Updated Demographic Projections Report

Aylesbury Vale District Council

April 2013

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This document must only be treated as a draft unless it is has been signed by the Originators and approved by a Business or Associate Director.

DATE	ORIGINATORS	APPROVED
April 2013	Nick Ireland Associate Director	Graeme Tulley Director

1 INTRODUCTION

1.1 This report provided an update to the demographic projections set out in the 2011 Housing and Economic Growth Assessment (HEGA), which GL Hearn and Justin Gardner Consulting prepared for Aylesbury Vale District Council.

1.2 The demographic model and methodology used to prepare the projections is consistent to that which underpinned the projections in the HEGA. The updated demographic modelling takes account of further information available, specifically:

- Information from the 2011 Census regarding the size and structure of the District's population, the number of households and how households of different ages occupy homes;
- More recent data from the Office for National Statistics (ONS) regarding birth and death rates, and migration trends including information from the 2010- and 2011-based Sub-National Population Projections;
- A further set of econometric forecasts, issued by Experian in January 2013, which provide a view regarding the potential performance of the economy over the period to 2031.

1.3 The analysis has been undertaken in advance of release of the 2011-Interim Household Projections by Communities and Local Government (CLG).

1.4 The report has sought to replicate the projections developed within the HEGA for consistency purposes and to allow comparison between the outputs.

1.5 This report is presented as an addendum to the original HEGA report.

1.6 The remainder of the report is structured as follows:

- Section 2: Projections Methodology and Projections Run
- Section 3: Detailed Projection Inputs
- Section 4: Projection Outputs
- Section 5: Implications for VAP Strategy

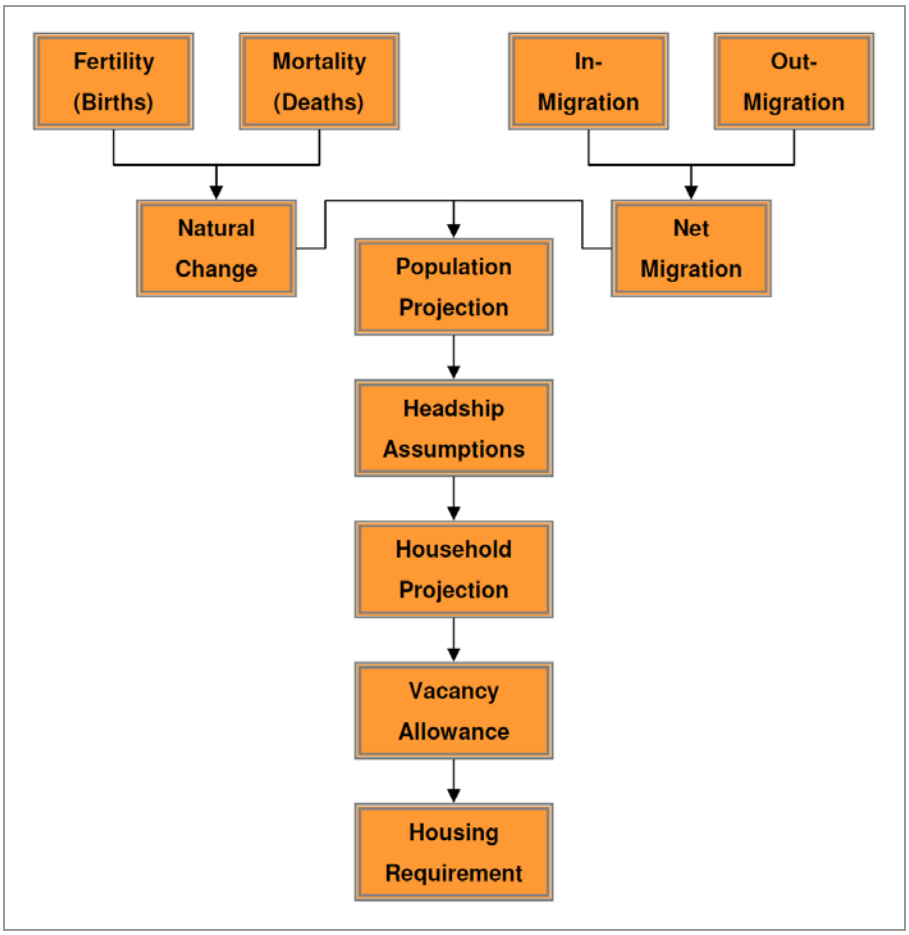
2 PROJECTION METHODOLOGY AND PROJECTIONS RUN

Introduction

2.1 Our methodology used to determine population growth and hence housing requirements is based on fairly standard population projection methodology consistent with the methodology used by ONS and CLG in their population and household projections. Essentially the method establishes the current population and how will this change in the period from 2011 to 2031. This requires us to work out how likely it is that women will give birth (the fertility rate); how likely it is that people will die (the death rate) and how likely it is that people will move into or out of the District. These are the principal components of population change and are used to construct our population projections.

2.2 Figure 1 below shows the key stages of the projection analysis through to the assessment of housing requirements.

Figure 1: Overview of Methodology



Projections Run

2.3 As part of this assessment we have run twelve projections to assess how the population and local economy (number of people in employment) might change under different assumptions. The projections can be separated out into three main categories and are listed below.

2.4 The projections have been numbered in the same order as in the original HEGA report. Where updated data is available, for instance on migration or housing completions, this has been informed the revised projections.

2.5 PROJ 9 is based on the most recent 2010 and 2011-based Sub-National Population Projections which have been published since preparation of the HEGA. This replaces the ONS/CLG projection in the HEGA Report.

2.6 Three additional projections (PROJ 6a, PROJ X, and PROJ Y) have been included. PROJ 6a and X are based on more recent econometric forecasts which take account of recent economic performance and the economic outlook in 2013. These are based respectively on forecasts from Experian and Oxford Economics. PROJ Y models the demographic implications of delivery of the Draft Vale of Aylesbury Plan (VAP) Strategy for provision of 13,500 homes between 2011-31.

2.7 Our reporting focuses on the first six scenarios (as listed below) with the component projections being run to provide some context to the outputs.

Demographic Projections

- PROJ 1 – 10-year migration
- PROJ 2 – 5-year migration

Economic-led Projections

- PROJ 5 – Cambridge Econometrics (CE) Forecasts (2011)
- PROJ 6– Experian Employment Forecasts (2011)
- PROJ 6a – Experian Employment Forecasts (2013)
- PROJ X – East of England Forecasting Model (EEFM) Forecasts (2013)

Component Projections

- PROJ 3 – Zero Net Migration
- PROJ 4 – Zero Employment Growth
- PROJ 7 – Past Housebuilding Rates

- PROJ 8 – South East Plan housing requirement
- PROJ 9 – Sub-National Population Projections (SNPP)
- PROJ Y – VAP Strategy (13,500 homes)

Demographic Projections (PROJ 1 and 2)

2.8 To develop projections linked to past demographic trends it is necessary to analyse and critically assess a range of data. This analysis mainly focuses on migration trends as this will have the greatest impact on population change and will also be the most variable component of change as we move forward. As the data will show, trends in natural change (the number of births minus the number of deaths) are quite consistent, whilst migration can be highly variable. It also needs to be recognised that whilst ONS data is quite good at recording births and deaths it is far more difficult to accurately record migration levels.

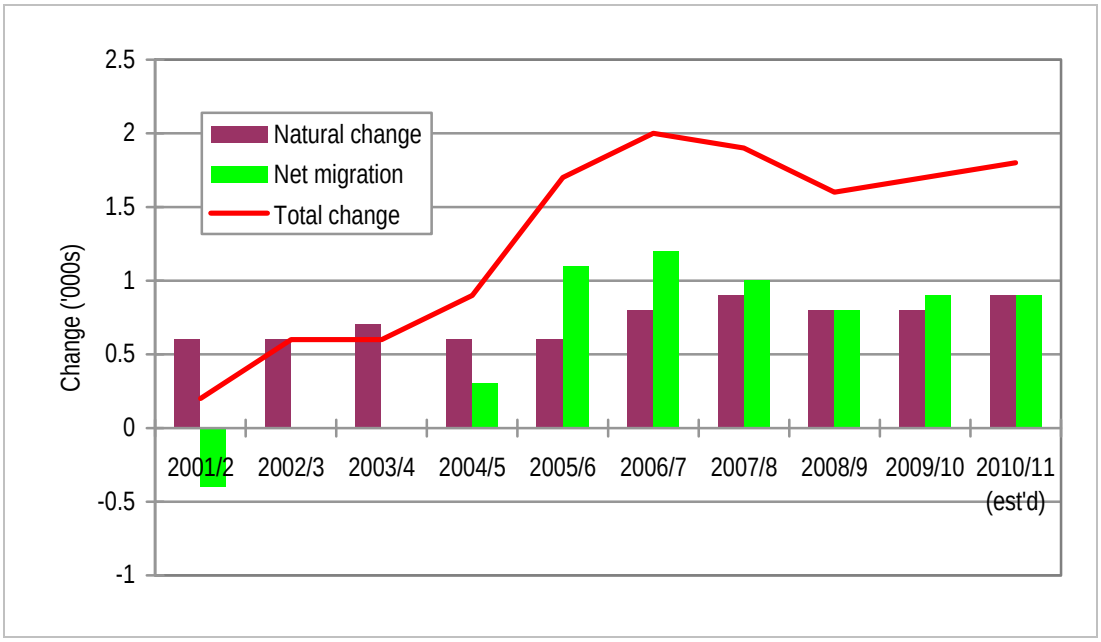
2.9 Figure 2 below shows components of population change over the past ten years in Aylesbury Vale. The period covered is from 2001 to 2011 to be consistent with the Census (which is a good source for testing the accuracy of ONS migration recording).

2.10 The figures used are all taken from mid-year population estimate releases. However adjustments have been made for migration in the period from 2005-2011 to take account of ONS revisions linked to a project to improve immigration statistics.

2.11 The data for 2010-11 is slightly imperfect, with the natural change data being based on projections and the migration figures only including internal migration (i.e. move from other parts of England and Wales). We do not consider that these additional assumptions will unduly affect the analysis given that a) they only impact on one-tenth of the analysis period and b) internal migration tends to be the most significant aspect of migration in relation to Aylesbury Vale.

2.12 Figure 2 shows over the ten year period that natural change is positive and at a very slightly increasing rate, with levels of migration being more variable but tending to also show an upward trend. If we take all of the data together we find that natural change accounts for population increase of about 7,300 people with net migration accounting for an increase of about 5,800. In total, this analysis suggests a population increase of about 13,000.

Figure 2: Components of Population Change (Aylesbury Vale)



Source: Derived from ONS Mid-Year Population Estimates

2.13 However, it needs to be noted that the figures above all pre-date release of 2011 Census data. It is therefore important to test the extent to which the above figures look to be reasonable. To do this we have considered mid-year population estimates for 2001 and 2011 with 2011 data being shown as both pre- and post-Census estimates (actual data is taken from the Census which differs slightly from mid-year figures due to Census timing).

2.14 The data shows that before the release of Census data that the population of the District was expected to have reached 178,800 in mid-2011 – a growth of around 13,000 people which is consistent with our components of change analysis above. The Census data show that the actual population was lower, with less population growth in the inter-censal period, showing only 8,400 more people in 2011 than 2001. Given that we believe births and deaths are accurately recorded this means that **ONS past trend migration figures have over-estimated net migration by some 4,500 people over the past ten years** (an average of 450 people per annum too many).

Figure 3: Comparing pre and post Census population growth estimates

	2001	2011	Population growth
Pre-Census	165,900	178,800	12,900
Census	165,700	174,100	8,400

Source: Mid-year population estimates (and 2001 and 2011 Census)

2.15 From this analysis **it is clear that using past migration trends as published would not be a robust methodology moving forward**. In due course (probably not until 2014) ONS are expected to back-project the mid-year estimates, but as such analysis is currently not available we need to

undertake some degree of consolidation with known figures (i.e. those linked to the 2011 Census). The data does not allow us to determine in which years in the past errors in the ONS analysis have been particularly stark and so, for consolidation purposes, we have assumed that net-migration has been over-estimated by 390 in each year in the past.

2.16 This then gives the following estimates of net-migration on a year by year basis. If we look at the past five years this analysis would suggest average net migration of about 510 people per annum with a 10-year trend being much lower (only 130 per annum). These two figures are therefore used to inform our trend based projections (PROJ 1 and PROJ 2).

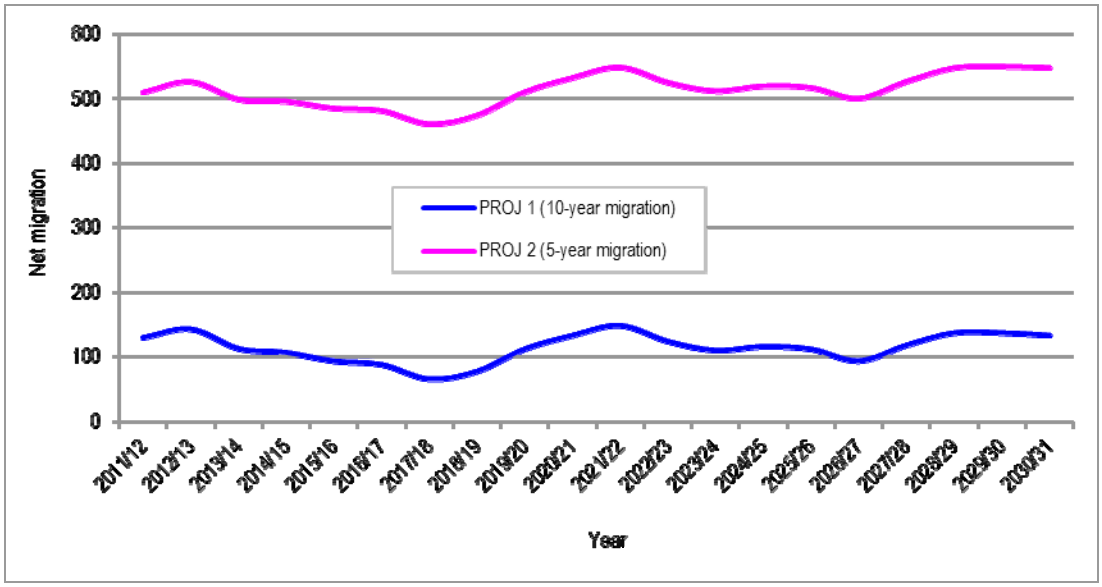
Figure 4: Adjusted net migration estimates (2001-2011)

Period	Net migration	Period	Net migration
2001/2	-850	2006/7	750
2002/3	-450	2007/8	550
2003/4	-450	2008/9	350
2004/5	-150	2009/10	450
2005/6	650	2010/11	450
Average (01-06)	-250	Average (06-11)	510
		Average (01-11)	130

2.17 Moving forward we need to consider if these levels of migration are expected to increase or decrease. To get an idea about this, we have considered the analysis above and also the patterns shown in ONS Subnational Population Projections (SNPP) – the latest of which are 2011-based. The analysis above suggests that there has been some upward trend in net migration over the past ten years although the past six years really don't show any trend (upward or downward).

2.18 When applying a start point of net migration of 130 people per annum (PROJ 1) and 510 per annum (PROJ 2) to the SNPP we find some variation year on-year in expected migration; however, this variation is fairly minor with no particular overall trend in either an upwards or downwards direction. Figure 5 below shows the levels of net migration assumed for each year of the projection for our two trend-based projections.

Figure 5: Modelled migration assumptions 2011/12 to 2030/31



Source: Derived from a range of ONS data

Component Projections

PROJ 3 (Zero Net Migration)
PROJ 4 (Zero Employment Growth)

2.19 The next two projections are 'component' projections and look at the impact on population, employment and housing requirements of holding certain aspects of the projection constant over time.

2.20 The first projection (PROJ 3) looks at housing requirements if there were to be no net migration into the District for the next 20-years. Whilst net migration is held at zero this projection does allow for in- and out-migration so there will be changes in the age structure due to migration trends as well as those created by natural change (i.e. births minus deaths).

2.21 The second 'component' projection (PROJ 4) looks at what level of housing growth would be required to achieve a stable population in employment. Within this projection (and indeed all other projections) we have also looked at the impact of the economic downturn on the number of people in employment and considered the scope for some local residents to return to work if additional jobs were available. We have also considered the likely impact of changes in pensionable age throughout the projection period as and when these become relevant.

Economic-led Projections (PROJ 5, 6, 6a and X)

2.22 All of our projections have an associated estimate of the implications of demographic change on the number of people (residents in the Vale) in employment. It is however also of use to look at the likely housing requirements associated with different levels of employment growth. To assist in this analysis we have studied Employment Forecasts provided by Cambridge Econometrics (CE), Experian and Oxford Economics (the East of England Forecasting Model or EEFM).

2.23 Projections from CE and Experian were used in the original HEGA projections. We have used additionally included economic-led projections based on more recent Experian forecasts (Jan 2013) and forecasts from Oxford Economics' EEFM. These forecasts take account of more recent economic data and the economic outlook in 2013.

2.24 Figure 6 shows the assumptions about employment growth under each of the projections. The data shows that, over the full 20-year projection period, employment in the Vale might increase from between 11,382, in the CE projections, up to 18,750 in the Experian (2013) projections. There are some differences in the phasing of when employment growth is expected, with the most notable difference being the EEFM showing strong growth up to 2016 relative to other projections.

Figure 6: Econometrics Employment Forecasts 2011 to 2031

	PROJ 5- CE	PROJ 6 – Experian (2011)	PROJ 6a – Experian (2013)	PROJ X - EEFM
2011-2016	2,280	3,066	5,004	5,204
2016-2021	3,121	4,444	5,046	3,070
2021-2026	3,010	3,189	4,323	2,333
2026-2031	2,971	3,816	4,377	2,461
Total (2011-2031)	11,382	14,515	18,750	13,068

Source: Cambridge Econometrics, Experian and Oxford Economics Employment Forecasts

2.25 The figures in the table above are all for the expected increase in the number of jobs available in the District and technically is not the same as a projected increase in the number of local residents who are in employment (regardless of the location). In the original HEGA Report we studied commuting patterns in some detail and concluded whilst there is a level of net out-commuting from the District that it would be reasonable to assume a 1:1 relationship between new jobs being created and the number of residents in employment moving forward.

2.26 To some degree this approach is supported by additional analysis of EEFM data which forecasts that the increase in the number of residents in employment will only be about 3% higher than the increase in the number of jobs.

2.27 We have however also included a sensitivity analysis which looks at likely housing requirements were commuting patterns to remain at 2001 levels from Census data (at the time of writing the most recent date for which complete information is available). More recent sample based figures from the Annual Population Survey suggests that there were no significant changes in commuting patterns between 2001 and 2008.

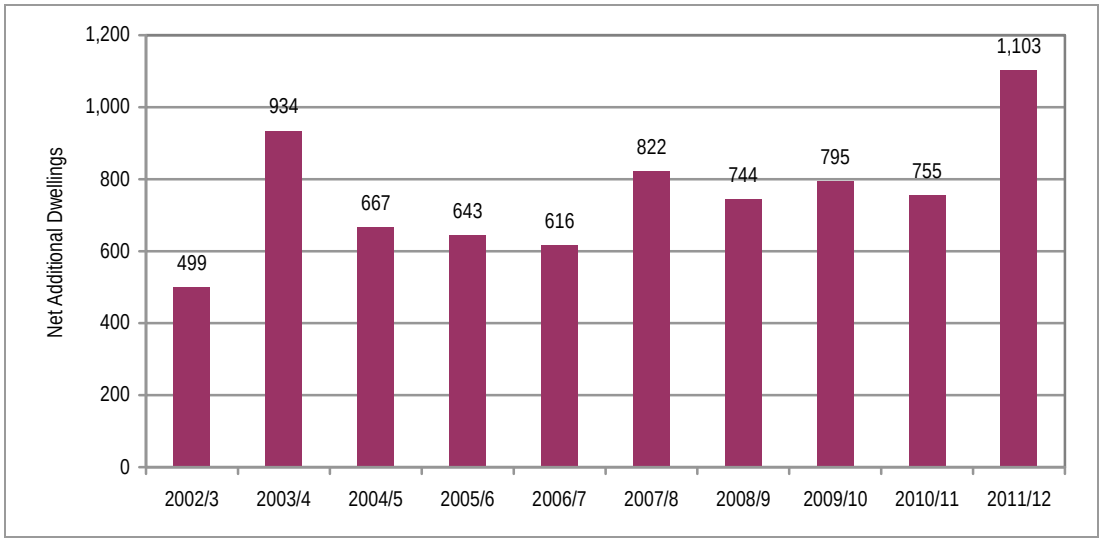
2.28 Data from the 2001 Census showed that 86,073 lived in Aylesbury Vale and were working compared with 69,144 people working within the District (figures exclude those living/working outside Great Britain). This means that for every 'job' in the District there were 1.24 residents in employment. For our sensitivity analysis we have therefore increased the growth in resident workers by around 24% and applied this figure to all of the above projections. Summary outputs from these projections can be found later in this document.

PROJ 7 (Past Completions)
PROJ Y (VAP Strategy)

2.29 The next two projections run in this report are based on understanding the implications for population and employment growth of particular levels of housing delivery. The two projections are: a) based on projecting forward average completions over the past 10-years (2002-12) on a linear basis and b) linked to the VAP Strategy proposals for provision of 13,500 dwellings over the 2011-31 plan period.

2.30 Figure 7 below shows housing completions over the past ten years (from 2002/3 to 2011/12). The data shows some year-on-year variations in housing delivery with strongest delivery of 1,103 units being seen in 20011/12 and the lowest figure (of 499) in 2002/3. Over the full ten-year period the average level of completions has been 758 per annum and this figure is taken forward into our projection modelling exercise. It is however worth noting that the average for the past five years is slightly higher (at 844 per annum).

Figure 7: Net Completions 2002/3 to 2011/12



Source: Aylesbury Vale District Council

2.31 The emerging Vale of Aylesbury Plan (VAP) Strategy is based on provision of 13,500 homes over the 2011-31 plan period. Taking account of commitments and the Council's current housing trajectory, the indicative phasing of this is as shown in Figure 8. PROJ Y is modelled on this basis.

Figure 8: Draft VAP Strategy Housing Provision and Phasing

	2011 to 2016	2016 to 2021	20121 to 2031	2011-31 Total
Housing Provision (Dwellings)	5331	3326	4815	13472

Source: Aylesbury Vale District Council

PROJ 8 (South East Plan)

2.32 An analysis has also been undertaken to explore the implications of delivery of South East Plan housing numbers. This is for comparative purposes only. This analysis assumes delivery of 1,345 homes per annum from 2011 to 2031.

PROJ 9 (ONS – SNPP)

2.33 The final projection considers likely housing requirements arising from the most recent Sub-national Population Projections (SNPP). These are 2011-based and run to 2021. The data underpinning the 2011-based projections is largely the same as in the 2010-based version (shown as the ONS Projections in the original HEGA report), although adjustments have been made to levels and patterns of migration as a result of updating mid-year population estimates as a result of 2011 Census data. The assumptions on levels of migration however pre-date release of 2011 Census

data. Figure 9 below shows the migration assumptions contained within both the 2010- and 2011-based SNPP for the period from 2011 to 2021 (which is the longest time period in the 2011-based projections).

2.34 The data shows a substantial increase in estimated net migration in the 2011-based projections when compared with the 2010-based version. The difference is mainly attributable to projected levels of international out-migration which are expected to be far lower than previously thought.

2.35 The differences between the 2010- and 2011-based SNPP are counter-intuitive. As we have shown above, the 2011 Census shows that past trends in migration have been significantly lower than previously estimated by ONS and on that basis we would expect the 2011-based SNPP to project lower population growth. However, the limited updating by ONS of the SNPP has led to a situation where the opposite happens. In effect because the population of Aylesbury Vale is lower than previously thought there are less people to be out-migrants; and as a result ONS has reduced these figures. It is clear from the analysis that the SNPP does not reflect a trend-based projection – the annual average of net migration moving forward is in excess of the total level of net migration seen over the whole of the past decade. For this reason **we do not believe that a projection linked to the SNPP can be considered as a robust scenario for consideration in the case of Aylesbury Vale.**

Figure 9: Comparing migrations in 2010 and 2011 based SNPP (average figures 2011-2021)

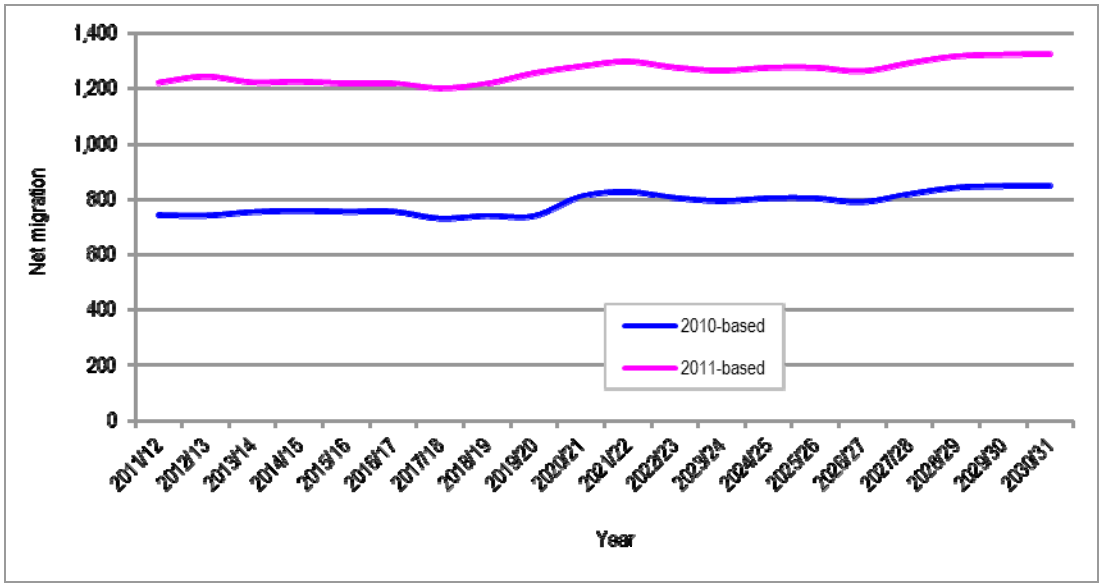
	2010-based SNPP	2011-based interim SNPP
Internal in-migration	8,612	8,794
Internal out-migration	7,950	8,011
Internal net migration	662	783
Cross-border in-migration	275	275
Cross-border out-migration	360	360
Cross-border net migration	-85	-85
International in-migration	1,916	1,916
International out-migration	1,739	1,381
International net migration	177	534
All in-migration	10,802	10,985
All out-migration	10,049	9,753
All net migration	754	1,232

Source: 2010- and 2011-based SNPP

2.36 Although the SNPP does not provide a robust basis for analysis we have, as part of our suite of projections, run a scenario linked to the latest ONS figures. Figure 10 below shows annual levels of net migration from this source. Beyond 2021 we have recalibrated migration levels to be consistent with the pattern shown by the 2010-based SNPP. Figure 10 also shows net migration in the 2010-based SNPP although no scenario has been developed from this information. In the report we have

not commented in any detail on the SNPP based projection, because of the issues of robustness identified.

Figure 10: Migration assumptions (2010 and 2011 based SNPP)



Source: ONS 2010- and 2011-based SNPP

3 DETAILED PROJECTION INPUTS

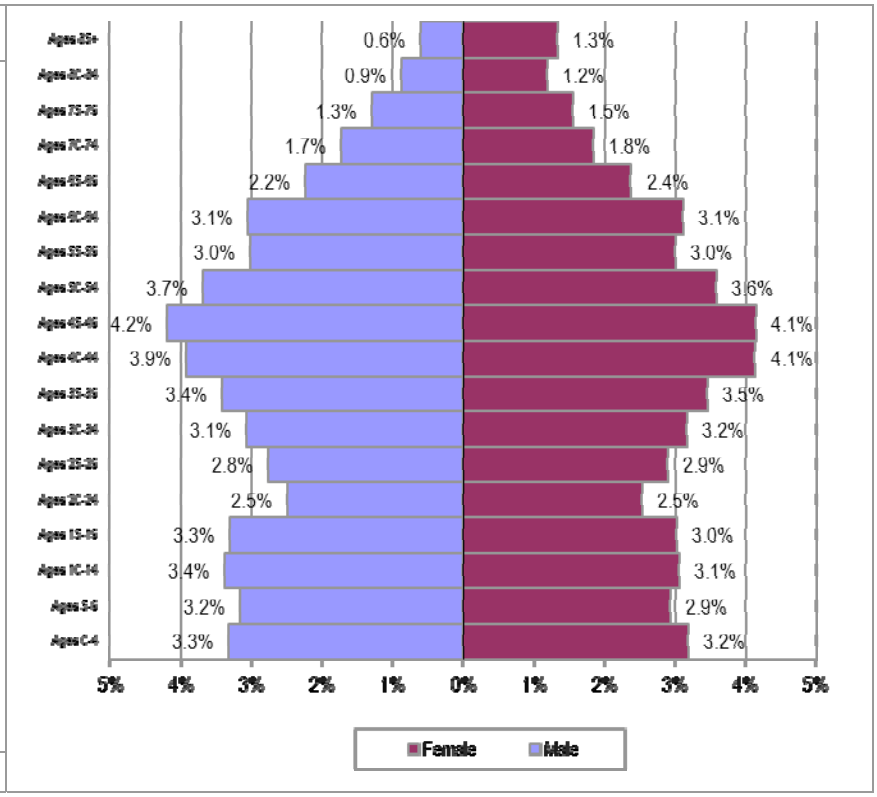
Baseline Population

3.1 The baseline for our projections is taken to be 2011 with the projection run for each year over the period up to 2031. The estimated population profile as of 2011 has been taken from ONS mid-year population estimates with the overall population of Aylesbury Vale estimated to be 174,880. This figure is about 700 higher than was recorded in the 2011 Census (174,137) – the difference being due to ONS estimates of natural change and migration from the Census date to the middle of the year. Given our earlier analysis, they may be some doubt about the validity of projecting such an increase although for the purposes of forward projecting any discrepancy in the baseline position will not have any notable impact on the outputs of the modelling.

3.2 The population pyramid below shows that the District has a notable proportion of the population aged in their forties with relatively low population numbers seen for people aged in their 20s.

Figure 11: Population of Aylesbury Vale (5 year age bands) - 2011

Age group	Male	Female
Ages 0-4	5,817	5,555
Ages 5-9	5,513	5,129
Ages 10-14	5,894	5,356
Ages 15-19	5,790	5,269
Ages 20-24	4,362	4,425
Ages 25-29	4,823	5,047
Ages 30-34	5,381	5,545
Ages 35-39	5,976	6,046
Ages 40-44	6,865	7,230
Ages 45-49	7,326	7,231
Ages 50-54	6,431	6,264
Ages 55-59	5,274	5,252
Ages 60-64	5,341	5,430
Ages 65-69	3,920	4,156
Ages 70-74	3,013	3,212
Ages 75-79	2,274	2,706
Ages 80-84	1,526	2,091
Ages 85+	1,067	2,343
All Ages	86,593	88,287



Source: Derived from ONS data

Fertility and Mortality Rate Assumptions

3.3 For modelling of fertility, we have used the rates contained within the ONS 2010-based Population Projections. For the period from 2011 to 2031 the total fertility rate (the expected average number of live births per woman throughout their childbearing lifespan) has been calculated to be 2.04 in 2011/12. This rises very slightly in the short-term before reducing to 1.86 in 2030/31.

3.4 We also interrogated the ONS 2010-based Projections with regard to death rates which suggested that life expectancy is expected to increase over time for both males and females. It is not possible to provide exact life expectancy figures from the 2010-based SNPP as this to some degree will depend on the assumptions made about the death rates for age groups beyond 90 (the ONS data stops at a figure for 90+). However in modelling life expectancy we suggest that the figures will see an improvement from 80.6 to 84.1 for males from 2011 to 2031 with figures of 83.1 to 86.4 expected for females.

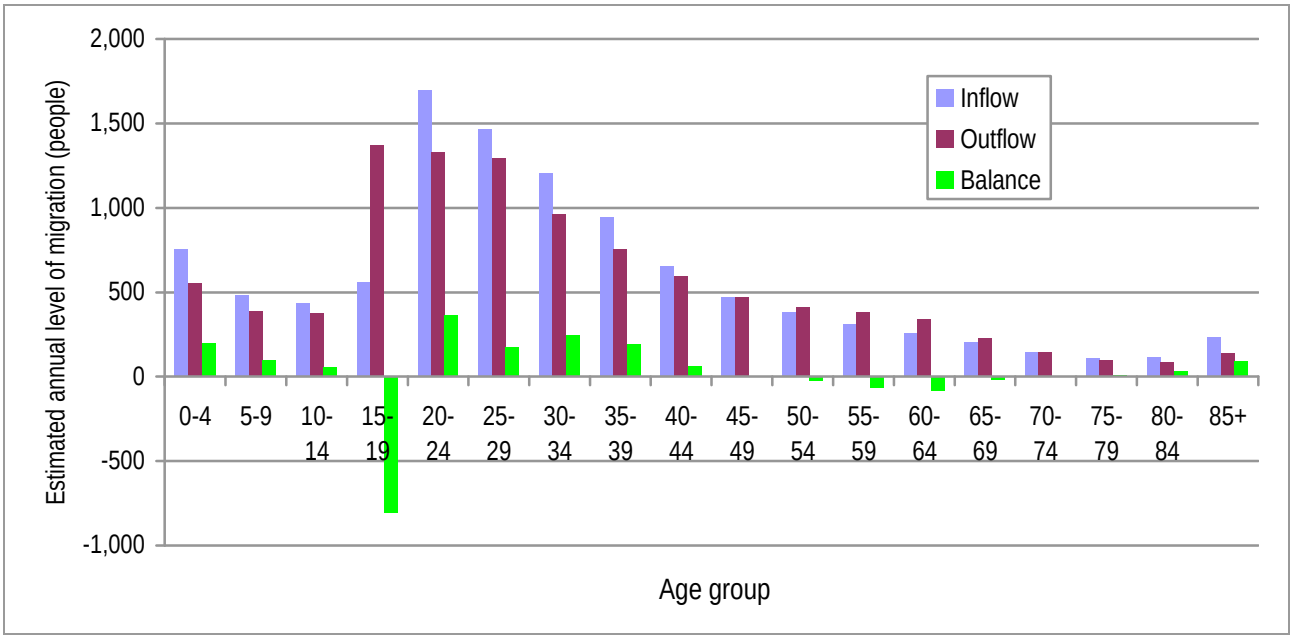
3.5 We have no evidence to suggest that either the fertility or mortality estimates used by ONS are unreasonable and note that the expected figures and changes in both areas are consistent with past trend data and future expected patterns as published by ONS on a national basis.

Migration Assumptions

3.6 For the purposes of understanding the profile of migrants we have again drawn on the ONS 2010-based Sub-National Population Projections, which we have adjusted to reflect our revised estimate of 5-year trend-based migration which averages a net in migration of 514 people per annum.

3.7 Over the period from 2011 to 2031 the figures show an average annual level of in-migration of 10,450 and out-migration of 9,936. The data shows that the most important age groups are from 20 to 34. It suggests a significant net out-migration of people aged 15 to 19 (likely to be linked to people moving away for further education) along with net out-migration of those in their 50s and 60s, which is likely to be linked to people moving as they approach retirement age. Most other age groups shows positive levels of in-migration, with these being particularly strong for those in their 20s and 30s.

Figure 12: Estimated annual leave of net migration by five-year age band (2011-2031)



Source: Derived from ONS 2010-based population projections

3.8 Whilst we have noted above that levels of (net) migration in the SNPP look to be too high on the basis of past trends, we do not have any strong evidence to suggest that the age profile of migrants (once amended for different overall migration levels) is substantially inaccurate.

3.9 When projecting migration patterns for the various projection scenarios we have used the migration data and adjusted levels of in-migration to match the requirements of our scenario (e.g. when testing what level of migration is required to support a workforce of a particular size). This approach has consistently been adopted across all analysis.

Employment Rate Assumptions

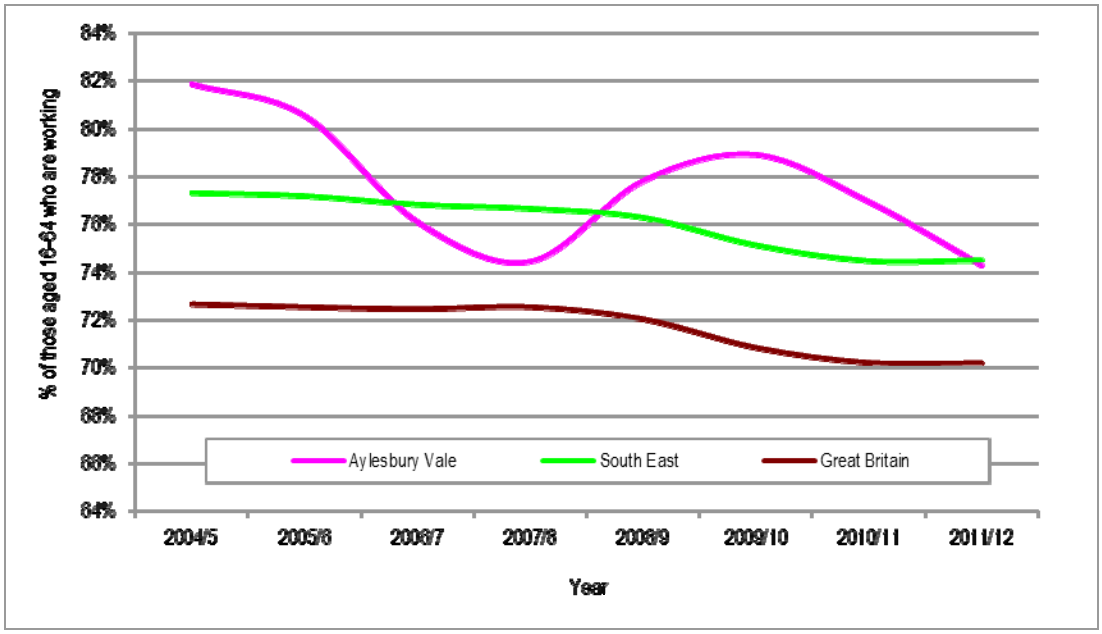
3.10 With the change in demographic structure will come changes in the number of people who are working, the next stage of the projection process was therefore to make estimates about how employment levels would change under each of our projections and also to consider the demographic implications of different levels of employment growth. The process is set out in the figure below.

Figure 13: Overview of Economic-Driven projection methodology

3.11 The first stage of the process was to establish employment rates in the District. Figure 14 shows data on the proportion of people living in the area who were in employment (based on the proportion of the population aged 16-64 who are working).

3.12 The data shows that the employment rate can be quite variable over time although the trend in Aylesbury Vale is generally downwards. Figures for both the South East and Great Britain show a more constant drop in employment rates up until the last year where a small increase is recorded for the South East with a levelling off seen nationally.

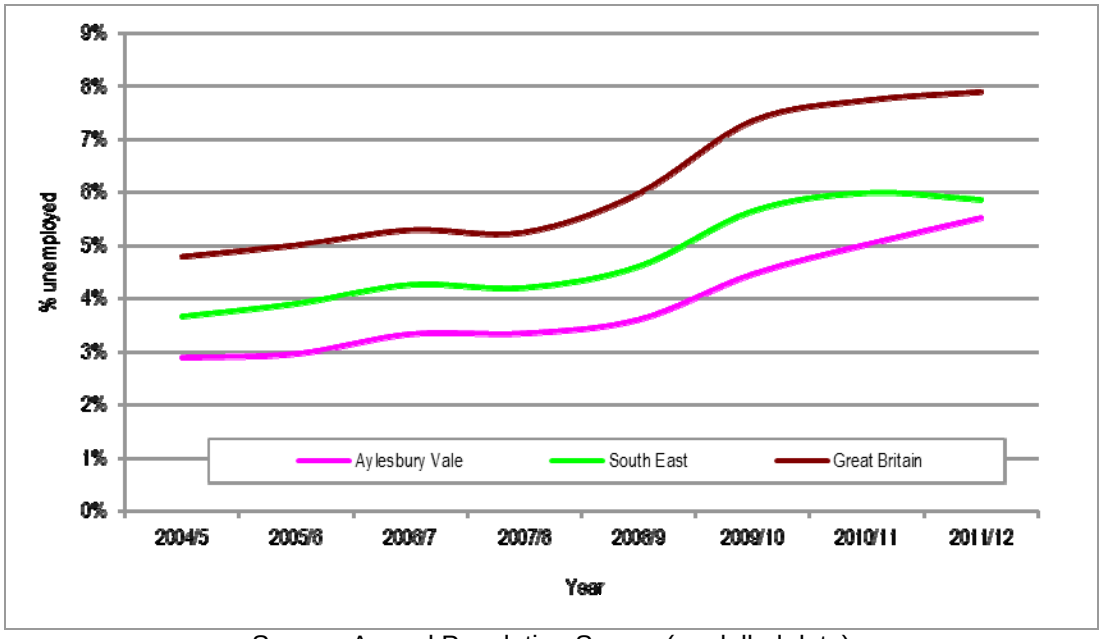
Figure 14: Proportion of Population Working



Source: Annual Population Survey

3.13 Part of the problem with the Annual Population Survey source used above is that data is based on only a sample of the population and therefore figures can be quite variable at a local authority level. We have therefore also drawn on data about unemployment to give an indication of how employment rates may have changed over the past few years. Figure 15 below shows that unemployment in Aylesbury Vale has increased notably over time, going from a typical level of about 3% in pre-recession years up to an average of more like 5%-5.5% in recent years.

Figure 15: Unemployment rate



Source: Annual Population Survey (modelled data)

3.14 Using the above data to provide us with an overall picture of employment levels, we also drew on 2001 and 2011 Census data and information from the Annual Population Survey to the distribution of workers by age and sex. In projecting forward, we have assumed that there is a latent labour force that could be brought back into work as a result of reducing unemployment. This improvement is assumed to occur at a constant rate throughout the projection period.

3.15 The modelling also includes provision for potential increases employment rates as a result of age. These additional changes have been based on studying the age-specific 'drop-off' in employment as people get older.

3.16 Finally we have rebased our data to match an estimate from the 2011 Census of the number of people who are working. The data suggests a higher number of residents in employment than had been recorded by the APS. Figure 16 below shows the age specific employment rates used for modelling in 2011 and 2031. It was estimated that in mid-2011 there were 90,724 people in employment with an employment rate of 77.5%. As a result of the modelled improvement in employment rates along with changes in pensionable age this figure is projected to rise to 79.7% by 2031.

Figure 16: Employment Rates by Age and Sex

Age group	Male		Female	
	2011	2031	2011	2031
Aged 16 to 19	52.4%	54.0%	54.6%	56.3%
Aged 20 to 24	74.6%	76.8%	71.8%	73.9%
Aged 25 to 29	85.4%	88.0%	75.2%	77.5%
Aged 30 to 34	87.8%	90.5%	71.4%	73.5%
Aged 35 to 39	90.3%	93.1%	78.9%	81.3%
Aged 40 to 44	90.2%	92.9%	84.8%	87.3%
Aged 45 to 49	89.8%	92.5%	86.5%	89.1%
Aged 50 to 54	90.0%	92.7%	84.0%	86.5%
Aged 55 to 59	82.2%	84.6%	71.3%	73.4%
Aged 60 to 64	63.3%	65.2%	36.8%	51.0%
Aged 65 to 69	33.2%	37.6%	25.9%	32.0%
Aged 70 to 74	18.4%	19.0%	8.6%	8.8%

Source: Derived from a range of data (including 2001 and 2011 Census and APS)

Headship and Vacancy Assumptions

3.17 Having projected change in the size and the age/sex profile of the population the next step in the process is to convert this information into estimates of the number of households in the area. To do this we use the concept of headship rates. Headship rates can be described in their most simple terms as the number of people (in different age groups) who are counted as heads of households (or in this case the more widely used Household Reference Person (HRP)). For the purposes of this analysis we have used information contained in the 2008-based CLG household projections about the relationship between the total population in an age group and the number of household reference persons (HRPs) in that age group as a starting point.

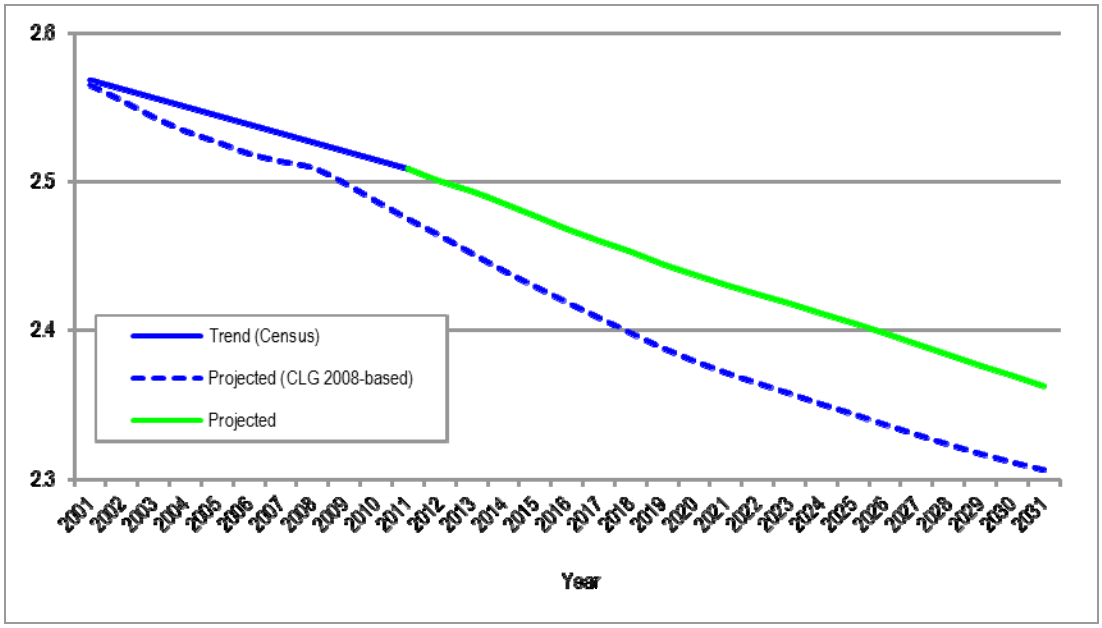
3.18 We have however also taken account of recent trends in household formation which have generally seen less households being formed from the population than was projected in the CLG 2008-based household projections. This can be seen in Figure 17.

3.19 Figure 17 shows the estimated average household size from 2001 to 2011 and how this is projected to change in the future under the 2008-based CLG projections. The data for 2001 and 2011 has been based on the relationship between total population numbers and the number of households shown in each of the relevant Census with a linear trend being plotted in the absence of any other up-to-date information. The data shows that **household sizes have decreased but at a slower rate than was expected in the 2008-based CLG household projections**.

3.20 In projecting forward we have rebased headship rates using 2011 Census data and then projected headship rates to broadly follow a trend at the mid-point between the trend shown from 2001 to 2011 and the expected trend in CLG projections. For the purposes of our projection we have assumed that average household sizes start at about 2.51 in 2011 and reduce down to 2.36 in 2031 (although exact figures do vary depending on the projection being run).

3.21 It should be noted that our measure of household size here includes all of the population (i.e. including the institutional population) so technically household sizes will be smaller than presented below. This will not make any difference to the overall analysis of the number of households in the District and how this is expected to change in the future.

Figure 17: Past and projected trends in Average Household Size – Aylesbury Vale



Source: Derived from ONS and CLG data (including 2001 and 2011 Census)

3.22 When applying our headship rates to our population we derive an estimated number of households in 2011 of 69,702. This is consistent with the number of households shown in the 2011 Census and revised mid-2011 household estimates.

3.23 In converting an estimated number of households into requirements for additional dwellings we have also factored in a small vacancy allowance which is normal to allow for movement of households between properties. For the analysis we have assumed that around 2.5% of additional stock will be vacant which should be reflective of what can be achieved in new housing stock.

4 PROJECTION OUTPUTS

Introduction

4.1 This section provides detailed outputs of the modelling under each of the six main scenarios to look at population growth, employment change and housing requirements. (Summary outputs for all twelve projections are provided at the end of the section. All the projections look at the period from 2011 to 2031 with outputs available for each year of the projection (although these have generally been summarised for five year periods). The main projections run are summarised in the table below.

Figure 18: Description of Main Projections used for Demographic Modelling

Projection	Description
PROJ 1	10-year migration trends
PROJ 2	5-year migration trends
PROJ 5	Cambridge Econometrics
PROJ 6	Experian (2011)
PROJ 6a	Experian (2013)
PROJ X	East of England Forecasting Model

Population Projections

4.2 Figures 19 and 20 show the expected growth in population under each of the six scenarios. The two demographic trend based projections (PROJ 1 and 2) show population growth in the district of 7% to 12% which is equivalent to growth of between about 12,400 and 21,700 people. In both cases the rate of population growth is expected to decrease slightly over time – this being particularly noticeable in PROJ 1 – the projection linked to 10-year migration trends.

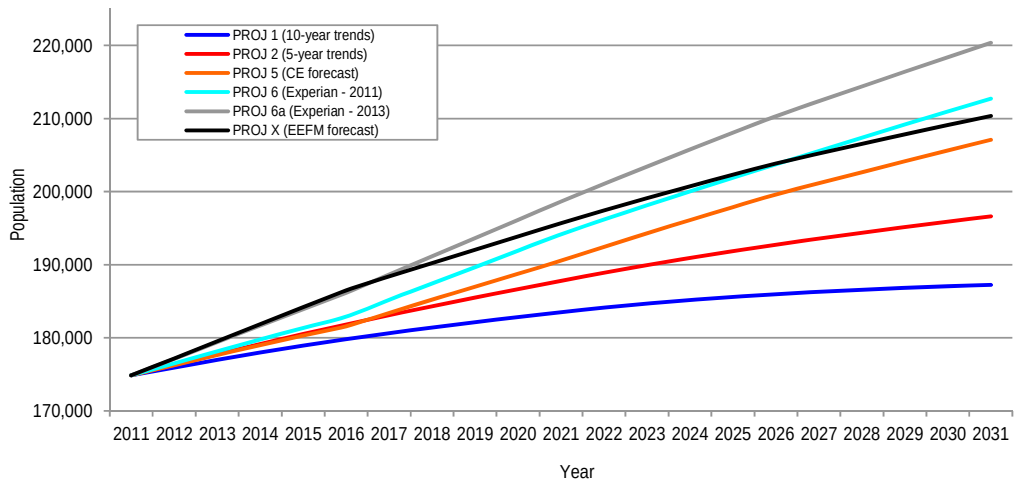
4.3 The four economic-led projection (PROJ 5, 6, 6a and X) all show higher levels of expected population growth ranging from about 18% to 26%, with an increase of between 32,200 to 45,500 people projected over the period 2011-31 period. The rate of change in the population varies between these different projections, with PROJ X (EEFM) showing higher growth in the early part of the projection period, and the opposite being true for the other projections. This is linked to when employment growth is forecast.

4.4 In reality each of the forecasts will include underlying assumptions about employment rate changes which would moderate this distribution although for consistency our projections look at gradual improvements to the employment rate throughout the 20-years from 2011 to 2031.

Figure 19: Population Estimates 2011 to 2031 – Aylesbury Vale

	2011	2016	2021	2026	2031
PROJ 1 (10-year migration trends)	174,880 0.0%	179,825 2.8%	183,503 4.9%	185,978 6.3%	187,237 7.1%
PROJ 2 (5-year migration trends)	174,880 0.0%	181,844 4.0%	187,799 7.4%	192,742 10.2%	196,607 12.4%
PROJ 5 (Cambridge Econometrics)	174,880 0.0%	181,581 3.8%	190,548 9.0%	199,621 14.1%	207,081 18.4%
PROJ 6 (Experian – 2011)	174,880 0.0%	182,901 4.6%	194,170 11.0%	203,740 16.5%	212,709 21.6%
PROJ 6a (Experian – 2013)	174,880 0.0%	186,155 6.4%	198,638 13.6%	210,328 20.3%	220,341 26.0%
PROJ X (East of England Forecasting Model)	174,880 0.0%	186,491 6.6%	195,680 11.9%	203,851 16.6%	210,344 20.3%

Figure 20: Population Change, 2011-2031 – Aylesbury Vale



Projections of Residents in Employment

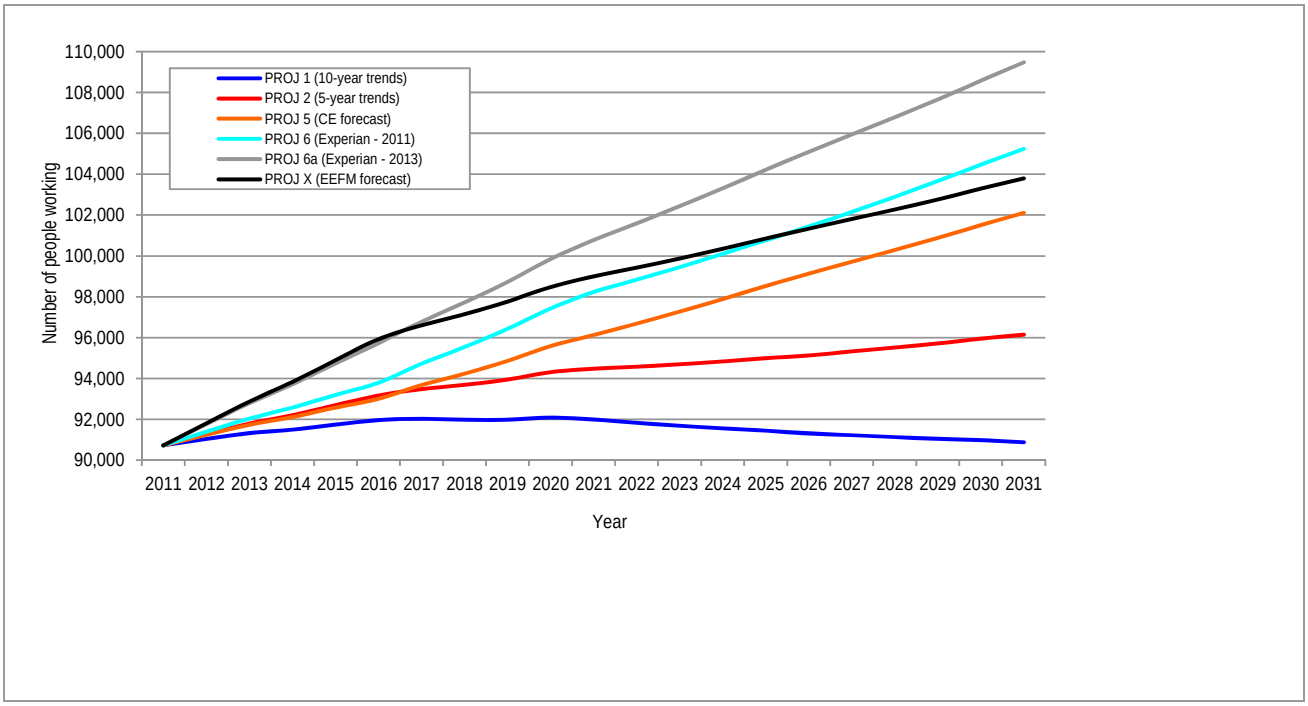
4.5 Figures 21 and 22 below show estimated employment growth in each of our six main projections. It should be remembered that these figures are for the number of people living in an area who are working. For the purposes of analysis it has been assumed that there is a 1:1 relationship between jobs and labour-force in projections 5, 6, 6a and X.

4.6 The 10-year trend-based projection (PROJ 1) shows a very moderate increase in employment (up just 0.2% over the full projection period) whilst the projection linked to 5-year trends (PROJ 2) comes out slightly higher – a 6% increase in employment or 5,400 more people working. The four economic-led projections show figures as contained within each of the relevant employment forecasts, with an increase in employment of between 13% to 21% over the 2011-31 period.

Figure 21: Employment Estimates 2011 to 2031 – Aylesbury Vale

	2011	2016	2021	2026	2031
PROJ 1 (10-year migration trends)	90,724 0.0%	91,958 1.4%	91,993 1.4%	91,303 0.6%	90,877 0.2%
PROJ 2 (5-year migration trends)	90,724 0.0%	93,160 2.7%	94,477 4.1%	95,124 4.8%	96,145 6.0%
PROJ 5 (Cambridge Econometrics)	90,724 0.0%	93,004 2.5%	96,125 6.0%	99,135 9.3%	102,106 12.5%
PROJ 6 (Experian – 2011)	90,724 0.0%	93,790 3.4%	98,234 8.3%	101,423 11.8%	105,239 16.0%
PROJ 6a (Experian – 2013)	90,724 0.0%	95,728 5.5%	100,774 11.1%	105,097 15.8%	109,474 20.7%
PROJ X (East of England Forecasting Model)	90,724 0.0%	95,928 5.7%	98,998 9.1%	101,331 11.7%	103,792 14.4%

Figure 22: Employment Change, 2011 – 2031– Aylesbury Vale



Projections of Household Growth

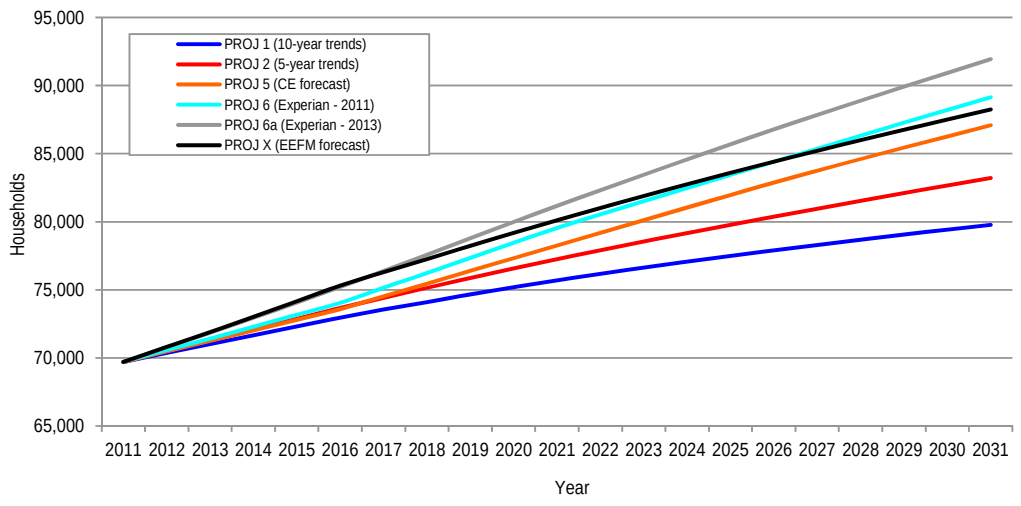
4.7 Figures 23 and 24 shows the projected growth in the number of households under each of the six scenarios. In all cases the proportionate increase in households is notably higher than the changes in either population or employment. This reflects changes to household sizes over the plan period which mean that more houses will be required just to house the Vale's existing population.

4.8 Looking first at the trend-based projections (PROJ 1 and 2) we project household growth of between 14% and 19% - an increase in households of between about 10,100 and 13,500 over the 2011-31 period. The four economic-led projections (PROJ 5, 6, 6a and X) show higher levels of household growth ranging from 25% to 32% (17,400 to 22,200). As with the profiles for population and employment growth there is some difference between the economic-led projections in relation to the pace of household growth in different years of the projection.

Figure 23: Household Estimates 2011 to 2031 – Aylesbury Vale

	2011	2016	2021	2026	2031
PROJ 1 (10-year migration trends)	69,702 0.0%	72,954 4.7%	75,702 8.6%	77,893 11.8%	79,772 14.4%
PROJ 2 (5-year migration trends)	69,702 0.0%	73,668 5.7%	77,257 10.8%	80,365 15.3%	83,213 19.4%
PROJ 5 (Cambridge Econometrics)	69,702 0.0%	73,575 5.6%	78,240 12.2%	82,885 18.9%	87,086 24.9%
PROJ 6 (Experian – 2011)	69,702 0.0%	74,041 6.2%	79,548 14.1%	84,398 21.1%	89,145 27.9%
PROJ 6a (Experian – 2013)	69,702 0.0%	75,191 7.9%	81,174 16.5%	86,798 24.5%	91,941 31.9%
PROJ X (East of England Forecasting Model)	69,702 0.0%	75,310 8.0%	80,117 14.9%	84,422 21.1%	88,248 26.6%

Figure 24: Household Change, 2011-2031 – Aylesbury Vale



Projections of Dwelling Requirements

4.9 The analysis above concentrated on the number of additional households. In reality there are always likely to be some vacant homes in the area and so the number of properties required to house all of these households will be slightly greater than the projected household numbers. We have therefore added a vacancy allowance of 2.5% to all of the above figures to make estimated housing requirements with figures shown in the table below.

Figure 25: Estimated housing numbers with 2.5% vacancy allowance (to 2031) – Aylesbury Vale

Projection variant	Annual household growth	Annual requirement with vacancy allowance	Requirement over 20-years
PROJ 1 (10-year migration)	503	516	10,322
PROJ 2 (5-year migration)	676	692	13,849
PROJ 5 (CE)	869	891	17,819
PROJ 6 (Experian – 2011)	972	996	19,929
PROJ 6a (Experian – 2013)	1,112	1,140	22,795
PROJ X (EEFM)	927	950	19,009

Summary of Projection Results

4.10 Figure 26 below provides an overall summary of the above projections along with the other six projections run as part of the analysis. The projections in bold reflect the projections shown in detail above. The table shows data for the full 20-year projection period for population growth, housing requirements and the associated change in employment.

4.11 Even with no net migration into the District (PROJ 3) we would expect to see a requirement for additional homes to be provided (about 9,300 over the full 20-year projection period). This projection would however expect to see a decrease in the working population of about 1,400 (or 1.5% down from 2011 levels). This scenario highlights that net in-migration to the Vale will be important in supporting economic growth. As we set out in the HEGA, planning for Zero Net Migration is not a realistic scenario set against national planning policies.

4.12 The projections indicate that to maintain employment at 2011 levels (PROJ 4) would require provision of about 10,187 additional homes along with a population growth of around 12,000. This reflects the expected change in the age structure of population the District over the period to 2031; in particular the increase in the number of older people. This scenario provides outputs which are close to the figures in the 10-year trend based migration projection (PROJ 1). It suggests that employment growth could result in some increase in in-migration moving forward relative to trends over the 2001-11 period.

4.13 Projecting forward 5-year migration trends on a linear basis (PROJ 2) sees the population increase by around 21,700. This results in growth in residents in employment in the Vale of around 6% over the 2001-11 period. This scenario is the most similar to the VAP Strategy which proposes delivery of 13,500 homes over the plan period.

4.14 Based on past housebuilding rates (PROJ 7), which have average 758 homes over the past ten years, we might expect a notable increase in both population (up 25,000) and the number of people who are in employment (up 7,500). Linked to the South East Plan (PROJ 8) we see the highest of all figures in the table with an expected population growth of 56,000 and an increase in employment approaching 25,000. This latter figure is significantly higher than even the highest of the economic-led projections which shows employment growth of about 16% (compared with the SEP projection figure of around 28%) highlighting that it would likely to be difficult to achieve the level of growth envisaged in the SEP.

4.15 The projection based on assumptions in the 2011-based SNPP (PROJ 9) also shows quite high figures with all of population, employment and housing growth being in excess of any of the main trend-based or economic-led projections. As discussed earlier in this document we do not think that

the assumptions about migration used by ONS are realistic when compared with trends as evidenced through analysis of Census data. This thus is not considered to provide a robust projection of housing requirements.

Figure 26: Summary of all projections 2011 to 2031 – Aylesbury Vale

Projection	Population growth		Housing numbers		Employment growth	
	Total	% change	Total	% change	Total	% change
PROJ 1 – 10-year migration	**12,357**	**7.1%**	**10,322**	**14.4%**	**153**	0.2%
PROJ 2 – 5-year migration	**21,727**	**12.4%**	**13,849**	**19.4%**	**5,421**	6.0%
PROJ 3 – Zero Net Migration	9,666	5.5%	9,308	13.0%	-1,364	-1.5%
PROJ 4 – Zero Employment Growth	11,945	6.8%	10,187	14.3%	0	0.0%
PROJ 5 – CE Forecast	**32,201**	**18.4%**	**17,819**	**24.9%**	**11,382**	**12.5%**
PROJ 6 – Experian (2011)	**37,829**	**21.6%**	**19,929**	**27.9%**	**14,515**	**16.0%**
PROJ 6a – Experian (2013)	**45,461**	**26.0%**	**22,795**	**31.9%**	**18,750**	**20.7%**
PROJ 7 – Past Housebuilding	25,178	14.4%	15,160	21.2%	7,461	8.2%
PROJ 8 – South East Plan	56,390	32.2%	26,900	37.7%	24,943	27.5%
PROJ 9 – SNPP	39,301	22.5%	20,465	28.6%	15,303	16.9%
PROJ X – EEFM Forecast	**35,464**	**20.3%**	**19,009**	**26.6%**	**13,068**	**14.4%**
PROJ Y – VAP Strategy	20,808	11.9%	13,472	18.9%	4,788	5.3%

Sensitivity Analysis around Commuting Assumptions

4.16 Figure 27 provides a sensitivity analysis to the main projection outputs based on different assumptions on commuting. As we have shown earlier the 2001 Census suggests that there are around 1.24 residents in employment for each person who works in the District (regardless of where they live). More recent APS data suggests that this did not change significantly from 2001 to 2008.

4.17 If we were to assume that this commuting ratio remained consistent, with some housing demand in the Vale generated by a growth in residents which commute out of the Vale to work in absolute terms, the levels of housing provision required to support the economic-led scenarios would be higher still.

4.18 The data is only shown for the four economic-led projections. Housing requirements for all other projections would be unaffected by a changed commuting assumption.

Figure 27: Housing Requirement with Commuting Patterns at 2001 Levels

Projection	Housing requirement	Housing req't (constant commuting)	Difference	% increase
PROJ 5 – CE Forecast	17,819	19,688	1,869	10.5%
PROJ 6 – Experian (2011)	19,929	22,314	2,385	12.0%
PROJ 6a – Experian (2013)	22,795	25,883	3,088	13.5%
PROJ X – EEFM Forecast	19,009	21,170	2,161	11.4%

Comparing Projection Outputs to the HEGA

4.19 Below we have compared these projections with a similar set run as part of the Housing and Economic Growth Assessment. The figures from the HEGA differ slightly from those in the published report as we have returned to the original projections and excluded the projected growth from 2006 to 2011. We have added comments where projections differ markedly from earlier work.

Figure 28: Comparing projections – Annual figures (housing numbers)

Projection	Previous Annual Housing Figures	Updated Annual Housing Figures	Notes
PROJ 1 – 10-year migration	624	516	Analysis from Census suggests lower migration over past 10-years than recorded by ONS.
PROJ 2 – 5 year migration	662	692	
PROJ 3 – Zero net migration	433	465	
PROJ 4 – Zero employment growth	595	509	Previous projection higher due to the zero employment growth being from 2006 (modelling included some drop in employment from 2006 to 2011)
PROJ 5 – CE forecasts	941	891	
PROJ 6 – Experian (2011)	1,014	996	
PROJ 6a – Experian (2013)	-	1,140	
PROJ 7 – Past build rates	748	758	
PROJ 8 – South East Plan	1,345	1,345	
PROJ 9 – SNPP	764	1,023	Current forecast higher due to ONS SNPP projecting higher levels of migration. This assumption does not appear to be supported by a past trend analysis.
PROJ X – EEFM forecasts	-	950	
PROJ Y – VAP Strategy	-	674	

5 IMPLICATIONS FOR THE VAP STRATEGY

5.1 Aylesbury Vale District Council is shortly due to publish the Pre-Submission Vale of Aylesbury Plan: Strategy. Decisions regarding levels of housing provision in the Plan have already been made by the Council. The report has been prepared in this context.

5.2 The Vale of Aylesbury Plan (VAP) Strategy is based on delivering 13,500 homes over the 2011-31 plan period. This was based on the projections in the HEGA, prepared in 2011, and was broadly equivalent to planning for population growth consistent with 5-year migration trends. It was below the scenarios modelled based on economic forecasts, and past rates of housing delivery in the District.

5.3 The revised projections are largely consistent with this. The projections undertaken indicate that the VAP Strategy would support growth in the District's population of 20,800 (11.9%) over the plan period.

5.4 This level of planned growth is broadly consistent to a continuation of past population trends over the last 5 years (as modelled in PROJ 2) and sees stronger population growth moving forward than has taken place in the Vale over the previous ten years (2001-11, as modelled in PROJ 1). It is thus consistent with meeting demographic-driven demand for housing and takes into account and plans for a continuation of the strong recent housing delivery in the District (2006-11) consistent with the growth agenda.

5.5 The projections estimate that delivery of 13,500 homes over the 2011-31 period, as proposed in the VAP Strategy, would support growth in the number of residents in employment in the Vale by around 4,800 (5.3%). This falls below forecasts for employment growth. The 2011 econometric forecasts used in the HEGA (PROJ 5 and 6) projected growth in employment in the Vale of between 12.5 – 16.0% over the plan period (2011-31). The 2013 econometric projections considered in the report (PROJ 6a and X) indicate that based on more recent performance and trends, employment growth could be moderately stronger, suggesting growth of between 1.4 – 20.7% over the plan period.

5.6 The relationship between housing and employment growth is complex and the level of employment growth which could be influenced by changes in commuting dynamics. In 2010 the Vale had a jobs density of 0.68 compared to 0.80 across the South East[1]. The employment growth projections in the 2011 forecasts (and the EEFM 2013 run) could be achieved in the Vale if the jobs density in the District was to increase to the regional average through a reduction in net out-commuting, although

[1] This describes the ratio between jobs and working-age population aged 16-64

the extent to which this can be achieved will be influenced by the commuting pull and future economic performance of larger employment centres such as Milton Keynes and London.