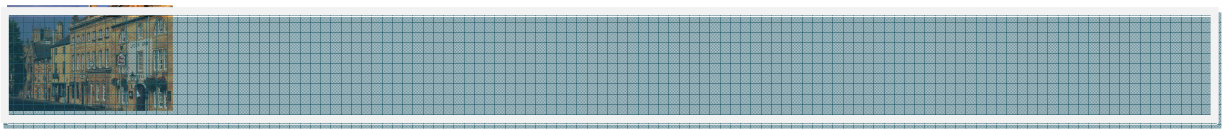
Population Growth & Total Housing Requirements for Stroud District

Housing requirement update July 2013

Keith Woodhead



About the author

Keith Woodhead is an independent planning consultant specialising in strategic planning policy and research matters, demographic and economic research, strategic planning for housing, town centres and rural development. The practice was founded in 2010 building on his wide experience in Planning and local government since 1972.

Formerly Head of Planning and Senior Policy Manager at South West Regional Assembly and then South West Councils, Keith set up as an independent planning consultant focusing particularly in LDF and now Local Plan related work on the cessation of the Regional Planning Bodies. Commissions over the past three years have included Plan preparation (particularly housing and economic growth issues) and related work for a wide range of local authorities including:

North Somerset
South Gloucestershire
Bath & North East Somerset
Cornwall
Wiltshire
The Planning Advisory Service
Stroud
Cotswold
West Dorset
Weymouth & Portland
W Oxfordshire

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1. Purpose of this Report

1.1 The report Population growth & total housing requirements for Stroud District, was produced for Stroud District Council in August 2012. A further document, Evidence review update, was produced in April 2013 and incorporated updated material from the (then just published) DCLG Interim 2011-based household projections. This report consolidates and expands on the evidence in the April 2013 and further examines the implications of employment growth forecasts on the future housing requirement. A summary of the April 2013 Evidence review update may be found in Appendix 1 to this report.

1.2 The 2012 report was intended to inform the Council's evaluation of responses to recent consultation on its Preferred Strategy and its proposals for how best to distribute 3,200 additional homes, giving a total including those already allocated of 9,350. This is alongside a target of up to 6,400 jobs across the district 2006 - 2026. The report concluded that the time horizon for the Plan should be extended to 2031 and that the overall total net additions to the housing stock be set as a range between 9,260 and 11,500. Following evaluation of more recent evidence, this range was narrowed in the April 2013 review paper to 9,350 – 10,500 dwellings 2006-31, with a recommendation, based on the then just published DCLG Interim 2011 Based Household Projections, to adopt a revised figure of 9,500 (see Table 3 and para A9 of Appendix 1 below).

1.4 Since that time an interim set of ONS sub-national population projections has become available (Sept 2012), the second data release from the 2011 Census (Jan 2013) and, most recently, interim household projections from DCLG (April 2013). The perspective on economic prospects, both locally and nationally, has also changed to some extent since August 2012 and this needs to be taken into consideration. While prospects for a sustained emergence from the recession of 2008/09 must remain somewhat tentative, there are at least signs of consistent, if weak, recovery.

1.5 These factors now need to be set alongside the conclusions of the preceding papers.

2. Further evidence

2.1 The April 2013 report demonstrated that a total housing figure for the Plan of 9,500 2006-31 was supported by the evidence. However, the upper range figure of 11,500 was not, being derived from now out-dated 2008 DCLG household projections. The latter reflected data pre-dating the impact of the 2008/09 recession and its subsequent effect on economic growth and household formation.

2.2 The recommended level of growth in housing was set alongside Stroud's emerging economic prospects in the original 2012 report. Its main findings were:

2.2.1 The local economy had had its share of setbacks since the beginning of the recession but, relative to other areas appears to show signs of more rapid recovery. Unemployment, though still high, has been falling. Employment on evidence available so far was holding reasonably steady, though not increasing, and there had been a growth in the numbers self employed. Male economic activity rates remained high (though declining somewhat) and female rates were rapidly increasing.

2.2.2 The then most recent Cambridge Econometrics (CE) LEFM model employment projections for GCC showed slow growth until 2016, in line with HM Treasury analysis of independent forecasts. After that employment growth was projected to accelerate to the extent that, compared with the 2008 pre-recession CE projections for the (now defunct) Regional Spatial Strategy, the lost growth in jobs due to the recession and the current period of low growth is effectively wiped out by 2026.

2.2.3 However, a number of factors were identified which could derail this forecast. A major consideration was the major role that productivity improvements make towards annual economic growth, job growth being almost a residual factor that needs headline GVA increases, depending on a number of local factors, of around 1.5% or 2.0% pa before employment can increase. Growth below these rates can mean job losses even though there is still some positive GVA change.

2.2.4 Contrary to this, the long term improvement in productivity had been slowing as diminishing returns set in. Many service jobs in the so-called post industrial economy cannot easily become more productive.

2.2.5 Also, it was by no means clear that there will be much potential for a post recession/ depression “bounce back” in the economy that the Cambridge Econometrics jobs forecast shows in order to get back to the track of pre-recession trends by 2026 or so. Prolonged recessions damage capacity, particularly human capital, as people drop out of the labour market, lose previous skills by doing more mundane work and so on.

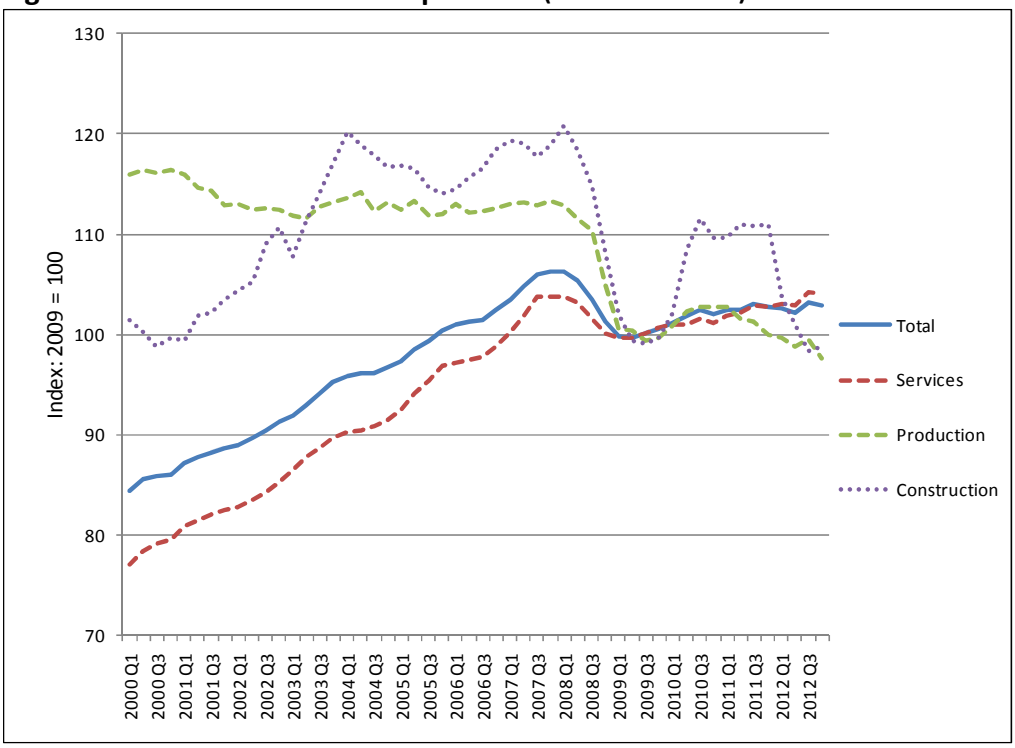
2.2.6 In support of the CE projection, however, the 4,000 increase in jobs projected is not large in historic terms and it may be that the problem lies more with undue pessimism in the 2008 based CE projection for Stroud.

2.2.7 What if job growth lower than forecast occurs? Stroud is well placed in relation to a number of large employment centres, particularly Gloucester, S Gloucestershire, Bristol and Swindon. The scale of these employment markets, even in an era of low national growth, makes it likely that any shortfall in Stroud’s growth would be readily absorbed but at the expense of increased commuting and a poorer overall level of sustainability.

2.2.8 For a fairly small area in employment and population terms, Stroud appears to be reasonably self contained on both residential and workplace related measures. However, the District suffers from substantial net commuting outflows to all of its neighbours as local residents in managerial and professional occupations have fairly restricted local job opportunities. This means that it has less resilience than might be expected in the event of reduced job growth before a less sustainable dormitory type function for the area begins to predominate.

2.3 In general, it was concluded that the proposed level of housing growth was easily sufficient to cope with the demands of the local economy and that it would not provide a constraint on the prospects for future job growth in the area. There is in fact little evidence that housing is significant constraint on local economic growth (see Appendix 2) and many of the most successful local economies in the UK are characterised by chronic pressures on their housing stock.[1] However, maintaining a balance between housing and job growth is an important factor in maintaining the quality of life of local workers, keeping commuting movements under some measure of control, reducing impacts on transport infrastructure and improving general levels of sustainability. As para 2.2.8 has commented, an undersupply of housing promotes more inward commuting and exacerbates local housing stress; a building rate that gets too far ahead of local job growth, amongst other things, leads to more "dormitory" settlements but, on a local scale at least, does not effectively reduce house prices.

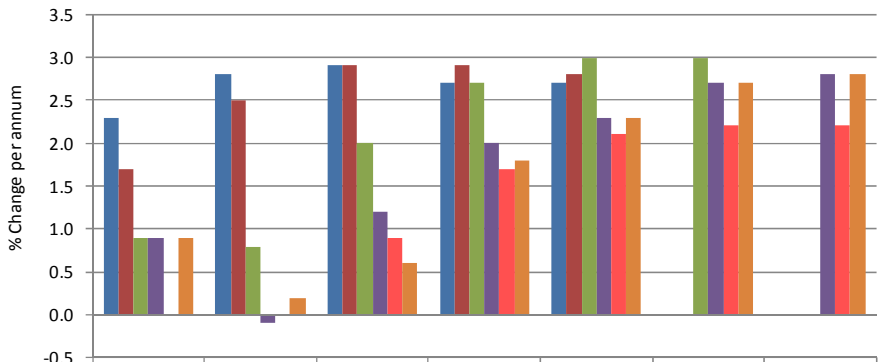
Figure 1 UK GDP and main components (Index 2009 = 100)



Source: ONS Note: ONS Jan 2013 estimate of GDP 2012 Q4

[1] Bristol, London, Exeter, Brighton, Cambridge, Oxford, Edinburgh, Aberdeen, Winchester, Reading, Harrogate, York, Sale, Chester for example.

Figure 2 The changing medium term prospects for the UK economy
OBR Budget Forecasts 2010-2013: annual % GDP Growth



	2011	2012	2013	2014	2015	2016	2017
Emergency Budget 06/2010	2.3	2.8	2.9	2.7	2.7		
Budget 03/2011	1.7	2.5	2.9	2.9	2.8		
Budget 03/2012*	0.9	0.8	2.0	2.7	3.0	3.0	
Autumn Statement 12/2012*	0.9	-0.1	1.2	2.0	2.3	2.7	2.8
HMT independent forecasts 02/2013		0.0	0.9	1.7	2.1	2.2	2.2
Budget 03/2013*	0.9	0.2	0.6	1.8	2.3	2.7	2.8

*Note: 2011 figure is actual outturn data. Source: HM Treasury

2.4 The recession of 2008/09 and the ensuing period of, at best, very growth have had a lasting impact on most sectors of the UK economy (Fig 1) and the pattern of repressed growth has been reflected in subsequent national economic forecasts. Since the August 2012 Stroud housing requirements report was produced, the date at which the national economy officially expected to return to any resemblance of its pre-2008 trajectory has been pushed back further (Fig 2). The Office for Budget Responsibility's March 2013 report for the Chancellor now gives 2016 as the earliest date that full growth is expected to return.

2.5 Revised local forecasts have also been produced by Cambridge Econometrics (CamEcon) using their Local Economy Forecasting Model (LEFM). The set dating from early 2012 (but actually derived from work in late 2011) that was used in the August 2012 report has since been replaced by figures first dating from late 2012 and made available in February 2013. These are shown in Table 1, and compared with the earlier 2011/12 figures and also with the pre-recession trend forecasts produced in 2007/08 by CamEcon for the now abandoned Regional Spatial Strategy for the South West.[2]

Table 1 Stroud: Recent forecasts of total employment 2006 - 31 (adjusted 2010 base)

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2025	2026	2031
Actual 2006-10	50.8	52.6	53.9	51.8	52.1														
LEFM 2007/08					52.1	51.6	51.8	52.0	52.2	52.4	52.5	52.7	52.9	53.0	53.2	53.3	54.1	54.3	
LEFM 2011/12					52.1	51.6	51.4	51.5	51.5	51.5	51.8	52.1	52.3	52.5	52.7	53.0	54.3		
LEFM 2012/13					52.1	51.6	51.4	51.4	51.6	51.9	52.2	52.5	53.0	53.5	54.0	54.4	55.6	55.8	57.0

Source: CamEcon LEFM
Note: These figures represent all jobs located in Stroud District, including self employment.

[2] The LEFM projections for 2011/12 and 2012/13 were supplied by courtesy of Gloucestershire County Council. Note that the 2011/12 and 2007/08 projections have been corrected to allow for discrepancies in the earlier forecast base at 2010.

2.6 It is notable that, in spite of the continuing depressed state of the national economy between 2008 and 2012/13, the latest CamEcon projection shows forecast growth of 4,800 jobs between 2006 and 2025, the latest date common to the original forecasts (Table 2). This compares with only 3,500 in the 2011/12 forecast and a surprisingly low 3,300 in the earlier RSS figures, in spite of the latter's assumption of an unbroken average rate of economic growth of 2.8% p.a. averaged over the SW Region to 2026. The reasons for this upward revision are not clear but are likely to reflect revisions in CamEcon's overall expectations for both the industries that the local area is strongest in and also with regard to the way some of those and other industries individually perform in Stroud relative to elsewhere. Using CamEcon forecasts of economic output growth (GVA) for the South West and UK which include individual years from 2026-31, the LEFM 2012/13 total employment forecasts were then extended to 2031 (see Appendix 3). This shows an increase of 6,200 jobs 2006-31, a figure very close to the Stroud Preferred Strategy (Feb 2012) target of 6,400 jobs over the period[3] but higher than the current draft Plan figure of 5,100.

Table 2 Stroud: Employment projections comparative change from 2006 (Jobs '000)

	Change 2006-25	Change 2011-25	Change 2006-31
Actual 2006-10			
LEFM 2007/08	3.3	2.5	-
LEFM 2011/12	3.5	2.7	-
LEFM 2012/13	4.8	4.0	-
Extended LEFM 2012/13	4.8	4.0	6.2

Source: CamEcon LEFM

2.7 The August 2012 Stroud Housing Requirements Report necessarily made use of the LEFM 2011/12 projections, then the latest available which only anticipated growth of 3,500 jobs net between 2006 and 2025. It should be noted that this was a time when the impacts of the post 2008 period of recession and, at best, sluggish growth were still emerging. In line with the LEFM 2011/12 figures in the August 2012 housing report, but projected on to 2031, the latest Draft Local Plan has a figure of 5,100 jobs 2006-31. The more recent LEFM 2012/13 projections, together with successive economic data releases since early 2013,[4] now strongly suggest that the Preferred Strategy figure of 6,400 was, coincidentally, closer to the picture of somewhat stronger local economic growth that is now emerging. The significance of this will be further discussed later in this report.

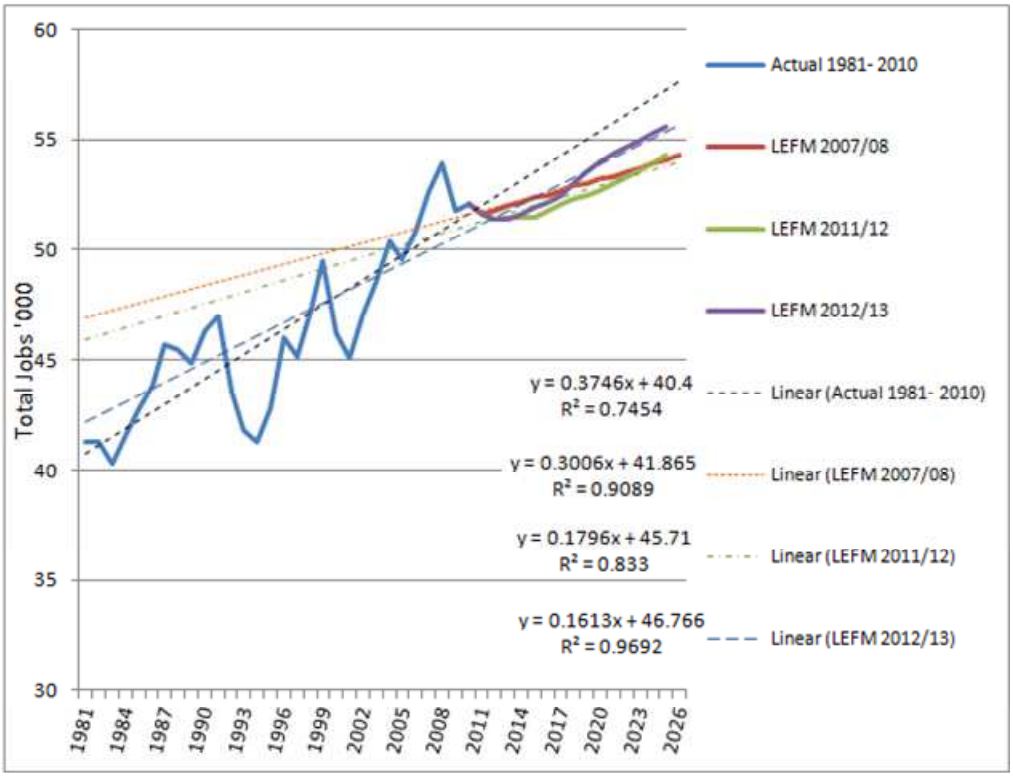
2.8 The overall rates of growth are shown by the trend lines in Fig 3 fitted to the three projections for the period 2011-25 and compared with a trend line fitted to the historic employment growth for Stroud 1981-2010. This shows that although the overall projected growth trend is significantly steeper for the latest 2012/13 figures than for the two earlier forecasts, the historic trend was steeper still. By the 2025 end date of the LEFM 2012/13 forecast, continuing the 1981-2010 trend uninterrupted would have resulted in total employment of 56,900, some 1,300 jobs higher than the LEFM 2012/13 figure for that year. Making the same comparison for 2031, continuing the long term trend would result in

[3] Stroud District Core Strategy: Preferred Strategy Consultation (Feb 2012) para 1.1.

[4] See for example NIESR "June GDP Estimates". http://niesr.ac.uk/press/june-2013-gdp-estimates-11463#.UdKvMIdwbIU

59,100 jobs (an increase of 8,300 2006-31) compared with the latest forecast of 57,000 (6,200 increase 2006-31).

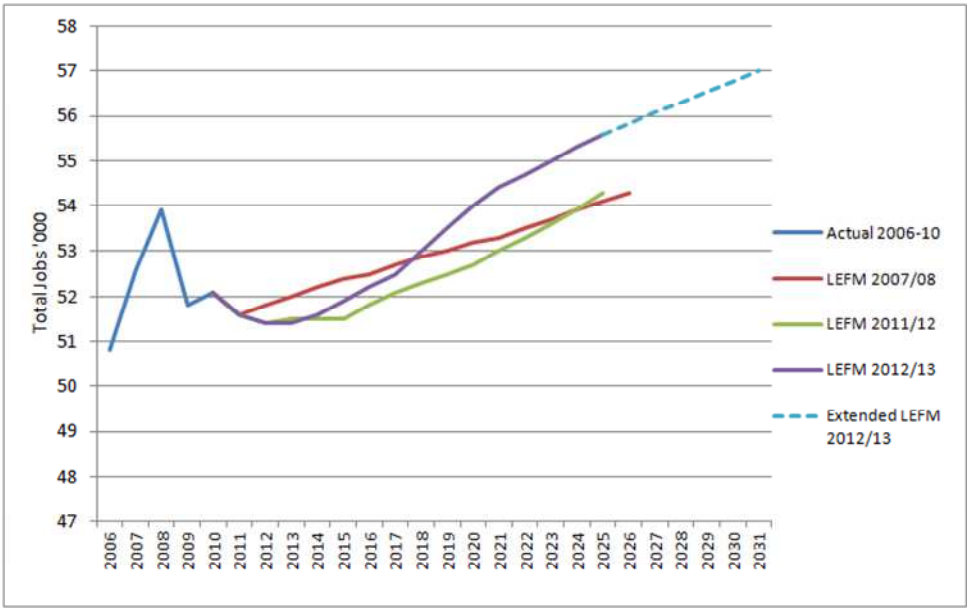
Figure 3 Stroud: Recent total employment forecasts & trends 2006 - 2025/26



Source: CamEcon LEFM

2.9 Figure 4 shows the detailed relationships between the projections together with the forward extension of the LEFM 2012/13 forecast to 2031.

Figure 4 Stroud: total employment forecasts detail 2006 - 31



Source: CamEcon LEFM

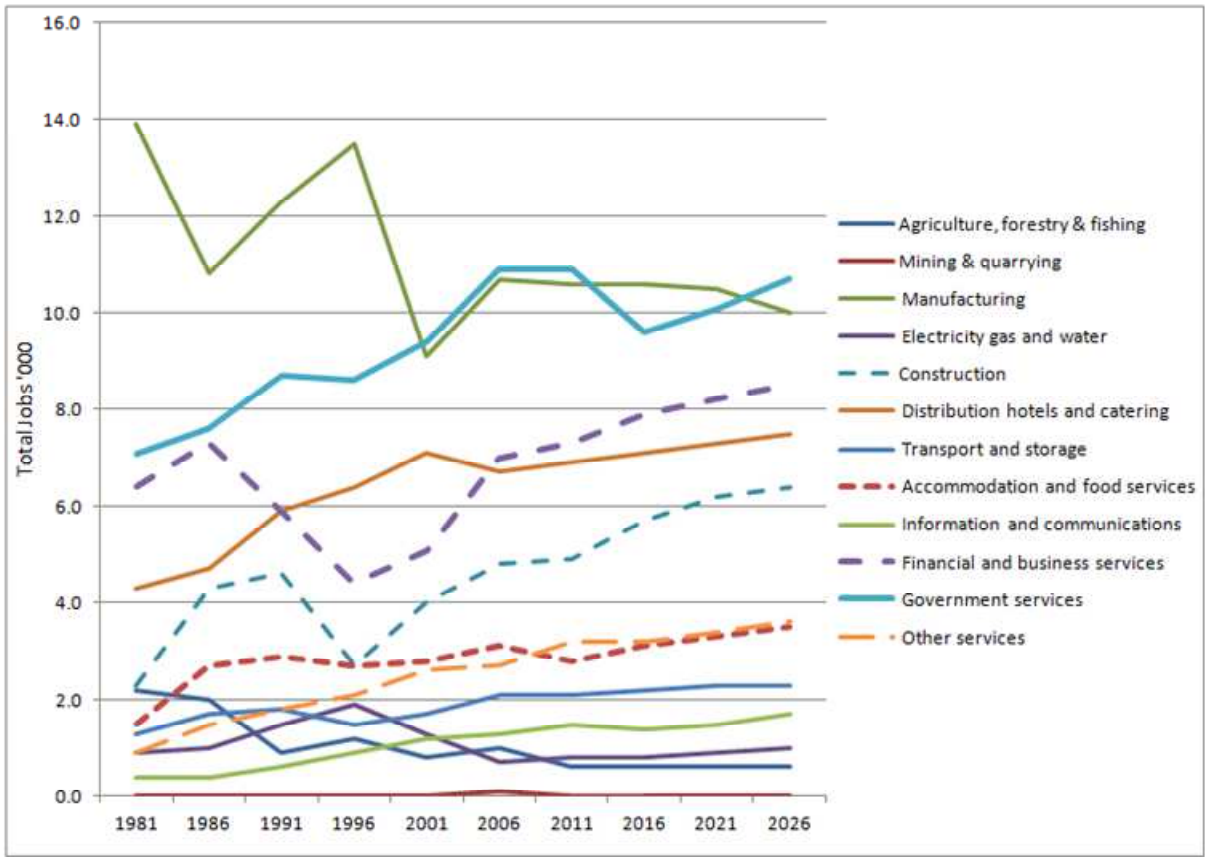
Table 3 Stroud: Forecast employment by broad industry

Jobs '000

	1981	1986	1991	1996	2001	2006	2011	2016	2021	2026	Change 2006-26
Agriculture, forestry & fishing	2.2	2.0	0.9	1.2	0.8	1.0	0.6	0.6	0.6	0.6	-0.4
Mining & quarrying	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	-0.1
Manufacturing	13.9	10.8	12.3	13.5	9.1	10.7	10.6	10.6	10.5	10.0	-0.7
Electricity gas and water	0.9	1.0	1.5	1.9	1.3	0.7	0.8	0.8	0.9	1.0	0.3
Construction	2.3	4.3	4.6	2.7	4.0	4.8	4.9	5.7	6.2	6.4	1.6
Distribution hotels and catering	4.3	4.7	5.9	6.4	7.1	6.7	6.9	7.1	7.3	7.5	0.8
Transport and storage	1.3	1.7	1.8	1.5	1.7	2.1	2.1	2.2	2.3	2.3	0.2
Accommodation and food servi	1.5	2.7	2.9	2.7	2.8	3.1	2.8	3.1	3.3	3.5	0.4
Information and communicatio	0.4	0.4	0.6	0.9	1.2	1.3	1.5	1.4	1.5	1.7	0.4
Financial and business services	6.4	7.3	5.9	4.4	5.1	7.0	7.3	7.9	8.2	8.5	1.5
Government services	7.1	7.6	8.7	8.6	9.4	10.9	10.9	9.6	10.1	10.7	-0.2
Other services	0.9	1.5	1.8	2.1	2.6	2.7	3.2	3.2	3.4	3.6	0.9
Total	**41.3**	**43.9**	**47.0**	**46.0**	**45.1**	**50.8**	**51.6**	**52.2**	**54.4**	**55.8**	**5.0**

Source: CamEcon LEFM 2012/13

Figure 5 Stroud: Forecast employment by broad industry



Source: CamEcon LEFM 2012/13

2.10 Table 3 and Fig 5 show how LEFM 2012/13 projected growth in the various broad industry sectors across Stroud compare in the period up to 2026.[5] The largest increases are for financial and business services and for construction with net growth of 1,500 and 1,600 respectively. The latter figure is probably more volatile than that for financial and business services but would represent a change to more stable investment in the sector, something very much in line with current Government priorities of course. Of the other sectors

[5] N.b figures for 2026 use the extended projection base given in Appendix 3.

manufacturing, a critically important activity in Stroud, continues its long term, productivity driven decline in jobs, but at a much slower rate than in the past as shown in Fig 5.[6] The distribution, hotels and catering sector (which includes retail) shows steady growth over the period. After an initial steep decline, government services (which include education, local government and the NHS) show a recovery from 2016, although by 2026 numbers employed are still not quite forecast to return to pre 2011 levels.

2.11 To sum up, the changes in job numbers within the industrial components of the LEFM 2012/13 forecast appear to contain no surprises. They are broadly in line with past patterns and anticipated rates of economic recovery although, among the higher growth sectors some, such as construction, may be more subject to variation than others depending on the stage of the economic cycle in the mid 2020s. In the normal course of things we would expect at least one, if not two, economic down-turns to occur between 2016 and 2031 so all of the detailed projections are assumed to average out the effects of this. The assumption here of course is that these potential recessions are relatively minor and that none even approach the scale of economic damage sustained in the period following 2008/09.

2.12 It has already been noted above that housing availability is rarely a strong limiting factor regarding the growth of local economies. However, maintaining an adequate level of housing opportunities, an important element contributing towards local quality of life, is an important issue and a key feature of sustainable communities. Attaining a broad balance between additional housing and employment is therefore an important planning consideration, as is also making provision for inevitable non local job related housing demand. Bearing this in mind, what does the most recent set of job projections imply?

2.13 The following section of the report looks at how different elements of the demographic and economic evidence can be used to provide alternative estimates of the future housing requirement. These are compared and a final recommendation is then made.

[6] The actual value of manufacturing output will continue to rise significantly however.

3. Using the employment forecasts to "stress test" the Local Plan housing requirement

Fig 6 Bracketing a target

3.1 Given the body of evidence discussed above, in Appendix 1 and in the 2012 Housing Requirements report, it is clear that there are a range of factors – demographic/ housing stock based and economic based – which can influence Stroud's future housing requirement. In developing these themes it is important to bear in mind that there is no single "right" answer to this; instead we look at the lines of evidence to narrow down the range of solutions. In this way we can aim to arrive at a reasonable figure or range of figures for housing provision. This process of "bracketing the target" is analogous to the process of range-finding in golf or artillery, or getting the right exposure in photography (Fig 6).

<u>Housing requirements from economic growth based projections</u>

3.2 Much of the relationship between jobs and housing is mediated by the effects of people commuting in and out to work across the District boundaries. The August 2012 Stroud housing requirements report (para 3.47) showed that Stroud is relatively self contained in commuting terms, especially considering that it is a fairly small district surrounded by major employment centres. Travel to work data from the 2011 Census is not expected to become available until at least the autumn of 2013, so much reliance still has to be placed on the 2001 data. A more recent study by ONS in 2008 showed that Stroud is characterised by average levels of self containment compared with English first tier local authorities defined by residence (67%) and a moderately high level of self containment defined on workplace (73%).[7] However, all of the significant commuting net flows are negative, with Stroud losing significant numbers of commuters to surrounding areas. This pattern is due to the fact that many workers in professional, managerial and higher order technology-based jobs work outside the District. The self containment tends to apply more to jobs requiring less advanced educational qualifications.

3.3 In line with this, in 2001 the census recorded a substantial negative commuting balance with the adjacent major employment centres in Gloucester and the West of England which between them accounted for 60% of the net commuting outflow from Stroud.[8] From this it was concluded in the 2012 report that, Stroud would benefit from job growth in

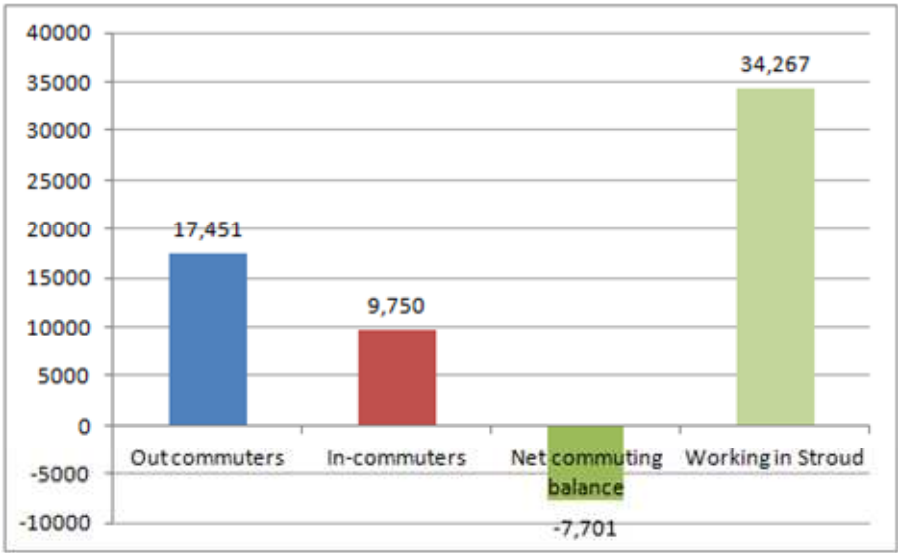
[7] ONS 2010 <u>A study of commuting patterns in Great Britain based on the Annual Population Survey 2008.</u> Residence based self containment refers to the proportion of Stroud residents who both live and work in the District, whereas workplace self containment refers to the proportion of workers occupying jobs in Stroud that also live in the District.

[8] Mainly S Gloucestershire and City of Bristol which between them accounted -2,342 of the net commuting balance. Gloucester City accounted for a balance of -2,290. Detailed flows are given in the August 2012 housing requirements report.

professional and managerial occupations in order to improve the balance of the commuting flows and to provide better quality local job opportunities.

3.4 Given a projected jobs growth in Stroud of 6,200 and a Plan objective of 6,400 between 2006 and 2031, how many additional members of the local resident workforce would be required in order to keep commuting levels out of and into the District in the same degree of balance as in 2001? (Fig 7).

Fig 7 Stroud: Broad commuter flows 2001



Source: NOMIS/ 2001 Census

3.5 The results of this analysis are shown in Table 4. The LEFM 2012/13 jobs forecast, which provides the starting point for the analysis, represents the lower limit of the additional workforce required to meet the demand created by the additional jobs in the District to 2031. The upper limit is then provided by the higher target of 6,400 jobs from the Preferred Strategy 2012. Table 5 shows how this growth translates into an overall housing requirement, taking account of the anticipated needs, not only of the economically active, but also of population ageing and the related increase in demand from non economically active, mainly retired local and migrant households, as well as an overall projected numerical decline in Stroud's working age population over the period to 2031.[9]

3.6 Apart from the commuting data for which percentages only were used from 2001, Table 4 and 5 use data from the most recent releases from the 2011 Census, the appropriate Census table references being included in the description of the variables. Note that in Table 5 the proportion of dwelling stock vacancies/ second homes of 4.4%, derived from the 2011 Census data on vacant household spaces, and represents a slight increase in the levels used in the August 2012 housing requirements report. Vacancies = 3.2% (the 2001 level) and 3.8% (ONS/NOMIS estimate for 2008) (August 2012 Stroud housing requirement report para

[9] Making clear the allowance made for non employment related housing requirements is a particularly important consideration following a recent High Court judgement regarding the Inspector's report on the North Somerset Core Strategy. University of Bristol v. North Somerset Council, High Court Queen's Bench Division 14th Feb. 2013 (Case No. CO/5259/2012).

3.20)[10] Data in Table 5 regarding the change in working age population numbers (variable h) and the population ageing factor (variable n) are derived from the Extended 2011 based population and household projections. The description of the calculation of the variables is given in full in both tables.

Table 4 Calculation of additional economically active local residents required to 2031

Work & the impact of commuting (2001 data)		
a) Total living & working in Stroud		34,267
b) Total commuting out of Stroud to work		17,451
c) Total commuting into Stroud to work		9,750
d) Total economically active (in work) (a)+(b)		51,718
e) Out commuters as % of economically active in work (b)/(d)%	33.74%	
f) Total local jobs (a)+(c)		44,017
g) In-commuters as % of jobs (c)/(f)%	22.15%	
LEFM 2012/13 jobs projection: additional economically active required @ 2001 commuting % flows		
i) Increase in Stroud total jobs (including self employed)		6,200
ii) In-commuters 2001 as percentage of jobs (g)	22.15%	1,373
iii) Jobs available to local residents (i)-(ii)	77.85%	4,827
iv) Percentage of local residents in employment out-commuting (e)	33.74%	
v) Total new econ. active residents in work required (iii)/(1-(iv)/100)		**7,285**
vi) Total new econ. active residents in work less allowance for 5% "double jobbing" =(v)-5%		**6,920**
vii) Additional local economically active including 3% unemployed (vi)/(1-0.03)		**7,135**
viii) Additional local economically active (including unemployed) @ Local Plan 6,400 jobs target (T) = T/(i) x (vii)		**7,365**

Notes: 2001 total residents in work = 51,718 (Fig 7); 2011 total residents in work = 55,589

3.7 After rounding, Table 4 shows that the range of additional jobs available to local people is projected to be 4,827 in 2031 for the LEFM 2012/13 forecast. This is after allowing for inward commuting (22.15% of all jobs) and the 33.74% of economically active residents in work who travel to employment outside the District. Although not shown in the table, this corresponds to just under 5,000 locally available jobs under the Local Plan target scenario of 6,400 additional jobs. Using a (conservative) estimate of 5% of workers holding more than one job in 2031 ("double jobbing")[11] together with unemployment at an average of 3%,[12] this results in a total requirement of between **7,100** and **7,400** economically active residents (variables vii and viii in Table 4).

[10] The August 2012 Stroud housing requirement report (para 3.20) gave these earlier figures for vacancies as 3.2% (the 2001 level) and 3.8% (ONS/NOMIS estimate for 2008).

[11] "Double jobbing" becomes more common as the number of part-time jobs and also self employment increases. Table 7 shows the increase in part-time employment in Cotswold in recent years.

[12] Although Stroud has shown an unemployment rate of under 3% unemployment (ILO definition including those seeking work but not necessarily claiming benefit), 3% is used here as a reasonable approximation to the minimum level of unemployment achievable given normal rates of turnover in the labour market.

Table 5

Calculating an employment growth based projection of housing requirements to 2031

Households & economically active:		
(a) Total households 2011 Census (ONS Table ks105ew)		47,794
(b) Pensioner households (all aged 65+) (ONS ks105ew)		11,665
(c) Pensioner households as % of total	24.41%	
(d) Total households with one or more economically active member		36,129
(e) Households with econ. active member(s) as % of all households (b)/(a) %	75.59%	
(f) Total economically active 2011 Census (ONS Table ks603ew)		59,980
(g) Average No. of econ. active per working age group household (f)/(d)	1.66	
(h) Allowance for vacant dwellings (ONS Table QS417ew)*	4.4%	
(j) Net change in working age population (16-64) to 2031 (Extended 2011 based projn)		-3414
(k) Stroud mean labour force participation rate 2004-2012 (NOMIS)	82.2%	
(m) Net economically active population change to 2031 (h)*(k)%		-2806
(n) Population ageing effect (Increase in ratio of population 65+ to 16-65 popn 2011-31)	68.21%	
Housing requirement based on LEFM 2012/13 job growth projection:		
(i) Projected net local economically active requirement (including 3% unemployment) (Table 4 row (vii))		7,135
(ii) Local economically active requirement allowing for change to 2031 (i)-(m)		9,941
(iii) Total additional econ. active households generated (ii)/(g)		5,988
(iv) Total additional non econ. active households generated (iii)*(c)%		1,461
(v) Growth in relative no. of non econ active hholds 2011-31 (iv)+(n)%		2,458
(v) Total dwellings required with allowance for vacant dwellings ((iii)+(v))*(1+(f)%)		**8,818**
(vi) Total dwellings required @ Plan Target 6,400 jobs		**9,102**

3.8 Table 5 shows that Stroud's total number of economically active residents in 2011 was 59,980 (variable f). To this therefore we need to add the 7,100 to 7,400 identified as the additional requirement for economically active which, rounded, gives a range of between 67,100 and 67,400 in 2031. However, as Table 5 variable (j) shows, the total number of people in the main working age groups between 16 and 64 locally are projected to decline by 3,414 even at the rates of growth suggested by the Extended 2011 based projection. Following allowance for Stroud's 82% average labour force participation rate,[13] we see that this shortfall is equivalent to 2,806 economically active people (variable m). Variable (ii) shows that this brings the net requirement for additional economically active to a little under 10,000 people (9,941).

[13] In this report the convention is followed of using the term "labour force participation rate" to refer to the overall proportion of the population in the 16-64 working age groups who are economically active (i.e. in work, recorded as off work sick, or unemployed and actively seeking work. The term "economic activity rate" is then used for members of smaller population subgroups (e.g. five year age groups) that are economically active.

3.9 We then allow for the average number of economically active people in households with one or more working age members (1.66 per household)[14] to give us a total of just under 6,000 additional economically active households needed to fill the LEFM forecast additional jobs by 2031 (variable iii). To this is then added the number of non economically active (retired) households (variable v), a total of 2,458. This is comprised of the number of entirely pensioner households calculated at the 2011 proportion of these to working age households (variable iv) multiplied by the increase in the ratio of population aged 65 and over to the 16-64 population in the period to 2031. Allowing for vacant dwellings at 4.4% of stock this gives a final total housing requirement for the LEFM forecast of 8,818 and a Plan based job growth target increase of 9,102. Rounding, this gives a range of between **8,800** and **9,100** additional homes implied by the employment projections.

3.10 In my view, this result is sufficiently close to the recommendation in the April 2013 Evidence Update paper (Appendix 1 para A16) to confirm that the figure of 9,500 dwellings is still robust, particularly when bearing in mind the improving trend of recent economic forecasts for Stroud and the clear priority of the Government to set out in the NPPF "to boost significantly the supply of housing"[15] . Using the "bracketing the target" principle outlined in Fig 6, I therefore take the results of the job led housing growth analysis to be further confirmation that the proposed housing requirement is fully in line with likely economic growth figures.

3.11 It could be argued of course that the economic forecast evidence provides sufficient justification for reducing the housing requirement in the Plan to 9,100 or even 8,800. However, it is necessary to bear in mind the emphasis in the NPPF on the need to "identify the scale and mix of housing and the range of tenures that the local population is likely to need over the plan period which....meets household and population projections, taking account of migration and demographic change". [16] The Government's "localist" approach underpinning the NPPF requires that the Plan should address growth pressures occurring within its area, unless there has been explicit agreement reached with neighbouring local authorities to divert growth to their area through the Duty to Co-operate.[17] As the 9,500 figure is based on the most recent Government population and housing projections the job forecast led figures on their own may not be sufficient justification for a reduction to the lower range to be found sound.

<u>Other approaches</u>

3.10 Work on the North Somerset, Bath and NE Somerset and the South Gloucestershire Core Strategies in 2010 and 2011 included use of a ratio of new homes to new jobs to calculate future dwelling requirements.[18] Based on the established long term pre-recession relationships between population and household growth and economic change in pre-

[14] Note that this is an average per household and does not imply that all individual households with one or more working age member necessarily are economically active.
[15] NPPF para 47.
[16] Ibid para 159.
[17] Ibid para 178.
[18] In the case of N Somerset and B&NES this was central to the calculation of the final housing requirement; in S Gloucestershire the ratio was used to provide an external robustness test to the requirement that was arrived at by means of the 2010 based ONS SNPP. =

recession trends (i.e. in a "policy off" scenario), this was used as a means of reflecting the very different housing requirements in those places following the impact of the recession on job growth. This approach was seen to be necessary to break away from projection methods that were still heavily dependent on pre-recession data. The latter included demographic projections led by the relationship between projected job growth (post recession) and a migration "top up" to ensure that the numbers economically active in the population could meet the projected job requirement where it was felt that the historic migration statistics were unlikely adequately to reflect these changes in these parts of the West of England. [19] Instead the use of the ratio method was seen to continue the established relationship between homes and jobs growth but under the different prevailing economic circumstances.

3.11 Is this a reasonable approach in the case of Stroud? The homes/jobs ratio (H/J) method was used in a situation where there had been the major economic shock of the so-called world "credit-crunch" in 2007/08 followed by the deep recession of 2008/09 but no post 2008 data. We now broadly know the economic direction of travel as Fig 2 demonstrates therefore it is reasonable now to return to more conventional local employment and housing requirements projection methods. The fact that the 2012/13 Cambridge Econometrics (CE) employment growth projection 2006-26 compared with the earlier pre-recession trend RSS projection (Fig 4) also strongly suggests that there is no need to apply the homes/ jobs ratio approach to calculating housing requirements in Stroud. The recession impacts projected by CE compared with their job projections for the RSS appear to have little lasting effect on Stroud (at least by the end of the Plan period). This is very different to the situation in North Somerset and B&NES.

3.12 In addition, in 2012 the preliminary Inspector's report on the B&NES Core Strategy Examination criticised the use of the ratio and found that this aspect of the plan could not be considered to be sound.[20] As a result, B&NES are resubmitting the plan in 2013. However, it is still worthwhile recalculating the ratio for Stroud (originally set out in Table 15 of the August 2012 report) for comparison purposes. The results of this are repeated in Table 6.

3.13 The trend dwellings requirement based on the (2003 based) Chelmer population projection model RSS projections in Table 6 show a dwelling requirement of just over 7,700 to 2026 (386 dw p.a.). The result of the application of the resulting H/J ratio of 1.8824 to the earlier LEFM 2011/2 CamEcon job projection for 2006-26 of 4,000 jobs used in the August 2012 housing requirements report for Stroud is therefore 7,530 dwellings. This is slightly less than, but of the same general order as, the 7,700 – 7,800 dwellings indicated from the ONS 2010 sub-national population projection (2010 SNPP) based projection used in the August 2012 housing requirements report. Bearing in mind the earlier (2003 based)

[19] This concern was based on the impacts of potential changes in economic activity rates due to the recession and the impact on economic activity of other changes such as progressive rises in pension age and reduction in the value of private pensions. In addition there were likely to be continuing impacts on the age structure of net migration from the continuing high levels of unemployment.

[20] B&NES Core Strategy "Examination Inspector's Preliminary Conclusions on strategic matters and way forward – June 2012" http://www.bathnes.gov.uk/sites/default/files/sitedocuments/Planning-and-Building-Control/Planning-Policy/Core-Strategy/Examination/id-28_preliminary_conclusions_final_21_june_2012.pdf

projection data used in the RSS this was then felt to be a reasonably close result and provided some added weight to the 2010 SNPP derived figures.

Table 6 Stroud Pre-recession Trend (RSS based) Homes/jobs ratio

		2001	2006	2011	2016	2021	2026
Chelmer DCLG/ONS 2003 "policy off" projection	Total dwellings	45,953	47,563	49,309	51,252	53,314	55,281
CE 2.8% GVA trend	Total jobs	45,400	49,700	51,100	52,000	52,800	53,800
Change 2006-2026							
Dwellings required		7,718					
Total employment		4,100					
Homes/ Jobs ratio		**1.8824**					

N.B. Chelmer model assumed vacant & 2nd homes rate =3.0%

3.14 The revision to the LEFM 2012/13 employment forecasts now suggests a growth of 6,200 between 2006 and 2031. Applying the H/J ratio would now give a housing projection of 1.8824 x 6200 which equals 11,670 dwellings. This figure is close to the 11,500 set out in the August 2012 report as an upper range projection derived from the (now obsolete) 2008 based DCLG household projections for Stroud. The April 2013 evidence update for Stroud demonstrated that the 2008 based figures were no longer adequate (see Appendix 1). Moreover, the fact that the H/J method, whatever its merits at the time, was not accepted by the Inspector at the B&NES Examination would suggest that this is now not appropriate for use in evaluating the Stroud Local Plan housing proposals.

4. Conclusions and recommendations

4.1 The results of the testing of the Local Plan proposal for 9,500 dwellings to be built over the period 2006 – 2031 are supported by the evidence provided in the likely job growth prospects for the District. While there is no real evidence that housing growth restraints have any significant effects on economic growth rates at the local level (Appendix 2), the requirements for sustainable growth indicate that housing and population growth need to be kept in broad balance. The possible case for reducing the target to 9,100 or 8,800 as suggested by the jobs led housing growth analysis was discussed. However, it was argued that the demographic evidence for retaining the 9,500 figure, together with the Government's and PINs' interpretation of the consequences for the NPPF of "localism" in terms of the weight given that evidence, could significantly increase the risk of the Plan not being found sound.

4.2 The above analysis confirms that the proposed Local Plan housing figure is supported by the economic growth evidence under the "bracketing the target" approach used in this report. It has been based on the progressive analysis, assessment and, where necessary, reassessment of current and emerging demographic and economic evidence starting with the August 2012 housing requirements report. The current Plan target of 9,500 reflects the pressures faced by Stroud while at the same time meeting the requirements of Government policy for increasing housing supply.

4.3 It is therefore recommended that:

(i) The proposed Local Plan 2006-31 housing requirement for 9,500 should be retained;

(ii) The target for jobs growth in the Plan should either be raised to meet the LEFM 2012/13 forecast figure of 6,200 or that the former policy led jobs target of 6,400 in the 2012 Preferred Strategy Document should be reinstated.

Keith Woodhead BSc, PhD, Dip TP, MRTPI 2nd July 2013

Appendix 1

April 2013 Evidence review paper: edited extracts

A1. The DCLG Interim 2011 based projection figures for total households were compared with 2010 based household projection figures (calculated for the 2012 Stroud report and referred to here as KW2010),[21] and the DCLG 2008 based projections (see Table 1).

A2. The problem of the shorter term nature of the interim 2011 projections has been overcome by extending the projections beyond 2021 to 2031. The crudest way of doing this would of course be simply to use the arithmetic rate of increase from the projections for 2011-21 and then apply this to the 2021-31 period, in other words simply to double the growth. To this we add actual household growth from 2006 to 2011 using the 2011 Census figures to provide a measure of growth from the 2006 base year all the way to 2031. This is shown in Tables 1 and 2. The drawback to this approach is that the calculations in the model underlying the DCLG figures is much more complex and does not imply a uniform growth rate throughout the 2011-21 period, quite apart from that of the following decade.

Table 1: Comparison of recent household projections

		2006	2011	2016	2021	Total change 2006-21	Total change 2011-21
CLG Interim 2011 based	Total Hholds	**46,256**	**47,917**	**49,934**	**51,978**	**5,722**	**4,061**
	Growth in prev 5 years	**-**	**1,661**	**2,017**	**2,044**		
KW 2010 based estimates	Total Hholds	46,249	48,073	49,802	51,815	5,565	3,742
	Growth in prev 5 years	-	1,823	1,729	2,013		
CLG 2008 based	Total Hholds	46,278	47,911	50,164	52,664	6,386	4,753
	Growth in prev 5 years	-	1,633	2,253	2,500		

Source: DCLG 2010, 2013 & K Woodhead 2012

A3. Table 1 sets out the comparative total growth between the different projections up to 2021. Table 2 shows the average annual rates of household increase and then makes the simple calculation of total housing requirements from the projections by applying the 2011-21 average annual rate of increase to the entire 2011-31 period and then adding the "actual" increase in households that occurred between 2006 and 2011. Finally a dwelling

[21] These were derived from the ONS 2010 based population projections and referred to in this report as the KW2010 projection.

vacancy/ second homes percentage rate is applied to the household figures in order to arrive at a final housing requirement. The two alternative vacancy figures used here are the same as used in Table 13 of the Stroud 2012 housing requirement report: 3.2% (the 2001 level) and 3.8% (ONS/NOMIS estimate for 2008).

Table 2: Recent household projections: average change p.a. & crude housing requirement

	Additional Hholds p.a.	Total additional 2006-31 h/holds at annual rate 2011-31 plus 2006-11 actual	Total 2031 crude housing requirement @ Vacancy rate:	
			3.2%	3.8%
Actual household change 1991-2006	323	8121	8381	8430
Actual 2006-11	332	8305	8571	8621
CLG Interim 2011 based 2011-21	**406**	**9783**	**10096**	**10155**
2010 based estimates 2011-21	374	9145	9438	9493
CLG 2008 based	475	11167	11524	11591

Source: DCLG 2010, 2013 & K Woodhead 2012

A4. During 2006-2011, total households increased by 1,661, or 332 a year. This period of course spanned the end of the post 2000 housing construction boom, the immediate impacts of the world credit crisis and ensuing severe recession, and also the period of stagnating economic growth that followed. In this context it is notable that the 2006-11 rate was actually marginally higher than during the preceding 1991-2006 period.

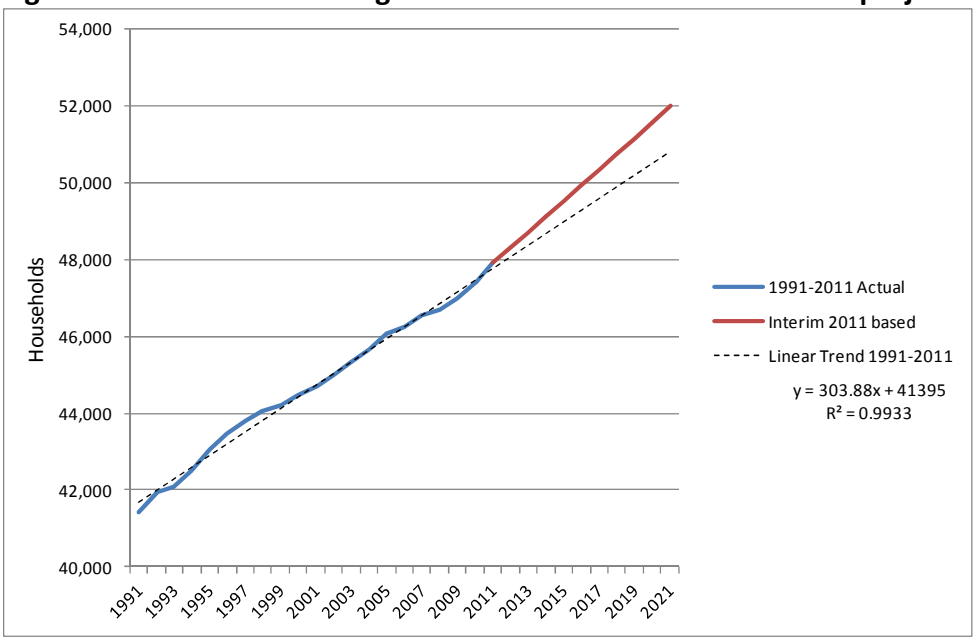
A5. By comparison, the DCLG2011 based projections show an increase of 4,061 during 2011-21, a rise to 406 households per annum. This is also more 32 p.a. than the KW2010 figures (used in the 2012 report) at 374 households p.a. (3,742 in total) but still significantly less than that for the previous DCLG2008 based projections (475 p.a., 4,753 in total for the ten years).

A6. Table 2 shows that the crude calculation housing requirement method suggests DCLG2011 based figure of about 10,100 for the 2006-31 period. The KW2010 based figure rounds to 9,500. This is higher than the 2012 report's figure of 9,260 for this projection but this reflects the cruder method used compared with the relatively sophisticated household formation based approach used in the previous report. We can conclude from this that the DCLG2011 based figure is also likely to be a slight overestimate, and this will be tested below. The DCLG2008 based projections based on this approach, however, are similar to the 11,500 dwelling increase upper range figure in the 2012 report.

A7. These projections using a simple annual rate may be criticised for being too simplistic. The next step therefore was to fit a least squares trend line to the data and then look at the implications of projecting this beyond 2021. Fig 1 shows the DCLG2011 projection to 2021 compared with the long term trend 1991-2011 if the latter is extrapolated for ten years to 2021. This would result in a simple projection for 2021 of 50,511 households, close to 1,500

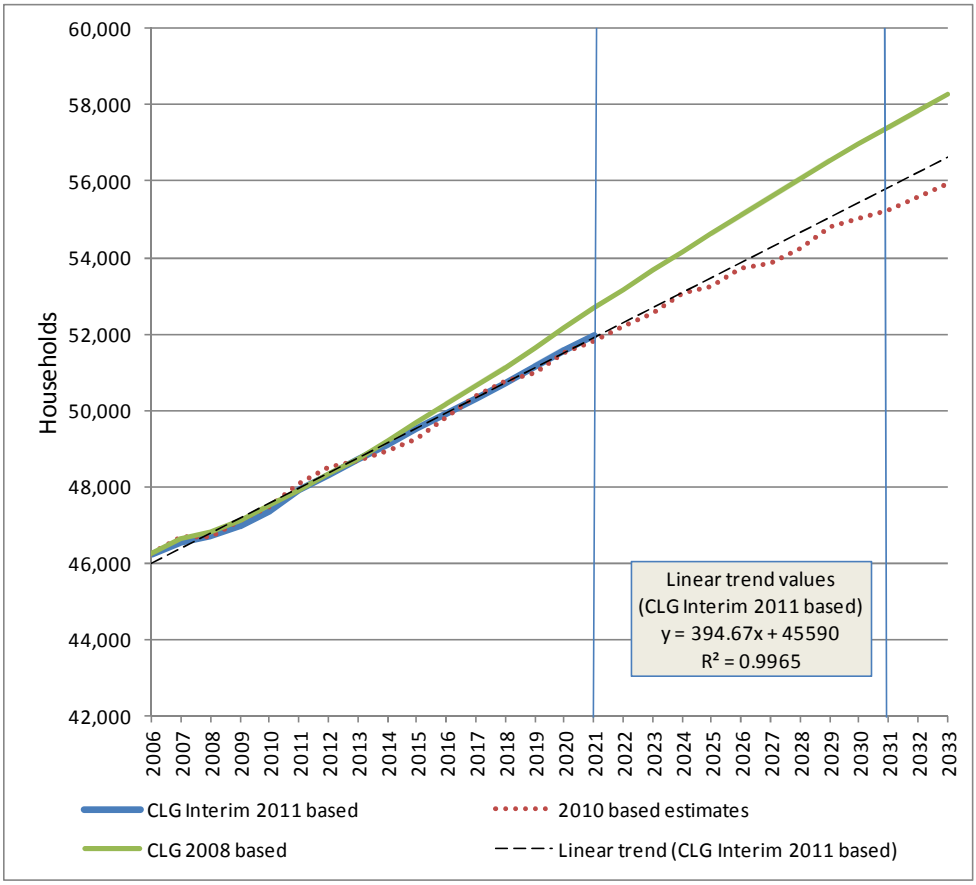
fewer than the DCLG2011 projection. DCLG2011 clearly represents an acceleration of growth compared with the longer term historic trend.

Figure 1 Households: actual growth 1991-2011 and 2011 interim projection to 2021



Source: DCLG

Figure 2: Comparison of household projections 2006-2033



Source: DCLG 2010, 2013 & K Woodhead 2012

A8. Fig 2 compares the three projections up to 2033, the end date of the 2008 based DCLG projections and sets them alongside a linear trend projection forward of the DCLG 2011 based figures from 2021 to 2031. This shows the close match between the KW2010 projection and the new DCLG2011 figures up to 2021, followed by a little further divergence between KW2010 and the extrapolated DCLG2011 as 2031 and 2033 are approached. By 2031, therefore, the extrapolated DCLG2011 projection reaches 55,457 compared with 55,226 for KW2010. Meanwhile, the DCLG2008 projection reached 57,426 households in 2031. The housing requirement figures from the extrapolated DCLG projection for the period 2006-11, 2011-31 are shown in Table 3.

Table 3 Stroud housing requirements based on recent projections 2006-31

			Households ('000)					
Projection	**2001**	**2006**	**2011**	**2016**	**2021**	**2026**	**2029**	**2031**
Extrapolated Interim 2011 based total households	44.67	46.28	47.91	49.93	51.98	53.48	54.67	55.46
Change from 2006	-	-	1.63	3.66	5.70	7.21	8.39	9.18
Additional dwelling requirement at								
(a) 3.2% vacancy	-	-	***1.69***	***3.77***	***5.88***	***7.44***	***8.66***	***9.47***
(b) 3.8% vacancy	-	-	***1.70***	***3.79***	***5.92***	***7.48***	***8.71***	***9.53***
2010 based (estd) total households	-	46.25	48.07	49.80	51.81	53.74	54.79	55.23
Change from 2006	-	-	1.82	3.55	5.57	7.49	8.54	8.98
Additional dwelling requirement at								
(a) 3.2% vacancy	-	-	***1.88***	***3.67***	***5.74***	***7.73***	***8.81***	***9.26***
(b) 3.8% vacancy	-	-	***1.89***	***3.69***	***5.78***	***7.77***	***8.87***	***9.32***
2008 based total households	44.67	46.28	47.91	50.16	52.66	55.12	56.53	57.43
Change from 2006	-	-	1.63	3.89	6.39	8.85	10.25	11.15
Additional dwelling requirement at								
(a) 3.2% vacancy	-	-	***1.69***	***4.01***	***6.59***	***9.13***	***10.58***	***11.50***
(b) 3.8% vacancy	-	-	***1.70***	***4.03***	***6.63***	***9.18***	***10.64***	***11.57***

NB in the table vacancies also include second homes

A9. In Table 3, the additional households suggested by the different projections are converted into a total housing requirement by adding an allowance for vacant dwellings and second homes. This results in a **2006 – 31 additional requirement of 9,470 – 9,530 dwelling**s under the new DCLG 2011 based projections. This is only around 200 dwellings more than the KW2010 based figures that were the basis of the recommended building figure for the Local Plan. This compares with a range of 11,500 – 11,570 that a requirement based on the DCLG2008 based projections would have suggested.

A9. In terms of housing requirements change from 2006 to 2026, the time horizon of early drafts of the Plan under the previous LDF Core Strategy format, DCLG suggests slightly lower

level of growth compared with the KW2010 projection at 7,480 dwelling in 2026 as opposed to the 7,770.

Conclusions and recommendation

A10. The 2012 Report made its recommendations for the housing requirement to 2031 based on a set of household projections generated from combining the ONS2010 sub-national population projections with household representative rates (or headship rates) calculated from the raw data supplied with the DCLG2008 household projections. This approach addressed many of the known weaknesses of the 2008 projections which had been made on the basis of trends in migration that entirely pre-dated the onset of the most severe economic recession since World War Two and arguably since before 1914.

A11. Therefore, while the 2010 figures were still unable to exploit most of the results of the 2011 Census, they did at least reflect some of the changing migration trends that followed 2008 supplied by recent data from the NHSCR and the Labour Force Survey. In addition, the 2010 projections benefited from improved statistical methods for handling migration as a result of ONS' long-running Migration Statistics Improvement Programme. The newly released Interim DCLG2011 based household projections have added improvements and corrections, particularly for the base population, derived from the 2011 Census. These changes have also allowed updated household representative rates used within the model to convert population numbers and structure into households for future years. The migration data from the Census have not, as yet, been available for use in the projections even now and will not be until their release later in 2013. The results of this later projection, however, have been remarkably consistent with the KW2010 projection in the original 2012 report for Stroud.

A12. What then are the implications of the projections for the Plan housing requirement? Strictly speaking, in terms of the relationship between these projections and the Local Plan, they are a material consideration but not a sole determinant.[22] The housing requirement is ultimately determined through consideration of a range of issues, including these growth trends, in the light of the plan's stated objectives. The plan's targets must take the figures into account as they help with understanding the pressures underlying population and household growth in the area. Since publication of the NPPF in March, and its key objective to boost significantly the supply of housing,[23] it is clear that the ONS/DCLG projections are taken by Planning Inspectors at least as the starting point for determining the housing requirement, and that reductions below this level would require an extremely strong case. However, for Stroud the DCLG2011 projections on the basis of the analysis above strongly support the KW2010 projections and, therefore, the conclusions of the 2012 Stroud housing

[22] Both ONS and DCLG are at pains to point out that the projections....
"...are not forecasts as they do not attempt to predict the impact that future government policies, changing economic circumstances or other factors might have on demographic behaviour. They provide the household levels and structures that would result if the assumptions based on previous demographic trends in the population and rates of household formation were to be realised in practice." DCLG (2013) Household Interim Projections, 2011 to 2021, England, Housing Statistical Release 09/04/13.

[23] National Planning Policy Framework (2012) para 47. See also para 159 in respect of the use of projections.

requirement report, with only a minor indication that the low figure in the Local Plan's housing target range of 9,350 to 11,500 could be increased slightly to 9,500.

A13. There is an issue concerning current practice in presenting plan target figures that also needs to be considered. In areas like Stroud that are attractive to non employment related, or "lifestyle", motivated migrant households, there is always an underlying pressure for growth irrespective of economic or other circumstances. Often this pressure can have a negative impact on the physical capacity of the area to cope satisfactorily with an open ended approach to future growth. In these circumstances the sensible approach is to determine a maximum housing target for the plan period in the knowledge that it is highly unlikely that the actual growth achieved will be any less than this level. However, in recent years it has become clear that Planning Inspectors regularly remove references to "no more than" x dwellings and replaced them with the wording "at least" x dwellings.[24] Clearly this is in line with central Government's drive to increase national construction rates but, at the local level, it may risk some loss of control.

A14. The alternative to setting a maximum in the plan has been to use a range with minimum and a maximum. This provides a degree of flexibility when dealing with an uncertain future while retaining control, and this has been the case in previous drafts of the Stroud plan. Bearing in mind current decisions by Inspectors, however, it might be worth considering either removing the upper part of the range or just mentioning it as a guideline in the supporting text of the document rather than as a headline policy. The lower part of the previous range would then be part of an "at least x dwellings" statement. This approach would be supported by the similar (if fractionally higher) housing requirement figures suggested by the DCLG2011 projections. Alternatively, if a range were still felt to be needed, it could perhaps be narrowed so that the upper part would perhaps coincide with the high projection from Table 2 of this paper (10,500 dw. 2011-31) and the lower part would either be left at 9,350 or raised slightly to 9,500 as shown in Table 3. If this were the case then the Council would have to be prepared for the Inspector, after considering evidence in Examination from those who want higher (and of course lower) rates of growth, to require the range maximum to become a minimum figure in his report.

A15. To summarise there is a choice of between three alternatives:

i) retain the current range of 9,350 – 11,500 dwellings 2006-31;
ii) reduce the range to 9,350 – 10,500;
iii) set a new minimum only figure of either 9,350 or, I would suggest, 9,500.

A16. Given that the figure of 11,500 was derived from the DCLG2008 projection and is very clearly now out of date, I would suggest that the real choice is between ii) and iii). Bearing in mind that the Inspector is on recent indications likely to go for a single minimum figure, my recommendation therefore is to choose the DCLG2011 projection supported figure of a minimum of **9,500 dwellings 2006-31**.

Keith Woodhead BSc, PhD, Dip TP, MRTPI 12th April 2013

[24] A recent example of this is the Inspectors report on the South Gloucestershire Local Plan examination. (South Gloucestershire Local Plan: Core Strategy 2006 - 2027 Inspector's Draft Main Modifications Oct 2012)

Appendix 2

The relationship between house building and local economic growth

DTZ (2006) Housing, Economic Development and Productivity: Literature Review (Report to the Dept of Trade and Industry), one of the pieces of work commissioned in the wake of the Barker Review of Housing Supply (2004), found that:

- Regarding impact of housing shortages on labour supply and mobility:

"Frequently, areas of high unemployment are within travelling distance of areas with high levels of vacancies (for example in London). It is clearly desirable to remove housing related barriers to labour mobility but they are just one of a number of factors that lead to mis-matches between labour demand and supply."

- As for productivity related issues:

***"Skills:** There is limited evidence that the housing market is constraining the mobility of higher level skills in the economy – at least in the private sector. In the public sector, skill shortages linked to high housing costs are more prevalent.*

***"Investment:** The evidence is mixed on whether there is a relationship between the housing market and capital investment by businesses. One hypothesis is that if businesses are facing rising labour costs due to the high cost of housing, they will have less capital to invest in the business. There is some evidence to support this hypothesis. A business survey in South East England found 13% of companies affected by high housing costs, were deferring or cancelling investment in their company due to rising costs or a lack of competitiveness.*

However, the same survey found that 25% of companies that had experienced difficulty in recruiting and retaining staff due to high housing costs, had increased investment in capital in order to reduce their demand for labour. There is even evidence that this can take place in people-intensive industries where it is commonly thought to be difficult to substitute capital for labour. For example, an employer in the hotel sector reduced the need for kitchen staff through investment in a large steam oven which could heat pre-prepared meals for a large quantity of people. This shows how a tight housing market can be a spur for investment and innovation in some situations.

There is concern that the pressure to release land for housing may make it more difficult for businesses to invest in new premises when they need to expand or change working practices. This could undermine productivity. However, there is no evidence that PPG3 or general housing pressures are constraining employment land allocations." ...."There is an issue about the protection of existing employment sites...."

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***"Enterprise:** Banks are the main source of finance for start-up businesses and they are reluctant to sanction unsecured lending. Thus, the family home (which is usually the most valuable asset people own in the UK) could have an important influence on new firm foundation in this country. This may be one of the reasons why business start-up rates are highest in Southern England where high house prices have given people the opportunity to*

build up most equity in their homes. However, this will not be the only reason why business start-up rates are high in Southern England."

***"Innovation:** There is no hard evidence of a link between housing and innovation except to the extent that businesses may be encouraged to find new ways of doing things that reduce their*
need for staff, in a tight housing and labour market.

"Impact of Housing On Business Competitiveness
There is evidence that high housing costs are creating problems for a small (but still significant) proportion of private sector businesses: 12% of businesses are experiencing labour shortages / recruitment difficulties due to high housing costs in South East England. The main difficulty is recruiting workers at the lower end of the pay scale.

"There is no evidence of a rapid change in business sentiment towards being located in parts of the country with high housing costs."

(DTZ 2006 op cit., paras 9-20)

Appendix 3

Extending the Stroud CamEcon 2012/13 forecasts to 2025 using 2026-31 forecasts for the SW and UK

Gross Value Added Growth in the South West (%pa)

	Total GVA SW	Job growth Stroud 2012/13	
2010-11	1	-0.5	
2011-12	-0.6	-0.2	
2012-13	1.2	0	
2013-14	1.8	0.2	
2014-15	1.8	0.3	
2015-16	1.6	0.3	
2016-17	2.4	0.3	
2017-18	2.5	0.5	
2018-19	2.9	0.5	
2019-20	2.7	0.5	
2020-21	2.6	0.4	
2021-22	2.5	0.3	
2022-23	2.5	0.3	
2023-24	2.5	0.3	
2024-25	2.6	0.3	
2025-26	2.3	0.33	Forecast
2026-27	2.4	0.35	
2027-28	2.5	0.37	
2028-29	2.6	0.39	
2029-30	2.5	0.37	
2030-31	2.46	0.36	

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.907112725
R Square	0.822853496
Adjusted R S	0.808091287
Standard Erro	0.083926649
Observation	14

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.392618668	0.392618668	55.74054	7.57137E-06
Residual	12	0.084524189	0.007043682		
Total	13	0.477142857			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.110180755	0.057575598	-1.913671063	0.079812	-0.235627205	0.015265696	-0.23562721	0.015265696
1	0.191121744	0.025599089	7.465958795	7.57E-06	0.13534612	0.246897367	0.13534612	0.246897367

RESIDUAL OUTPUT

Observation	*Predicted -0.5*	*Residuals*
1	-0.224853801	0.024853801
2	0.119165338	-0.119165338
3	0.233838384	-0.033838384
4	0.233838384	0.066161616
5	0.195614035	0.104385965
6	0.34851143	-0.04851143
7	0.367623604	0.132376396
8	0.444072302	0.055927698
9	0.405847953	0.094152047
10	0.386735779	0.013264221
11	0.367623604	-0.067623604
12	0.367623604	-0.067623604
13	0.367623604	-0.067623604
14	0.386735779	-0.086735779