

West Northamptonshire JPU

Population & Household forecasts

Methodology review

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Executive Summary

The West Northamptonshire Joint Planning Unit (WNJPU) has been developing an evidence base to support the production of its Joint Core Strategy. Housing targets set by the Regional Spatial Strategy (RSS) have been subject to review given real concerns over infrastructure constraints and the prevailing economic conditions.

In 2010, WNJPU commissioned Edge Analytics to prepare housing-led population, household and job projections. Variations of these projections were used in the preparation of the Pre-Submission Joint Core Strategy which was subject to public consultation during February-March 2011. The former RSS was based on a mixture of 2004 and 2006 based ONS projections. The Edge Analytics / WNJPU projections were based on 2008 Population and 2006 Household projections (the 2008 Household projections were published after the Joint Core Strategy had been prepared).

The objective of this report has been to assess the consistency and comparability of WNJPU's approach with that produced (as a challenge to WNJPU's 'preferred' scenario) by JG Consulting (on behalf of William Davis and Hallam Land) and to present the very latest demographic evidence in support of WNJPU's housing policy decisions in its Joint Core Strategy.

WNJPU has derived a demographic and economic forecast (Scenario F Variant 3) that reflects the prevailing economic and demographic conditions and the longer-term impact of the recession. This 'preferred' scenario takes account of the recent reduction in completion rates and its impact upon occupancy rates and adopts a prudent approach to its estimation of international migration, given the difficulty of local-area estimation and the uncertainty surrounding its long-term impact upon population change.

The analysis presented here uses the most recent demographic statistics on births, deaths, internal migration and international migration from ONS' 2010 mid-year estimates. It is clear that the forthcoming 2010-based sub-national population projections (due in Spring 2012) are likely to follow a lower growth trajectory than previous projections, due primarily to the reduction in the combined impact of internal and international migration upon West Northamptonshire.

This reduced growth trajectory is made more likely given that ONS' revised methodology for estimating international migration at local authority level will most probably reduce immigration

totals - particularly for Northampton, where population growth estimates have been dominated by its international migration component.

In a direct challenge to WNJPU's 'preferred' scenario, the JGC study presents a robust and detailed analysis of demographic change in West Northamptonshire, with a specific focus on the potential implications of different trajectories of economic growth upon population change.

The methodologies employed by WNJPU and JGC are similar and the data and assumptions employed are reasonably consistent, although JGC does not attempt to explicitly handle international migration and does not acknowledge the likelihood that household occupancy rates will have stabilised in the short term due to falling completion rates and continued population growth.

The scenario analysis developed by WNJPU has largely been trend-based and dwelling-led. The JGC analysis combines its own trend-based scenarios with employment-led alternatives, using jobs growth trajectories from the earlier SNEAP economic forecasts to define its 'preferred' or 'most likely' scenario.

It is recommended that WNJPU explores its own employment-led scenarios, incorporating assumptions on economic activity rates, unemployment rates and commuting ratios. A set of trend-led, dwelling-led and employment-led scenarios which use a common methodology, data and assumptions might provide a more consistent comparison.

However, the discrepancy between population and household forecasts based on a prudent growth trajectory (WNJPU) and those derived from the most ambitious economic growth scenario (JGC) will remain. The most recent demographic evidence suggests that lower growth is likely, whilst recovery from the current economic conditions is forecast to be slower than previous recessions. It remains imperative that stakeholders align an appropriate housing growth trajectory with realistic and achievable economic aspirations, balancing the 'high growth' of the pre-2008 SNEAP forecast, with the latest economic forecasts that take more account of the prevailing economic conditions and demographic trends.

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1. Context

With the likely demise of the Regional Spatial Strategy (RSS), local authorities have assumed responsibility for the development of long-term plans for housing provision. This new responsibility is being conducted in the context of considerable economic and demographic uncertainty. Across the UK, the rate of new housing completions has reduced significantly and gross mortgage lending is a fraction of its 2007 peak.

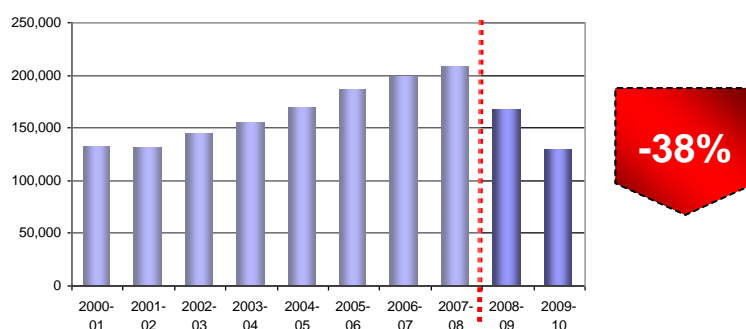


Figure 1a: Housing Completions, England 2000-2010 (Source: CLG)

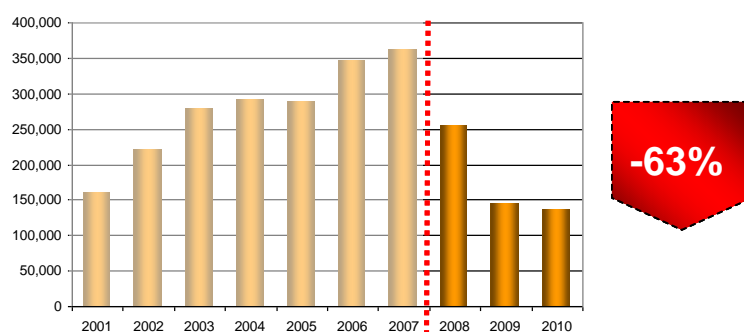


Figure 1b: UK Gross Mortgage Lending (£m), 2001-2010 (Source: Council of Mortgage Lenders)

The economic situation has had an impact upon levels of mobility as the housing market has stagnated, whilst the long-term impact of international migration remains uncertain despite a government policy that is seeking to exert more control. 'Official' statistics suggest that immigration totals have been maintained at a fairly constant level since 2004, with fluctuations in the emigration total determining the (estimated) net immigration impact (Figure 2a). Natural change continues to exert a considerable influence upon population growth. Fertility rates have risen consistently since 2001, reaching their highest levels since 1973 (Figure 2b). At the same time life expectancy continues to improve as baby boomer cohorts move into retirement, leading to unprecedented ageing of the population over the next 25 years.

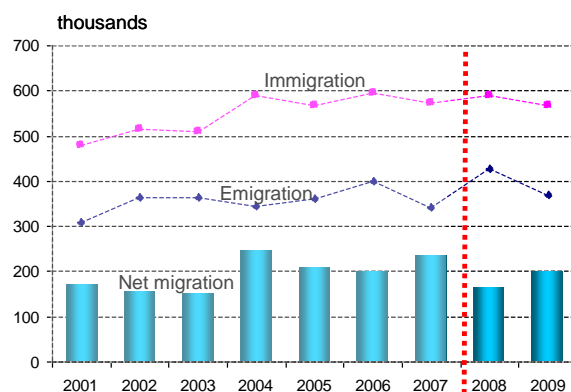


Figure 2a : UK International migration, 2001/2 – 2009/10 (Source: ONS)

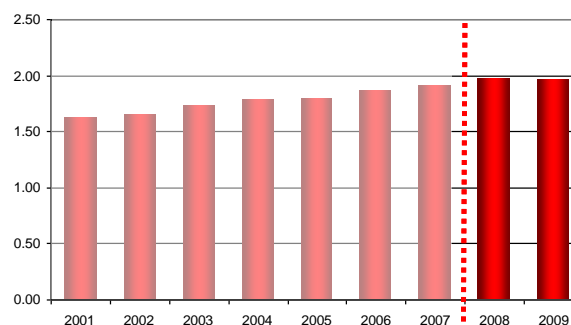


Figure 2b: UK Total Fertility Rate, 2001-2009 (Source: ONS)

It is in this context that the West Northamptonshire Joint Planning Unit (WNJPU) has been seeking to develop an evidence base to support the development of its Joint Core Strategy. It has scrutinised the most recent ONS (2008-based) population projections and the latest evidence on local population change and housing development to derive a demographic and economic forecast that is designed to better reflect the longer-term impact of the recession. The key elements of this forecast are:

- The total number of dwellings constructed 2001-2026 will be 50,150
- Net international migration is assumed to continue at its 2009 level
- Household formation rates are held steady for 5 years before resuming published trend
- The government's changes to retirement age are factored into the labour force forecasts.

A local developer has subsequently commissioned its own housing and jobs forecasts (completed by JG Consulting – JGC) and made a direct challenge to the robustness of the WNJPU 'preferred' growth trajectory, primarily on the basis of its underpinning economic aspirations. WNJPU is seeking further assistance to scrutinise the data, methodology and assumptions that have been used in the delivery of these alternative forecasts; to ensure consistency in the data and

assumptions that have been used in the alternative forecasts so any future discussions and debate that might arise can concentrate on key housing development issues.

Section 2 of this report provides a brief summary of the analysis and documents that have provided evidence or scrutiny to the Joint Core Strategy growth forecasting issues. Section 3 examines the most recent patterns and trends in West Northamptonshire's population growth and explores the implications for forecasting future trajectories. Section 4 scrutinises the data, methods and assumptions detailed in the JGC report and compares and contrasts with WNJPU's own forecasts and the most recent evidence presented in Section 3. Section 5 provides a number of concluding comments based upon the collective evidence and analysis presented here.

2. Developing the evidence

2.1. Population and household forecasts

To provide a basis from which to evaluate alternative housing development trajectories WNJPU commissioned Edge Analytics to provide a population and household forecasting capability using POPGROUP technology. A range of scenarios were tested, benchmarking 'official' projections from the Office for National Statistics (ONS) and Communities and Local Government (CLG) with variant housing growth trajectories, using the most recent evidence and assumptions on demographic change. Evidence for this work can be found under the Population and Jobs Forecasting research section of the WNJPU website, at

Edge Analytics (October 2010) WNJPU Population and Household Forecasts
www.westnorthamptonshirejpu.org/LinkClick.aspx?fileticket=WyObQ1FCgyc%3d&tabid=145

Since delivery of the forecasting capability, WNJPU has developed a 'preferred' growth trajectory 'Scenario F variant 3' upon which to base its Joint Core Strategy housing development plan for Daventry, Northampton and South Northamptonshire. The scenario is similar to Edge Analytics' original 'Dwellings C Variant 3', but with a different distribution of dwellings and a modified build out rate.

WNJPU commissioned DTZ Consulting to scrutinise its approach to demographic forecasting and the derivation of the preferred housing trajectory for West Northamptonshire. It concluded that the preferred scenario was achievable and that the approach was robust but suggested more explicit identification of the sensitivity of WNJPU's assumptions on household headship rates and international migration. It also recognised the need to integrate population and household forecasts with economic growth aspirations for West Northamptonshire. The DTZ evidence is available as follows:

DTZ Consulting (November 2010) Review of Demographic and Housing Projections for West Northamptonshire. A Report to WNJPU.
www.westnorthamptonshirejpu.org/LinkClick.aspx?fileticket=k4yj0oHE%2fZc%3d&tabid=145

To provide further scrutiny on the alignment of the preferred scenario with economic development in West Northamptonshire, Roger Tym & Partners was commissioned to investigate the consistency of the housing and employment targets recommended to the LDF. It concluded that the new housing growth trajectory would accommodate growth of the existing population but would not meet previous economic aspirations for West Northamptonshire, formulated as part of the (former)

Milton Keynes and South Midlands (MKSM) growth area. More recent economic projections (Cambridge Econometrics) were seen to be broadly in line with WNJPU’s preferred scenario, taking account of the current recession and the change in ‘growth area’ status. The final report for its analysis is available as follows:

Roger Tym & Partners (February 2011) WNJPU, West Northants Further Evidence
www.westnorthamptonshirejpu.org/LinkClick.aspx?fileticket=jfrvfRZKm%2fA%3d&tabid=145

WNJPU has published details of its preferred scenario as follows:

WNJPU (February 2011) West Northamptonshire Joint Core Strategy, ‘Dwellings F – Variant 3’ Population and Employment Forecasts
www.westnorthamptonshirejpu.org/LinkClick.aspx?fileticket=WSP08z2rW1E%3d&tabid=145

Additional technical detail has been published to accompany this summary report:

WNJPU (February 2011) West Northamptonshire Joint Core Strategy, Population, Households and Labour Force Technical Paper
www.westnorthamptonshirejpu.org/LinkClick.aspx?fileticket=YtValEnEWyc%3d&tabid=145

WNJPU (February 2011) West Northamptonshire Joint Core Strategy, Housing Technical Paper
www.westnorthamptonshirejpu.org/LinkClick.aspx?fileticket=cfFG%2b%2f7yVDC%3d&tabid=145

WNJPU (February 2011) West Northamptonshire Joint Core Strategy, Employment Technical Paper
www.westnorthamptonshirejpu.org/LinkClick.aspx?fileticket=r6jucbOswPw%3d&tabid=145

Since publication of the evidence detailed above, WNJPU has updated its household and dwelling forecasts using CLG’s 2008-based household model assumptions. Results produced by WNJPU suggest little change to the expected trajectory of household growth in the preferred scenario (Figure 3) although household totals are lower in the 2008-based scenario suggesting a higher average household size overall.

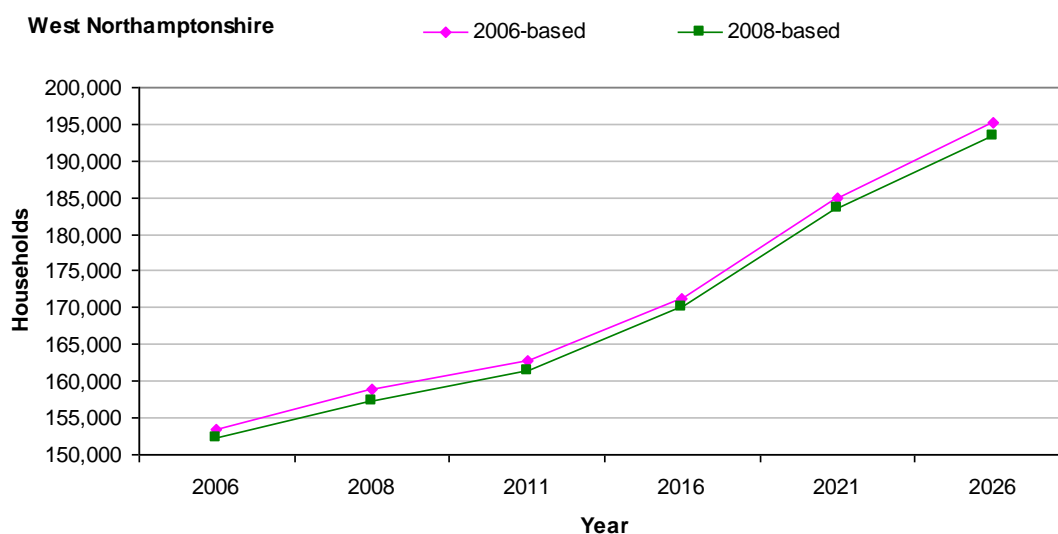


Figure 3: WNJPU household growth forecast, 2006-based and 2008-based headship rates

2.2. Challenging the evidence

The report commissioned by William Davis and Hallam Land, 'Estimating Housing Requirements West Northamptonshire' and delivered by JG Consulting (JGC) has been provided to Edge Analytics for review. An accompanying document from David Lewis at Hallam Land Management has used the content of the report to state its case for a review of proposed dwelling development in West Northamptonshire. The basis of the JGC analysis is the development of alternative housing growth scenarios derived from previous economic forecasts which established 'aspirational' growth targets for the West Northamptonshire sub-region.

To ensure clarity and consistency of interpretation of the respective forecasts, the data, assumptions and methodology used in the JGC analysis are compared to those used by WNJPU in the derivation of its preferred growth scenario. First, section 3 summarises some of the most recent evidence on demographic change in West Northamptonshire that has particular significance to the development of population and household scenarios for its constituent districts.

3. Key demographic evidence

3.1.Components of change

The 2001 Census provided the most recent, definitive count of the resident population of West Northamptonshire at 346k, (Daventry 72,045, Northampton 194,351 and South Northamptonshire 79,497). Since 2001, the Office for National Statistics (ONS) has produced ‘mid-year estimates’ (MYE) of its population, taking account of the annual impact of births and deaths (natural change), internal migration and international migration - the components-of-change. The latest, 2010, MYE for West Northamptonshire suggests that its population total was 379,871, giving an overall increase since 2001 of approximately 34,000; equivalent to a 9.8% rise. South Northamptonshire has had the largest relative increase in population since 2001, with an 11.7% increase, although much of this growth was concentrated in the first half of the decade and the majority (+1,500 dwellings) was in Grange Park on the edge of Northampton and related to its growth, rather than South Northamptonshire itself. Estimated growth in Daventry has been more consistent year-on-year with a 9.6% increase 2001-2010, whereas the 9.1% growth in Northampton has occurred largely since 2004. These changes are illustrated in an ‘indexed’ form in Figure 4, indicating a relative decline in the rate of growth in the latest years.

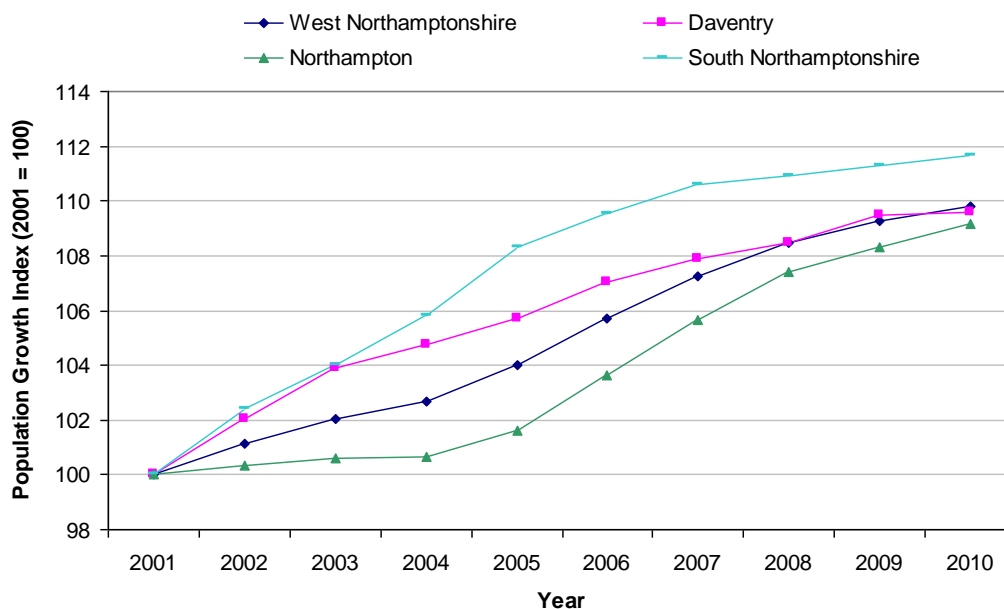


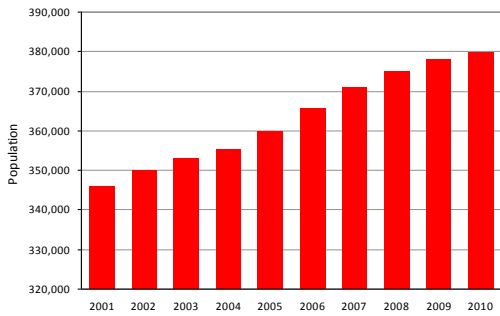
Figure 4: Index of population change, West Northamptonshire 2001-2010 (Source: ONS)

Disaggregation of this population change into its ‘components’ of change reveals the relative importance of natural change (births minus deaths), net internal migration and net international migration to growth since 2001 (Figure 5). In West Northamptonshire in total, natural change is

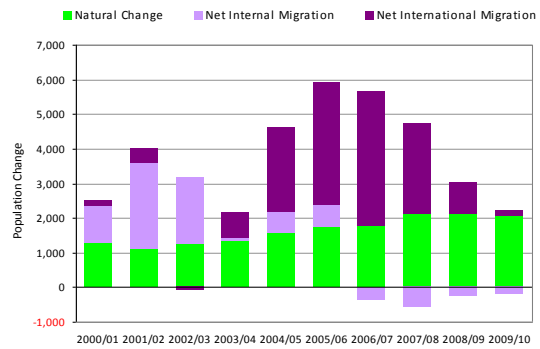
estimated to have been the major contributor (+16,397) since 2001. International migration, the most difficult component to estimate accurately, has had a variable impact depending upon the respective levels of emigration and immigration allocated to West Northamptonshire. In total, net immigration has contributed 14,727 to population growth since 2001. Net internal migration has had the smallest net impact upon growth over the last ten years (+5,375).

Within the individual districts, the relative importance of these three components differs for each, with internal migration the key driver for Daventry and South Northamptonshire and international migration the largest component for Northampton. However, it is the change in the relative importance of these components over time that has particular significance, as these will drive the assumptions used in the official sub-national population projections. Contrast South Northamptonshire's internal migration, in the first half of the decade, with that since 2006; a significant reduction in net in-migration. Migration assumptions based upon a recent (5-year) history with a 2004, 2006 or 2008-base would have very different impacts upon trend projections. Similarly, the impact of international migration upon Northampton is very different when calculated from a five-year historical period with a 2004, 2006, 2008 or a 2010 base.

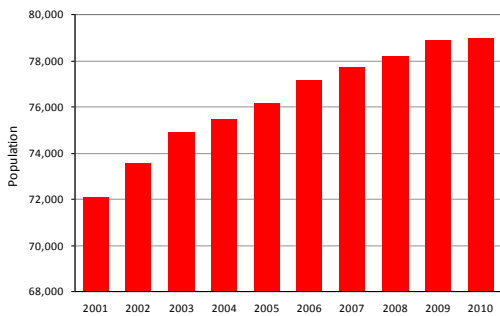
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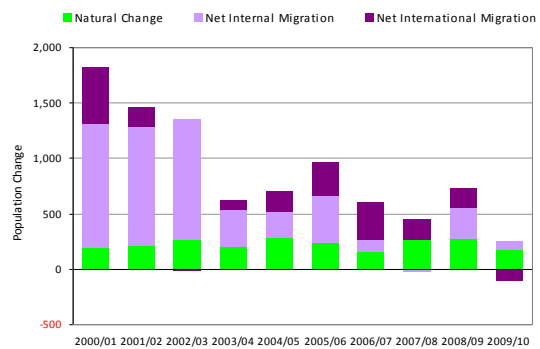
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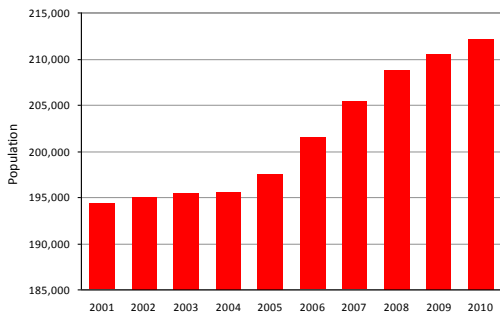
Daventry



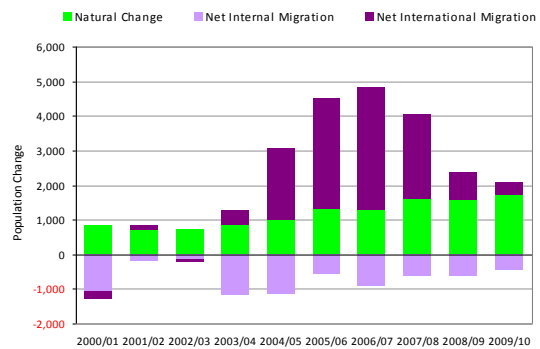
Daventry



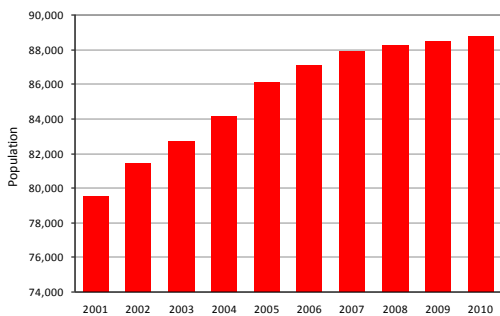
Northampton



Northampton



South Northamptonshire



South Northamptonshire

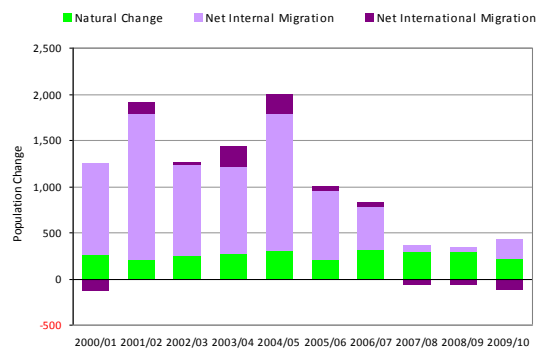


Figure 5: Components of change, West Northamptonshire 2001-2010

3.2.Official projections (2004, 2006 and 2008-based alternatives)

ONS publishes its sub-national population projections on a rolling, two-year basis. They are produced following release of 'national' projections which incorporate long-term assumptions on fertility, mortality and international migration. At a local level, sub-national projections take account of recent demographic evidence to derive a set of assumptions for a 25-year, 'trend-led' projection. The 2004-based, 2006-based and 2008-based projections for West Northamptonshire and its constituent districts are illustrated in Figure 6.

These illustrations emphasise how sensitive successive, trend-led projections are to variations in the relative importance of the components of change detailed in Figure 5. For West Northamptonshire in total, the 2004-based projection follows the lowest growth trajectory, the 2006-based the highest. This pattern is not consistent across each of the districts, however, reflecting the temporal changes in the relative importance of natural change, internal migration and international migration upon projected population change.

In South Northamptonshire, the 2006-based projection is dramatically different to the latest, 2008-based projection, due to the significant reduction in the importance of internal migration in the second half of the decade. The latest (migration) evidence for 2008/9 and 2009/10 suggests that the 2010-based projection will follow a lower trajectory than each of the three previous projections.

Daventry follows a similar pattern. The most recent evidence suggests a 2010-based projection that will be lower than that of its 2008-based predecessor.

In Northampton the picture is very different, with the 2008-based projection following the highest growth trajectory due, primarily, to the impact of international migration estimates upon its long-term assumptions on demographic change. With international migration estimated to have had a much reduced impact on population growth in 2008/9 and 2009/10, the 2010-based projections for Northampton are again likely to follow a lower growth trajectory.

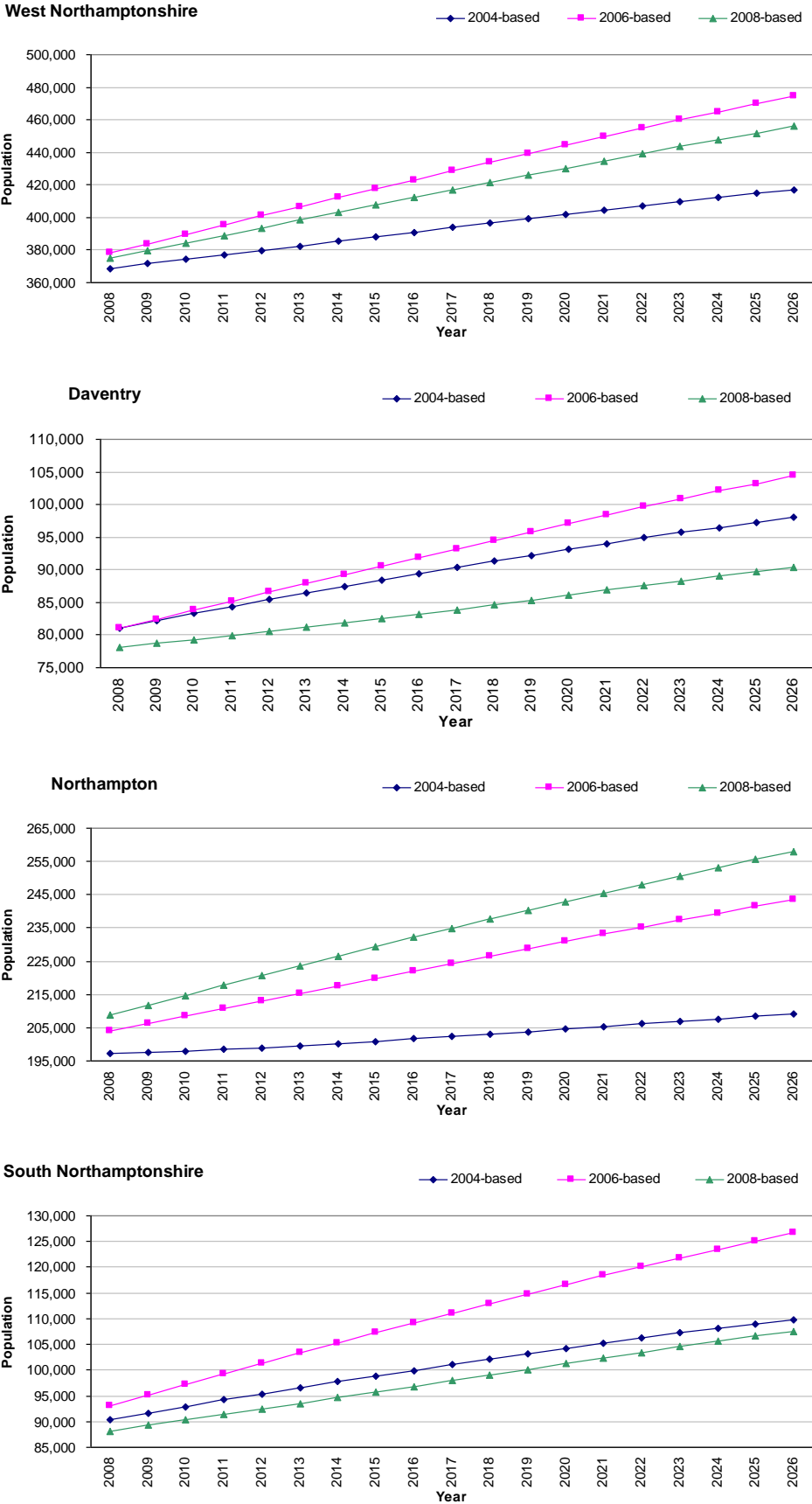


Figure 6: Official Projections, West Northamptonshire 2004, 2006 and 2008-based

3.3. International Migration - uncertainty

ONS employs a robust cohort component methodology for the calculation of its mid-year population estimates and the methodology is maintained in the production of its sub-national population projections. It is a tried and tested approach, used by many national statistical agencies and researchers for estimating and projecting demographic change (and applied by WNJPU in the development of its own forecasts).

As with all estimation 'models', the cohort component methodology is very reliant on robust and reliable data inputs. International migration is the most difficult component to estimate robustly, especially at a local authority scale. Consequently, ONS continues to develop new and alternative methods for estimating international migration as part of its ongoing Migration Statistics Improvement Programme (MSIP). What complicates this challenging programme of improvement is the sheer complexity of the process of international migration, with a huge diversity of origin/destination countries, migrant types and durations of stay to consider.

Official estimates of immigration and emigration are primarily based on sample data derived from the question asked in the International Passenger Survey (IPS) on migrants 'intentions' to stay in or leave the UK for more than twelve months. These are supplemented with additional statistics from the Home Office on asylum seekers and their dependants and from the Irish Central Statistical Office (ICSO) on estimates of migration between the UK and the Irish Republic. Since 2004, estimates of visitor switchers (those people whose original intention was to stay for less than twelve months but who subsequently stay for longer) and migrant switchers (those people who intended to stay for more than twelve months but decide to leave within a year) have been derived from questions in the IPS.

The current estimation process works at four different levels: national, regional, intermediate geography and local authority area. The intermediate geography groups local authority areas outside London based upon their contiguity and 'economic association'. Within London, boroughs are grouped based on similarities in historical migration profiles. There is a different set of these new geographies for both immigration and emigration.

Until June 2010, immigration estimation used the Labour Force Survey (LFS) to allocate gross national IPS flows to Wales and the English regions. LFS statistics on 'long-term' migrants calibrated the proportional distribution of flows to each Region and IPS data, smoothed over an extended

time-series, was used to allocate immigration flows to intermediate geographies outside London, with the LFS sample size believed to be sufficiently robust to enable it to be used for estimation for the London areas. The final stage of immigration estimation involved the proportional allocation of flows to local authority areas using the migrant distributions evident from 2001 Census data. The emigration estimation process has a similar hierarchical structure but does not have the luxury of additional data from either the LFS or the Census. As an alternative, it incorporates a 'migration propensity' model to estimate the distribution of flows at a local authority level.

To improve the estimation of immigration and to combat some of the issues identified with the use of outdated census information, the latest methodological developments from ONS (June 2010) have integrated administrative data as the basis for allocating flows from intermediate geographical zones to local authority areas. No changes were made to the regional estimation of immigration flows. Relatively minor changes were made to the emigration estimation methodology. This round of methodological changes (which also included improved handling of student flows in the internal migration estimates) resulted in retrospective revisions to all mid-year estimates. These mid-year estimate revisions were used as the basis for the calibration of the 2008-based sub-national population projections.

Research at the University Leeds, to develop population projections for ethnic groups, has scrutinised the methods and data sources used by ONS to estimate international migration and has identified some major discrepancies between the immigration estimates which underpin local authority mid-year estimates and evidence from local administrative datasets, specifically on immigration. These discrepancies relate to both the regional estimation of immigration flows and the local authority allocation based around membership of an intermediate geography. This research has contributed significantly to the debate on the statistical robustness of existing methods and an alternative estimation methodology has been formulated. Output from the research has been shared with ONS and the alternative methods suggested now form the basis of the MSIP's planned improvements to international migration estimates to 2011. The research by Dr Peter Boden & Professor Phil Rees has been published in the Journal of the Royal Statistical Society Series A, October 2010, Volume 173, Issue 4. An electronic copy of the original submission can be downloaded at:

<http://arxiv.org/ftp/arxiv/papers/0903/0903.0507.pdf>

The 'alternative' methodology retains the ONS 'national' estimate of international migration but distributes these data direct to local authorities using a combination of evidence from three administrative datasets: GP registration of foreign nationals, National Insurance Number registrations and the Higher Education Statistical Agency's count of international student numbers. The methodology removes the requirement for a regional and intermediate geographical hierarchy and maximises the use of 'local' administrative evidence on international migrant populations. The 2010-based projections for West Northamptonshire and its constituent districts will use international migration assumptions that are based on this new methodology.

A preliminary assessment of the impact of the new methodology based upon the model developed at the University of Leeds suggests that a lower level of 'immigration would be estimated for each of the West Northamptonshire districts, resulting in a likely reduction in the impact of net international migration compared to the 2008-based projections. This would contribute to producing a lower, trend-based population growth trajectory for each area, particularly in Northampton, where net immigration has been the main driver of change.

3.4. Housing Completion rates

In addition to the uncertainty surrounding the impact (current and future) of international migration upon West Northamptonshire, there is also the very immediate issue of the mismatch between continued population growth (estimated) and a sharp decline in the number of new dwellings being built (Figure 7).

| Number of dwellings | | | | | | | |
|------------------------|------|---------|---------|---------|---------|---------|---------|
| Stock | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
| West Northamptonshire | | 152,440 | 154,620 | 156,980 | 158,570 | 159,670 | 160,450 |
| Daventry | | 31,290 | 31,630 | 31,900 | 32,220 | 32,400 | 32,570 |
| Northampton | | 86,300 | 87,850 | 89,690 | 90,710 | 91,410 | 91,760 |
| South Northamptonshire | | 34,850 | 35,140 | 35,390 | 35,640 | 35,860 | 36,120 |

| New Dwellings | 2003-4 | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 | 2009-10 |
|------------------------|--------|---------|---------|---------|---------|---------|---------|
| West Northamptonshire | | 850 | 2,180 | 2,370 | 1,590 | 1,110 | 780 |
| Daventry | | 250 | 340 | 270 | 320 | 180 | 170 |
| Northampton | | - | 1,550 | 1,840 | 1,020 | 710 | 350 |
| South Northamptonshire | | 600 | 290 | 260 | 250 | 220 | 260 |

| Vacancies | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|------------------------|-------|-------|-------|-------|-------|-------|-------|
| West Northamptonshire | 4,556 | 4,592 | 4,423 | 4,665 | 5,120 | 5,005 | 4,680 |
| Daventry | 864 | 676 | 583 | 682 | 708 | 646 | 686 |
| Northampton | 2,907 | 2,896 | 3,014 | 3,090 | 3,541 | 3,393 | 3,047 |
| South Northamptonshire | 785 | 1,020 | 826 | 893 | 871 | 966 | 947 |

Note: Stock and new dwellings are rounded to the nearest 10.

Figure 7: Dwelling growth, West Northamptonshire 2002-2010 (Source: CLG)

South Northamptonshire has maintained its dwelling completion rate at 200-300 per year since 2005-6, following a high of 600 units in 2004-5 (which will explain the higher internal migration flows earlier in the decade). Completion rates in Daventry have fallen from a high of 340 in 2005-6 to 170 in the latest year. The decline in Northampton is most significant with the peak completion rate of 1,840 units in 2006-7 now reduced to just 350 in 2009-10. The overall impact is a completion rate in West Northamptonshire in 2010-11 that is less than one third of that achieved in 2006-7 (Figure 8).

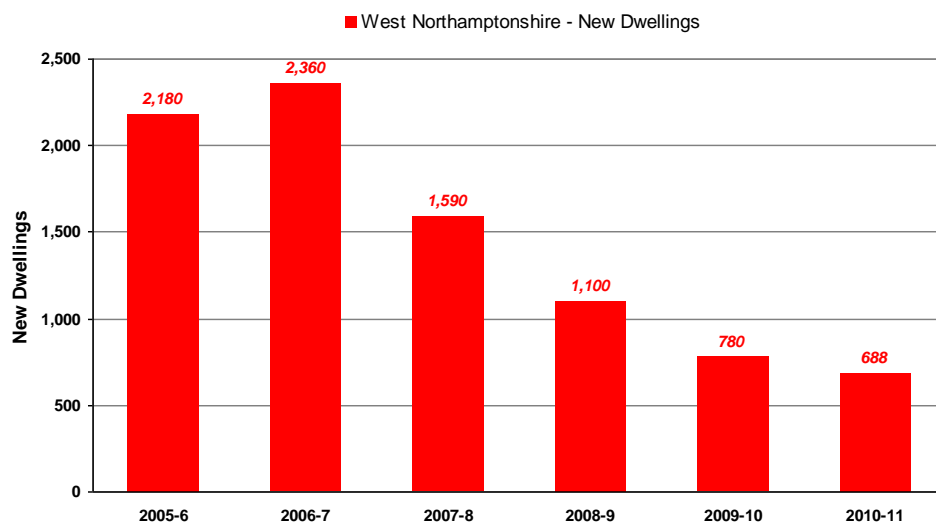


Figure 8: New dwellings, West Northamptonshire 2006-2011

With the population estimated to have continued to increase 2005-2010, housing completions falling and vacancy rates stable, it is likely that occupancy rates have *increased* over the period. This is counter to the assumption used in CLG's 2008-based household projections which model a gradual decline in occupancy rates from 2001 onwards.

3.5. CLG's household projections

In November 2010 CLG released its 2008-based household projections (after the original JCS was prepared). New household types have been defined; 17 in total (Figure 9) compared to the 5-fold classification used in the 2006-based projections.

The application of 'headship rates' to the age-sex composition of a population projection derives an indication of the likely change in household numbers. The *trend* in headship rates is that estimated by CLG for the West Northamptonshire districts and assumes an increasing number of smaller households, therefore a decreasing population per household.

| Household Type | Description |
|----------------|---|
| OPMAL | One person households: Male |
| OPFEM | One person households: Female |
| FAMC0 | One family and no others: Couple: No dependent children |
| FAMC1 | One family and no others: Couple: 1 dependent child |
| FAMC2 | One family and no others: Couple: 2 dependent children |
| FAMC3 | One family and no others: Couple: 3+ dependent children |
| FAML1 | One family and no others: Lone parent: 1 dependent child |
| FAML2 | One family and no others: Lone parent: 2 dependent children |
| FAML3 | One family and no others: Lone parent: 3+ dependent children |
| MIX C0 | A couple and one or more other adults: No dependent children |
| MIX C1 | A couple and one or more other adults: 1 dependent child |
| MIX C2 | A couple and one or more other adults: 2 dependent children |
| MIX C3 | A couple and one or more other adults: 3+ dependent children |
| MIX L1 | A lone parent and one or more other adults: 1 dependent child |
| MIX L2 | A lone parent and one or more other adults: 2 dependent children |
| MIX L3 | A lone parent and one or more other adults: 3+ dependent children |
| OTHHHH | Other households |
| TOTHH | Total |

Figure 9: Household types, CLG 2008-based household projection model

In the derivation of its preferred growth scenario, WNJPU has quite appropriately noted that the large reduction in dwelling completions in recent years coupled with a continued increase in population is unlikely to have resulted in a fall in average household size. It has therefore assumed that headship rates for each of its districts are held 'constant' for five years (2010-2015) with the CLG trend continuing thereafter. Whilst reducing the rate of household formation in this five year period, the 'Dwelling F Variant 3' still results in a trajectory which sees average household size lower than that forecast by CLG using the 2008-based population projections (Figure 10). This is due to the different levels of migration that are assumed in each scenario which affect the age profile of the population and thus the rate and profile of household formation.

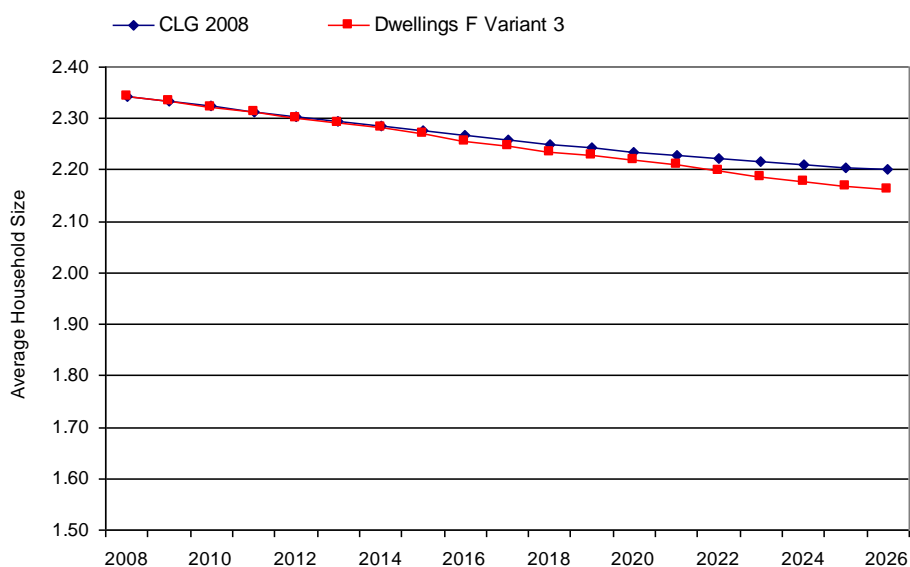


Figure 10: Average household size, CLG and WNJPU scenarios

It is useful to disaggregate the trajectory of household formation into that which is due to population growth and that which is due to changes in the headship rates over time. If headship rates were held 'constant' then all household growth would be driven by population growth; but with a trend in headship rates that suggests a reducing household size, some household growth will be due to the incremental change in the (modelled) propensity of different age-groups to form different types of household.

The 'population effect' and the 'rate effect' upon household growth recorded in the CLG and WNJPU scenarios is illustrated in Figure 11. Total household growth is higher in the CLG scenario (+46,294 versus +35,874) but the decomposition of the population-effect and rate-effect of household formation reveals similarities in the impact of the headship rates. The percentage rate-effect is lower in the WNJPU scenario due primarily to the impact that headship rates have upon South Northamptonshire, which actually have a negative impact upon household growth. WNJPU has kept its headship rates constant to 'model' the impact of the stagnation in completion rates, but it is the migration component of change that is the key driver of household formation in both the Dwellings F Variant 3 and the CLG scenarios.

Decomposition of Household Change: CLG 2008

| 2008 - 2026 | Population | Rate Effect | Change | Rate Effect % |
|------------------------|------------|-------------|--------|---------------|
| West Northamptonshire | 43,725 | 2,569 | 46,294 | 5.5% |
| | | | | |
| Daventry | 7,900 | 37 | 7,936 | 0.5% |
| Northampton | 24,971 | 3,071 | 28,042 | 11.0% |
| South Northamptonshire | 10,854 | -539 | 10,315 | -5.2% |

Decomposition of Household Change: Dwellings F Variant 3

| 2008 - 2026 | Population | Rate Effect | Change | Rate Effect % |
|------------------------|------------|-------------|--------|---------------|
| West Northamptonshire | 34,505 | 1,370 | 35,874 | 3.8% |
| | | | | |
| Daventry | 9,372 | 38 | 9,411 | 0.4% |
| Northampton | 16,109 | 2,015 | 18,124 | 11.1% |
| South Northamptonshire | 9,023 | -683 | 8,340 | -8.2% |

Figure 11: Decomposition of household change, CLG and WNJPU scenarios

A further disaggregation of the projected household totals reveals the profile of household change that is estimated by the CLG headship rate trends (Figure 12). The large majority of

household growth in both scenarios is concentrated in three categories: 'One person households male', 'One person household female' and 'One family and no others – couple with no dependent children'. The expectation is that a much larger proportion of the population will be living alone or as a family with no dependent children. The ageing of the population is a significant driver of this trend, with the movement of the large baby boomer cohorts into retirement coupled with increasing life expectancy, swelling household numbers in the 65+ age-groups.

| CLG 2008 West Northamptonshire | | | Dwellings F Variant 3 West Northamptonshire | | |
|--|---------------|------------|---|---------------|------------|
| <u>Household Change 2008-2026</u> | | | <u>Household Change 2008-2026</u> | | |
| | <u>Change</u> | <u>%</u> | | <u>Change</u> | <u>%</u> |
| OPMAL | 15,023 | 67% | OPMAL | 11,256 | 50% |
| OPFEM | 11,378 | 44% | OPFEM | 11,091 | 43% |
| FAM C0 | 14,273 | 30% | FAM C0 | 13,040 | 27% |
| FAM C1 | 584 | 6% | FAM C1 | -200 | -2% |
| FAM C2 | -751 | -6% | FAM C2 | -1,625 | -12% |
| FAM C3 | 1,381 | 22% | FAM C3 | 282 | 4% |
| FAM L1 | 3,186 | 67% | FAM L1 | 1,925 | 40% |
| FAM L2 | 1,841 | 55% | FAM L2 | 936 | 28% |
| FAM L3 | 1,015 | 68% | FAM L3 | 570 | 38% |
| MIX C0 | -2,161 | -24% | MIX C0 | -1,498 | -17% |
| MIX C1 | -908 | -38% | MIX C1 | -741 | -31% |
| MIX C2 | -186 | -18% | MIX C2 | -188 | -19% |
| MIX C3 | -48 | -12% | MIX C3 | -54 | -13% |
| MIX L1 | 292 | 30% | MIX L1 | 149 | 15% |
| MIX L2 | 278 | 57% | MIX L2 | 133 | 27% |
| MIX L3 | 16 | 10% | MIX L3 | -2 | -1% |
| OTHHH | 1,080 | 13% | OTHHH | 801 | 10% |
| Total | 46,294 | 29% | Total | 35,874 | 23% |

Figure 12: Household growth by type, CLG and WNJPU scenarios

4. Alternative forecasts – data & assumptions

4.1. Summary of approach

Both the WNJPU and the JGC analyses have used demographic forecasting methods to derive alternative growth trajectories for population and households in West Northamptonshire. Each has used its local intelligence and ‘recent evidence’ to produce its forecasts. This section attempts to align the two approaches through a review of data and assumptions, drawing out the key differences between the two to enable a robust and transparent comparison to be made.

The JGC approach is summarised in the Executive Summary of its main report as follows:

‘The analysis is designed to provide a clear understanding of the housing needs (across all housing tenures) over the period from 2010 to 2026 (and onto 2030) and to consider alternative scenarios to achieve economic growth.’

‘The approach adopted is based on interrogating demographic dynamics and assessing what level of migration the economy might be able to support’.

The long-term impact of migration and its relationship to economic growth aspirations is a key component of the analysis, presented in the form of a range of alternative demographic scenarios, identified as follows:

- PROJ 1: Main Trend-Based Demographic Projection
- PROJ 2: Alternative trend-based projection (migration based on past 5 years ONS data)
- PROJ 3: Employment growth of 1,000 jobs per year
- PROJ 4: Employment growth of 1,860 jobs per year
- PROJ 5: Employment growth of 2,650 jobs per year

4.2. Projection Methodology

The population projection methodology used in the JGC analysis is not made explicit in the report. It is not clear whether a traditional ‘cohort-component’ model is used as the basis for the population projections, although it is indicated that 5-year age-groups and 5-year time-periods are used for projection purposes. WNJPU projections have used POPGROUP technology which uses a single-region, single year of age cohort component model to project population in single-year intervals. Whether a 5-year or single-year disaggregation is used, both approaches apply a robust, ‘components-based’ methodology to population forecasting.

For its household projections the JGC analysis adopts the standard approach of applying headship rates to the age-sex profile of the projected population. This is consistent with the CLG household model and with POPGROUP's 'Derived Forecast' model which drives the household projections. The JGC analysis uses a more up-to-date set of headship rates than the WNJPU 'Scenario F variant 3', applying 2008-based rates rather than the 2006-based variety in the WNJPU case (although WNJPU does apply the 2006 rates to the 2008-based population totals). However, Figure 3 has indicated that there are only minor differences in the household growth trajectories that result from the application of 2008-based rates to WNJPU's preferred scenario; household totals are lower in the 2008-based scenario suggesting a higher average household size overall.

4.3.Data inputs and assumptions

4.3.1 Summary

The WNJPU population projections use historical data on births, deaths, internal migration and international migration to derive a set of demographic assumptions from which alternative population projections are derived. These projections are benchmarked directly against the 2008-based sub-national projections from ONS. The benefit of the historical data is that a range of assumptions can be derived and the most recent information can be used to calibrate alternative projection scenarios (although neither the WNJPU or JGC analysis has incorporated the latest, 2010 mid-year estimates evidence, published after the preparation of the JCS, into its assumptions regarding future growth – see Figure 5).

The JGC analysis uses the output from ONS' 2008-based projection as the basis for its data inputs, together with recent historical evidence on fertility, mortality and migration, to make a judgement on future trends and to moderate its scenario output.

The specific data items and assumptions used by the respective methodologies are described in more detail below.

4.3.2 Fertility and mortality

The fertility and mortality data and assumptions used in the JGC and WNJPU methods are similar. Each takes account of the 'local' variation in fertility and mortality versus the national picture and each uses ONS long-term assumptions to guide the estimation of future trends.

The fertility rates used by each approach are similar for Northampton and South Northamptonshire, whereas the WNJPU projections have a slightly higher Total Fertility Rate (TFR) for Daventry. A

similar parameter is used to guide the ratio between male and females births (1:1.05 in the case of JGC; 1:1.06 in the case of WNJPU).

Life expectancy at birth follows a similar pattern in each approach, with slightly higher life expectancy in South Northamptonshire relative to Daventry and Northampton but with a long-term improvement in mortality rates that are consistent with the ONS 'expected' trend.

4.3.3 Migration

It is generally recognised that migration is the most difficult demographic assumption to estimate. This is made doubly difficult by the need to consider both 'internal' migration (migration to and from other areas of the UK) and 'international' migration (immigration and emigration). Section 3.1 illustrated the degree to which internal migration and international migration has been driving (estimated) population growth in each of the West Northamptonshire districts. Section 3.3 provided some discussion on the key influence of international migration and the continued uncertainty which surrounds the robustness of local estimates.

In its forecasting analysis, WNJPU has derived different assumptions for internal and international migration given their relative uncertainty. Internal migration assumptions for its scenarios are based on historical data for the five-year period 2004/5 to 2008/9, applying a weighted average using the following weights: 0.0, 0.1, 0.2, 0.35, 0.35 – which assumes that greater weight is given to more recent years. For international migration, the preferred scenario is based on a continuation of the levels of international migration evident in 2008/9. This is a prudent approach to future growth estimation but the latest data for 2009/10 suggests that the international migration component has declined further as a component of growth and the indications are that ONS' new estimation methods will result in lower levels of international migration for West Northamptonshire. The adoption of these international migration assumptions has a particular influence on Northampton's population and household forecasts, which in the case of the ONS 2008-based projections have been driven very significantly by continuing net immigration to the district. In its preferred scenario, these migration assumptions operate in tandem with the housing growth trajectory to produce average annual net migration growth of + 1,303 between 2010-2026. This disaggregates as +418 from internal migration and +885 from international migration.

In the derivation of its migration assumptions, JGC makes no distinction between internal and international migration and treats 'migration' as a single component of change. For its principle trend projection (PROJ 1), JGC uses the average annual (total) migration estimate from ONS' 2008-

based projections for West Northamptonshire (+2,240) and its districts. For its alternative trend projection (PROJ 2) it uses an average of total migration taken from the last five years of evidence (to 2008/9) which gives an average total net migration of +2,700.

4.3.4 Household Headship Rates

Section 3.5 has provided a discussion on the use of CLG's household headship rates to derive household estimates from the age-sex population profile of an area. Both JGC and WNJPU use the same headship rates in their respective analysis, although WNJPU attempt to model the current slowdown in housing completions by holding headship rates fixed for a five-year period (2010-2015). Analysis has shown that this has a relatively small impact upon the derived household projections, with population growth fuelled by migration being the main driver of household growth in West Northamptonshire (Figure 11).

4.3.5 Vacancy Rates

In order to translate households into dwellings and vice versa, it is necessary to include a parameter which accounts for 'vacancy rates' within each district. The WNJPU approach is to take vacancy rates directly from the 2001 Census and to hold these constant throughout the projection period. The vacancy rates for the three districts were: 3.9% for Daventry, 3.1% for Northampton and 2.8% in South Northamptonshire.

JGC adopts a slightly simpler approach and has applied a fixed vacancy rate of 2.5% to account for the difference between households and dwellings.

4.3.6 Employment, economic activity and commuting

The main thrust of the JGC analysis is an examination of growth rates which might result from different levels of economic growth. Its analysis tests three alternative jobs growth scenarios (+1,000, +1,860 and +2,650 per year) representing the WNJPU preferred scenario, an RSS growth scenario and finally a scenario which replicates forecasts from the Strategic Northamptonshire Economic Action Plan (SNEAP). The JGC analysis identifies the SNEAP projection as its 'most likely' growth trajectory for West Northamptonshire although it is clear that economic conditions have shifted significantly for the worse since these 'aspirational' projections were created.

The JGC analysis estimates a set of age-specific employment rates for each district using census data in combination with more recent data from NOMIS. These employment rates are applied to the

age-sex population profile to derive a labour force estimate associated with each scenario. Employment rates are held constant throughout the forecast period in each case.

WNJPU has published labour force estimates derived from its 'preferred' scenario but has not run its own 'jobs-led' forecasts for direct comparison with the JGC output. WNJPU has used economic activity rates to derive its labour force estimates, modifying the rates to take account of planned changes to the pension age over the forecast period. These modifications increase levels of economic activity in the 50-64 and 65+ age-groups for both males and females. They are a realistic assumption and, for any labour-force or jobs-led forecast, result in a larger labour force being maintained for longer. Reduced in-migration is therefore required to compensate for any short-fall in the jobs-labour force ratio.

The dynamics of 'commuting' is an additional factor which is important to consider in any economic-led demographic modelling. The JGC analysis does not explicitly handle commuting flows, although it does recognise the importance of the commuter inflow and outflow balance to the trajectory of jobs growth. Its approach assumes that, *'the number of people living locally who are working is roughly in balance with the number of people who work in the area – for the purposes of our projection this means that it is reasonable to assume that any additional creation of jobs locally will require a similar increase in the local population in employment.'* The modelling approach is one which overall assumes a 1:1 relationship between new jobs created and the size of the labour force in West Northamptonshire.

The POPGROUP/Derived Forecast model used by WNJPU has the capacity to handle commuting flows a little more explicitly, modelling the balance between jobs (created) and the resident labour force in each individual district. Appendix 1 gives an indication of the derivation of these commuting 'ratios' from 2001 Census data; a commuting ratio less than 1.0 indicates that there are more jobs than workers in a district – a net inflow of workers results. The value of 0.87 for Northampton indicates that a net in-commute is necessary. The reverse is true for both Daventry and South Northamptonshire.

It is suggested that WNJPU runs a series of 'jobs-led' scenarios in line with those evaluated by JGC and to include the more recent, Cambridge Econometrics forecast. These scenarios should use the modified economic activity rates, an average unemployment rate and the derived commuting ratios to produce population, household and jobs statistics for the full range of trend-led and policy-constrained (dwelling-led and employment-led) forecasts.

5. Summary comments

The objective of this report has been to assess the consistency and comparability of WNJPU's demographic analysis and forecasts with that produced by JG Consulting (on behalf of William Davis and Hallam Land). In doing so, the report has sought to also present the very latest demographic evidence in support of WNJPU's housing policy decisions in its Joint Core Strategy.

The development of the Joint Core Strategy is being conducted in the midst of considerable economic and demographic uncertainty. An updated perspective is required, to derive appropriate and achievable growth targets for economic and housing development in the three districts of West Northamptonshire.

WNJPU has published its 'preferred' scenario for housing growth to 2026. This, quite appropriately, takes account of the recent reduction in completion rates in West Northamptonshire and its impact upon occupancy rates. It also adopts a prudent approach to its estimation of international migration, given the difficulty of local-area estimation and the uncertainty surrounding its long-term impact upon population change.

This report has presented the 'components-of-change' that are estimated to have driven population growth in West Northamptonshire since 2001 and that have been the basis for successive, 'official' sub-national projections (2004-based, 2006-based and 2008-based). Using the most recent information on births, deaths, internal migration and international migration from the 2010 mid-year estimates, it is clear that the forthcoming 2010-based sub-national population projections would likely follow a lower growth trajectory for each of the three districts, due primarily to the reduction in the combined impact of internal and international migration. This reduced growth trajectory is made more likely given that ONS' revised methodology for estimating international migration at local authority level will most probably reduce the immigration totals for each area. The most significant impact of this will be upon Northampton, where population growth estimates have been dominated by its international migration component.

In a direct challenge to WNJPU's 'preferred' scenario, the JGC study presents a robust and detailed analysis of demographic change in West Northamptonshire, with a specific focus on the potential implications of different trajectories of economic growth upon population change.

The methodologies employed by WNJPU and JGC for their respective population and household forecasts are similar and the data and assumptions are reasonably consistent. JGC does not attempt to explicitly handle international migration or acknowledge its significance to past and future growth trajectories (in Northampton). Furthermore, the JGC analysis should ideally have recognised the fact that occupancy rates will have stabilised (at least) in the short term due to the much reduced housing completion rates in West Northamptonshire coupled with continued population growth.

The scenario forecasts developed by WNJPU have largely been trend-based and dwelling-led using an examination of this suite of growth trajectories to derive its preferred 'Dwelling F Variant 3' scenario. The JGC analysis combines its own trend-based scenarios with employment-led alternatives, using jobs growth trajectories from the earlier, pre-recession SNEAP economic forecasts to define its 'preferred' or 'most likely' scenario.

Using its POPGROUP technology, it is recommended that WNJPU explores its own employment-led scenarios, incorporating robust assumptions on economic activity rates (and change over time), unemployment rates and commuting ratios. A set of trend-led, dwelling-led and employment-led scenarios which use a common methodology, data and assumptions might provide a more consistent comparison.

However, the discrepancy between forecasts based on a prudent growth trajectory and those derived from an ambitious economic growth scenario will remain. The most recent demographic evidence suggests that lower growth is likely. It remains imperative that stakeholders align an appropriate housing growth trajectory with realistic and achievable economic aspirations, balancing the 'high growth' of the pre-2008 SNEAP forecast, with the latest economic forecasts that take more account of the prevailing economic conditions and demographic trends.

6. Appendix 1 – Travel-to-work statistics

Where do people who live in Daventry work?

| Live | Work | Flow | % | Cum% |
|----------|------------------------|--------|------|--------|
| Daventry | Daventry | 19,380 | 51.3 | 51.33 |
| Daventry | Northampton | 7,038 | 18.6 | 69.97 |
| Daventry | Rugby | 1,645 | 4.4 | 74.33 |
| Daventry | South Northamptonshire | 1,419 | 3.8 | 78.09 |
| Daventry | Cherwell | 952 | 2.5 | 80.61 |
| Daventry | Milton Keynes | 739 | 2.0 | 82.57 |
| Daventry | Harborough | 715 | 1.9 | 84.46 |
| Daventry | Wellingborough | 579 | 1.5 | 86.00 |
| Daventry | Coventry | 529 | 1.4 | 87.40 |
| Daventry | Kettering | 500 | 1.3 | 88.72 |
| Daventry | Warwick | 328 | 0.9 | 89.59 |
| Daventry | Stratford on Avon | 258 | 0.7 | 90.27 |
| Daventry | Leicester | 231 | 0.6 | 90.89 |
| Daventry | Birmingham | 216 | 0.6 | 91.46 |
| Daventry | Corby | 183 | 0.5 | 91.94 |
| Daventry | Solihull | 135 | 0.4 | 92.30 |
| Daventry | East Northamptonshire | 129 | 0.3 | 92.64 |
| Daventry | Westminster | 126 | 0.3 | 92.98 |
| Daventry | Blaby | 111 | 0.3 | 93.27 |
| Daventry | City of London | 93 | 0.2 | 93.52 |
| Daventry | Bedford | 87 | 0.2 | 93.75 |
| Daventry | Luton | 87 | 0.2 | 93.98 |
| Daventry | Camden | 78 | 0.2 | 94.18 |
| Daventry | Hinckley and Bosworth | 72 | 0.2 | 94.37 |
| Daventry | Others 1 | 69 | 0.2 | 94.56 |
| Daventry | Oxford | 69 | 0.2 | 94.74 |
| Daventry | Dacorum | 63 | 0.2 | 94.91 |
| Daventry | Mid Bedfordshire | 60 | 0.2 | 95.07 |
| Daventry | Others | 1,863 | 4.9 | 100.00 |
| | Total | 37,754 | | |

Where do people who work in Daventry live?

| Live | Work | Flow | % | Cum% |
|-------------------|----------|--------|------|--------|
| Daventry | Daventry | 19,380 | 60.9 | 60.87 |
| Northampton | Daventry | 3,130 | 9.8 | 70.70 |
| Rugby | Daventry | 2,456 | 7.7 | 78.41 |
| South | Daventry | 1,044 | 3.3 | 81.69 |
| Kettering | Daventry | 622 | 2.0 | 83.64 |
| Harborough | Daventry | 613 | 1.9 | 85.57 |
| Wellingborough | Daventry | 474 | 1.5 | 87.06 |
| Coventry | Daventry | 468 | 1.5 | 88.53 |
| East | Daventry | 375 | 1.2 | 89.70 |
| Stratford on Avon | Daventry | 286 | 0.9 | 90.60 |
| Warwick | Daventry | 216 | 0.7 | 91.28 |
| Leicester | Daventry | 210 | 0.7 | 91.94 |
| Nuneaton and | Daventry | 207 | 0.7 | 92.59 |
| Hinckley and | Daventry | 177 | 0.6 | 93.15 |
| Cherwell | Daventry | 174 | 0.5 | 93.69 |
| Milton Keynes | Daventry | 171 | 0.5 | 94.23 |
| Corby | Daventry | 150 | 0.5 | 94.70 |
| Blaby | Daventry | 147 | 0.5 | 95.16 |
| Others | Daventry | 1,540 | 4.8 | 100.00 |
| | Total | 31,840 | | |

| | |
|------------------------|-------------|
| Commuting ratio | 1.19 |
|------------------------|-------------|

Figure A1.1: Travel to work statistics – Daventry (Source: Census 2001)

Where do people who live in Northampton work?

| Live | Work | Flow | % |
|-------------|------------------------|--------|------|
| Northampton | Northampton | 75,169 | 77.0 |
| Northampton | Milton Keynes | 3,621 | 3.7 |
| Northampton | Daventry | 3,130 | 3.2 |
| Northampton | South Northamptonshire | 3,028 | 3.1 |
| Northampton | Wellingborough | 2,562 | 2.6 |
| Northampton | Kettering | 1,084 | 1.1 |
| Northampton | East Northamptonshire | 633 | 0.6 |
| Northampton | Corby | 508 | 0.5 |
| Northampton | Bedford | 477 | 0.5 |
| Northampton | Westminster | 421 | 0.4 |
| Northampton | Luton | 324 | 0.3 |
| Northampton | Rugby | 294 | 0.3 |
| Northampton | Birmingham | 273 | 0.3 |
| Northampton | Coventry | 261 | 0.3 |
| Northampton | Cherwell | 249 | 0.3 |
| Northampton | Camden | 237 | 0.2 |
| Northampton | Harborough | 216 | 0.2 |
| Northampton | Mid Bedfordshire | 211 | 0.2 |
| Northampton | South Bedfordshire | 189 | 0.2 |
| Northampton | Others | 4,714 | 4.8 |
| | Total | 97,601 | |

Where do people who work in Northampton live?

| Live | Work | Flow | % |
|--------------------|-------------|---------|------|
| Northampton | Northampton | 75,169 | 66.6 |
| Daventry | Northampton | 7,038 | 6.2 |
| South | Northampton | 6,373 | 5.6 |
| Wellingborough | Northampton | 6,133 | 5.4 |
| Kettering | Northampton | 3,408 | 3.0 |
| East | Northampton | 3,134 | 2.8 |
| Milton Keynes | Northampton | 1,423 | 1.3 |
| Corby | Northampton | 919 | 0.8 |
| Harborough | Northampton | 687 | 0.6 |
| Bedford | Northampton | 612 | 0.5 |
| Rugby | Northampton | 510 | 0.5 |
| Aylesbury Vale | Northampton | 243 | 0.2 |
| Leicester | Northampton | 240 | 0.2 |
| Mid Bedfordshire | Northampton | 213 | 0.2 |
| Coventry | Northampton | 198 | 0.2 |
| Huntingdonshire | Northampton | 195 | 0.2 |
| Blaby | Northampton | 186 | 0.2 |
| Cherwell | Northampton | 186 | 0.2 |
| South Bedfordshire | Northampton | 177 | 0.2 |
| Warwick | Northampton | 168 | 0.1 |
| Others | Northampton | 5,607 | 5.0 |
| | Total | 112,819 | |

| | |
|------------------------|-------------|
| Commuting ratio | 0.87 |
|------------------------|-------------|

Figure A1.1: Travel to work statistics – Northampton (Source: Census 2001)

Where do people who live in South Northamptonshire work?

| Live | Work | Flow | % |
|------------------------|------------------------|--------|------|
| South Northamptonshire | South Northamptonshire | 17,757 | 41.5 |
| South Northamptonshire | Northampton | 6,373 | 14.9 |
| South Northamptonshire | Milton Keynes | 5,410 | 12.6 |
| South Northamptonshire | Cherwell | 4,627 | 10.8 |
| South Northamptonshire | Aylesbury Vale | 1,137 | 2.7 |
| South Northamptonshire | Daventry | 1,044 | 2.4 |
| South Northamptonshire | Oxford | 579 | 1.4 |
| South Northamptonshire | Wellingborough | 402 | 0.9 |
| South Northamptonshire | Westminster | 276 | 0.6 |
| South Northamptonshire | West Oxfordshire | 264 | 0.6 |
| South Northamptonshire | Vale of White Horse | 183 | 0.4 |
| South Northamptonshire | South Oxfordshire | 172 | 0.4 |
| South Northamptonshire | Bedford | 171 | 0.4 |
| South Northamptonshire | Warwick | 168 | 0.4 |
| South Northamptonshire | Stratford on Avon | 162 | 0.4 |
| South Northamptonshire | Mid Bedfordshire | 157 | 0.4 |
| South Northamptonshire | Coventry | 156 | 0.4 |
| South Northamptonshire | Birmingham | 156 | 0.4 |
| South Northamptonshire | Luton | 156 | 0.4 |
| South Northamptonshire | South Bedfordshire | 150 | 0.4 |
| South Northamptonshire | Rugby | 150 | 0.4 |
| South Northamptonshire | Kettering | 141 | 0.3 |
| South Northamptonshire | Hillingdon | 135 | 0.3 |
| South Northamptonshire | City of London | 120 | 0.3 |
| South Northamptonshire | Wycombe | 120 | 0.3 |
| South Northamptonshire | Corby | 111 | 0.3 |
| South Northamptonshire | Dacorum | 91 | 0.2 |
| South Northamptonshire | Solihull | 90 | 0.2 |
| South Northamptonshire | East Northamptonshire | 84 | 0.2 |
| South Northamptonshire | Others1 | 81 | 0.2 |
| South Northamptonshire | Leicester | 72 | 0.2 |
| South Northamptonshire | Others | 2,127 | 5.0 |
| | Total | 42,822 | |

Where do people who work in South Northamptonshire live?

| Live | Work | Flow | % |
|------------------------|------------------------|--------|------|
| South Northamptonshire | South Northamptonshire | 17,757 | 60.8 |
| Northampton | South Northamptonshire | 3,028 | 10.4 |
| Cherwell | South Northamptonshire | 2,127 | 7.3 |
| Daventry | South Northamptonshire | 1,419 | 4.9 |
| Milton Keynes | South Northamptonshire | 1,107 | 3.8 |
| Aylesbury Vale | South Northamptonshire | 634 | 2.2 |
| Wellingborough | South Northamptonshire | 322 | 1.1 |
| Kettering | South Northamptonshire | 234 | 0.8 |
| East Northamptonshire | South Northamptonshire | 162 | 0.6 |
| Stratford on Avon | South Northamptonshire | 138 | 0.5 |
| Rugby | South Northamptonshire | 132 | 0.5 |
| Bedford | South Northamptonshire | 114 | 0.4 |
| Oxford | South Northamptonshire | 108 | 0.4 |
| West Oxfordshire | South Northamptonshire | 105 | 0.4 |
| Corby | South Northamptonshire | 75 | 0.3 |
| Mid Bedfordshire | South Northamptonshire | 72 | 0.2 |
| Warwick | South Northamptonshire | 60 | 0.2 |
| Coventry | South Northamptonshire | 57 | 0.2 |
| Wigan | South Northamptonshire | 57 | 0.2 |
| South Bedfordshire | South Northamptonshire | 57 | 0.2 |
| Others | South Northamptonshire | 1,458 | 5.0 |
| | Total | 29,223 | |

| | |
|------------------------|-------------|
| Commuting ratio | 1.47 |
|------------------------|-------------|

Figure A1.1: Travel to work statistics – South Northamptonshire (Source: Census 2001)