Joint Core Strategy

Note for the Inspector

Subject: JCS Councils Response to EXAM 78:

JCS OAN Update Report, Dated September 2015

This report has been prepared on behalf of the JCS authorities, to address that element of the Inspector's requests for further consideration of OAN as set in EXAM 78.

Once the additional work also requested by the Inspector in terms of the local economy has been completed, the JCS authorities will give consideration to whether all additional pieces of work require an adjustment to the OAN.

Dated: Monday 28 September 2015

An Updated Estimate of the Objectively Assessed Housing Needs of Cheltenham, Gloucester and Tewkesbury

Neil McDonald

September 2015

NMSS

Author

Neil McDonald

This report has been prepared for Cheltenham Borough Council, Gloucester City Council and Tewkesbury Council.

Neil McDonald is an independent adviser and commentator on housing demographics. He works with local authorities and others on the estimation of housing need and related issues.

He was a civil servant and policy adviser to Ministers for over 30 years, the last 10 advising on housing and planning issues within the Department of Communities and Local Government. His 7 years as a Director at DCLG included a posting as Director, Planning Policy and a period as Chief Executive of the National Housing and Planning Advice Unit until its closure in 2010. He left the Department in March 2011 and has since worked with the Cambridge Centre for Housing and Planning Research (CCHPR) as a Visiting Fellow (2012-15), collaborating in particular with its founder director, Professor Christine Williams.

AN UPDATED ESTIMATE OF THE OBJECTIVELY ASSESSED HOUSING NEEDS OF CHELTENHAM GLOUCESTER AND TEWKESBURY

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Executive Summary

Aim

To present in one report the analysis carried out by the Cambridge Centre for Housing and Planning Research (CCHPR) since December 2012 which has informed the estimation of the objectively assessed housing needs (OAN) of the Cheltenham, Gloucester and Tewkesbury Joint Core Strategy (JCS) area.

Approach

This report follows the approach indicated by the National Planning Policy Framework (NPPF) and the Planning Practice Guidance (PPG). It takes as its starting point the official population and household projections.

To assess the housing requirement of any area it is necessary to:

- Estimate the size and age structure of the population that will need to be housed.
- Take a view on how that population will group itself into households. This, combined with the population estimate, enables the number of extra households which will need to be housed to be estimated.
- An allowance needs then to be added for properties which will be empty or second homes to produce a preliminary estimate of the housing requirement.
- Finally, consideration needs to be given to whether there are any factors which will not have been reflected in this approach. These might include:
    - market signals which suggest that the local housing market has been under particular stress;
    - unmet housing needs or past undersupply which will have affected the trend-based assessment of future housing needs produced by a demographic approach;
    - how the assessment of the overall housing requirements relates to the need for affordable housing (i.e. social and intermediate housing); and,
    - whether additional housing is needed to ensure that the area can accommodate sufficient workers to support the projected level of economic growth.

The report follows through these steps in order.

Findings and recommendations

- The starting point for this Update Report is the DCLG's 2012-based household projections (DCLG 2012) which were released in February 2015. These were based on the ONS 2012-based Sub-national Population Projections (2012 SNPP) which were published in May 2014. However, more recent evidence on how the population has changed since 2012 is available from the 2014 Mid-Year Estimates (2014 MYE) which were issued in June 2015 and the international migration statistics for the year to March 2015 which were released in August 2015. This report also takes that additional evidence into account to provide the most up to date view possible.

- As a result of the latest evidence it is proposed that the following adjustments should be made to the 2012 SNPP/DCLG 2012 before using them to estimate the OAHN for the JCS area.

    - The 2012 SNPP projects flows to and from other parts of the UK using flow rates estimated from the 5-year period 2007-12. That period included a severe economic downturn and as a result some of the projected flows appear to be low. It is proposed to correct for this by using average flow rates for a 10-year period. Previously the period 2002-12 had been used but, with the publication of the 2014 MYE, it is now possible to update this to 2004-14. At the same time the population estimates from the 2014 MYE will be used as revised starting points for the population projections.

    - The latest estimates for net international migration to the UK suggest that in the year to March 2015 the net inflow was approximately twice that assumed in the 2012 SNPP. In view of this it is proposed to adjust international flows into and out of the JCS authorities to reflect actual flows over the most recent 10-year period for which data is available, i.e. 2004-14.

    - If all of the data were completely accurate the population in one census plus the cumulative effect of the births, deaths and flows in and out in the intervening years would equal the population counted in the next census. That is not the case: there is a discrepancy known as the 'Unattributable Population Change' (UPC). It is debatable whether UPC should be taken into account in projecting future population changes. The ONS do not do this but in earlier analysis NMSS had adopted the principle that where UPC would have the effect of increasing a population projection it should be included so as to avoid the possibility of underestimating the population to be planned for. However, evidence from the 2014 MYE does not suggest that the 2012 SNPP is underestimating population growth. In view of this it is now felt that the previous approach was unduly cautious and that it would be more appropriate to assume that half of UPC would have contributed to population change. This is mid-way between the "no UPC" assumptions adopted by the ONS and the "100% UPC" approach used previously.

- Table 6 (reproduced below) summarises the impact which these adjustments have on the 2012 SNPP projections for the JCS authorities. The effect is to increase the

projected population increase of the JCS area from 52,570 to 57,630, an increase of 5,060 or 9.6%

Table 6: Summary of Adjustments to the 2012 Sub-national Population Projection					
Population change 2011-31		**Cheltenham**	**Gloucester**	**Tewkesbury**	**JCS**
A	**2012 SNPP**	**15580**	**21960**	**15020**	**52570**
B	*10-year UK flow adjustment*	*660*	*-30*	*-1290*	*-660*
C	**10-year UK flows**	**16240**	**21930**	**13730**	**51910**
D	*2004-14 UK flows and re-base to 2014 MYE*	*-880*	*70*	*2200*	*1400*
E	**MYE + 2004-14 UK flows**	**15370**	**22000**	**15930**	**53300**
F	*Adjustment for 2004-14 overseas flows*	*790*	*1620*	*900*	*3320*
G	**MYE + 2014-14 UK + overseas flows**	**16160**	**23620**	**16840**	**56620**
H	*Adjustment for 50% UPC*	*600*	*1150*	*-740*	*1010*
I	**MYE + 2014-14 UK +overseas flows + 50% UPC**	**16760**	**24770**	**16090**	**57630**

- To turn an estimate of a population change into an estimate of the change in the number of households a view needs to be taken on how the tendency of people to form separate households (the household formation rate) is likely to change. The latest DCLG household projections (DCLG 2012) provide the most recent official view on this and represent a significant step forward from the 2011-based interim projections (which were prepared relatively quickly following the 2011 census as a stop-gap measure). Having reviewed the latest projections, NMSS believes that they should be used as published.

- In particular, there is no longer a need to make adjustments to the projected household formation rates for young adults (those aged 25-34) that were appropriate when using the 2011-based interim projections. Those projections envisaged a continuing sharp deterioration in the household formation rates of that age group. NMSS believe that the latest DCLG projections represent a realistic view of likely trends in household formation patterns when account is taken of the changes that have occurred since the last pre-recession projection were published (the 2008-based projections), many of which are unlikely to reverse in the foreseeable future.

- Once an allowance is made for empty and second homes (based on council tax data), applying the 2012-based DCLG household formation rates to the adjustment 2012 SNPP population projections produces a demographically based estimate of the OAHN of the JCS area of 31,800 homes over the period 2011-31, as set out in Table 9 (shown below).

Table 9: Demographic housing need in the JCS area				
Homes needed 2011-31	**Cheltenham**	**Gloucester**	**Tewkesbury**	**JCS**
Population based on 2012 SNPP	9650	12330	8060	30040
Proposed planning assumptions for population	**9900**	**13290**	**8640**	**31830**

- A review of house prices, house price-earnings affordability ratios, rents, house building rates, overcrowding levels and the proportion of concealed households does not suggest that the JCS housing market is subject to particular stresses that would

justify increasing the OAHN above the level indicated by the demographically based estimate.

- Updated economic projections have been obtained from Oxford Economics (OE) and Cambridge Econometrics (CE) and Experian for the three authorities. There are substantial differences between these projections and between the projections obtained some 18 months earlier. This suggests that great caution should be used in using them to estimate the number of homes needed to support economic growth.

- The economic projections are highly sensitive to the assumptions made on the growth in jobs in key sectors such as government services (including health and education) and finance and business services. The assumptions made about economic activity rates (i.e. the proportion of the population who are available for work) also have a big impact on the number of people needed to support economic growth (and hence the number of additional homes required). Plausible variations in the assumptions could change the estimates of the number of homes needed significantly. In addition there are question marks over whether the projections have made sufficient allowance for improvements in productivity as the economy recovers from recession given that the deterioration in productivity in the last recession was deeper than in the previous two and there has so far been relatively little improvement in productivity.

- Taking the JCS area as a whole and using economic activity rates consistent with the projections, there does not appear to be a need to add to the demographically-based OANs to ensure that there are sufficient homes in the area to support the projected growth in jobs. The OANs should therefore be as set out in Table 9 above.

- A range of alternative scenarios has been modelled to explore how sensitive the OAHN estimate is to alternative assumptions about population growth and household formation rates.

- The population sensitivity tests produce a range from 31,000 to 32,100 homes. The proposed OAHN (31,800) is above the mid-point of that range (31,550).

- Eight household formation rates scenarios have been tested. These include six which explore scenarios in which household formation rates move all or part of the way back towards the 2008-based projections for some or all age groups. These result in estimates of the number of homes needed up to 36,400 in the scenario in which the household formation rates of all age groups are assumed to reach the rates envisaged in the 2008-based projections before 2031. This is thought extremely unlikely given that it is now clear that the 2008-based projections were optimistic when they were first published and changes have occurred that are unlikely to reverse even after a full recovery from the recession.

- Two other household formation rate sensitivities are more relevant.

    - One considers the impact of assuming that no group sees its household formation rate fall below the level in 2011 – the '2011 floor' scenario. This

increases the number of homes needed by 800 or 2.5%. This is a relatively small adjustment and indicates that the deterioration in housing conditions for some groups implicit in the new projections is relatively small.

- A second scenario assumes that no group sees a rise in its household formation rate above its 2011 level – the '2011 ceiling' scenario. This reduces the number of homes needed by 3400 or 11%. It is a pessimistic scenario as it takes away all of the increases in household formation rates inherent in the 2012-based projections. However, in doing so it shows that the improvements in housing conditions which some groups are projected to enjoy are reasonably substantial.

- Barton Willmore have put forward an alternative assessment of the OAHN on behalf of Gladman Developments. This also makes adjustments to the 2012 SNPP to apply 10-year flow rates and, in addition, assumes that the household formation rates of those aged 25-44 reach the rates envisaged in the 2008-based projections before 2031. Barton Willmore also estimate the number of homes needed to support economic growth based on forecasts which they obtained from the same forecasting houses as used by the JCS authorities. Their analysis suggests that:

  - Demographic factors will lead to the population of the JCS area growing more slowly than envisaged in this update report: by 48,600 between 2011 and 2031 compared with 57,600 suggested by this report.

  - A population increase of 55,300 is needed to support economic growth. This is also smaller than that envisaged in this report.

  - 35,770 homes are needed to support economic growth. The only reason this is a higher figure that the OAHN estimated in this report is the assumption that the household formation rates of 25-44 year olds reach those assumed in the 2008-based projections before 2031. Barton Willmore's analysis suggests that if DCLG's 2012-based household formation rates are used 31,990 homes are needed – only 190 homes more than the OAHN estimated in this report.

  - The substantive point of difference is therefore the assumptions made on household formation rates.

Conclusion

- The updated OAHN estimate of 31,800 homes over the period 2011-31 compares with 31,600 homes suggested in the analysis set out in the JCS authorities' Written

Statement on Housing Provision (Matter 3). The difference is well within the error margins associated with this kind of analysis.

- Given the inevitable uncertainties, the demand for homes and the growth in employment should be closely monitored and the OANs should be reviewed periodically in the light of what actually happens.

AN UPDATED ASSESSMENT OF THE OBJECTIVELY ASSESSED HOUSING NEEDS OF CHELTENHAM GLOUCESTER AND TEWKESBURY

INTRODUCTION

Aim

1. To present an updated estimate of the objectively assessed housing needs (OAHN) of the Cheltenham, Gloucester and Tewkesbury Joint Core Strategy (JCS) area. The report is based on the latest available evidence as of September 2015. It draws together in one document all of the evidence that remains relevant[1].

Approach

2. The report follows the approach indicated by the National Planning Policy Framework[2] (NPPF) and the Planning Practice Guidance[3] (PPG). It takes as its starting point the latest official population and household projections. These are the Office for National Statistic's (ONS's) 2012-based Subnational Population Projections for England[4] (2012 SNPP) and the Department for Local Government's (DCLG's) 2012-based Household Projections[5]. Account has also been taken of the ONS's

[1] This responds to the request of the Inspector examining the Cheltenham, Gloucester and Tewkesbury Joint Core Strategy in paragraph 16 of her request for additional evidence (EXAM 78) for an update which draws together "the new evidence and the existing evidence that the JCS authorities still wish to rely upon, and to present it in one stand-alone document…"

[2] The *National Planning Policy Framework* was published on 27 March 2012 and sets out the Government's planning policies for England and how these are expected to be applied. See http://www.communities.gov.uk/publications/planningandbuilding/nppf

[3] The *Planning Practice Guidance* was launched by the Department for Communities and Local Government (DCLG) on 6 March 2014 as a web-based resource and has been periodically updated since then. It is available at http://planningguidance.planningportal.gov.uk/

[4] The *2012-based Subnational Population Projections for England* were published on 29 May 2014 and are available at http://www.ons.gov.uk/ons/rel/snpp/sub-national-population-projections/2012-based-projections/stb-2012-based-snpp.html

[5] The *2012-based household projections in England, 2012 to 2037* were published on 27 February 2015 and are available at https://www.gov.uk/government/statistics/2012-based-household-projections-in-england-2012-to-2037

Annual Mid-year Population Estimates, 2014[6] (2014 MYE) and the latest estimates of international migration[7]

3. To assess the housing requirement of any area it is necessary to:

- Estimate the size and age structure of the population that will need to be housed.
- Take a view on how that population will group itself into households. This, combined with the population estimate, enables the number of extra households which will need to be housed to be estimated.
- An allowance needs then to be added for properties which will be empty or second homes to produce a preliminary estimate of the housing requirement.
- Finally, consideration needs to be given to whether there are any factors which will not have been reflected in this approach. These might include:
    - market signals which suggest that the local housing market has been under particular stress;
    - unmet housing needs or past undersupply which will have affected the trend-based assessment of future housing needs produced by a demographic approach;
    - how the assessment of the overall housing requirements relates to the need for affordable housing (i.e. social and intermediate housing); and,
    - whether additional housing is needed to ensure that the area can accommodate sufficient workers to support the projected level of economic growth.

4. The report follows through these steps in order.

[6] The *Annual Mid-year Population Estimates, 2014* were published on 25 June 2015 and are available at http://www.ons.gov.uk/ons/dcp171778_406922.pdf

[7] See *Migration Statistics Quarterly Report, August 2015* which was released on 27 August 2015 and is available at http://www.ons.gov.uk/ons/rel/migration1/migration-statistics-quarterly-report/august-2015/stb-msqr-august-2015.html

WHAT POPULATION SHOULD BE PLANNED FOR?

Introduction

5. The first step in preparing a demographic estimate of an area's objectively assessed needs (OAHN) for housing is to reach a view on the number of people to be planned for by age group and gender. This section takes as its starting point the most recent ONS population projections and considers whether they provide a prudent basis on which to plan.

The recent ONS population projections

6. There are two sets of ONS population projections which post-date the 2011 census:

- The *Interim 2011-based subnational population projections for England*[8] (2011 SNPP) which were published on 28 September 2012. They only cover the period 2011-21 and have a number of acknowledged weaknesses stemming from the fact that they were produced relatively quickly following the census, before the necessary data was available to update the trends on which they are based. As a result they can over-estimate births in some areas and either over- or underestimate population flows between local authorities. These have been superseded by the 2012-based population projections and are not discussed further in this report.
- The latest ONS local authority level population projections are the *2012 Sub-national Population Projections for England* (2012 SNPP) which were published on 29 May 2014[4]. They take as their starting point the 2012 population estimates. They cover the period 2012 to 2037. Unlike the 2011-based interim projections, the 2012 SNPP involve a full re-working of the trends which are used to project population growth. However, there are two significant issues with these projections:
  - The projections for flows between local authorities are estimated from data from the five years 2007-8 to 2011-12, a period which included a severe economic downturn, during which activity in the housing market and population flows between local authorities were generally depressed, although the effect varies considerably from authority to authority.
  - The projections ignore population changes which occurred between 2001 and 2011 which the ONS have not been able to attribute to any of the 'components of change' (births, deaths, and flows in and out to and from the rest of the UK and abroad). For some authorities these 'unattributable population changes' (UPCs) can be large compared with the total population change between the censuses. Not taking

[8] Interim 2011-based subnational population projections for England, ONS, 28 September 2012, http://www.ons.gov.uk/ons/rel/snpp/sub-national-population-projections/Interim-2011-based/index.html

them into account may have introduced significant errors into some projections.

7. The ONS's 2014 Mid-year Estimates[6] (2014 MYE) were published on 25 June 2015 and provide the best available estimates of the population of local authorities at 30 June 2014. In some cases the population estimate is higher than that estimated in the 2012 SNPP and in other cases it is lower. This section also consider the consequences of the 2014 MYE for the JCS authorities.

8. The latest estimates for international migration[7] suggest that the net inflow to the UK in the year to 31 March 2015 was 330,000. This is about twice the level assumed in the 2012 SNPP. The implications of this for the JCS authorities are also examined.

What the 2012-based population projections say

9. The 2012 SNPP suggest significant population increases between 2011 and 2031 for the three JCS authorities with all three being above the Gloucestershire average. The projected increases for Gloucester (18%) and Tewkesbury (also 18%) are higher than for England as a whole. See Chart 1 and Table 1 below.

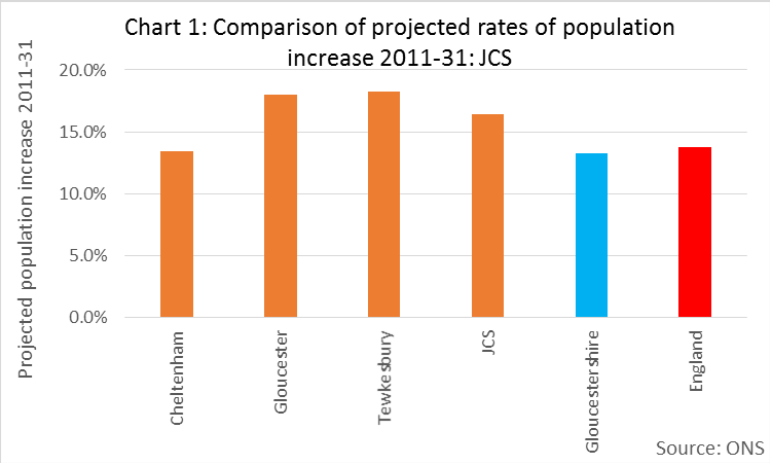


Table 1: Comparison of projected rates of population increase 2011-31: JCS

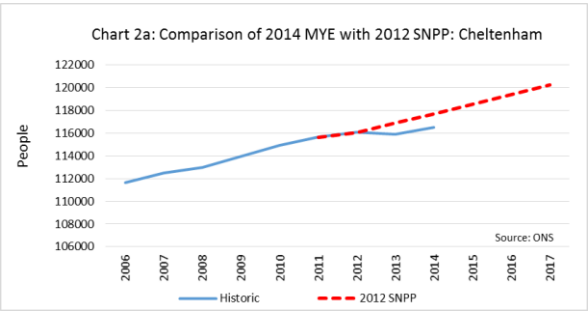
	Cheltenham	Gloucester	Tewkesbury	JCS	Gloucestershire	England
2012 SNPP	15600	22000	15000	52600	79600	79600
% change	13.5%	18.0%	18.3%	16.4%	13.3%	13.8%

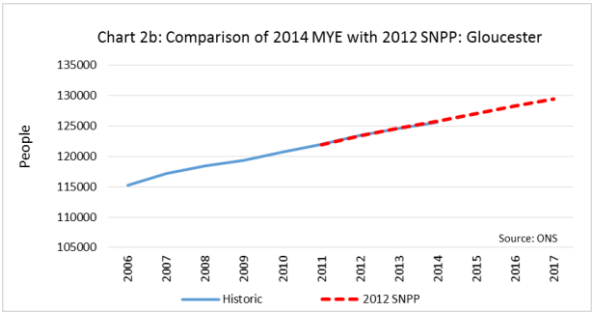
2014 Mid-Year Estimates

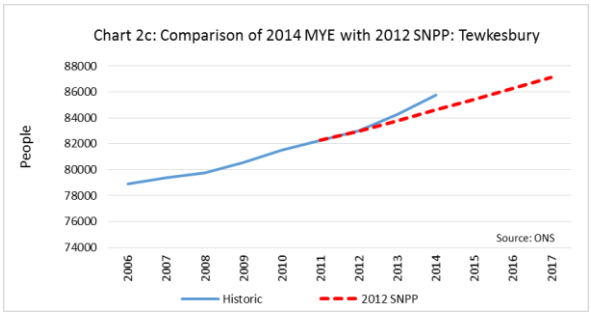
10. With the publication of the 2014 MYE there are now two year's data available for the period covered by the 2012 SNPP. This provides the best available evidence of what has happened since 2012, although it should be treated with some caution: what has

happened in the first two years of a 25 year projection period is not necessarily a reliable indication of what is likely to happen over the period as a whole: and, the mid-year estimates are also subject to sampling error and other uncertainties9.

11. The Charts 2a-c below show how the 2012 SNPP figures for the three JCS authorities compare with the recent historical data including the mid-year estimates for 2013 and 2014. Note that the 2014 MYE is close to the 2012 SNPP figure for Gloucester, lower than the 2012 SNPP figure for Cheltenham and higher than the 2012 SNPP figure for Tewkesbury. In aggregate across the JCS area the difference between the 2012 SNPP and the MYE is small: 188 people or less than 0.1%.







Understanding how populations change

12. The future population of any area is simply the current population plus those who come less those who go. Those who come are those who are born in the area plus those who move in from outside. Those who go are those who die plus those who leave the area. It is helpful to divide arrivals and departures into those who come from or go to the rest of the UK and those who come from or go to other countries. This gives six 'components of population change':

- Births
- Deaths
- Arrivals from other parts of the UK – "UK flow in"

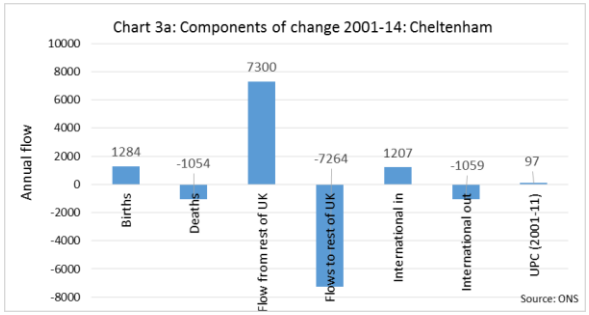
[9] In the Background notes to *Annual Mid-year Population Estimates, 2014* (paragraph 12) the ONS notes in relation to the national population estimates (which the local authority area estimates are constrained to be consistent with) that, "As the national population estimates rely on Census estimates of the population in 2011 and survey estimates of international migration since then, the population estimate will be affected by sampling error." There are also significant additional uncertainties at the local authority level due to the difficulties in determining the ultimate destinations of international in migrants; the origins of international out migrants and the estimation of flows between local authorities. Mid-year estimates become increasingly uncertain the further they are from the most recent census.

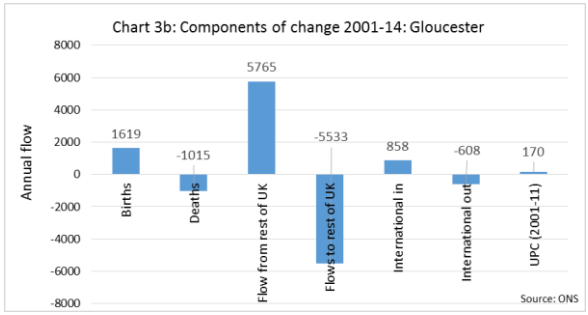
- Departures to other parts of the UK – "UK flow out"
- Arrivals from abroad – "international migration in"
- Departures abroad – "international migration out"

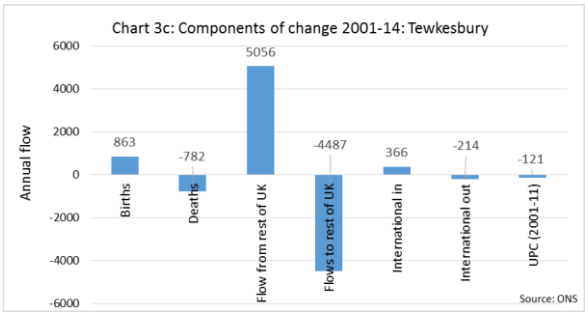
Taking a view on the plausibility of a projected population change

13. By examining each of the six components of change individually it is possible to take a view on how reasonable or otherwise the overall projection for the population of any local authority area might be. This can be done by comparing the projected flow with the recent past to assess how plausible it might be.

14. Charts 3a-c (below) shows how the six components of change have contributed to the population changes which occurred in the three authorities between 2001 and 2014. This gives an indication of the relative size of the flows. In all cases the flows to and from the rest of the UK are substantially larger than the other flows.

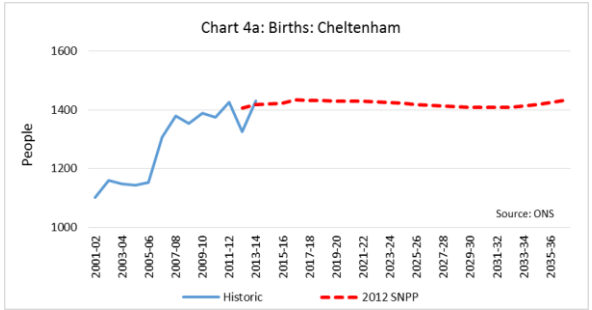


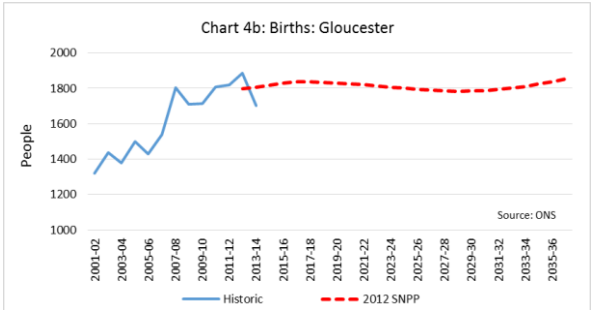


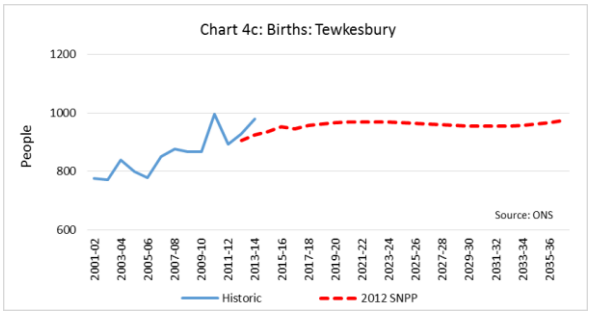


Births

15. Charts 4a-c (below) compare the latest ONS projections for births with the historic data up to and including the 2014 MYE. The 2012 SNPP projections are all reasonable fits to the historic data. There is no case for adjusting this aspect of the projections.

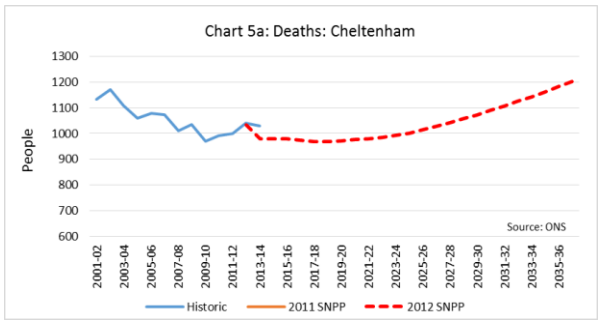


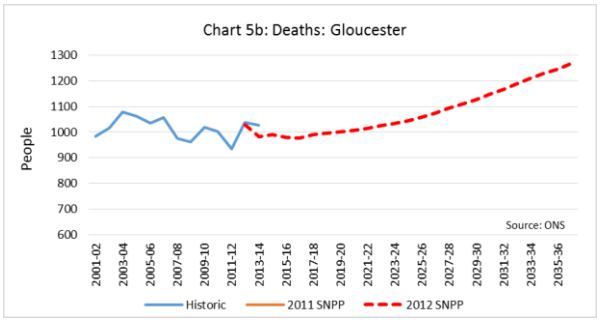


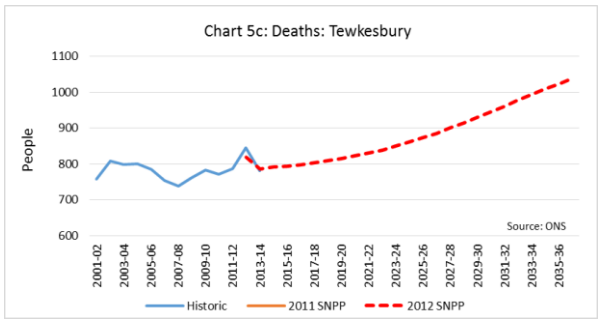


Deaths

16. The charts 5a-c below compare the latest ONS projections for deaths with the historical trends. There is again no reason to question this aspect of the projections.







Flows to and from the rest of the UK

17. As already noted, the flows to and from the rest of the UK are by some way the largest of the six components of change. Unlike births, they have an immediate impact on the adult population of an area and therefore have significant implications for household numbers and housing requirements. This suggests that the projections in this area deserve careful attention.

18. There are two complicating factors: the data sources on which the trends are based (primarily GP registrations) are not of a high quality and, in the 2012 SNPP the projected flows between local authorities in the UK were based on flow rates in the period 2007-12, a period which included the most severe economic downturn for more than a generation. For some authorities this latter factor will have had a significant impact on net flows, and hence the rate at which the population is projected to increase.

19. It can be argued that the appropriate course of action is to base the projections on either a 'typical' period or a longer period. A longer period would have the advantage of being less affected by economic or housing market cycles. This argument is particularly strong at a time such this when the economy is recovering after a prolonged and deep recession. It is likely that flows will return to higher levels once more normal economic conditions return, although that is not to say that the years immediately before 2008 were typical or that those flow rates will necessarily occur again.

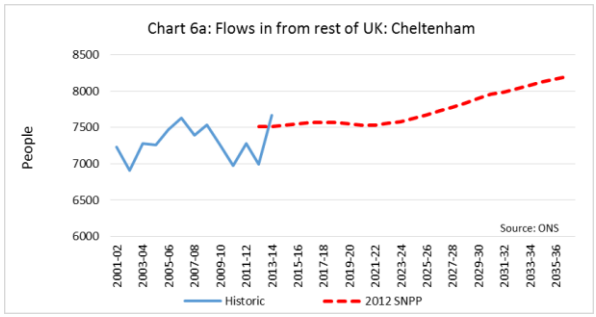
20. The ONS do not, however follow this approach in the official population projections: they base their trends on a recent five year period. This has the advantage of picking up changes in trends more quickly, but the disadvantage of potential distortions as a result of cyclical changes.

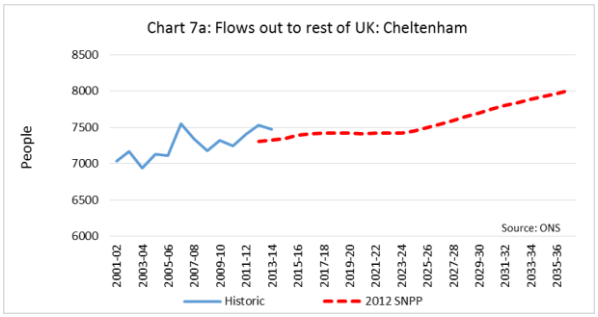
21. A key consideration is that, by definition, net internal migration flows between local authorities in the UK must sum to zero. This means that adjusting the projected net flow into an authority to reflect a longer trend period should be accompanied by compensating adjustments in the other direction for the authorities which are net exporters of people to that authority. Or, to put this another way, making this kind of adjustment would have the effect of moving a projected population increase between authorities, whilst keeping the overall UK population increase unchanged.

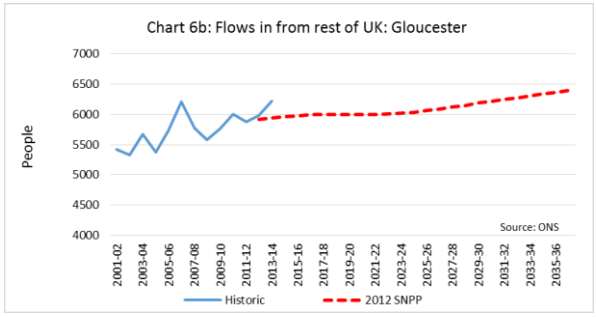
22. There is a further issue in that, without a clear national policy on this, there is a danger that local authorities choose which trend period to use to suit their own convenience, perhaps choosing the approach which produces the lowest number if there is local opposition to house building. That could result in an overall under-supply of housing in some sub-regions.

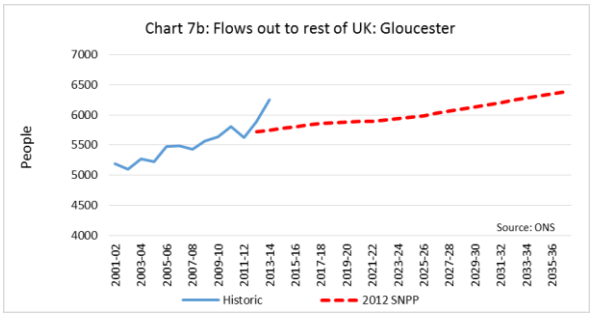
23. It should also be recognised that the net UK flow is often a relatively small difference between two much larger gross 'in' and 'out' flows. This means that a small percentage change in either the projected 'in' or 'out' flow can result in a large change in the projected net flow, with sizeable consequences for the projected change in population and hence the housing requirement.

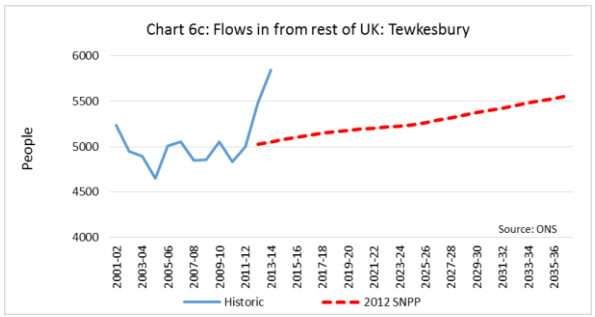
24. As is often the case with such issues, the impact varies significantly from authority to authority. Charts 6a-c and 7a-c compare the 2012 SNPP projections for inflows and outflows with the historical data. These show that flows into both Cheltenham and Gloucester appear to have fallen after 2006-7 and that the flow out of Tewkesbury fell after that year. The impact on the outflows from Cheltenham and Gloucester was less marked. The flows into Tewkesbury appear to have grown strongly in 20012-3 and 2013-14

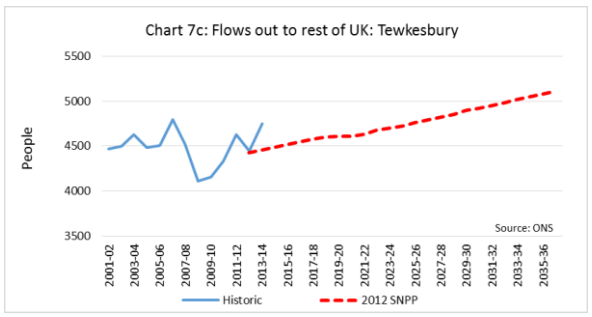












25. The charts suggest that there is a case for adjusting the projected flows to and from the rest of the UK to reflect 10-year rather than 5-year flow rates but that the impact of doing so will not be as large as it would be for some authorities.

26. There is a significant technical issue in making this adjustment. It is relatively straightforward to adjust the projected outflows as these are calculated by applying average flow rates from the chosen trend period to the projected future population (after adjustments for births and deaths in the year in question). The ONS does not, however, project inflows as such but instead projects the outflows from all local authorities in the country and allocates these to destination authorities in line with the historical pattern of flows. The projected inflow into a local authority is the sum of the proportions of the projected outflows from all 325 other local authorities that are expected to have that authority as their destination. It is therefore impractical to replicate exactly what the consequences would have been of the ONS using the period 2002-12 as their trend period rather than 2007-12: an approximation needs to be made.

27. There are a number of possible approaches:

    i) Adjusting the projected flows in 2012 SNPP by the ratio of the average total flows in the period 2002-12 to average in the period 2007-12.

ii) As (i) but adjusting the flows for each age and gender group by the ratio of the average flows in each age and gender group.

iii) Calculating average flow rates for inflows by dividing the flows in each age and gender group by the population in that age and gender group in the rest of the UK. Ratios of average flow rates for the periods 2002-12 and 2007-12 can then be calculated and used to adjust the flows in the 2012 SNPP.

iv) As (ii) but dividing the inflows by the population in the local authority in the age and gender group rather than the population in the rest of the UK.

v) The average flow rates calculated in methods (iii) and (iv) can be used directly by multiplying the flow rates by either the projected population in the rest of the UK or the authority itself as appropriate.

28. Each of these methods has its advantages and disadvantages. Method (i) has the benefit of simplicity and was used in the November 2014 NMSS Report[10]. It does not, however, take into account how the population in the originating authorities may have changed over the trend period and may not therefore fully reflect the changes in flow rates that may have occurred. Method (ii) is rather more sophisticated but may also not fully reflect changes in flow rates that have occurred. Methods (iii) and (iv) calculate flow rates but those flow rates are not the rates from the areas from which people will have moved to the authority in question. This is unavoidable as it is impracticable to create a suitably weighted set of flow rates that reflect the actual mix of originating authorities: some proxy has to be used. The accuracy of these methods depends on how good a proxy either the rest of the UK or the authority itself is for the sending authorities. Method (v) has the additional issue that the rate at which the projected inflow increases will depend on the rate at which the population in the proxy population grows, which could be faster or slower than in the actual originating authorities.

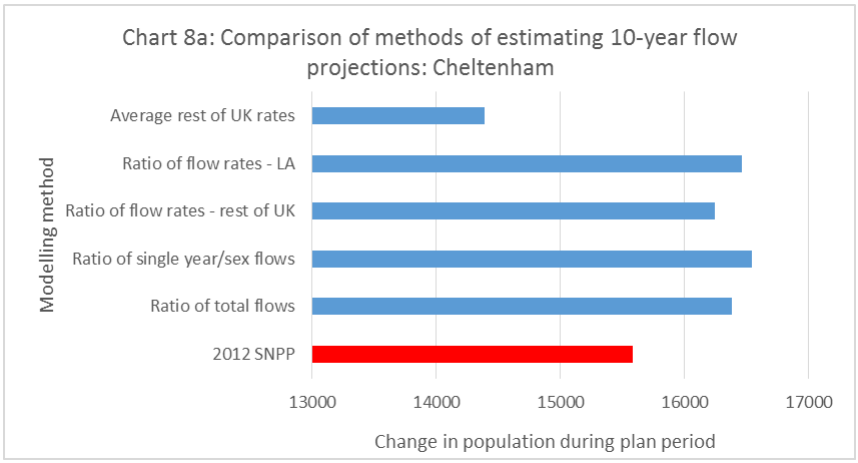
29. The results produced by the different methods varies from authority to authority and can in some cases be substantial. Charts 8a-c summarise the results for the different methods for the JCS authorities.

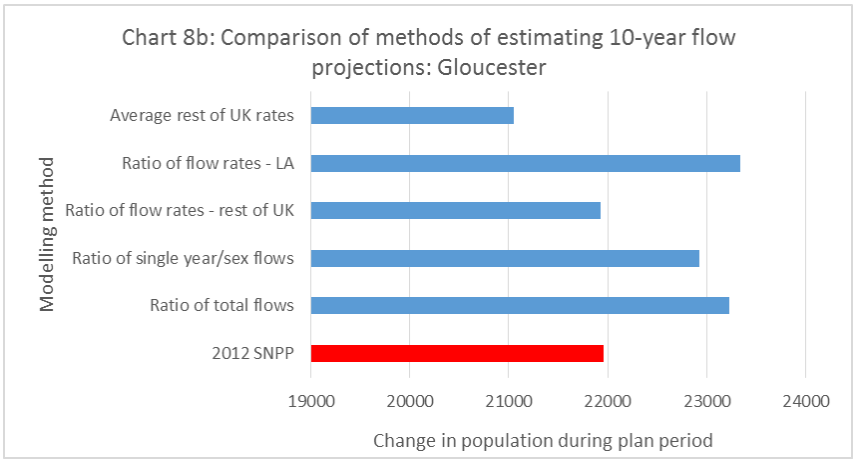
30. For all three authorities the 'average of the rest of UK rates' approach gives surprisingly low figures. This approach has been used by Barton Willmore in their report on the OAHN of the JCS area which underpins their Matter 3 Statement on behalf of Gladman Developments[11]. Of the two 'ratio of flow rates' models the LA-based approach produces higher numbers for Cheltenham and Gloucester but lower numbers for Tewkesbury, perhaps illustrating that the results obtained from these

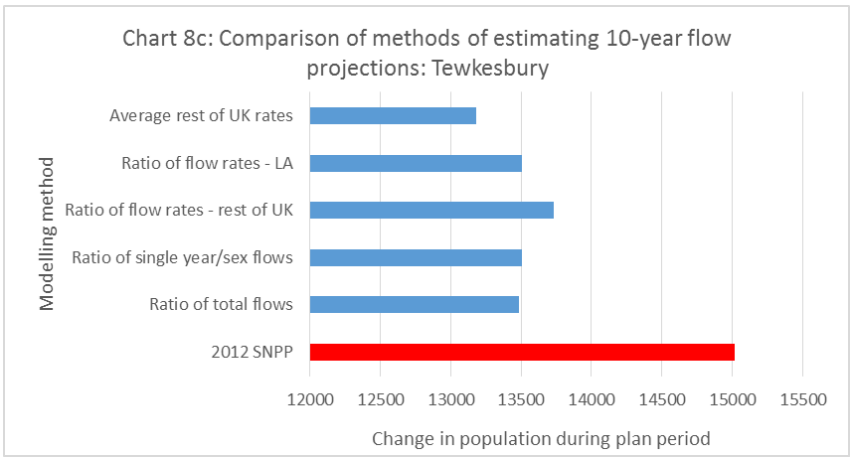
[10] *The Objectively Assessed Housing Needs of Cheltenham, Gloucester, Tewkesbury Joint Core Strategy Area*, NMSS, November 2014 available at http://www.gct-jcs.org/Documents/EvidenceBase/CGT-Summary-Report-Final.pdf

[11] Gloucestershire Housing Market Area (incorporating Gloucester, Cheltenham and Tewkesbury), Objective Assessment of Housing Need, April 2015, Draft Findings. See http://www.gct-jcs.org/Documents/Examination-Document-Library/Matter3WrittenStatement-BartonWillmoreGladmanDevelopments.pdf

methods depend on how good a proxy the base population is for the authorities from which internal migrants come.





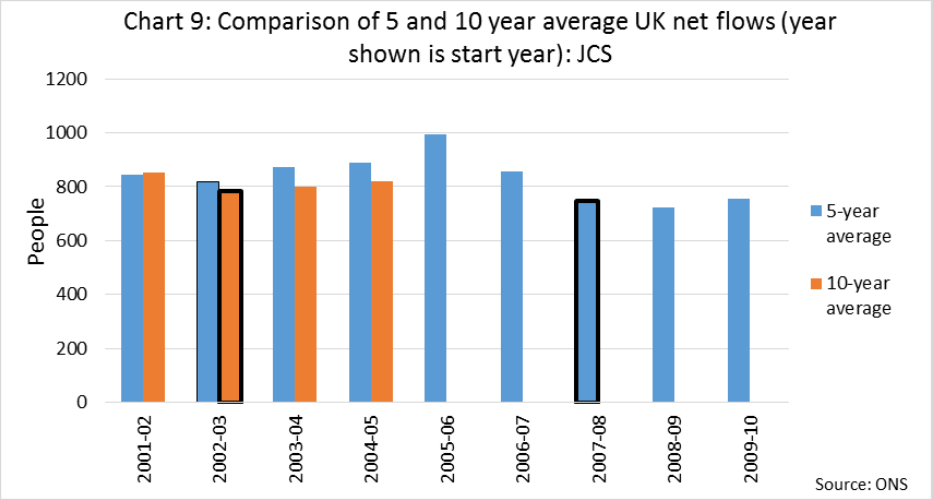


31. As the ONS method is based on flow rates, there is an obvious attraction in using a rates-based approach to adjust the projections and, as the 'ratio of flow rates – rest of UK' approach tends to produce the median figure, that is used as the main

estimate in what follows. However, other options are modelled as sensitivities. Rows B and C of Table 2 show the impact which this has[12].

Table 2: Adjusting UK flow rates to reflect average rates during 2002-12 rather than 2007-12					
Population change 2011-31		**Cheltenham**	**Gloucester**	**Tewkesbury**	**JCS**
A	**2012 SNPP**	**15580**	**21960**	**15020**	**52570**
B	*10-year UK flow adjustment*	*660*	*-30*	*-1290*	*-660*
C	**10-year UK flows**	**16240**	**21930**	**13730**	**51910**

32. Chart 9 shows how the choice of period used to determine the flow rate affects the figure obtained. The 10-year average flows (orange bars) are less variable than the 5-year average flows (blue bars) but the average flow still varies with the choice of start date. The bars outlined in black are the 5-year period used by the ONS (blue) and the 10-year period (orange) used in the above adjustment.



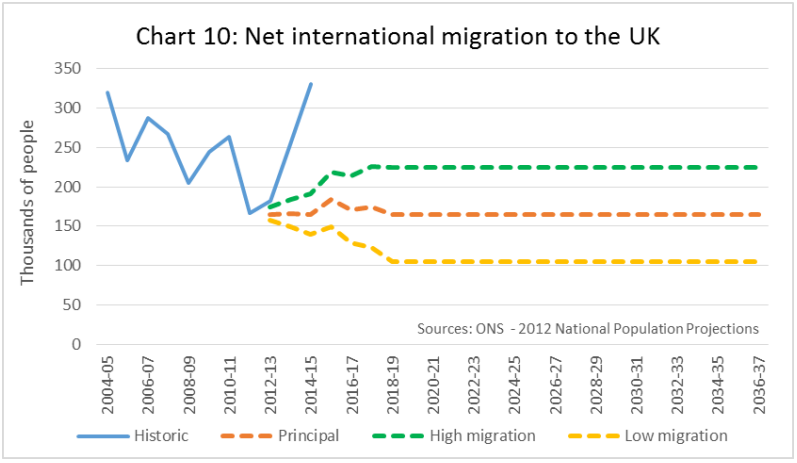
33. With the publication of the 2014 MYE in June it is now possible to calculate the 10-year average flow for the years from 2004-05 to 2013-14. This is slightly higher than that for the ten years to 2012 used in the above analysis. The difference is some 5%. To adjust to reflect this later 10-year period would incorporate the most recent information about flow rates. At the same time it would also be appropriate to re-base the projections to the 2014 MYE figures for the population in2014. Rows D and E of Table 3 show the effect of making this adjustment.

Table 3: Adjusting UK flows to reflect average flow rates in the period 2004-14 and re-basing to 2014 MYE					
Population change 2011-31		**Cheltenham**	**Gloucester**	**Tewkesbury**	**JCS**
A	**2012 SNPP**	**15580**	**21960**	**15020**	**52570**
B	*10-year UK flow adjustment*	*660*	*-30*	*-1290*	*-660*
C	**10-year UK flows**	**16240**	**21930**	**13730**	**51910**
D	*2004-14 UK flows and re-base to 2014 MYE*	*-880*	*70*	*2200*	*1400*
E	**MYE + 2004-14 UK flows**	**15370**	**22000**	**15930**	**53300**

[12] See Annex A for a discussion of the method used to make these adjustments.

International flows

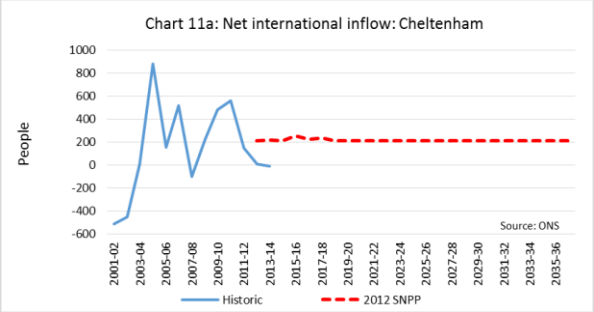
34. The international projections in 2012 SNPP are based on allocating the 2012-based National Population Projections[13] for in and outflows between authorities. The flows to and from each authority therefore depend on the national projections and how they are envisaged to change over the plan period. It is therefore understandable that some have expressed concern that the latest data for net migration to and from the UK suggest flows that are much larger than assumed in the 2012-based projections. Chart 10 compares the latest data with the 2012-based projections. As can be seen, the latest figures (for the year to March 2015) are about twice the ONS's principal projection.

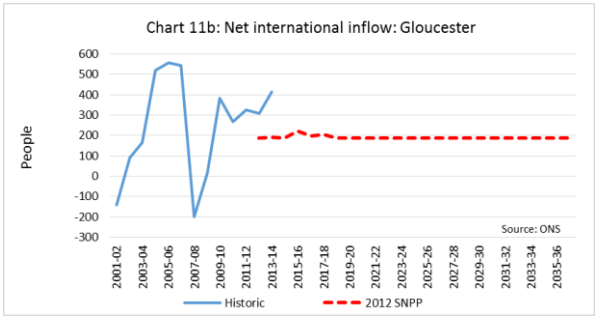


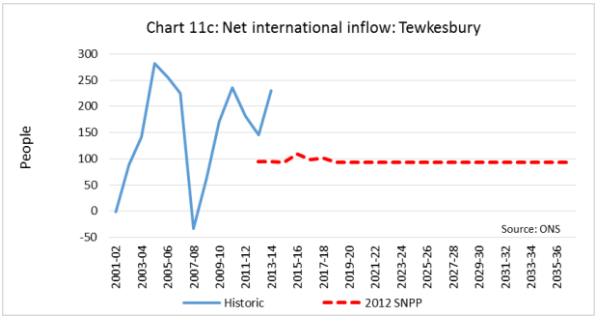
35. Whilst two years' data is not necessarily a reliable indicator of what is likely to happen over the 20 year plan period, the size of the discrepancy is such that the potential consequences of different assumptions should be explored.

36. One option would be to scale up the in and outflows to reflect the 'high migration scenario' presented by the ONS with their 2012 National Population Projections. However, this would apply uniform adjustments to all authorities when it is clear that different authorities have been affected differently. That is evident from Charts 11a-c (below) which compare the latest historical data with the 2012 SNPP projections: the latest historical data is higher than the 2012 SNPP for Gloucester and Tewkesbury but lower for Cheltenham.

[13] See *National Population Projections, 2012-based Statistical Bulletin* published on 6 November 2013 and available at http://www.ons.gov.uk/ons/rel/npp/national-population-projections/2012-based-projections/stb-2012-based-npp-principal-and-key-variants.html#tab-Introduction







37. A better approach would be to adjust the international flows to reflect the latest 10-year average flows into and out of each authority. This results in adjustments which increase the projected populations of all three authorities. The projected population increase in the plan period increases by 3320 or 6.2% from 53,330 to 56,620. See Rows F and G in Table 4.

Table 4: Adjusting international flows to reflect average flow rates in the period 2004-14					
Population change 2011-31		**Cheltenham**	**Gloucester**	**Tewkesbury**	**JCS**
A	**2012 SNPP**	**15580**	**21960**	**15020**	**52570**
B	*10-year UK flow adjustment*	*660*	*-30*	*-1290*	*-660*
C	**10-year UK flows**	**16240**	**21930**	**13730**	**51910**
D	*2004-14 UK flows and re-base to 2014 MYE*	*-880*	*70*	*2200*	*1400*
E	**MYE + 2004-14 UK flows**	**15370**	**22000**	**15930**	**53300**
F	*Adjustment for 2004-14 overseas flows*	*790*	*1620*	*900*	*3320*
G	**MYE + 2014-14 UK + overseas flows**	**16160**	**23620**	**16840**	**56620**

38. Although two years' figures are not necessarily a good indicator of the long term trend it is suggested that it would be prudent to adjust the international flows to reflect the latest 10-year average international flows.

Unattributable Population Change (UPC)

39. If all of the data were completely accurate the population in one census plus the cumulative effect of the components of change in the intervening years would equal the population counted in the next census. That is not the case: there is a discrepancy known as the 'Unattributable Population Change' (UPC). At the national level the discrepancy was 103,700 people between the 2001 and 2011 census. That is not a large number in the context of England's population of 53 million in 2011, only 0.2%. It is, however, 2.8% of the population change between the two censuses and that is arguably the more relevant comparison.

40. At the local authority level UPC can be much larger proportionately. There are 28 English local authorities for which the total UPC over the period 2001-11 is more that 5% of the population in 2011 and 83 for which the average UPC is more than 50% of the average population change between 2001 and 2011. A discrepancy of that size is highly significant in estimating population changes.

41. It is not thought likely that there are significant errors in the estimation of births and deaths as we have effective registration systems for both. That leaves three possible causes of UPC:

- International migration estimates
- Flows within the UK
- Census estimates in both 2001 and 2011

42. The ONS considered the arguments for and against taking UPC into account in its 2012 sub-national population projections and decided not to. The main reasons were that:

- It is unclear what proportion of UPC is due to errors in the 2001 and 2011 censuses and what proportion is due to errors in the components of change. Insofar as the errors are in either the 2001 and 2011 censuses they will not affect projections based on trends in the components of change.

- If UPC is due to international migration, the biggest impacts will have been during the earlier years of the decade as significant improvements in the migration estimates were made in the latter part of the decade.

43. This is the considered view of the ONS's experts in this field and should not be lightly dismissed. However, where UPC is sizeable compared with the total population, it is less likely that a significant part of it could be due to errors in the 2001 and 2011 censuses, although it should be noted that census estimates of local authority populations are subject to significant error margins. The ONS publishes[14] 95% confidence intervals[15] for its census population estimates and for the 'all persons' counts for the Gloucestershire authorities in both the 2001 and 2011 census these were in the range 1.0 – 1.3%. This means, broadly speaking, that we do not know how many people there were in these authorities on census day to better than +/-1000 people.

44. For the three JCS authorities UPC ranges from 17% of the population change between 2001 and 2011 in the case of Cheltenham to -21% in the case of Tewkesbury. (The negative sign in the case of Tewkesbury implies that the cumulative components of change exaggerated the actual population change.) However, if UPC is expressed as a percentage of the 2001 population, the range is from 1.5% in the case of Gloucester to -1.6% in the case of Tewkesbury. These are of

[14] http://www.ons.gov.uk/ons/guide-method/census/2011/census-data/2011-census-data/2011-first-release/first-release--quality-assurance-and-methodology-papers/census-confidence-intervals.xls

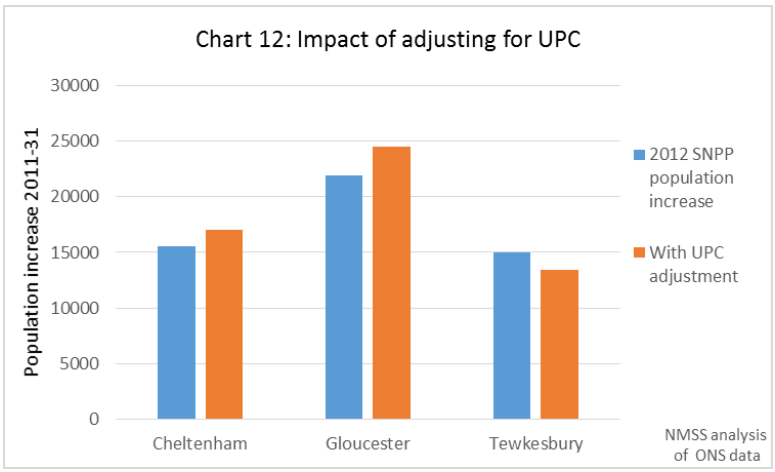
[15] A 95 per cent confidence interval is a range within which the true population would fall for 95 per cent of all possible samples that could have been selected.

a similar order of magnitude to the 95% confidence limits published by the ONS for the census counts. This suggests that a significant proportion of UPC could have been due to errors in either the 2001 or 2011 censuses.

45. Insofar as UPC is caused by errors in the migration components of change, the effect will largely be to misallocate the projected population growth between local authorities. Correcting for it will largely be a question of redistributing the projected population growth.

UPC scenario

46. Chart 12 illustrates the change in the projected population increase that a full adjustment for UPC would cause. Note that the impact on Cheltenham and Gloucester is to increase the projected population increase whilst the impact on Tewkesbury is to reduce it.



47. The November 2012 NMSS Report[12] took the view that, given the uncertainty about the appropriateness of making an adjustment for UPC, the prudent approach would be to plan on the basis of the higher of the two figures i.e. to include UPC when it the adjustment is positive and not when it is negative. The thinking was that it was better to err on the high side than risk underestimating the potential increase in the population of Cheltenham and Gloucester (the two authorities with a positive UPC). The effect, however, was to adopt a position at the other extreme of the range from the ONS's position i.e. to assume that 100% of UPC would have contributed to population change whereas the ONS assumed that none of it would have done so. Indeed, it can be argued that the approach in the November 2014 NMSS Report was doubly extreme in that it also discounted the negative UPC of Tewkesbury which would have had the effect of moderating the UPC adjustment for the JCS area as a whole.

48. The 2014 Mid-Year Estimates do not suggest that the 2012 SNPP is underestimating future population increases in the case of either of the Cheltenham or Gloucester – the two authorities with positive UPC. Indeed, they suggests that Cheltenham is growing slower than the 2012 SNPP envisages. In view of this new evidence it is suggested that a more appropriate assumption would be to assume that, for each

authority, half of the UPC would have affected the population. This is a central assumption which avoids both extremes i.e. assuming that none of UPC would have affected the projection or that all of it would have. The effect is to increase the projected population increase in the JCS area by 1010 or 1.8% from 56,620 over the period to 57,630. See Rows H and I of Table 5.

Table 5: Adjusting for 50% UPC					
Population change 2011-31		**Cheltenham**	**Gloucester**	**Tewkesbury**	**JCS**
A	**2012 SNPP**	**15580**	**21960**	**15020**	**52570**
B	*10-year UK flow adjustment*	*660*	*-30*	*-1290*	*-660*
C	**10-year UK flows**	**16240**	**21930**	**13730**	**51910**
D	*2004-14 UK flows and re-base to 2014 MYE*	*-880*	*70*	*2200*	*1400*
E	**MYE + 2004-14 UK flows**	**15370**	**22000**	**15930**	**53300**
F	*Adjustment for 2004-14 overseas flows*	*790*	*1620*	*900*	*3320*
G	**MYE + 2014-14 UK + overseas flows**	**16160**	**23620**	**16840**	**56620**
H	*Adjustment for 50% UPC*	*600*	*1150*	*-740*	*1010*
I	**MYE + 2014-14 UK +overseas flows + 50% UPC**	**16760**	**24770**	**16090**	**57630**

Conclusions on the population to be planned for

49. It is proposed that five adjustments should be made to the ONS's 2012-based Sub-national Population Projection for the JCS area to reflect both weaknesses in those projections and the latest evidence available from the 2014 Mid-Year Estimates and the most recent international migration statistics.

50. The proposed adjustments are shown in Table 6.

Table 6: Summary of Adjustments to the 2012 Sub-national Population Projection					
Population change 2011-31		**Cheltenham**	**Gloucester**	**Tewkesbury**	**JCS**
A	**2012 SNPP**	**15580**	**21960**	**15020**	**52570**
B	*10-year UK flow adjustment*	*660*	*-30*	*-1290*	*-660*
C	**10-year UK flows**	**16240**	**21930**	**13730**	**51910**
D	*2004-14 UK flows and re-base to 2014 MYE*	*-880*	*70*	*2200*	*1400*
E	**MYE + 2004-14 UK flows**	**15370**	**22000**	**15930**	**53300**
F	*Adjustment for 2004-14 overseas flows*	*790*	*1620*	*900*	*3320*
G	**MYE + 2014-14 UK + overseas flows**	**16160**	**23620**	**16840**	**56620**
H	*Adjustment for 50% UPC*	*600*	*1150*	*-740*	*1010*
I	**MYE + 2014-14 UK +overseas flows + 50% UPC**	**16760**	**24770**	**16090**	**57630**

51. The key steps are as follows:

- The ONS's 2012 Sub-national Population Projections (2012 SNPP) are latest official population projections. They suggest that the population of the JCS area will increase by 52,570 over the plan period, 2011-31. (Row A)

- The 2014 Mid-Year Estimates (published in June 2015) provide the latest indication of what has happened to the population of the JCS since the 2012 SNPP was published. In aggregate across the JCS area the difference between the 2012 SNPP and the 2014 MYE is small: 188 people or less than 0.1%.

- The 2012 SNPP projections for births and deaths appear to be plausible projections of recent trends.

- Taking the JCS area as a whole, the impact of the 2012 SNPP using 2007-12 as its trend period for flows from and to other UK authorities is not large notwithstanding that that period encompassed the deepest recession for more than a generation. The impact on the projected population increase adjusting to reflect the 10-year flows over the period 2002-12 depends on the method used to make the adjustment. It could range between an increase of 1.4% and are reduction of 7.5%. Having reviewed the available methods it is proposed to make an adjustment based on the ratio of flow rates in the period 2002-12 to those in the period 2007-12, with inflow rates calculated on the assumption that the originating authorities are typical of the rest of the UK. This reduces the projected population increase over the plan period by 660 (1.3%) from 52,570 to 51,910. (Rows B and C)

- The publication of the 2014 Mid-Year Estimates allows average rates for flow to and from the rest of the UK to be calculated for the period 2004-14. The average net flow into the JCS over this period was 5% larger than in the period 2002-12. Adjusting for this and re-basing to the 2014 MYE population figures increases the projected population increase by 1400 or 2.7% from 51,910 to 53,300. (Rows D and E)

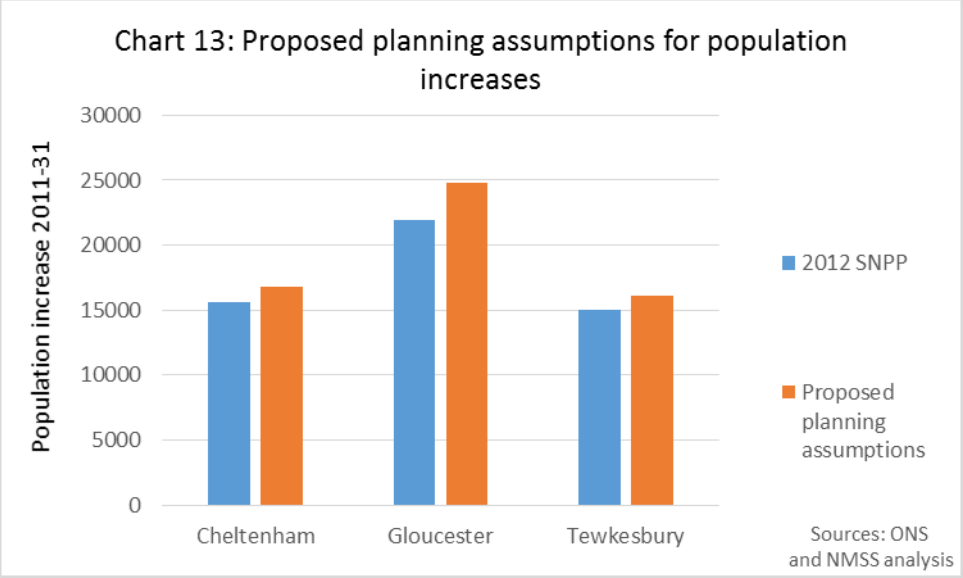
- The impact of the higher than projected net international migration into the UK over the last two years has varied from area to area. To avoid giving undue weight to only two years' figures whilst reflecting what has actually happened in the JCS area it is proposed that the international flows should be adjusted to reflect average flows over the latest 10-year period for which data exists i.e. 2004-14. This increases the projected population increases significantly in each of the JCS authorities producing an overall increase of 3,320 or 6.2%, lifting the projected increase for the area as a whole from 53,300 to 56,620. (Rows F and G)

- It is debatable whether the projections should make an allowance for Unattributable Population Change (UPC). The ONS made no such allowance in the 2012 SNPP. However, earlier analysis for the JCS authorities took the view that it was appropriate to err on the side of caution to avoid any possibility of underestimating the population to be planned for. It had therefore assumed that for the authorities for which UPC was positive (Cheltenham and Gloucester) all of UPC would have contributed to future population increases. This assumption was at the other extreme of the range from the ONS's assumption that none of UPC would have contributed to future population increases. However, the new evidence from the 2014 Mid-Year Estimates does not suggest that the 2012 SNPP is underestimating the rate at which the populations of Cheltenham and Gloucester (the two authorities with positive UPC) are growing and, in fact, the estimate for Cheltenham suggests that the 2012 SNPP may be overestimating that authority's growth. It is therefore proposed to assume that half of UPC

would have contributed to future population changes (both positive and negative). This is a mid-way assumption which leads to a higher projected population for the JCS area than the ONS's 'no adjustment' approach but a lower figure than the earlier analysis. The effect is to increase the projected population increase of the JCS area by 1010 or 1.8% from 56,620 to 57,630.

52. The overall effect of these adjustments is to increase the 2012 SNPP's projection for the increase in the population of the JCS area over the plan period of 52,570 to 57,630, an increase of 5,060 or 9.6% to. Table 7 and Chart 13 show the changes for the three authorities.

Table 7: Proposed planning assumptions for population increases in the JCS area				
Population change 2011-31	**Cheltenham**	**Gloucester**	**Tewkesbury**	**JCS**
2012 SNPP	15580	21960	15020	52570
Proposed planning assumptions	**16760**	**24770**	**16090**	**57630**
Change from 2012 SNPP	1180	2810	1070	5060
Percentage increase in population increase	7.5%	12.8%	7.2%	9.6%



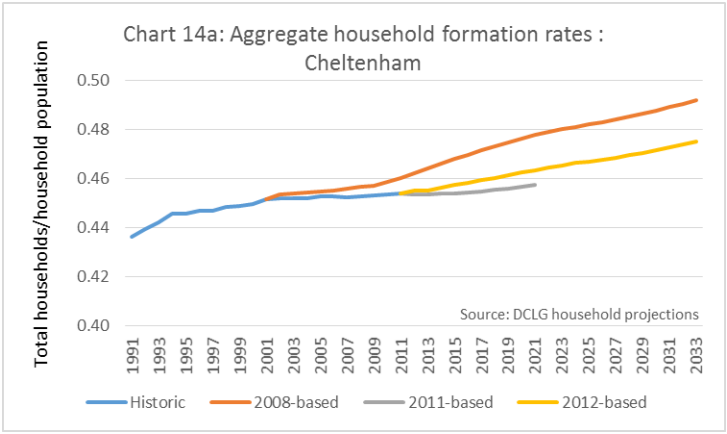
HOW PEOPLE ARE LIKELY TO GROUP THEMSELVES INTO HOUSEHOLDS

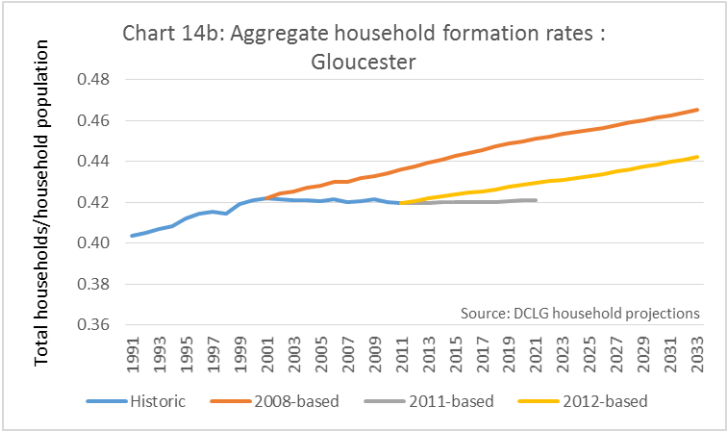
The household projections

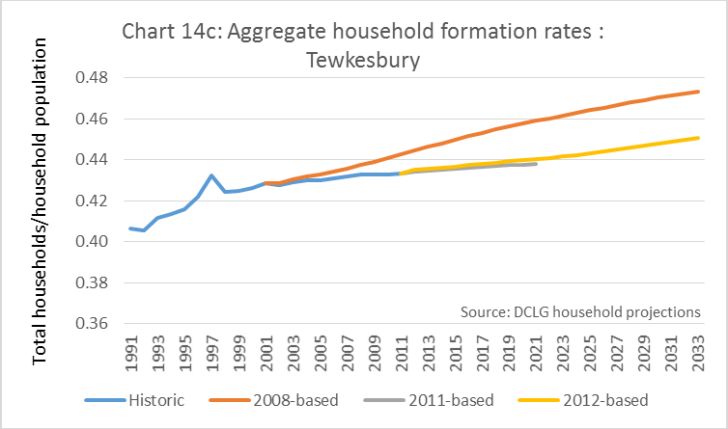
53. The assumptions made about how people will group themselves together into households are crucial in estimating the number of homes needed. The key issue is whether household formation patterns will revert to the earlier trend towards smaller average household sizes or will the economic downturn, a long period of deteriorating housing affordability and other factors have caused a permanent change?

54. There are three recent DCLG household projections that are of some relevance: those with base dates of 2008, 2011 and 2012. The 2008-based projections, in effect, predate the economic downturn and are taken by some as broadly indicative of the previous longer term trend, although there are good reasons to believe that they were optimistic even from the standpoint of the time when they were formulated. The 2011-based projections were produced following the 2011 census and take some account of census data which generally found fewer households than had been envisaged in the 2008-based projections, suggesting that household formation patterns had departed from the previous long term trends. The 2012-based projection are the first full set of projections following the 2011 census and take much fuller account of that census.

55. Charts 14a-c summarise the view these projections take of the likely direction of travel of household formation rates in the JCS area.







56. Note that:

- Household formation rates were broadly flat between 2001 and 2011, although they did rise slightly in Tewkesbury.
- The 2008-based projections were based on a view of household formation rates in 2008 that we now believe to have been over-estimated (as can be seen from the way in which the brown line for the 2008-based rates in 2008 is higher than the blue line showing what is now believed to be the true historic position.)
- The most recent projections, the 2012-based set, envisage faster increases in household formation rates than the 2011-based projections. There can be little doubt that the 2012-based projections are more soundly based as they take much fuller account of the 2011 census.
- The 2012-based projections envisage that aggregate household formation rates will return to rates of growth which are broadly comparable to those envisaged in the 2008-based projections (as can be seen from the way in which the yellow lines for the 2012-based projections move to become roughly parallel to the brown lines for the 2008-based projections).

57. The key issue is whether or not it should be assumed that household formation rates will not just return to rates of growth similar to those envisaged in the 2008-based projections but will also, in effect, catch up some or all of the lost ground relative to those earlier projections.

Is a return towards the 2008-based household formation rates likely?

58. There are two reason for believing that a return towards the 2008-based household formation rates is unlikely:

- The 2008-based household formation rates were optimistic even when they were first issued.

- The departure from the earlier trend in household formation rates which occurred between 2001 and 2011 was not primarily due to the economic downturn but to other factors, most of which are unlikely to reverse.

2008-based household formation rates optimistic

59. There are a number of reasons for believing that the 2008-based household formation rates were optimistic.

    - As already noted, their starting point was an estimate of household formation rates in 2008 that we now believe to have been too high. (See Charts 14a-c above).
    - The DCLG at the time discounted some evidence which suggested that their projections were too high. This included evidence from the Labour Force Survey[16] and on cohort effects (which were ignored by the methodology used[17]).
    - The projections did not take into account the significantly higher numbers of new international migrants in the first decade of this century. This impacts on headship rates as recent international migrants tend to live in larger households (i.e. they have a lower propensity to form separate households) than the rest of the population of a similar age. There is evidence to suggest that the increased volumes of international in migration were responsible for a large part of the difference between the expected number of households in 2011 and the actual number found by the census[18] although this has since been disputed.

Reasons for the departure from the earlier household formation rate trends

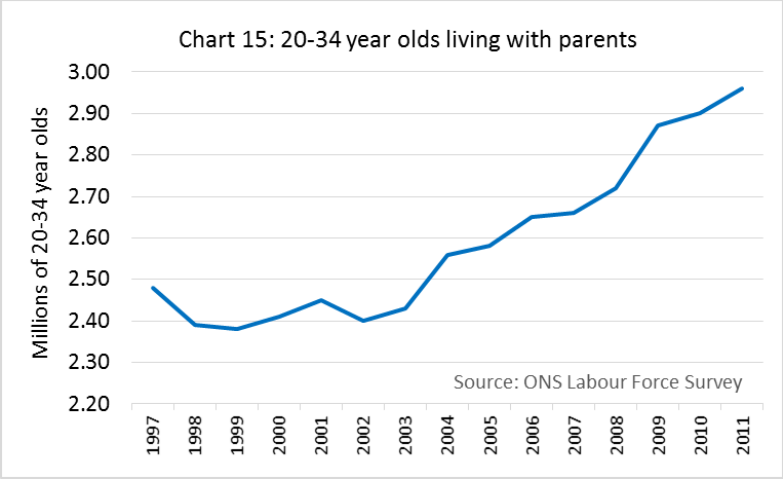
60. There are a number of reason for believing that the departure from the earlier household formation rate trends began well before the economic downturn and as such is unlikely to be reversed as a result of the economy emerging from recession. In particular there is evidence that there has been a significant increase in young

[16] See *"Updating the Department for Communities and Local Government's household projections to a 2008 base: methodology"* 26 November 2010, page 10 and available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/7484/1780350.pdf. This includes the following comment, "Labour Force Survey (LFS) data suggests that there have been some steep falls in household representative rates for some age groups since the 2001 Census. If these shifts in household formation behaviour are sustained in the longer term, and this can only be truly assessed once the 2011 Census results are available, the household projections using the method as in the 2006-based and previous projection rounds would turn out to be too high."

[17] See *"Updating the Department for Communities and Local Government's household projections to a 2008 base: methodology"* 26 November 2010, page 12 and available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/7484/1780350.pdf.

[18] Holmans, A. (2013), *New estimates of housing demand and need in England, 2011 to 2031,* London, TCPA. http://www.tcpa.org.uk/pages/new-estimates-of-housing-demand-and-need-in-england-2011-to-2031.html

adults living with their parents. This was explored in an ONS report entitled "Young adults living with parents in the UK, 2011"[19] Using data for the Labour Force Survey this suggested that there had been a 21% increase in the number of young adults living with their parents between 2001 and 2011 – an increase of over ½ million people. As can be seen from Chart 15, the increase started well before the credit crunch and recession, suggesting that other factors, such as the deteriorating affordability of housing, were at work.



61. An analysis of the changes that have occurred in household formation rates has been provided by Professor Simpson writing in the TCPA Journal in December 201420. In that article he argues that, "The causes of reduced household formation are varied, began before the recession, and mostly are likely to continue with or without recession". He refers to:

- "…a sustained increase among young people not leaving home" which began at the turn of the century and accelerated after 2008 (see Chart 15);
- " …the introduction of student fees from 1998"
- "…the increase in precarious employment, including the rapid growth of part-time work…."
- "The long term increase in the number of childless women…which increased the number of smaller households, stopped and has fallen since 2000."
- "Increasingly older formation of couples or families, which had increased the number of single person households in the 1980s and 1990s, has levelled out since 2001."

62. Whilst it is possible that some of these factors may change, that does not seem very likely. Professor Simpson suggests that the first three, "…appear at the moment as fixed circumstances of the policy and economic environment." It might also be

[19] Young Adults Living With Parents in the UK, 2011, ONS, 29 May 2012 http://www.ons.gov.uk/ons/rel/family-demography/young-adults-living-with-parents/2011/young-adults-rpt.html

[20] Professor Simpson is Professor of Population Studies at the University of Manchester and is the originator and designer of Popgroup. His article in the December 2014 TCPA Journal, "Whither household projections", was referred to in paragraph 15 of the NMSS Update Report of July 2015.

noted here that there are a number of factors such as increasing levels of student debt and welfare reform that are likely to serve to reduce further household formation rates. These will not have been reflected in the 2011 census or the 2012-based household projections.

63. Professor Simpson concludes that, "…we are not in a position to expect further increases in household formation rates of the same kind [as suggested in the 2008-based projections].....The future in the UK is likely to be a continuation of precarious household formation. It will probably be lower than once projected and carry more uncertainty…."

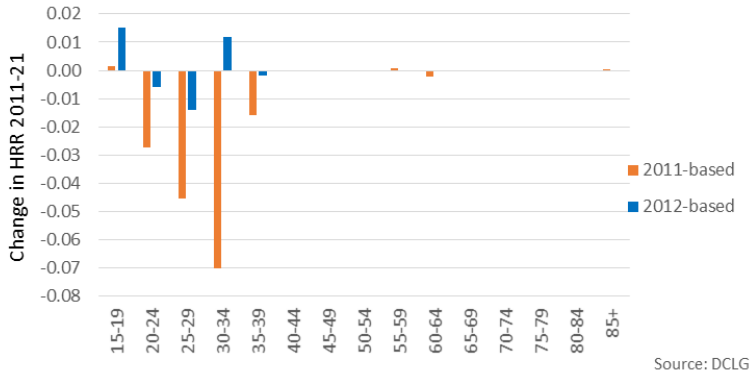
Why not assume a partial return to 2008-based rates for at least the 25-34 year olds as in the November 2014 NMSS Report?

64. The short answer to this question is, "because the 2012-based projections are very different from the 2011-based projections".

65. It should be noted that the 2011- based were labelled in their title as "interim" projections. DCLG were fully aware that they were a stop-gap measure and for that reason they only extend to 2021 and not the 25 years of a full set of projections such as the 2012-based set.

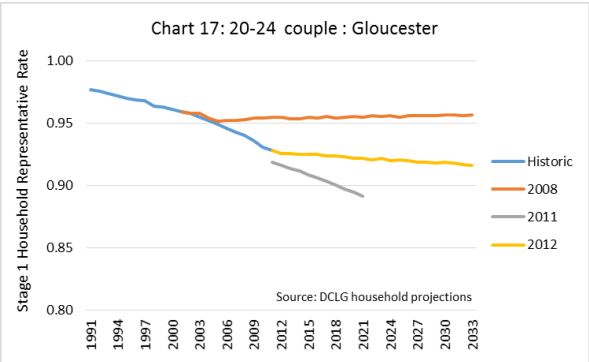
66. One aspect of particular concern with the 2011-based projections was the way in which they envisaged sharp and continuing fall in household formation rates for some young adults. Such falls have been largely eliminated in the 2012-based projections. See Chart 16 which compares the projected changes in household formation rates between 2011 and 2021 in the 2011 and 2021 projections for Gloucester: the difference between the two sets of projections is stark.

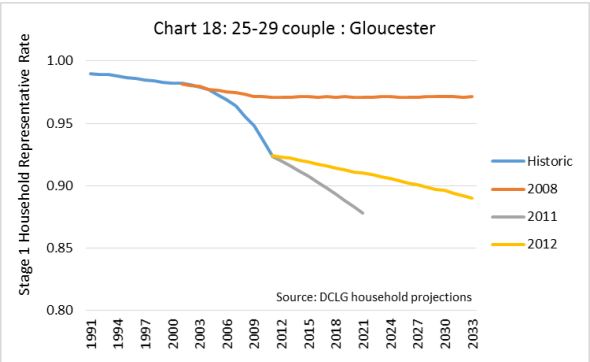
Chart 16: Comparison of changes in household formation rates of couples in the 2011 and 2012-based projections

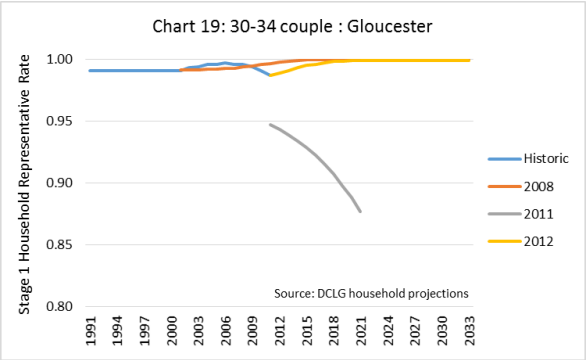


67. Faced with such large projected declines in household formation rates for young adults in the 2011-based projections it was reasonable to conclude that this aspect of the projections had been influenced by something that was unlikely to continue (although it was not, and is not, possible to link the projected falls to any particular cause).

68. Charts 17-19 compare the three projections for the household formation rates of young couples in Gloucester.







69. Note that whilst continuing falls in the household formation rates of 20-24 and 25-29 year old couples are envisaged in the 2012-based projections, those falls are much less than in the 2011-based projections. For the 30-34 year olds the latest projections envisage that household formation rates will return to the trend in the 2008-based projections.

70. The falls in the household formation rates of couples in their 20s are in the context of aggregate household formation rates rising and average household sizes falling. This means that the projections assume that sufficient homes are built to allow some groups to have higher household formation rates but that those additional homes are taken by other groups, probably older people with greater purchasing power. This would be consistent with factors such as welfare reform, tighter mortgage regulation and increased student debt affecting those in their 20s in particular. Although it may not be a particularly desirable outcome, it is by no means an unlikely one.

Conclusion on household formation rates

71. The conclusion from the above analysis is that there is no case for adjusting the household formation rates in the 2012-based household projections.

Empty and second homes

72. To turn an estimate of the net number of additional households into an OAHN assumptions need to be made about the proportion of the housing stock that will either be empty or used as second homes. The assumptions used have been based on 2011 data[21] as set out in Table 8. The sources are provided in Annex B.

Table 8: Empty and second homes				
	A	B	C	D = (A+B)/C
	Second homes	Vacant homes	Number of homes	Percentage second or vacant homes
Cheltenham	790	1,665	53,120	4.62%
Gloucester	152	1,742	52,720	3.59%
Tewkesbury	239	778	37,060	2.74%

73. Applying these empty and second homes rates and the DCLG 2012 household formation rates to the proposed planning assumptions for population growth in estimated in the previous section produces the following estimates of demographic OAHN:

Table 9: Demographic housing need in the JCS area				
Homes needed 2011-31	**Cheltenham**	**Gloucester**	**Tewkesbury**	**JCS**
Population based on 2012 SNPP	9650	12330	8060	30040
Proposed planning assumptions for population	**9900**	**13290**	**8640**	**31830**

[21] 2011 data has been retained as it has been suggested that with the reduction in discounts for second homes and empty properties fewer owners are notifying authorities that their properties are empty or used as second homes. The sources used are:

- Vacant homes from DCLG Live Table 615 available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/423184/LT_615.xls
- Dwelling Stock numbers from DCLG Live Table 125 available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/423183/LT_125.xls
- Second homes from: Council Taxbase local authority-level data 2011 available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69898/2011_Local_Authority_level_data.xls

ADJUSTMENTS TO REFLECT 'OTHER FACTORS'

74. This section of the report has been expanded to include discussion of alternative interpretations of the indicators used to identify whether the JCS housing market has been subject to particular pressures which might justify increasing the OAHN above level suggested by the demographically-based analysis.

75. The PPG advises:

> *"The household projection-based estimate of housing need may require adjustment to reflect factors affecting local demography and household formation rates which are not captured in past trends. For example, formation rates may have been suppressed historically by under-supply and worsening affordability of housing. The assessment will therefore need to reflect the consequences of past under delivery of housing. As household projections do not reflect unmet housing need, local planning authorities should take a view based on available evidence of the extent to which household formation rates are or have been constrained by supply."*[22]

Market signals

76. More specifically those planning for housing are expected to take account of 'market signals':

> *"The housing need number suggested by household projections (the starting point) should be adjusted to reflect appropriate market signals, as well as other market indicators of the balance between the demand for and supply of dwellings. Prices or rents rising faster than the national/local average may well indicate particular market undersupply relative to demand."*[23]

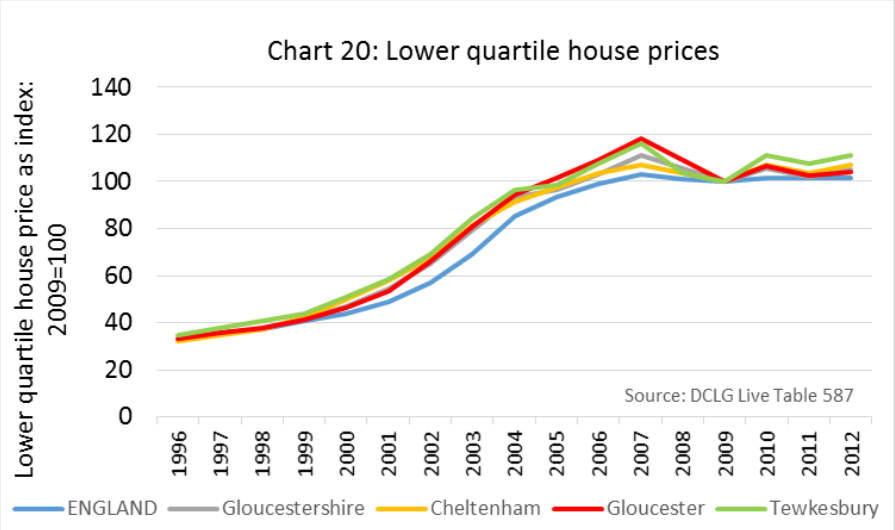
77. The reference to 'prices or rents rising faster than the national/local average' is important. Higher prices than in other areas may not necessarily indicate a particular problem but may simply reflect the mix of housing in an area or particular features which are thought desirable such as proximity to transport links, city centres, attractive countryside etc. For example, prices in central London are always going to be higher than elsewhere given the value those renting or buying homes attach to a central location – advantages that are inevitably limited to a finite number of properties no matter how adequate the supply of homes is in London as a whole. On the other hand, prices rising faster than other areas may indicate a supply problem. This is reinforced by the Planning Advisory Service's (PAS) recent technical advice note on Objectively Assessed Needs and Housing Targets[24] which advises at

[22] Planning Practice Guidance, Paragraph: 015 Reference ID: 2a-015-20140306
[23] Planning Practice Guidance, Paragraph: 019 Reference ID: 2a-019-20140306
[24] Objectively Assessed Need and Housing Targets: Technical advice note, Planning Advisory Service http://www.pas.gov.uk/documents/332612/6363137/Objectively+Assessed+Need+and+Housing+Targets/f22edcc2-32cf-47f1-8e4a-daf50e4412f7

paragraph 5.38 that, "Proportional price change is generally a better indicator than absolute price,…."

House prices

78. The most obvious indicator is changing house prices. Figure 21 shows lower quartile house prices for the three JCS authorities expressed as an index to enable the relative price movements to be seen. The clear conclusion is that prices in the three authorities have moved in line with those in the county and the country as a whole. This suggests that there are no particular local factors to take into account.



79. Barton Willmore present an analysis of the same dataset in Table 7.3 of the "Objective Assessment of Housing Need" attached to their evidence[25]. The table is reproduced below for ease of reference.

Table 7.3: Analysis of Lower Quartile House Price Change 1997-2012

	Absolute Change 1997-2012	Index (England=100)	Percentage Change 1997-2012	Index (England=100)
Cheltenham	£100,780	124	206%	112
Cotswold	£137,050	169	218%	118
Forest of Dean	£82,500	102	183%	99
Gloucester	£75,250	93	192%	104
Stroud	£101,000	125	215%	117
Tewkesbury	£99,000	122	194%	105
England	£81,048	100	184%	100

Source: Land Registry via CLG Live Table 586

[25] Gloucestershire Housing Market Area (incorporating Gloucester, Cheltenham and Tewkesbury), Objective Assessment of Housing Need, April 2015, Draft Findings. See http://www.gct-jcs.org/Documents/Examination-Document-Library/Matter3WrittenStatement-BartonWillmoreGladmanDevelopments.pdf

80. The third column of figures is a comparison of the percentage change in lower quartile house prices in the Gloucestershire authorities with England as a whole. The final column converts those percentage changes into an index with England = 100. A figure greater than 100 indicates that lower quartile house prices have increased faster than in England as a whole. With the exception of Forest of Dean all of the figures are above 100, suggesting that prices have risen faster in percentage terms than in England as a whole. However, this kind of analysis can depend heavily on the date chosen for the start of the comparison period. Table 10 below shows the same calculation as in the final column of Barton Willmore's table but with different years taken as the start date. The figures in the column headed '1997' are identical to those in the Barton Willmore table.

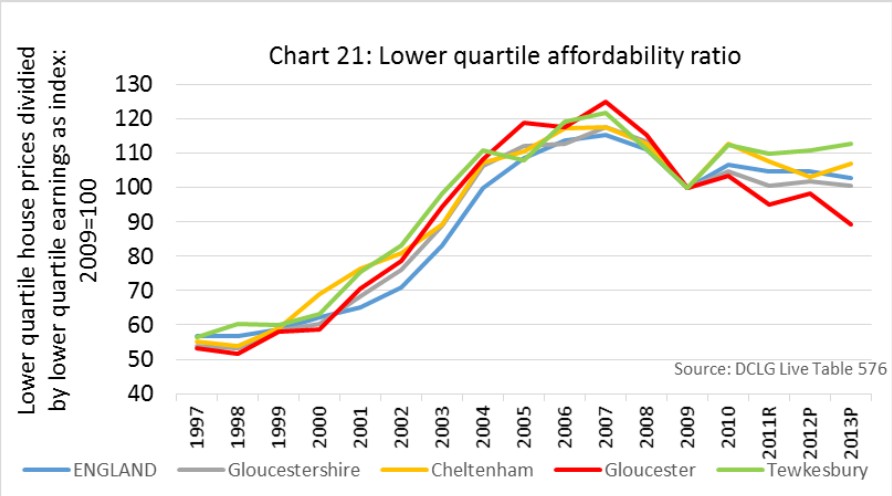
Table 10: Lower quartile house prices: percentage change as index with England = 100 in each year

	1996	1997	1998	1999	2000	2001	2002	2003	2004
ENGLAND	100	100	100	100	100	100	100	100	100
Gloucestershire	105	106	104	100	94	86	78	69	66
Cheltenham	114	112	108	101	87	78	73	67	89
Gloucester	104	104	102	101	95	87	74	61	53
Tewkesbury	106	105	101	103	89	83	78	67	81

81. As can be seen, had Barton Willmore taken any date between 2000 and 2004 as their start date they would have concluded that house prices in the JCS authorities had risen slower proportionately than in England as a whole. This shows that a graphical analysis such as that in Chart 20 is a much clearer and safer method – and indicates that there is little to choose between the movements in house prices in the JCS area and in the rest of the country.

Affordability ratios

82. Affordability ratios, which measure house prices as a multiple of earnings, are another indicator of how a housing market is performing. The following chart shows the ratio of lower quartile house prices to lower quartile earnings, the lower quartiles being chosen as better indicators of the prices paid and incomes earned by those seeking to enter the housing market for the first time.



83. Again the chart indicates that affordability has moved in line with Gloucestershire and the rest of the country. There is no indication of particularly stressed housing markets.

84. Barton Willmore present in their Table 7.4 a similar analysis of lower quartile affordability ratios to that offered for house prices. Again the table is reproduced for ease of reference

Table 7.4: Analysis of Lower Quartile Affordability Ratio Change 1997-2013

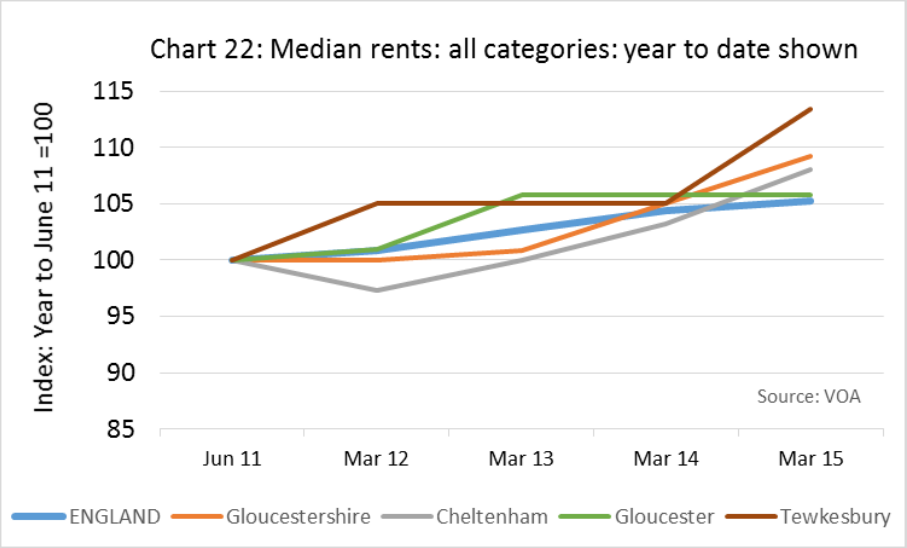
	Absolute Change 1997-2013	Index (England=100)	Percentage Change 1997-2013	Index (England=100)
Cheltenham	3.6	113	94%	105
Cotswold	6.1	193	112%	125
Forest of Dean	3.3	103	92%	102
Gloucester	2.0	63	65%	73
Stroud	3.3	104	92%	103
Tewkesbury	3.3	103	86%	95
England	3.2	100	90%	100

Source: Land Registry via CLG Live Table 586

85. NMSS has not been able to replicate these figures exactly. That may be due to the provisional figures quoted in the source DCLG Live Table for 2013 having been updated since Barton Willmore prepared their analysis. However, there are similar issues with the choice of start date affecting the results produced with start dates between 2001 and 2004 suggesting that affordability ratios have moved less unfavourably in the JCS area than in England as a whole. Indeed, using the Barton Willmore's data in the above table, of the JCS authorities only Cheltenham appears to have had a worse percentage deterioration in affordability ratio than England as a whole (as shown by an index of 105). The indices for Gloucester and Tewkesbury are less than 100 (73 and 95 respectively), indicating that the JCS area as a whole has fared better than the rest of the country over the period analysed.

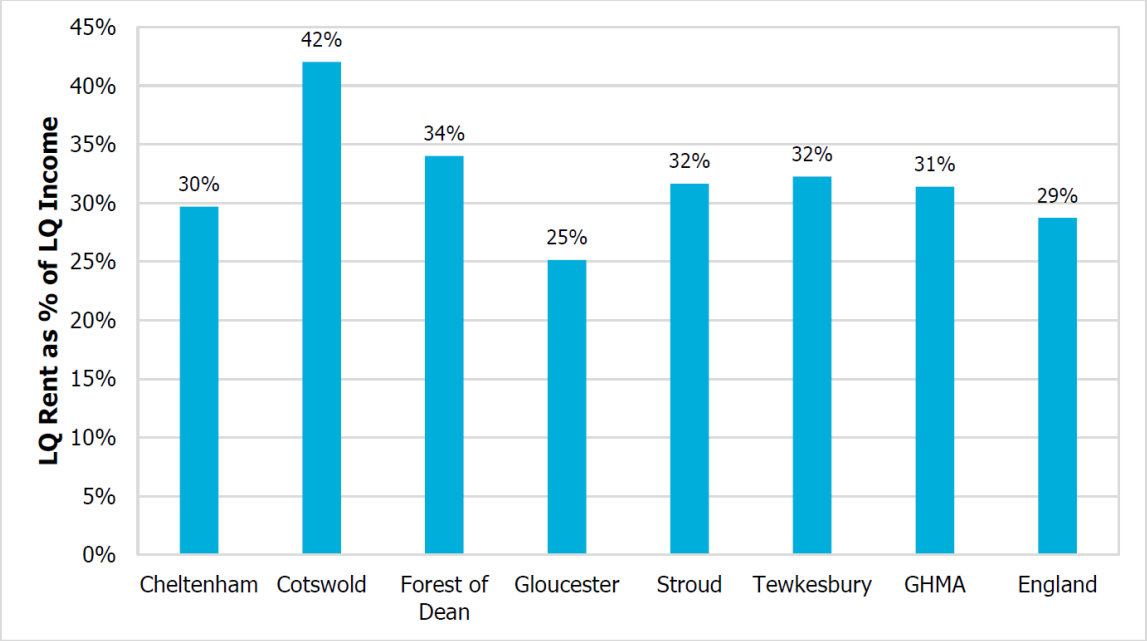
Rents

86. Average rents are a further indicator. However, the available Valuation Office Agency data at the local authority level does not extend back beyond the year to June 2011 and so is of limited value in enabling trends to be identified. What information there is Chart 22 does not suggest a particular problem in any of the authorities.



87. Barton Willmore present some useful analysis of rents relative to earnings in their Figure 7.7 (again reproduced below for ease of reference). This shows that for England as a whole lower quartile rents were 29% of lower quartile earnings in 2013-14. The equivalent figures for the JCS authorities were Cheltenham 30%; Gloucester 25% and Tewkesbury 32%. Bearing in mind the relative size of the JCS authorities, these figures would suggest that across the JCS area lower quartile rents were more affordable than in the rest of the country. Barton Willmore's conclusion that "renting in GHMA (Gloucestershire Housing Market Area) is relatively expensive" clearly does not apply to the JCS area: the Gloucestershire average figure is distorted by the high ratio for Cotswold.

Figure 7.7: LQ Rents as % of LQ Earnings – 2013/14



Source: Valuation Office Agency, CLG, ASHE

Under supply

88. The PAS technical advice note offers some useful advice on what is meant by the references in the PPG to past under supply:

> *"5.34 The guidance on past supply and market signals is sometimes misinterpreted, because readers take 'under-supply' and 'under-delivery' to mean that house building was below policy targets. But in the present context these words mean something quite different - that house building was less than demand or need. In many places delivery is in line with targets, but the targets themselves are far below need or demand; in other words, planning constrains the amount of housing development. This constitutes under-supply within the meaning of the PG.*
>
> *5.35 The impact of under-supply works not only through suppressed household formation, but also through suppressed migration. The latter effect is very common, as we can see from the close correlation between housing completions and net migration. If housing land, and hence housing, is in short supply, households will be prevented from moving into the area or will be priced out or forced out of the area*.[26]"

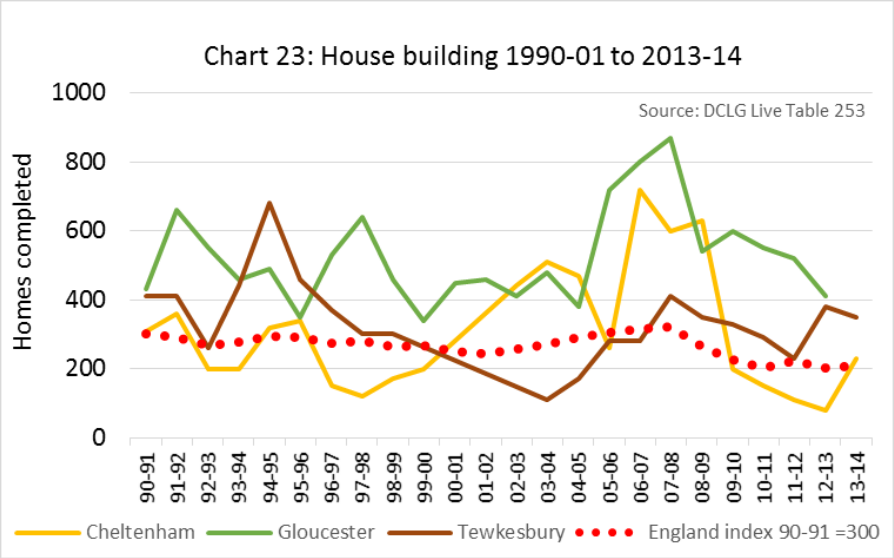
89. The PAS technical note also draws attention to a recent High Court judgment which has made it clear that under supply should not be gauged against the now defunct Regional Plan housing targets:

> *"In assessing future need, authorities should not add any 'backlog', where past housing development under-delivered RSS targets. Thus a recent High Court judgement noted:*
>
> > *'… There was no methodological error in the way these competing estimates for the period 2011-2031 were drawn up by reason of the notional "shortfall" in housing delivery between 2006 and 2011 by comparison with the average annual figure for additional housing indicated in the South East Plan… There was no reason whatever for a person in 2011 seeking to draw up a current estimate of population growth and housing requirements looking into the future from that date to 2031 and using up-to-date evidence to do so, to add on to the estimated figures any shortfall against what had been estimated to be needed in the first phase of the previously modelled period included in the South East Plan..'*
>
> *(Zurich Assurance Limited v Winchester City Council and South Downs National Park Authority, [2014] EWHC 758 (Admin) 18th March 2014*)[27]"

[26] Objectively Assessed Need and Housing Targets: Technical advice note, Planning Advisory Service, Paragraphs 5.34 and 5.53
http://www.pas.gov.uk/documents/332612/6363137/Objectively+Assessed+Need+and+Housing+Targets/f22edcc2-32cf-47f1-8e4a-daf50e4412f7

[27] Objectively Assessed Need and Housing Targets: Technical advice note, Planning Advisory Service, Paragraph 8.5

90. The PAS technical note recommends the comparison of past completions with the trend in completions in England as a whole[28], the suggestion being that a local trend that was clearly at variance with the national trend might indicate that planning constraints or other local factors were affecting housing supply and that as a consequence past household formation rates or migration flow might not be a reliable basis on which to assess an OAN. Figure 24 shows the available data for housing completions over the last 20 years with the England trend rate shown as an appropriately scaled index. Whilst there have been up and downs, there is no clear evidence that supply has been subject to particular constraints over the last ten years.



91. Barton Willmore compare housing delivery over the period 2001-11 with the relevant housing targets. (See their Table 7.1) They conclude that over this period the JCS undersupplied by 65 homes against a target of 1,525 i.e. by 4%. Given that this period included three years that were affected by the worse economic downturn for more than a generation (when housing supply in most areas dipped dramatically) it is hardly fair to regard this as even a slight under performance. Had it not been for the downturn it seems likely that the target over the 10-year period would have been met.

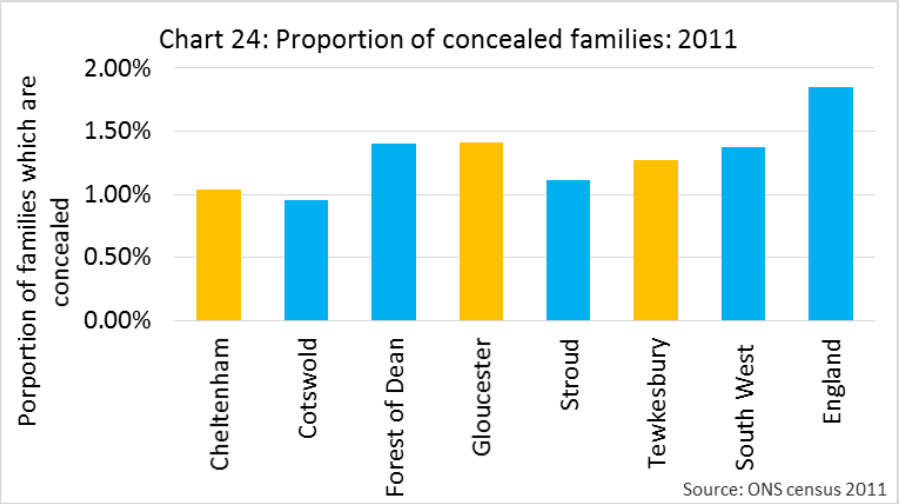
Concealed families

92. The proportion of concealed families (i.e. families living within another household) is another measure of the degree of stress in a housing market. Chart 24 shows the

http://www.pas.gov.uk/documents/332612/6363137/Objectively+Assessed+Need+and+Housing+Targets/f22edcc2-32cf-47f1-8e4a-daf50e4412f7

[28] PAS Technical note at Objectively Assessed Need and Housing Targets: Technical advice note, Planning Advisory Service, Paragraph 5.40
http://www.pas.gov.uk/documents/332612/6363137/Objectively+Assessed+Need+and+Housing+Targets/f22edcc2-32cf-47f1-8e4a-daf50e4412f7

data from the 2011 census for the three authorities alongside the data for the other Gloucestershire authorities, the South West and England.

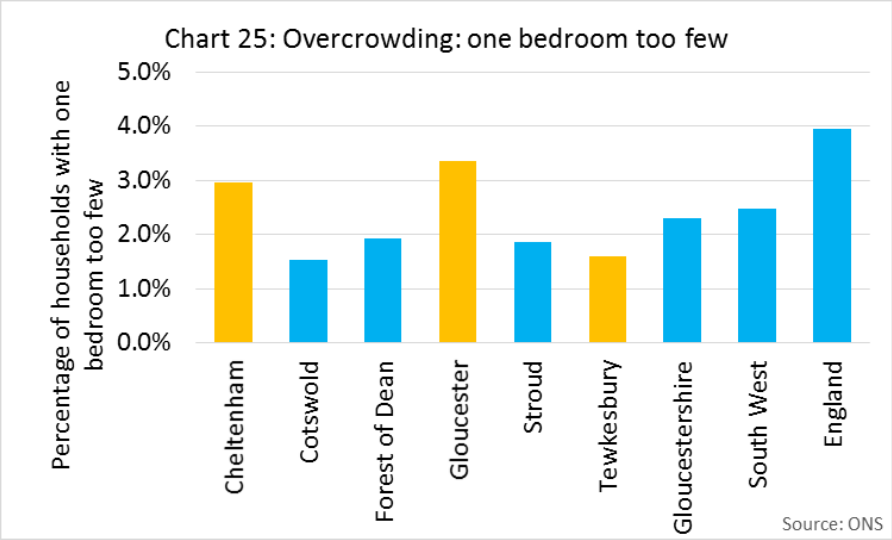


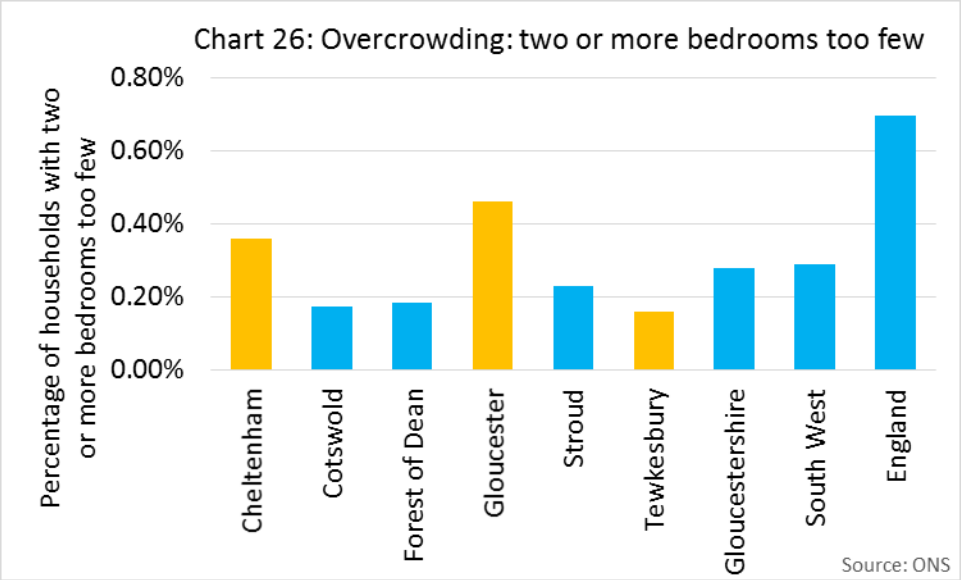
93. Whilst the proportion of concealed households in Gloucester is above average for Gloucestershire, it is well below the England average and not far from the South West average. The proportions for Cheltenham and Tewkesbury are lower. Overall this indicator does not suggest any particular housing stress in the three authorities.

94. Barton Willmore note that the proportion of concealed households has increased in the JCS authorities as it has in England as a whole. They also provide an analysis of concealed households by broad age group. The proportion of concealed households is, as might be expected, highest in the under 25 age group but in that age group as in the others, the proportion of concealed household across the JCS area as a whole is below the England average.

Overcrowding

95. Overcrowding provides a further indicator of potential stress in housing markets. Charts 25 and 26 present the census 2011 data for households which have either one bedroom too few or two or more too few.





96. On both measures Tewkesbury is less below the Gloucestershire average but Cheltenham and Gloucester are above the county average, suggesting that overcrowding is more an issue in these authorities than in their neighbours. They are, however, well below the England percentage.

97. Barton Willmore note that the proportion of overcrowded households increased between the 2001 and 2011 but in both censuses was below the national average.

Affordable housing

98. Assessing the affordable housing needs (i.e. social and intermediate housing) of the three authorities is outside the scope of this report, but there remains the question of the extent to which the assessed need for affordable housing should be taken into account in determining objectively assessed housing needs as a whole. The PPG guidance on this is not particularly explicit:

> "*The total affordable housing need should then be considered in the context of its likely delivery as a proportion of mixed market and affordable housing developments, given the probable percentage of affordable housing to be delivered by market housing led developments. An increase in the total housing figures included in the local plan should be considered where it could help deliver the required number of affordable homes.*"[29]

99. In seeking to apply this guidance it is important to recognise that the methods set out in the PPG for estimating the OAHN and estimating the need for affordable housing are fundamentally different and incompatible. The second edition of the PAS Technical Note[30] deals with this explicitly:

[29] Planning Practice Guidance, Paragraph: 029 Reference ID: 2a-029-20140306

[30] Objectively Assessed Need and Housing Targets Technical advice note, second edition, July 2015. Available at http://www.pas.gov.uk/documents/332612/6549918/OANupdatedadvicenote/f1bfb748-11fc-4d93-834c-a32c0d2c984d

"…the two numbers are not directly comparable, because they relate to different meanings of the term 'need'. ….affordable need measures aspiration (what ought to happen), while the OAN measures expectation (what is likely to happen) based on past experience, provided that planning provides enough land."[31]

The OAHN is described as being:

"….based primarily on projecting (rolling forward) past trends in total population and household numbers" whereas the PGG in seeking to *"determine how many households will need affordable housing … does not refer to past reality, but instead looks to set criteria, or standards."*[32]

The PAS Technical Note further explains that:

"….the calculated OAN relates to net new dwellings which accommodate net new households (household growth). In contrast, much of the assessed affordable need relates to existing households that are or will be entitled to affordable housing over the plan period. For the most part the needs of these existing households are not for net new dwellings. Except for those who currently live in temporary institutional accommodation or on the street, if they move into suitable housing they will free an equivalent number of dwellings, to be occupied by people for whom they are suitable.

In practical terms there is no arithmetical way of combining the two calculations set out in the PPG to produce a joined up assessment of overall housing need. We cannot add together the calculated OAN and the calculated affordable need because they overlap: the OAN of course covers both affordable and market housing, but we cannot measure the components separately. Because demographic projections – which are the starting point for the OAN – do not distinguish between the different sectors of the housing market.

In summary, it seems logical that affordable need, as defined and measured in paragraphs 22-29 of the PPG, cannot be a component of the OAN. The OAN does have an affordable component – which cannot be measured separately but will normally be much smaller than the affordable need…."[33]

This reasoning supports the conclusion that:

"…it seems clear from the PPG and Inspectors' advice that affordable housing need is a policy consideration that bears on policy targets, rather than a factor that bears on objectively assessed need."

100. This makes eminent sense in an area such as the JCS area in which affordable housing need as calculated in the manner set out in the PPG is much larger than the OAN. For example, Barton Willmore in Table 8.2 of their OAN Report present a calculation which indicates that to meet an annual affordable housing need in the

[31] PAS Technical Note, paragraphs 9.3 and 9.4.
[32] PAS Technical Note paragraph 2.14.
[33] PAS Technical Note, paragraphs 9.5-9.7

JCS area of 3,819 homes a year 9,548 homes a year would need to be built if the affordable need was to be met through S106 agreements delivering 40% affordable homes in all developments. That figure of 9,548 compares with Barton Willmore's estimate of the OAHN of 1,769 homes a year. It is clearly ludicrous to suggest that the OAN should be calculated in this way and Barton Willmore do not suggest this. However, it remains the case that the more homes that are built the more affordable homes can be delivered through S106 agreements. Where the need for affordable housing is high it has to be a matter for local policy judgement whether and, if so to what extent, more homes are built than either the demographic or jobs-led OAHN suggests. That inevitably involves assessing the costs and benefits of a range of impacts, many of which cannot be quantified. As such it must, as the PAS Technical Note suggests, fall outside the scope of an objective assessment of housing need such as this and into the realm of the qualitative judgements which local decision takers have to make in determining where the housing requirement should be set relative to the OAN.

Conclusions on adjustments for 'other factors'

101. In all of the indicators considered in this section the JCS area performs either broadly in line with or better than the rest of the country: there is no clear evidence of exceptional stress in the local housing market. There is therefore no case for increasing the demographically-based OAN to reflect market factors.

SUPPORTING ECONOMIC GROWTH

102. The NMSS November 2014 Report discussed what were then the latest economic forecasts available to the JCS authorities. That included:

- A review of commuting patterns within Gloucestershire, which showed the strong interlinkages between the labour markets of the Gloucestershire authorities.
- A discussion of the current and projected age profiles of the JCS authorities, which showed that their 16-64 populations were projected to continue to grow, albeit at a slower rate than in the recent past.
- A brief review of the projections which noted that there were significant differences between the different forecasting houses both in terms of the total jobs growth projected and, to an even greater extent, between the projections made for particular sectors of the local economy.
- A discussion of the plausibility of the projections which concluded that they were subject to considerable uncertainty and noted that they implied smaller increases in productivity than seen after the previous recession in the early 1990s.
- An analysis of the labour force, population and housing implications of the three forecasts based on the economic activity rate assumptions that were inherent in the projections.
- A JCS and Gloucestershire-wide analysis which concluded that, whilst Gloucestershire as a whole needed more homes than suggested by the demographic OAN calculation, the demographic OAN would provide a labour force that was more than sufficient to support the projected job growth.

103. That analysis remains valid and is largely unaffected by the updated economic projections which have been obtained for the JCS authorities. It is not therefore repeated here but is reproduced at Annex B for ease of reference. This section compares the new economic forecasts with the earlier forecasts and forecasts obtained by Barton Willmore. The population and housing implications of those forecasts are estimated using the household formation rates in DCLG's 2012-based projections. The results are then compared with the analysis submitted by Barton Willmore. It has not, however, been possible to update the Gloucestershire-wide analysis as updated economic projections are not available for the non-JCS authorities.

The new jobs forecasts

104. Chart 27 and Table 11 show the new forecasts obtained in July 2015 by the JCS authorities from Experian, Oxford Economics and Cambridge Econometrics with the earlier forecasts (dated January 2014) and forecasts obtained by Barton Willmore

dated between January and April 2015. The data is for the period 2014-31 to avoid the added uncertainty caused by the large fluctuations in all three forecasts for the period 2011-14. (The reasons for the choice of this period were discussed in greater detail in paragraphs 127 and 128 of the November 2014 NMSS, reproduced at Annex B.)

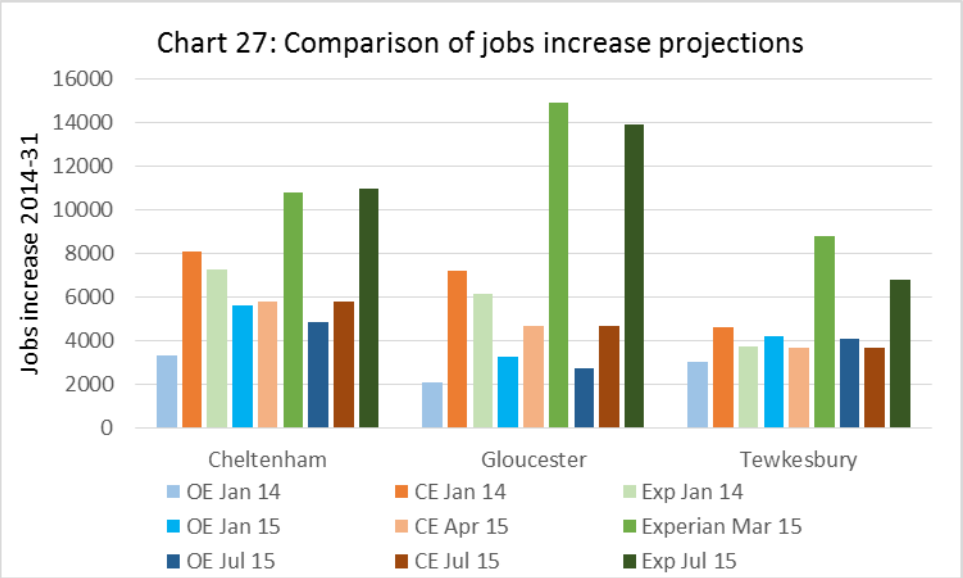


Table 11: Comparison of jobs increases forecast for 2014-31

	JCS Jan 2014			Barton Willmore			JCS July 2015		
	OE Jan 14	CE Jan 14	Exp Jan 14	OE Jan 15	CE Apr 15	Experian Mar 15	OE Jul 15	CE Jul 15	Exp Jul 15
Cheltenham	3315	8124	7280	5600	5800	10800	4844	5787	10990
Gloucester	2109	7217	6160	3300	4700	14900	2721	4705	13910
Tewkesbury	3027	4610	3750	4200	3700	8800	4106	3697	6820
JCS area	8451	19951	17190	13100	14200	34500	11671	14189	31720

105. As can be seen from the chart and table, there are large differences both between successive forecasts from the same company and between the forecasts of the same date from different organisations. In particular, the Experian forecast for the JCS area as a whole has risen by 85% between January 2012 and July 2015 whilst the Cambridge Econometric forecast has fallen by 29% and the Oxford Economic forecast has by 38%. Amongst the July 2015 forecasts, the Experian jobs increase is more than twice that projected by the other two forecasting houses.

106. These differences underline the point that the forecasts of this type are subject to very considerable uncertainty at the local authority level and need to be interpreted with this in mind.

Housing implications of the new employment projections

107. The housing implications of the new projections have been estimated using an updated model. In each case the inflow from the rest of the UK projected in the 2012 SNPP has been adjusted up or down until the population matches that

necessary to support projected increase in jobs. In adjusting those inflows it has been assumed that, as the driving force for a change in migration patterns would be the availability or otherwise of jobs, those who move are not near or over retirement age. The matching with the jobs forecast has been performed in a different way for each projection owing to the differences between the forms in which the outputs are provided.

- In the case of CE, economic activity rates for the three JCS authorities have been estimated from economic activity rates for the South West region supplied by CE. Those economic activity rates have then been used to calculate the labour force which the population projected in the 2012 SNPP will provide in 2031. The population in 2031 has then been adjusted up or down until the increase in labour force between 2014 and 2031 matches that needed for the CE forecast for the jobs increase over this period.
- For OE the inflow from the rest of the UK has been adjusted until the 16-64 population in the period 2026-31 just exceeds that envisaged in the OE projections.
- For Experian a similar approach has been used except that the comparison is between the 2012 SNPP and Experian projections for those over 16.

108. Having estimated the population needed in 2031 to provide the labour force implied by a jobs forecast, the number of homes needed to accommodate that population in 2031 has been calculated using the household formation rates from DCLG's 2012-based household projections. (Full details of this analysis and the assumptions used are set out in Annex A.)

109. The Barton Willmore analysis takes a fundamentally different approach. It takes the average of the three jobs forecasts it has obtained and then uses economic activity rates derived from analysis by Kent County Council to estimate the population needed to support that average jobs increase forecast.

110. NMSS has two major reservations with this approach:

- Whilst the economic activity rate forecasts used may be perfectly reasonable they will inevitably be different from the assumptions inherent in the three economic forecasts. Had the economic forecasters used different assumptions they would have arrived at different forecasts for jobs increases. The analysis is therefore inconsistent with the projections being interpreted.
- Simply averaging three very different jobs forecasts (one of which is more than twice the other two) is not an adequate way of taking account of the high degree of uncertainty in forecasts of this type. Had the NMSS analysis not suggested that there was no need to add to the demographically-based OAHN to support economic growth, NMSS would have advised that the economic forecasts should be reviewed by employment consultants and adjusted as necessary for plausibility before being used to estimate the number of additional homes needed to support economic growth. A similar approach was adopted by NMSS in advising on the Stroud District Local Plan

and has been accepted by the Inspector examining that plan as the basis on which to establish the OAHN.

111. Chart 28 and Table 12 show the NMSS and Barton Willmore estimates of the population increases needed to support the projected increases in jobs. Also shown are demographically-based population increase estimated above in the section entitled "What population should be planned for?"

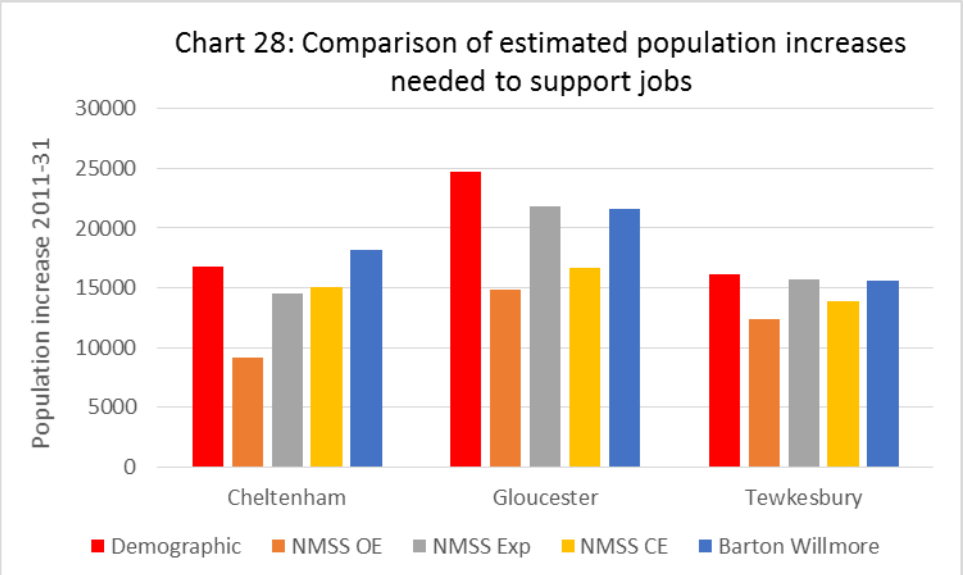


Table 12: Comparison of population increases needed to support jobs

Household formation rate	Demographic	NMSS OE	NMSS Exp	NMSS CE	Barton Willmore
Cheltenham	16760	9160	14550	15020	18130
Gloucester	24770	14880	21770	16700	21600
Tewkesbury	16090	12390	15740	13880	15570
JCS	57630	36420	52060	45600	55300

112. Note that:

- In all cases the demographic estimate of the population increase is higher than the population suggested by the NMSS estimates of the population increase needed to support the forecast jobs increase. This suggests that no additional homes are needed to support economic growth beyond those envisaged in the demographic projection.
- For the JCS area as a whole the demographically-based population increase is larger than that estimated by Barton Willmore as necessary to support the projected increase in jobs. The same is true for Gloucester and Tewkesbury but not for Cheltenham, although the shortfall in Cheltenham's case is comfortably offset by the surfeit in the other two authorities.

113. This leads to the conclusion that neither the NMSS nor the Barton Willmore analysis suggests a larger population is needed in the JCS area than envisaged in the NMSS demographically-based population projection.

114. Notwithstanding this conclusion, it is the case that the Barton Willmore analysis suggests that a larger number of homes are needed to support economic growth than suggested by the NMSS demographically based analysis i.e. 35,770 homes compared with the NMSS figure of 31,800 homes between 2011 and 2031. This is largely due to the Barton Willmore assumption that the household formation rates for 25-44 year olds will move back to the rates envisaged by the 2008-based projections. Barton Willmore analysis suggests that if DCLG's 2012-based household formation rates were used 31,990 extra homes would be needed between 2011 and 2031.

Conclusion on homes needed to support economic growth

115. The employment forecasts for JCS area are subject to considerable uncertainty as is shown by the way in which they have changed over a relatively short period and by the differences between the latest forecasts. However, none of the three forecasts suggests that there is a need to increase the demographically-based OAHN to support economic growth.

116. The Barton Willmore analysis also suggests that the NMSS demographically-based projection for the JCS area's population would be sufficient to support the projected increase in jobs. Their analysis suggests that additional homes are needed to support economic growth largely because they assume that household formation rates for 25-44 year olds will move to the rates envisaged in the 2008-based projections. For the reasons discussed in paragraphs 59-70, NMSS believe this to be highly unlikely.

SENSITIVITY ANALYSIS

117. Any analysis of this kind depends on the assumptions made. This section reports the results of sensitivity analysis carried out to explore what the implications would have been had different assumptions been made.

118. The two main components in a household projection and OAHN calculation are the estimation of the number of people to be accommodated and the assumption made about how those people will group themselves into households i.e. the assumptions on household formation rates. This section therefore looks at the impact which alternative assumptions might have in both of areas. In each sensitivity test, only one parameter is changed from the assumptions made in the chosen OAHN scenario.

Population sensitivities

119. There are three main areas in which adjustments have been made to the 2012 SNPP:

- Flows to and from the rest of the UK
- Overseas flows
- UPC

120. This sub-section looks at each in turn

(a) Flows to and from the rest of the UK

121. The proposed demographic population projection assumes that flow rates are adjusted to reflect the average rates for the latest ten year period for which data is available i.e. 2004-14. Two alternative assumptions are considered here:

- Flow rates for 2002-12 are used. This might be thought the most natural longer period to take as the trend period for 2012-based projections even though data for more recent periods is available.
- Flow rates calculated as percentages of the population in the local authority in the age and gender group in question (rather than the population in the rest of UK). As discussed in paragraphs 27-30 above both the rest of the UK and the LA population can be used as proxies for the authorities from which people move to a given authority. Neither is a perfect proxy. By considering both an indication can be gained of the extent of the uncertainty introduced by the use of the rest of the UK as the chosen proxy.

122. Table 13 (below) compares these two scenarios with the chosen OAHN scenario.

Table 13: UK flow rate sensitivities			
	OAHN scenario	2002-12 flow rates, rest of UK as proxy	2004-14 flow rates with LA as proxy
Population increase 2011-31	57600	56500	58100
Homes needed 2011-31	31800	31300	32000

123. As can be seen, using 2002-12 average flow rates reduces the population increase by 1100 and the number of homes needed by 500. On the other hand, using the LA itself as the proxy for the authorities from which people move to the JCS area increases the population increase by 500 and the number of homes needed by 200.

(b) Overseas flows

124. The proposed demographic projection assumes that flows to and from abroad reflect the average flow rates seen over the most recent 10 year period for which data is available i.e. 2004-14. Plausible alternative assumptions are:

- The assumptions in the 2012 SNPP. Although these appear low in relation to the actual flows in the last two years, it should be acknowledged that they were intended to reflect what is likely to happen over the next 25 years: high flows in the first years of this period do not necessarily invalidate the ONS's assumptions as a longer term view. That view is undoubtedly an expert and independent view arrived at after careful consideration of the available evidence.
- Scaling up international migration flows to reflect the ONS's high migration assumption. Although scaling-up on a uniform basis across all local authorities does not reflect what has actually happen in individual authorities it does approximate the results the ONS might have produced had they taken their high scenario as their principal one.

125. Table 14 (below) shows the results for these two scenarios compared with the OAHN scenario.

Table 14: Overseas flow sensitivities			
	OAHN scenario	2012 SNPP assumptions	ONS high migration scneario
Population increase 2011-31	57600	54300	56700
Homes needed 2011-31	31800	31000	32100

126. Both of these sensitivities reduce the projected population increase – by 3,300 for the 2012 SNPP and by 900 for the ONS high migration scenario. The former reduces the number of homes needed by 800 whilst the latter increases the number of homes needed by 300. An increase in homes needed when the population increase falls may seem counterintuitive but almost certainly reflects a difference in the age

profile of the additional overseas migrants: an older age profile can give rise to a higher number of households and homes despite the population change being smaller.

(c) Unattributable population change

127. Whether or not an adjustment should be made for UPC is debatable. The OAHN scenario assumes that 50% of UPC would have contributed to population increases. That is a mid-range scenario. The extremes of the range are the obvious alternative scenarios to sensitivity test, i.e.:

- None of UPC contributes to future population change – the ONS assumption; and,
- 100% of UPC contributes to future population change.

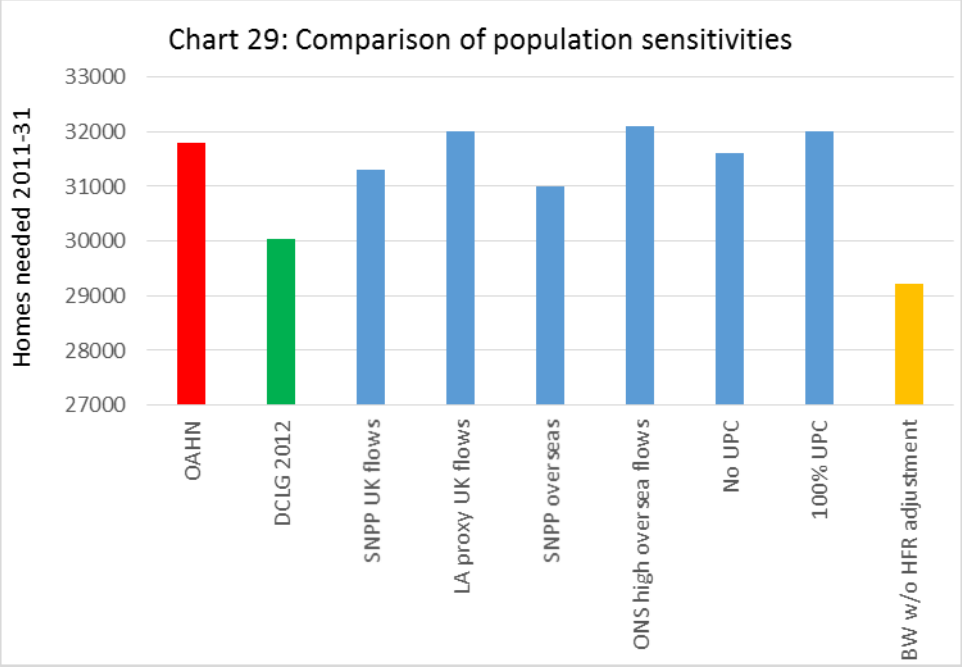
128. Table 15 shows the results for these two scenarios compared with the OAHN scenario.

Table 15: UPC sensitivities

	OAHN scenario	No UPC	100% UPC
Population increase 2011-31	57600	56600	58600
Homes needed 2011-31	31800	31600	32000

129. As is to be expected these sensitivities are symmetrical, changing the projected population increase by +/-1000 and the number of homes needed by +/-200.

130. The chart below illustrates the above population sensitivities. It includes both the DCLG projection (green) based on the unadjusted 2012 SNPP and the Barton Willmore projection before their household formation rate adjustment (orange).



131. The sensitivities give a range from 31,000 to 32,100 homes. The mid-point of that range is 31,550. The OAHN at 31,800 is above the mid-point.

132. The Barton Willmore Long Term Migration assumption before their household formation rate adjustments (which are shown in the household formation rate sensitivities discussed below) produces a housing need figure of 29,170. This is below the number suggested by the DCLG 2012 household projection (30,000).

133. The DCLG 2012-based projection (30,000 homes) should not be entirely disregarded as a population sensitivity. It is based on the unadjusted 2012 SNPP which, for the JCS area taken as a whole, is very close to the actual population increase reported in the 2014 Mid-Year Estimates – suggesting that the 2012 SNPP is not necessarily underestimating the likely population growth. The OAHN is 1800 homes or nearly 6% above the DCLG 2012-based figure.

Household formation rate sensitivities

(a) Tests relative to the DCLG 2012 household formation rates

134. The discussion in paragraphs 60-63 above suggests that the 2008-based household formation rate projections are now of very limited relevance: those projections were optimistic even at the time they were formulated and the world has changed irreversibly since then. In this context the most relevant alternative scenarios to test are those which address aspects of the new projections themselves. Two are suggested as being particularly worth investigating:

- Although the household formation rates in the 2012-based projections are generally higher than those in the 2011-based interim projections and eliminate or reduce most of the instances in which the household formation rates of specific groups are projected to fall, there are still some groups for which a small fall is still projected. Whilst this may well be a realistic prospect for those groups, a useful sensitivity test is the scenario in which the household formation rate of no group falls below the level it was at in 2011 and the rates for other groups rise as projected. This might be described as the '**2011 HFR floor'** scenario.

- The above scenario is an 'upside' test. A balancing 'downside' test would be the scenario in which the household formation rate of no group rises above its level in 2011. This could be described as the '**2011 HFR ceiling'** scenario. This may sound excessively pessimistic, but with recent shocks to the world economy and the likelihood that emerging economies will catch up on the West, possibly growing at its expense, it is far from obvious that housing conditions will inevitably always move in the upwards direction. This test has the added advantage of providing a measure of the 'upside' included in the 2012-based projections for some groups.

135. The table below gives the results for these two tests compared with OAHN scenario. (The projected population increases are not shown because in all of the household

formation rates scenarios the projected population is held at the level in the OAHN i.e. an increase of 57,600 between 2011 and 2031 for the JCS area.)

Table 16: Sensitivities on DCLG's 2012-based HFRs			
	OAHN scenario	2012 + 2011 floor	2012 + 2011 ceiling
Homes needed 2011-31	31800	32600	28400

136. The 2011 floor scenario increases the number of homes needed by 800 or 2.5%. This is a relatively small adjustment and indicates that the deterioration in housing conditions for some groups implicit in the new projections is relatively small.

137. The 2011 ceiling scenario reduces the number of homes needed by 3400 or 11%. This is a much larger margin and indicates that the improvements in housing conditions which some groups are projected to enjoy are reasonably significant.

Test based on the 2008-based household formation rates

138. Although there is growing evidence that the 2008-based household projections have very little relevance some still use them as the basis for constructing sensitivity tests, perhaps in the absence of any other benchmark. Six such tests have been carried out involving either a full return to the 2008-based household formation rates by 2031 for some or all age groups or a partial return, which is interpreted as a move to the mid-point between the 2008 and 2012-based rates by 2031. These tests are:

- Full return to 2008-based rates for all age groups for all ages 'FRT 2008 all ages'.
- Full return to 2008-based rates for 25-34 year olds 'FRT 2008 25-34s'
- Full return to 2008-based rates for 25-44 year olds 'FRT 2008 25-44s'
- Partial return to 2008-based rates for all age groups 'PRT 2008 all ages'
- Partial return to 2008-based rates for 25-34 year olds 'PRT 2008 25-34s'
- Partial return to 2008-based rates for 25-44 year olds 'PRT 2008 25-44s'

139. The flowing table shows the results of these tests.

Table 17: Sensitivities relative to DCLG's 2008-based HFRs							
	OAHN scenario	FRT 2008 all ages	FRT 2008 25-34	FRT 2008 25-44	PRT 2008 all ages	PRT 2008 25-34	PRT 2008 25-44
Homes needed 2011-31	31800	36400	33400	34600	34100	32600	33200

140. As expected all of these scenarios increase the number of homes needed. The biggest increase is, of course, the full return to trend for all age groups. This increases the number of homes needed by 4600 or 14%. The partial return to trend

for the 25-34 age group – the age group that has seen its household formation rate fall most – involves an increase of 800 homes or 2.5%.

141. The chart below summarises all of the sensitivity tests relative to both the OAHN and the Barton Willmore full return to trend scenario for 25-44s. This latter scenario produces a lower number of homes needed than the equivalent NMSS scenario largely because it is based on a lower population increase assumption – as discussed in the previous sub-section.

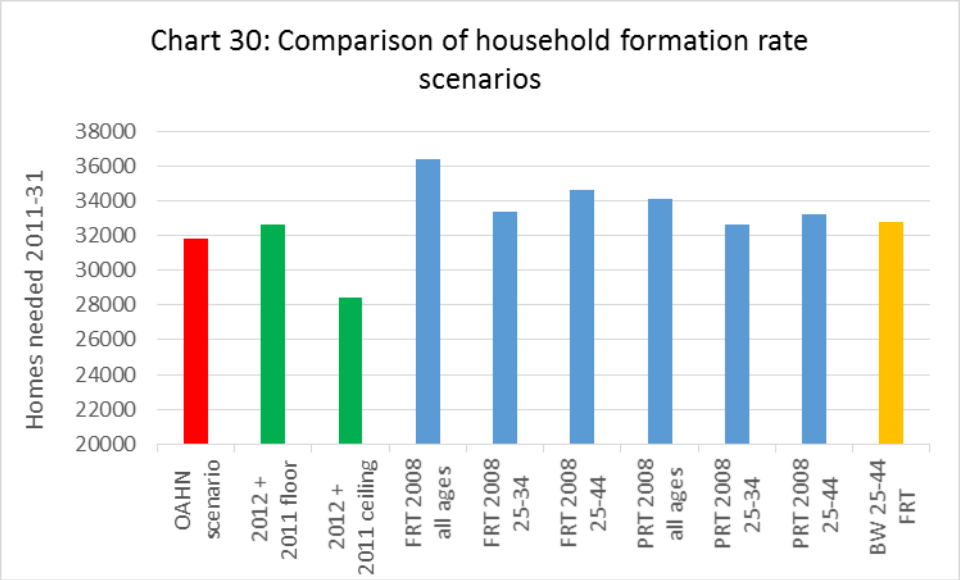


Table 18: Summary of household formation rate sensitivities

	OAHN scenario	2012 + 2011 floor	2012 + 2011 ceiling	FRT 2008 all ages	FRT 2008 25-34	FRT 2008 25-44	PRT 2008 all ages	PRT 2008 25-34	PRT 2008 25-44	BW 25-44 FRT
Homes needed 2011-31	31800	32600	28400	36400	33400	34600	34100	32600	33200	32800

142. Note that the Barton Willmore full return to 2008 rates for 25-44s scenario – their demographically-based OAHN estimate – is 32,800 i.e. 1000 or 3.1% higher than the NMSS OAHN. All of the difference (and more) is due to the Barton Willmore assumption that household formation rates for 25-44s will return fully to the 2008-based rates. NMSS believe that to be extremely improbable given that those rates were probably optimistic even when they were first projected.

SUMMARY AND CONCLUSIONS

143. The starting point for this Update Report is the DCLG's 2012-based household projections (DCLG 2012) which were released in February 2015. These were based on the ONS 2012-based Sub-national Population Projections (2012 SNPP) which were published in May 2014. However, more recent evidence on how the population has changed since 2012 is available from the 2014 Mid-Year Estimates (2014 MYE) which were issued in June 2015 and the international migration statistics for the year to March 2015 which were released in August 2015. This report also takes that additional evidence into account to provide the most up to date view possible.

144. As a result of the latest evidence it is proposed that the following adjustments should be made to the 2012 SNPP/DCLG 2012 before using them to estimate the OAHN for the JCS area.

- The 2012 SNPP projects flows to and from other parts of the UK using flow rates estimated from the 5-year period 2007-12. That period included a severe economic downturn and as a result some of the projected flows appear to be low. It is proposed to correct for this by using average flow rates for a 10-year period. Previously the period 2002-12 had been used but, with the publication of the 2014 MYE, it is now possible to update this to 2004-14. At the same time the population estimates from the 2014 MYE will be used as revised starting points for the population projections.

- The latest estimates for net international migration to the UK suggest that in the year to March 2015 the net inflow was approximately twice that assumed in the 2012 SNPP. In view of this it is proposed to adjust international flows into and out of the JCS authorities to reflect actual flows over the most recent 10-year period for which data is available, i.e. 2004-14.

- If all of the data were completely accurate the population in one census plus the cumulative effect of the births, deaths and flows in and out in the intervening years would equal the population counted in the next census. That is not the case: there is a discrepancy known as the 'Unattributable Population Change' (UPC). It is debatable whether UPC should be taken into account in projecting future population changes. The ONS do not do this but in earlier analysis NMSS had adopted the principle that where UPC would have the effect of increasing a population projection it should be included so as to avoid the possibility of underestimating the population to be planned for. However, evidence from the 2014 MYE does not suggest that the 2012 SNPP is underestimating population growth. In view of this it is now felt that the previous approach was unduly cautious and that it would be more appropriate to assume that half of UPC would have contributed to population change. This is mid-way between the "no UPC" assumptions adopted by the ONS and the "100% UPC" approach used previously.

145. Table 6 (reproduced below) summarises the impact which these adjustments have on the 2012 SNPP projections for the JCS authorities. The effect is to increase the

projected population increase of the JCS area from 52,570 to 57,630, an increase of 5,060 or 9.6%

Table 6: Summary of Adjustments to the 2012 Sub-national Population Projection					
Population change 2011-31		**Cheltenham**	**Gloucester**	**Tewkesbury**	**JCS**
A	**2012 SNPP**	**15580**	**21960**	**15020**	**52570**
B	*10-year UK flow adjustment*	*660*	*-30*	*-1290*	*-660*
C	**10-year UK flows**	**16240**	**21930**	**13730**	**51910**
D	*2004-14 UK flows and re-base to 2014 MYE*	*-880*	*70*	*2200*	*1400*
E	**MYE + 2004-14 UK flows**	**15370**	**22000**	**15930**	**53300**
F	*Adjustment for 2004-14 overseas flows*	*790*	*1620*	*900*	*3320*
G	**MYE + 2014-14 UK + overseas flows**	**16160**	**23620**	**16840**	**56620**
H	*Adjustment for 50% UPC*	*600*	*1150*	*-740*	*1010*
I	**MYE + 2014-14 UK +overseas flows + 50% UPC**	**16760**	**24770**	**16090**	**57630**

146. To turn an estimate of a population change into an estimate of the change in the number of households a view needs to be taken on how the tendency of people to form separate households (the household formation rate) is likely to change. The latest DCLG household projections (DCLG 2012) provide the most recent official view on this and represent a significant step forward from the 2011-based interim projections (which were prepared relatively quickly following the 2011 census as a stop-gap measure). Having reviewed the latest projections, NMSS believes that they should be used as published.

147. In particular, there is no longer a need to make adjustments to the projected household formation rates for young adults (those aged 25-34) that were appropriate when using the 2011-based interim projections. Those projections envisaged a continuing sharp deterioration in the household formation rates of that age group. NMSS believe that the latest DCLG projections represent a realistic view of likely trends in household formation patterns when account is taken of the changes that have occurred since the last pre-recession projection were published (the 2008-based projections), many of which are unlikely to reverse in the foreseeable future.

148. Once an allowance is made for empty and second homes (based on council tax data), applying the 2012-based DCLG household formation rates to the adjustment 2012 SNPP population projections produces a demographically based estimate of the OAHN of the JCS area of 31,800 homes over the period 2011-31, as set out in Table 9 (shown below).

Table 9: Demographic housing need in the JCS area				
Homes needed 2011-31	**Cheltenham**	**Gloucester**	**Tewkesbury**	**JCS**
Population based on 2012 SNPP	9650	12330	8060	30040
Proposed planning assumptions for population	**9900**	**13290**	**8640**	**31830**

149. A review of house prices, house price-earnings affordability ratios, rents, house building rates, overcrowding levels and the proportion of concealed households does not suggest that the JCS housing market is subject to particular stresses that would justify increasing the OAHN above the level indicated by the demographically based estimate.

150. Updated economic projections have been obtained from Oxford Economics (OE) and Cambridge Econometrics (CE) and Experian for the three authorities. There are substantial differences between these projections and between the projections obtained some 18 months earlier. This suggests that great caution should be used in using them to estimate the number of homes needed to support economic growth.

151. The economic projections are highly sensitive to the assumptions made on the growth in jobs in key sectors such as government services (including health and education) and finance and business services. The assumptions made about economic activity rates (i.e. the proportion of the population who are available for work) also have a big impact on the number of people needed to support economic growth (and hence the number of additional homes required). Plausible variations in the assumptions could change the estimates of the number of homes needed significantly. In addition there are question marks over whether the projections have made sufficient allowance for improvements in productivity as the economy recovers from recession given that the deterioration in productivity in the last recession was deeper than in the previous two and there has so far been relatively little improvement in productivity.

152. Taking the JCS area as a whole and using economic activity rates consistent with the projections, there does not appear to be a need to add to the demographically-based OANs to ensure that there are sufficient homes in the area to support the projected growth in jobs. The OANs should therefore be as set out in Table 9 above.

153. A range of alternative scenarios has been modelled to explore how sensitive the OAHN estimate is to alternative assumptions about population growth and household formation rates.

154. The population sensitivity tests produce a range from 31,000 to 32,100 homes. The proposed OAHN (31,800) is above the mid-point of that range (31,550).

155. Eight household formation rates scenarios have been tested. These include six which explore scenarios in which household formation rates move all or part of the way back towards the 2008-based projections for some or all age groups. These result in estimates of the number of homes needed up to 36,400 in the scenario in which the household formation rates of all age groups are assumed to reach the rates envisaged in the 2008-based projections before 2031. This is thought extremely unlikely given that it is now clear that the 2008-based projections were optimistic when they were first published and changes have occurred that are unlikely to reverse even after a full recovery from the recession.

156. Two other household formation rate sensitivities are more relevant.

- One considers the impact of assuming that no group sees its household formation rate fall below the level in 2011 – the '2011 floor' scenario. This increases the number of homes needed by 800 or 2.5%. This is a relatively small adjustment and indicates that the deterioration in housing conditions for some groups implicit in the new projections is relatively small.

- A second scenario assumes that no group sees a rise in its household formation rate above its 2011 level – the '2011 ceiling' scenario. This

reduces the number of homes needed by 3400 or 11%. It is a pessimistic scenario as it takes away all of the increases in household formation rates inherent in the 2012-based projections. However, in doing so it shows that the improvements in housing conditions which some groups are projected to enjoy are reasonably substantial.

157. Barton Willmore have put forward an alternative assessment of the OAHN on behalf of Gladman Developments. This also makes adjustments to the 2012 SNPP to apply 10-year flow rates and, in addition, assumes that the household formation rates of those aged 25-44 reach the rates envisaged in the 2008-based projections before 2031. Barton Willmore also estimate the number of homes needed to support economic growth based on forecasts which they obtained from the same forecasting houses as used by the JCS authorities. Their analysis suggests that:

- Demographic factors will lead to the population of the JCS area growing more slowly than envisaged in this update report: by 48,600 between 2011 and 2031 compared with 57,600 suggested by this report.
- A population increase of 55,300 is needed to support economic growth. This is also smaller than that envisaged in this report.
- 35,770 homes are needed to support economic growth. The only reason this is a higher figure that the OAHN estimated in this report is the assumption that the household formation rates of 25-44 year olds reach those assumed in the 2008-based projections before 2031. Barton Willmore's analysis suggests that if DCLG's 2012-based household formation rates are used 31,990 homes are needed – only 190 homes more than the OAHN estimated in this report.

The substantive point of difference is therefore the assumptions made on household formation rates.

158. The updated OAHN estimate of 31,800 homes compares with 31,600 homes suggested in the analysis set out in the JCS authorities' Written Statement on Housing Provision (Matter 3). The difference is well within the error margins associated with this kind of analysis.

159. Given the inevitable uncertainties, the demand for homes and the growth in employment should be closely monitored and the OANs should be reviewed periodically in the light of what actually happens.

ANNEX A

SUMMARY OF ANALYTICAL METHODS USED

To be provided as a separate document

ANNEX B

EXTRACT FROM NOVEMBER 2014 NMSS REPORT

SUPPORTING ECONOMIC GROWTH

160. The PPG advises:

> *"Plan makers should make an assessment of the likely change in job numbers based on past trends and/or economic forecasts as appropriate and also having regard to the growth of the working age population in the housing market area. …..*
>
> *Where the supply of working age population that is economically active (labour force supply) is less than the projected job growth, this could result in unsustainable commuting patterns (depending on public transport accessibility or other sustainable options such as walking or cycling) and could reduce the resilience of local businesses. In such circumstances, plan makers will need to consider how the location of new housing or infrastructure development could help address these problems."*[34]

161. This makes it clear that Local Plans should be consistent with the economic prospects of an area and that it is not acceptable simply to assume that commuting patterns will change to cover any shortfall between the resident labour force and what is needed to support the economic growth of the area.

162. In particular, there may be a temptation to assume that a faster increase in jobs than workers can be accommodated simply by assuming that fewer people will commute out of the area. However, this is unlikely to happen unless the new jobs are attractive to those who commute out, some to well-paid city-centre jobs. The PAS Technical Advice Note[17] advises caution in this area and notes the need for credible supporting evidence to show how the changes envisaged will be brought about: aspirations alone are not sufficient. It also notes the need for consultation under the Duty to Co-operate.

163. This section of the report discusses the economic projections which have recently been obtained for the JCS authorities and compares them with past trends in employment growth. It then seeks to estimate the implications for the housing requirements of the three authorities if the projected labour forces are to be provided without changes in commuting patterns. However, before considering the economic projections, a few comments on the nature of the labour market in Gloucestershire provide some useful context.

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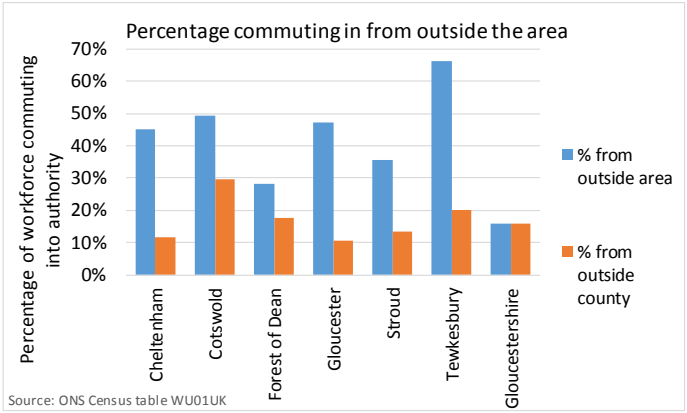
[34] Planning Practice Guidance, Paragraph: 018 Reference ID: 2a-018-20140306 http://planningguidance.planningportal.gov.uk/blog/guidance/housing-and-economic-development-needs-assessments/methodology-assessing-housing-need/

Commuting flows

164. Local authority boundaries are about as relevant for labour markets as they are for housing markets: for both there are likely to be substantial flows across the boundaries. This is particularly true for the Gloucestershire authorities. As Figure 27 shows, according to the 2011 census, the proportion of those employed in the Gloucestershire authorities who live outside the authority in which they work ranges from 28% (Forest of Dean) to 66% (Tewkesbury). However, with the exception of Cotswold and Forest of Dean, the majority of those commuting into the Gloucestershire authorities come from elsewhere in the county. Only 16% of those who work in Gloucestershire commute from outside the county.

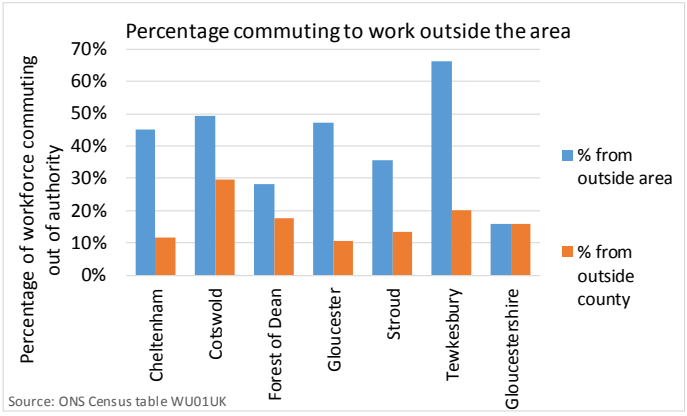
Figure 27: Commuter inflows



Commuter flows	Cheltenham	Cotswold	Forest of Dean	Gloucester	Stroud	Tewkesbury	Gloucestershire
% from outside area	45%	49%	28%	47%	36%	66%	16%
% from outside county	12%	30%	18%	11%	13%	20%	16%

165. The situation for those commuting out to work in another authority's area is similar although rather more uniform. The proportion of those who are in work who commute to somewhere outside their home authority ranges from 40% (Cheltenham) to 61% (Tewkesbury). With the exception of Cotswold, the majority of these are commuting to somewhere else in Gloucestershire. Only 17% of Gloucestershire residents in work commute to somewhere outside the county. See Figure 28.

Figure 28: Commuter outflows

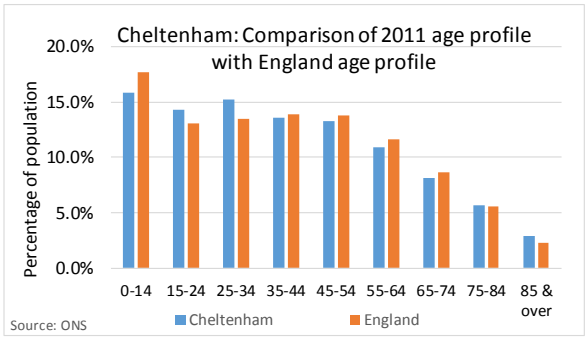


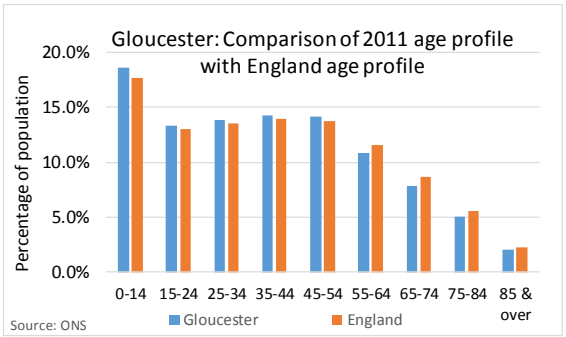
Commuter flows	Cheltenham	Cotswold	Forest of Dean	Gloucester	Stroud	Tewkesbury	Gloucestershire
% from outside area	40%	46%	49%	44%	46%	61%	17%
% from outside county	11%	32%	23%	9%	19%	13%	17%

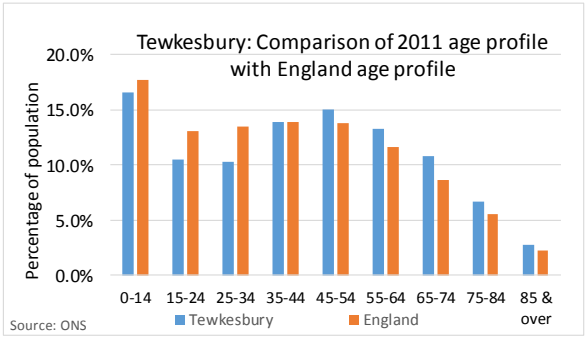
166. All of this indicates that Gloucestershire is a far more sensible geographical area in which to consider labour markets than any of its local authorities. Indeed, given the strong interactions between the labour markets of the Gloucestershire districts, focussing too narrowly on an individual authority is likely to lead to misleading conclusions. It is therefore, extremely helpful that, courtesy of the authorities concerned, we have economic forecasts for Stroud, Cotswold and Forest of Dean as well as for the JCS area. This enables a broad picture to be compiled of the potential overall demand for labour in the wider area.

The 16-64 population

Figure 29: Comparison of age profiles



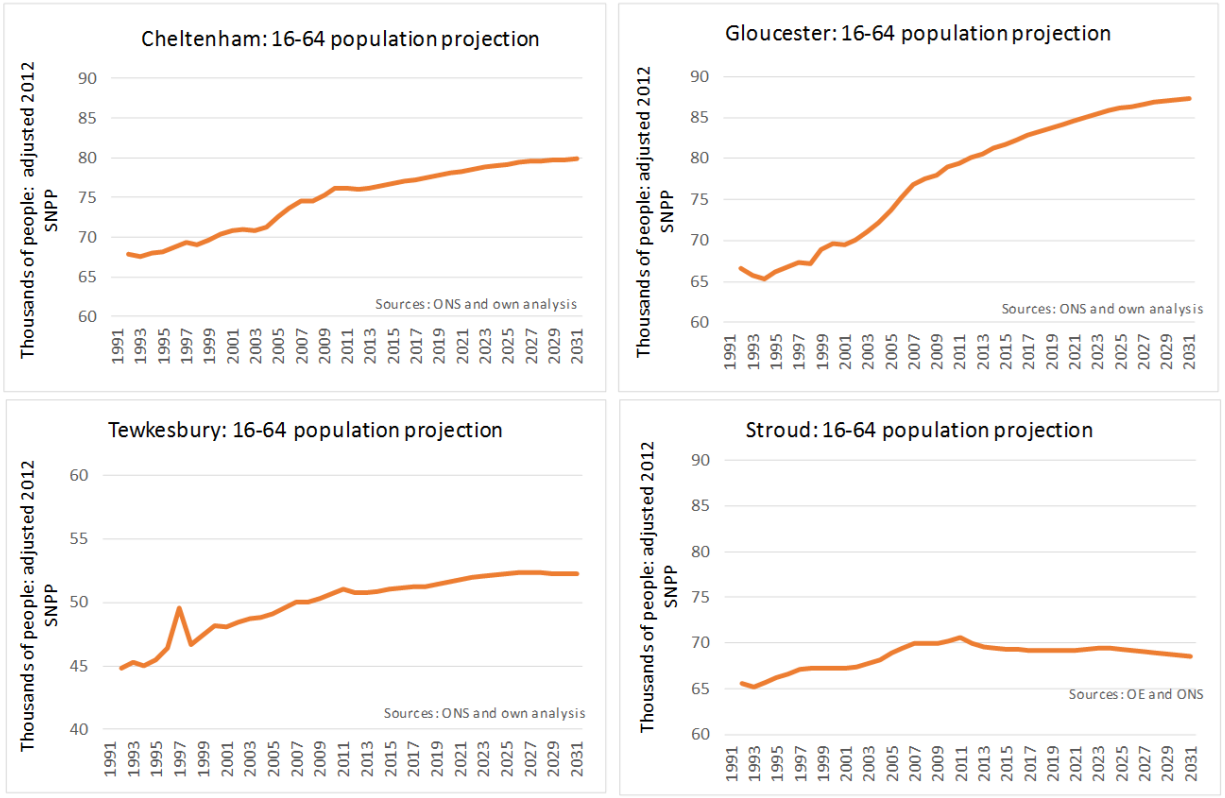




167. As the charts in Figure 29 show, Cheltenham and Gloucester have slightly younger age profiles than England as a whole whilst Tewkesbury has an older age profile than England. In particular, the 15-24 and 25-34 age groups are both under-represented in Tewkesbury and the 45-54 and 55-64 age groups – the people who will retire in the next 20 years – are over represented. In this respect Tewkesbury is similar to the rest of Gloucestershire i.e. Stroud, Cotswold and Forest of Dean.

168. As Figure 30 shows, the number of 16-64 year olds in the JCS authorities is projected to continue to grow albeit at a slower rate in the future. This is marked contrast with the other Gloucestershire authorities which are projected to see a decline in their 16-64 populations, as illustrated by the chart for Stroud which is included in Figure 30.

Figure 30: Projections for 16-64 population



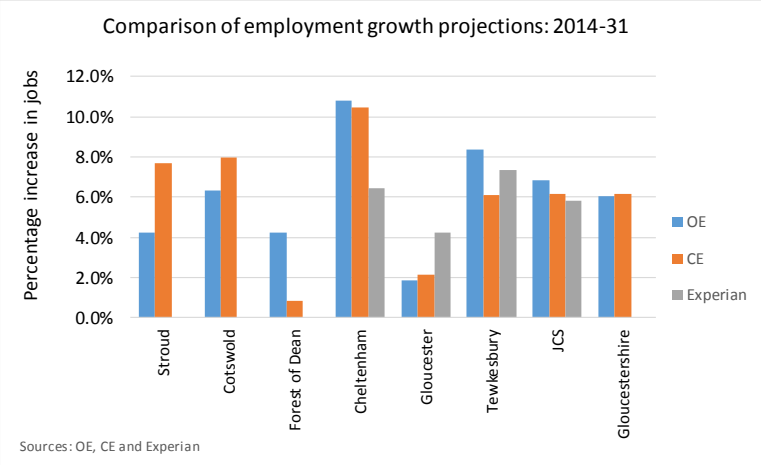
The economic forecasts

169. Figure 31 summarises the available projections from Oxford Economics (OE), Cambridge Econometrics (CE) and Experian. This uses the data for the period 2014-31 to avoid the distortions caused by the inevitable uncertainties in the forecasters' views on the emergence of the economy from recession in the period 2011-14[35]. It

[35] The forecasters' views of what has actually happened between 2011 and 2014 vary considerably: in the case of Cheltenham the CE view of the job increase over this period is 60% larger than Experian's; for Forest of Dean the Experian increase is 1½ times the CE increase. The forecasters will have had data for some but not all of the years in question when they prepared these forecasts. The differences will reflect uncertainties in the underlying datasets which are based on sample surveys and the ways in which those datasets have been used.

should be noted that the projections for the JCS area are from January 2014 whereas those for the Stroud, Cotswold and the Forest of Dean are from August 2014.

Figure 31: Employment growth projections for Gloucestershire



Job growth 2014-31	OE	CE	Experian
Stroud	4.3%	7.7%	-
Cotswold	6.3%	8.0%	-
Forest of Dean	4.2%	0.8%	-
Cheltenham	10.8%	10.5%	6.4%
Gloucester	1.9%	2.1%	4.3%
Tewkesbury	8.3%	6.1%	7.4%
JCS	6.9%	6.2%	5.8%
Gloucestershire	6.1%	6.2%	-

170. As can be seen from Figure 31, the projections for employment growth vary widely between localities, from OE's projection for Gloucester of 1.9% to their projection for Cheltenham of 10.8%.

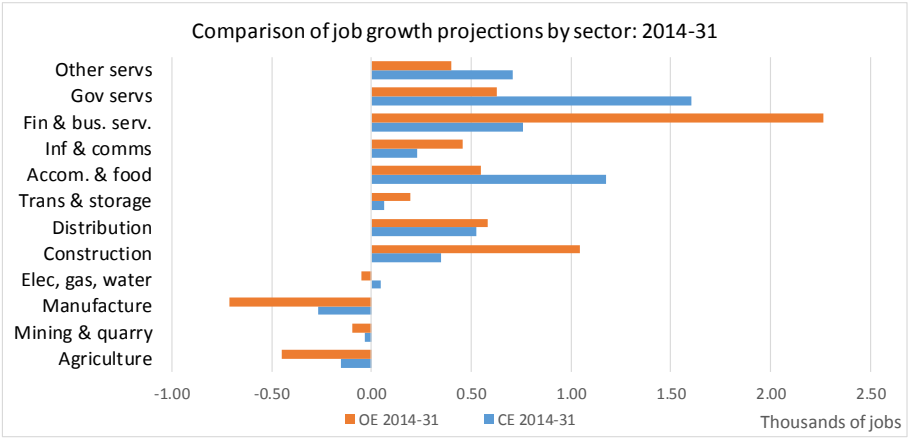
171. Note also that there are significant differences between the forecasters in their assessments of the potential for job growth in some authorities. The Forest of Dean is the most extreme example of this with the OE projection being some 5 times the CE figure.

172. Whilst there are still variations between forecasters, if a wider area is considered the variations are likely to be smaller. This is the case for both the JCS area and for Gloucestershire. This reflects the general rule that projections of this kind, whether for jobs, people or housing, tend to be less and less reliable the smaller the geography considered. This point is explicitly acknowledged in the explanatory notes on the CE model.

173. The reasons for the variations between the different forecasts becomes rather clearer when the more detailed sector by sector forecasts are examined. The forecasts are built up using a combination of a national view on the prospects for the difference sectors of the economy and local data on the demand for services and the performance of the different sectors. Because of the different views taken by the various forecasters about the prospects of different sectors, significant differences arise in their projections for individual authorities. Take, for example, the data for Cotswold shown in Figure 32. This again uses the data for the period 2014-31 to

avoid the uncertainties in the period 2011-14. CE take a much more bullish view of the prospects for 'government services' (a sector that includes health and education) than OE and envisage a growth in jobs in this sector that is 2½ times that suggested by OE. This has a significant impact on CE's overall estimate for jobs growth in Cotswold as their estimate for government services accounts for over 30% of the total projected increase in jobs.

Figure 32: Projected job growth by sector in Cotswold



174. In contrast, OE are much more optimistic about financial and business services. Their estimate of jobs growth in that sector in Cotswold is three times that of CE. Again this has a significant impact on the overall OE projection as growth in this sector equates to nearly half of their projected job increase across all sectors.

175. This high degree of sensitivity to the assumptions made on individual sectors underlines the care that needs to be taken in interpreting the local authority level projections.

Interpreting the economic projections

176. In assessing the housing implications of any economic projection two questions need to be asked:

- **How plausible are the overall projected job growth figures?** Just as in earlier sections of this report we have examined the plausibility of the population and household formation rate assumptions which underpin the household projections, a similar exercise needs to be carried out on the job growth projections.
- **How many people will be needed to fill the extra jobs that are likely to be created?** There are a variety of changes taking place in the workforce including in particular older people working longer and more emphasis on apprenticeships. These mean that in future a population of a given size and age profile is likely to be able to support more jobs than at present. There is, however, considerable scope for debate about how big a change will occur.

How plausible are the overall job growth figures?

177. A number of factors are relevant here.

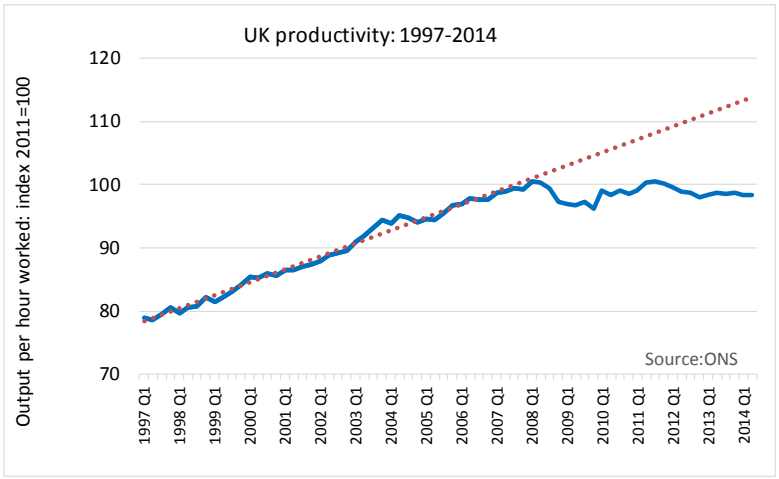
(a) Uncertainty in the figures

178. As already noted, the projections for job growth vary significantly from forecaster to forecaster and the individual forecasts for some authorities are heavily dependent on the assumptions made for the rate of growth in key sectors. For example, if OE had assumed that financial and business services would grow at the rate envisaged by CE, their projection for job growth in Cotswold would have been 30% lower. This indicates that there is considerable uncertainty in the projections, not that they are necessarily too high or too low.

(b) Improvements in productivity

179. Whilst both CE and OE assume some improvements in productivity, it is questionable whether they have made sufficient allowance for the likely improvements. In the last recession the fall in productivity was greater than in the previous two but so far there has been surprising little improvement in productivity as the economy has begun to recover from the downturn. (This helps to explain why there has been a faster than anticipated reduction in unemployment.) Figure 33 shows how UK productivity has departed from trend in the recession and so far failed to recover. Productivity improvements will need to be delivered if the recovery is to be sustainable, particularly bearing in mind the need for the economy to be competitive internationally.

Figure 33: UK Productivity



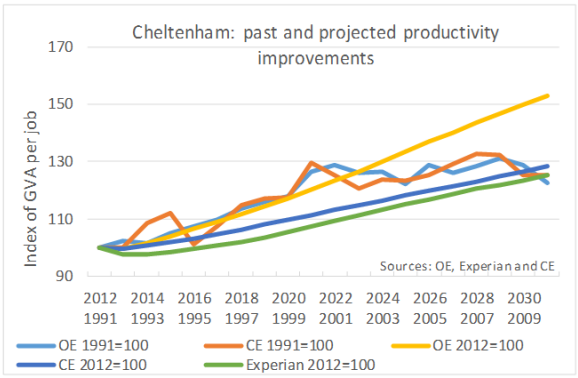
180. As the economy recovers from the downturn demand for goods and services will grow. That increased demand will not necessarily mean more jobs will be created. The last upturn in the economy showed what is called 'smart growth' with few extra jobs as output expanded. There are reasons to expect this will be more prevalent in this upturn because productivity has fallen so heavily – and unexpectedly.

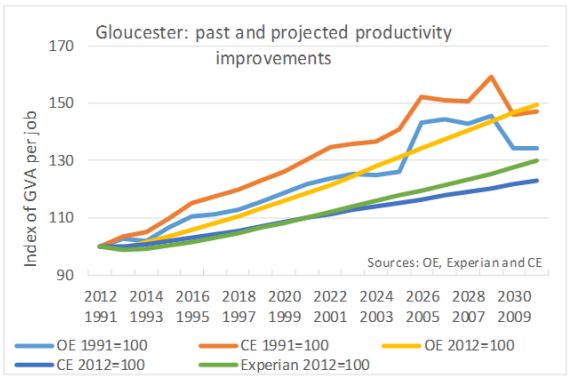
181. The processes which can generate growth without additional jobs include:

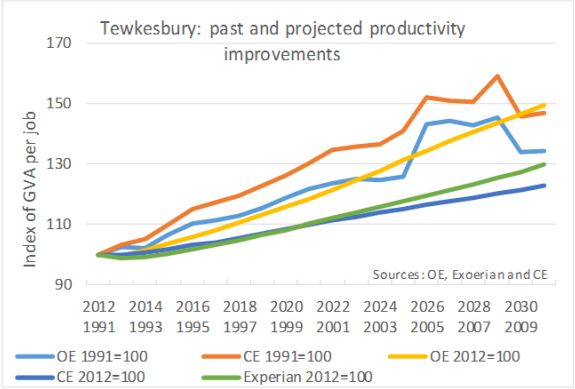
- Existing staff may be more fully utilised with the result that the same number of people produce more output;
- Many of the jobs that have been created over the last few years have been part-time. As the economy improves it is likely that people will be enabled to work longer hours or that jobs will be restructured to reduce the numbers of workers employed;
- More overtime working;
- Improvements in productivity arising from new technology. It is difficult to assess how much further these will go but, given the likely continuing cutbacks in public service jobs, such changes could well accelerate over the period to 2031.

182. One way of gauging how realistic the assumptions made about future productivity improvements are is to compare what is projected with what happened following the recession in the early 1990s. Figure 34 compares the productivity improvements achieved then with what is now projected. As can be seen, there is a marked difference between the CE and Experian projections on the one hand and the OE projections on the other. Whilst the OE projections assume productivity growth that is broadly comparable with that achieved after the early '90s recession, the CE and Experian projections suggest a rather slower improvement in productivity. This is at least part of the reason why they suggest that more jobs will be created.

Figure 34: Past and projected productivity improvements







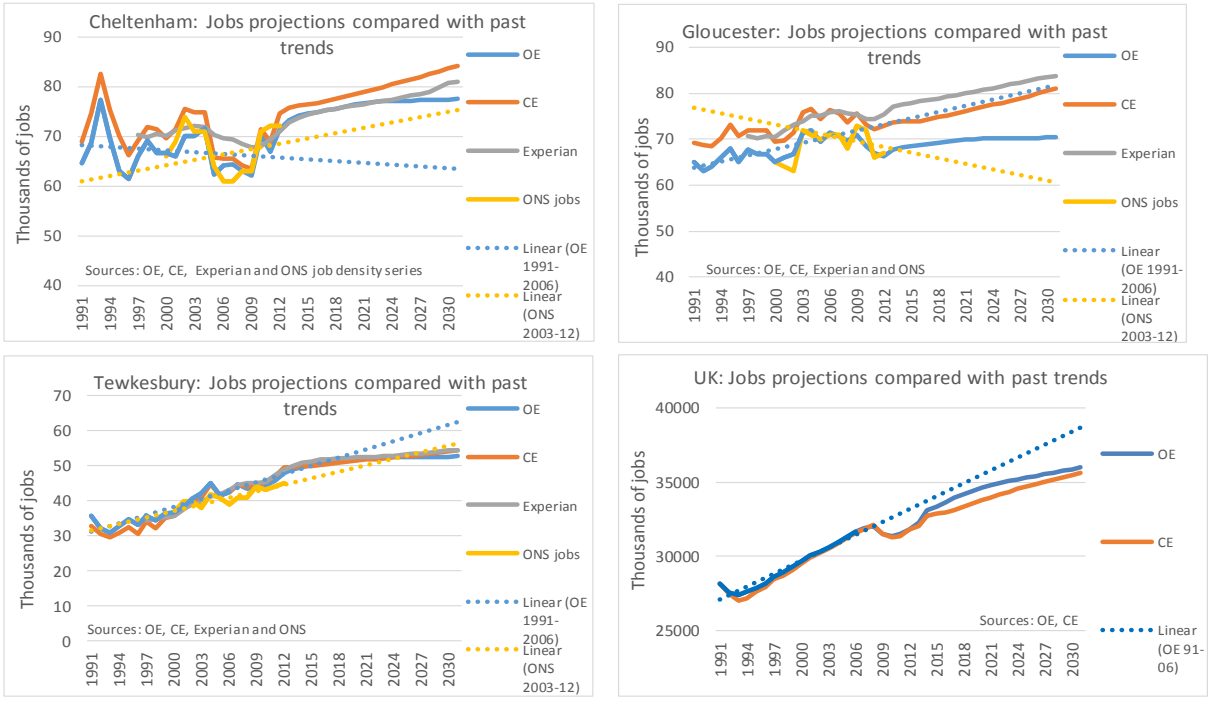
c) Comparison with past trends in job growth

183. The PPG stipulates that, "Plan makers should make an assessment of the likely change in job numbers based on past trends and/or economic forecasts as appropriate…" Figure 35 therefore compares the projections for job growth with past trends and adds the equivalent UK projections from OE and CE to enable their projections for the JCS authorities to be seen in the context of their view of the country as a whole.

184. Note that, when compared with past job growth, both the OE and CE projections for the UK are below past trends. This may reflect the fact that the growth in the England 16-64 population will be slower than in the past.

185. The relationship between the past trend and projections for Tewkesbury is similar to that for the UK projections. For Cheltenham and Gloucester, however, it all depends on the period from which the trend is taken. For Cheltenham the projections tie up reasonably well with the trend form 2003-12 whilst they bear no relation to the longer term trend. For Gloucester the reverse is true: the projections are broadly in line with the longer term trend but not with the short term trend. This suggest that this kind of simple comparison with past job growth trend is not a very reliable indicator.

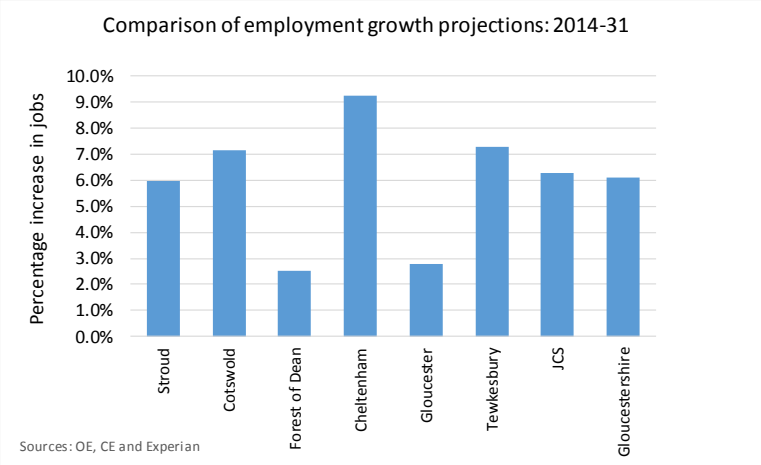
Figure 35: Comparison of projections with past trends



(d) Comparison with other areas

186. Figure 36 (below) compares the job growth projections in the three JCS authorities with the rest of Gloucestershire. It is notable that the projected growth rates in Gloucester and the Forest of Dean are much lower than for the other authorities.

Figure 36: Employment growth projections for Gloucestershire



Job growth 2014-31	Average of projections
Stroud	6.0%
Cotswold	7.1%
Forest of Dean	2.5%
Cheltenham	9.2%
Gloucester	2.8%
Tewkesbury	7.3%
JCS	6.3%
Gloucestershire	6.1%

Conclusions on the plausibility of the job growth projections

187. From the above analysis it is clear that there is considerable uncertainty attaching to the job growth projections for the three authorities: that is inevitable given the difficulties of modelling economic growth on this spatial scale, particular as the economy emerges from the deepest recession for more than a generation. However, compared with the productivity gains seen after the early 1990s recession, the projected productivity improvements over the next ten years seem low. This is particularly relevant given the much greater fall in productivity associated with this recession and the fact that significant productivity improvements have yet to be seen as economy emerges from the downturn. If future productivity gains were comparable with those seen in the 1990s, the projected increases in output could be achieved with much smaller increases in the number of jobs.

How many people will be needed to fill the extra jobs that are likely to be created?

(a) Assumptions about economic activity rates

188. How many people are needed to fill a given number of jobs without a change in commuting patterns depends on what proportion of the population is available for work; the unemployment rate and the number of people who have more than one job ('double jobbing'). The proportion available for work (i.e. the economic activity rate of the population) is expected to change with the raising of the state pension age, less generous pensions and better health in older age groups. Other factors such as the extension of fulltime education to 18, the growth in apprenticeships and reforms to working age welfare benefits may also have an impact.

189. There is considerable debate about how far economic activity rates will change and it is impossible to say categorically that one view is the right one. However, in estimating the working age population, and hence the housing implications of an economic projection, it is important to make assumptions that are consistent with the projections being interpreted. This is because the projections depend on the view taken on the relationship between the number of people in the population and the number jobs they will fill. Applying a lower economic activity rate assumption than that implicit or explicit in a forecaster's model would be inconsistent with the forecast as, had the forecaster used a lower activity rate, he would have concluded that there would have been fewer jobs in the economy – and hence fewer jobs to distribute between local authorities.

190. It should be noted that in this area the CCHPR has taken a different view from that adopted by Nathaniel Lichfield and Partners who have also advised on the JCS. This is discussed further in Appendix F.

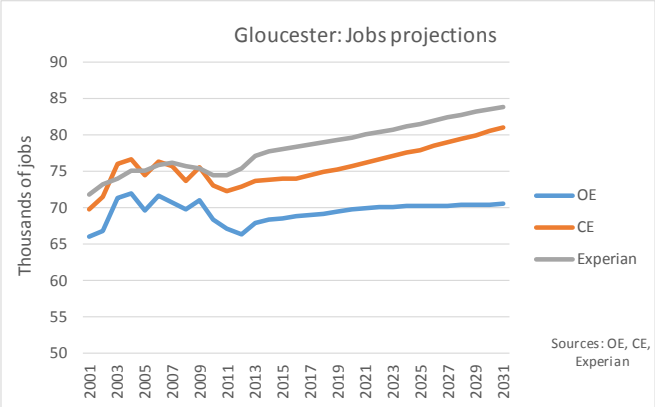
191. In this report the population implications of CE projections have been calculated by assuming that economic activity rates change in line with CE's projections for activity rates in the South West. The issue does not arise in interpreting the OE and Experian projections as they include estimates of the 16-64 or working age populations in each authority which can be compared with the population projections for those age groups derived from ONS's 2012 SNPP.

(b) Period to be used in estimating the population implications of a job projection

192. A particular difficulty in assessing how many homes will be needed to support a projected increase in jobs as the economy moves out of the downturn is that the number of additional jobs to be supported depends heavily on the period over which the assessment is made. Figure 37 shows the three projections for Gloucester for the period from 2001 onwards. As can be seen there are considerable fluctuations in the number of jobs there are thought to have been in Gloucester over the period 2006 to 2014, fluctuations which are large compared with the total job growth projected over the period to 2031. This means that the increase in jobs over a period to 2031 depends significantly on when the period considered starts. Taking the CE projections as an example, if the period starts in 2006 it is 4778; if it starts in 2011it is 8769 and if it starts in 2014 it is 7217. The OE projection is even more

difficult to fathom: if 2006 is taken as the starting date planning should be on the basis that 1056 jobs are to be lost whereas if 2011 is the starting date an increase of 3372 jobs should be assumed. It is clearly not acceptable to have an estimate of the homes needed to support economic growth that fluctuates so wildly.

Figure 37: Example of impact of choice of start date on projected job increase

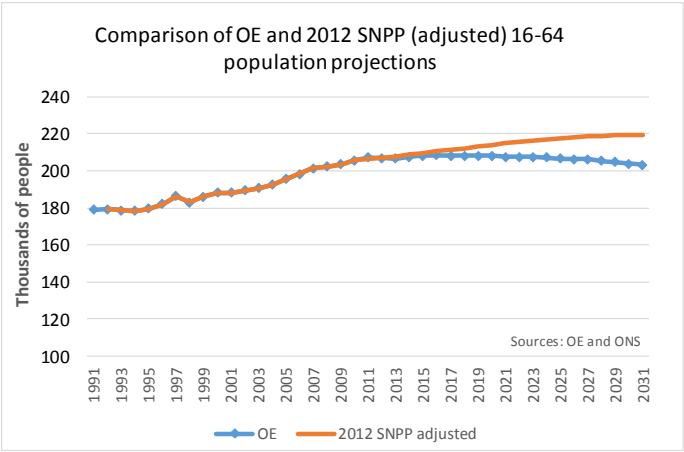


Jobs increase	2006-31	2011-31	2014-31
OE	-1056	3372	2109
CE	4778	8769	7217
Experian	8020	9340	6160

193. To avoid this the assessments made in this report have been based on the period 2014-31. That is the period after the fluctuations caused by the economic downturn and its immediate aftermath and might be thought to represent the forecasters' medium term view. Moreover, from a very practical point of view, it is the period from now onwards that is most relevant: unless the view is taken that current commuting patterns are unacceptable, the key issue is to ensure that there is not such a mismatch between future job growth and future housing provision that commuting patterns become unsustainable.

Oxford Economics projection

Figure 38: Comparison of OE and ONS (adjusted) population projections for 16-64s in JCS area

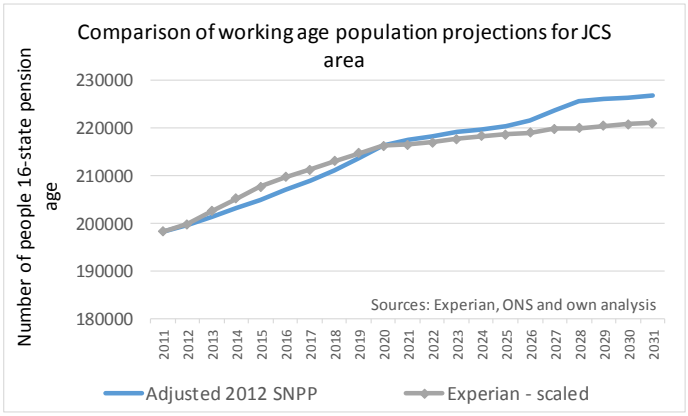


194. Figure 38 (above) compares the OE projection for the 16-64 population of the JCS with the projection produced by adjusting 2012 SNPP to compensate for low UK migration flows and UPC in producing the demographically-based OAN. As can be seen, by 2031 there is a substantial margin between the 16-64 population OE project will be needed and that assumed in the demographically-based OAN. This suggests that there is no need to add additional homes to the demographically-based OAN – and, indeed, that building that number of homes would allow more jobs to be supported than OE believe are likely to be created.

Experian projection

195. A similar comparison is possible with the Experian projection. Experian estimate the working age population, which they define to be those over 15 and under the state pension age (which is, of course, scheduled to go up). Again the comparison is made with the 2012 SNPP adjusted for low UK migration flows and UPC. The Experian projection has been scaled up to reflect the actual working age population in 2011.

Figure 39: Comparison of OE and ONS (adjusted) population projections for 16-64s in JCS area



196. In the early years of the plan period the Experian projection is slightly above the 2012 SNPP projection (adjusted for low internal migration in the 2007-12 trend period and UPC). However, the difference is not large and may not exist in practice if productivity increases at anywhere near the rate achieved in the equivalent period following the early '90s recession. By the second half of the plan period there is a reasonable margin between the demographically-estimate working age population and that suggested by Experian. This also suggests that there is no need to add to the demographically-based OAN in order to support economic growth.

Cambridge Econometrics

197. CE produce projections of both economic activity rates by age and gender for the South West and for the UK as a whole. They do not produce projections at the local authority level but these can be estimated if it is assumed that the relationship between the CE activity rates for a local authority and the CE rates for the South

West is the same as the relationship between the census 2011 activity rates for the local authority and census rates for the South West. Future CE activity rates at the local authority level can then be estimated on the assumption that the local authority rates change at the same rate as CE's projections for the South West. With these additional assumptions it is possible to estimate the change in population needed in the JCS authorities to support the job growth projected by CE using economic activity rates that are consistent with the CE projections.

198. The results are set out in Figure 40, with negative numbers indicating that the demographic OAN would support more jobs than are projected by CE. The overall conclusion is that the combination of the increases in the population (particularly those aged 16-64) and the changes in activity rates assumed by CE, there is no need for extra homes in the JCS area as a whole to support economic growth.

Figure 40: CE projections: homes needed in addition to demographic OAN: 2011-31

	Cheltenham	Gloucester	Tewkesbury	JCS	Gloucestershire
CE	800	-1700	300	-600	6100

Conclusions on the number of homes needed to support economic growth

199. The key points from the above analysis are:

- There are a substantial uncertainties in any econometric projection of job numbers at the local authority level and hence in estimates of the implications these may have for an area's housing requirement. Such calculations should be regarded as broadly indicative of a potential pressure on the housing stock and not regarded as exact or certain.
- In particular, faster improvements in productivity akin to those seen in the 1990s could mean many fewer jobs are created, at least in the next ten years. Given that the drop in productivity in the last recession was greater than in the previous two, productivity improvements larger than those seen in the 1990s could well occur.

The analysis presented above suggests that, if the three econometric forecasts are interpreted on a basis consistent with the different relationships between jobs and working age people implicit in each forecasting model, no additional homes are needed above the demographic OAN for the JCS area as a whole.