Northumberland

Demographic Analysis and Forecasts

County Level & Sub-County Level

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For the attention of:

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Acknowledgements

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Introduction

Context & Requirements

1.1 In September 2014[1] and July 2015[2], Edge Analytics provided Northumberland County Council (NCC) with a range of population and household forecasts at for the County and for 25 sub-County 'small areas'.

1.2 Since the previous Northumberland demographic analysis was produced, a number of new datasets have been published from the Office for National Statistics (ONS), the Department for Communities and Local Governments (DCLG) and the Office for Budget Responsibility (OBR). These include:

- 2014 and 2015 mid-year population estimates (MYEs) from the ONS
- 2014-based Sub-National Population Projections (SNPP) from the ONS
- 2014-based household projection model from the DCLG
- 2015 labour market analysis from the OBR[3].

1.3 In preparation for the submission of the Northumberland Core Strategy, NCC has requested that a range of demographic scenarios are developed at County and sub-County level, taking account of the latest demographic evidence.

1.4 NCC has requested that, at County level, the updated demographic evidence considers: the latest 2014-based population and household projections; trend-based scenarios with variant migration histories; and employment projections from St Chads Economic Sectoral and Employment Projections (2013). Additionally, NCC has requested that a migration sensitivity scenario is developed in which migration is adjusted to evaluate the impact of changes in internal migration flows between Northumberland and neighbouring local authorities. Jobs-led sensitivity scenarios

[1] Northumberland Draft Strategic Housing Market Assessment. 2014. Appendix A

[2] Northumberland County level Demographic Forecasts & Analysis. 2014.

[3] http://budgetresponsibility.org.uk/docs/dlm_uploads/49753_OBR-Fiscal-Report-Web-Accessible.pdf

have also been requested, in which alternative economic assumptions are applied to the St Chad's employment growth forecast.

1.5 At sub-County level, dwelling led scenarios have been requested in which Northumberland's small area housing targets and the proposed 'Garden Village' development are considered. For comparison, the latest ONS 2014-based SNPP is also considered at sub-County level. Scenario outcomes are presented for the 25 'small areas' areas within the four delivery areas.

Approach

Official Guidelines

1.6 The development and presentation of demographic evidence to support local housing plans is subject to an increasing degree of public scrutiny. The National Policy Planning Framework (NPPF) and Planning Practice Guidance (PPG) provide guidance on the appropriate approach to the objective assessment of housing need. Guidance is also provided by the Planning Advisory Service (PAS)[4], with practical advice on assessing the housing needs and establishing housing targets for an area.

1.7 In the objective assessment of need, demographic evidence is a key input. The PPG states that the DCLG household projections should provide the *"starting point estimate of overall housing need"* (PPG paragraph 2a-015). Local circumstances, alternative assumptions and the most recent demographic evidence, including Office for National Statistics (ONS) population estimates, should also be considered (PPG paragraph 2a-017). Evidence that links demographic change to forecasts of economic growth should also be assessed (PPG paragraph 2a-018).

1.8 The choice of assumptions used for demographic forecasting has an important impact on scenario outcomes. This is particularly the case when trend projections are considered alongside jobs forecasts. The scrutiny of demographic assumptions is now a critical component of the public inspection process, providing much of the debate around the appropriateness of a particular objective assessment of housing need.

[4] http://www.pas.gov.uk/documents/332612/6549918/OANupdatedadvicenote/f1bfb748-11fc-4d93-834c-a32c0d2c984d

Edge Analytics' Approach

1.9 In accordance with the PPG, Edge Analytics has used POPGROUP (v.4) technology to develop a range of growth scenarios. At County level, each of the scenarios has been developed with historical data included for the 2001–2015 period. At sub-County level, the dwelling-led scenarios have been developed with historical data for the 2001–2014 period. All scenarios are presented for Northumberland's designated 2011–2031 plan period.

1.10 The scenario analysis is prefaced with a 'demographic profile' of Northumberland, illustrating its geographical context, its 'components' of population change (births, deaths, and migration) and its historical commuting and migration patterns (**Section 2**). A sub-County perspective is included to illustrate how demographic change has varied for the 25 key planning areas since 2001.

1.11 The starting point of the scenario analysis is the 2014-based sub-national population projection (SNPP) and sub-national household projection for Northumberland (**Section 3**). A number of alternative trend scenarios, using varying migration assumptions, have been developed and are compared to the 2014-based benchmark scenario in **Section 4**. Additionally, a migration sensitivity scenario has been developed in which the migration flows are adjusted to consider the impact of increased migration into Northumberland from neighbouring local authorities. Household and dwelling growth have been estimated using assumptions from the 2014-based DCLG household projection model for Northumberland.

1.12 In **Section 5**, the effect of the changing population age structure on Northumberland's labour force is considered, linking the demographic scenarios to an estimated employment growth requirement using assumptions on economic activity rates, unemployment and commuting. These are compared to independently-generated employment forecasts from St Chad's Economic Sectoral and Employment Projections (2013). Sensitivity testing has also been conducted on the assumptions that link population growth to the jobs growth implied by the St Chads' employment forecasts.

1.13 In **Section 6**, the forecasting results are presented for the sub-County areas and four delivery areas.

1.14 **Section 7** summarises the new scenario evidence, with the Appendices to this document providing a summary of the POPGROUP methodology and further detail on key data and assumptions used in the development of the forecasts.

2 Area Profile

Geography

2.1 Twenty five sub-County 'small areas' have been defined for Northumberland (Figure 1), falling within four delivery areas: North, West, Central and South East. Northumberland is a predominantly rural Unitary Authority with many of the main towns falling within the South East and Central delivery areas.

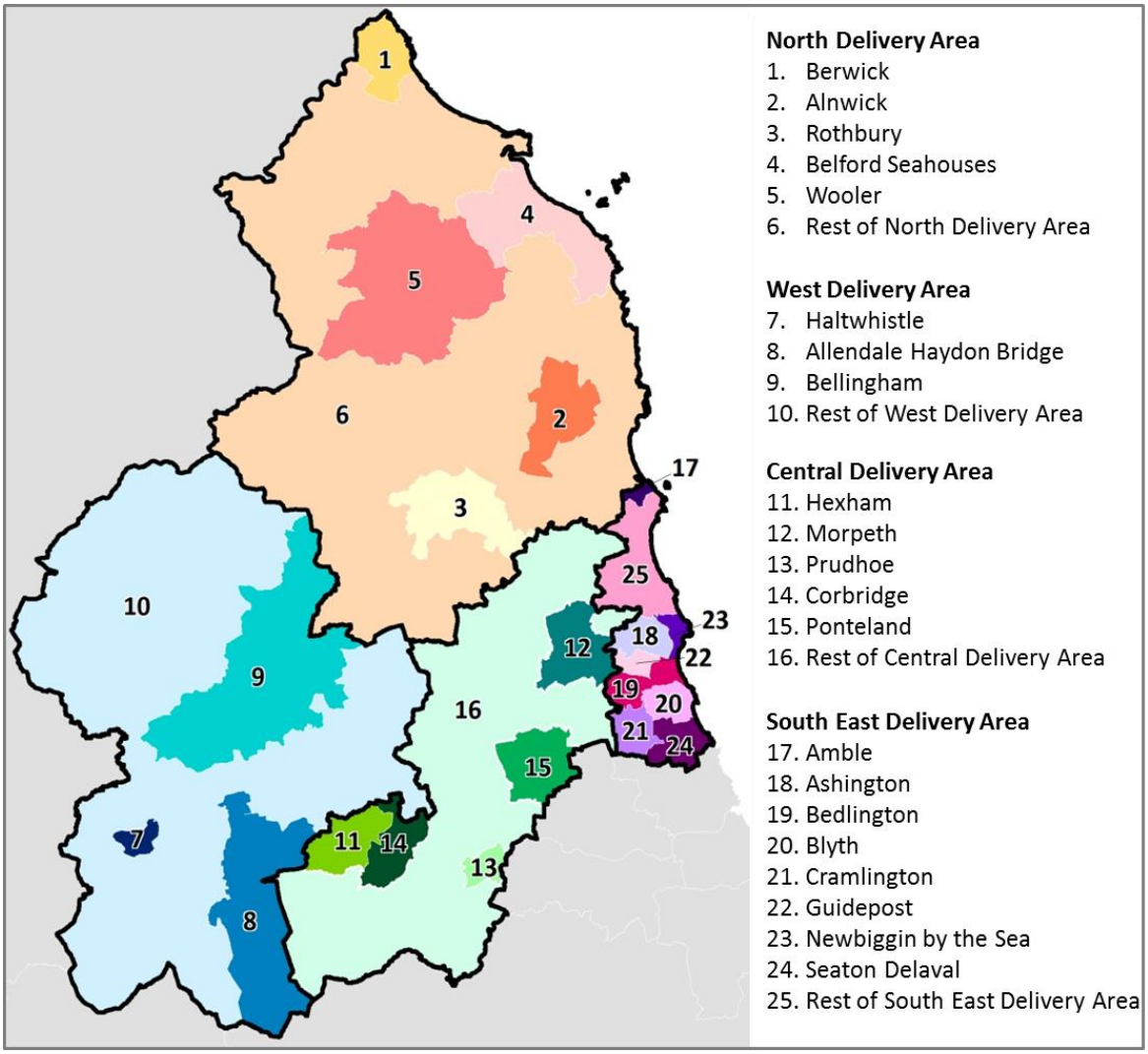


Figure 1: Northumberland Small Area Geographies

Population Growth Profile

2.2 The latest 2015 MYE for Northumberland suggests a population of 315,263, a 2.6% increase since 2001. This rate of growth is more closely aligned with the regional average of 3.3%, however substantially lower than the England average of 10.8% (Table 1).

Table 1: Northumberland population change comparison (Source: ONS)

Area	Population Change 2001–2015			
	2001	2015	Change	% Change
Northumberland	307,363	315,263	7,900	2.6%
North East	2,540,090	2,624,621	84,531	3.3%
England	49,449,746	54,786,327	5,336,581	10.8%

2.3 Between Censuses, MYEs are derived by applying 'components of change' (i.e. counts of births and deaths and estimates of internal and international migration) to the previous year's MYE. Following the 2011 Census, the MYEs from 2002–2010 were 'rebased', ensuring the correct transition of the age profile of the population over the 2001–2011 decade. At the 2011 Census, Northumberland's resident population was 316,028, a 2.9% increase from 2001. The 2011 Census population count proved to be *higher* than that suggested by the trajectory of growth from the previous MYEs. As a result, the revised, final MYEs are *higher* than the previous MYEs (Figure 2).

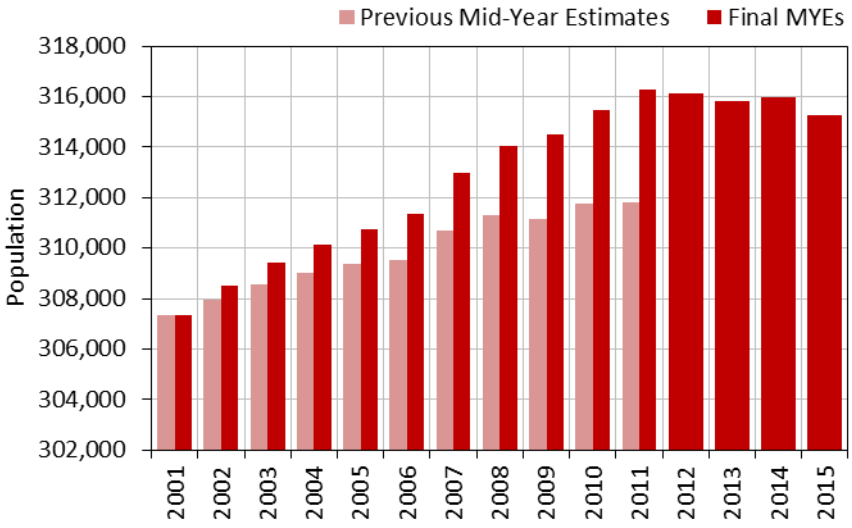


Figure 2: Northumberland mid-year population estimates, 2001–2015

2.4 The rebasing of the MYEs involved the recalibration of the components of change for 2001/02–2010/11. After methodological changes and errors in the components were accounted for, the remaining difference between the expected 2011 mid-year estimate and the 2011 Census-based mid-year estimate is referred to as 'unattributable population change' (UPC). The ONS has not attributed UPC to any one component-of-change, however, suggesting that it may be due to the Census estimates themselves, international migration estimation or internal migration counts.

2.5 In Northumberland's case, the impact of the UPC component was an uplift to each inter-Census MYE, averaging +384 per year to 2011 (Figure 3).

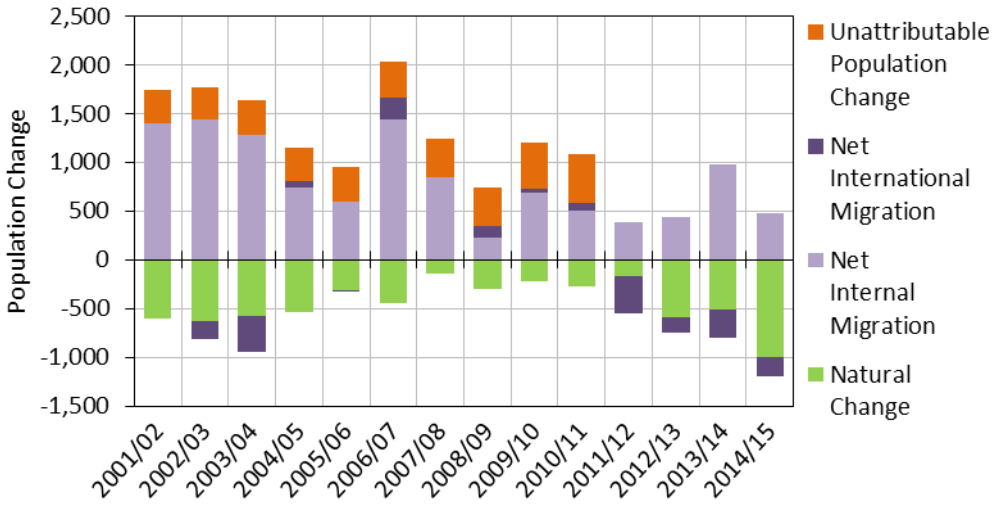


Figure 3: Mid-Year Population Estimates (Source: ONS)

2.6 Between Censuses, births and deaths are accurately recorded in vital statistics registers and provide a robust measure of 'natural change' (the difference between births and deaths) in a geographical area. Given that births and deaths are robustly recorded, and assuming that the 2001 Census provided a robust population count, the 'error' in the historical MYEs is most likely due to the difficulties associated with the estimation of migration.

2.7 Internal migration (i.e. migration flows to and from other areas in the UK) is adequately measured using data from the Patient Register (PR), the National Health Service Central Register (NHSCR) and Higher Education Statistics Agency (HESA), although data robustness may be lower where there is under-registration in certain age-groups (young males in particular).

2.8 It is most likely that the UPC component is associated with the mis-estimation of international migration, i.e. the balance between immigration and emigration flows to and from

Northumberland. Based on this assumption, a fourteen–year profile of the 'components of change' is presented for Northumberland (Figure 4).

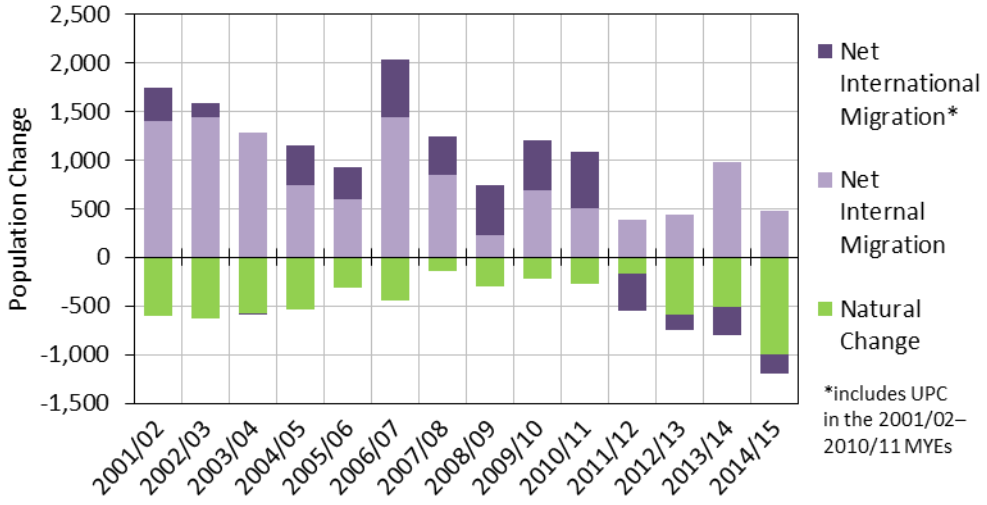


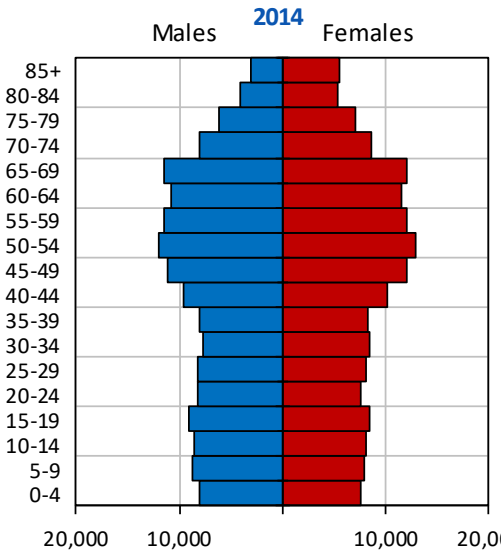
Figure 4: Northumberland components of population change 2001/02 to 2014/15 including UPC in the 2001/02 to 2010/11 international migration component (source: ONS)

2.9 Northumberland's population change since 2001/02 has been driven by a combination of natural change, internal and international migration. Natural change has historically resulted in a population decline (an excess of deaths over births) a reflection of Northumberland's 'ageing' population.

2.10 Internal migration (i.e. the exchange of migrants between Northumberland and other parts of the UK) has had the most significant impact on population growth, but with a significant fall in net migration in 2008/09. Net flows have recovered since but not to the levels experienced pre-2008. With the inclusion of the UPC component, international migration is estimated to have had a varying impact on Northumberland's population growth, with a positive impact experienced up to 2010/11 and an estimated negative impact in more recent years.

Age-Structure

2.11 When considering future housing needs and the size and shape of the resident labour force, the age structure of Northumberland's population is a key factor. Figure 5 compares Northumberland's age profile to its region and England in total, using the 2014 base year of the latest ONS sub-national projections.



Indicator	Northumberland	North East	England
Aged 65+	23%	19%	18%
Aged 80+	6%	5%	5%
OAD Ratio	36	29	27
Median age	47	42	40

OAD = Old Age Dependency Ratio
(Population Aged 65+/Population aged 15–64)

Figure 5: Northumberland population age structure (source: ONS)

2.12 Northumberland has a substantially older age profile than the North East region and England, with 23% of the population in the 65+ age-range, and a median age of 47. Northumberland has an Old Age Dependency ratio of 36, compared to a national average for England of 27. This means that the 65+ population of Northumberland is equivalent to 36% of the 15–64 age-group population, compared to just 27% across England in aggregate.

Internal Migration

2.13 Internal migration statistics measure the in-flows and out-flows of population to and from Northumberland, from and to elsewhere in the UK. The average annual growth of Northumberland's population as a result of internal migration exchanges has averaged +816 per year since 2001/02 (Figure 6). This illustration reflects the 'components-of-change' profile but also presents the separate in-migration and out-migration flows that make up the net total. During the 2001/02–2014/15 time period, internal in-migration averaged 9,716 per year, with internal out-migration averaging 8,900 people per year. Whilst out-migration has remained relatively stable during the last fifteen years, it was a sharp increase in the level of in-migration to Northumberland in 2006/07 that led to the increase in net migration, followed by a decrease in the two years that followed. In more recent years, both internal in- and out-migration has increased.

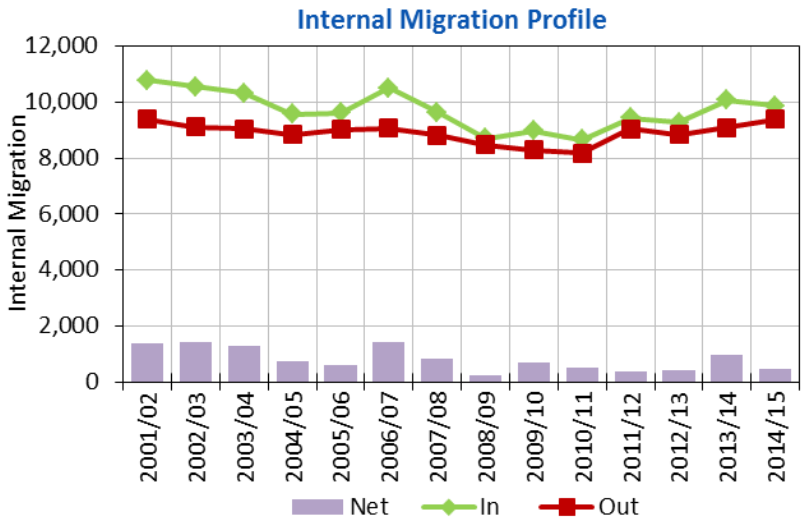


Figure 6: Northumberland internal migration profile, 2001/02–2014/15 (source: ONS)

2.14 In terms of migration linkages between Northumberland and surrounding areas, the largest *positive* net exchanges (i.e. a higher inflow than outflow) have been with North Tyneside and Newcastle upon Tyne local authority districts (Figure 7). For the net *outflow* exchange, the dominant flow has been between Northumberland and Leeds (Figure 7).

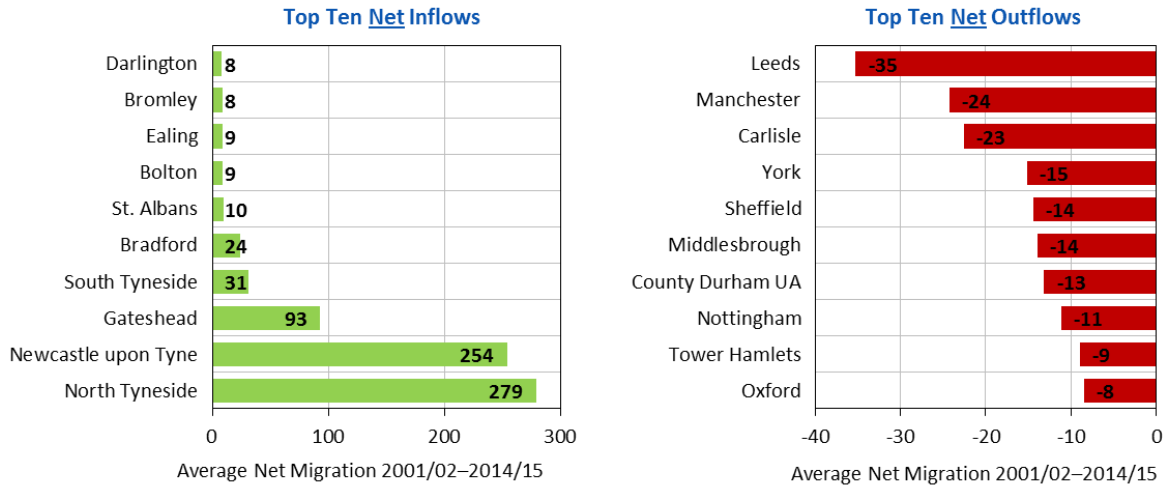


Figure 7: Top-10 internal migration net inflows & outflows, average 2001/02–2014/15 (source: ONS)

2.15 The historical internal in-, out- and net migration flows between Northumberland and neighbouring local authorities are summarised in Figure 8, confirming the latest net inflows from Newcastle, North Tyneside and Gateshead. In 2014/15, Northumberland experienced a net outflow to County Durham, Sunderland and South Tyneside. Net migration flows between Northumberland and Newcastle were lower in 2014/15 than that experienced in the previous year, driven by lower internal in-migration flows from Newcastle.

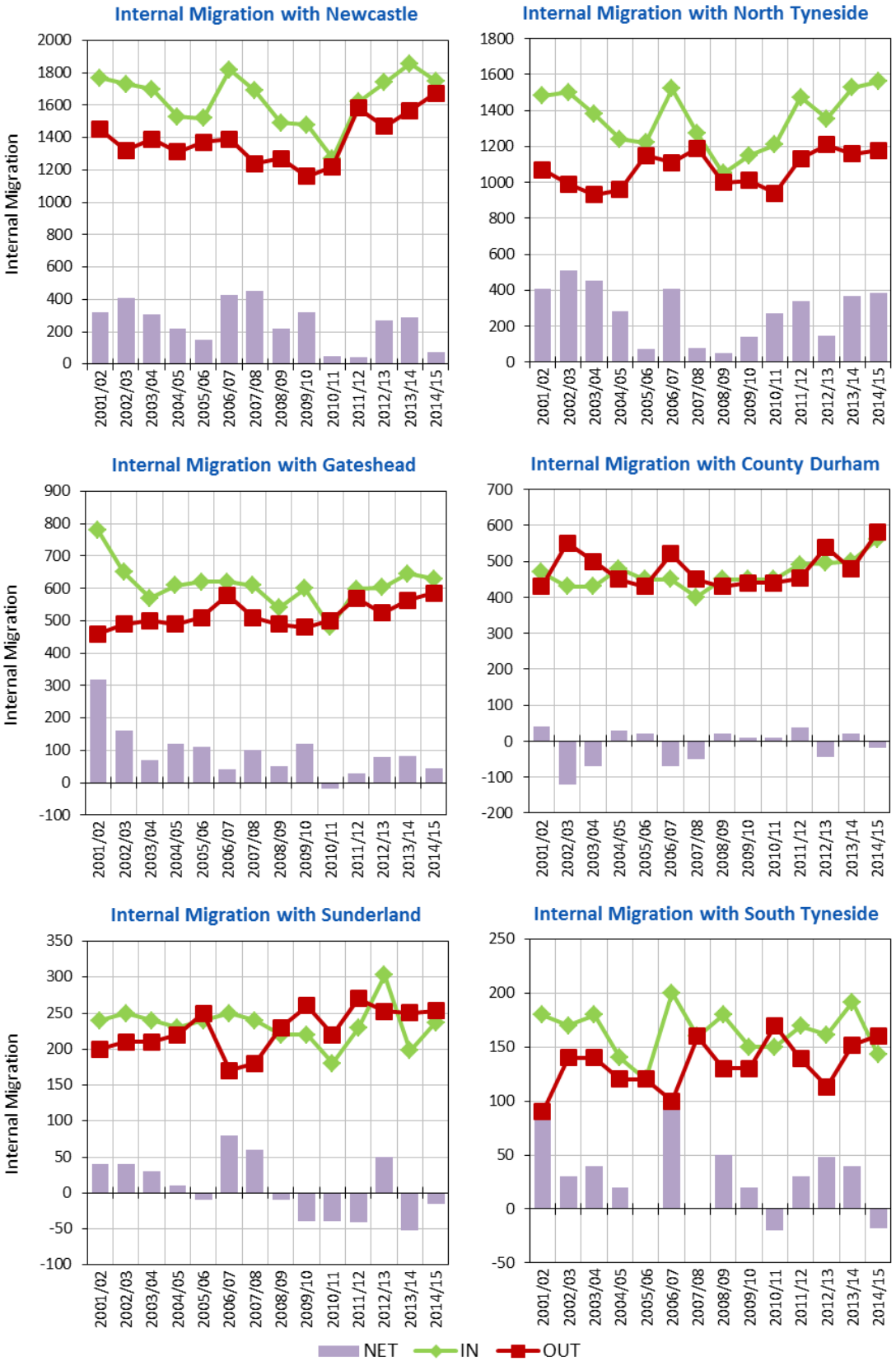


Figure 8: Historical internal migration flows between Northumberland and neighbouring local authorities (2001/02–2014/15). Green indicates the flows *to* Northumberland from the neighbouring authority and red the flows *from* Northumberland (Source: ONS)

2.16 The age profile of migration reveals that Northumberland has experienced a net inflow in all age-groups with the exception of 15–19 year-olds (Figure 9). The large net outflow at age 15–19 will be associated with student moves to higher education, but there is no corresponding return flow in the 20–24 age-range.

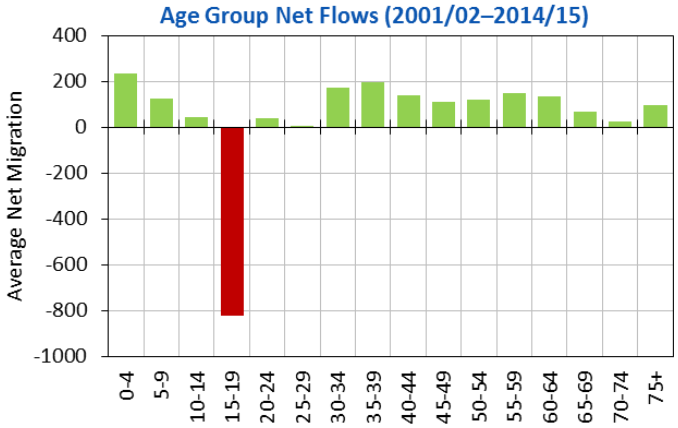


Figure 9: Northumberland internal migration age profile, 2001/02–2013/14 (source: ONS)

International Migration

2.17 National Insurance Number (NINo) registrations provide an indication of the number of foreign nationals that have registered to work in Northumberland since 2002 (Figure 10).

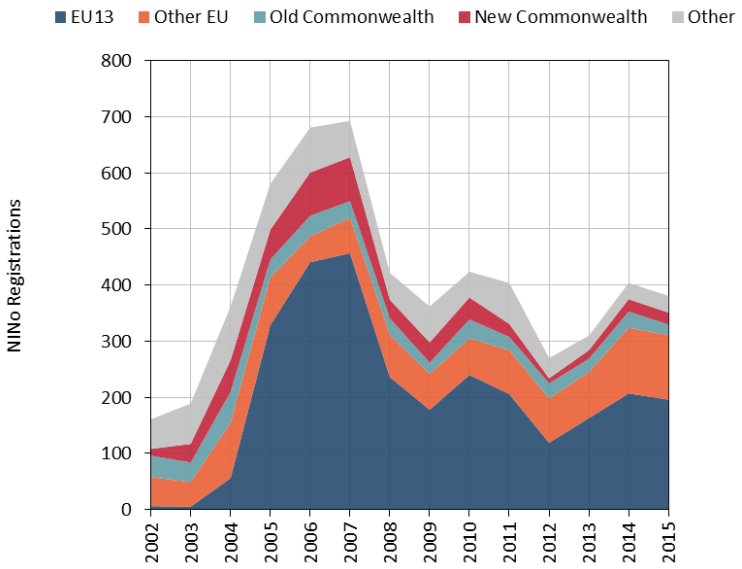


Figure 10: NINo Registrations in Northumberland, 2002–2015 (Source: DWP)[5]

[5] Refer to Appendix D for more detail on the NINo classification

2.18 These data do not align especially well with ONS components of change as they are a record of immigration only (there are no associated de-registration statistics); they only include those registering for work (excluding dependents) and do not provide any evidence on the 'length-of-stay' of each migrant. However, they do provide a useful picture of the likely trend in immigration and an indication of the country-of-origin of migrants locating themselves in Northumberland.

2.19 The large majority of Northumberland's NINo-registrations have been associated with European migrants, particularly from the countries that have joined the EU since 2004. 2012 was a low-point for registrations, but numbers have increased since, with a higher proportion of migrants from Bulgaria and Romania since 2013.

Commuting Flows

2.20 With regards to travel-to-work patterns, the 2011 Census recorded 147,827 workers aged 16+ living within Northumberland (Table 2) and 125,803 workers aged 16+ working within Northumberland (Table 3).

Table 2: Northumberland 2011 Census commuting flows: workers (ages 16+)

Where do people who live in Northumberland work?			Source: ONS
Live	**Work**	**Number**	**%**
Northumberland	Northumberland	102,276	69.2%
	Newcastle upon Tyne	19,289	13.0%
	North Tyneside	10,506	7.1%
	Other	15,756	10.7%
	Workers	**147,827**	**100.0%**

Table 3: Northumberland 2011 Census commuting flows: employment (ages 16+)

Where do people who work in Northumberland live?			Source: ONS
Live	**Work**	**Number**	**%**
Northumberland	Northumberland	102,276	81.3%
Newcastle upon Tyne		6,275	5.0%
Other		17,252	13.7%
	Jobs	**125,803**	**100.0%**

2.21 Approximately 69.2% of Northumberland's labour force both lives and works within the county, with 13.0% commuting out to neighbouring Newcastle-upon-Tyne, 7.1% to North Tyneside and

the remaining 10.7% elsewhere (Table 2).

2.22 In terms of employment, the majority of Northumberland's jobs are taken up by the local workforce (81.3%), with 5.0% of workers commuting from Newcastle-upon-Tyne and a further 13.7% commuting from elsewhere (Table 3).

2.23 The balance between the number of workers and jobs in Northumberland changed over the 2001–2011 Census decade; with a smaller increase in the number of resident workers (+12,982) compared to jobs (+17,809) (Table 4). In 2011, Northumberland had a net outward commuting ratio of 1.18, compared to a higher net outward commuting ratio of 1.25 in 2001.

Table 4: Northumberland Census travel-to-work commuting ratios, ages 16+ (source: ONS)

Northumberland UA		2001 Census	2011 Census
Workers	*a*	134,899	147,827
Jobs	*b*	107,994	125,803
Commuting Ratio	*a/b*	**1.25**	**1.18**

Note: 2001 data from Census Table *T101 – UK Travel Flows* ; 2011 data from Census Table *WU02UK - Location of usual residence and place of work by age* .

Sub-County Growth Profile

2.24 Northumberland's growth since 2001 has been a composite of different levels of population change across the 25 sub-County small areas (Figure 11)[6].

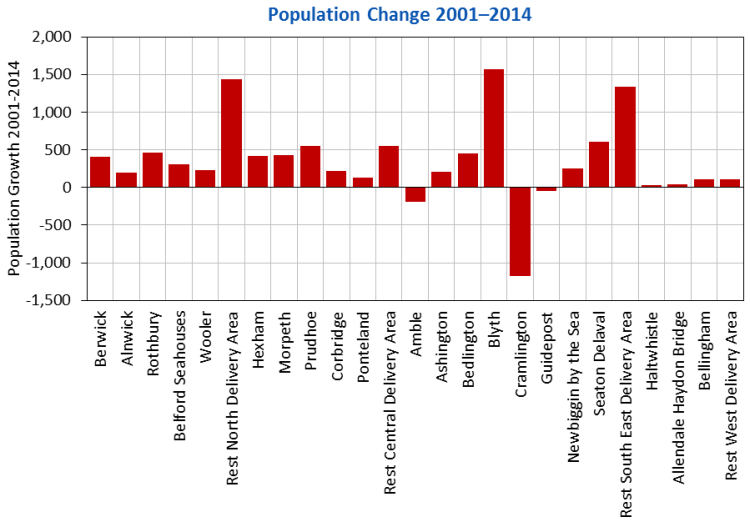


Figure 11: Northumberland small area population change 2001–2014

2.25 The North Delivery area has experienced the largest population growth of 6% over the 2001–2014 historical period. With only 6% of Northumberland's total population in 2014, the West Delivery Area has experienced the lowest population growth of 1.9% over the 2001–2014 period. The Central and South East Delivery areas have followed a similar population growth trend to that experienced under Northumberland County (Figure 12).

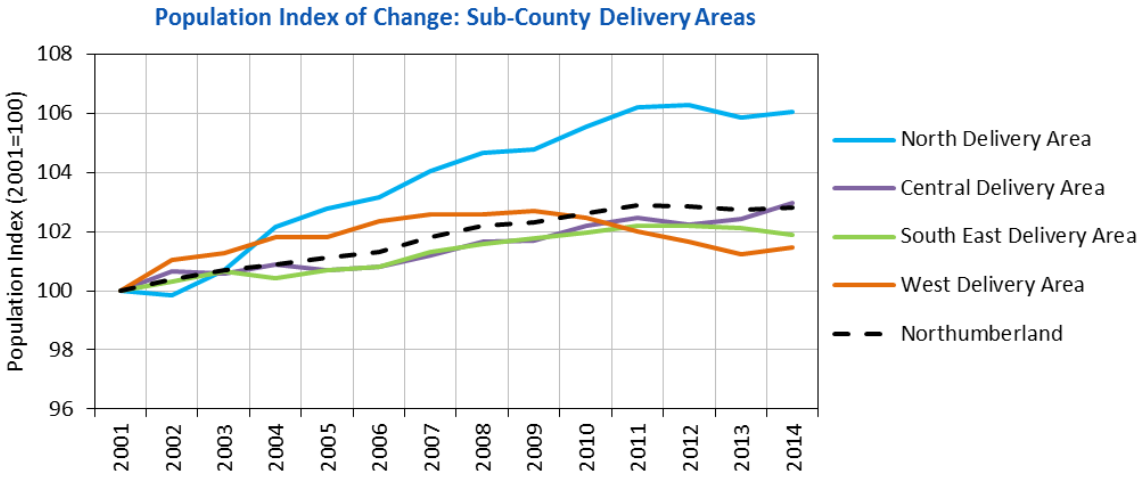


Figure 12: Northumberland Delivery Areas: index of population change 2001–2014

[6] At sub-County level, population estimates are available to mid-year 2014 only

2.26 The components of population change illustrate how net migration and natural change are estimated to have contributed to population growth in the 25 sub-County 'small areas' (Figure 13). Population change in all small-areas (excluding Amble and Cramlington) has been driven by positive net migration. Conversely, natural changes (i.e. the difference between births and deaths) has largely contributed to negative population change, with the exception of Prudhoe, Ashington, Blyth and Cramlington where natural change has been positive (i.e. more births than deaths).

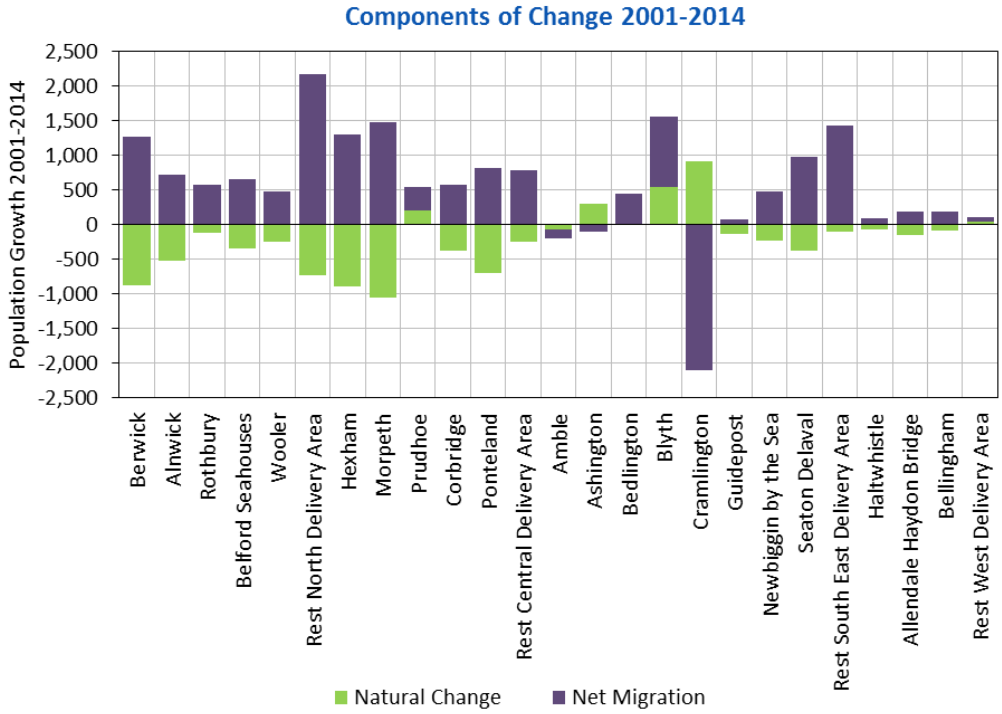


Figure 13: Northumberland small area components of population change 2001–2014

3 Official Projections

3.1 In this section, the latest population and household projections from the ONS and the DCLG are considered. Together with Section 2, this section presents the context for the development of a range of alternative growth scenarios, detailed in Section 4.

Official Statistics

3.2 In the absence of a population register, the UK continues to rely on the ten-yearly Census for a definitive count of population within its constituent local authority areas. Between Censuses, MYEs are calculated, using data on births, deaths, internal and international migration to quantify annual growth (Figure 14).

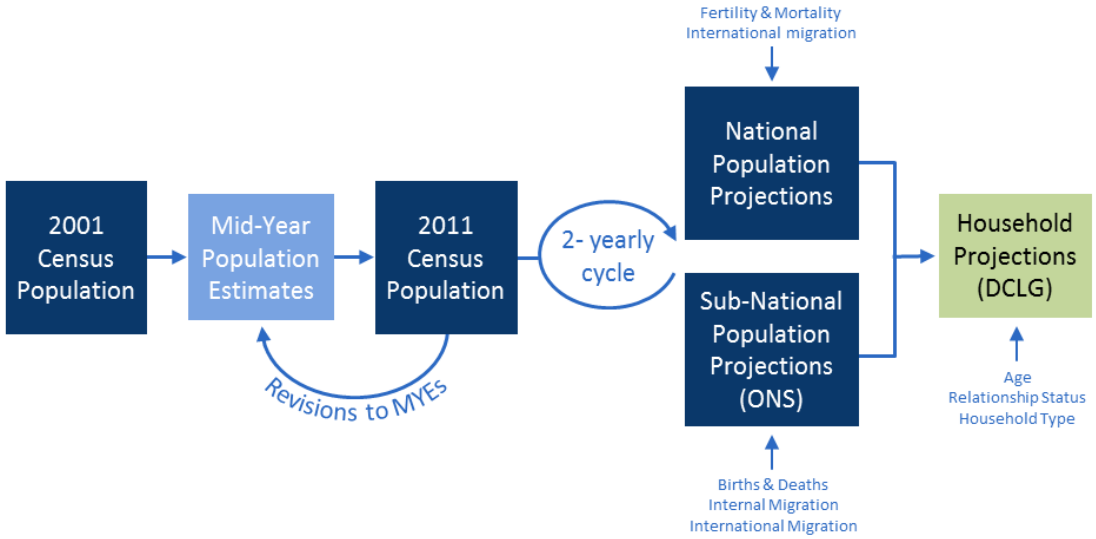


Figure 14: Official Statistics – population and households

3.3 Every two years ONS publishes its national population projections, setting key assumptions on the long-term effects of fertility, mortality and international migration to estimate population growth outcomes for England, Wales, Scotland and Northern Ireland. The 2014-based *national* projection was released in October 2015[7].

[7] http://www.ons.gov.uk/ons/rel/npp/national-population-projections/2014-based-projections/index.html

3.4 The national projection informs the sub-national population projections (SNPPs) for English local authorities, also published on a bi-yearly cycle. The latest, 2014-based SNPPs use a combination of national and local assumptions on births, deaths and migration to formulate a 25-year projection for each local authority area.

3.5 The SNPPs provide the key demographic input to the DCLG household projections. The latest 2014-based household projection model provides a 25-year projection of household growth in each of the English local authorities.

3.6 The PPG states that the DCLG household projections should provide the *"starting point estimate of overall housing need"* (PPG paragraph 2a-015). The remainder of this section considers the 2014-based SNPP and the 2014-based DCLG household projection for Northumberland, providing the context for complementary scenario analysis in Section 4.

ONS Sub-national Population Projection

3.7 In the development and analysis of population forecasts, it is important to benchmark any growth alternatives against the latest 'official' population projection. The most recent official subnational population projection is the ONS 2014-based SNPP, released in July 2016. These projections use demographic assumptions derived from a pre-2014, 5–6 year historical period in combination with national assumptions on fertility, mortality and international migration[8].

3.8 Figure 15 presents the ONS population projections series for Northumberland. Under the latest, 2014-based SNPP, the population of Northumberland is expected to increase by 5,777 over the 25-year projection period (2014–2039), an increase of 1.8%. Under the previous 2012-based SNPP, the population was expected to increase by 8,630, a 2.7% increase over the 2012–2037 25-year projection period.

3.9 The rate of growth under the 2014-based SNPP is notably *lower* than that estimated by each of the previous projections. The 2010-based and 2012-based outcomes have slightly higher rates of growth, whereas projections prior to 2008 have substantially higher growth rates, driven primarily by inappropriate measures of international migration that have now been superseded by new and improved evidence.

[8] http://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/bulletins/subnationalpopulationprojectionsforengland/2014basedprojections

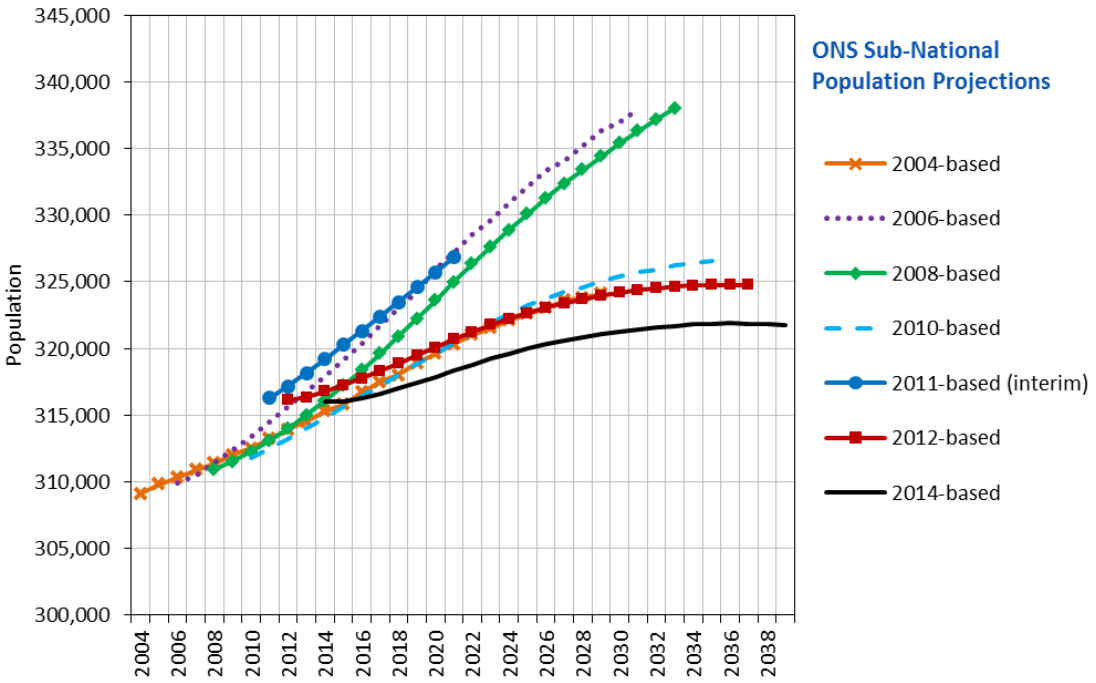


Figure 15: Official Projections for Northumberland (Source: ONS)

3.10 The rate of population growth implied by the 2014-based SNPP for Northumberland is also significantly lower than that estimated for both the North East region and England in total (Table 5).

Table 5: SNPP-2014 growth comparisons (Source: ONS)

Areas	Population			
	2014	2039	Change	Change %
Northumberland	315,987	321,764	5,777	1.8%
North East	2,618,710	2,795,865	177,155	6.8%
England	54,316,618	63,281,522	8,964,904	16.5%

3.11 The components of population change that underpin the 2014-based projection for Northumberland are presented in Figure 16, with the historical components of change for 2001/02 to 2013/14 included for comparison. Internal migration is projected to be the dominant and increasing driver of population growth over the projection period. As the population ages, natural change is projected to have an increasingly negative impact on population growth throughout the SNPP projection period, with international migration contributing a small annual net loss.

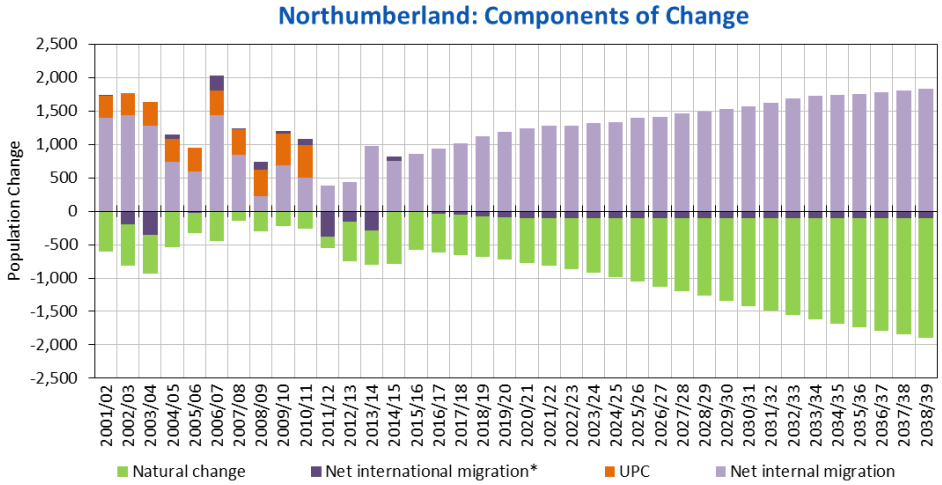


Figure 16: Historical and 2014-based SNPP components of change (Source: ONS)

3.12 To illustrate how the ONS assumptions on demographic change in Northumberland compare with the historical evidence, the annual average natural change, plus net internal and international migration change for the 2014-based projection are compared to 6-year and 13-year historical averages (Table 6).

Table 6: Northumberland 2014-based SNPP components comparison (Source: ONS)

Component of Change	Historical		Projected
	6-year average (2008/09–2013/14)	13-year average (2001/02–2013/14)	2014-based SNPP average (2014/15–2038/39)
Natural Change	-344	-408	-1,094
Net Internal Migration	534	842	1,406
Net International Migration (+UPC)	132	230	-82
Net International Migration (-UPC)	-97	-66	

*UPC is only applicable to the year 2001/02 to 2010/11

3.13 The negative influence of natural change upon population growth is reflected in an SNPP average annual assumption that is significantly greater (-1,094) than both the short-term 6-year average and longer-term 13-year average. The projected effect of internal migration in the 2014-based SNPP is estimated at a level that also exceeds the average for both the six-year and thirteen-year periods preceding 2014, with an annual net inflow of +1,406 per year. International migration is projected to result in a small net emigration over the 25-year period (-82 per year), which is slightly higher than that experienced over the last six years, but lower than the last thirteen years (when UPC is excluded). With the inclusion of the UPC component within the historical data, the

level of international migration projected under the SNPP is considerably lower than the historical data suggests.

DCLG Household Projection

3.14 In the evaluation of housing need, the PPG states that the DCLG household projections *"should provide the starting point estimate of overall housing need"* (PPG paragraph 2a-015). The 2014-based household projection model, which is underpinned by the 2014-based SNPP, was released by the DCLG in July 2016, superseding the 2012-based household projection model.

3.15 The methodological basis of the new 2014-based model is consistent with that employed in the previous 2008-based and 2012-based household projections. A 'two-stage' methodology has been used by DCLG. 'Stage One' produces the national and local projections for the total number of households by age-group and relationship status group over the projection period. 'Stage Two' provides the detailed household type breakdown by age.

3.16 The 2014-based household headship rates (also referred to as household representative rates) have changed little from the 2012-based model, with only small adjustments made to account for new evidence arising from the latest Labour Force Survey (LFS) extracts. As a result, the 2014-based household projections differ from the 2012-based versions primarily on the basis of a different underpinning population projection

3.17 The 2014-based DCLG household projection model for Northumberland, underpinned by the 2014-based SNPP, estimates that the number of households will increase by 12,440 over the 2014–2039 projection period, equivalent to an additional 498 households per year, compared to 579 per year under the 2012-based model (Figure 17).

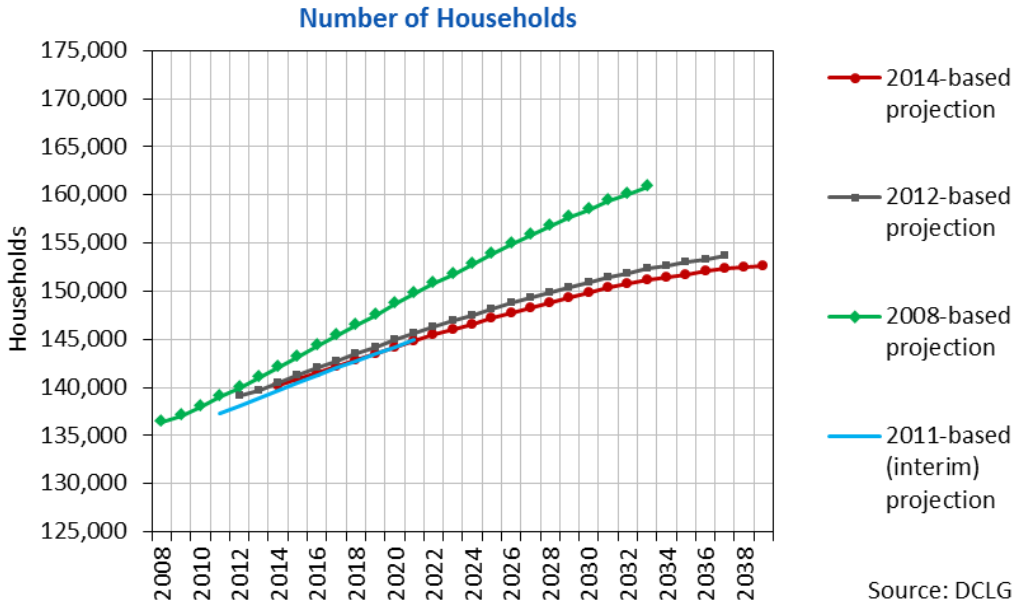


Figure 17: Household growth 2014 based DCLG household projections for Northumberland

3.18 A significantly larger population growth expectation in the 2008-based household projection, coupled with household formation rates that suggest a more rapid reduction in average household size, resulted in an average annual household growth estimate of 980 per year under the 2008-based model alternative.

Starting Point Estimate

3.19 The DCLG household projection, underpinned by the latest ONS population projection, provides the 'starting point' in the assessment of housing need (PPG paragraph 2a-015). For the 2014–2031 projection period (the Northumberland plan period, *excluding* the historical years 2011–2013), the 2014-based household projection model suggests an increase of 10,082 households, approximately 593 per year. Over the same time period, the 2014-based SNPP projects a 1.7% growth in the population, equivalent to an additional 5,443 people (Table 7).

Table 7: Northumberland 'starting point' estimates (source: ONS and DCLG)

	Variable	2014	2031	Change	% Change	Average (per year)
2014-based SNPP	Population	315,987	321,430	5,443	1.7%	320
2014-based DCLG Model	Households	140,235	150,317	10,082	7.2%	593
	Household Population	310,439	314,111	3,672	1.2%	216
	Average Household Size	2.21	2.09	-0.12	-5.6%	-0.01

3.20 As outlined in the PPG, it is appropriate to consider *"alternative assumptions in relation to the underlying demographic projections and household formation rates"* of the local area (PPG Paragraph 2a-017). In the following sections, these 'official' projections are compared to a range of alternative growth scenarios, considering both demographic and economic evidence.

4 County-Level Demographic Scenarios

Introduction

4.1 There is no single definitive view on the likely level of growth expected in Northumberland. Ultimately, a mix of economic, demographic and national/local policy issues will determine the speed and scale of change. Whilst the official 2014-based ONS population and DCLG household projections form the 'starting point' of the assessment of housing need, the PPG states that it is appropriate to consider *"alternative assumptions in relation to the underlying demographic projections and household formation rates"* of the local area (PPG Paragraph 2a-017).

4.2 In line with the PPG, Edge Analytics has developed a range of alternative demographic scenarios for Northumberland, using POPGROUP technology. At County-Level, the 2014-based population projection from ONS is presented as the official 'benchmark' scenario, with household growth estimated using household headship rate assumptions from the 2014-based DCLG household projection model. For comparison with this official benchmark, a number of 'alternative trend' scenarios have been developed, in which variant migration assumptions have been applied. Additionally, a migration sensitivity scenario has been developed in which the migration flows have been altered to reflect the potential impact in changing migration from neighbouring local authorities. In each of the alternative trend scenarios, the same 2014-based DCLG household growth assumptions have been applied.

4.3 The PPG states that the likely change in the number of jobs in an area should be considered, as should the size and structure of the labour force (PPG paragraph 2a-018). Section 5 compares the labour force and job growth implications of the trend scenarios with economic forecasts from the St Chads Economic Sectoral and Employment Projections (2013), considering key

assumptions on Northumberland's future economic activity rates, level of unemployment and balance of commuting between resident workers and local jobs.

Core Demographic Scenario Definition

4.4 The **SNPP-2014** scenario replicates the 2014-based population projection from ONS. With the application of the household growth assumptions from the 2014-based DCLG household projection model, this provides the 'starting point estimate' for Northumberland's housing growth analysis.

4.5 The PPG recommends, as part of the assessment of housing need, that the most recent demographic statistics from ONS and alternative demographic projections should be considered (PPG Paragraph 2a-017). The 2014-based SNPP from ONS is a trend-based projection that uses demographic assumptions based on up to six years historical evidence preceding 2014[9]. Given the unprecedented economic changes that have occurred since 2008, and the differences between the projected 2014-based SNPP data and the historical evidence on population change in Northumberland (see paragraph 3.13), it is appropriate to consider alternative time periods in the derivation of migration assumptions.

4.6 Two alternative trend scenarios have been developed which make more explicit use of historical evidence from a period prior to the latest (2015) mid-year population estimates. A **PG 5yr**[10] scenario derives its internal migration rates and international migration flow assumptions from the historical period 2010/11–2014/15 (i.e. 5 years). A **PG 10yr** scenario derives its internal migration rates and international migration flow assumptions from a longer 10-year period, 2005/06 to 2014/15. Refer to Appendix B for detail on the scenario inputs and assumptions.

[9] https://www.ons.gov.uk/populationandmigration/populationprojections/methodologies/

[10] Note that PG refers to POPGROUP, the demographic forecasting software used to develop the scenario forecasts.

Demographic Scenario Results

4.7 Each of the scenarios has been run using historical MYEs for the 2001–2015 period, with the exception of the SNPP-2014, which has a base year of 2014. Scenario results are displayed for Northumberland's designated plan period 2011–2031 (Figure 18 and Table 8). The plan period includes four years of historical data (2011/12–2014/15) in the PG scenarios, and three years of historical data in the SNPP-2014 scenario (2011/12–2013/14)

4.8 Under the **SNPP-2014** scenario, Northumberland's population is projected to increase by 1.6% between 2011 and 2031, resulting in an average annual dwelling requirement of +621 per year.

4.9 The **PG 10yr** scenario results in the highest population growth outcome of 3.6% over the 2011–2031 plan period. Conversely, the **PG 5yr** scenario results in the lowest population growth (1.1%) over the 2011–2031 period, driven by lower migration growth assumptions from the latter years of the historical period. This population growth results in an average annual dwelling requirement of +601 per year, compared to +734 per year under the **PG 10yr** scenario.

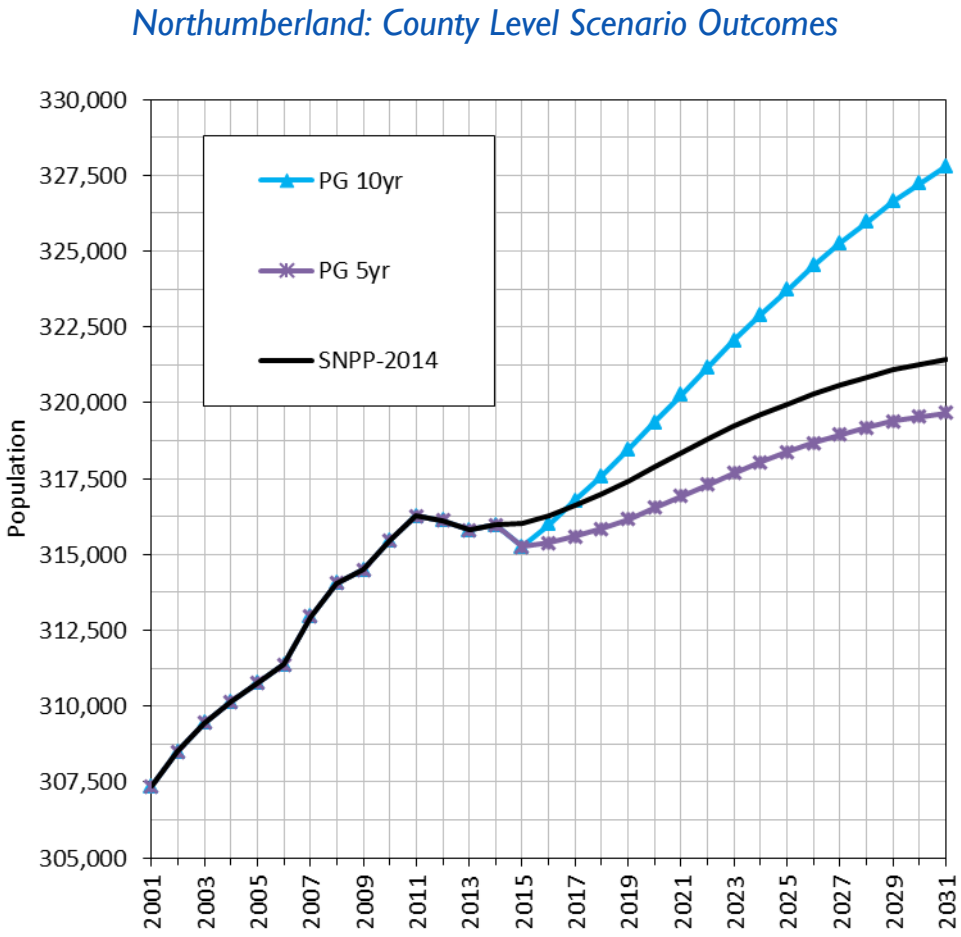


Figure 18: Northumberland County Level demographic scenario outcomes: population change 2001–2031

Table 8: Northumberland County Level demographic scenario outcomes 2011–2031

Scenario	Change 2011–2031				Average per year	
	Population Change	Population Change %	Households Change	Households Change %	Net Migration	Dwellings
PG 10yr	11,528	3.6%	13,739	9.9%	1,315	734
SNPP-2014	5,152	1.6%	11,632	8.4%	1,045	621
PG 5yr	3,395	1.1%	11,248	8.1%	1,013	601

Note: Household and dwelling growth assessed using assumptions from the 2014-based household projection model

Age Profile

4.10 The changing age structure of Northumberland's population is important when considering future housing needs, and the progression of its labour force. The change in the age profile depends on the history of population change, particularly the relative size of successive birth cohorts, and continued improvements in life expectancy. The large birth cohorts of the 1940s, 1950s and 1960s are set to have a substantial effect upon local population profiles and this is reflected in the Northumberland data. The term 'ageing population' generally refers to an increase over time in the share of the population in the older age-groups, specifically 65+.

4.11 Using a 2011 base year for comparison, Northumberland's projected age profile change under the **SNPP-2014** scenario has been calculated for the plan period 2011–2031 (Figure 19). The red bars indicate where the population at the end of each-time period is *lower* than the 2011 base year. The blue bars indicate where the population is *higher* than the base year.

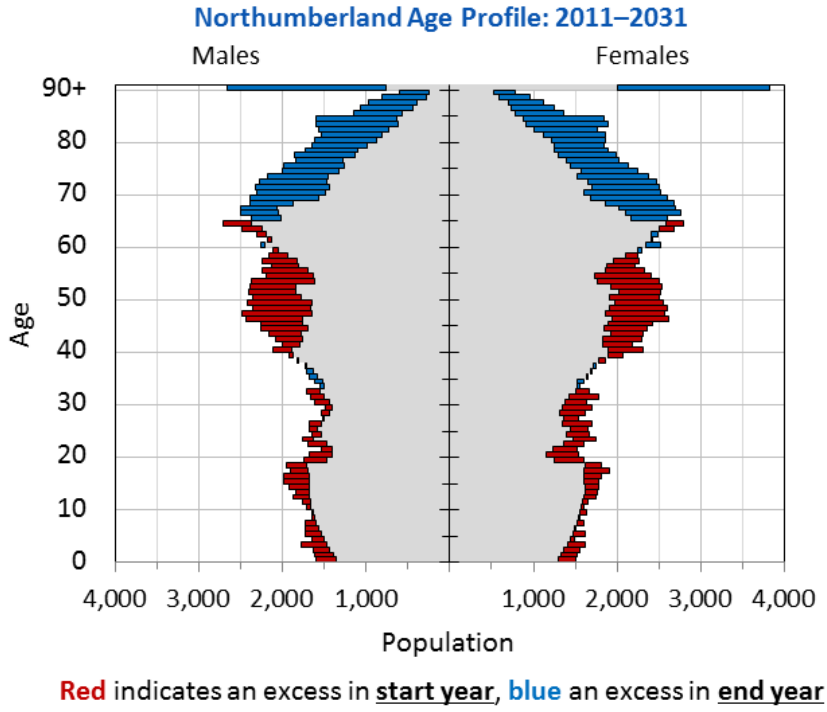


Figure 19: Northumberland population age profile, 2011–2031 (Source: ONS, POPGROUP)

4.12 By 2031, it is estimated that there will have been a significant shift in the shape of the age profile, with those born in the 1940s, 1950s and 1960s moving into the oldest age groups, creating an increased imbalance between those aged 65+ and those in the younger age-groups. This is reflected in the Old Age Dependency (OAD) ratio, which is projected to increase from 31.5 in

2011 to 58.1 by 2031. This means that the 65+ population will be equivalent to 58.1% of those aged 16–64 by 2031, compared to 31.5% at the start of the plan period.

4.13 At a regional and national level, the proportion of the older age groups is also expected to increase over the 2011–2031 period, however at a lower rate than that estimated for Northumberland. In the North East, the 65+ population in 2011 was equivalent to 26.4% of the 16–64 age population. By 2031, this is expected to increase to 41.3%, higher than that expected at national level (36.5%).

Migration Sensitivity Scenario

4.14 The PPG recommends that local circumstances and alternative assumptions should also be considered (PPG paragraph 2a-017). To examine the potential effect that alternative migration assumptions might have on scenario outcomes, a migration sensitivity scenario (**PG 10yr SENS**) has been developed. For consistency with the migration sensitivity scenario presented in the previous July 2015 report, the adjustments have been made to the **PG 10yr** scenario.

4.15 In the migration sensitivity scenario (**PG 10yr SENS**), the internal in-migration flow has been increased on the assumption that in-migration from North Tyneside will increase in the future[11]. The internal out-migration flow is consistent with the **PG 10yr** scenario.

4.16 The impact of increasing in-migration under the **PG 10yr SENS** scenario, results in higher population growth than that experienced under the **PG 10yr** scenario. Population growth of 4.7% under the **PG 10yr SENS** scenario (compared to 3.6% under the **PG 10yr** scenario), results in an average annual dwelling requirement of +805 per year over the 2011–2031 plan period.

Table 9: Northumberland migration sensitivity scenario

Scenario	Change 2011–2031				Average per year	
	Population Change	Population Change %	Households Change	Households Change %	Net Migration	Dwellings
PG 10yr	***11,528***	***3.6%***	***13,739***	***9.9%***	***1,315***	***734***
PG 10yr SENS	14,851	4.7%	15,072	10.9%	1,467	805

[11] In the PG 10yr SENS scenario, the internal in-migration flow has been increased by 100 in 2015/16 and by increasing intervals of 50 from 2016/17 (i.e. the in-flow has been increased by 100 in year 1, 150 in year 2 and by 200 in year 3). From 2018, the in-migration increase is fixed at +200 per year. These adjustments are consistent with those presented in the July 2015 report and mirror a similar scenario developed for North Tyneside Council.

5 Labour Force & Jobs Growth

Introduction

5.1 In the assessment of housing need, the PPG states that *"plan makers should make an assessment of the likely change in job numbers based on past trends and/or economic forecasts as appropriate and also having regard to the growth of the working age population in the housing market area"* (PPG paragraph 2a-018).

5.2 In POPGROUP, it is possible to derive the size and structure of the labour force and the level of employment that an implied level of population growth could support, through the application of: (1) economic activity rates; (2) unemployment rates; (3) a commuting ratio.

5.3 In this section, the labour force and employment growth implications of the demographic scenarios are presented and then compared to four economic forecasts from the St Chad's Economic Sectoral and Employment Projections (2013). Sensitivity testing has also been conducted on the assumptions that link population growth to the employment growth implied by the St Chad's projections.

Core Economic Assumptions

Economic Activity Rates

5.4 The **Economic Activity Rates** determine the proportion of the working-age population (aged 16–75+) that are economically active (i.e. the labour force). The labour force includes those who are in work (i.e. 'workers') and those who are unemployed. Between the 2001 and 2011 Censuses, economic activity rates in Northumberland increased in all but the youngest age group (16–19), and most notably in the older age groups (Figure 20). The increase in the economic activity rates has been more pronounced for females than for males.

5.5 In the face of unprecedented demographic change due to population ageing, changes to economic activity rates are critical in maintaining an adequately sized local labour force and for maintaining the overall rate of employment. This is particularly the case in Northumberland where the population is projected to age considerably over the next 25 years, with a larger proportion of the population in the older age-groups compared to the younger, labour-force ages.

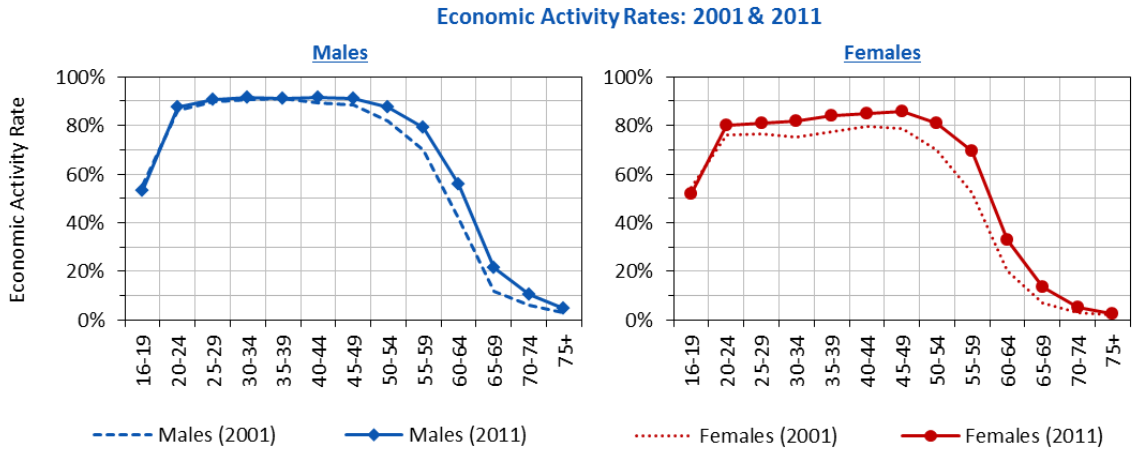


Figure 20: 2001 and 2011 Census economic activity rates for Northumberland (source: ONS)

5.6 Whilst economic activity rates have increased historically, forecasting changes to future economic activity rates is challenging. In reality, it is highly unlikely that future rates of economic activity will remain static. The ageing of the population profile of most local authorities means that the older age-groups increasingly make up a larger proportion of the population. Furthermore, with increased life expectancies and changes to the State Pension Age (SPA), people are remaining in the labour force for longer, resulting in increased participation rates in the older age groups. To at least maintain the current level of *overall* economic activity requires higher economic activity rates generally, but most importantly in the older age-groups.

5.7 The Office for Budget Responsibility (OBR) has undertaken analysis of labour market trends in its 2015 Fiscal Sustainability Report[12]. Included within its analysis is a forecast of changing economic activity rates for males and females in the 16–75+[13] year-old age groups, extending to a long-term 2066 forecast horizon.

[12] http://budgetresponsibility.org.uk/docs/dlm_uploads/49753_OBR-Fiscal-Report-Web-Accessible.pdf

[13] Note in the previous July 2015 report, economic activity rates were defined for ages 16–74, with economic activity rate adjustments to account for changes in the State Pension Age (SPA) for the 60–64 and 65–69 age groups over the 2011–2020 period.

5.8 In the core scenario analysis presented here, economic activity rates for the 60–75+ Northumberland age groups have been adjusted in line with the OBR forecasts. Economic activity rates for the 16–59 age-range remain fixed at their 2011 Census values. The resulting age-specific economic activity rates applied to the Northumberland scenarios are illustrated in Figure 21 and in Appendix B.

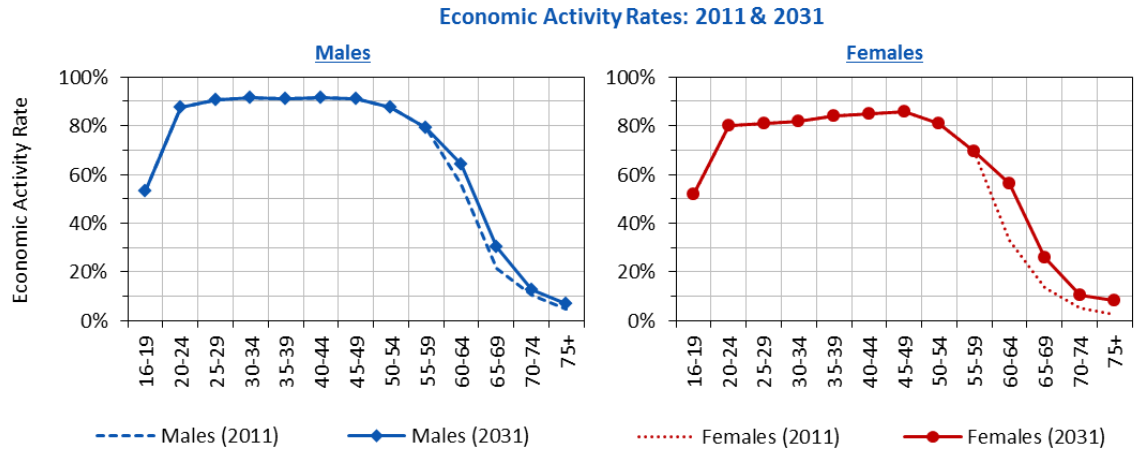


Figure 21: 2011 and 2031 OBR economic activity rates for Northumberland (Source: OBR)

Unemployment Rate

5.9 The **Unemployment Rate** determines the proportion of the labour force that is unemployed (and as a result, the proportion that is employed). The historical unemployment rate profile for Northumberland has been sourced from the ONS model-based estimates of unemployment. In the core scenario modelling presented here, the unemployment rate tracks historical data to 2015, reducing to a 'pre-recession' (2004–2007) average of 5.0% by 2020 (fixed thereafter).

Commuting Ratio

5.10 The **Commuting Ratio** determines the balance between the resident number of 'workers' (i.e. the employed labour force) and the number of jobs in an area. A commuting ratio greater than 1.0 indicates a net *out*-commute (i.e. the number of resident workers in an area is greater than the number of jobs). A commuting ratio less than 1.0 indicates a small net *in*-commute (i.e. the number of jobs is greater than the number of workers).

5.11 A fixed commuting ratio of 1.18 has been applied in the scenarios presented here. This ratio is derived from the 2011 Census Travel to Work and indicates a net *out*-commute from

Northumberland. This contrasts to 2001, when Northumberland had a commuting ratio of 1.25, indicating a larger net *out*-commute (see Table 4 on page 13).

Demographic Scenarios & Labour Force Change

5.12 For each of the Northumberland demographic scenarios presented in Section 4, economic activity rate, unemployment rate and commuting ratio assumptions have been applied to derive an estimate of the changing size of the labour force that the population growth implies, and the level of employment growth that could be supported under these assumptions (Table 10).

Table 10: Labour Force and employment-growth outcomes 2011–2031

Scenario	Change 2011–2031			Average Annual Employment Growth
	Labour Force (16–75+)	Employed People	Unemployed People	
PG 10yr SENS	-4,797	-25	-4,772	-1
PG 10yr	-6,603	-1,741	-4,861	-74
SNPP-2014	-10,389	-5,340	-5,049	-227
PG 5yr	-12,078	-6,945	-5,132	-296

5.13 The application of the economic assumptions to the **SNPP-2014** scenario estimates that the labour force size will be subject to a decline (-10,389) over the 2011–2031 period. The **PG 10yr SENS** scenario has the highest migration growth assumptions and results a smaller decline in the labour force change (-4,797). Subsequently an estimated annual employment change of -1 per year is expected over the 2011–2031 period. The **PG 10yr SENS** scenario supports static employment growth on the basis of a decreasing unemployment rate.

5.14 The estimated decline in the size of the labour force under each of the scenarios is reflective of the impact of a significant ageing population in Northumberland, even with the higher economic activity rates implied by the OBR forecasts.

St Chad's Economic Forecasts

5.15 In the consideration of future employment growth in an area, the PPG states that 'economic forecasts' should be considered (PPG paragraph 2a-018). Whilst the employment growth estimates presented above are derived through the application of economic assumptions to scenarios of demographic change, economic forecasts of employment growth are derived using a different methodology.

5.16 Economic forecasts combine a national and regional economic outlook, with data on the sectoral mix of businesses, to produce a forecast of jobs growth for a local area. Economic forecasts typically incorporate population projection data but do not adjust the migration assumptions associated with this projection to account for higher or lower population growth to support a forecast level of jobs growth. Instead, economic forecasting models will typically balance jobs and population growth through changes to economic activity and unemployment rates and, in some instances, the commuting ratio.

5.17 Employment growth forecasts for Northumberland have been provided from the St Chad's Economic Sectoral and Employment Projections (2013), consistent with previous reports by Edge Analytics in 2014 and 2015. The St Chad's projections provide four trajectories of jobs growth (Policy, Upper, Lower and Baseline), measured as an annual change in headcount employment (Figure 22).

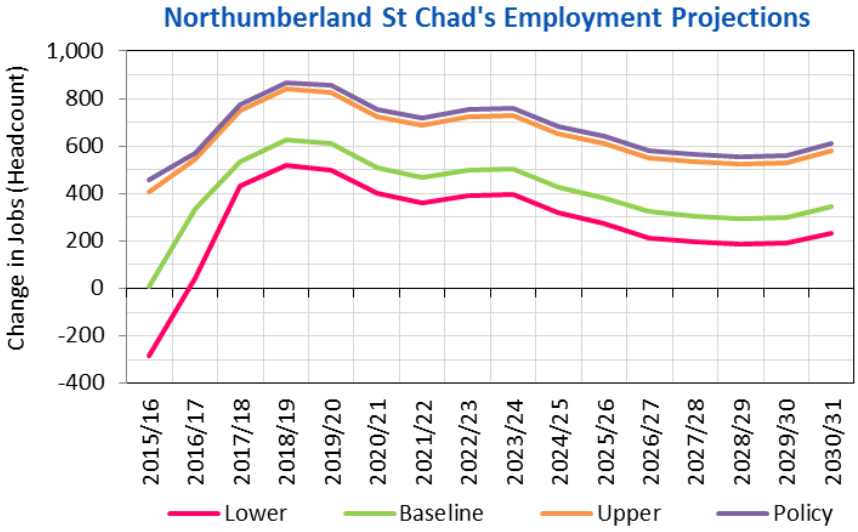


Figure 22: Northumberland employment growth forecast (headcounts) (Source: Policy Research Group, St Chad's College Durham 2013) Note that jobs growth targets are applied from the start of the *forecast* period (i.e. 2015/16 onwards)

5.18 Between 2015/16 and 2030/31 (i.e. over the *forecast* period of the scenarios presented in this report), the average annual level of jobs growth ranges from +273 per year under the Lower growth trajectory to +670 per year under the Policy growth trajectory.

5.19 Over the 2011–2031 *plan* period, with the inclusion of the MYE statistics for the years 2011–2015 and the application of the three key economic assumptions in these years, the jobs growth implied by the St Chad's employment forecasts can be compared to that resulting from the demographic scenarios (Figure 23). The St Chad's forecasts result in higher employment growth over the 2011–2031 plan period; with a range of +219 to +536 per year under the **Lower** and **Policy** scenarios respectively. This is significantly higher than employment growth under the demographic scenarios over the 2011–2031 period. The **PG 5yr** scenarios results in the lowest employment growth at -296 per year.

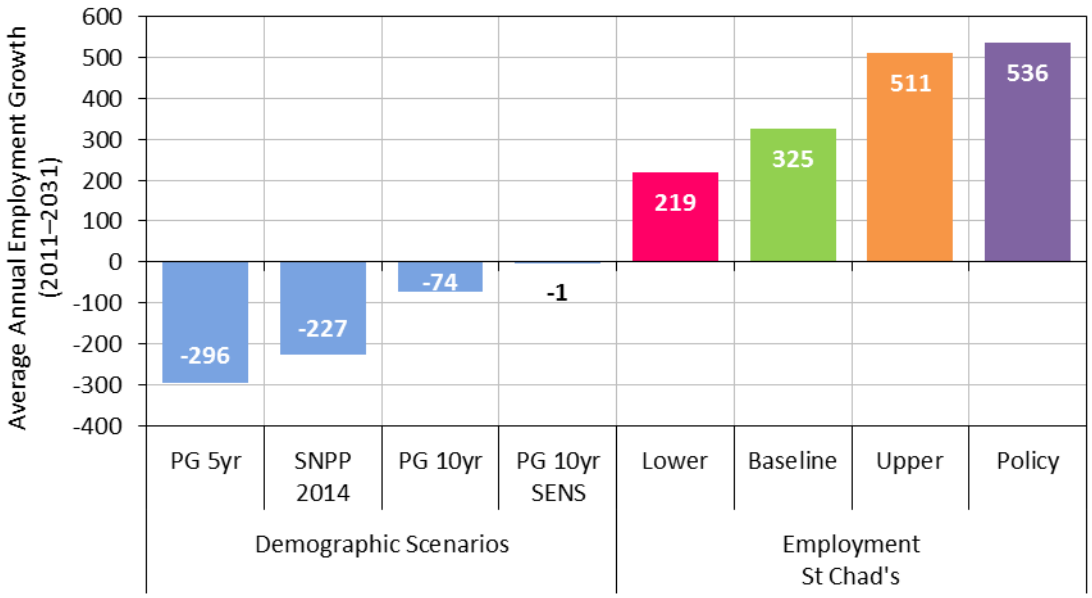


Figure 23: Comparison of average annual employment growth (2011–2031) from the St Chad's employment forecast (pink, green, orange & purple) and the four demographic scenarios (blue)[14]

5.20 With the assumptions that have been made in relation to economic activity, unemployment and commuting, the population growth required to support the level of employment growth implied by the each of the St Chad's forecasts (Lower, Baseline, Upper and Policy), would be higher than that implied by each of the demographic scenarios.

[14] Note that employment is estimated for the historical years 2011–2015 of the plan period.

Jobs-led Scenarios

5.21 In POPGROUP, the population, household and dwelling growth implications of the St Chad's (2013) employment forecasts can be evaluated using a 'jobs-led' configuration of the POPGROUP forecasting model. In a jobs-led scenario, population growth is linked directly to the change in employment within an area. POPGROUP evaluates the impact of a jobs growth trajectory by measuring the relationship between the number of jobs in an area, the size of the resident labour force and the size of the resident population.

5.22 Internal migration is used to balance the relationship between the size of the labour force and the forecast number of jobs. A higher level of net in-migration will occur if there is insufficient resident population and labour force to meet the forecast number of jobs. A higher level of net out-migration will occur if the population is too high relative to the number of jobs.

5.23 Key to determining the level of population growth required to meet a defined jobs growth trajectory are the three assumptions on economic activity, unemployment and commuting. With an ageing population (together with a fixed commuting ratio), higher levels of net in-migration would be needed to support the expected level of jobs growth implied under each of the four variant St Chad employment forecasts (Lower, Baseline, Upper and Policy). However, if any of the key economic assumptions were to alter, for example, if the commuting ratio or unemployment rate were to decrease, the required level of population growth needed to support this level of jobs growth would be reduced.

5.24 The population and dwelling growth outcomes of the **Jobs-led (Lower)**, **Jobs-led (Baseline)**, **Jobs-led (Upper)** and **Jobs-led (Policy)** scenarios are compared to the demographic scenario outcomes in Table 11. To support the level of employment growth implied by each of the Jobs-led scenarios, a higher level of net migration is estimated, ranging from 1,980 to 2,626 people per year. This results in a population growth range of 7.9%–12.4% over the 2011–2031 period, with an associated average annual dwelling requirement of +1,044 under the **Jobs-led Lower** scenario, to +1,346 under the **Jobs-led Policy** scenario. Over the 2011–2031 plan period population change, and therefore household and dwelling growth, is significantly higher under the jobs-led scenarios than under the demographic scenarios.

Table 11: Northumberland demographic scenario outcomes 2011–2031

Scenario	Change 2011–2031				Average per year		
	Population Change	Population Change %	Households Change	Households Change %	Net Migration	Dwellings	Employment Growth
Jobs-led Policy	39,330	12.4%	25,202	18.2%	2,626	1,346	536
Jobs-led Upper	38,188	12.1%	24,750	17.8%	2,574	1,322	511
Jobs-led Baseline	29,867	9.4%	21,451	15.5%	2,195	1,146	325
Jobs-led Lower	25,113	7.9%	19,553	14.1%	1,980	1,044	219
PG 10yr SENS	14,851	4.7%	15,072	10.9%	1,467	805	-1
PG 10yr	11,528	3.6%	13,739	9.9%	1,315	734	-74
SNPP-2014	5,152	1.6%	11,632	8.4%	1,045	621	-227
PG 5yr	3,395	1.1%	11,248	8.1%	1,013	601	-296

Jobs-led Sensitivity Scenarios

5.25 Scenario sensitivities are presented here to compare how the application of alternative economic assumptions on the Baseline, Lower, Upper and Policy employment forecast trajectories might influence population growth outcomes. Six sensitivities have been undertaken in which varying economic activity rates, unemployment rates and commuting ratios are applied within a jobs-led formulation of the demographic model:

- Jobs-led **SENS1a**
- Jobs-led **SENS1b**
- Jobs-led **SENS2a**
- Jobs-led **SENS2b**
- Jobs-led **SENS3a**
- Jobs-led **SENS3b**

5.26 The scenarios developed in this report are considered appropriate and reasonable as updated sensitivity analysis for Northumberland.

Economic Activity Rate Sensitivities

5.27 Robustly forecasting changes to future economic activity rates is challenging, particularly with many local authorities facing an ageing population age profile. The OBR analysis (2015) provides a starting point in the assessment of labour force changes, however, historical changes in economic activity rates for male and females also provide an indication of area-specific trends, particularly in the older age groups. For Northumberland, economic activity rates in the older age groups increased between the 2001 and 2011 Censuses, however at an overall *lower* rate than that forecast by the OBR.

5.28 At the request of NCC, economic activity rate sensitivities have been developed in which the rates for the 75+ age groups increase in line with 2001–2011 historical trends (Table 12). For males, this has relatively little impact with economic activity rates similar under both the Core and sensitivity scenario. For females (aged 75+), this results in a *lower* economic activity rate of 2.9% in 2031, compared to 8.1% assumed under the Core OBR adjustments. For more detail on the economic activity rates, refer to Appendix B.

Table 12: Sensitivity economic activity rates (75+)

EA Rates 75+	Census		Core	Sensitivity
	2001	2011	2031	2031
Males	3.0%	4.5%	6.9%	7.0%
Females	2.0%	2.4%	8.1%	2.9%

5.29 These economic activity rates have been applied in the **Jobs-led SENS1b**, **SENS3a** and **SENS3b** scenarios.

Unemployment Rate Sensitivities

5.30 Sensitivity scenarios have been developed in which the unemployment rate reduces from its 2015 6.1% to 4.4%, the lowest unemployment rate experienced over the historical 2004–2015 period. This unemployment rate assumption has been applied to the **Jobs-led SENS1a** and **SENS1b** scenarios.

Commuting Ratio Sensitivities

5.31 Three commuting ratio sensitivities have been developed in which a reduction to the net out commute is assumed over the 2011 to 2031 plan period.

5.32 Under the first sensitivity, the commuting ratio reduces from the 2011 Census value of 1.18 to 1.09 by 2031. This is in line with the NOMIS line of best fit, as defined by Northumberland County Council. This commuting ratio has been applied in conjunction with other economic sensitivity assumptions under the **Jobs-led SENS1a** and **SENS1b** scenarios.

5.33 The second commuting ratio sensitivity assumes a reduction in the net out commute that is equivalent to 50% of that experienced between the 2001 and 2011 Censuses. Under this assumption, the commuting ratio incrementally reduces from the 2011 Census value of 1.18 to 1.11 in 2031. This has been applied in the **Jobs-led SENS2a** and **SENS3a** scenarios.

5.34 The third commuting ratio sensitivity assumes a reduction in the net out commute that is equivalent to 25% of that experienced between the 2001 and 2011 Censuses. The commuting ratio incrementally reduces from 1.18 in 2011 to 1.145 in 2031. This has been applied in the **Jobs-led SENS2b** and **SENS3b** scenarios. For more detail on the commuting ratio assumptions, refer to Appendix B.

Table 13: Summary of jobs-led sensitivity scenario assumptions

Sensitivity Scenario	Economic Assumptions		
	Economic Activity Rate (EA)	Unemployment Rate (UR)	Commuting Ratio (CR)
CORE	*OBR adjustments to male and female older age groups (60–64, 65–69, 70–74 and 75+)*	*Reduces from 2015 UR (**6.1%**) to pre-recession average (**5.0%**) by 2020, fixed thereafter*	*Fixed 2011 Census CR of **1.18***
SENS1a	*CORE*	Reduces from 2015 UR (**6.1%**) to lowest historical UR (**4.4%**) by 2031	Reduces from 2011 Census CR of **1.18** to **1.09** by 2031 (NOMIS line of best fit).
SENS1b	OBR adjustments to males and female older age groups (60–64, 65–69 and 70–74). 75+ age groups adjusted in line with historical 2001–2011 EA rates.	**SENS1a**	**SENS1a**
SENS2a	*CORE*	*CORE*	Reduces from 2011 CR of **1.18** to **1.11** by 2031, a 50% reduction in rate of reduced net-out commute between 2001 and 2011.
SENS2b	*CORE*	*CORE*	Reduces from 2011 CR of **1.18** to **1.145** by 2031, a 50% reduction in rate of reduced net-out commute between 2001 and 2011.
SENS3a	**SENS1b**	*CORE*	**SENS2a**
SENS3b	**SENS1b**	*CORE*	**SENS2b**

Jobs-led Scenario Results

5.35 The results of the jobs-led sensitivity scenarios for each of the four employment growth trajectories (Lower, Baseline, Upper and Policy) are summarised in Table 14–Table 17. With the greatest reductions in the commuting ratio and unemployment rate, the **Jobs-led SENS1a** and **SENS1b** scenarios result in the *lowest* population change under each of the employment growth trajectories (Baseline, Lower, Upper and Policy). The reductions in the commuting ratio result in fewer people commuting out from Northumberland to neighbouring local authorities, increasing the residence-based employment. This, in combination with reductions to the unemployment rate, results in a higher number of jobs taken by the resident population. Subsequently, less internal migration into Northumberland is estimated, resulting in lower population growth over the 2011–2031 plan period. Population growth is slightly higher under the **Jobs-led SENS1b** scenario, with adjustments made to the economic activity rates that reduce older-age participation in female age-groups.

5.36 Under the Jobs-led SENS2 scenarios, population growth is higher under **SENS2b** than that under the **SENS2a** scenario. Economic activity and unemployment rates are the same between these scenarios, with the only difference being the commuting ratio. Smaller reductions in the commuting ratio result in the population growth under the **Jobs-led SENS2b** scenario being higher than that estimated under the **SENS2a** alternative.

5.37 With smaller changes to the commuting ratio and unemployment rates, in combination with older-age adjustments to the economic activity rates, population growth is *highest* under the **Jobs-led SENS3b** scenario. The economic activity rates determine the size of the labour force, as a percentage of the working age resident population. Adjustments to the economic activity rates alter the size of the labour force, which influences the level of employment growth that can be supported. For Northumberland which has an ageing population, lower economic activity rates in the 75+ groups results in a smaller proportion of the resident population being maintained in the labour force. Subsequently, a higher level of internal migration is estimated to meet the annual change in the level of employment as defined by the Baseline, Lower, Upper and Policy employment trajectories.

Table 14: Northumberland **Jobs-led Baseline** sensitivity scenario outcomes

Jobs-led Baseline	Change 2011–2031				Average per year		
	Population Change	Population Change %	Households Change	Households Change %	Net Migration	Dwellings	Employment
Baseline	***29,867***	***9.4%***	***21,451***	***15.5%***	***2,195***	***1,146***	***325***
SENS3b	25,715	8.1%	19,808	14.3%	2,005	1,058	339
SENS2b	23,772	7.5%	19,037	13.7%	1,916	1,017	357
SENS3a	18,538	5.9%	16,962	12.2%	1,676	906	377
SENS2a	16,596	5.2%	16,191	11.7%	1,588	865	395
SENS1b	12,997	4.1%	14,807	10.7%	1,414	791	399
SENS1a	11,056	3.5%	14,035	10.1%	1,326	750	416

Note: Jobs-led Baseline core scenario highlighted in blue. Sensitivity scenarios ranked in order of population change.

Table 15: Northumberland **Jobs-led Lower** sensitivity scenario outcomes

Jobs-led Lower	Change 2011–2031				Average per year		
	Population Change	Population Change %	Households Change	Households Change %	Net Migration	Dwellings	Employment
Lower	***25,113***	***7.9%***	***19,553***	***14.1%***	***1,980***	***1,044***	***219***
SENS3b	21,062	6.7%	17,947	12.9%	1,795	959	234
SENS2b	19,133	6.0%	17,181	12.4%	1,707	918	251
SENS3a	14,019	4.4%	15,152	10.9%	1,472	809	272
SENS2a	12,091	3.8%	14,386	10.4%	1,385	768	289
SENS1b	8,577	2.7%	13,034	9.4%	1,215	696	294
SENS1a	6,649	2.1%	12,266	8.8%	1,127	655	311

Note: Jobs-led Lower core scenario highlighted in blue. Sensitivity scenarios ranked in order of population change.

Table 16: Northumberland **Jobs-led Upper** sensitivity scenario outcomes

Jobs-led Upper	Change 2011–2031				Average per year		
	Population Change	Population Change %	Households Change	Households Change %	Net Migration	Dwellings	Employment
Upper	***38,188***	***12.1%***	***24,750***	***17.8%***	***2,574***	***1,322***	***511***
SENS3b	33,858	10.7%	23,039	16.6%	2,375	1,231	526
SENS2b	31,890	10.1%	22,260	16.1%	2,286	1,189	543
SENS3a	26,444	8.4%	20,106	14.5%	2,036	1,074	563
SENS2a	24,479	7.7%	19,326	13.9%	1,947	1,032	581
SENS1b	20,731	6.6%	17,887	12.9%	1,766	956	585
SENS1a	18,767	5.9%	17,107	12.3%	1,677	914	603

Note: Jobs-led Upper core scenario highlighted in blue. Sensitivity scenarios ranked in order of population change.

Table 17: Northumberland **Jobs-led Policy** sensitivity scenario outcomes

Jobs-led Policy	Change 2011–2031				Average per year		
	Population Change	Population Change %	Households Change	Households Change %	Net Migration	Dwellings	Employment
Policy	***39,330***	***12.4%***	***25,202***	***18.2%***	***2,626***	***1,346***	***536***
SENS3b	34,975	11.1%	23,482	16.9%	2,426	1,254	551
SENS2b	33,004	10.4%	22,702	16.4%	2,337	1,213	569
SENS3a	27,529	8.7%	20,536	14.8%	2,086	1,097	589
SENS2a	25,561	8.1%	19,756	14.2%	1,996	1,055	606
SENS1b	21,792	6.9%	18,309	13.2%	1,815	978	611
SENS1a	19,825	6.3%	17,528	12.6%	1,725	936	628

Note: Jobs-led Policy core scenario highlighted in blue. Sensitivity scenarios ranked in order of population change.

Dwelling Growth

5.39 Drawing the demographic scenarios and the core jobs-led alternatives together illustrates the range of dwelling growth outcomes under the 2014-based household assumptions (Table 18). The **PG 5yr** scenario suggests the lowest annual dwelling growth of +601 per year, compared to +1,346 per year implied by the **Jobs-led Policy** scenario. Higher dwelling growth under the Jobs-led scenarios is driven by higher population change required to support economic growth, with changes to economic activity and unemployment rates but with *no* changes to Northumberland's existing commuting balance.

Table 18: Demographic and core Jobs-led dwelling growth outcomes (2011–2031)

	Scenario	Average Annual Dwelling Growth
Jobs-led Core	Jobs-led Policy	1,346
	Jobs-led Upper	1,322
	Jobs-led Baseline	1,146
	Jobs-led Lower	1,044
Demographic	PG 10yr SENS	805
	PG 10yr	734
	SNPP-2014	621
	PG 5yr	601

5.40 The suite of sensitivity scenarios has examined how the estimated population and dwelling growth for Northumberland might alter if the key conditions set for economic activity, unemployment and commuting were altered. Positive change to Northumberland's commuting balance, which has been an important feature for the County since 2001, has the most significant impact on dwelling growth, implied by each of the St Chad's employment forecast (Figure 24).

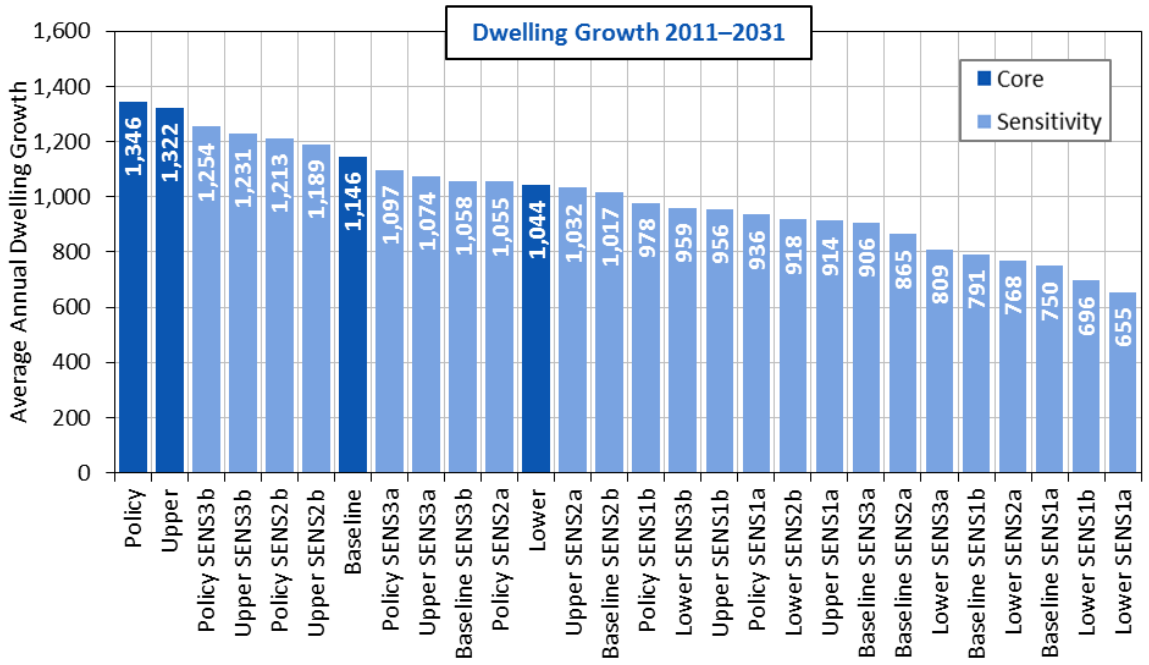


Figure 24: Average annual dwelling growth under jobs-led scenarios (2011–2031)

6 Sub-County Scenarios

Core Scenario Definition

6.1 Northumberland County Council (NCC) has requested that Edge Analytics develop a scenario that considers the potential impact of sub-County level dwelling targets, and indicative housing figures from the emerging Northumberland Core Strategy[15]. The configuration of a '**Dwelling-led'** scenario evaluates the impact of the defined sub-County 'small area' dwelling growth targets on household and population change. Additionally, an **SNPP-2014** scenario has been configured to evaluate the expected population growth at small area level under the most recent ONS sub-national population projection for Northumberland.

6.2 At small area level, historical population are provided for the 2001–2014 period (refer to Figure 11 in Section 2). Under the **Dwelling-led** scenario, dwelling growth targets are applied in each year of the forecast period (i.e. 2014/15–2030/31)[16]. A higher level of net internal migration will occur of there is insufficient resident population to meet the annual dwelling growth targets.

6.3 The **SNPP-2014** and **Dwelling-led** scenarios presented in this section have been run using assumptions from the DCLG 2014-based household model.

Core Scenario Results

6.4 Scenario outcomes under the **SNPP-2014** and **Dwelling-led** scenarios are presented in the form of a table at sub-County level for each of the 25 small areas and four Delivery Areas (North, Central, South East and West). The tables summarise the population, household change and average annual net migration over the 2011–2031 plan period, associated with the average annual dwelling growth targets applied.

[15] http://www.northumberland.gov.uk/NorthumberlandCountyCouncil/media/Planning-and-Building/planning%20policy/Core%20strategy/CS-Major-Modifications-Core-Strategy-PDS-with-modifications.pdf

[16] Note that the 2011–2031 plan period includes three years of historical data (2012, 2013 and 2014)

North Delivery Area

6.5 In this section, the scenario outcomes are presented for the aggregate North Delivery area and each of the 6 small areas. Over the 2011–2031 plan period, population growth of 4.5% under the **SNPP-2014** scenario results in an average annual dwelling an increase of +184 dwellings per year for the aggregate North Delivery area (Table 19). Under the **Dwelling-led** scenario, dwelling growth target of +209 per year results in an expected population growth of 9.3%, driven by higher levels of net migration (Table 20).

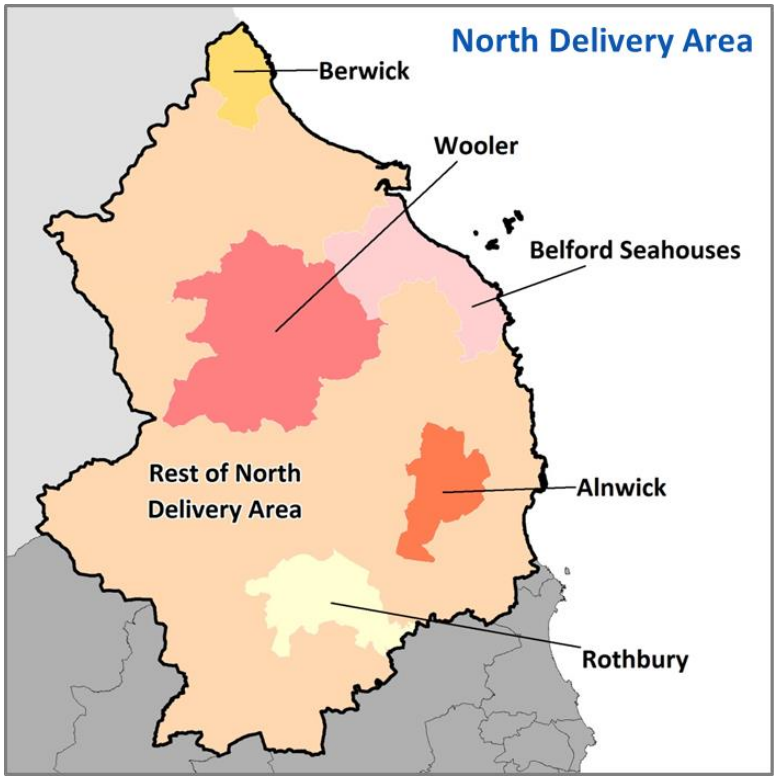


Figure 25: North Delivery Area

Table 19: Small area **SNPP-2014** scenario outcomes for North Delivery Area 2011–2031

SNPP-2014 Scenario	Change 2011–2031				Average per year	
	Population Change	Population Change %	Households Change	Households Change %	Net Migration	Dwellings
Berwick upon Tweed	511	3.8%	384	6.4%	114	21
Alnwick	-48	-0.6%	454	12.0%	59	25
Rothbury	570	17.8%	394	26.4%	46	22
Belford and Seahouses	226	5.1%	285	13.0%	53	22
Wooler	395	12.6%	320	21.0%	45	19
Rest of North Delivery Area	767	3.6%	1,269	13.7%	153	76
North Delivery Area	***2,420***	***4.5%***	***3,105***	***12.8%***	***470***	***184***

Table 20: Small area **Dwelling-led** scenario outcomes for North Delivery Area 2011–2031

Dwelling-led Scenario	Change 2011–2031				Average per year	
	Population Change	Population Change %	Households Change	Households Change %	Net Migration	Dwellings
Berwick upon Tweed	1,901	14.2%	836	13.9%	177	45
Alnwick	1,534	18.3%	1,016	26.8%	127	55
Rothbury	132	4.1%	180	12.0%	23	10
Belford and Seahouses	419	9.5%	302	13.8%	57	23
Wooler	318	10.1%	235	15.4%	37	14
Rest of North Delivery Area	689	3.3%	1,040	11.2%	137	62
North Delivery Area	***4,993***	***9.3%***	***3,608***	***14.9%***	***557***	***209***

Central Delivery Area

6.6 In this section, the scenario outcomes are presented for the aggregate Central Delivery area and each of the 6 small areas. Under the **SNPP-2014** scenario, population growth of 1.7% results in an expected average annual dwelling growth of +152 (2011–2031) (Table 21). The annual dwelling growth targets under the **Dwelling-led** scenario (+297 per year), result in a higher population growth of 12.7% in the Central Delivery Area (Table 22).

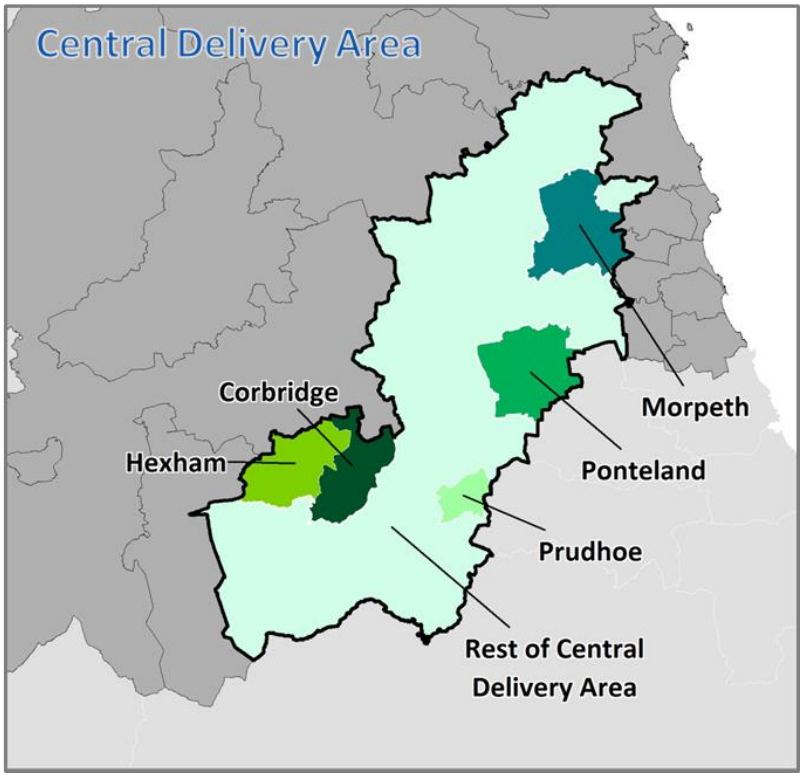


Figure 26: Central Delivery Area

Table 21: Small area **SNPP-2014** scenario outcomes for Central Delivery Area 2011–2031

SNPP-2014 Scenario	Change 2011–2031				Average per year	
	Population Change	Population Change %	Households Change	Households Change %	Net Migration	Dwellings
Hexham	797	5.9%	597	10.1%	118	31
Morpeth	224	1.2%	522	6.2%	118	27
Ponteland	-57	-0.5%	148	3.3%	77	8
Prudhoe	-406	-3.5%	288	5.9%	-4	15
Corbridge	430	11.7%	349	20.7%	60	19
Rest of Central Delivery Area	340	1.7%	991	11.9%	88	52
Central Delivery Area	***1,328***	***1.7%***	***2,895***	***8.6%***	***457***	***152***

Table 22: Small area **Dwelling-led** scenario outcomes for Central Delivery Area 2011–2031

Dwelling-led Scenario	Change 2011–2031				Average per year	
	Population Change	Population Change %	Households Change	Households Change %	Net Migration	Dwellings
Hexham	1,662	12.2%	857	14.5%	154	45
Morpeth	4,318	22.5%	2,028	24.0%	295	105
Ponteland	2,134	19.6%	857	19.1%	169	45
Prudhoe	1,376	11.7%	876	17.9%	72	45
Corbridge	369	10.0%	281	16.6%	55	15
Rest of Central Delivery Area	195	1.0%	794	9.5%	74	42
Central Delivery Area	***10,054***	***12.7%***	***5,692***	***16.9%***	***819***	***297***

South East Delivery Area

6.7 In this section, the scenario outcomes are presented for the aggregate South East Delivery area and each of the 9 small areas. For the aggregate South East Delivery area, the **SNPP-2014** scenario expects population growth of 1.1% over the 2011–2031 plan period, resulting in an average annual dwelling growth of +258 per year (Table 23). The higher dwelling growth targets under the **Dwelling-led** scenario (+642 per year) results in higher population growth of 14.4%, an increase of +23,486 people over the 2011–2031 period (Table 24).

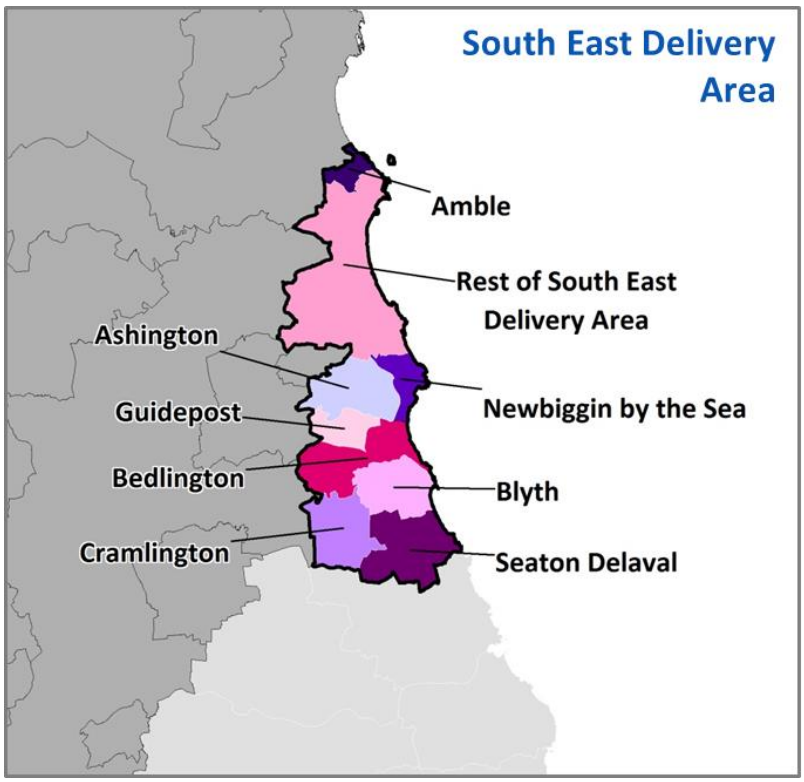


Figure 27: South East Delivery Area

Table 23: Small area **SNPP-2014** scenario outcomes for South East Delivery Area 2011–2031

SNPP-2014 Scenario	Change 2011–2031				Average per year	
	Population Change	Population Change %	Households Change	Households Change %	Net Migration	Dwellings
Amble	-620	-10.3%	51	1.9%	-6	3
Ashington	927	3.3%	687	5.5%	-2	36
Bedlington	19	0.1%	362	4.4%	2	19
Blyth	1,997	5.3%	1,637	10.0%	60	85
Cramlington	-4,198	-14.3%	-614	-4.9%	-155	-31
Guidepost	3	0.0%	121	2.8%	23	6
Newbiggin by the Sea	778	12.4%	405	14.2%	51	22
Seaton Delaval	864	5.6%	904	12.7%	87	47
Rest of South East Delivery Area	1,988	15.9%	1,364	26.8%	110	72
South East Delivery Area	***1,758***	***1.1%***	***4,917***	***6.9%***	***170***	***258***

Table 24: Small area **Dwelling-led** scenario outcomes for South East Delivery Area 2011–2031

Dwelling-led Scenario	Change 2011–2031				Average per year	
	Population Change	Population Change %	Households Change	Households Change %	Net Migration	Dwellings
Amble	737	12.3%	572	21.2%	55	30
Ashington	3,750	13.5%	1,706	13.7%	118	90
Bedlington	2,514	13.6%	1,230	15.1%	109	64
Blyth	5,736	15.3%	2,994	18.3%	215	155
Cramlington	7,652	26.0%	3,750	29.9%	371	191
Guidepost	768	7.9%	366	8.3%	55	19
Newbiggin by the Sea	684	10.9%	277	9.7%	41	15
Seaton Delaval	889	5.8%	758	10.6%	78	39
Rest of South East Delivery Area	756	6.0%	743	14.6%	44	39
South East Delivery Area	***23,486***	***14.4%***	***12,396***	***17.3%***	***1,086***	***642***

West Delivery Area

6.8 In this section, the **SNPP-2014** and **Dwelling-led** scenario outcomes are presented for the aggregate West Delivery area and each of the 4 small areas. Under the **SNPP-2014** scenario, negative population change of -1.8% is largely driven by the expected population change in Haltwhistle and Rest of Delivery Area (Table 25). The **SNPP-2014** scenario results in an average annual dwelling requirement of +37 per year (2011–2031). Under the **Dwelling-led** scenario, the average annual dwelling growth target of +67 results in higher population change of 8.4% (2011–2031) (Table 26).

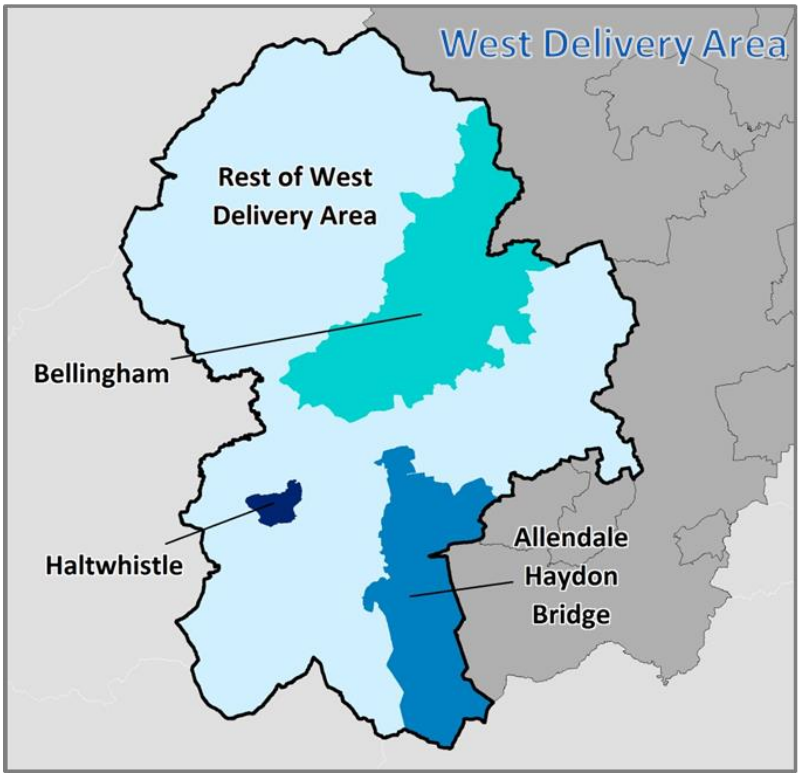


Figure 28: West Delivery Area

Table 25: Small area **SNPP-2014** scenario outcomes for West Delivery Area 2011–2031

SNPP-2014 Scenario	Change 2011–2031				Average per year	
	Population Change	Population Change %	Households Change	Households Change %	Net Migration	Dwellings
Haltwhistle	-88	-2.3%	239	13.6%	10	13
Allendale and Haydon Bridge	87	2.1%	122	6.6%	16	7
Bellingham	6	0.2%	239	15.7%	16	13
Rest of West Delivery Area	-360	-4.1%	90	2.3%	-2	5
West Delivery Area	***-355***	***-1.8%***	***690***	***7.7%***	***40***	***37***

Table 26: Small area **Dwelling-led** scenario outcomes for West Delivery Area 2011–2031

Dwelling-led Scenario	Change 2011–2031				Average per year	
	Population Change	Population Change %	Households Change	Households Change %	Net Migration	Dwellings
Haltwhistle	394	10.4%	380	21.7%	29	20
Allendale and Haydon Bridge	615	14.7%	272	14.6%	35	15
Bellingham	172	5.0%	255	16.8%	21	14
Rest of West Delivery Area	513	5.8%	334	8.7%	30	19
West Delivery Area	***1,695***	***8.4%***	***1,242***	***13.9%***	***116***	***67***

Dwelling-led Sensitivity Scenarios

6.9 In light of plans for the development of a Garden Village in Ponteland, three dwelling-led sensitivity scenarios have been developed, in which an uplift is applied to the core dwelling growth targets. These sensitivities evaluate the impact of varying levels of additional dwelling growth in Ponteland (Table 27).

Table 27: Dwelling growth uplift for Garden Village in Ponteland

Sensitivity Scenario	Uplift Applied	Total Uplift	Average Annual Uplift
SENS1	2019/20–2028/29	1,870	187
SENS2	2019/20–2028/29	2,000	200
SENS3	2019/20–2030/31	1,200	100

Sensitivity Scenario Outcomes

6.10 Population growth is highest under the **Dwelling-led SENS2** scenario, in which the greatest uplift to dwelling growth is applied. Under the **Dwelling-led SENS2** scenario, increased net migration of +414 results in a total population growth of +7,456 people over the 2011–2031 period, a 68.3% increase.

6.11 Population growth is lowest under the **Dwelling-led SENS3** scenario in which the lowest average annual dwelling growth is assumed (+105 per year over the 2011–2031 plan period). This annual dwelling growth results in lower net migration over the plan period, thus resulting in a lower population growth of +5,390 people, a 49.4% change over the 2011–2031 plan period.

6.12 The increased dwelling growth targets under each of the sensitivities, results in higher population growth than under the core scenario. This is driven by higher levels of average annual net migration to meet the changes in the dwelling growth.

Table 28: Ponteland Dwelling-led sensitivity scenario outcomes 2011–2031

Dwelling-led Scenarios	Change 2011–2031				Average per year	
	Population Change	Population Change %	Households Change	Households Change %	Net Migration	Dwellings
Core	***2,134***	***19.6%***	***857***	***19.1%***	***169***	***45***
SENS2	7,456	68.3%	2,760	61.5%	414	145
SENS1	7,111	65.2%	2,637	58.7%	398	139
SENS3	5,390	49.4%	1,999	44.5%	321	105

Note: Sensitivity scenarios ranked in order of population change

7 Summary

Approach

7.1 The objective of this report has been to provide a range of demographic evidence to support the development of Northumberland County Council's Core Strategy. The evidence is an update on previous analysis, incorporating the latest statistical releases from ONS and DCLG and providing a range of growth scenarios for Northumberland County along with SNPP-2014 and Dwelling-led scenarios for its 25 sub-County areas and 4 Delivery Areas. All scenario analysis has been produced using POPGROUP technology.

7.2 At County-level, the starting point of the scenario analysis is the 2014-based SNPP and the 2014-based DCLG household projection model for Northumberland. A number of alternative trend scenarios, using variant migration assumptions, have been developed and are compared to the 2014-based SNPP benchmark.

7.3 Household and dwelling growth have been estimated using assumptions from the 2014-based DCLG household projection model for Northumberland.

7.4 The analysis has considered the effect of changing age structure on its labour force, linking the demographic scenarios to an estimated employment growth using assumptions on economic activity rates, unemployment and commuting. These have been compared to four employment growth trajectories under the St Chad's employment projections (2013). Sensitivity testing has also been carried out on each of the jobs-led scenarios (Baseline, Lower, Upper and Policy), to evaluate the impact of alternative economic assumptions on estimated population change and dwelling growth.

7.5 At sub-County level, the impact of dwelling growth targets on population change for each of the 25 small areas has been assessed and compared to the population and dwelling growth under

the **SNPP-2014**. Additionally, the potential impact of the development of the Garden Village in Ponteland has been evaluated through a range of **Dwelling-led** sensitivity scenarios.

Growth Outcomes

7.6 A summary of the dwelling growth outcomes associated with each scenario for Northumberland is provided in Figure 29. Dwelling growth is highest under the Jobs-led scenarios, ranging from an average of +1,044 to +1,346 per year under the **Jobs-led Lower** and **Jobs-led Policy** scenarios respectively, over the 2011–2031 plan period. Lower population growth under the demographic scenarios results in a lower dwelling growth average, ranging from +601 under the **PG 5yr** scenario to +805 under the **PG 10yr SENS** scenario.

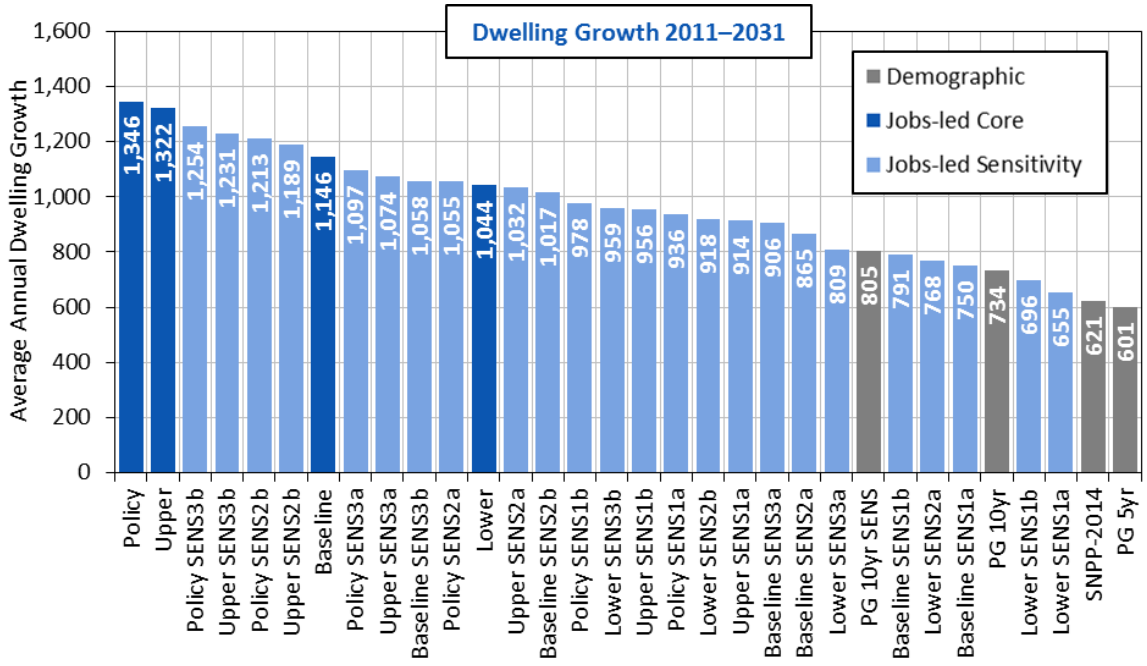


Figure 29: Average annual dwelling growth outcomes for Northumberland County 2011–2031

7.7 At sub-County level, the population growth outcomes associated with the **SNPP-2014** and **Dwelling-led** scenarios for the four delivery areas is presented in Figure 30. Under the **SNPP-2014** scenario, the highest population change is expected in the North Delivery Area, at 4.5% (2011–2031). The West Delivery Area is expected to experience negative population change (-1.8%) over the 2011–2031 plan period.

7.8 Under the **Dwelling-led** scenario, a higher level of population change is expected, with higher levels of net migration occurring as a result of the proposed annual dwelling growth. Population

change is highest in the South-East Delivery Area in which the greatest dwelling growth is expected to occur over the 2011–2031 plan period. In the West Delivery Area, population change is expected to be lowest, reflecting lower dwelling growth targets over the forecast period.

7.9 The impact of the development of the Garden Village in Ponteland on the population change in the Central Delivery Area varies from 16.8% under the **Dwelling-led SENS3** scenario to 19.4% under the **Dwelling-led SENS2** scenario.

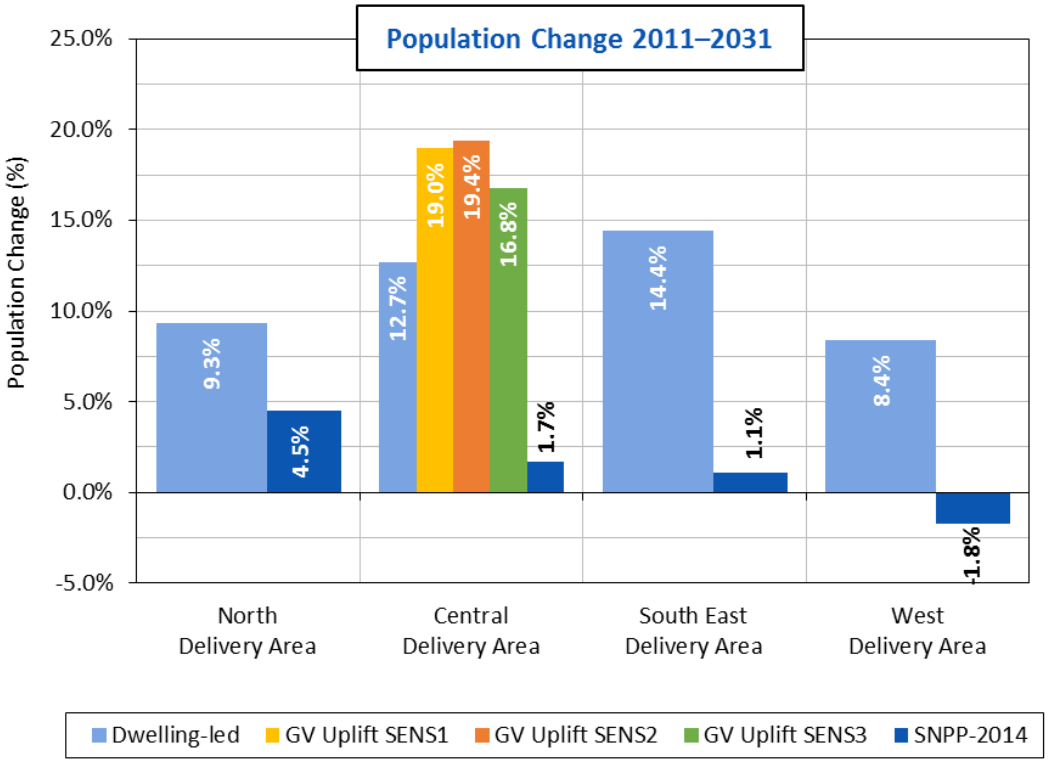


Figure 30: Population change (%) in the four Delivery Areas under the SNPP-2014 & Dwelling-led scenarios 2011–2031

Concluding Comments

7.10 An updated range of evidence has been presented here for Northumberland County Council to consider. The latest projections from the ONS and DCLG respectively suggest relatively low growth in Northumberland's population between 2011 and 2031, resulting in an estimated dwelling requirement of +621 per year (as in the **SNPP-2014** scenario).

7.11 An increase in internal migration flows into Northumberland under the **PG 10yr SENS** scenario, results in the highest population growth under the demographic scenarios. The increased annual

migration and subsequently a higher population change over the 2011–2031 plan period, results in a higher average annual dwelling growth requirement (+805) than that expected under **PG 5yr**, **SNPP-2014** and **PG 10yr** scenarios.

7.12 Future demographic change in Northumberland is associated with a substantial shift in the age-structure of the County's population, with a large uplift in its Old Age Dependency ratio, an increasing imbalance between its core labour force ages (16–64) and older age groups (65+). These changes to the age structure of the population will have an important impact upon Northumberland's ability to sustain its labour force under current economic participation and commuting conditions.

7.13 Quantifying the link between demographic and economic change is challenging. The scenario analysis presented here has illustrated how the employment growth forecasts in the **Jobs-led** scenarios (**Lower**, **Baseline**, **Upper** and **Policy**) are estimated to require a higher level of population and dwelling growth under a range of variant economic assumptions and conditions.

7.14 The suite of sensitivity scenarios has examined how the estimated population and dwelling growth for Northumberland might alter if the key conditions set for economic activity, unemployment and commuting are altered. A continuation of the County's trend towards greater self-containment in its commuting balance has the most significant impact upon the estimated population and dwelling growth required to support employment growth, operating in tandem with higher rates of economic participation in the older age-groups.

Appendix A

POPGROUP Methodology

Forecasting Methodology

A.1 Evidence is often challenged on the basis of the appropriateness of the methodology that has been employed to develop growth forecasts. The use of a recognised forecasting product which incorporates an industry-standard methodology (a cohort component model) removes this obstacle and enables a focus on assumptions and output, rather than methods.

A.2 Demographic forecasts have been developed using the POPGROUP suite of products. POPGROUP is a family of demographic models that enables forecasts to be derived for population, households and the labour force, for areas and social groups. The main POPGROUP model (Figure 31) is a cohort component model, which enables the development of population forecasts based on births, deaths and migration inputs and assumptions.

A.3 The Derived Forecast (DF) model (Figure 32) sits alongside the population model, providing a headship rate model for household projections and an economic activity rate model for labour-force projections.

A.4 For further information on POPGROUP, please refer to the Edge Analytics website (http://www.edgeanalytics.co.uk/).

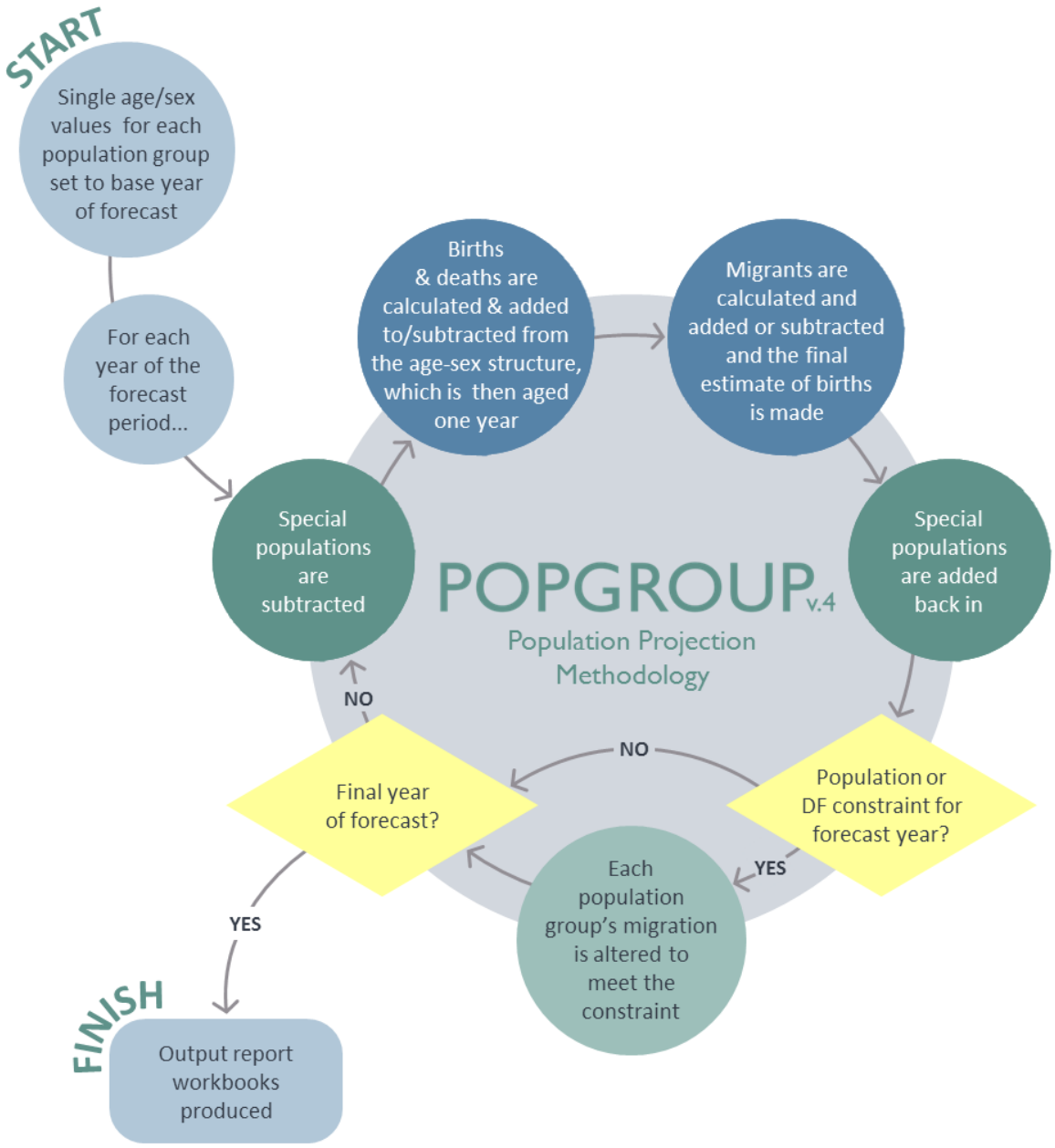
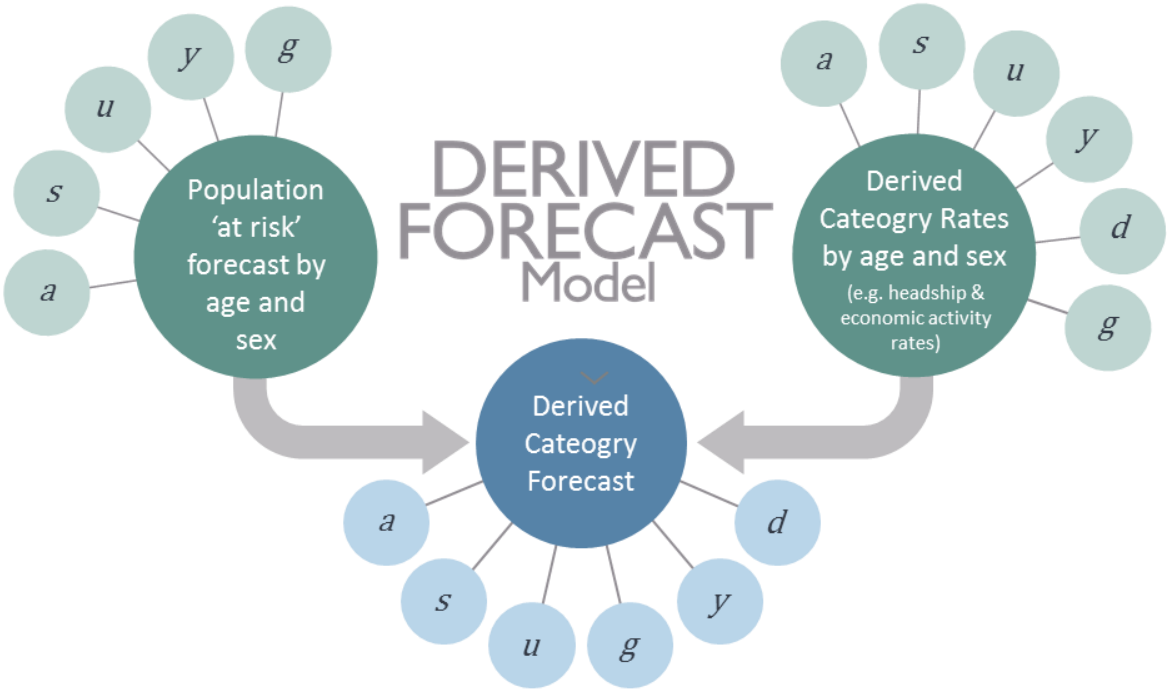


Figure 31: POPGROUP population projection methodology



$$D_{a,s,u,y,d,g} = \frac{P_{a,s,u,y,g}\ R_{a,s,u,y,d,g}}{100}$$

D	Derived Category Forecast	y	Year
P	Population 'at risk' Forecast	d	Derived category
R	Derived Category Rates	g	Group (usually an area, but can be an ethnic group or social group)
a	Age-group		
s	Sex		
u	Sub-population		

Figure 32: Derived Forecast (DF) methodology

Appendix B

County Level Data Inputs & Assumptions

Introduction

B.1 Edge Analytics has developed a suite of demographic scenarios for Northumberland using POPGROUP v.4 and the Derived Forecast model. The POPGROUP suite of demographic models draw data from a number of sources, building an historical picture of population, households, fertility, mortality and migration on which to base its scenario forecasts. Using historical data evidence for 2001–2015, in conjunction with information from ONS sub-national population projections (SNPPs) and DCLG household projections, a series of assumptions have been derived which drive the scenario forecasts.

B.2 The following core scenarios have been produced at County Level:

- SNPP-2014
- PG 5yr
- PG 10yr
- Jobs led Upper
- Jobs-led Policy
- Jobs-led Lower
- Jobs-led Baseline

B.3 In addition to the above core scenarios, the following sensitivity scenarios have been developed:

- PG 10yr SENS
- Jobs-led Baseline SENS1a
- Jobs-led Baseline SENS1b
- Jobs-led Baseline SENS2a
- Jobs-led Baseline SENS2b
- Jobs-led Baseline SENS3a
- Jobs-led Baseline SENS3b
- Jobs-led Lower SENS1a
- Jobs-led Lower SENS1b
- Jobs-led Lower SENS2a
- Jobs-led Lower SENS2b
- Jobs-led Lower SENS3a
- Jobs-led Lower SENS3b
- Jobs-led Upper SENS1a
- Jobs-led Upper SENS1b
- Jobs-led Upper SENS2a
- Jobs-led Upper SENS2b
- Jobs-led Upper SENS3a
- Jobs-led Upper SENS3b
- Jobs-led Policy SENS1a
- Jobs-led Policy SENS1b
- Jobs-led Policy SENS2a
- Jobs-led Policy SENS2b
- Jobs-led Policy SENS3a
- Jobs-led Policy SENS3b

B.4 In the following sections, a narrative on the data inputs and assumptions underpinning the County-Level scenarios is presented.

Population, Births & Deaths

Population

B.5 In each scenario, historical population statistics are provided by the mid-year population estimates (MYEs), with all data recorded by single-year of age and sex. These data include the revised MYEs for 2002–2010, which were released by the ONS in May 2013. The revised MYEs provide consistency in the measurement of the components of change (i.e. births, deaths, internal migration and international migration) between the 2001 and 2011 Censuses.

B.6 In the **SNPP-2014** scenario, the historical MYEs are used up to 2014. From 2014, future population counts are provided by single-year of age and sex to ensure consistency with the trajectory of the ONS 2014-based SNPP.

B.7 In the other scenarios, the historical MYEs are used up to 2015.

Births & Fertility

B.8 In each scenario, historical mid-year to mid-year counts of births by sex have been sourced from the ONS MYEs.

B.9 In the **SNPP-2014** scenario, historical births are used from 2001/02 to 2013/14. From 2014/15, future counts of births are specified, to ensure consistency with the 2014-based official projection.

B.10 In all other scenarios, historical births are used from 2001/02 to 2014/15. From 2015/16, an area-specific age-specific rate (ASFR) schedule, derived from the ONS 2014-based SNPP, is included in the POPGROUP model assumptions. Long-term assumptions on changes in age-specific fertility rates are taken from the ONS 2014-based SNPP.

B.11 In combination with the 'population-at-risk' (i.e. all women between the ages of 15–49), the area-specific ASFR and future fertility rate assumptions provide the basis for the calculation of births in each year of the forecast period (i.e. from 2015 onwards).

Deaths & Mortality

B.12 In each scenario, historical mid-year to mid-year counts of deaths by 5-year age group and sex have been sourced from the ONS MYEs.

B.13 In the **SNPP-2014** scenario, historical deaths are used from 2001/02 to 2013/14. From 2014/15, future counts of deaths are specified, to ensure consistency with the 2014-based official projection.

B.14 In all other scenarios, historical deaths are used from 2001/02 to 2014/15. From 2015/16, an area-specific age-specific mortality rate (ASMR) schedule, derived from the ONS 2014-based SNPP, is included in the POPGROUP model assumptions. Long-term assumptions on changes in age-specific mortality rates are taken from the ONS 2014-based SNPP.

B.15 In combination with the 'population-at-risk' (i.e. the whole population), the area-specific ASMR and future mortality rate assumptions provide the basis for the calculation of deaths in each year of the forecast period (i.e. from 2015 onwards).

Migration

Internal Migration

B.16 In each scenario, historical mid-year to mid-year estimates of internal in- and out-migration by 5-year age group and sex have been sourced from the 'components of population change' files that underpin the ONS MYEs. These internal migration flows are estimated using data from the Patient Register (PR), the National Health Service Central Register (NHSCR) and the Higher Education Statistics Agency (HESA).

B.17 In the **SNPP-2014** scenario, historical counts of internal in and out-migrants are used from 2001/02 to 2013/14. From 2014/15, future counts of migrants are specified, to ensure consistency with the 2014-based official projection.

B.18 In the **PG** scenarios, historical counts of internal in and out-migrants are used from 2001/02 to 2014/15. From 2015/16, future internal migration flows are based on the area-specific historical migration data. In the **PG-5yr** scenario, a *five* year internal migration history is used (2010/11 to 2014/15). In the **PG-10yr** scenario, a *ten* year history is used (2005/06 to 2014/15).

B.19 In the alternative trend scenarios (i.e. **PG 5yr** and **PG 10yr**) the relevant historical time period is used to derive the age-specific migration rate (ASMigR) schedules, which are then used to determine the future number of in- and out-migrants.

B.20 In the case of internal in-migration, the ASMigR schedules are applied to an external 'reference' population (i.e. the population 'at-risk' of migrating into the area). This is different to the other components (i.e. births, deaths, internal out-migration), where the schedule of rates is applied to the area-specific population (i.e. the population 'at-risk' of migrating out of the area). The reference population is defined by considering the areas which have historically contributed the majority of migrants into the area. In the case of Northumberland, it comprises all districts which cumulatively contributed 70% of migrants into the North Eastern LEP over the 2008/09–2014/15 period.

B.21 In the **PG 10yr SENS** scenario, internal in- and out-migrant counts are used in each year of the forecast. The internal in-migration counts are based on the historical ten years of internal migration, with increasing intervals of 50 per year from 2015/16 to 2017/18, with the first adjustment starting at 100 in 2015/16. From 2018 onwards, internal in-migration is increased by 200 per year. The internal out-migration flows are unaltered, remaining consistent with the **PG 10yr** scenario.

B.22 These are based on the historical average annual internal migration counts over the relevant historical time period. The ASMigR schedules are used to distribute these counts to single year of age.

B.23 In the **Jobs-led** (**Core** and **SENS**) scenarios, historical counts of internal in and out-migrants are used from 2001/02 to 2014/15. From 2015/16, these scenarios then calculate their own internal migration assumptions to ensure an appropriate balance between the population and the targeted increase in the number of jobs that is defined in each year of the forecast period. A higher level of net internal migration will occur if there is insufficient population and resident labour force to meet the forecast number of jobs. In the **Jobs-led** (**Core** and **SENS**) scenarios, the

profile of internal migrants is defined by an ASMigR schedule, derived from the ONS 2014-based SNPP.

International Migration

B.24 Historical mid-year to mid-year counts of immigration and emigration by 5-year age group and sex have been sourced from the 'components of population change' files that underpin the ONS MYEs. Any 'adjustments' made to the MYEs to account for asylum cases are included in the international migration balance.

B.25 In all scenarios, future international migrant counts are specified.

B.26 In the **SNPP-2014** scenario, historical counts of migrants are used from 2001/02 to 2013/14. From 2014/15, the international in- and out-migration counts are drawn directly from the 2014-based official projection.

B.27 In the **PG** scenarios, historical counts of international in and out-migrants are used from 2001/02 to 2014/15. From 2015/16, future international migration counts are based on the area-specific historical migration data. In the **PG 5yr** scenario, a five year international migration history is used (2010/11 to 2014/15). In the **PG 10yr** and **PG 10yr SENS** scenarios, a ten year history is used (2005/06 to 2014/15).

B.28 Implied within the international migration component of change in the **PG** scenarios (i.e. **PG-5yr**, **PG 10yr** and **PG 10yr SENS**) is an 'unattributable population change' (UPC) figure, which ONS identified within its latest mid-year estimate revisions. The POPGROUP model has assigned the UPC to international migration as it is the component with the greatest uncertainty associated with its estimation.

B.29 In the **Jobs-led** (**Core** and **SENS**) scenarios, historical counts of international in and out-migrants are used from 2001/02 to 2014/15. From 2015/16, international migration counts are taken from the ONS 2014-based SNPP (i.e. counts are consistent with the **SNPP-2014** scenario). An ASMigR schedule of rates from the ONS 2014-based SNPP is used to distribute future counts by single year of age.

Households & Dwellings

B.30 The 2011 Census defines a household as:

> *"one person living alone, or a group of people (not necessarily related) living at the same address who share cooking facilities and share a living room or sitting room or dining area."*

B.31 In POPGROUP, a dwelling is defined as a unit of accommodation which can either be occupied by one household or vacant.

B.32 In all scenarios, the household and dwelling implications of the population growth trajectory have been evaluated through the application of headship rate statistics, communal population statistics and a dwelling vacancy rate. These data assumptions have been sourced from the 2001 and 2011 Censuses and the 2014-based household projection model from the DCLG. The 2014-based model was released by the DCLG in July 2016, and is underpinned by the 2014-based SNPP from ONS.

Household Headship Rates

B.33 A household headship rate (also known as household representative rate) is the *"probability of anyone in a particular demographic group being classified as being a household representative"*[17].

B.34 The household headship rates used in the POPGROUP modelling have been taken from the latest DCLG 2014-based household projection model, which is underpinned by the ONS 2014-based SNPP. The DCLG household projections are derived through the application of projected headship rates to a projection of the private household population. The methodology used by DCLG in its household projection models consists of two distinct stages:

- **Stage One** produces the national and local authority projections for the total number of households by sex, age-group and relationship-status group over the projection period.
- **Stage Two** provides the detailed 'household-type' projection by age-group, controlled to the previous Stage One totals.

[17] Household Projections 2012-based: Methodological Report. Department for Communities and Local Government (February 2015). https://www.gov.uk/government/statistics/2012-based-household-projections-methodology

B.35 In POPGROUP, the Stage Two headship rates have been applied by 10-year age group in an 8-fold household type classification (Table 29).

Table 29: DCLG Stage Two headship rate classification household type classification

DCLG Category	Description
One person male	One person households: Male
One person female	One person: Female
Couple no child	One family and no others: Couple households: No dependent children
Cple+adlts no child	A couple and one or more other adults: No dependent children
One child	Households with one dependent child
Two children	Households with two dependent children
Three+ children	Households with three or more dependent children
Other households	Other households with two or more adults

Communal Population Statistics

B.36 Household projections in POPGROUP exclude the population 'not-in-households' (i.e. the communal/institutional population). These data are drawn from the DCLG 2014-based household projections, which use statistics from the 2011 Census. Examples of communal establishments include prisons, residential care homes and student halls of residence.

B.37 For ages 0–74, the number of people in each age group not-in-households is fixed throughout the forecast period. For ages 75–85+, the proportion of the population not-in-households is recorded. Therefore, the population not-in-households for ages 75–85+ varies across the forecast period depending on the size of the population.

Vacancy Rate

B.38 The relationship between households and dwellings is modelled using a 'vacancy rate', sourced from the 2011 Census[18]. The vacancy rate is calculated using statistics on households (occupied household spaces) and dwellings (shared and unshared).

B.39 A vacancy rate of 6.4% for Northumberland has been applied, fixed throughout the forecast period. Using the vacancy rate, the 'dwelling requirement' of each household growth trajectory has been evaluated.

[18] Census Table KS401EW: Dwellings, household spaces and accommodation type

Labour Force & Jobs

B.40 Apart from in the **Jobs-led** (**Core** and **SENS**) scenarios, the labour force and jobs implications of the population growth trajectory are evaluated through the application of three key data items: economic activity rates, an unemployment rate and a commuting ratio.

B.41 In the **Jobs-led** (**Core** and **SENS**) scenarios, these assumptions are used to determine the level of population growth required by the defined jobs growth trajectory.

Economic Activity Rates

B.42 The level of labour force participation is recorded in the economic activity rates. Economic activity rates by five year age group (ages 16-75+) and sex have been derived from Census statistics.

B.43 Between the 2001 and 2011 Censuses, rates of economic activity increased, most notably for females and males in the older age groups (Figure 33).

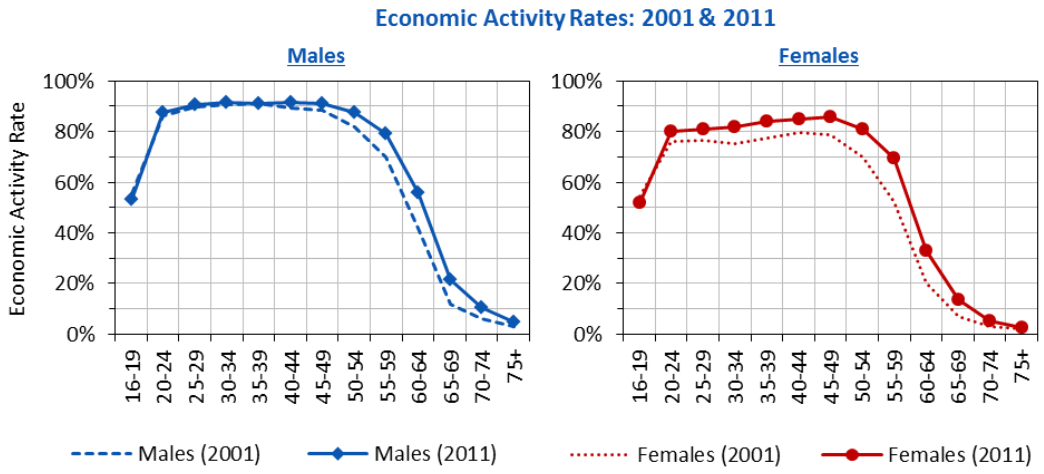


Figure 33: Northumberland Economic activity rates: 2001 and 2011 Census comparison (source: ONS)

OBR Rates

B.44 The Office for Budget Responsibility (OBR) has undertaken analysis of labour market trends in its 2015 Fiscal Sustainability Report[19]. Included within its analysis is a forecast of changing economic activity rates for males and females, extending to a long-term 2066 forecast horizon. This

[19] http://budgetresponsibility.org.uk/docs/dlm_uploads/49753_OBR-Fiscal-Report-Web-Accessible.pdf

forecast has been used to generate an alternative set of economic activity rates for Northumberland.

B.45 Adjustments have been made for the older age groups only (60–75+) (Table 30). The economic activity rate profiles are summarised in Figure 34.

Table 30: OBR Economic Activity Rate adjustments

OBR Economic Activity Rates Change 2011–2031			
Males		Females	
16–19	0%	16–19	0%
20–24	0%	20–24	0%
25–29	0%	25–29	0%
30–34	0%	30–34	0%
35–39	0%	35–39	0%
40–44	0%	40–44	0%
45–49	0%	45–49	0%
50–54	0%	50–54	0%
55–59	0%	55–59	0%
60–64	15%	60–64	70%
65–69	43%	65–69	89%
70–74	23%	70–74	95%
75+	51%	75+	240%

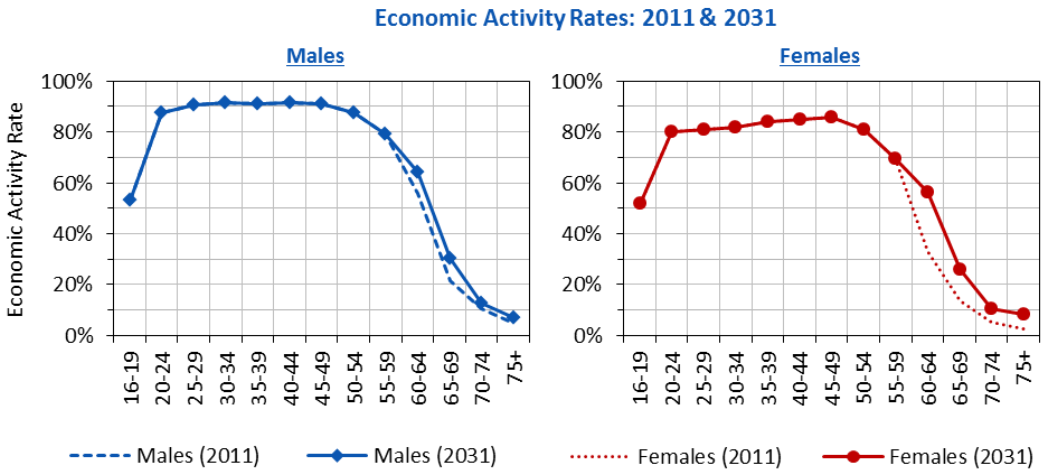


Figure 34: OBR economic activity rate profile for Northumberland

B.46 These economic activity rate adjustments have been applied in all demographic and jobs-led scenarios except **Jobs-led SENS1b**, **SENS3a** and **SENS3b**.

Sensitivity Rates

B.47 Under the Jobs-led sensitivity scenarios (**SENS1b**, **SENS3a** and **SENS3b**), the economic activity rates for the 75+ age groups has been adjusted in line with the historical economic activity rates in the 2001 and 2011 censuses. OBR adjustments have been made in the 60–64, 65–69 and 70–74 age groups, in line with the core scenarios.

Table 31: Sensitivity Economic Activity Rate adjustments

OBR Economic Activity Rates Change 2011–2031			
Males		Females	
16–19	0%	16–19	0%
20–24	0%	20–24	0%
25–29	0%	25–29	0%
30–34	0%	30–34	0%
35–39	0%	35–39	0%
40–44	0%	40–44	0%
45–49	0%	45–49	0%
50–54	0%	50–54	0%
55–59	0%	55–59	0%
60–64	15%	60–64	70%
65–69	43%	65–69	89%
70–74	23%	70–74	95%
75+	54%	75+	22%

B.48 For females, this results in a lower economic activity rate than under the core OBR adjustments (Figure 35).

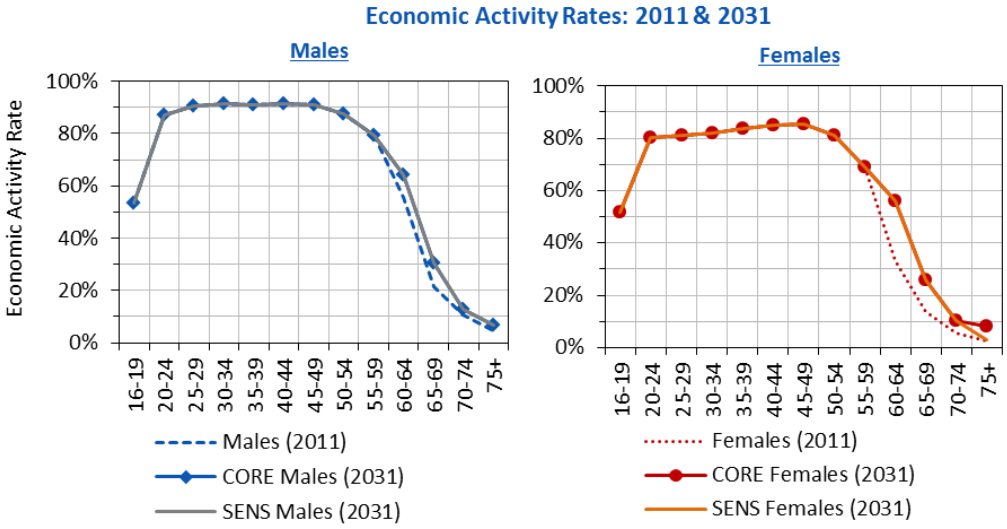


Figure 35: Sensitivity economic activity rate profile for Northumberland

Commuting Ratio

B.49 The commuting ratio, together with the unemployment rate, controls the balance between the number of workers living in a district (i.e. the resident labour force) and the number of jobs available in the district.

B.50 A commuting ratio greater than 1.00 indicates that the size of the resident workforce exceeds the number of jobs available in the district, resulting in a net out-commute. A commuting ratio less than 1.00 indicates that the number of jobs in the district exceeds the size of the labour force, resulting in a net in-commute.

B.51 From the 2011 Census 'Travel to Work' statistics, published by ONS in July 2014, commuting ratios have been derived for Northumberland. This is compared to the 2001 Census value in Table 32.

Table 32: Commuting Ratio Comparison

Northumberland UA		2001 Census	2011 Census
Workers	a	134,899	147,827
Jobs	b	107,994	125,803
Commuting Ratio	a/b	**1.25**	**1.18**

Note: 2001 data from Census Table *T101 – UK Travel Flows*; 2011 data from Census Table *WU02UK - Location of usual residence and place of work by age*.

B.52 In the **Jobs-led SENS1a** and **SENS1b** scenarios, the commuting ratio incrementally reduces from the 2011 Census value of 1.18, to 1.09 by 2031 (Figure 36). This commuting ratio adjustment is in line with the NOMIS line of best fit, as defined by Northumberland County Council.

B.53 In the **Jobs-led SENS2a** and **SENS3a** scenarios, the commuting ratio incrementally reduces from the 2011 Census value of 1.18 to 1.11 by 2031 (Figure 36). This commuting ratio adjustment is based on a 50% reduction in the net out-commute seen between the 2001 and 2011 censuses.

B.54 In the **Jobs-led SENS2b** and **SENS3b** scenarios, the commuting ratio incrementally reduces from the 2011 Census value of 1.18 to 1.145 by 2031 (Figure 36). This commuting ratio adjustment is based on a 25% reduction in the net out-commute seen between the 2001 and 2011 censuses.

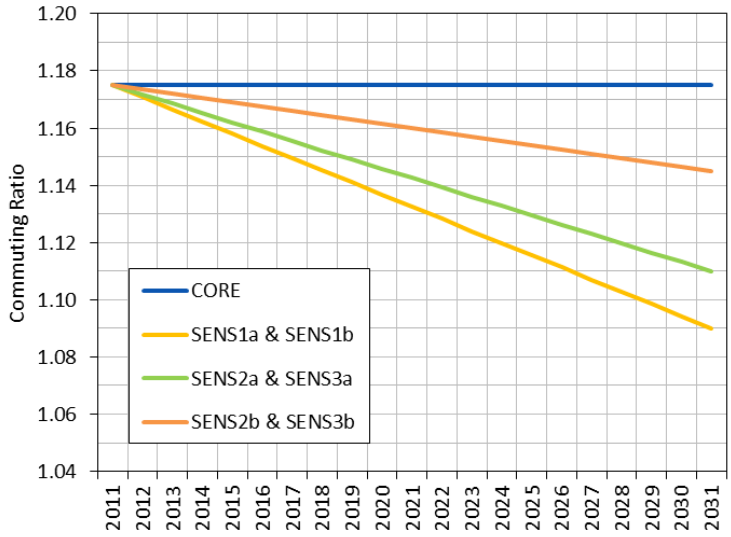


Figure 36: Commuting ratio in core and Jobs-led sensitivity scenarios

Unemployment Rate

B.55 The unemployment rate, together with the commuting ratio, controls the balance between the size of the labour force and the number of jobs available within an area.

B.56 In all scenarios (except **Jobs-led SENS1a** and **Jobs-led SENS1b**), historical unemployment rates are defined up to 2015. From 2015, the unemployment rate reduces from 6.1% to a pre-recession average (2004–2007) of 5.0% by 2020 (Table 33).

Table 33: Historical unemployment rates 2004–2015

Area	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Average Pre-Recession (2004-07)
Northumberland	4.5	4.4	5.9	5.0	5.9	7.1	7.4	7.8	7.7	7.1	6.6	6.1	5.0

Source: ONS model-based estimates of unemployment, from NOMIS

B.57 In the **Jobs-led SENS1a** and **SENS1b** scenarios, the unemployment rate has been incrementally reduced to the lowest historical unemployment rate of 4.4% by 2031 (Figure 37).

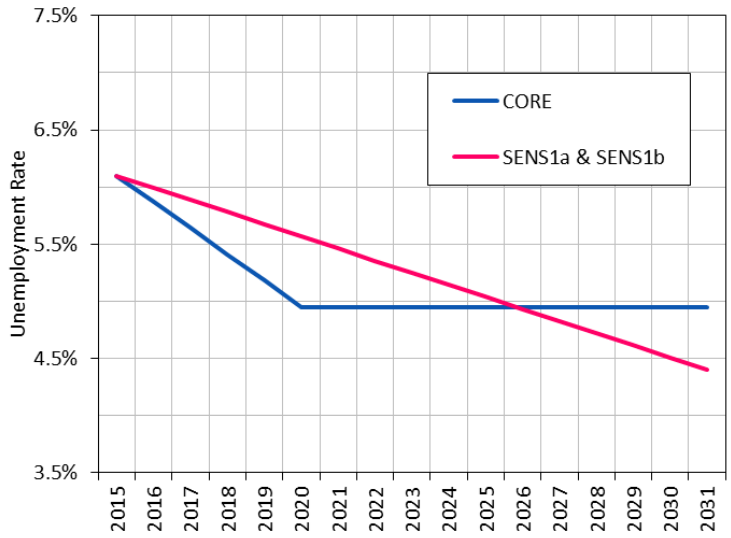


Figure 37: Unemployment rates in core and Jobs-led sensitivity scenarios

Appendix C

Sub-County Data Inputs & Assumptions

Introduction

C.1 To produce demographic forecasts at sub-county level, POPGROUP was configured for 'small-area' forecasts.

C.2 Using historical evidence for the 2001–2014 period, in conjunction with information from ONS sub-national population projections, a series of assumptions have been derived which drive the scenario forecasts at small-area level. In the following sections, a narrative on these data inputs and assumptions is presented.

C.3 At sub-county level, an **SNPP-2014** has been developed along with a **Dwelling-Led** scenario using housing growth trajectories from the Northumberland County Council Local Plan. Three additional dwelling-led sensitivity scenarios (**Dwelling-led SENS1**, **SENS2** and **SENS3**) have also been developed to consider the potential impact of the development of the Garden Village in Ponteland only.

C.4 In the **Dwelling-led** scenarios, dwelling growth targets were applied in each year of the 2014/15–2030/31 forecast period.

Population, Births & Deaths

Population

C.5 Historical population statistics for each of the 25 small areas are provided by the mid-year population estimates (MYEs) for Census Output Areas 2001–2014, with all data recorded by five year age group and sex. These data include the revised MYEs for 2002–2010, which were released by the ONS in May 2013. The revised MYEs provide consistency in the measurement of

the components of change (i.e. births, deaths, internal migration and international migration) between the 2001 and 2011 Censuses.

C.6 In the **SNPP-2014** scenario, future population counts are provided by single-year of age and sex to ensure consistency with the trajectory of the ONS 2014-based SNPP for Northumberland.

Births & Fertility

C.7 For each of the 25 sub-county areas, historical mid-year to mid-year counts of births by sex are defined from 2001/02 to 2013/14. These statistics have been sourced from ONS statistics at output area level.

C.8 In combination with the 'population-at-risk' (i.e. all women between the ages of 15–49), the assumptions listed below provide the basis for the calculation of births in each year of the forecast period:

- A county-level age specific fertility rate (ASFR) schedule, which measure the expected fertility rates by age in 2013/14. This is derived from ONS 2014-based SNPP for Northumberland.
- A fertility differential for each of the 25 sub-county areas, derived from the historical births data
- Long-term assumptions on changes in age-specific fertility rates from the ONS 2014-based SNPP for Northumberland

C.9 In the **SNPP-2014** scenario, future births are calculated to ensure consistency with the official population growth trajectory under the 2014-based SNPP.

Deaths & Fertility

C.10 For each of the 25 sub-county areas, historical mid-year to mid-year counts of deaths and age by sex are defined from 2001/02 to 2013/14. These statistics have been sourced from ONS statistics at output area level.

C.11 In combination with the 'population-at-risk' (i.e. the total population), the assumptions listed below provide the basis for the calculation of deaths in each year of the forecast period:

- A county-level age-specific mortality rate (ASMR) schedule, which measures the expected mortality rates by age in 2013/14. This is derived from the ONS 2014-based SNPP for Northumberland.
- A mortality differential for each of the 25 sub-County areas, derived from the historical deaths data.
- Long-term assumptions on changes in age-specific mortality rates from the ONS 2014-based SNPP for Northumberland.

C.12 In the **SNPP-2014** scenario, future deaths are calculated to ensure consistency with the official 2014-based SNPP growth trajectory.

Migration

C.13 Other than Census statistics, there are no historical migration statistics available at a sub-county level. Therefore, migration is calculated as the 'residual' of the population, after taking account of births and deaths. 'Net migration' equates to the cumulative impact of the four types of migration modelled within POPGROUP (in-migration, out-migration, immigration and emigration).

C.14 Using the county-level Census statistics, historical estimates of migration are derived at sub-county level by comparing the migration implied by the schedule of rates for all areas (in this case, the schedule from the 2014-based SNPP for Northumberland) with the pattern of migration observed for small areas in the Census statistics.

C.15 Once historical estimates of migration have been derived, a weighted average of the last ten years (2003/04–2013/14) of estimated migrant counts is used directly as input to scenario forecasts for all years after the 2014 population estimate. The weighted average, calculated for each age-sex category and separately for each of the four migration flows, is repeated for each year of the scenario projection up to and including the last year (2031).

Households & Dwellings

C.16 In the **Dwelling-led** scenario, the application of headship rate statistics, communal population statistics and a dwelling vacancy rate are used to determine the level of population growth required by the defined dwelling growth trajectory. In the **SNPP-2014** scenario, these assumptions are used to determine the level of household and dwelling growth.

C.17 Household and dwelling data assumptions have been sourced from the 2001 and 2011 Censuses and the 2014-based household projection models from the Department for Communities and Local Government (DCLG).

C.18 The latest DCLG household projections provide headship rate statistics and communal population statistics, but only at local authority (i.e. county) level. Small-area (i.e. sub-county) household assumptions have therefore been derived using DCLG county statistics in combination with sub-county statistics from the 2001 and 2011 Census.

Headship Rates

C.19 Household headship rates define the probability of anyone in a particular demographic group being classified as a household representative, given the age-sex profile of the population in that year.

C.20 The household headship rates at sub-county level have been derived from the 2014-based household projections for Northumberland. Sub-county level statistics on the total number of households are available from the Census. These have been used to scale the DCLG county-level headship rates to sub-county totals, ensuring consistency with the total number of households for Northumberland in 2001 and 2011.

C.21 Although sub-county headship rates are derived, the *trend* in headship rates for each small-area mirrors that evident in the county-level statistics. The trend is applied by household type and age for all years of the projection period.

C.22 For further detail on the 2014-based headship rates, please refer to Appendix B.

Communal Population

C.23 Household projections in POPGROUP exclude the population 'not-in-households' (i.e. the communal/institutional population). Examples of communal establishments include prisons, residential care homes and student halls of residence.

C.24 The 2011 Census provides information on the communal establishment population by age and sex for Census Output Areas. By aggregating and apportioning these data for the small-areas, the DCLG county-level communal establishment assumptions for 2014 have been updated.

C.25 For ages 0–74, the number of people in each age group 'not-in-households' is kept fixed throughout the forecast period. For ages 75–85+, the proportion of the population 'not-in-households' is recorded. Therefore, the population not-in-households for ages 75–85+ varies across the forecast period depending on the size of the population.

Vacancy Rate

C.26 A household/dwelling ratio (vacancy rate) based on households (occupied, second homes and vacant) and dwellings (shared and unshared) has been derived from the 2011 Census, for each of the 25 sub-County areas (Table 34). This ratio models the relationship between households and dwellings. The vacancy rates are fixed throughout the forecast period.

Table 34: Sub-County area vacancy rates used in the POPGROUP model

Small Area	Vacancy Rate
Berwick	7.1%
Alnwick	7.6%
Rothbury	10.0%
Belford Seahouses	34.4%
Wooler	16.2%
Rest of North Delivery Area	**16.8%**
Hexham	4.8%
Morpeth	3.4%
Prudhoe	2.6%
Corbridge	6.5%
Ponteland	4.8%
Rest of Central Delivery Area	**5.5%**

Small Area	Vacancy Rate
Amble	4.6%
Ashington	5.2%
Bedlington	3.9%
Blyth	3.4%
Cramlington	1.8%
Guidepost	3.8%
Newbiggin by the Sea	7.6%
Seaton Delaval	2.8%
Rest of South East Delivery Area	**4.8%**
Haltwhistle	4.9%
Allendale Haydon Bridge	9.3%
Bellingham	8.8%
Rest of West Delivery Area	**9.7%**

Appendix D National Insurance Number Registration

Country of Origin Classification

EU13
Cyprus
Malta
Czech Rep
Czechoslovakia
Hungary
Poland
Rep of Estonia
Rep of Latvia
Rep of Lithuania
Rep of Slovenia
Slovak Rep
Bulgaria
Romania

Other EU
Austria
Belgium
Denmark
E Germany
Finland
France
Germany
Greece
Italy
Luxembourg
Netherlands
Portugal
Rep of Ireland
Spain
Sweden
Croatia

New Commonwealth	
Antigua	Nevis, St Kitts-Nevis
Bahamas	Nigeria
Bangladesh	Pakistan
Barbados	Papua New Guinea
Belize	Seychelles
Botswana	Sierra Leone
Brunei	Singapore
Cameroon	Solomon Islands
Fiji	Sri Lanka
Ghana	St Lucia
Grenada	St Martins
Guyana	St Vincent & Grenadines
India	Swaziland
Jamaica	Tanzania
Kenya	Tonga
Kiribati	Trinidad & Tobago
Lesotho	Tristan da Cunha
Malawi	Tuvalu
Malaysia	Uganda
Maldive Islands	Vanuatu
Mauritius	Samoa
Mozambique	Zambia
Namibia	Rwanda
Nauru	

Old Commonwealth
Australia
Canada
New Zealand
South Africa