	20,856	22,774	432,701	6.74
East of England	7.83	24,800	38,100	32,189	35,300	670,700	8.69
London	8.90	27,290	38,600	33,573	36,219	688,160	8.92
South East	8.48	34,560	42,400	38,916	40,749	774,240	9.94
South West	8.71	25,150	35,100	30,678	33,005	627,100	9.35
England	7.23	199,250	275,733	241,741	259,631	4,932,998	7.74

Run 4D: Real earnings growth down to 1.5% and interest rates up to 6.25% for the whole projection period							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	7,548	7,380	7,469	141,903	5.34
North West	5.69	22,750	32,000	27,889	30,053	571,000	5.90
Yorkshire & Humber	5.72	19,160	25,100	22,460	23,849	453,138	5.52
East Midlands	6.57	22,070	27,485	25,078	26,345	500,558	6.58
West Midlands	6.30	16,300	24,500	20,856	22,774	432,699	6.45
East of England	7.83	24,800	38,100	32,189	35,300	670,700	8.51
London	8.90	27,290	35,500	31,851	33,772	641,659	8.85
South East	8.48	34,560	42,400	38,916	40,749	774,240	9.70
South West	8.71	25,150	35,100	30,678	33,005	627,100	9.14
England	7.23	199,250	267,733	237,296	253,316	4,812,998	7.55

Run 4E: Real earnings growth down to 1.5% and interest rates up to 6.75% for the whole projection period							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	6,600	6,853	6,720	127,682	5.30
North West	5.69	22,750	31,085	27,381	29,331	557,281	5.69
Yorkshire & Humber	5.72	19,160	25,100	22,460	23,850	453,141	5.30
East Midlands	6.57	22,070	23,700	22,976	23,357	443,779	6.48
West Midlands	6.30	16,300	21,792	19,351	20,636	392,081	6.30
East of England	7.83	24,800	38,100	32,189	35,300	670,700	8.30
London	8.90	27,290	35,500	31,851	33,772	641,661	8.57
South East	8.48	34,560	42,400	38,916	40,749	774,240	9.48
South West	8.71	25,150	35,100	30,678	33,005	627,100	8.90
England	7.23	199,250	259,378	232,654	246,719	4,687,665	7.34

Run 4F: Experian's projections							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	9,800	8,631	9,246	175,680	5.57
North West	5.69	22,750	32,000	27,889	30,053	571,000	6.66
Yorkshire & Humber	5.72	19,160	35,600	28,293	32,139	610,640	5.80
East Midlands	6.57	22,070	31,100	27,087	29,199	554,780	7.11
West Midlands	6.30	16,300	24,500	20,856	22,774	432,700	7.27
East of England	7.83	24,800	38,100	32,189	35,300	670,700	9.36
London	8.90	27,290	38,600	33,573	36,219	688,160	9.48
South East	8.48	34,560	42,400	38,916	40,749	774,240	10.61
South West	8.71	25,150	35,100	30,678	33,005	627,100	10.13
England	7.23	199,250	287,200	248,111	268,684	5,105,000	8.27

Run 4G: Family housing mix, real earnings growth down to 1.5% and interest rates up to 6.25% for whole projection period							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	6,600	6,853	6,720	127,682	5.33
North West	5.69	22,750	32,000	27,889	30,053	571,000	5.69
Yorkshire & Humber	5.72	19,160	25,100	22,460	23,849	453,139	5.43
East Midlands	6.57	22,070	23,700	22,975	23,357	443,779	6.52
West Midlands	6.30	16,300	22,865	19,947	21,483	408,177	6.30
East of England	7.82	24,800	38,100	32,189	35,300	670,700	8.11
London	8.89	27,290	35,500	31,851	33,771	641,658	8.47
South East	8.48	34,560	42,400	38,916	40,749	774,240	9.41
South West	8.71	25,150	35,100	30,678	33,005	627,100	8.85
England	7.22	199,250	261,365	233,758	248,288	4,717,475	7.33

Set 5 – Fixed net additions

Run 5A: Latest emerging RSS figures, standard model							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2008	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	7,585	7,585	7,585	144,114	7.03
North West	5.69	22,750	23,114	23,114	23,114	439,167	8.13
Yorkshire & Humber	5.72	19,160	22,260	22,260	22,260	422,938	7.62
East Midlands	6.57	22,070	21,758	21,758	21,758	413,399	9.02
West Midlands	6.30	16,300	18,280	18,280	18,280	347,320	8.80
East of England	7.83	24,800	25,400	25,400	25,400	482,600	11.87
London	8.90	27,290	27,597	27,597	27,597	524,342	10.86
South East	8.48	34,560	32,008	32,008	32,008	608,152	12.62
South West	8.71	25,150	28,475	28,475	28,475	541,026	12.20
England	7.23	199,250	206,477	206,477	206,477	3,923,062	10.17

With net additions figures taken from the latest emerging RSS proposals in all regions (totalling 205,088 nationally) and applied from 2008 onwards, the baseline model projects a deterioration in the affordability ratio to 10.2 nationally.

Run 5B: Latest RSS emerging figures, real earnings growth down to 1.5% for the whole projection period							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2008	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	7,585	7,585	7,585	144,114	6.10
North West	5.69	22,750	23,114	23,114	23,114	439,166	7.11
Yorkshire & Humber	5.72	19,160	22,260	22,260	22,260	422,941	6.65
East Midlands	6.57	22,070	21,758	21,758	21,758	413,401	7.91
West Midlands	6.30	16,300	18,280	18,280	18,280	347,321	7.73
East of England	7.83	24,800	25,400	25,400	25,400	482,602	10.49
London	8.90	27,290	27,597	27,597	27,597	524,342	10.02
South East	8.48	34,560	32,008	32,008	32,008	608,150	11.21
South West	8.71	25,150	28,475	28,475	28,475	541,025	10.43
England	7.23	199,250	206,477	206,477	206,477	3,923,062	8.93

Even with a reduction in nominal earnings of 1 per cent for the whole period in Run 5B, the affordability ratio is projected to worsen in all regions and to 8.9 nationally.

Run 5C: Latest RSS emerging figures, real earnings growth down to 1.5% and interest rates up to 6.25% for the whole projection period							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2008	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	7,585	7,585	7,585	144,114	5.85
North West	5.69	22,750	23,114	23,114	23,114	439,166	6.80
Yorkshire & Humber	5.72	19,160	22,260	22,260	22,260	422,938	6.24
East Midlands	6.57	22,070	21,758	21,758	21,758	413,402	7.57
West Midlands	6.30	16,300	18,280	18,280	18,280	347,318	7.39
East of England	7.83	24,800	25,400	25,400	25,400	482,600	10.18
London	8.90	27,290	27,597	27,597	27,597	524,344	9.66
South East	8.48	34,560	32,008	32,008	32,008	608,152	10.92
South West	8.71	25,150	28,475	28,475	28,475	541,023	10.14
England	7.23	199,250	206,477	206,477	206,477	3,923,061	8.59

Run 5D: NHPAU minimum range, standard model							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	6,600	6,853	6,720	127,681	6.91
North West	5.69	22,750	27,600	25,444	26,579	505,004	7.51
Yorkshire & Humber	5.72	19,160	25,100	22,460	23,849	453,139	7.09
East Midlands	6.57	22,070	23,700	22,976	23,357	443,780	8.39
West Midlands	6.30	16,300	19,800	18,244	19,063	362,202	8.26
East of England	7.83	24,800	32,100	28,856	30,563	580,702	10.93
London	8.90	27,290	35,500	31,851	33,772	641,666	10.18
South East	8.48	34,560	38,700	36,860	37,829	718,744	11.81
South West	8.71	25,150	31,000	28,400	29,768	565,600	11.77
England	7.23	199,250	240,100	221,945	231,500	4,398,503	9.52

Run 5D models the impact on affordability of the bottom of our proposed supply range. Whilst the deterioration in affordability is not as great as that seen in Run 5A, it is still of a large magnitude.

Run 5E: NHPAU minimum range, real earnings growth down to 1.5% for the whole projection period							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	6,600	6,853	6,720	127,678	5.95
North West	5.69	22,750	27,600	25,445	26,579	505,002	6.50
Yorkshire & Humber	5.72	19,160	25,100	22,460	23,849	453,138	6.15
East Midlands	6.57	22,070	23,700	22,976	23,357	443,780	7.28
West Midlands	6.30	16,300	19,800	18,244	19,063	362,199	7.17
East of England	7.83	24,800	32,100	28,856	30,563	580,700	9.47
London	8.90	27,290	35,500	31,851	33,772	641,660	9.25
South East	8.48	34,560	38,700	36,860	37,828	718,741	10.32
South West	8.71	25,150	31,000	28,400	29,768	565,601	10.00
England	7.23	199,250	240,100	221,944	231,500	4,398,498	8.26

Run 5F: NHPAU minimum range, real earnings growth down to 1.5% and interest rates up to 6.25% for the whole projection period							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	6,600	6,853	6,720	127,682	5.71
North West	5.69	22,750	27,600	25,445	26,579	505,002	6.23
Yorkshire & Humber	5.72	19,160	25,100	22,460	23,849	453,140	5.78
East Midlands	6.57	22,070	23,700	22,976	23,357	443,783	6.98
West Midlands	6.30	16,300	19,800	18,244	19,063	362,200	6.87
East of England	7.83	24,800	32,100	28,856	30,563	580,701	9.22
London	8.90	27,290	35,500	31,851	33,772	641,661	8.94
South East	8.48	34,560	38,700	36,860	37,828	718,741	10.08
South West	8.71	25,150	31,000	28,400	29,768	565,600	9.73
England	7.23	199,250	240,100	221,945	231,500	4,398,508	7.95

Run 5G: NHPAU demographic method, standard model							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	7,600	7,409	7,509	142,680	6.42
North West	5.69	22,750	31,300	27,500	29,500	560,501	7.11
Yorkshire & Humber	5.72	19,160	28,300	24,238	26,376	501,141	6.69
East Midlands	6.57	22,070	25,300	23,864	24,620	467,780	7.98
West Midlands	6.30	16,300	24,300	20,744	22,616	429,700	7.73
East of England	7.83	24,800	36,400	31,245	33,958	645,201	10.23
London	8.90	27,290	46,700	38,073	42,614	809,659	9.31
South East	8.48	34,560	43,000	39,249	41,223	783,239	11.29
South West	8.71	25,150	34,400	30,289	32,453	616,600	11.13
England	7.23	199,250	277,300	242,611	260,869	4,956,502	8.95

Run 5H: NHPAU demographic method, real earnings growth down to 1.5% for the whole projection period							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	7,600	7,409	7,510	142,681	5.49
North West	5.69	22,750	31,300	27,500	29,500	560,496	6.11
Yorkshire & Humber	5.72	19,160	28,300	24,238	26,376	501,140	5.78
East Midlands	6.57	22,070	25,300	23,864	24,620	467,780	6.89
West Midlands	6.30	16,300	24,300	20,744	22,616	429,698	6.66
East of England	7.83	24,800	36,400	31,245	33,958	645,201	8.76
London	8.90	27,290	46,700	38,073	42,614	809,660	8.32
South East	8.48	34,560	43,000	39,249	41,223	783,240	9.77
South West	8.71	25,150	34,400	30,289	32,453	616,601	9.38
England	7.23	199,250	277,300	242,611	260,868	4,956,496	7.69

Run 5I: NHPAU demographic method, real earnings growth down to 1.5% and interest rates up to 6.25% for the whole projection period							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	7,600	7,409	7,509	142,680	5.27
North West	5.69	22,750	31,300	27,500	29,500	560,500	5.86
Yorkshire & Humber	5.72	19,160	28,300	24,238	26,376	501,140	5.43
East Midlands	6.57	22,070	25,300	23,865	24,620	467,781	6.61
West Midlands	6.30	16,300	24,300	20,744	22,616	429,701	6.39
East of England	7.83	24,800	36,400	31,245	33,958	645,199	8.54
London	8.90	27,290	46,700	38,073	42,614	809,658	8.06
South East	8.48	34,560	43,000	39,249	41,223	783,240	9.56
South West	8.71	25,150	34,400	30,289	32,453	616,600	9.14
England	7.23	199,250	277,300	242,611	260,868	4,956,501	7.42

Run 5J: NHPAU upper range, standard model							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	7,600	7,409	7,509	142,679	5.90
North West	5.69	22,750	31,300	27,500	29,500	560,499	6.54
Yorkshire & Humber	5.72	19,160	28,300	24,238	26,376	501,139	6.29
East Midlands	6.57	22,070	25,300	23,864	24,620	467,781	7.35
West Midlands	6.30	16,300	24,300	20,744	22,616	429,699	7.12
East of England	7.83	24,800	43,000	34,911	39,168	744,199	9.37
London	8.90	27,290	46,700	38,073	42,614	809,660	9.18
South East	8.48	34,560	53,800	45,249	49,749	945,239	10.13
South West	8.71	25,150	37,400	31,956	34,821	661,600	10.61
England	7.23	199,250	297,700	253,944	276,973	5,262,494	8.30

In Run 5J, even when applying the upper figure of our proposed range from either the demographic method or affordability method, the baseline model projects a deterioration in the affordability ratio. The deterioration is much reduced however. It is only in the South East, South West and East of England where the ratio has not returned to within one point of its starting level, and in both the South East and East of England, by 2026 it is on a downward trajectory.

Run 5K: NHPAU upper range, real earnings growth down to 1.5% for the whole projection period							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	7,600	7,409	7,509	142,680	4.99
North West	5.69	22,750	31,300	27,500	29,500	560,502	5.56
Yorkshire & Humber	5.72	19,160	28,300	24,238	26,376	501,140	5.40
East Midlands	6.57	22,070	25,300	23,864	24,620	467,781	6.26
West Midlands	6.30	16,300	24,300	20,744	22,616	429,699	6.06
East of England	7.83	24,800	43,000	34,911	39,168	744,199	7.90
London	8.90	27,290	46,700	38,073	42,614	809,659	8.17
South East	8.48	34,560	53,800	45,249	49,749	945,239	8.56
South West	8.71	25,150	37,400	31,956	34,821	661,601	8.86
England	7.23	199,250	297,700	253,944	276,974	5,262,499	7.05

When modelling lower earnings growth in Run 5K, improvements in affordability can be seen in all regions. However, it should be remembered that as the model is not a macroeconomic model, this reduction in earnings growth does not feed through to higher company profits, higher dividends, and thus also a likely increase in housing demand.

Run 5L: NHPAU upper range, real earnings growth down to 1.5% and interest rates up to 6.25% for the whole projection period							
Region	Affordability ratio 2007 (modelled)	Actual net additions 2007	Projected net additions from 2016	Average annual net additions 2008 – 2016	Average annual net additions 2008 – 2026	Total net additions 2008 – 2026	Affordability ratio 2026
North East	5.34	7,170	7,600	7,409	7,510	142,681	4.80
North West	5.69	22,750	31,300	27,500	29,500	560,499	5.34
Yorkshire & Humber	5.72	19,160	28,300	24,238	26,376	501,140	5.09
East Midlands	6.57	22,070	25,300	23,865	24,620	467,781	6.02
West Midlands	6.30	16,300	24,300	20,744	22,616	429,700	5.83
East of England	7.83	24,800	43,000	34,911	39,168	744,200	7.72
London	8.90	27,290	46,700	38,073	42,614	809,659	7.92
South East	8.48	34,560	53,800	45,249	49,749	945,240	8.40
South West	8.71	25,150	37,400	31,956	34,821	661,601	8.64
England	7.23	199,250	297,700	253,945	276,974	5,262,501	6.81

With these amendments to the baseline economic assumptions, stabilisation is achieved in all regions, with a welcome improvement to the affordability ratios seen in London, northern and midlands regions by 2026.

Technical Appendix B

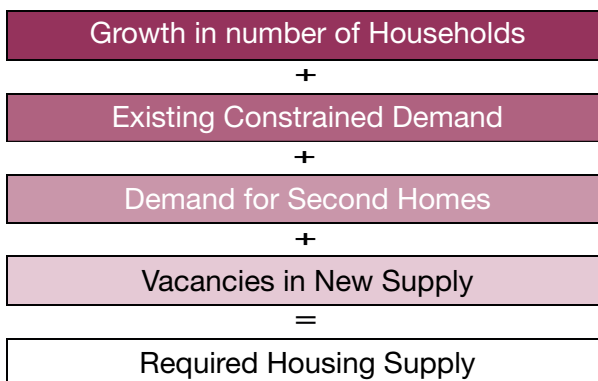
DEMOGRAPHIC METHOD

B1. This approach is similar to the main method used by the Regional Planning Authorities when considering housing requirement figures as part of the Regional Spatial Strategy process.

Brief outline of method

B2. The basic method is outlined in figure B1 below.

Figure B1: Components of the Demographic Method



B3. The components of the Demographic Method are considered in turn. Please note that figures throughout may not add up because of rounding.

Household Projections

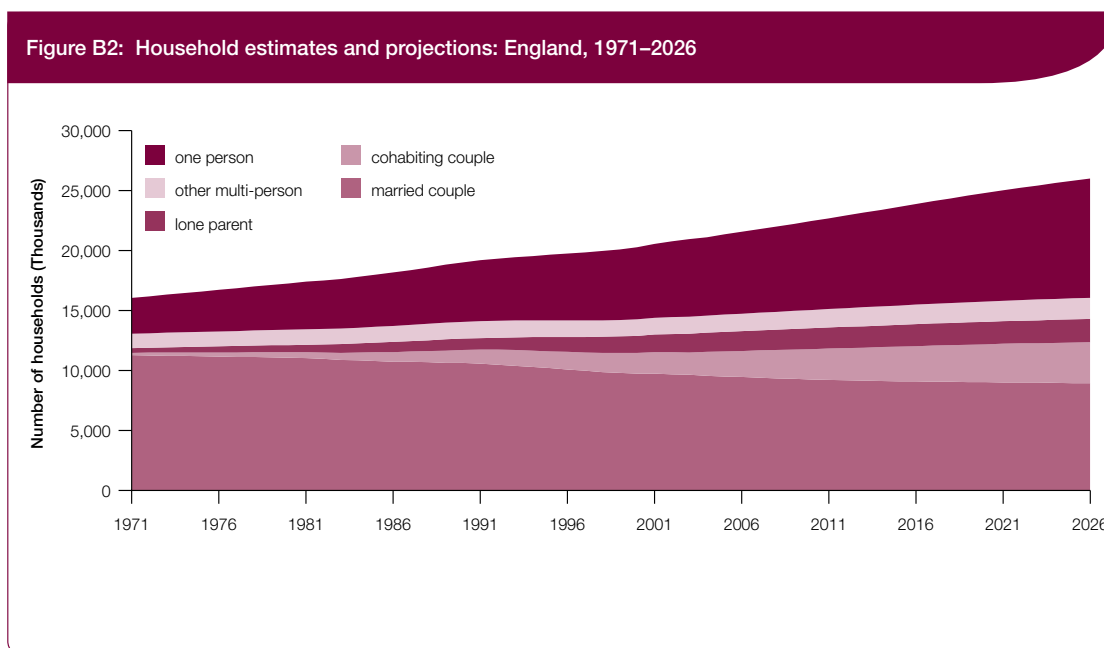
Background

B4. A measure of the growth in household numbers is gained through an analysis of household projections. Official household projections are the responsibility of Communities and Local Government. Revised 2004-based Household Projections were released in February 2008, with a 2006-based version expected for release late 2008. These are trend-based projections. They estimate the number of households that will form in the future using current trends and projections of household membership rates based on age, sex and marital status.

B5. A key driver of the Household Projections are the Population Projections produced by ONS – it is here that trends and assumptions for mortality, fertility and migration are included. The Household Projections are constrained to the private household population which excludes those living in institutions²⁶.

B6. The most recent set of official household projections – the CLG Revised 2004-based Household Projections released in February 2008 – showed that the proportion and number of one-person households is projected to increase (see figure B2). The number of married and cohabiting couple households is projected to remain constant over time but to decrease as a proportion of all households.

²⁶ For more detail on how Household Projections are produced refer to: <http://www.communities.gov.uk/housing/housingresearch/housingstatistics/housingstatisticsby/householdestimates/communitieslocal/>



Source: CLG²⁷

B7. The projected increase in one-person households is broken down into age groups in table B1. This shows that one-person households for those over 75 years will increase by 32,000 per year up to 2026 and 55-64 year olds by 36,000 per year. The elderly living alone are contributing to an increasing need for housing for one-person households.

B8. The increase in one-person households over time is not peculiar to England. Figure B3 shows that the England experience is similar to other European countries.

Table B1: One-person households by age, thousands.

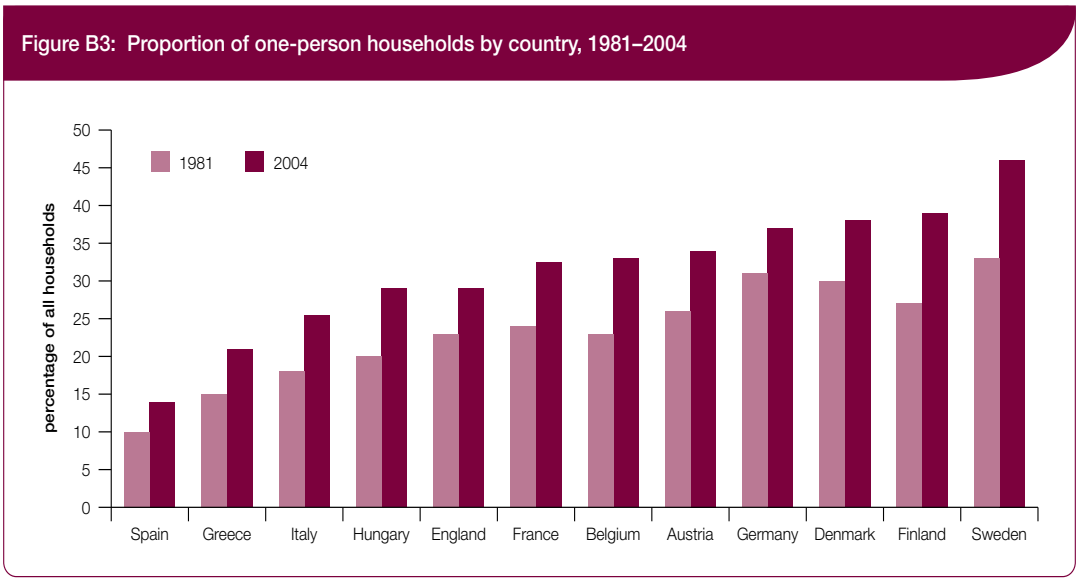
	2004	2026	Average Annual Increase (2004- 2026)
Under 25	231	260	1.3
25-34	789	1,074	13.0
35-44	951	1,507	25.3
45-54	858	1,425	25.8
55-64	980	1,766	35.7
65-74	1,060	1,544	22.0
75 and over	1,666	2,373	32.1
Total	6,535	9,948	155.1

Source: CLG 2004-based Household Projections²⁸

²⁷ Chart 402: Household estimates and projections: England, 1971 – 2026, uses estimated household numbers to 2004 (from ONS) and then household projections (from CLG). accessed here: <<http://www.communities.gov.uk/documents/housing/xls/402.xls>>

²⁸ From here: <http://www.communities.gov.uk/documents/housing/xls/707892.xls>

Figure B3: Proportion of one-person households by country, 1981–2004

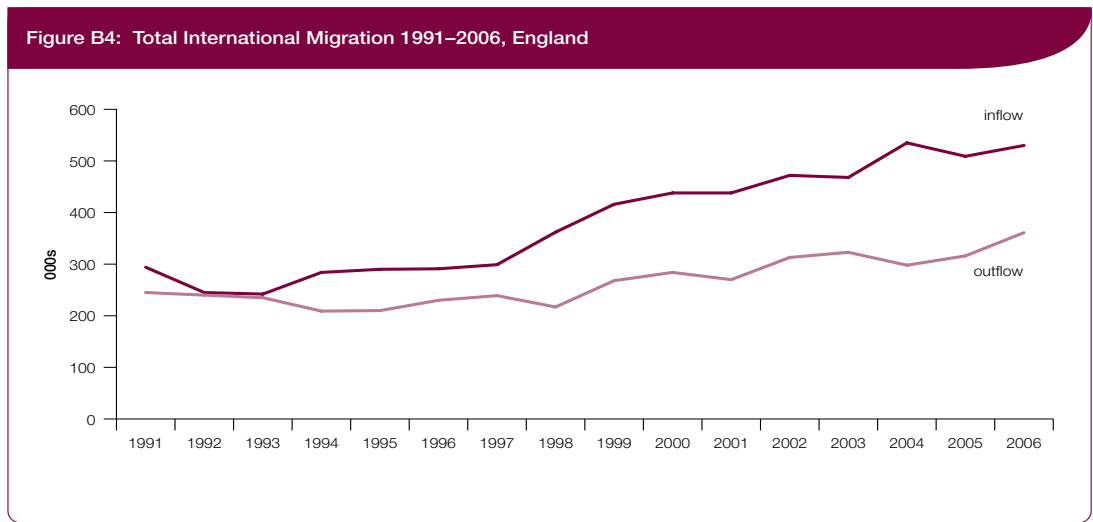


Source: Ministry of Infrastructure of the Italian Republic²⁹

B9. As mentioned, assumptions over future migration, fertility and mortality play a key role in informing the Population Projections and therefore the Household Projections. Of these, the level of assumed future migration has shown the most significant change over recent releases.

B10. The recent experience has been of positive net migration to England. Figure B4 shows the inflow and outflow of migration to England since 1991, the difference between these lines equates to the net migration to England. From a small increase of 6,000 people in both 1992 and 1993 to a high of 236,000 in 2004.

Figure B4: Total International Migration 1991–2006, England



Source: ONS³⁰

²⁹ Ministry of Infrastructure of the Italian Republic (2006), Housing Statistics in the European Union 2005/2006, Federcasa.

³⁰ Derived from Table 3, Total International Migration: Time Series 1991 to 2006, Areas of Destination or Origin within the United Kingdom. Accessed here: <http://www.statistics.gov.uk/downloads/theme_population/First_Release_Tables_91-06.xls> Please refer to source for further detail on methodology.

B11. The reasons for migration fluctuate over time. The main reason for people migrating to England has shifted from those migrating to accompany or join a partner or their immediate family in the early 1990s to those either undertaking formal study or to take up a job in 2006. Similarly, where emigrants gave a reason for leaving the most popular one in 1990 was to join family members while in 2006 it was to take up a job.

Which version of the Household Projections to use as a measure of future household growth?

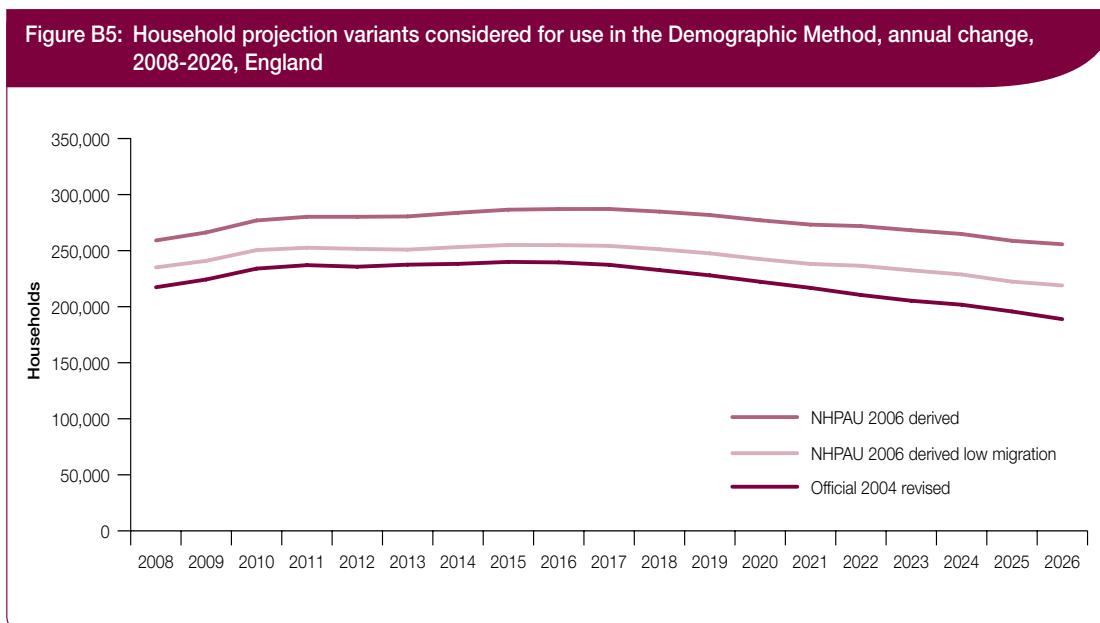
B12. A number of versions of household projections, both official and derived, were considered for use in the Demographic Method. The criteria for selection were that the household projections used must be both timely and defensible.

B13. The final list of household projections considered was:

- Official 2004: CLG Revised 2004-based Household Projections that were revised to include improved international migration and migrant distribution methodology

- NHPAU 2006 derived: 2006-based projection derived by NHPAU through applying household representative rates³¹ to the 2006-based Subnational Population Projections less the institutional population³² by region, age and gender groups, and
- NHPAU 2006 derived low migration: 2006-based low migration variant projection derived by NHPAU through applying low migration weights³³ to the 2006-based Subnational Population Projections by age and gender groups

B14. The impact of current and future policy developments, such as the points based immigration system, may have a downward impact on future levels of net migration. The international economic outlook will also be important with the relative performance of different countries being an important factor in levels of both inward and outward migration. While net flow of 236,000 in migrants to England in 2004 roughly matches the high migration variant assumption, it would seem unlikely to be repeated year on year. For these reasons we did not consider a high migration variant at this time. The population projections considered are shown in figure B5.



³¹ Household representative rates are from the CLG Revised 2004-based Household Projections.

³² The institutional population projections used to construct the Revised 2004-based Household Projections were employed. The proportion of the population in institutions was removed from the 2006-based Subnational Population Projections by year and five year age groups by gender.

³³ Official low migration variant household projections do not exist. NHPAU have independently derived low migration variant household projections to help inform our housing supply range advice. The low migration weights are equal to the proportional difference between the principal and low migration variant 2006-based National Population Projections by five year age and gender groups.

B15. The average annual increase in household numbers for each of the household projections considered is shown for each region in table B2.

Table B2: Average annual household change by household projection type, 2008-2026

	Official 2004 revised	NHPAU 2006 derived	NHPAU 2006 derived low migration
North East	6,100	9,200	7,700
North West	25,700	30,100	25,900
Yorkshire & Humber	23,300	32,100	28,700
East Midlands	22,100	29,200	26,400
West Midlands	18,400	22,800	19,700
East of England	29,900	35,300	31,800
London	33,000	36,200	30,900
South East	36,000	40,700	35,900
South West	28,800	33,000	29,900
ENGLAND	223,300	268,600	236,900

Key differences between 2004-based and 2006-based household projections

Timeliness

B16. The official Revised 2004-based Household Projections are the most up-to-date set of official household projections – released by CLG in February 2008.

B17. The NHPAU 2006 derived household projections utilise the most recently available population projections – the 2006-based Subnational Population Projections – produced by ONS broken down by Government Office Region and five year age groups by gender. The 2006-based projections benefit from the most up-to-date data to inform trend analysis and assumptions for future rates of fertility, mortality and of net migration.

B18. It is clear that the NHPAU 2006 derived household projections represent the more timely option.

Defensible

B19. There are two aspects to consider: are the changes to the migration, fertility and mortality assumptions that drive the projections between 2004 and 2006 defensible?; and, how robust are the methods underpinning the household projections? These questions are considered in turn.

Migration assumptions

B20. Projections are trend based and therefore do not take account of things that ‘might’ happen in the future – like a change in economic conditions or a change to government policy e.g. the introduction of a points based immigration system. Learned opinions on what ‘might’ happen in the future can be used as a framework on which to assess whether the assumptions included as part of the household projection methodology are defensible.

B21. The long-term assumption for net migration into England has increased from 130,000 people per year in the 2004-based projections to 171,000 per year in the 2006-based projections.

B22. This increase is due to an improved international migration methodology (about 20,000 people) and observed sustained levels of positive net migration. Since the assumptions underpinning the 2004-based projections were made net migration to England has remained high: 236,000 people in 2004, 193,000 in 2005 and 169,000 in 2006³⁴.

B23. The increase to the long-term migration assumptions does not imply that recent growth from the accession countries will continue indefinitely. An additional short-term assumption is in place for this purpose which includes net migration from accession countries and returning Armed Forces personnel and families – about an additional 125,000 people up to 2013/14. The projections assume that net migration from the accession countries will be zero, or close to zero, by 2012/13.

³⁴ Total International Migration, ONS, derived from Table 3, Total International Migration: Time Series 1991 to 2006. Accessed here: <http://www.statistics.gov.uk/downloads/theme_population/First_Release_Tables_91-06.xls>

B24. In addition to the NHPAU 2006 derived household projection a derived low migration variant was considered. The low migration variant is important in the context of statements by the Home Office that international migration will not reach the levels projected in the standard population projections³⁵. The low migration variant assumes long-term positive net migration to England of 111,000 people per year.

B25. The 2006-based migration assumptions are defensible. The assumptions made on the data available are sound. However, it appears reasonable to assume that government policy such as the institution of a points based immigration system and international economic conditions will dampen future levels of immigration and therefore that assumptions included in the principal 2006-based projections may not be reached over the medium and long term.

Fertility assumptions

B26. The fertility assumption is made in terms of the average number of children that women are expected to have over their lifetimes.

B27. The Total Fertility Rate in England has risen steadily from 1.63 in 2001 to 1.86 in 2006. The reason for the increase can not be ascribed to one determinant factor. It is likely to be a combination of three: changes in the timing of birth; international migration; and, changes in support for childbearing. The revised assumption was made after a full review, consultation with users, and advice from an expert advisory panel.³⁶

B28. The headline fertility assumption for England rose from 1.75 children per women in the Revised 2004-based Population Projections to 1.85 in the 2006-based Population Projections. Still well below the replacement level, but the first time the assumption has been raised since the baby boom.

Mortality assumptions

B29. Mortality is assumed to converge at a common rate of improvement of 1 per cent a year for most ages from 2031 onwards. Short and medium-term life expectancies are generally better in the 2006-based population projections compared to 2004. This was partly caused by lower starting levels of mortality – a result of higher than expected falls in mortality in 2004 and 2005.

Robust method

B30. The NHPAU 2006 derived dataset was produced using established official sources at a low level of granularity – five year age and gender groups by region. A key assumption in the NHPAU method is that the household representative rates and the proportion living in institutions from the official Revised 2004-based Household Projections will remain constant to 2006. Clearly this is unlikely to come to be. The NHPAU 2006 derived method is a useful way of producing an updated set of household projections to inform debate.

B31. CLG and ONS have a long established role producing the population and household estimates and projections that underpin the role and action of the Government. It would be a risk to move away from their sources. The official 2004-based Revised Household Projections represent the more defensible option when considering the rigour and detail of its methodology.

Decision

B32. There is a clear trade-off to be made between the household projections that use the most up-to-date evidence to inform trends and assumptions but have been derived independently by NHPAU (2006 derived options) versus the most recent official set of projections released by CLG (Official 2004) which include assumptions based on old data.

B33. The adoption of the official Revised 2004-based Household Projections as part of the Demographic Method as a measure of household growth contributes the most robust and defensible input to the housing supply range advice available.

B34. Although not used as part of the Demographic Method the NHPAU 2006 derived household projections illustrate the potential impact of the ONS 2006-based Population Projections on the forthcoming official CLG 2006-based Household Projections.

³⁵ Home Office indicates that in the 12 months to last September, 65,000 skilled workers from outside the EEA were allowed into the UK, but under the new rules there would have been almost 8,000 fewer. Reported here: http://news.bbc.co.uk/1/hi/uk_politics/7384801.stm

³⁶ More detail is available here: Julie Jefferies, "Fertility assumptions for the 2006-based national population projections", Population Trends 131, ONS, accessed here: http://www.statistics.gov.uk/downloads/theme_population/Population_Trends_131_web.pdf

Traditional constrained demand

B35. Growth in projected households has consistently exceeded housing supply over the last decade, and for decades previously³⁷. This has resulted in constrained or pent-up demand and need for housing. In determining housing supply ranges a view needs to be taken about the scale of constrained demand and how this will be tackled.

B36. Traditionally measures of constrained demand have included allowances for:

- sharing households, overcrowding and concealed households, and
- homelessness including those in temporary accommodation

Sharing Households, Overcrowding and Concealed Households

B37. The approach used first identified sharing households, overcrowding and concealed households, then discounted specific household types to prevent cross over with 'other constrained demand'. The number of additional households required was calculated and then a weight applied to reflect housing need – it is assumed that a proportion, not all, of these additional households will require a dwelling e.g. some may prefer to continue living as part of an extended household.

B38. This analysis estimates constrained demand at a point in time. It does not consider possible future constrained demand caused by not meeting projected housing need. Regions should consider any additional constrained demand when determining their final housing supply.

B39. There are several sources of data that can be used to identify sharing households, overcrowding and concealed households. The primary source of data for sharing households and overcrowding is the Survey of English Housing (SEH). Data on concealed households is available from both the SEH and the official CLG Household Projections (concealed families).

³⁷ Barker, K. (2004), Review of Housing Supply, ODPM

³⁸ A separate bedroom is required for each married or cohabiting couple, for any other person aged 21 or over, for each pair of adolescents aged 10 – 20 of the same sex, and for each pair of children under 10. Any unpaired person aged 10 – 20 is paired, if possible with a child under 10 of the same sex, or, if that is not possible, he or she is counted as requiring a separate bedroom, as is any unpaired child under 10. (from CLG, 'Housing in England 2005/06', October 2007)

³⁹ Households with over one person per room are described as 'overcrowded'.

⁴⁰ ODPM, Allocation of Housing Capital Resources for 2003/04, December 2002

⁴¹ Excluding concealed one-person units from concealed households avoids any overlap with non-dependent children (never married children aged 16 and over who have no children & are living with their parents – excludes children aged 16-18 in full-time education, no age limit) living with their parents considered as part of 'other constrained demand'.

B40. One issue in comparing these sources of constrained demand is double counting. To avoid this, the same data source (SEH) has been used to estimate all three categories. This allows any potential overlap to be identified and removed.

B41. The following definitions have been used.

- *Sharing Households*: More than one household (including single people households) sharing basic facilities, e.g. kitchen and bathroom, in the same dwelling
- *Overcrowded*: If household is overcrowded on either the bedroom standard³⁸ or persons per room measure³⁹. These measures used together pick up different features of overcrowding to gain a complete picture⁴⁰, and
- *Concealed Households*: a family (married/cohabiting couple, lone parent) living within a wider household⁴¹ that does not include the Household Reference Person (economic head of the household)

B42. When considering these categories, it is important to identify involuntary sharing and concealment as not all families and sharing households want to live separately; some prefer to live as part of an extended family for social or cultural reasons, and some one-person households choose to live in shared accommodation as a lifestyle choice. For example it is assumed that an overcrowded dwelling consisting of one family will not break up into a number of households; the family will either remain in overcrowded accommodation or move to a larger dwelling – this case would not count towards an estimate of constrained demand.

B43. Once the number of households that may require separate accommodation has been identified we must consider how many of these will require self-contained accommodation. There is an argument that suggests the propensity of a household to want to move to self-contained accommodation will differ by whether it is a sharing household, in overcrowding or a concealed family. That propensity would change further depending on the type of household e.g. is a lone parent concealed family more or less likely to want their own house compared to a concealed couple family? This argument has considerable merit; unfortunately there are no recent robust studies to support this approach. Further research into this area is needed.

B44. The analysis included here is consistent with work by Holmans based on a shared accommodation survey by the Office of Population Censuses and Surveys (OPCS) in 1990⁴²; frequently quoted by central and regional government⁴³. This analysis has assumed that 60 per cent of all households or potential new households currently in shared households, overcrowding or concealed households want to move to self-contained accommodation – a further simplification of Holmans' findings. Further detail:

- Shared households: the 1990 OPCS survey⁴² found that 60 per cent of shared households wanted to move to self-contained accommodation
- Concealed households: the 1990 OPCS survey⁴² found that 49 per cent of couples with children and 53 per cent of lone parents would prefer their own self-contained accommodation. Recent local research⁴⁴ found higher values suggesting a middle value of 60 per cent would be a valid 'safe' path, and

- Overcrowding: there is no specific literature available on the probability of individuals to want to move from overcrowded homes though it has been quoted as a reason for forming a new household in housing needs studies⁴⁵. The inherent discomfort in an overcrowded state might justify increasing the probability for moving but lack of recent research and an erring towards a simple blanket approach has meant that this analysis has adopted the 60 per cent standard

B45. It is possible that the likelihood of a shared, overcrowded or concealed household wanting their own place has increased from 60 per cent since 1990. However, without robust evidence to back this up the industry accepted proportion has been used.

B46. Once the households desiring separate accommodation have been identified, the amount of additional housing accommodation required is estimated.

B47. For concealed families⁴⁶ moving out of a household or for those leaving overcrowded accommodation it is assumed that each family or one-person unit moving out will require a household space⁴⁷.

B48. For sharing households, the number of additional houses required is more complex – two households sharing will only require one additional dwelling, while four households sharing will require three additional dwellings. The pattern of sharing for the last three years was examined and an average weight calculated based upon the number of households sharing dwellings in the North (North East, North West and Yorkshire & Humber), Midlands and the South (West Midlands, East Midlands, East of England, South East and South West) and London⁴⁸. These weights were applied to all sharing households and used to estimate the amount of additional housing required.

⁴² Office of Population Censuses and Surveys (1993), *SN 2965 - Shared Accommodation in England, 1990*, HMSO.

⁴³ E.g. ODPM, Allocation of Housing Capital Resources for 2003/04, December 2002; CLG, Housing Investment in the Regions, November 2006; Cambridge Centre for Housing and Planning Research (2005), East of England Affordable Housing Study Stage 2: Provision for Key Workers and Unmet Housing Need.

⁴⁴ Blackburn & Darwen "Homelessness review"; Chichester "Housing Needs Analysis" (2006); Tamworth Borough Council "Housing Needs Analysis" (2006)

⁴⁵ Tunbridge Wells Borough Council "Housing Need Analysis" (2005); Derby Council "Black and Minority Ethnic Housing Needs and Market Study" (2003)

⁴⁶ One-person units were not included in the concealed families' analysis to avoid possible overlap with 'other constrained demand'.

⁴⁷ Those leaving an overcrowded household form a new household leaving behind a household of reduced size (which may still be overcrowded).

⁴⁸ Three area groupings were used rather than the nine regions due to the small sample size of the source data - shared accommodation cases formed less than 1% and overcrowding less than 2.5% of cases in the SEH.

Table B3: Additional housing required due to traditional constrained demand arising from sharing households, overcrowding or concealed households (based on SEH data)

	03/04	04/05	05/06	3 year average
North East	15,900	16,700	9,100	13,900
North West	32,100	54,800	39,200	42,000
Yorkshire & Humber	28,000	29,600	27,000	28,200
East Midlands	23,700	24,100	16,200	21,300
West Midlands	40,200	42,700	49,700	44,200
East of England	24,400	19,600	35,000	26,300
London	118,100	122,600	116,400	119,000
South-East	51,800	55,300	51,900	53,000
South West	20,300	24,300	19,800	21,400
ENGLAND	354,600	389,700	364,200	369,500

B49. Finally, any overlap (or double counting) between categories was removed. Households that qualified for more than one aspect of traditional constrained demand, e.g. a concealed household suffering from overcrowding, were only counted once.

B50. The SEH includes a sample of about 20,000 households each year with weights applied to estimate national figures. Due to a small amount of variability at regional level, three years data has been combined. This reduces sample variation but means that the impact of recent trends may be reduced. The year on year number of additional houses required due to constrained demand, with any overlap removed, is shown in table B3. The average, centred on 2004/05, has been used to inform the Demographic Method.

Homelessness including temporary accommodation

B51. A household is defined as homeless if they meet the requirements for statutory homelessness in the 1996 Housing Act. Either:

- there is no accommodation that they are entitled to occupy, or
- they have accommodation but it is not reasonable for them to continue to occupy this accommodation

B52. When considering this element of constrained demand it is important to consider only those households that are not occupying an existing household space (or dwelling) which could be used by another household were they to be housed elsewhere. For this reason some temporary accommodation types were discounted.

B53. Those living in bed and breakfast accommodation or hostels/refuges are included while those living in other temporary accommodation like LA/RSL stock are not.

B54. The homelessness data reported in table B4, from CLG, used to inform this analysis of constrained demand fluctuates between quarters – a four quarter average has been used.

B55. “Rough sleepers” should be included in this estimate of constrained demand. However, due to their small numbers and lack of available data constrained demand arising from rough sleepers has not been included. There is a small downside risk in omission. This can be mitigated by regions considering this factor when determining their final housing supply.

Table B4: Statutory homelessness: households in temporary accommodation, 2007, England

2007 – four quarter average	Included in constrained demand analysis			Not included in constrained demand analysis	
	Total	Bed & breakfast/hotels	Hostels/Women's refuges	Leased from private sector by LA/RSL, or rented direct with private landlord	Other accommodation, including LA/RSL own stock
North East	130	60	70	40	250
North West	910	170	740	310	1,080
Yorkshire & Humber	500	270	220	480	920
East Midlands	480	140	340	130	1,160
West Midlands	420	190	230	500	670
East of England	1,090	250	840	1,560	2,100
London	5,600	2,100	3,500	39,500	13,300
South-East	1,150	450	710	3,300	3,200
South West	960	430	530	2,300	1,600
ENGLAND	11,200	4,000	7,200	48,100	24,300

Source: derived from CLG⁴⁹

Other constrained demand

B56. The estimate of traditional constrained demand for housing as a result of concealed households did not include the demand for housing by concealed one-person households. These cases were stripped out of that analysis.

B57. Any estimate of constrained housing demand and need generated by concealed one-person households must consider that there are a lot of single people that want to live in multi-person households and want to continue living in the family home. It is therefore not appropriate to estimate this form of constrained demand as a proportion of total households but to consider proportional change over time. For this reason the estimation of concealed one-person households was removed from the analysis of traditional constrained demand and treated separately in this analysis of other constrained demand.

B58. Around 14 per cent of the population in England currently live alone compared to 6.5 per cent in 1971 – an increase from three million people in 1971 to seven million in 2005.⁵⁰ While there has been a commensurate increase of young one-person households over the medium term, the short-term experience is quite different. The official Revised 2004-based Household Projections show that had historic trends continued there would have been an additional 28,600 one-person households aged under 34 years between 2004 and 2006 (see table B1). Analysis of Labour Force Survey data, using three year averages, shows that there has been a decrease of 31,900 households over the period – over 60,500 less households than expected.

⁴⁹ Derived from CLG data, Table 625: Households in accommodation arranged by local authorities under the homelessness provisions of the 1985 and 1996 Housing Acts by type of accommodation by region

⁵⁰ Palmer, G. *Briefing on the growth in one-person households*, March 2006, Joseph Rowntree Foundation

B59. What factors are contributing to this recent decline in the number of young one-person households?

B60. One factor may be university students increasingly choosing not to form one-person households in favour of living at home. Correspondingly the proportion of full-time first degree students living at the parental home increased 8 percentage points from 12 per cent to 20 per cent between 1995/96 and 2004/05. However, it appears that the most significant element of this change is due to students shifting away from institutionally managed accommodation which declined 8 percentage points from 35 per cent to 27 per cent⁵¹. Recent increases in university student numbers would therefore not seem to be contributing significantly to the recent decline in the number of young one-person households.

B61. Another factor is likely to be the decline in affordability as indicated by the recent decline in the number of first-time buyers⁵². Earlier this year RICS estimated that since the end of 2002 around 500,000 potential first-time buyers had been unable to access the housing market.

B62. How to estimate the constrained demand for housing from concealed one-person households?

B63. On the one hand there has been a reduction in the number of one-person households forming amongst younger age groups while on the other hand there has been an increase in the number of multi-person households and non-dependent children living with their parents. This analysis seeks to quantify both sides of this relationship – using the higher result in each region to inform the results of the Demographic Method.

B64. Data from the Labour Force Survey for 2000 to 2007 have been used to look at trends over time in the number of one-person households for one strand of the analysis and multi-person households and households with non-dependent children for the other⁵³.

One-person households

B65. While the overall number of one-person households in England has been increasing due to an ageing population the number of one-person households at younger ages has been decreasing over time. Analysis has focused on the 16-24 and 25-34 year age groups as these individuals are most likely to want to form one-person households should circumstances allow.

B66. There may be one-person households at older age groups yet to form due to worsening affordability. However, these are difficult to identify. The increase of one-person households for reasons such as divorce, bereavement or choice may mask the impact of worsening affordability for those over 35 years.

B67. The proportional decrease in one-person households for people aged 16-24 and 25-34 years between 2001 and 2006 was found⁵⁴. This proportional decrease was applied to the 2007 household population to gain an estimate of the number of young one-person households that are yet to form. This estimate forms one half of the other constrained demand analysis (see table B5).

B68. There is no overlap between this element of other constrained demand and the sharing or concealed elements of traditional constrained demand. The one-person households included in this methodology are households which have not formed, whilst the traditional methodology counts those that already exist. There may be some overlap if a household included in this analysis is also overcrowded according to the bedroom standard or rooms per person measures. The scale of this would be very small. Considering the number of conservative assumptions made throughout the constrained demand method this overlap is of little consequence.

⁵¹ Universities UK (2006), Patterns of higher education institutions in the UK: Sixth Report.

⁵² RICS 2008 Housing Forecast (December, 2007).

⁵³ The Labour Force Survey is one of the largest household surveys in the UK and includes around 50,000 responding households in Great Britain, representing about 0.1% of the population. The available data contains both a household file and a person file. The April to June dataset has been used for 2001 to 2007 and the closest equivalent (March to May) for 2000.

⁵⁴ To limit the effect of sample variability between years – three year averages were used (2000-2002 and 2005-2007).

Multi-person households

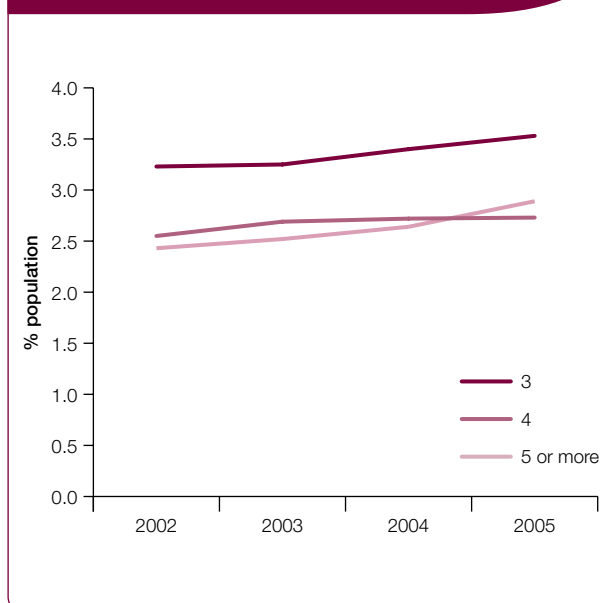
B69. Multi-person households consist of a number of individuals that make up one household. This is different to sharing households where multiple households share a single dwelling. An increase in the number of multi-person households over time indicates a squeeze on one-person households forming. This approach assumes that some people are moving into multi-person households rather than forming one-person households due to affordability issues. A number of conservative assumptions have been made in this analysis in deference to the possibility that the rise of multi-person households may be, in part, due to changing lifestyle choices.

B70. An increase in multi-person households has been experienced across all regions. Summarised at the England level we see a large increase in multi-person households with five or more members (see figure B6).

B71. An estimate of the number of one-person households that have not formed and been pushed into living in multi-person households was gained through an analysis of the change in the proportion of the household population living in multi-person households over time⁵⁵. The change between 2002 and 2005 for different household sizes was used – five year averages were applied to limit the effect of sample variation over time – and applied to the 2007 household population to derive a count of multi-person households that have formed since 2002.

B72. It is assumed that each of these multi-person households includes a one-person household that would have formed were it not for worsening affordability. It is this count that is included in the multi-person household contribution to the estimate of other constrained demand (see table B5).

Figure B6: Proportion of people in multi-person households, 5 yr averages, 2002–2005, England



Source: Labour Force Survey (from 2000-2007)

B73. There is a risk that this area of constrained demand has been underestimated: multi-person households with five or more people are likely to include more than a single one-person household that wants to form; and, the conservative use of five year averages rather than three means that the full scale of change between years has been dampened. On the other hand, there is a small risk of overlap between this analysis and traditional constrained demand where a multi-person household that formed before 2000 is also overcrowded.

Households with non-dependent children

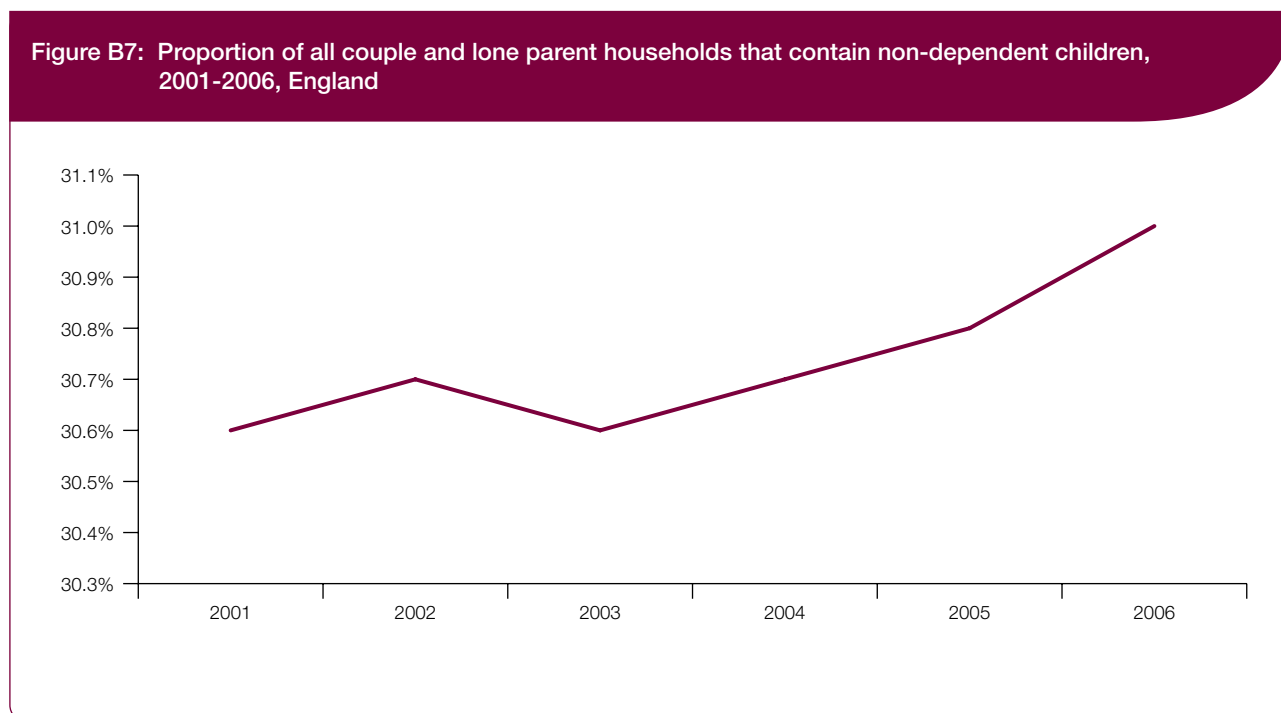
B74. A number of the non-dependent children living in households with a parent or parents do so because they cannot afford to live independently. A non-dependent child in this context is defined as someone living with a parent aged over 18 or aged 16 to 18 and not in full time education.

⁵⁵ It could be argued that this is not comparing like with like, however this is more conservative than dividing by total number of households as population is likely to be relatively unaffected by any change in affordability.

B75. To gain an estimate of the number non-dependent children that want to move those children that wish to stay in the parental home must be discounted. To allow for this only households with a Household Reference Person (economic head of household) aged between 40 and 64 were considered. These households are considered most likely to contain non-dependent children aged between 16 and 34 – the typical ages of those leaving home for the first time to form their own household.

B76. It is acknowledged that there will be parents of non-dependent children younger than 40 years old and individuals who live at home with their parents beyond 34 years e.g. divorced or separated individuals that return to the family home. This is likely to lead to an under-estimate of total households with non-dependent children.

B77. The change in the percentage of couple and lone parent households containing non-dependent children⁵⁶ was tracked over time.⁵⁷ At the England level an increase was observed between 2001 and 2006 (see figure B7).



Source: Labour Force Survey (from 2000-2007)

⁵⁶ Initially, couples and lone parents were considered separately as the pattern was thought to be different for these two categories (e.g. a non-dependent child may be more likely to remain with a lone parent). However, increasing divorce/separation rates mean that there are more lone parent families created with non-dependent children - so an increase in lone parents with non-dependent children may reflect a change in the divorce/separation rate rather than constrained demand. This will also impact couples, but in the opposite direction. To allow for this and other factors, couples and lone parents were considered together.

⁵⁷ To remove any variation due to sampling three year moving averages were calculated.

B78. The increase in households with non-dependent children between 2001 and 2006 was used to inform this estimate of constrained demand (see table B5). This approach does not account for non-dependent children living with a parent prior to 2001 and should be treated as an underestimate. There is a small chance of overlap with traditional constrained demand if a household with non-dependent children formed since 2000 is also overcrowded.

Other constrained demand results

B79. Other constrained demand estimates the number of one-person households that are yet to form due to affordability issues. The method produces two competing estimates – one considers the drop in one-person households formed by young people over time, and the other looks at observed increases in multi-person households and of households with non-dependent children. The greater of these estimates for each region is selected. The national figure for other constrained demand is the sum of the resulting regional totals (see table B5).

B80. Cautious assumptions have been made throughout this analysis. It focuses specifically on one-person households that have not formed and looks in particular at younger age groups. There are additional sources of constrained demand that are more difficult to measure e.g. individuals living with other relatives, individuals living with a friends family and those living as a lodger as part of a household, which are excluded. This cautious approach is consistent with the low weightings used in the traditional constrained demand analysis and means that any overlap between the two measures will not lead to an overstatement of total constrained demand.

Table B5: Additional housing required due to other constrained demand.

	Drop in one-person households	Increase in multi-person households	Increase in households with non-dependent children	Other constrained demand estimate
North East	1,630	2,800	4,100	6,900
North West	4,800	9,500	0	9,500
Yorkshire & Humber	10,600	10,400	0	10,600
East Midlands	4,000	4,300	5,000	9,300
West Midlands	0	6,400	12,200	18,600
East of England	15,800	3,300	24,700	28,100
London	23,400	18,400	2,700	23,400
South East	16,900	13,200	0	16,900
South West	14,800	13,300	5,200	18,500
ENGLAND				141,700

B81. A reasonable sense check here is provided by the work mentioned earlier. RICS estimated that since the end of 2002 around 500,000 potential first-time buyers had been unable to access the housing market. Analysis of the Survey of Mortgage Lenders (SML), suggests that the majority of this group are probably accommodated in the private rental sector (31 per cent); 13 per cent in social housing; 25 per cent in 'other' accommodation; and 30 per cent living with family and friends⁵⁸.

B82. An estimate based on the RICS figure and work by NHPAU would indicate that as many as 150,000 potential first-time buyers are living with family and friends. They may be looking to occupy their own accommodation if mortgage market conditions returned to their pre-2003 state, and could represent a significant amount of additional demand for housing.⁵⁹

B83. The next step is to make an assumption about how quickly the combined constrained demand will be tackled. It is possible to consider the implications of clearance over 10, 20 or 40. It seems appropriate to set an expectation that total constrained demand will be dealt with over the period of an RSS, say 20 years. As such, the Demographic Method has assumed that the total constrained demand will be addressed over the period 2008 to 2026.

Second Homes

B84. As the existing population gets richer they demand more and better housing. One element of this is the desire for second homes. An estimate of the projected demand for second homes needs to be included in the housing supply⁶⁰.

B85. Recent Council Tax/Local Government Finance (LGF) data (2004, 2005 and 2006) indicates little variation in the growth of second homes (see table B6).

Table B6: England Second Homes Figures (Data source: LGF)

	2004	2005	2006
North East	6,200	7,200	7,400
North West	17,200	18,300	18,400
Yorkshire & Humber	14,700	16,300	16,600
East Midlands	9,900	10,000	10,200
West Midlands	8,800	14,800	15,900
East of England	27,500	28,200	28,400
London	52,200	49,800	50,000
South East	42,100	41,600	41,700
South West	50,400	50,300	51,500
ENGLAND	228,900	236,300	240,000

B86. The most current data available (2006) shows that second homes make up 1.1 per cent of England's housing stock with 240,000 second homes across the nine Government Office Regions.

B87. Second home figures for each region were estimated by finding the total number of second homes in England, which was then portioned between the regions. The England total was found year on year by multiplying the previous year's total stock figure (all regions) by 1.1 per cent and subtracting second homes to date. The regional proportions used to share the England total between regions were derived from 2006 LGF data by dividing each region's total second homes by the England total. The regional proportions were applied year on year (2007 to 2026) to produce annual second homes figures. The national total was the sum of the regional figures.

⁵⁸ The survey asked first-time buyers a question about their previous tenure between 1997 and 2001. The combined results from these sweeps of the survey are used to derive the proportions.

⁵⁹ First-time buyers are counted as main mortgage applicants. This is not the same as persons because it may be the case that more than one person applies for the mortgage. In terms of these statistics it is the main applicant that is counted (i.e. the highest earner).

⁶⁰ For the purpose of projecting the number of second homes in England, a second home is defined as a property owned by a household member, which is not the household's main residence. However, properties which are the main residence of someone else, or which the owner intends to sell because they have moved are not counted as second homes. Second homes located outside England are not included in the analysis.

B88. An approach to estimate second homes figures by Government Office Region was considered using the Survey of English Housing (SEH) dataset.

However, whilst the number of second home owners and second homes by region could be identified a number of second homes and/or owners were lost across the borders to Wales, Scotland and Ireland. The result was a lower total for second homes than recorded in council tax data. It is likely that the SEH would provide a more robust distribution of second homes across all regions in England if this problem could be overcome.

Vacancies

B89. The vacancies in new and existing stock also need to be considered. There are several sources of data on vacancies. The preferred sources are Housing Strategy Statistical Appendix – HDS7 (HSSA) returns and council tax data. Council tax data has the weakness that there is thought to be some substitution between second homes and vacant properties where property owners pick the category that is best financially.⁶¹ In the HSSA data, the figures for RSL stock and vacancies have been replaced by data from the Housing Corporation RSR returns – recommended by CLG as a better source.

B90. Some quarters may argue for the use of a short-term vacancy rate on new stock rather than the total vacancy rate. This would potentially restrict the fluidity of the market so has been discounted from this analysis. Nevertheless, we have been cautious in our assumptions about vacancies and while the observed three-year average vacancy rate is above three per cent in the North East, North West, Yorkshire & Humber, and the Midlands, in our allowance for vacancies we have capped vacancy rates in these regions at 3 per cent. This has been done to reflect the fact that the vacancy rate in new stock may be lower than the overall rate because of a greater difference in quality between new and old supply in these regions⁶².

B91. To allow for likely vacancies in new housing supply a three year average, centred around 2005, of vacancy rates for each region (see table B7) were applied to new stock (except where a 3 per cent cap is in place). This approach is considered robust given the stable levels observed and that the level of vacancies is below the vacancy rate calculated using the Affordability Model⁶³.

Table B7: Vacancy rates for each region from HSSA/RSR data, 2002-2006

	2002	2003	2004	2005	2006	3yr Avg.
North East	4.1%	3.9%	3.5%	3.4%	3.6%	3.5%
North West	4.6%	4.5%	4.2%	4.2%	4.2%	4.2%
Yorkshire & Humber	4.3%	4.0%	3.8%	3.6%	3.4%	3.6%
East Midlands	3.2%	3.2%	3.2%	3.1%	3.2%	3.2%
West Midlands	3.4%	3.3%	3.3%	3.4%	3.2%	3.3%
East of England	2.7%	2.7%	2.5%	2.3%	2.7%	2.5%
London	3.2%	3.3%	3.2%	2.8%	2.7%	2.9%
South East	2.5%	2.4%	2.4%	2.6%	2.4%	2.5%
South West	3.2%	3.4%	2.8%	2.5%	2.6%	2.6%
ENGLAND	3.4%	3.4%	3.2%	3.1%	3.1%	

Note: The vacancy rate for North East, North West, Yorkshire & Humber, East Midlands, and West Midlands is capped at 3 per cent (see text).

⁶¹ However, such substitution is believed to be lower in more recent years due to fewer tax benefits available when registering homes as 'vacant'.

⁶² The Home Builders Federation (HBF) also stated a vacancy rate of 3% in new supply in evidence they presented to a Parliamentary Select Committee (see <http://www.publications.parliament.uk/pa/cm200203/cmselect/cmmodpm/77-ii/77m18.htm>)

⁶³ Simulations run by Reading University on the Affordability Model suggest that the market housing vacancy rate for England could increase to 4.5% by 2016 (range 3.8 to 5.9%) for the addition of 100,000 homes (Goody, Kasparova, Meen, Pryce and Whitehead, unpublished report, June 2007)

Also considered

Non-trend regional migration (no allowance at present)

B92. If the recent migration experience differs to the trend-based data used to inform the official Population Projections there may be additional pressures on the housing supply that are not catered for in the Demographic Method.

B93. Projected migration flows at the regional level are trend based on the average of the past five years. Deviation from trend will have an impact on the demand for housing. To estimate the impact on demand for housing, projected inflows and outflows have been considered separately for international and inter-regional migration and compared to historic flows over recent years.

B94. No specific allowance has been made in the Demographic Method for non-trend regional migration because time series analysis is limited. There is a small downside risk in omission. This can be mitigated by regions considering this factor when determining their final housing supply.

Short-term migrants (no allowance at present)

B95. There is no allowance for short-term migration in the population projections and hence the household projections. Statistics are available for short-term migrants for 2003/04 and 2004/05 at national level and for London⁶⁴. Two years data at this level of aggregation is insufficient to predict a trend as this time period may not be representative of future years.

B96. There is a small downside risk in omission. This can be mitigated by regions considering this factor when determining their final housing supply. It is likely that short-term migrants represent a requirement for a fixed proportion of stock in most areas.

Summary

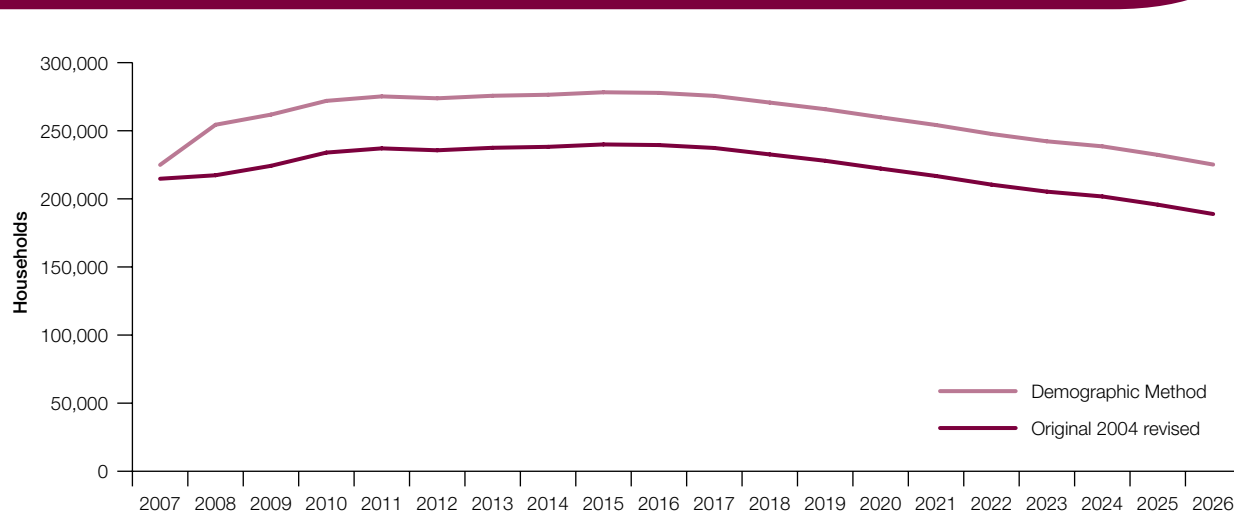
B97. The output of the Demographic Method is shown in table B8. This represents a housing supply to be met that accounts for the expected increase in households, current constrained demand and basic trends in second homes and vacancies.

Table B8: Demographic Method output – annual average change in housing supply across the period 2008-2026 (based on the Revised 2004-based Household Projections)

	Household Projections	Traditional constrained Demand	Temp.	Other constrained demand	2nd Homes	Vacancies	TOTAL
North East	6,100	730	10	360	90	230	7,500
North West	25,700	2,200	50	500	220	890	29,500
Yorkshire & Humber	23,300	1,500	30	560	200	790	26,400
East Midlands	22,100	1,100	30	490	120	740	24,600
West Midlands	18,400	2,300	20	980	190	680	22,600
East of England	29,900	1,400	60	1,480	340	850	34,000
London	33,000	6,300	290	1,230	600	1,230	42,600
South East	36,000	2,800	60	890	500	1,020	41,200
South West	28,800	1,100	50	970	620	860	32,500
ENGLAND	223,300	19,400	590	7,460	2,870	7,280	260,900

⁶⁴ ONS (2007), Research Report on Short-Term Migration, published online: <http://www.statistics.gov.uk/about/data/methodology/specific/population/future/imps/updates/downloads/STM_Research_Report.pdf>

Figure B8: Revised 2004-based Household Projections and the Demographic Method, annual household change, 2007-2026, England



Applying the Demographic Method to housing delivery trajectories

B98. The results of the Demographic Method show the number of households required each year. The change in household numbers between years shows the number of additional households required year on year (see figure B8).

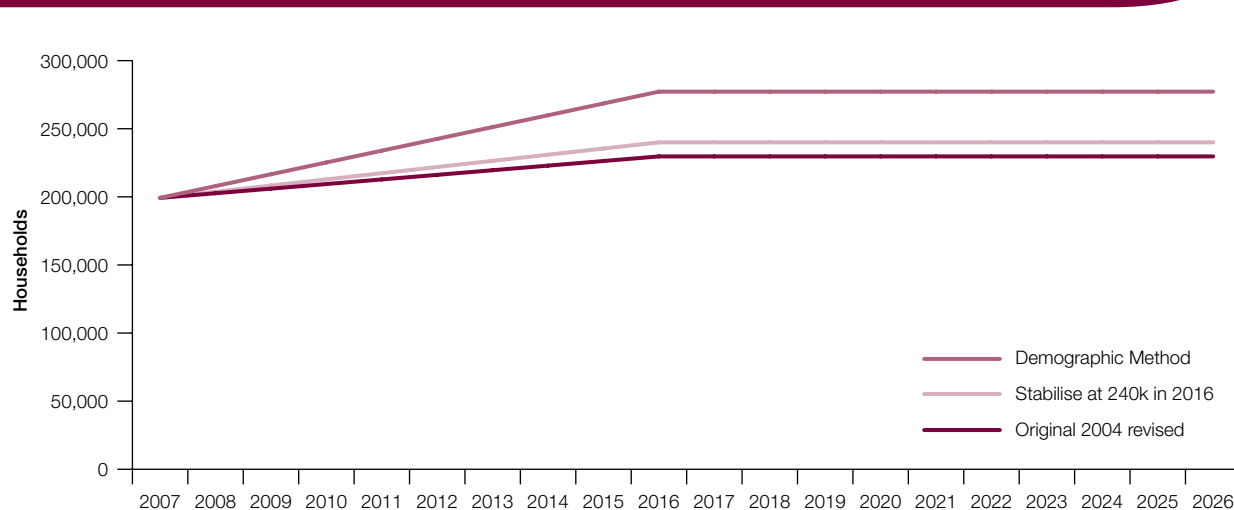
B99. Applying these results to a planning context means acknowledging that it would be difficult to ramp up construction to achieve higher than planned for housing construction targets in the short term. Also, government targets refer to delivery points in the future e.g. ‘by 2016’ or ‘by 2026’. The results of the Demographic Method do not lend themselves to this ‘ramp up and stabilise’ approach.

B100. A simple approach has been employed to adapt the results of the Demographic Method to form housing supply trajectories. The number of additional households expected between 2008 and 2026 has been reshaped to peak in 2016, in line with government targets, with straight line delivery trajectories. Current delivery, as indicated by 2007 net additions, is used as the starting point.

B101. This assumes that the constrained demand component of the Demographic Method accounts for any difference between the 2007 net additions and the Demographic Method results in 2007.

B102. Figure B9 shows three housing supply trajectories. The Demographic Method trajectory peaks and stabilises in 2016 with 277,000 households delivered per year. The trajectory based on the official Revised 2004-based Household Projections peaks and stabilises in 2016 with 230,000 households per year. The third trajectory satisfies the Government’s goals of delivering 240,000 houses per year by 2016, 2 million households by 2016 and 3 million by 2020 but then goes further – it stabilises at delivering 240,000 per year from 2016. This is used to inform the minima of NHPAU’s Affordability Model analysis.

Figure B9: Housing supply trajectories informed by the Demographic Method and the official Revised 2004-based Household Projections, 2007-2026, England



B103. The following tables show how the housing supply trajectories would be delivered by the regions (see tables B9, B10, B11). Please note that rather than peak the North East build decreases between 2008 and 2016.

Table B9: Demographic Method housing supply trajectory, delivery totals and average over time

	Peak by 2016	Annual Average Change 2008-2026	Total by 2016	Total by 2020
North East	7,600	7,500	66,800	97,300
North West	31,300	29,500	247,700	373,000
Yorkshire & Humber	28,300	26,400	218,300	331,700
East Midlands	25,300	24,600	214,500	315,500
West Midlands	24,300	22,600	186,600	283,700
East of England	36,400	34,000	281,200	426,800
London	46,700	42,600	342,700	529,600
South East	43,000	41,200	353,300	525,300
South West	34,400	32,500	272,700	410,300
ENGLAND	277,300	260,900	2,183,800	3,293,200

Table B10: Original Revised 2004-based Household Projection housing supply trajectory, delivery totals and average over time

	Peak by 2016	Annual Average Change 2008-2026	Total by 2016	Total by 2020
North East	5,800	6,100	57,800	81,200
North West	26,400	25,700	223,200	328,900
Yorkshire & Humber	24,500	23,300	199,000	296,800
East Midlands	22,100	22,100	198,700	287,100
West Midlands	19,000	18,400	160,000	235,900
East of England	31,200	29,900	255,200	380,000
London	34,500	33,000	281,900	420,000
South East	36,300	36,000	320,000	465,300
South West	29,800	28,800	249,700	369,000
ENGLAND	229,700	223,300	1,945,400	2,864,200

Table B11: Government target stabilises from 2016 housing supply trajectory, delivery totals and average over time

	Peak by 2016	Annual Average Change 2008-2026	Total by 2016	Total by 2020
North East	6,600	6,700	61,500	87,800
North West	27,600	26,600	228,900	339,300
Yorkshire & Humber	25,100	23,800	202,100	302,500
East Midlands	23,700	23,400	207,000	301,900
West Midlands	19,800	19,000	164,100	243,200
East of England	32,100	30,600	259,600	388,000
London	35,500	33,800	286,600	428,500
South East	38,700	37,800	331,500	486,200
South West	31,000	29,800	255,600	379,600
ENGLAND	240,100	231,500	1,996,900	2,957,000

Appendix C

NHPAU Board Members



Stephen Nickell (Chair)

Currently Warden of Nuffield College, Oxford, and a Board Member of the UK Statistics Authority. Previously he has held Economics Professorships at both LSE (London School of Economics) and Oxford and was President of the Royal Economic Society from 2000 to 2003. He was a member of the Bank of England Monetary Policy Committee from 2000 to 2006, and during this time he made a number of speeches on the housing market. He is a fellow of both the Econometric Society and the British Academy as well as being a foreign honorary member of the American Economic Association and the American Academy of Arts and Sciences.



Prof Glen Bramley

Professor of Housing and Planning/ Urban Studies at Heriot – Watt University in Edinburgh since 1994 leading research on planning, housing and urban policy. Prior to this he lectured in Urban Studies at the University of Bristol specialising in local government finance, housing and economic aspects of public policy. He has published papers and extensive research analysing the economics around housing affordability and its relationship with planning and house building.

Glen is the linked Board member for the South West and North East regions.



Prof Paul Cheshire

Has been Professor of Economic Geography at the London School of Economics and Political Science since 1995. Prior to this he was Professor of Urban and Regional Economics at the University of Reading and has spent time at Washington University in the USA. He has written extensively and conducted research on applied urban and regional economics, particularly the economics of housing, land markets and land use regulation.

Paul is the linked Board member for London and the East Midlands region.



Max Steinberg

Has been Chief Executive of Elevate East Lancashire, a housing market renewal pathfinder since 2003, following 25 years at the Housing Corporation where his roles included, Director of Investment & Regeneration for the North and Regional Director of the North West and Merseyside. He is a leading UK practitioner in Urban Regeneration and Housing. Max is Chair of the Board of Liverpool John Moores University European Institute for Urban Affairs and the Chair of Governors at King David High School in Liverpool.

Max is the linked Board member for the Yorkshire and Humber region.



Bob Lane

Is involved in a range of consultancy and non-executive roles in housing, economic development and regeneration. Until April 2008 he was Chief Executive for North Northants Development Company responsible for housing growth and regeneration in the area. His previous roles include Chief Executive of Speke Garston Development Company, Liverpool, Assistant Chief Executive of the Merseyside Development Corporation and roles at Oldham and Lambeth Councils managing urban programmes. He is a specialist in the delivery of complex urban regeneration projects, with more than twenty five years experience as a regeneration practitioner/manager.

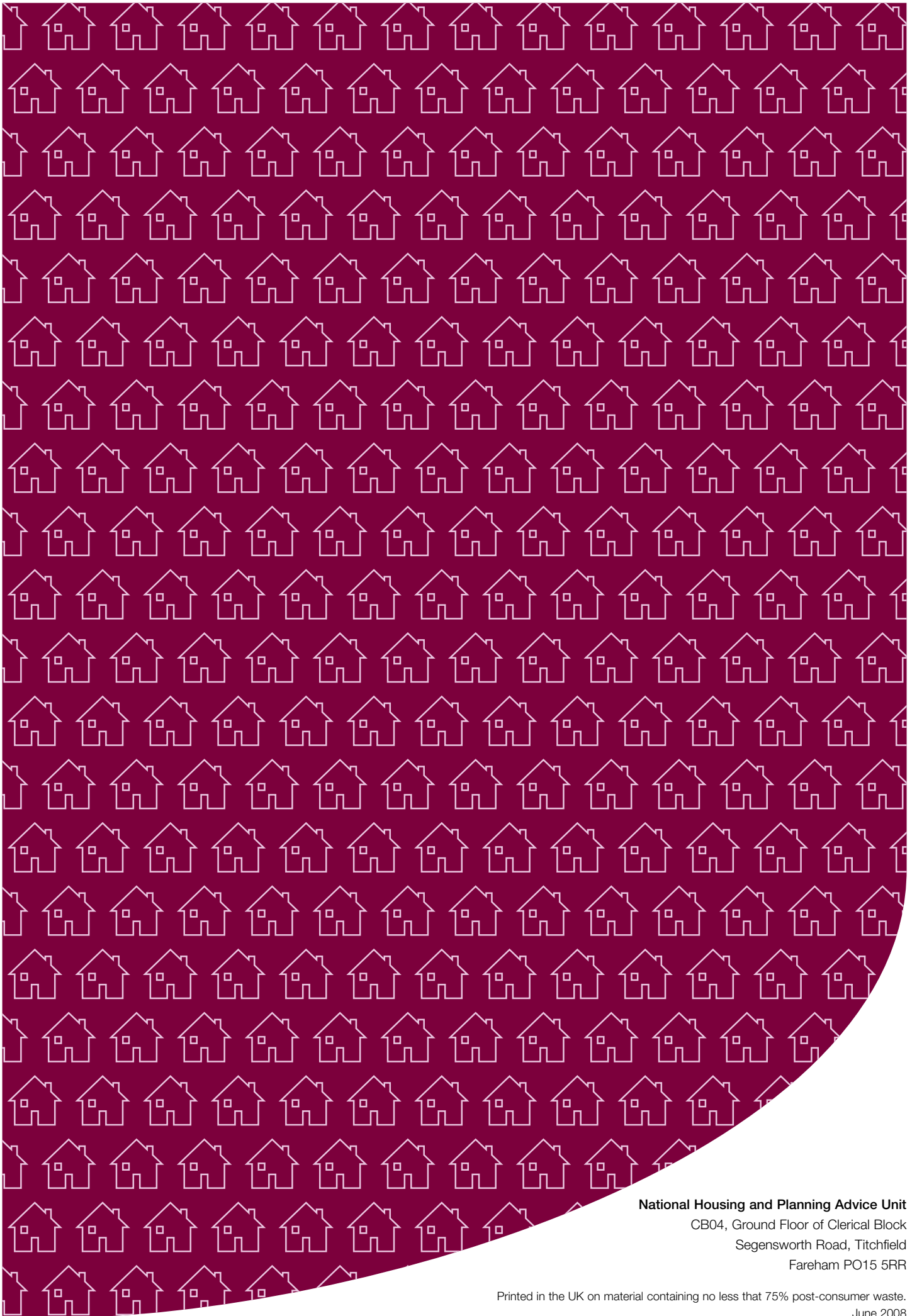
Bob is the linked Board member for the East of England and the North West regions.



Dr Peter Williams

Is now an independent consultant on housing and mortgage markets. His clients include the Intermediary Mortgage Lenders Association and Acadametrics. He was previously Deputy Director General of the Council of Mortgage Lenders. Prior to that, he was Professor of Housing Management at Cardiff University, Deputy Director at the Chartered Institute of Housing and as an academic at the Australian National University and the University of Birmingham. He previously served on the Board of the Housing Corporation (1995 - 2002) and Housing for Wales (1989 to 1993). He is a Visiting Professor at the Centre for Housing Policy at the University of York.

Peter is the linked Board member for the West Midlands and South East regions.



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