



# Carmarthenshire

## Population & Household Forecasts

October 2018

For the attention of:  
*Carmarthenshire County Council*

edge analytics

Leeds Innovation Centre | 103 Clarendon Road | Leeds | LS2 9DF  
0113 384 6087 | [www.edgeanalytics.co.uk](http://www.edgeanalytics.co.uk)

## Acknowledgements

Demographic statistics used in this report have been derived from data from the Office for National Statistics licensed under the Open Government Licence v.3.0.

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## Executive Summary

- E.1 Carmarthenshire County Council is seeking to formulate a new LDP, due for adoption in 2021. To inform the emerging LDP, this report has presented a range of new demographic and economic evidence for the Council to consider.
- E.2 Since 2001, Carmarthenshire’s population has increased by 7.4%, in line with the national growth rate. Notably higher net in-migration was recorded in the pre-recession period, driving higher population change in Carmarthenshire, whilst lower flows evident thereafter have had a dampening effect on growth.
- E.3 The Welsh Government 2014-based population and household projection has estimated significantly lower growth rates for Carmarthenshire, than the earlier 2008-based projection which underpinned the adopted LDP, driven by lower net in-migration flows and fertility assumptions.
- E.4 For comparison with the WG projections (Principal and 10yr Average Migration variant), four alternative trend scenarios have been developed, based on variant migration histories. In addition, evidence from local and regional economic strategies has provided an indication of the scale of employment growth that Carmarthenshire is seeking to achieve over its LDP horizon. This evidence has been used to generate ‘employment-led’ growth alternatives. Dwelling growth under each of the scenarios has been estimated using both a 2011 Census vacancy rate and lower alternative vacancy rate calculated using council tax data (Figure 1).

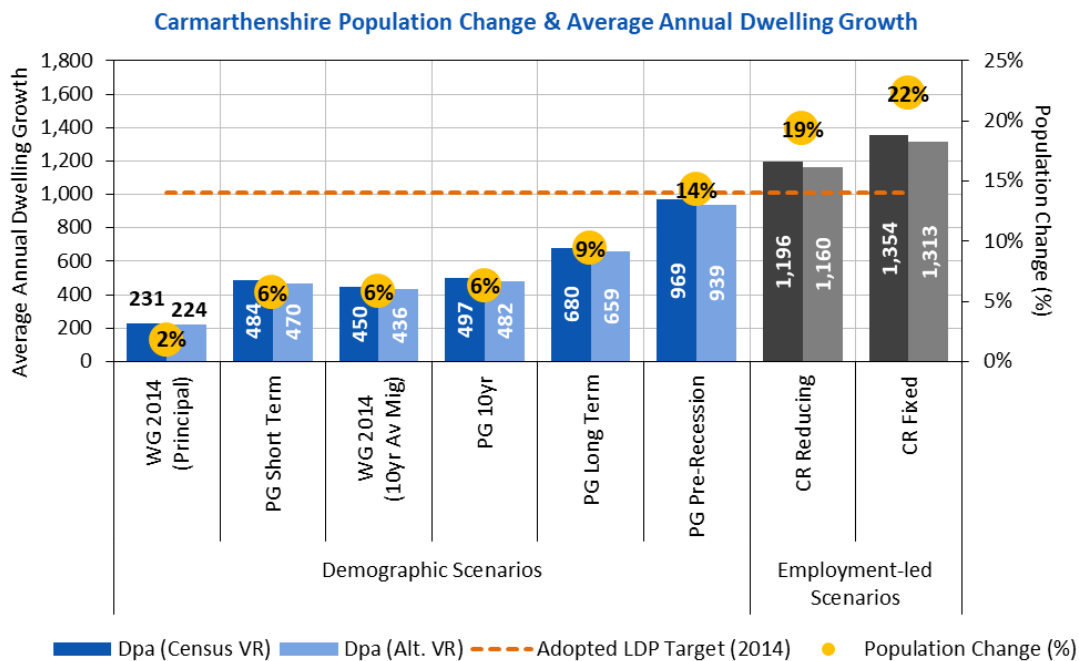


Figure 1: Carmarthenshire growth scenarios (2018–2033)

- E.5 Population and dwelling growth under each of the alternative trend scenarios is higher than estimated under the WG 2014-based (Principal) scenario, driven by higher net in-migration assumptions. Under the demographic scenarios, a population growth range of 1.7%–14.2%, results in an average annual dwelling growth of 231–969 dpa under the 2011 Census vacancy rate, with the WG 2014-based projection presenting the lower end of this range. Applying a lower vacancy rate reduces the estimated dwelling growth range to 224–939 dpa.
- E.6 In order to support the Council’s economic ambition, the employment-led scenarios estimates higher net in-migration, growing the population and its labour force to meet the employment growth target. Depending upon the future balance of commuting into and out of Carmarthenshire, the employment-led scenarios estimate population growth of 19.3%–22.2%, with an associated dwelling requirement of 1,196–1,354 dpa (2011 Census vacancy rate) reducing to 1,160–1,313 dpa under the alternative vacancy rate.
- E.7 Under each of the scenarios, population ageing is an immutable feature of Carmarthenshire’s demographic future that will lead to increased pressure on the Council’s health and social care services. A return to higher net in-migration would help to moderate the imbalance between the older age population and the younger age-groups, whilst providing the necessary labour force that will be critical to supporting Carmarthenshire’s long-term economic ambition.
- E.8 In reviewing this new evidence, it is recommended that the Council gives particular attention to the employment growth forecast (and its underpinning assumptions) presented in this report, as it forms a key component of the evidence on potential growth outcomes for the County.

# Contents

Acknowledgements.....	i
Executive Summary.....	ii
Contents.....	iv
1 Introduction.....	1
2 Carmarthenshire Profile .....	4
3 Welsh Government Projections.....	13
4 Demographic Scenarios .....	17
5 Economic Growth .....	26
6 Summary.....	30
Appendix A Economic Assumptions .....	34
Appendix B Carmarthenshire Outside Brecon Beacons NP .....	37
Appendix C POPGROUP Methodology .....	38

# 1 Introduction

## Context & Requirements

### Context

- 1.1 In 2010, Carmarthenshire County Council commissioned Edge Analytics to provide a range of demographic forecasts for the Unitary Authority (UA) and Community Network Areas (CNAs)<sup>1</sup>. The evidence produced was underpinned by mid-year population estimates (MYEs) to 2009 from the Office for National Statistics (ONS), pre-2011 Census revisions. In addition, the analysis included the Welsh Government (WG) 2008-based and 2006-based population and household projections for Carmarthenshire. Five demographic scenarios were developed using variant migration histories and household growth assumptions from the WG projections. A housing growth target of 15,197 (equivalent to 1,013 dwellings per annum (dpa)) was identified for the 2006–2021 plan period, underpinned by migration assumptions based on the 2005–2009 historical evidence. This informed the Local Development Plan (LDP), adopted in 2014.
- 1.2 Following publication of a variety of data and in seeking to validate its housing growth target, Carmarthenshire County Council commissioned Edge Analytics to provide an update on the demographic evidence, published in an August 2014 report<sup>2</sup>. This new evidence included 2011 Census data, revised MYEs for the 2002–2010 period, two additional years of historical MYE data (2010 and 2011) and WG 2011-based population projections. Three demographic scenarios were developed based on alternative migration assumptions, and presented alongside the WG 2008-based, WG 2011-based and LDP scenario (developed in the 2010 analysis). As a result, Carmarthenshire County Council adopted its LDP in 2014<sup>3</sup>, identifying a housing growth of 15,197 for the 2006–2021 plan period.
- 1.3 Since the adoption of the LDP, a range of new demographic and economic evidence has been published including:
- Mid-year population estimates and components of change 2012–2017
  - WG 2014-based population and household projections
  - Unemployment rate and commuting ratio
  - Labour force participation forecasts from the Office for Budget Responsibility (OBR)

<sup>1</sup> Population & Household Projections: Community Network Areas – Edge Analytics Ltd (August 2010)

<sup>2</sup> Carmarthenshire Demographic Forecasts 2011–2026 – Edge Analytics Ltd (January 2014)

<sup>3</sup> [http://www.cartogold.co.uk/CarmarthenshireLDP/english/text/00\\_Contents.htm](http://www.cartogold.co.uk/CarmarthenshireLDP/english/text/00_Contents.htm)

1.4 Accompanying the release of these new data items, a number of key strategic documents have been published including:

- Carmarthenshire County Council's Transformations: Strategic Regeneration Plan for Carmarthenshire 2015–2030<sup>4</sup>
- Swansea Bay City Deal<sup>5</sup>
- Carmarthenshire's Employment Sectoral Study 2017<sup>6</sup>
- Hywel Dda Health Transformation Agenda<sup>7</sup>
- Adopted LDP delivery and past build rates<sup>8</sup>

1.5 *Carmarthenshire County Council's Strategic Regeneration Plan* outlines six 'transformational' economic growth projects for the fifteen year (2015–2030) period, including two key projects as part of the *Swansea Bay City Deal* (Yr Egin and the Life Science and Well-being Village). The regeneration plan identifies an employment growth target of 5,000 additional jobs in Carmarthenshire over the 2015–2030 period; seeking to retain its younger 20–39 age-group population and to reduce the level of economic inactivity. The *Employment Sectoral Study* considers the potential impact of this economic growth by sector, land availability and in the context of past employment growth.

1.6 The economic strategies focus on employment growth, the changing size and profile of the labour force and better retention of young adults. Likewise, other strategic studies have identified the challenges of demographic change. The *Hywel Dda Health Transformation Agenda*, the *West Wales Population Assessment (2017)*<sup>9</sup> and the *County's Vision for Sustainable Services for the Next Decade*<sup>10</sup>, identify a number of economic, health and service provision challenges in the face of an ageing population profile.

## Requirements

1.7 Carmarthenshire County Council is seeking to formulate a new LDP, due for adoption in 2021. This will provide an outlook on population, housing and economic growth within Carmarthenshire for the 2018–2033, fifteen-year plan period. The Council has commissioned Edge Analytics to provide a range of demographic and economic evidence to inform the emerging LDP.

1.8 This report considers the latest demographic evidence published by WG, ONS and OBR. In addition, it draws on existing economic strategies including the *Swansea Bay City Deal*, *Carmarthenshire's Strategic Regeneration Plan* and *Employment Sectoral Study*, linking economic growth, population change and housing. Outcomes from the analysis are presented in the context of the *Hywel Dda Health Transformation Agenda*, providing demographic analysis to inform the future provision of health services.

<sup>4</sup> <https://www.carmarthenshire.gov.wales/media/1212060/strategic-regeneration-plan-for-carmarthenshire-2015-2030-pdf.pdf>

<sup>5</sup> <https://www.carmarthenshire.gov.wales/home/business/development-investment/the-swanea-bay-city-deal/#.W21WEtJKiHu>

<sup>6</sup> <https://www.carmarthenshire.gov.wales/media/1212564/employment-sectoral-study-final-english-1.pdf>

<sup>7</sup> <http://www.wales.nhs.uk/sitesplus/documents/862/Item6iiHywelDdaIntegratedMediumTermPlan2016-17to2018-19WorkinProgressJanuary2016.pdf>

<sup>8</sup> [http://www.cartogold.co.uk/CarmarthenshireLDP/english/text/00\\_Contents.htm](http://www.cartogold.co.uk/CarmarthenshireLDP/english/text/00_Contents.htm)

<sup>9</sup> <https://www.carmarthenshire.gov.wales/media/3943/west-wales-population-assessment-march-2017.pdf>

<sup>10</sup> <https://www.carmarthenshire.gov.wales/media/3345/older-people-vision.pdf>

## Edge Analytics' Approach

- 1.9 Edge Analytics has used POPGROUP technology to develop a range of demographic, housing and economic growth scenarios for Carmarthenshire. Under each of the scenarios, historical data is included for the 2001–2017 period, with results presented for the 2018–2033 plan period.
- 1.10 The scenario analysis is prefaced with a demographic profile of Carmarthenshire Unitary Authority (UA), illustrating its geographic context, components of population change (births, deaths, and migration) and its historical patterns of international and domestic migration ([Section 2](#)).
- 1.11 The starting point of the scenario analysis is the WG 2014-based population and household projections for Carmarthenshire ([Section 3](#)). Alternative trend scenarios, using variant migration assumptions, are developed and compared to the WG 2014-based benchmark scenario in [Section 4](#). Sensitivity analysis on household formation under the demographic scenarios is also considered in this section, using assumptions from the WG 2008-based household projection model.
- 1.12 [Section 5](#) summarises the economic growth outlook for Carmarthenshire detailed in the *Swansea Bay City Deal* and *Strategic Regeneration Plan*. Employment-led scenarios are presented, estimating population and housing growth linked to future employment growth. Key assumptions on economic activity rates, unemployment and commuting link economic and demographic change. Sensitivity analysis considers the potential impact of changes to the commuting ratio on demographic and housing growth in Carmarthenshire.
- 1.13 [Section 6](#) summarises the evidence, providing Carmarthenshire County Council with a suite of population, housing and economic growth outcomes to consider in the formulation of its new LDP.
- 1.14 Key detail on Carmarthenshire's economic profile and assumptions are provided in [Appendix A](#), with a summary of the population and housing growth outcomes for the area of Carmarthenshire outside the Brecon Beacon National Park presented in [Appendix B](#). The POPGROUP methodology used in the development of the forecasts are included in [Appendix C](#).



# 2 Carmarthenshire Profile

## Geography

- 2.1 With a population of 186,452 in 2017, Carmarthenshire UA is home to approximately 6% of Wales’ total population, making it the fourth largest Unitary Authority in Wales (after Cardiff, Swansea and Rhondda Cynon Taff). However given Carmarthenshire’s land area, the Unitary Authority has a population density of just 78 per km<sup>2</sup>, with only Powys, Pembrokeshire, Gwynedd and Ceredigion being more sparsely populated.
- 2.2 Carmarthenshire borders Pembrokeshire to the West, Ceredigion to the North, Powys to the East, and both Neath Port Talbot and Swansea to the South-East (Figure 2). The Brecon Beacons National Park covers approximately 9% of Carmarthenshire, with approximately 1% of Carmarthenshire’s population estimated to reside within the National Park.

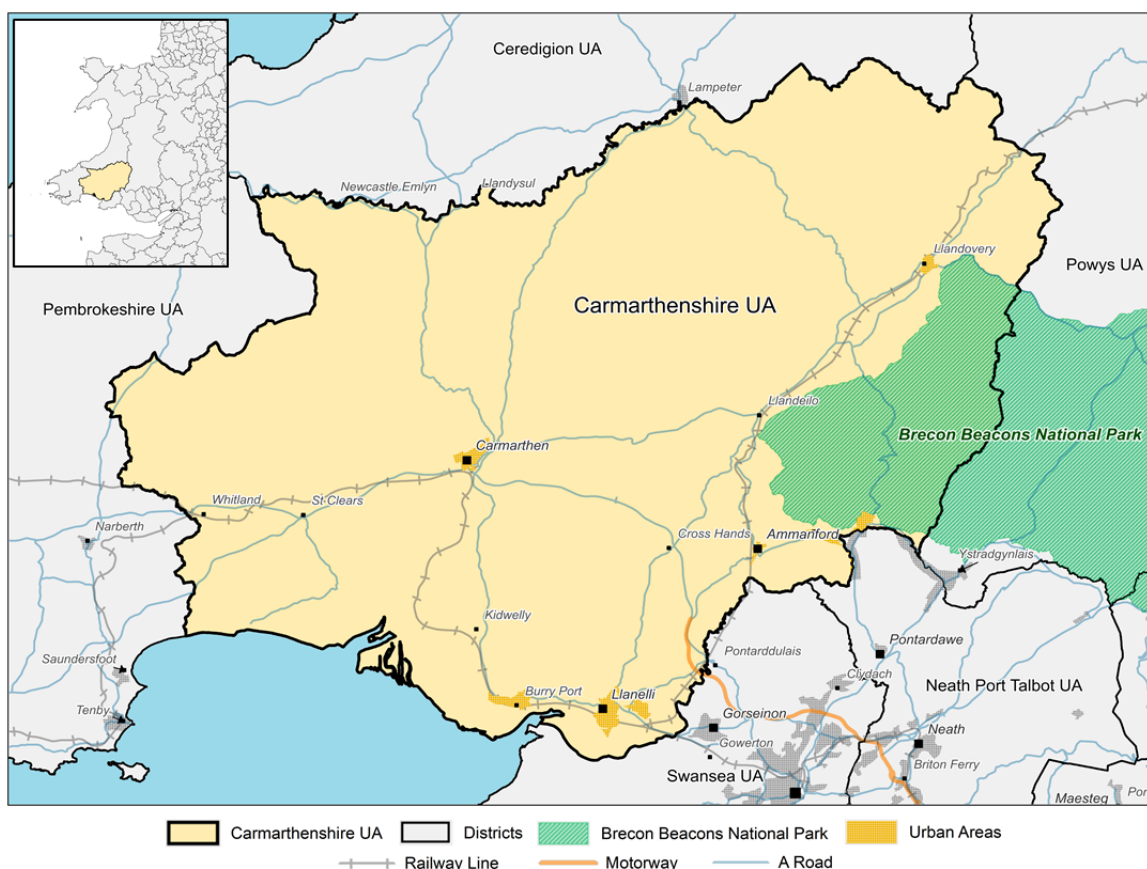


Figure 2: Carmarthenshire UA context

## Population Growth Profile

2.3 Since 2001, Carmarthenshire UA’s population has increased by +12,800 people, a 7.4% increase in sixteen-years. Higher annual population growth (averaging +0.7% pa) was recorded pre-2008, with notably lower annual growth recorded thereafter (averaging + 0.2% pa).

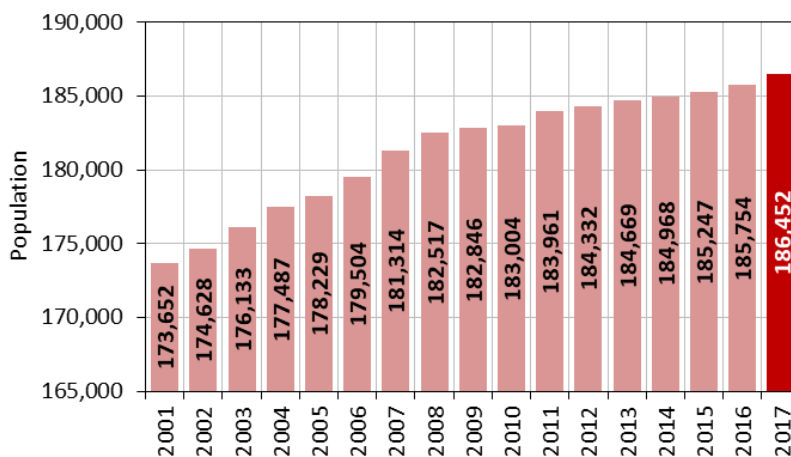


Figure 3: Carmarthenshire UA population 2001–2017

2.4 Whilst Carmarthenshire’s population growth rate is consistent with the national rate of growth, it remains lower than the neighbouring Unitary Authorities of Swansea (9.9%) and Pembrokeshire (10.3%), but higher than both Neath Port Talbot (5.7%) and Ceredigion (-3.1%). Cardiff has seen the greatest population growth rate since 2001, with an estimated 17% increase (+52,668) over the 16-year period.

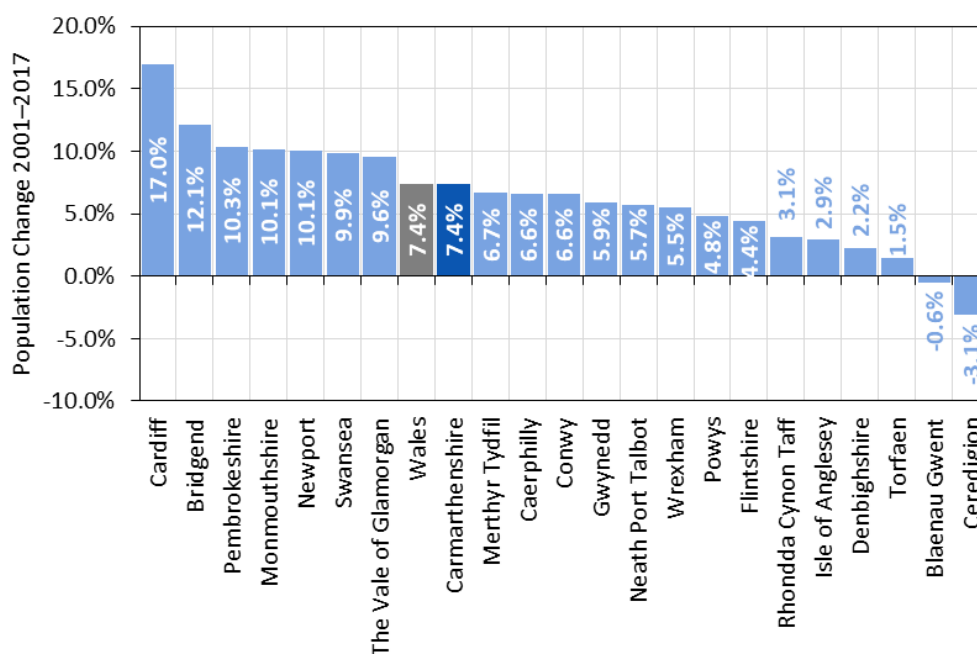


Figure 4: Population change in Wales 2001–2017 (Source: ONS)

- 2.5 A net inflow from internal (domestic) migration has been the dominant driver of population change since 2001/02 (Figure 5). Notably higher net internal migration flows were evident to 2008, averaging +1,444 per annum. Over the 2008/09–2013/14 period, net internal migration fell to an average of +415 pa, with a steady increase recorded thereafter (averaging +683 over the latest three years).
- 2.6 Net international migration has had a smaller but positive impact on population growth in Carmarthenshire, averaging +224 since 2001/02 (Figure 5). Conversely, natural change has had a negative impact on population change, with the number of deaths exceeding the number of births in all years. Since 2001, natural change averaged -333 per year. A reduced impact of natural change was evident in 2007/08–2011/12, driven by a small rise in births and a fall in the number of deaths.

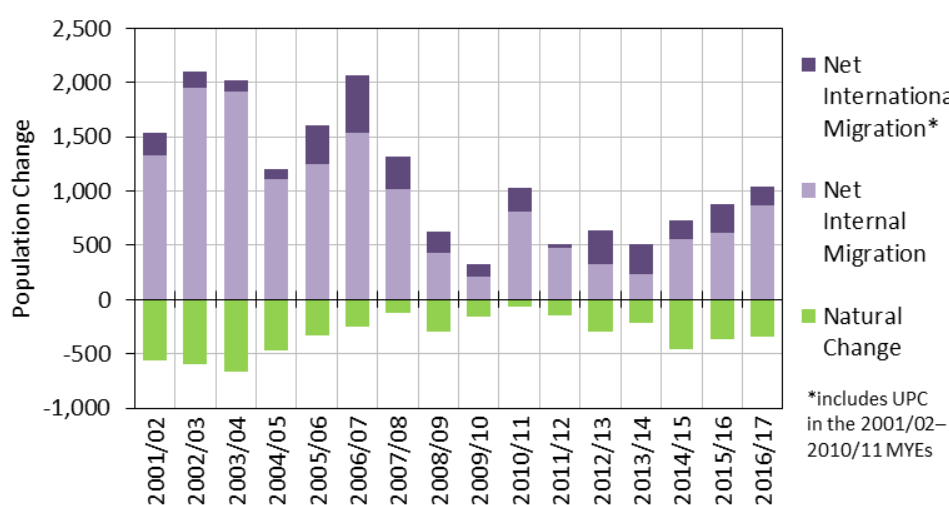


Figure 5: Carmarthenshire UA components of population change 2001/02–2016/17<sup>11</sup>  
(Source: ONS)

## Internal Migration

- 2.7 Internal migration statistics record the inflow and outflow of population to and from Carmarthenshire, from and to elsewhere in the UK. Net internal migration has had a positive impact on population change since 2001 (Figure 6).
- 2.8 Between 2001/02 and 2007/08 inflows to Carmarthenshire from the rest of the UK were notably higher than outflows, resulting in higher net internal migration to the UA. A fall in inflows to 2009/10, coupled with an increase in outflows, resulted in significantly smaller net internal migration flows. In the last three years, a steady rise in inflows to Carmarthenshire has increased the impact of net internal migration, with 2016/17 recording a net inflow of +873.

<sup>11</sup> Following the 2011 Census, the 2002–2010 MYEs were ‘rebased’ to align them with the 2011 MYE and to ensure the correct transition of the age profile over the 2001–2011 decade. The rebasing of the MYEs involved the recalibration of the components of change, with differences between the 2011 MYE and 2011 Census-based MYE referred to as ‘unattributable population change’ (UPC). The UPC adjustment for Carmarthenshire over the 2001–2011 period was -113.

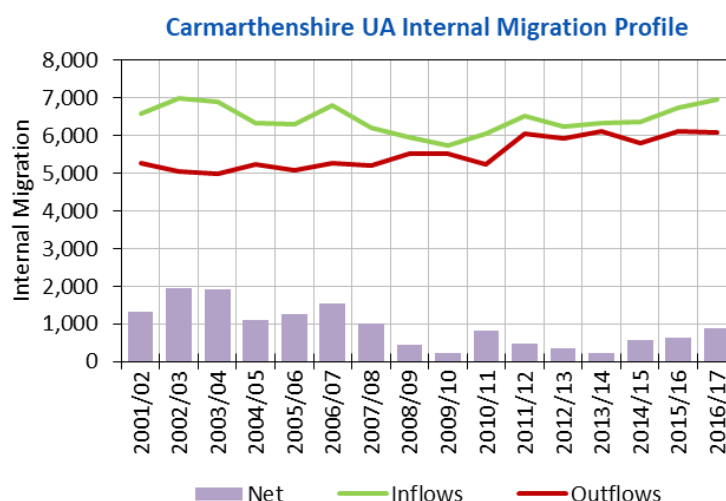


Figure 6: Carmarthenshire UA internal migration flows (Source: ONS)

- 2.9 The profile of internal migration flows to and from Carmarthenshire reflects a national trend. Wales experienced notably higher net in-migration to 2007/08, followed by a period of varied and lower net in-migration over the 2008/09–2013/14 recessionary period. However, similar to Carmarthenshire, an annual increase in net in-migration to Wales has been recorded in the last three years.
- 2.10 In terms of migration linkages between Carmarthenshire and surrounding areas, the largest positive net exchanges (i.e. higher inflow than outflow) have been with Swansea (+113 pa), Ceredigion (+66 pa) and Neath Port Talbot (+32 pa). For the net outflow exchange, the dominant net outflow has been to Cardiff (119 pa), with smaller net outflows to Bristol (17 pa); both influenced by the annual migration of students to higher education.
- 2.11 The full profile of historical in-, out- and net migration flows between Carmarthenshire and its surrounding Unitary Authorities are summarised in Figure 7. Swansea and Ceredigion have been net exporters of population to Carmarthenshire since 2001/02, with inflows from the two UAs remaining higher than outflows in all years. Net migration flows with Pembrokeshire have varied, with a rise in outflows from Carmarthenshire since 2012/13 resulting in a predominately net outflow.

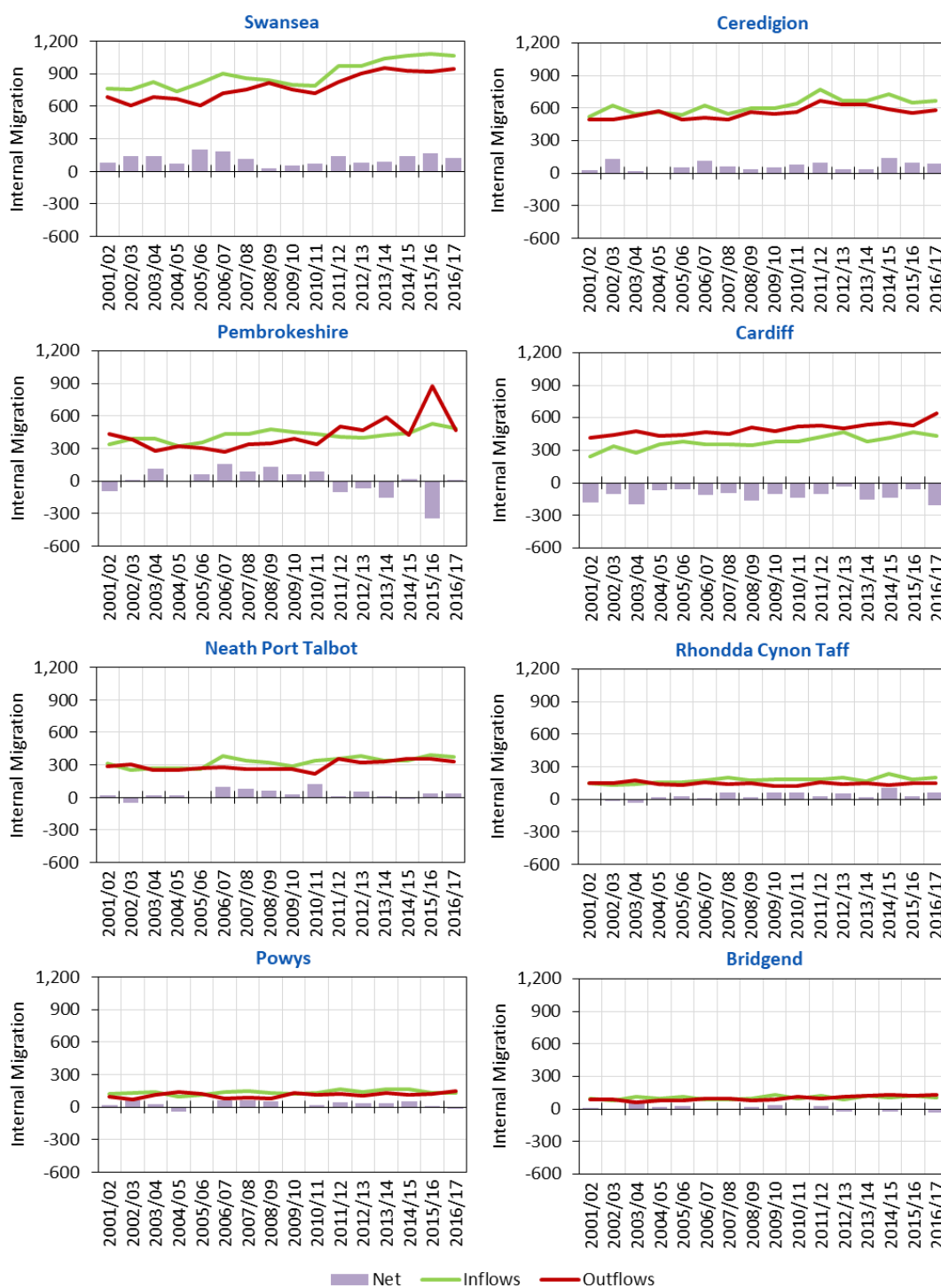


Figure 7: Historical migration flows between Carmarthenshire UA and unitary authorities (2001/02–2016/17)<sup>12</sup>

2.12 The age profile of migration reveals that Carmarthenshire has experienced a net inflow in all age groups, notwithstanding the 15–19 and 25–29 age groups (Figure 8). The large net outflow at age 15–19 is associated with the student population migrating out of Carmarthenshire for higher education, with a small return flow in the 20–24 age group. The smaller net outflow in the 25–29 age

<sup>12</sup> Green indicates the flows to Carmarthenshire UA from the Unitary Authority and red the flows from Carmarthenshire UA (Source: ONS)

group is likely associated with moves for employment and housing. Whilst the 20–29 age groups indicate a small net migration impact, it has experienced the largest migration churn since 2001. Carmarthenshire’s *Strategic Regeneration Plan* has identified the retention of its young adult population as a key consideration in its plans for economic growth over the next fifteen years.

2.13 The net inflow of the 30–44 young family age groups is mirrored by growth in the 0–14 age groups, as people move into Carmarthenshire to either have children or with their families. A net inflow is recorded in all older (65+) age groups, contributing to Carmarthenshire’s ageing population profile, a key challenge identified in the *Hywel Dda Health Transformation Agenda*.

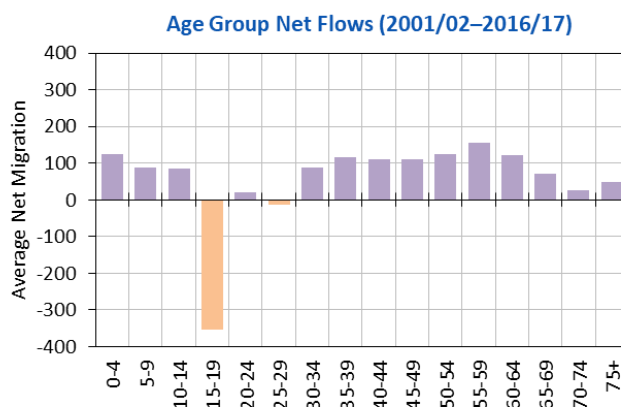


Figure 8: Average annual net migration flow by age group 2001/02–2016/17 (Source: ONS)

## International Migration

2.14 Since 2001, Carmarthenshire’s immigration total has remained higher than its emigration, resulting in population growth from international migration. A sharp rise in immigration was recorded in 2006/07 (+863), resulting in a peak in net international migration, with a more stable profile thereafter. Emigration flows from Carmarthenshire have averaged +291 per annum since 2001/02.

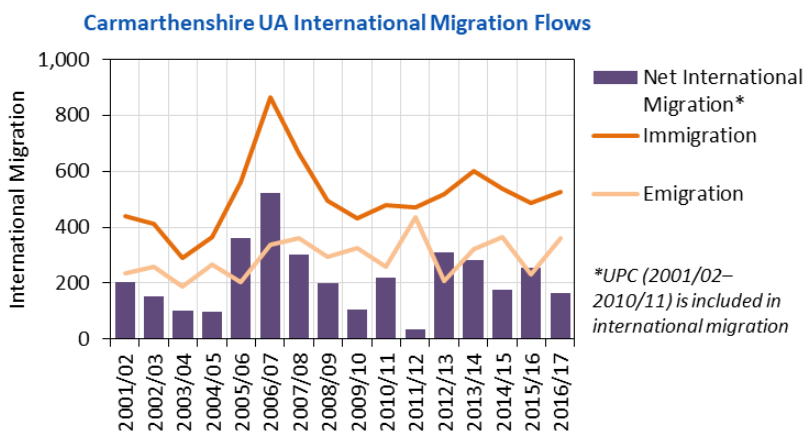


Figure 9: Carmarthenshire UA immigration, emigration & net international migration flows 2001/02–2016/17 (Source: ONS)

2.15 NINo statistics provide an alternative but complementary view of immigration linked to migrant worker populations (Figure 10). NINo registrations peaked in 2007 (1,313), driven by a significant increase in in-migration from Poland; reflected in immigration estimates for Carmarthenshire. Following the 2007 peak, NINo registrations fell to 467 in 2009, with a steady increase recorded to 2015. In 2017, fewer registrations were recorded, driven by a fall in Polish and Romanian worker registrations. A similar trend occurred at national level, with a fall in Polish, Romanian and Spanish workers resulting in lower 2017 NINo registrations.

2.16 Since 2002, Poland has contributed 58% of all NINo registrations, with 6% from Romania, 3% from India, Ireland and Portugal and 2% from Bulgaria and the Philippines. In total, approximately 71% of all NINo registrations since 2002 have come from EU13 countries, compared to 11% from Other EU countries.

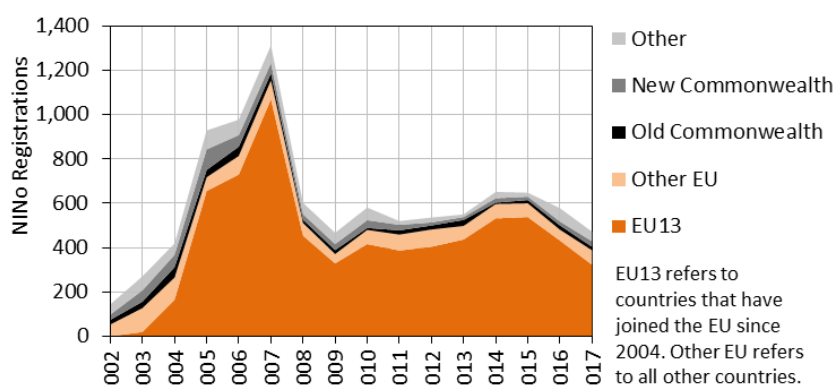


Figure 10: Carmarthenshire UA NINo registrations by country of origin 2002–2017 (Source: DWP)

## Housing Completions

2.17 A comparison of Carmarthenshire’s estimated population growth with a history of annual housing completions reveals some consistency. Lower housing growth during 2008–2013 corresponds with lower net in-migration flows to Carmarthenshire, increasing thereafter (refer to Figure 6, page 7). Since 2008, an additional 5,424 new homes have been built, averaging +493 per annum.

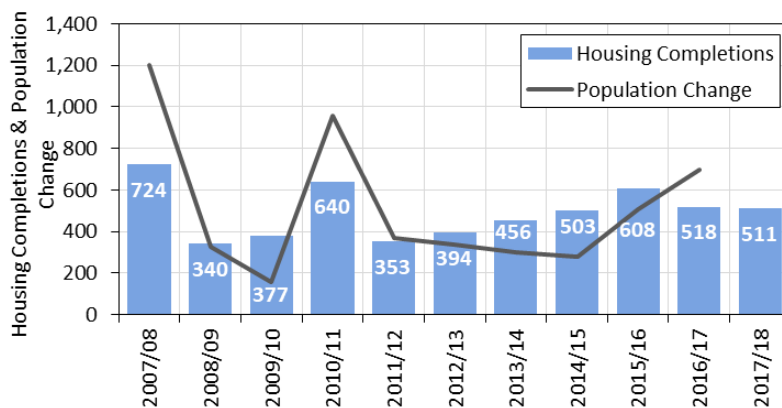


Figure 11: Carmarthenshire housing completions and population change 2007/08–2017/18 (Source: Carmarthenshire CC & ONS)



## Population Age Profile

2.18 In considering future housing, labour force and healthcare requirements, the changing age structure of Carmarthenshire’s population is a key factor. Figure 12 presents Carmarthenshire’s population age profile in 2001 and 2017. Since 2001, a greater proportion of the population has shifted to the 50+ age groups as the large birth cohorts of the 1950s and 60s get older.

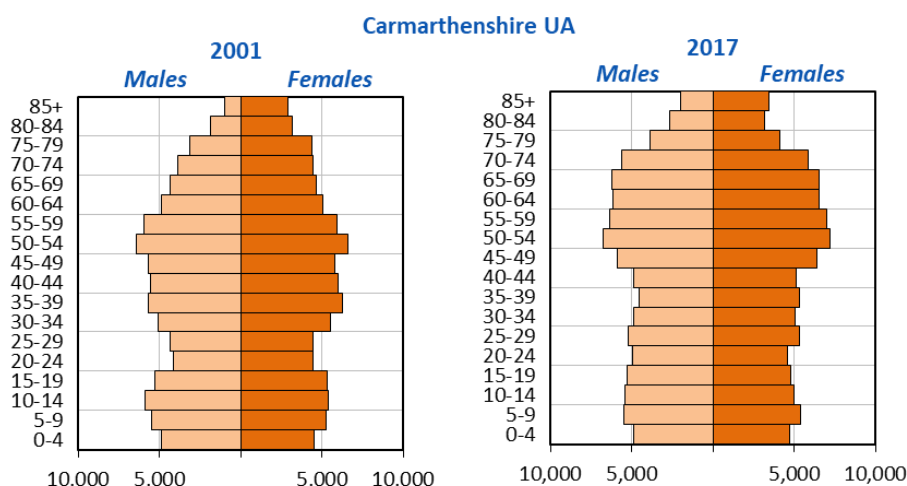


Figure 12: Carmarthenshire UA population age structure comparison: 2001 and 2017

2.19 It is the 65+ and 80+ age groups that have seen the largest growth rate since 2001 (+29% and +26% respectively), with accelerated growth in the 65+ age group since 2008. The 16–64 population has experienced a small (4%) increase since 2001, whilst the 0–15 age group has recorded a -3% decline over the sixteen year period (Figure 13).

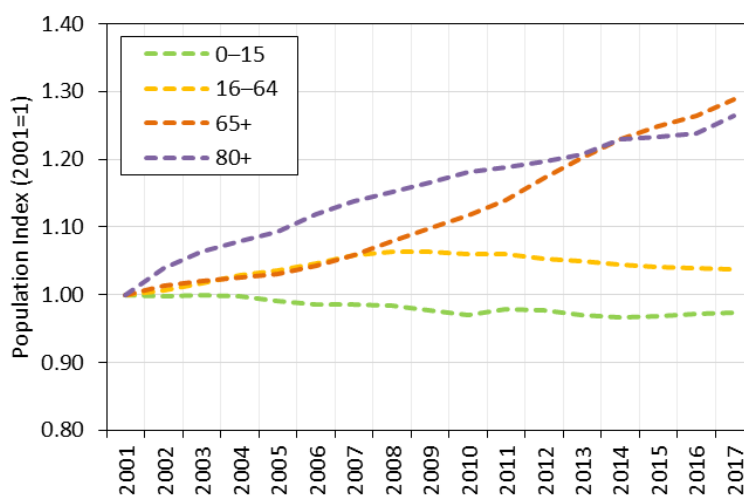


Figure 13: Carmarthenshire population growth index by age group (2001–2017)

2.20 Table 1 presents Carmarthenshire and Wales’ population age profile in 2001 and 2017, providing an indication of the share of older age groups relative to the rest of the population. Between 2001 and



2017, the proportion of Carmarthenshire's population aged 65+ increased from 19% to 23%. This is higher than estimated for Wales, with only 21% of its population aged 65+ in 2017, compared to 17% in 2001.

Table 1: Carmarthenshire & Wales' population age profile (2001 & 2017)

Indicator	Carmarthenshire		Wales	
	2001	2017	2001	2017
Percentage 65+	19%	23%	17%	21%
Percentage 80+	5%	6%	5%	5%
OAD	32	39	28	33

2.21 Carmarthenshire's Old Age Dependency (OAD) ratio<sup>13</sup>, increased from 32 in 2001 to 39 in 2017. The size of Carmarthenshire's population aged 65+ is equivalent to 39% of its 16–64 age group population in 2017, compared to 33% for Wales. Carmarthenshire has the eighth highest OAD in Wales, with neighbouring unitary authorities Powys, Pembrokeshire and Ceredigion recording an older age profile in 2017 (45%, 43% and 40% respectively). Conversely, Neath Port Talbot and Swansea record a lower OAD in 2017 (33 and 30 respectively).

<sup>13</sup> The Old Age Dependency (OAD) is the ratio between the population aged 65+ and the population aged 16–64 (Population Aged 65+/Population Aged 16–64).

# 3 Welsh Government Projections

## Population Projections

- 3.1 The Welsh Government's (WG) 2014-based population and household projections provide the starting point for the analysis of future growth outcomes for Carmarthenshire. The 2014-based projections are the latest available, incorporating the ONS 2014 mid-year population estimate, plus fertility, mortality and migration assumptions based on an historical five-year period prior to 2014.
- 3.2 Under the 2014-based projection, the population of Carmarthenshire UA is estimated to grow by approximately 2.2% over the 2014–2039 projection period, an increase of +4,004 persons. Over Carmarthenshire's LDP 2018–2033 plan period, a 1.7% increase is estimated, equivalent to an additional 3,207 persons (Figure 14).
- 3.3 Population growth under the WG 2014-based projection for Carmarthenshire is notably lower than that estimated under each of the previous WG projections. For the 2018–2033 LDP plan period, the WG 2011-based projection estimated population growth of +11,946 (6.3%), with the WG 2008-based projection estimating higher growth of +17,294 (8.9%), approximately five times higher than that estimated under the WG 2014-based projection.

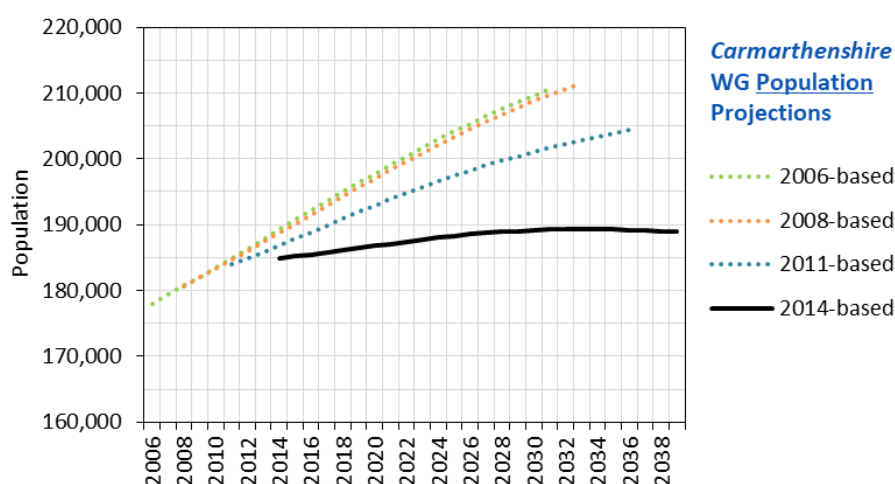


Figure 14: Comparison of Welsh Government Population Projections for Carmarthenshire (Source: StatsWales)

- 3.4 The components of population change which underpin the 2014-based projection for Carmarthenshire are presented in Figure 15, with historical components of change for 2001/02–2013/14 included for comparison<sup>14</sup>.

<sup>14</sup> These refer to the pre-revised MYEs (2012–2014) preceding the WG 2014-based projection.

- 3.5 Under the WG 2014-based projection for Carmarthenshire, net internal migration is estimated to continue to be a key driver of growth, averaging +408 per year. Whilst this is consistent with the preceding five years of internal migration flows, it is notably lower than that evident pre-2008.
- 3.6 International migration is estimated to have a small but positive impact on population growth in Carmarthenshire, averaging +137 per year. This reflects the five-year net international migration history for Carmarthenshire, however it is consistently lower than the latter and earlier years of the historical period.
- 3.7 Conversely, natural change is estimated to have a negative impact on population change in Carmarthenshire, reducing further toward the end of the projection period, driven by an ageing population profile, operating in tandem with lower assumptions on fertility.

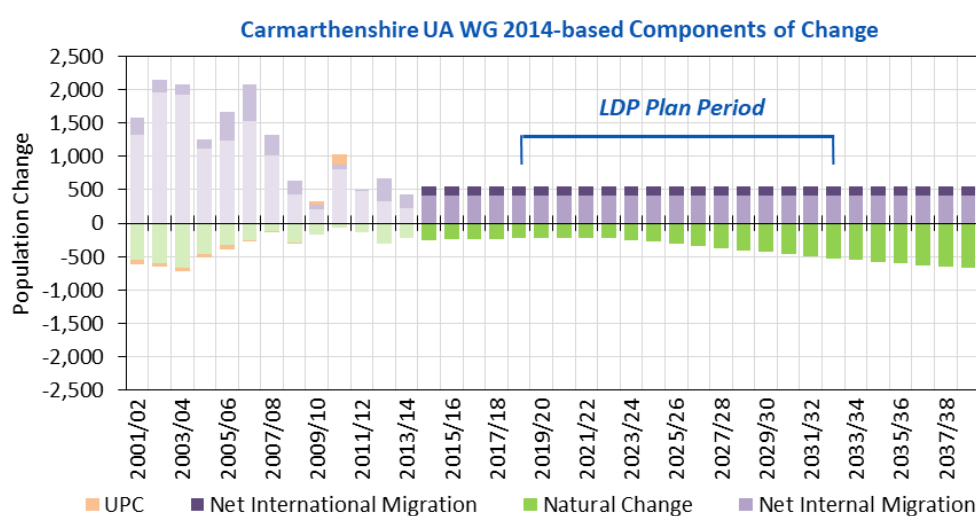


Figure 15: Carmarthenshire UA WG 2014-based components of population change 2001/02–2038/39

- 3.8 The adopted LDP scenario (from 2014) used historical population to 2009, capturing the higher migration flows in the preceding years and assumptions from the WG 2008-based population projection, which assumed a significantly higher rate of growth. This was predominantly driven by higher net internal migration flows to Carmarthenshire, operating in tandem with higher fertility rate assumptions.

## Household Projections

- 3.9 The WG 2014-based household projections provide the ‘starting point’ in the assessment of housing need, underpinned by the 2014-based population projection model. For the 2018–2033 plan period, the 2014-based household projection model estimates household growth of +3,254 (4.0%). This is significantly lower than estimated under the 2011-based and 2008-based household projection models, which estimated an increase of +6,781 (8.2%) and 14,832 (16.1%) respectively.

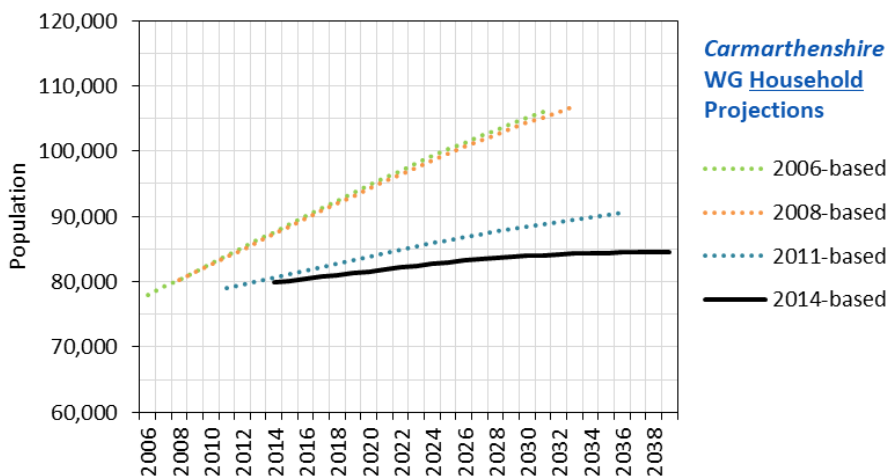


Figure 16: Comparison of Welsh Government Households Projections for Carmarthenshire (Source: StatsWales)

3.10 A comparison of projected growth by household size between the WG 2014-based and 2008-based projections (Figure 17), indicates higher growth rates in smaller (1 person, 2 person and 3 person) households and a greater decline in the larger 4 person and 5+ person households under the WG 2008-based projection.

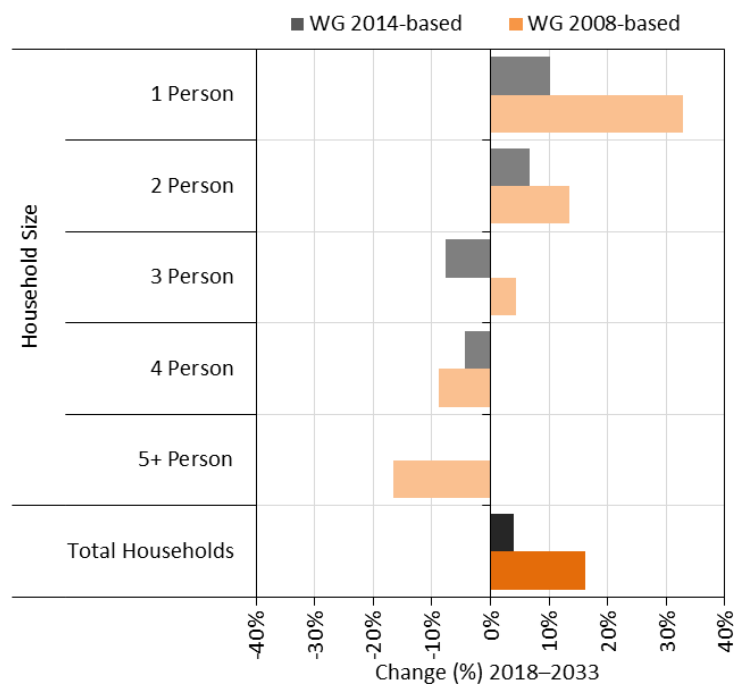


Figure 17: Comparison of Welsh Government 2008-based and 2014-based Household Projections by Size for Carmarthenshire (Source: StatsWales)

3.11 Underpinning the household projection for Carmarthenshire are assumptions on membership rates and average household size. Membership rates calculate the proportion of the household population (i.e. excluding the population in communal establishments) in each household category.

The average household size then determines the number of households required to support the estimated household population.

- 3.12 For the 2018–2033 plan period, the WG 2014-based household projection estimates a decline in average household size for Carmarthenshire, from 2.26 to 2.20 (-0.06), driven by increased population in the older age groups. This compares to the average household size forecast under the WG 2008-based household projection model, which estimated a reduction from 2.08 in 2018 to 1.94 in 2033, a -0.14 decrease. Under the WG 2014-based household projection model, a decline in average household size is a common feature across all unitary authorities in Wales.
- 3.13 Dwelling growth associated with the projected household growth is calculated using a dwelling vacancy rate which takes account of the number of vacant properties or second homes in Carmarthenshire. The 2011 Census records a vacancy rate of 6.3%<sup>15</sup> for Carmarthenshire, compared to 5.6% for Wales in total. The latest household statistics from Welsh Government and council tax data indicate a lower dwelling vacancy rate for Carmarthenshire of 3.4%.

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<sup>15</sup> The dwelling vacancy rate is calculated using 2011 Census data for Carmarthenshire.

# 4 Demographic Scenarios

## Scenario Definition

- 4.1 There is no single definitive view on the likely level of growth expected in Carmarthenshire. Ultimately, a mix of demographic, economic and local policy issues will determine the speed and scale of change.
- 4.2 In Section 3, the WG 2014-based population and household projections for Carmarthenshire have been presented, in comparison to the earlier WG 2008-based projections which informed the adopted LDP (2014).
- 4.3 In addition to the WG 2014-based Principal and variant scenario, four additional demographic scenarios have been configured:
- **WG 2014-based:** this replicates the WG 2014-based population projection.
  - **WG 2014-based (10yr Average Migration):** replicates the WG 2014-based 10yr average migration variant population projection. Migration assumptions are based on the ten year period prior to 2014 (i.e. 2004/05–2013/14).
  - **PG Short Term:** Internal migration rates and international migration flow assumptions are based on a six-year historical period (2011/12–2016/17). This is a similar time period to the WG projection (i.e. 5–6 years), but includes the latest three years of data.
  - **PG 10yr:** Internal migration rates and international migration assumptions are based on a ten-year historical period (2007/08–2016/17).
  - **PG Long Term:** Internal migration rates and international migration flow assumptions are based on the full sixteen-year historical period (2001/02–2016/17).
  - **PG Pre-Recession:** Internal migration rates and international migration flow assumptions are based on the period pre-2008 recession (2001/02–2007/08), in which higher in-migration flows to Carmarthenshire were recorded.
- 4.4 The demographic trend scenarios incorporate mid-year population, migration, births and deaths statistics for 2001–2017 (i.e. three additional years of historical data to the WG projection). Household and dwelling growth under the demographic scenarios has been estimated using assumptions from the WG 2014-based household projection model in conjunction with a 2011 Census vacancy rate of 6.3% and alternative vacancy rate of 3.4%. The population and housing

growth outcomes for the part of Carmarthenshire *outside* the Brecon Beacons National Park is presented in Appendix B.

## Scenario Outcomes

- 4.5 The 2001–2033 population growth trajectories for all scenarios are presented in Figure 18. In Table 2, each of the scenarios is summarised in terms of population and household growth for the 2018–2033 plan period, alongside the average annual net migration and dwelling growth outcomes.
- 4.6 Population change for the 2018–2033 period ranges from 1.7% under the **WG 2014-based (Principal)** scenario to 14.2% under the **PG Pre-Recession** scenario. Population change is higher under each of the trend based demographic scenarios than estimated under the **WG 2014-based (Principal)** scenario, driven by increased net migration flows to the area and subsequently a smaller net loss due to natural change.
- 4.7 Of the demographic trend based scenarios, the **PG Short Term** scenario results in the lowest population change (5.7%) over the plan period, capturing the lower net migration flows evident in 2011/12–2013/14. The estimated population growth would support an average annual dwelling growth of +484 dpa, reducing to +470 dpa under the lower ‘alternative’ vacancy rate’.
- 4.8 The **WG 2014-based (Principal)** scenario bases its migration assumptions on the five-year 2009/10–2013/14 period, which recorded notably lower net in-migration to Carmarthenshire. The **PG Short Term** scenario uses the six-year 2011/12–2016/17 period on which to base its migration assumptions, capturing an additional three years of historical data to the **WG 2014-based (Principal)** projection. As a result, whilst the migration assumptions under the **WG 2014-based (Principal)** and **PG Short Term** scenarios are based on a similar time-period (i.e. 5–6 years of historical data), higher net in-migration is estimated under the **PG Short Term** scenario, resulting in higher population growth than under the **WG 2014-based (Principal)** scenario.
- 4.9 The inclusion of the latest mid-year population estimates in a ten-year migration history (i.e. **PG 10yr** scenario) results in higher net migration than the **WG 2014 (10yr Average Migration)** variant, driven by higher net international migration flow assumptions. Under the **PG 10yr** scenario, population change of 6.3% over the plan period would support in an estimated dwelling growth range of +482 to +497 dpa, a total dwelling growth of 7,236–7,461 dpa.
- 4.10 Under the **PG Long Term** scenario, higher net migration flows are estimated (averaging +1,423 people per year), resulting in higher population change (9.4%) and subsequent annual dwelling growth range (+659 to +680 dpa) than estimated under the scenarios based on a shorter migration period. Whilst the **PG Long Term** scenario captures the significantly higher net migration flows over the 2001/02–2007/08 period in its assumptions, the notably lower net migration recorded to 2016/17 has a dampening effect on its migration assumptions.
- 4.11 The **PG Pre-Recession** scenario draws its migration assumptions from the 2001/02–2007/08 period, capturing the period of high net migration to Carmarthenshire. Consequently, future estimation of net migration is highest under the **PG Pre-Recession** scenario (averaging +2,028 per year), resulting

in population change of 14.2% and an average annual dwelling growth range of +939 to +969 per annum over the 2018–2033 plan period.

- 4.12 Over the 2018–2033 plan period, most of Carmarthenshire’s estimated population and dwelling growth under each of the demographic trend based scenarios is expected to be outside of the Brecon Beacon National Park (Appendix B).



## Carmarthenshire Scenario Outcomes

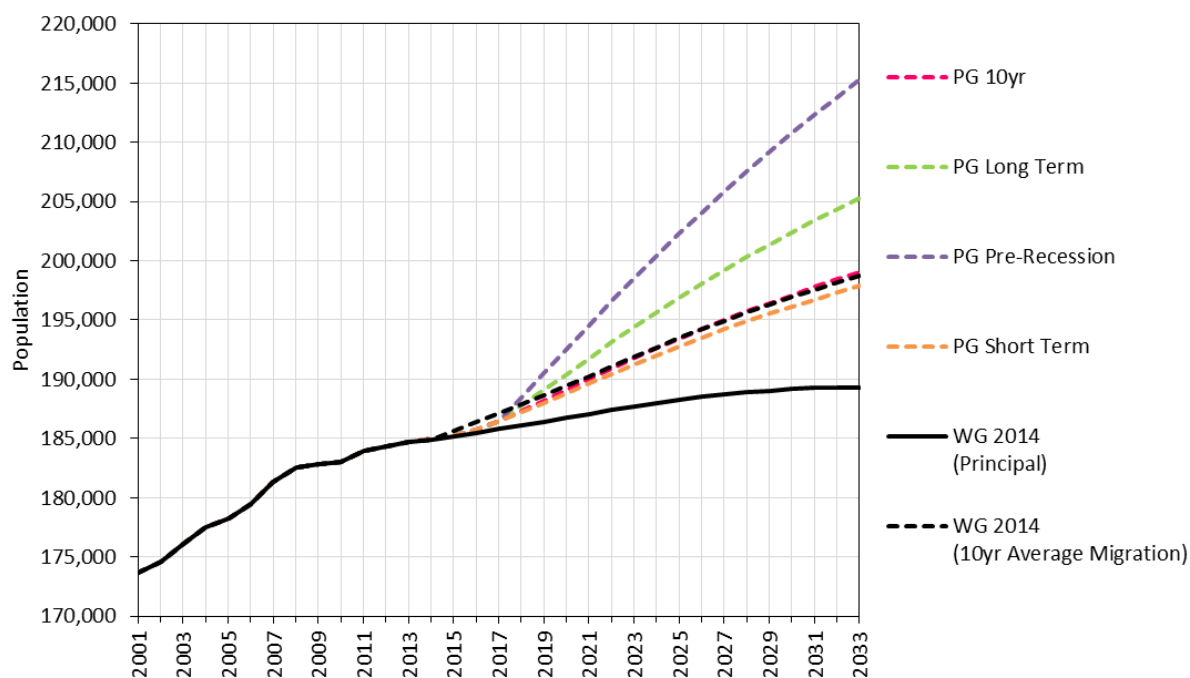


Figure 18: Carmarthenshire UA population growth 2001–2033

Table 2: Carmarthenshire UA Demographic Scenario Outcomes 2018–2033

Demographic Scenarios	Change 2018–2033				Average per year			Total Dwelling Growth (Census VR)	Total Dwelling Growth (Alt. VR)
	Population Change	Population Change %	Households Change	Households Change %	Net Migration	Dwellings (Census VR)	Dwellings (Alt. VR)		
PG Pre-Recession	26,811	14.2%	13,616	16.6%	2,028	969	939	14,529	14,090
PG Long Term	17,567	9.4%	9,555	11.7%	1,423	680	659	10,195	9,887
PG 10yr	11,755	6.3%	6,992	8.6%	1,043	497	482	7,461	7,236
<b>WG 2014 (10yr Av Mig)</b>	<b>10,842</b>	<b>5.8%</b>	<b>6,322</b>	<b>7.7%</b>	<b>921</b>	<b>450</b>	<b>436</b>	<b>6,746</b>	<b>6,542</b>
PG Short Term	10,691	5.7%	6,807	8.4%	997	484	470	7,263	7,044
<b>WG 2014 (Principal)</b>	<b>3,207</b>	<b>1.7%</b>	<b>3,254</b>	<b>4.0%</b>	<b>546</b>	<b>231</b>	<b>224</b>	<b>3,472</b>	<b>3,367</b>

Scenarios ranked in order of population change. Dwelling growth estimated under the 2011 Census vacancy rate of 6.3% (Census VR) and alternative vacancy rate of 3.4% calculated using council tax data (Alt. VR).

## Population Age Profiles

- 4.13 Fluctuations in the level of in- and out-migration have been a key driver of Carmarthenshire’s population change. Future migration flows and their critical influence upon Carmarthenshire’s population age structure are a key factor when considering future housing, employment and healthcare requirements.
- 4.14 Under each of the demographic scenarios, a net outflow of the 15–19 age groups is estimated to continue over the fifteen-year plan period, linked to a continued out-migration for higher education opportunities (Figure 19). The net migration flows in the 0–14 age group is aligned with the net inflows estimated in the young adult population, associated with moves of young families to Carmarthenshire.



Figure 19: Average annual net migration by 5-year age group (2018/19–2032/33)

- 4.15 Whilst generally lower net migration inflows to Carmarthenshire are suggested in the 65+ population, higher migration is estimated in the labour force age groups, particularly under the **PG Long Term** and **PG Pre-Recession** scenarios.
- 4.16 The **PG Long Term** and **PG Pre-Recession** scenarios would provide a more positive outlook in seeking to achieve the targets outlined in Carmarthenshire’s *Strategic Regeneration Plan*, retaining a greater proportion of its population aged 20–29. Increased net migration inflows to Carmarthenshire in the young adult age groups would support higher economic growth and have a positive impact on the ageing population profile of the Unitary Authority.
- 4.17 Migration profiles will drive changes to Carmarthenshire’s population age structure (Figure 20). Over the 2018–2033 plan period, there is substantial population growth projected in the 65+ age groups under all scenarios (Figure 20), driven by the gradual ageing of the birth cohorts from the 1940s, 50s and 60s, plus the additional impact of net in-migration. As recognised in the *Hywel Dda Health Transformation Agenda*, Carmarthenshire’s ageing population provides a real challenge for the future delivery of health and social care services.

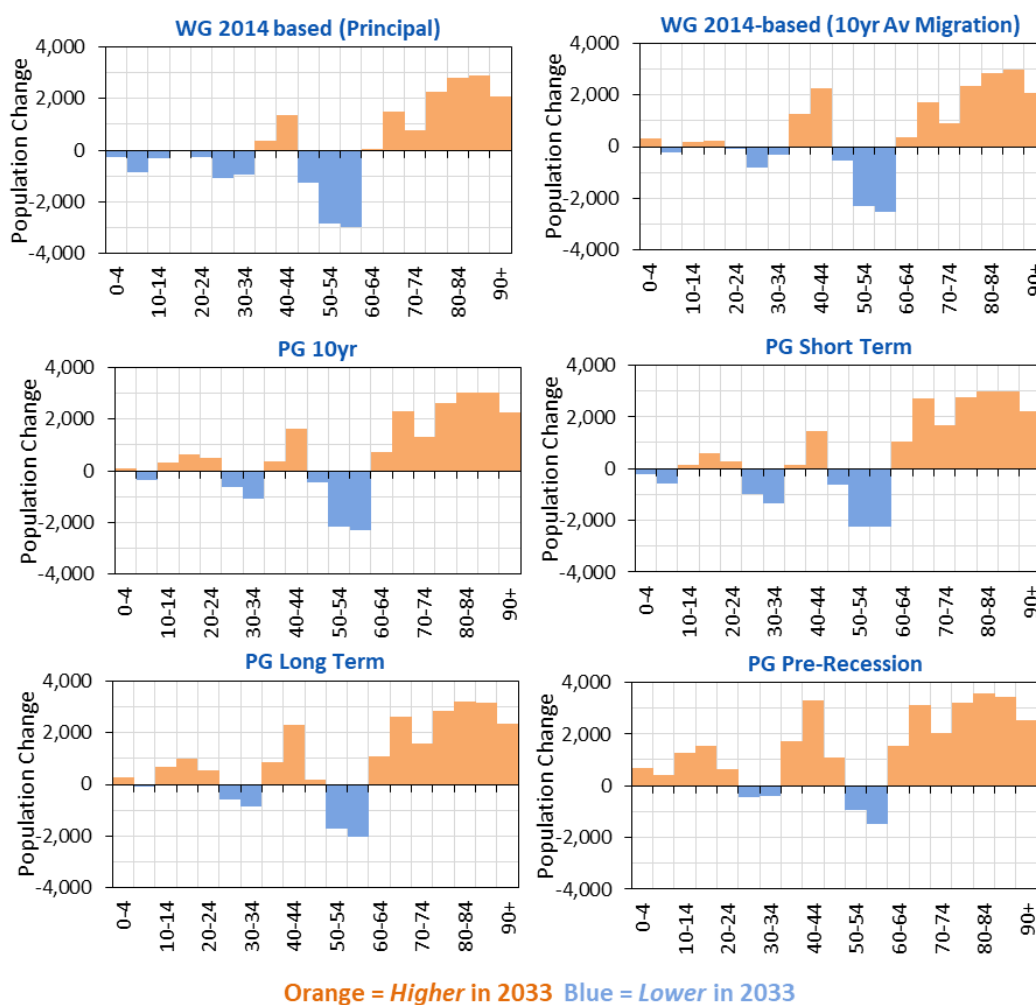


Figure 20: Population change by 5-year age group (2018–2033) under the demographic scenarios

- 4.18 Between 2018 and 2033, the population aged 65+ is estimated to increase by 28% under the **WG 2014-based (Principal)** scenario to 40% under the **PG Pre-Recession** scenario (Table 3). The population aged 80+ is estimated to experience a greater rate of growth over the fifteen year period, ranging from 66% to 82% (**WG 2014-based (Principal)** and **PG Pre-Recession** respectively).

Table 3: Population change by age group under the demographic scenarios (2018–2033)

Scenario	Population Change 2018–2033				Population Change % 2018–2033				OAD 2033
	0–15	16–64	65+	80+	0–15	16–64	65+	80+	
WG 2014-based (Principal)	-1,373	-7,735	12,315	7,769	-4%	-7%	28%	66%	56
PG Short Term	-533	-4,126	15,350	8,184	-2%	-4%	35%	71%	56
WG 2014-based (10yr Average Migration)	413	-2,539	12,968	7,957	1%	-2%	29%	67%	53
PG 10yr	183	-2,932	14,503	8,299	1%	-3%	33%	72%	55
PG Long Term	1,139	592	15,836	8,747	3%	1%	36%	75%	54
PG Pre-Recession	2,705	6,218	17,888	9,512	8%	6%	40%	82%	53

- 4.19 Higher growth (or less of a decline) is estimated in the labour force ages under the **PG Long Term** and **PG Pre-Recession** higher migration scenarios, ranging from 1% to 6% respectively. This contrasts from the estimated decline under the **WG 2014-based (Principal)** and **PG Short Term** scenarios (-7% and -4% respectively).
- 4.20 The balance between the population aged 65+ and 16–64 is expressed in the Old Age Dependency (OAD) ratio. Whilst the **PG Pre-Recession** scenario estimates higher growth in the 65+ age group, higher net in-migration and subsequent population change in the younger 16–64 age groups, results in an OAD of 53 by 2033 (i.e. the population aged 65+ is equivalent to 53% of its population aged 16–64). An older population profile is estimated under the **WG 2014-based (Principal)** and **PG Short Term** scenarios, both of which estimate an OAD of 56 by the end of the plan period. This compares to an OAD of 40 in 2018, an increase of +13 to +16 over the LDP plan period.
- 4.21 The higher growth scenarios estimate greater population change in the 0–14 age groups, than under the **WG 2014-based (Principal)** and **PG Short Term** scenarios, driven by higher net migration and therefore increased population change in the 30–44 age groups.

## Household Membership Rates

- 4.22 The latest WG 2014-based household projection model suggests significantly lower household growth for Carmarthenshire compared to its 2008-based equivalent. The 2008-based model was underpinned by higher population growth but also by household membership rates which estimate a higher rate of household growth.

- 4.23 To evaluate the potential impact of higher household formation on housing growth in Carmarthenshire, each of the demographic scenarios has been configured using membership rate assumptions from the WG 2008-based household projection model.
- 4.24 Under each of the demographic scenarios, changes to the household membership rates and household size, influence the level of household and dwelling growth required to support the estimated change in population. Under the WG's 2008-based membership rate and household size assumptions, a greater level of household growth is estimated, resulting in notably increased dwelling growth over the 2018–2033 period, compared to the 2014-based equivalent (Table 4). This is driven by a greater number of smaller households (i.e. '1 person' and '2 person' categories), operating in tandem with fewer '5+ person' households.
- 4.25 Under the **WG 2014-based (Principal)** scenario, the application of the 2008-based membership rates results in a dwelling growth range of 550–567 (under the alternative and 2011 Census vacancy rate respectively), approximately an additional +330 dpa compared to the estimated dwelling growth under the 2014-based membership rate assumptions. The **PG Pre-Recession** scenario results in the highest dwelling growth range of 1,362–1,404 dpa under the 2008-based membership rates, an uplift of approximately +436 dpa.

Table 4: Population change and average annual dwelling growth 2018–2033

Scenario	Population Change %	Average Annual Dwelling Growth 2018–2033			
		2011 Census Vacancy Rate		Alt. Vacancy Rate	
		2014-based	2008-based	2014-based	2008-based
PG Pre-Recession	14.2%	969	1,404	939	1,362
PG Long Term	9.4%	680	1,078	659	1,046
PG 10yr	6.3%	497	873	482	847
WG 2014 (10yr Average Migration)	5.8%	450	817	436	792
PG Short Term	5.7%	484	857	470	831
<b>WG 2014 (Principal)</b>	<b>1.7%</b>	<b>231</b>	<b>567</b>	<b>224</b>	<b>550</b>

- 4.26 The current LDP target of 1,013 dpa (adopted in 2014) is underpinned by the higher 2008-based membership rate assumptions. Applying these household growth assumptions to the population growth trajectories under the updated demographic scenarios highlights the differences between the two WG household models. The WG 2008-based household model assumptions increases the dwelling growth range, from 231–969 to 576–1,404 under the 2011 Census vacancy rate and from 224–939 to 550–1,362 under the lower alternative vacancy rate. The adopted LDP target sits within the WG 2008-based dwelling growth range, more closely aligned to the **PG Long Term** scenario (+1,078 dpa under the 2011 Census vacancy rate and +1,046 dpa under the lower alternative vacancy rate).

4.27 However, whilst the use of the WG 2008-based assumptions in this analysis illustrates the extent to which previous targets were underpinned by notably higher growth assumptions, it is deemed appropriate that given the prevailing economic and demographic conditions, the emerging LDP dwelling growth target should be underpinned by the latest WG 2014-based household projection model.

# 5 Economic Growth

## Context

- 5.1 The demographic scenarios presented in Section 4, provide an indication of the potential impact of a continuation of past migration trends upon future population change and housing growth in Carmarthenshire. It is evident that historical migration trends in Carmarthenshire have been influenced by economic factors, resulting in lower net migration to the UA over the recessionary period.
- 5.2 In contemplating future housing requirements in Carmarthenshire, alignment of demographic evidence with the County's economic strategies is an important consideration, but one which presents a particular methodological challenge.
- 5.3 The *Swansea Bay City Deal*<sup>16</sup> aims to achieve economic growth for the local and wider economy through job creation, development of knowledge and skills, entrepreneurialism, innovation and opportunities for young people. With funding of £1.3 billion and a targeted increase of +9,000 direct jobs across four unitary authorities (Swansea, Neath Port Talbot, Pembrokeshire and Carmarthenshire) the *Swansea Bay City Deal* seeks to have a number of direct and indirect economic benefits.
- 5.4 Two of the *Swansea Bay City Deal* projects are located in Carmarthenshire: (i) a creative industry project at Yr Egin; and (ii) a Life Science and Well-being Village in Llanelli. It is estimated that Yr Egin will create +638 direct jobs over the construction and operational phase, whilst the Wellness and Life Science Village will create an additional +1,853 jobs over the 15-year period<sup>17</sup>.
- 5.5 In 2015, Carmarthenshire County Council published its *Strategic Regeneration Plan*<sup>18</sup>, outlining six transformational projects for the 2015–2030 period, including Yr Egin and the Wellness and Life Science Village in Llanelli. The *Strategic Regeneration Plan* identified a jobs growth target of approximately 5,000 over the fifteen-year period, approximately 2,500 of which would be generated by the *Swansea Bay City Deal*.
- 5.6 The economic growth aspirations of the Council underpinned the *Employment Sectoral Study*, published by WSP in 2017<sup>19</sup>. This assumed a fixed annual rate of growth for key employment sectors, notwithstanding the 'life sciences' sector which assumed higher growth to take account of the anticipated growth in Carmarthenshire under the *Swansea Bay City Deal*. The *Employment Sectoral Study* estimated an average annual jobs growth in nine priority sectors of +1,245 jobs per year over

<sup>16</sup> <https://www.carmarthenshire.gov.wales/home/business/development-investment/the-swansea-bay-city-deal/#.W3KlcehKiHs>

<sup>17</sup> Carmarthenshire County Council

<sup>18</sup> <https://www.carmarthenshire.gov.wales/media/1212060/strategic-regeneration-plan-for-carmarthenshire-2015-2030-pdf.pdf>

<sup>19</sup> <https://www.carmarthenshire.gov.wales/media/1212564/employment-sectoral-study-final-english-1.pdf>

the 2017–2032 period<sup>20</sup>, taking account of the Swansea Bay City Deal and six transformation projects.

- 5.7 Using historical estimates as a guide, a 5.1% adjustment has been made to the employment growth total to account for double-jobbing (i.e. the number of people with two or more jobs). This results in an average annual employment growth of **+1,182** per year for the 2018–2033 plan period.

## Linking Population & Employment

- 5.8 Using POPGROUP technology, employment-led scenarios have been developed to consider the potential impact of employment growth upon population and housing growth in Carmarthenshire. POPGROUP quantifies the demographic impact of an economic growth trajectory by measuring the relationship between employment growth and the changing size of the resident population and its labour force.
- 5.9 Key to determining the relationship between population growth and employment growth are three assumptions on: (i) economic activity rates (also known as labour force participation rates); (ii) unemployment rate; and (iii) commuting ratio
- 5.10 **Economic activity rates** determine the proportion of the population that is actively engaged in the labour force, either employed or unemployed. In the scenario analysis presented here, Carmarthenshire’s economic activity rates have been adjusted in line with the OBR’s forecast of long-term changes to age-specific rates of labour-force participation.
- 5.11 The **unemployment rate** determines the proportion of the labour force that is unemployed (and as a result, the proportion that is employed). In the scenario analysis presented here, the unemployment rate tracks historical data to 2017, remaining fixed at 4% thereafter.
- 5.12 The **commuting ratio** is the balance between local employment and the size of the resident workforce. A commuting ratio greater than 1.00 indicates a net out-commute (i.e. the number of resident workers in an area is greater than the level of employment). A commuting ratio less than 1.00 indicates a net in-commute (i.e. the employment total is greater than the number of resident workers). In the scenario analysis presented here, Carmarthenshire’s 2011 Census commuting ratio of 1.09 has been applied, remaining fixed throughout the forecast period. Considering the latest WG<sup>21</sup>, evidence which suggests a shift in Carmarthenshire’s commuting ratio, the effect of a **reducing** net commuting outflow upon the balance between the county’s population and employment is also considered.
- 5.13 Further detail on each of these key assumptions is provided in Appendix A.

<sup>20</sup> Employment growth figures relates to nine priority industry sectors, detailed in the Employment Sectoral Study (2017).

<sup>21</sup> <https://stats.wales.gov.wales/Catalogue/Business-Economy-and-Labour-Market/People-and-Work/Employment/Commuting>



## Employment-led Scenarios

- 5.14 The *Employment Sectoral Study* estimates an average annual employment growth of +1,182 pa<sup>22</sup>. For comparison, the estimated employment growth that could be supported by the six demographic scenarios has been calculated; applying the key assumptions on economic activity, unemployment and (fixed) commuting detailed above (Figure 21).

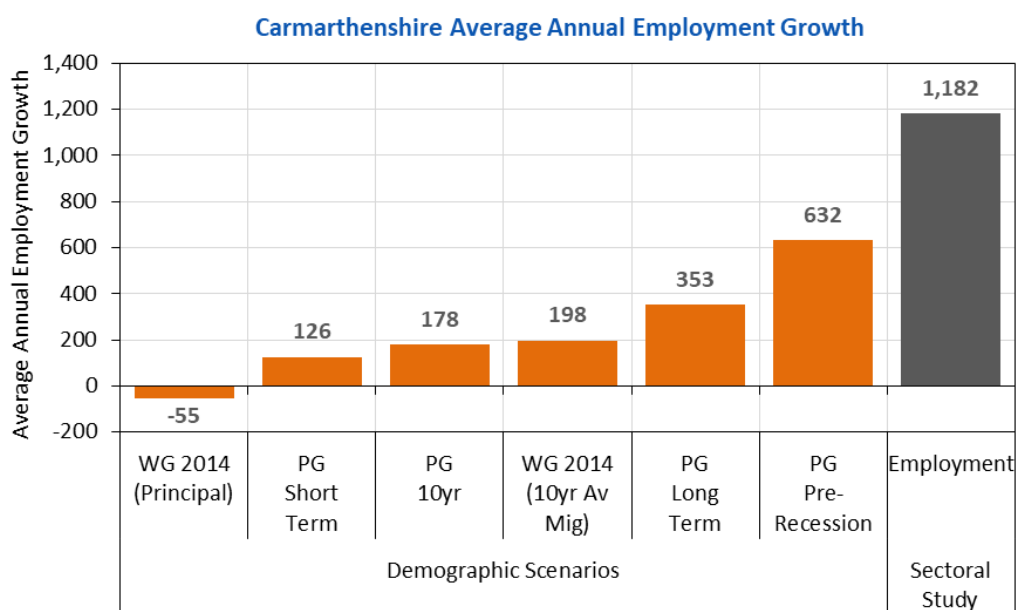


Figure 21: Average annual employment growth under the demographic scenarios & Employment Sectoral Study (2018–2033)

- 5.15 It is estimated that the population growth rate range of 1.7% to 14.2% (**WG 2014-based (Principal)** and **PG Pre-Recession** respectively) could support an average annual employment change of -55 to +632 per annum over the 2018–2033 plan period. The decline in employment change estimated under the **WG 2014-based (Principal)** scenario, reflects the estimated decline in the labour force over the plan period, driven by population ageing and lower migration. The **PG Pre-Recession** records higher employment growth over the plan period, driven by higher migration and the maintenance of a more youthful population.
- 5.16 However, even the **PG Pre-Recession** scenario suggests a lower employment growth outcome than the 1,182 per year total from the *Employment Sectoral Study*. This suggests a higher population growth is required to support this level of employment growth, possibly in combination with future change in Carmarthenshire’s commuting balance and its underpinning economic activity rates.
- 5.17 Using an employment-led formulation of the POPGROUP model, the population and housing growth implications of the 1,182 pa employment trajectory is estimated (Table 5). Two alternative commuting ratio assumptions are considered:

<sup>22</sup> Once an adjustment has been made for ‘double-jobbing’.

- **CR Fixed** applies the 2011 Census commuting ratio of 1.09, fixed throughout the plan period
- **CR Reducing** scenario assumes a reduction from 1.09 to 1.06 by the end of the plan period.

Table 5: Employment-led Scenario Outcomes 2018–2033

Employment-led Scenarios	Change 2018–2033				Average per year			Total Dwelling Growth (Census VR)	Total Dwelling Growth (Alt. VR)
	Population Change	Population Change %	Households Change	Households Change %	Net Migration	Dwellings (Census VR)	Dwellings (Alt. VR)		
CR Fixed	42,050	22.2%	19,027	23.2%	2,814	1,354	1,313	20,303	19,690
CR Reducing	36,481	19.3%	16,810	20.5%	2,483	1,196	1,160	17,938	17,396

Note: Employment growth, economic activity rate and unemployment rate assumptions are consistent for each, only the commuting ratio differs.

- 5.18 To support an average annual employment growth of +1,182 per year, an estimated population change ranges from 19.3% to 22.2% over the plan period. This is notably higher than estimated under each of the demographic scenarios, driven by higher net in-migration flows to Carmarthenshire to support the defined economic growth. A younger migration profile is estimated under the employment-led scenarios (driven by larger growth in the working age groups), which in turn results in a younger population age profile than estimated under the demographic scenarios.
- 5.19 In assuming no change in commuting over the plan period (i.e. **CR Fixed**), an average annual net migration of +2,814 per annum drives population change of 22.2% over the plan period. This results in an average annual dwelling growth of 1,354 per annum under the 2011 Census vacancy rate, reducing to +1,313 dpa under the lower alternative vacancy rate (2018–2033).
- 5.20 Assuming a reduction in the commuting ratio over the plan period, reduces the need for net migration (+2,483 per year) to support the forecast employment growth, as a smaller proportion of Carmarthenshire’s labour force are subject to a net out-commute. Therefore, lower population growth of 19.3% is estimated under the ‘**CR Reducing**’ scenario, with an average annual dwelling requirement range of +1,193 and +1,160 per year (2011 Census and alternative vacancy rate respectively).

# 6 Summary

## Context

- 6.1 Carmarthenshire County Council is in the process of updating its LDP, due for adoption in 2021. Taking account of the latest demographic and economic evidence, this document has presented a range of population and household forecasts for the Council to consider alongside existing strategies reported in the; *Swansea Bay City Deal, Strategic Regeneration Plan, Employment Sectoral Study and Hywel Dda Health Transformation Agenda*.
- 6.2 The analysis has estimated Carmarthenshire's demographic profile, identifying migration as the key driver of population growth since 2001. Higher net in-migration to Carmarthenshire was recorded pre-2008, with lower flows evident since, reflecting national trends. Carmarthenshire has an ageing population profile, with a substantial increase in the 65+ and 80+ populations, relative to the younger working age population since 2001.
- 6.3 The latest WG 2014-based population and household projections for Carmarthenshire suggest significantly lower growth than previously estimated under the WG 2008-based projection, driven by notably lower net in-migration and lower household formation. The WG 2008-based population and household growth assumptions underpin the adopted target of 1,013 dwellings per annum (dpa) for the 2006–2021 LDP period.

## Growth Outcomes

- 6.4 The WG 2014-based population and household projections, present the starting point in the assessment of future housing requirements for Carmarthenshire. Acknowledging the importance of migration on population change in Carmarthenshire, four alternative trend scenarios have been developed using POPGROUP technology, considering variant migration histories; **PG Short Term** (six-year migration history 2011/12–2016/17), **PG 10yr** (ten-year migration history 2007/08–2016/17), **PG Long Term** (sixteen-year migration history 2001/02–2016/17) and **PG Pre-Recession** (2001/02–2007/08).
- 6.5 In addition, the migration and subsequent population growth required to support an employment growth target of +1,182 pa outlined in the *Employment Sectoral Study* has been considered, using key assumptions on economic activity, commuting and unemployment.
- 6.6 The **WG 2014-based (Principal)** scenario estimates the lowest population growth (1.7%) over the plan period, driven by lower migration assumptions, with a resulting older population age profile. The average annual dwelling growth estimated under the **WG 2014-based (Principal)** scenario is +231 pa, reducing to +224 dpa under the lower alternative vacancy rate.

- 6.7 Larger net in-migration flows estimated under the PG scenarios result in higher population and dwelling growth, with the **PG Long Term** and **PG Pre-Recession** scenarios capturing the notably higher migration flows recorded to 2008. Whilst the **PG Short Term** and **WG 2014-based (Principal)** scenarios consider a 5–6-year historical period; the latest three years of historical data captured in the migration flow assumptions under the **PG Short Term** scenario, result in higher net in-migration and subsequent population growth estimated under the **PG Short Term** scenario compared to the **WG 2014-based** scenario. Incorporating the latest three years of historical population estimates in the **PG 10yr** scenario migration period, results in higher average annual net migration flows than under the **WG 2014 (10yr average migration)** equivalent. Under the PG scenarios, a population growth range of 5.7% to 14.2% results in an average annual dwelling growth range of 484–969 under the census vacancy rate. Assuming a lower vacancy rate reduces the average annual dwelling growth range to 470–939 dpa (2018–2033).
- 6.8 With changes to Carmarthenshire’s economic activity rates in line with the OBR forecasts and with a stable unemployment rate and commuting ratio, higher migration would be required to support the employment growth target of +1,182 pa. The employment-led **CR Fixed** scenario estimates higher population growth (22.2%) and dwelling growth (+1,354) than the demographic trend scenarios. Assuming a lower vacancy rate over the plan period, the estimated average annual dwelling growth reduces to +1,313 dpa.
- 6.9 Retention of a greater proportion of Carmarthenshire’s labour force through a reducing commuting ratio (**CR Reducing**), dampens the requirement for higher in-migration to support the employment growth, thus resulting in slightly lower population change (19.3%) and dwelling growth (ranging from +1,160 to +1,196 dpa).
- 6.10 The current adopted LDP target (+1,013 dpa) sits within the dwelling growth range estimated by the demographic and employment-led scenarios (231–1,354 dpa and 224–1,313 dpa under the lower vacancy rate). Underpinned by the WG 2008-based household model, the adopted LDP target is higher than that estimated under the demographic scenarios, but lower than the employment-led scenarios.

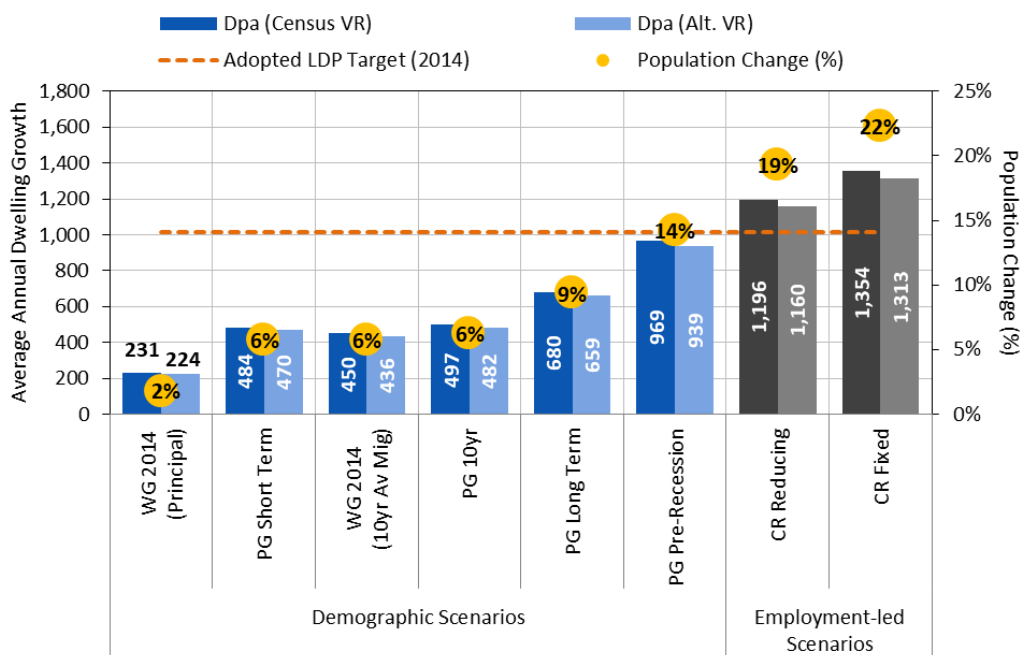


Figure 22: Carmarthenshire average annual dwelling growth and population change (%) under the demographic and employment-led scenarios (2018–2033)

6.11 Population ageing in Carmarthenshire over the fifteen-year plan period is inevitable and will lead to increased pressures on health and social care (*Hywel Dda Health Transformation Agenda*). However, a return to higher net in-migration would help to reduce the imbalance between the 65+ population and younger labour force age groups. A comparison of population change by age group under the highest and lowest population growth scenarios (**Employment-led CR Fixed** and **WG 2014-based** respectively), illustrates how migration can do little to change the size of the older age groups but can bolster the labour force age groups that are so critical to Carmarthenshire’s longer term economic ambitions (Figure 23).

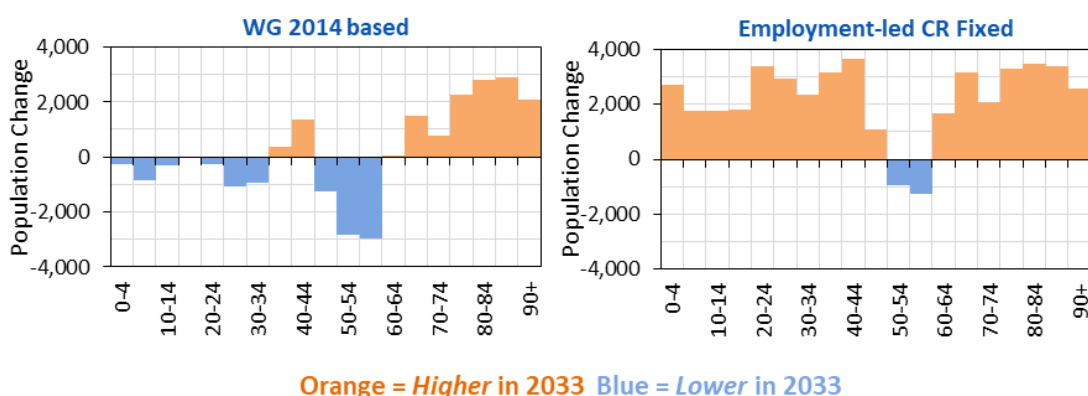


Figure 23: Carmarthenshire population change by 5-year age group under the WG 2014-based and Employment-led CR Fixed scenario (2018–2033)

6.12 The scenarios presented in this report provide a range of population, employment and housing growth outcomes for Carmarthenshire County Council to consider in the development of its emerging LDP. The analysis has considered the forecast demographic and economic change in

context of existing health and economic studies, taking account of the potential implications of the *Swansea Bay City Deal, Strategic Regeneration Plan and Employment Sectoral Study*. It is recommended that the Council gives particular attention to the employment growth forecasts presented in this report, as these form a key part of the evidence on potential growth outcomes for the County.

## Appendix A

# Economic Assumptions

A.1 This Appendix provides detail on the economic assumptions used in the analysis to determine the relationship between population and economic growth (Section 5 in the main body of the report).

### Economic Activity Rates

A.2 Between the 2001 and 2011 Censuses, economic activity rates in Carmarthenshire increased in all but the 16–19 male age group, and most notably in the older age groups. The increase in the economic activity rates has been more pronounced for females than for males (Figure 24).

A.3 In its 2017 Fiscal Sustainability Report<sup>23</sup>, the OBR published its long-term forecasts of changes to age-specific economic activity rates. The OBR adjustments to Carmarthenshire's economic activity rates over the 2018–2033 plan period estimate an increase in all older 60+ age groups, reflecting increased life expectancies and changes to the State Pension Age. A greater increase is assumed in the female economic activity rates than male, reflecting future social and economic national trends (Figure 24).

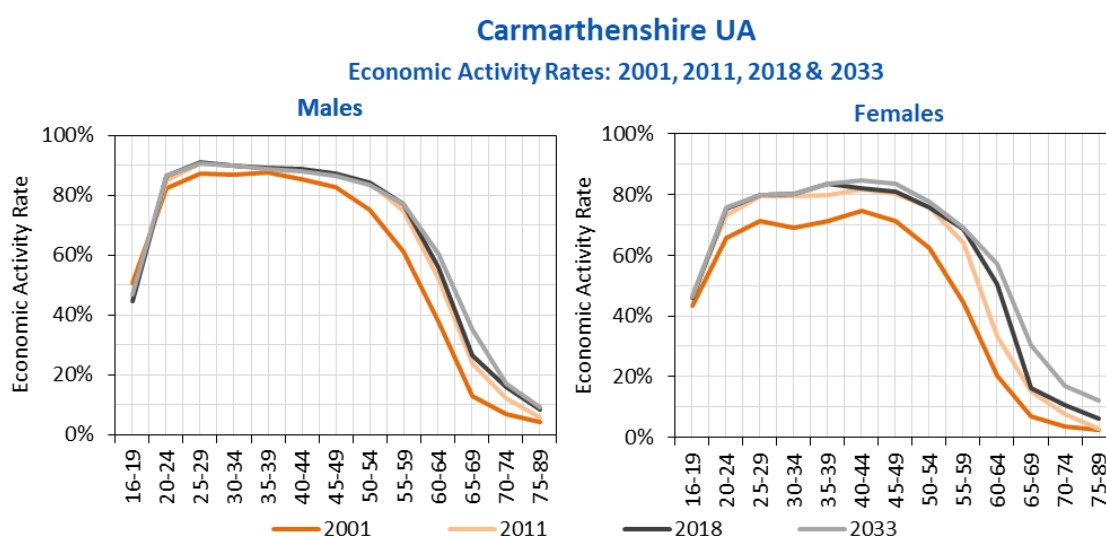


Figure 24: Carmarthenshire economic activity rates: 2001, 2011, 2018 & 2033  
(Source: Census and OBR)

### Commuting Patterns

A.4 Carmarthenshire's commuting ratio is a key component of the balance between local employment and the available labour force. The 2011 Census recorded 81,402 workers living within Carmarthenshire and 74,569 people working in Carmarthenshire.

<sup>23</sup> <http://obr.uk/fsr/fiscal-sustainability-report-january-2017/>

- A.5 Approximately 78.2% of Carmarthenshire’s resident workers both lives and works within the UA, with 10.1% commuting to Swansea, 2.2% to Neath Port Talbot, 2.1% to Pembrokeshire, 1.9% to Ceredigion and 5.4% to other parts of Wales and England.

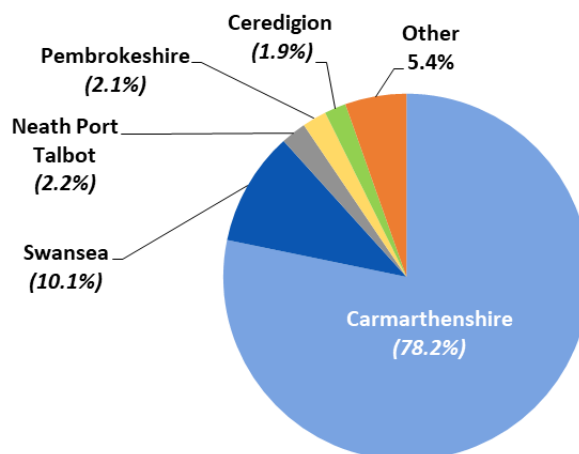


Figure 25: Where do people who live in Carmarthenshire work?  
(Source: 2011 Census)

- A.6 In terms of employment, the majority of Carmarthenshire’s jobs are taken up by the local workforce (85.4%), with 6.0% of workers commuting from Swansea, 2.0% from Neath Port Talbot, 2.3% from Pembrokeshire and 2.1% from Ceredigion. Approximately 2.2% come from other local authorities in Wales and England.

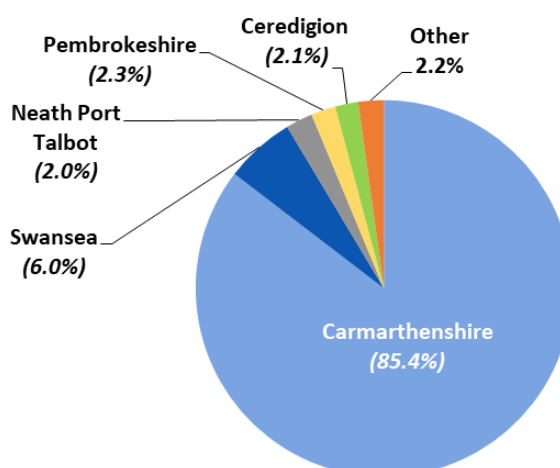


Figure 26: Where do people who work in Carmarthenshire live?  
(Source: 2011 Census)

- A.7 The commuting ratio determines the balance between the number of resident workers (i.e. the employed labour force) and the level of employment in Carmarthenshire. Whilst the number of resident workers and employment increased over the 2001–2011 Census decade; the balance between the two variables remained the same (Table 6). The 2011 Census recorded 81,402 workers in Carmarthenshire and an employment level of 74,569; resulting in a commuting ratio of 1.09 (i.e. more workers than employment in the area, resulting in a net out-commute from the UA).



Table 6: Carmarthenshire UA 2001 and 2011 Census commuting ratios

Carmarthenshire UA	2001 Census	2011 Census
<b>Workers</b>	67,630	81,402
<b>Employment</b>	62,021	74,569
<b>Commuting Ratio</b>	<b>1.09</b>	<b>1.09</b>

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 .

A.8 The Welsh Government publishes annual estimates on commuting patterns within unitary authorities in Wales<sup>24</sup>. Since 2015, the ratio between the number of estimated workers and employment in Carmarthenshire has averaged 1.06, a reduction from that recorded in the 2011 Census.

## Unemployment Rate

A.9 Between 2004 and 2010, Carmarthenshire’s unemployment rate increased from 4.2% to 7.6%, falling to 6.1% in 2012 (Figure 27). Since 2013 the unemployment rate has been subject to an annual decline, with 4.0% recorded in 2017, the lowest rate since 2004.

A.10 Under the demographic and employment-led scenarios presented in this report, the unemployment rate tracks historical data to 2017, remaining fixed thereafter.

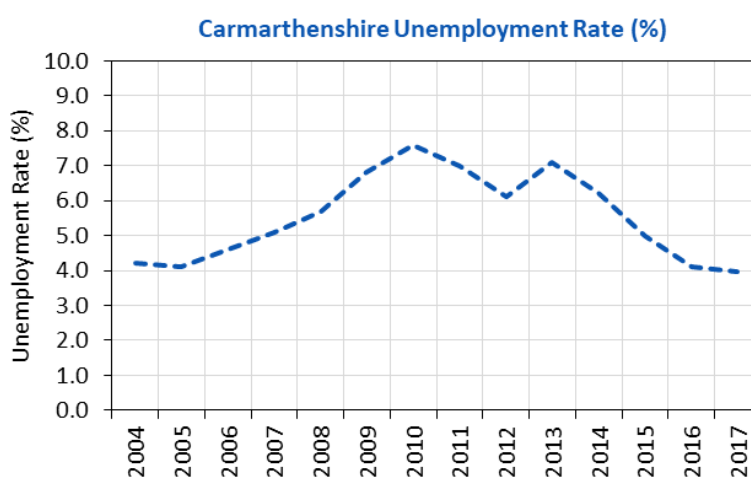


Figure 27: Carmarthenshire historical unemployment rate 2004–2017  
(Source: ONS model-based estimates)

<sup>24</sup> <https://statswales.gov.wales/Catalogue/Business-Economy-and-Labour-Market/People-and-Work/Employment/Commuting>

## Appendix B

# Carmarthenshire Outside Brecon Beacons NP

## Scenario Outcomes

- B.1 The population growth outcomes under each of the demographic scenarios (referred to in Section 4) for the part of Carmarthenshire *outside* the Brecon Beacon National Park are presented in Figure 28. The population change, net migration and average annual dwelling growth (under the 2011 Census and alternative vacancy rate) for the LDP plan period are summarised in Table 7.

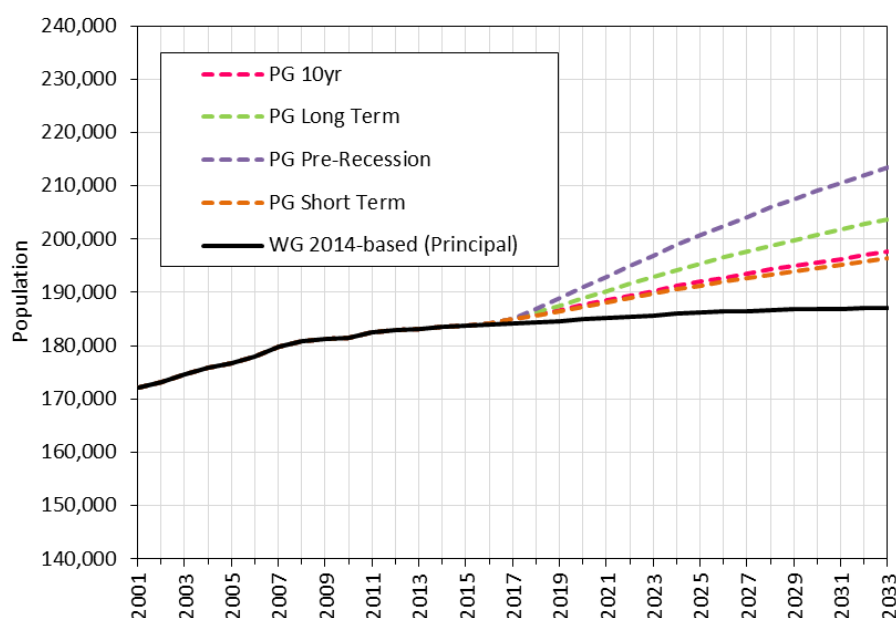


Figure 28: Carmarthenshire (outside the Brecon Beacon National Park) population growth trajectory (2001–2033)

Table 7: Carmarthenshire outside the Brecon Beacons National Park scenario outcomes 2018–2033

Scenario	Change 2018–2033				Average per year		
	Population Change	Population Change %	Households Change	Households Change %	Net Migration	Dwellings (Census VR)	Dwellings (Alt. VR)
PG Pre-Recession	26,559	14.2%	13,479	16.6%	2,097	959	930
PG Long Term	17,502	9.4%	9,505	11.7%	1,505	676	656
PG 10yr	11,799	6.3%	6,993	8.6%	1,128	497	482
PG Short Term	10,639	5.7%	6,772	8.4%	1,082	482	467
<b>WG 2014-based (Principal)</b>	<b>2,581</b>	<b>1.4%</b>	<b>2,878</b>	<b>3.6%</b>	<b>481</b>	<b>205</b>	<b>199</b>

# Appendix C

## POPGROUP Methodology

### Forecasting Methodology

- C.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.
- C.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 29) is a cohort component model, which enables the development of population forecasts based on births, deaths and migration inputs and assumptions.
- C.3 The Derived Forecast (DF) model (Figure 30) sits alongside the population model, providing a headship rate model for household projections and an economic activity rate model for labour-force projections.
- C.4 For further information on POPGROUP, please refer to the Edge Analytics website (<http://www.edgeanalytics.co.uk/>).

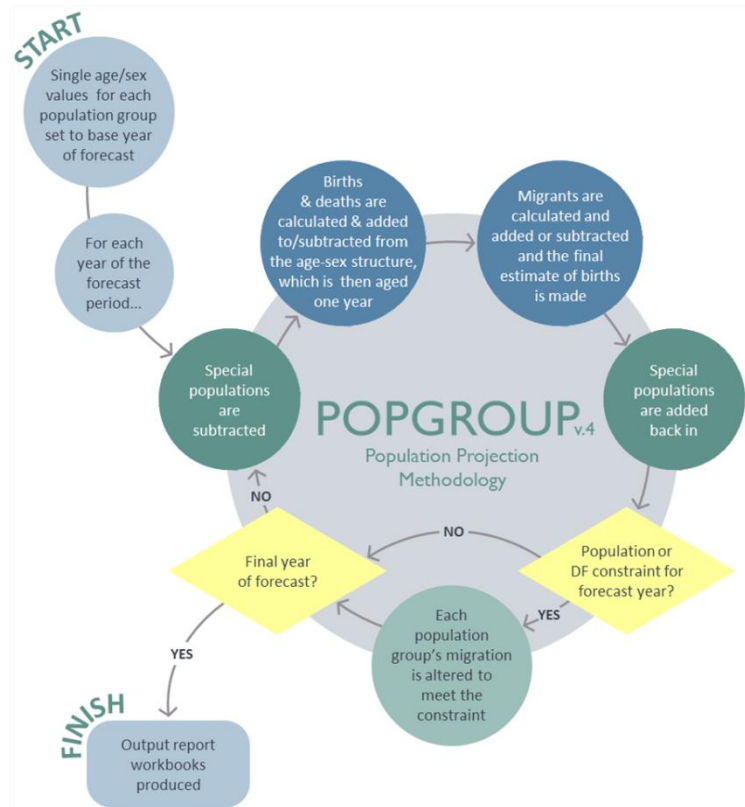


Figure 29: POPGROUP population projection methodology

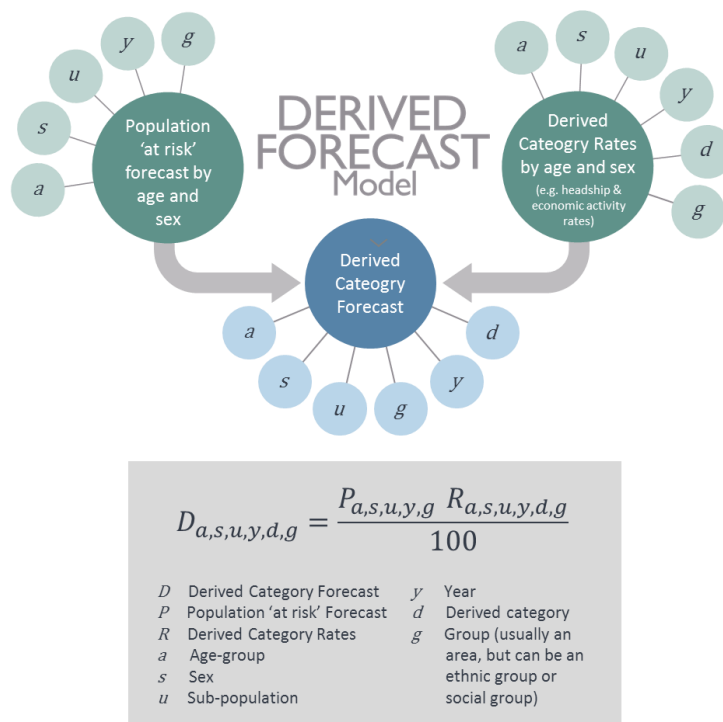


Figure 30: Derived Forecast (DF) methodology