PEMBROKESHIRE
DEMOGRAPHIC EVIDENCE

2022-based Welsh Government Projections:
Additional Commentary

October 2026

EDGE ANALYTICS

ACKNOWLEDGEMENTS

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1 INTRODUCTION

Context

1.1 Pembrokeshire County Council is currently at Examination for its Local Development Plan 2 (LDP2), which was submitted to Welsh Government (WG) in July 2025.

1.2 Pembrokeshire's LDP2 identifies a housing requirement of **5,840 new homes** for the local planning authority (LPA) between 2017 and 2033 (i.e. the area of the authority excluding the Pembrokeshire Coast National Park (PCNP)), an average of **365** homes per year[1]. The LDP2 requirement was informed by a suite of scenario evidence produced by Edge Analytics in 2020, which was underpinned by the 2018-based WG population and household projections.[2] The LDP2 growth scenario was identified as the average of the following three scenarios:

- Long Term Population Projection which forecasts a need for 295 dwellings p.a.
- Dwelling-led, 5-year average completion rate (2014/15–2018/19) of 413 dwellings p.a.
- Dwelling-led, 10-year average completion rate (2009/10–2018/19) of 378 dwellings p.a.

1.3 In each of these scenarios, household growth assumptions from the WG 2018-based projections were applied to provide the link between population and households. Since LDP2 was submitted for Examination, the WG has published its 2022-based population[3] and household[4] projections, superseding the 2018-based round. As part of the Examination process, the Inspector requested that the Council review the latest WG projections and assess their material impact upon the LDP2 evidence.

1.4 In March 2026, the council commissioned Edge Analytics to produce an overview of the 2022-based WG population and household projections, with comparisons made to the previous 2018-based round.[5] Due to the level of detail that was available at the time, this was a relatively high-level summary. The projections were apportioned to Pembrokeshire LPA (i.e. excluding the portion of the district within the PCNP) and were compared to the scenarios that informed LDP2.

1.5 The March 2026 note concluded that although the population growth outcomes of the WG 2022-based projections were broadly comparable to the LDP2 scenarios, the household growth outcomes were higher.

1.6 Since the March 2026 note was produced, WG has released further statistics relating to its projections. This includes the detailed household projection outputs, which provide estimates on the number and size of households in Pembrokeshire between 2022 and 2047. In June 2026, two of the variant 2022-based projections (*High Population* and *Low Population*) were re-published by WG after an error was found.

[1] Pembrokeshire County Council Local Development Plan Review
[2] Edge Analytics Updating the LDP Demographic Evidence, December 2020
[3] WG Local authority population projections: 2022-based
[4] WG Local authority household projections: 2022-based
[5] Pembrokeshire Examination Document ED06b 2026.03.10 Pembrokeshire Demographics Report by Edge Analytics

1.7 The Inspector has now posed the following question to the council: *Should the [housing] requirement be adjusted to account for the 2022-based local authority household projections for Wales?*

Approach

1.8 **Whether the housing requirement as set out in LDP2 remains appropriate is dependent on (a) how different the 2022-based WG population and household projections are to the previous 2018-based round that informed LDP2, and (b) whether the 2022-based WG projections provide an appropriate basis for planning in light of the latest demographic statistics.**

1.9 Edge Analytics has therefore (i) collated and reviewed the detailed WG population and household projection data and compared it to the previous 2018-based projections, (ii) apportioned the 2022-based projections to the LPA geography within Edge Analytics VICUS forecasting models, for comparison with the LDP2 scenarios, and (iii), considered the WG projection evidence within the wider demographic context of Pembrokeshire, including the latest mid-year population (MYE) evidence from the Office for National Statistics (ONS).

Report Structure

1.10 **Section 2** provides an overview of the WG population and households projections for Pembrokeshire unitary authority (UA), with detail on the household projections and the underpinning household 'membership' rate methodology. Comparison is made to the previous 2018-based WG projections. Regarding the population projections, these are evaluated within the context of the latest demographic statistics for Pembrokeshire UA.

1.11 In **Section 3**, the official WG projections have been apportioned to the Pembrokeshire LPA geography. The method by which this has been carried out is different to that used in the March 2026 Edge Analytics report, where an approximate apportionment was required due to the lack of detail available. With the full datasets now available, the projections can be replicated within Edge Analytics' in-house forecasting models (VICUS), which include a built-in apportioning process that utilises address point data and small-area (sub-district) statistics to disaggregate the UA projections to the LPA.

1.12 As well as replicating and apportioning the official projections, the use of the forecasting models also enables dwelling outcomes to be derived from the WG projections, for comparison with the LDP2 figures. With three further years of MYE evidence now available, this analysis also considers the level of dwelling growth implied by a range of alternative trend scenarios.

1.13 **Section 4** summarises the analysis and implications of the new projections for the LDP2 housing requirement.

2 WG 2022-BASED PROJECTIONS

Introduction

2.1 The 2022-based WG **population projections** are trend-based, drawing their fertility, mortality and migration assumptions from the historical ONS MYE up to mid-year 2022. To the population projections, household 'membership rates' (derived from Census data) and average household size assumptions are applied to derive the WG 2022-based **household projections.** There is a household projection for each of the population projection variants (although note that there is only one set of household membership rates for each local authority).

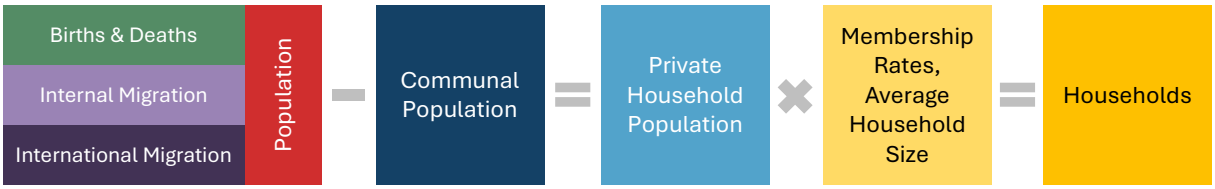


Figure 1: Population and household projection methodology

2.2 The 2022-based projection and associated variants are summarised below in Table 1.

Table 1: WG projection variants

Scenario Variant	Description
Principal	Principal 'central' projection, using 5-year migration trends (internal and international) and 5-year fertility and mortality trends
High Population	High fertility and high life expectancy, migration assumptions aligned with the Principal projection (updated June 2026)
Low Population	Low fertility and low life expectancy, migration assumptions aligned with the Principal projection (updated June 2026)
10-year Migration	10-year average migration (internal and international)
15-year Migration	15-year average migration (internal and international)
Zero Migration	Natural change only (the balance between births and deaths)

Source: WG

2.3 In the March 2026 Edge Analytics report, a high-level summary of the 2022-based WG projections was provided, as only the headline household figures were available at the time. The full set of outputs relating to the household projections are now available, enabling a more detailed scrutiny. However, as of October 2026, the technical methodology documentation for both the population and household projections remains unavailable.

2.4 In this Section, a summary of the **WG population projections** is provided, including the updated *High population* and *Low Population* variants, which were re-published by WG in June 2026 after an error was identified. Commentary is provided on the drivers of growth within the scenarios and the latest available MYE evidence, which is now available up to mid-year 2025.

2.5 Following this, the **WG household projections** for Pembrokeshire UA are presented, including commentary on the underpinning membership rate methodology and how these compare to the previous 2018-round of projections.

2.6 Note that the data presented in this section relates to the unitary authority (i.e. Pembrokeshire including PCNP) as this is the geography for which the data is published. The WG scenarios have been apportioned to the LPA in Section 3.

WG Population Projections

Overview

2.7 The 2022-based WG local authority population projections provide statistics on the future potential size and structure of the population in each year from 2022 to 2047. Each scenario has a 2022 MYE base year. In Pembrokeshire UA, the MYE that provided the 2022 base year was 124,425.[6] Approximately 83% of this population lives in the LPA, with the remaining 17% in PCNP.

2.8 Figure 2 summarises the population trajectories for the WG *Principal* projection and the five variants, together with the MYE up to the 2022 base year. The MYE for 2023, 2024 and 2025 (shaded in lighter blue) are also included for reference.

2.9 The previous 2018-based WG *Principal* projection is included for comparison. As outlined in the March 2026 Edge Analytics report, the 2022-based *Principal* projection results in a **higher level of population growth** (13.9%) compared to the previous 2018-based *Principal* projection, which estimated population growth of 4.1% over its 25-year projection period. The primary reasons for this difference are the changing demographic profile and the revisions to the MYE history (see further detail below).

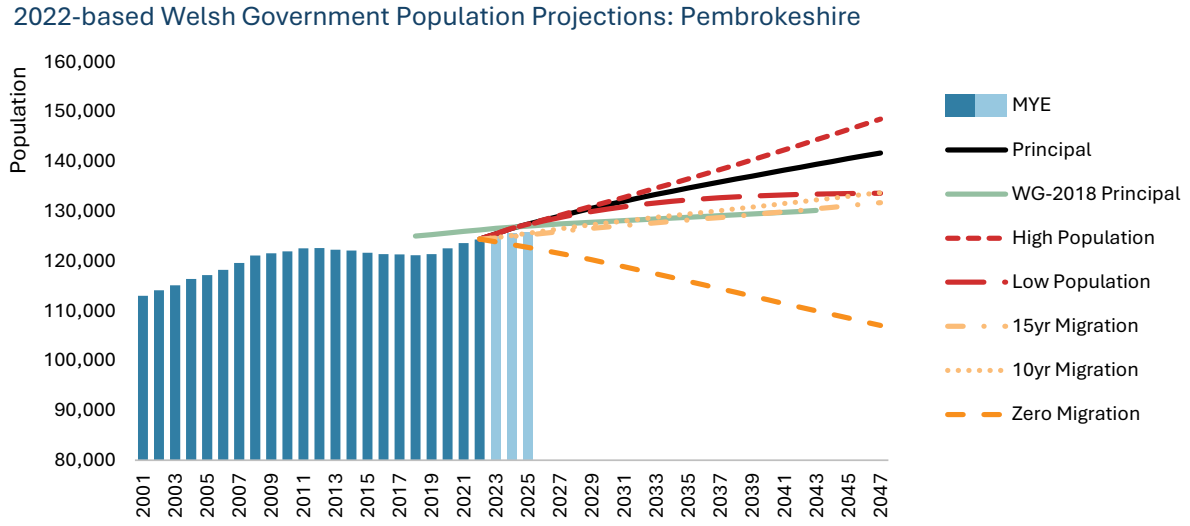


Figure 2: WG 2022-based population projections & ONS MYE, Pembrokeshire UA

Source: ONS, WG.

[6] The 2022 MYE was revised downwards slightly by ONS in July 2026, from 124,425 to 124,388. The 2022-based projection use the previous MYE.

2.10 Between 2022 and 2047, population growth in Pembrokeshire is projected to range from -13.9% under the hypothetical *Zero Migration* scenario, to 19.4% under the *High population* variant (Table 2). In all scenarios (apart from the *Zero Migration* variant), net migration is the driver of population growth. Natural change (the balance between births and deaths) is projected to be negative, reflective of the continued ageing of the population and declining fertility rates.

Table 2: WG 2022-based population projection summary, Pembrokeshire UA

Scenario Variant	Population Growth 2022–2047		Average Annual Change	
	Change	% Change	Natural Change	Net Migration
High Population	24,115	19.4%	-649	1,614
Principal	17,318	**13.9%**	-793	1,486
10yr Migration	9,340	7.5%	-785	1,158
Low Population	9,237	7.4%	-973	1,342
15yr Migration	7,353	5.9%	-754	1,048
Zero Migration	-17,336	-13.9%	-693	0

Source: WG. Scenarios are ranked in order of population change.

WG Projections, MYE Rebasing & UPC

2.11 WG has derived the future fertility, mortality and migration assumptions for each variant from the historical MYE and associated '**components of change**' evidence up to mid-year 2022. The components of change refer to the drivers of population growth: natural change (the balance between births and deaths), internal migration (domestic flows to/from elsewhere in the UK), and international migration (flows to/from overseas). Also included within the MYE is an 'unattributable population change' (**UPC**) component, which is a result of the post-Census rebasing exercise that is carried out by ONS to align Census estimates.[7]

2.12 Following a Census, ONS reviews the intercensal MYE and applies adjustments to births, deaths and migration where appropriate. Where population change cannot be attributed to any one of the components of change, it is classified as UPC. The 2021 Census population estimate in Pembrokeshire was *lower* than the pre-Census MYE, resulting in a downwards adjustment to the MYE. The UPC component is therefore *negative* between 2011 and 2021. Between 2001 and 2011, the reverse occurred (the 2011 Census estimate was higher than anticipated) and UPC adjustment was therefore positive. This pattern of positive followed by negative UPC is one that is seen across local authorities in Wales (with the exception of Newport).

2.13 Although UPC is not assigned to any one component of change, it is considered most likely to be associated with the **misestimation of international migration** (as this is the component of change that is the most challenging to estimate), although it could also be due to the misestimation of domestic (internal) migration and/or errors with the Census estimates, or a **combination of factors**.

2.14 A review of the MYE and WG projection data would suggest that UPC has not been accounted for within the WG projections; this is certainly the case with the international migration assumptions

[7] ONS (2023) Rebasing of mid-year population estimates following Census 2021, England and Wales

and would be consistent with previous rounds. It is important to note that **neglecting to account for the impact of UPC within projections risks misrepresenting the historical profile** of growth. Edge Analytics routinely includes UPC within the historical intercensal international migration estimates when configuring trend scenarios. This approach is consistent with that used by the Greater London Authority (GLA) in its projections.

MYE & Components of Change

2.15 The **MYE and components of change** for Pembrokeshire UA are illustrated in Figure 3. This includes the MYE up to mid-year 2022 (the WG projection base year), and three years of additional evidence up to mid-year 2025. The red dashed line on the MYE chart represents the pre-Census non-rebased MYE, which were used to inform the 2018-based WG projections, and the scenarios developed by Edge Analytics in 2020 for Pembrokeshire (i.e. informing LDP2). These MYE are now out-dated and have been superseded by the rebased time series.

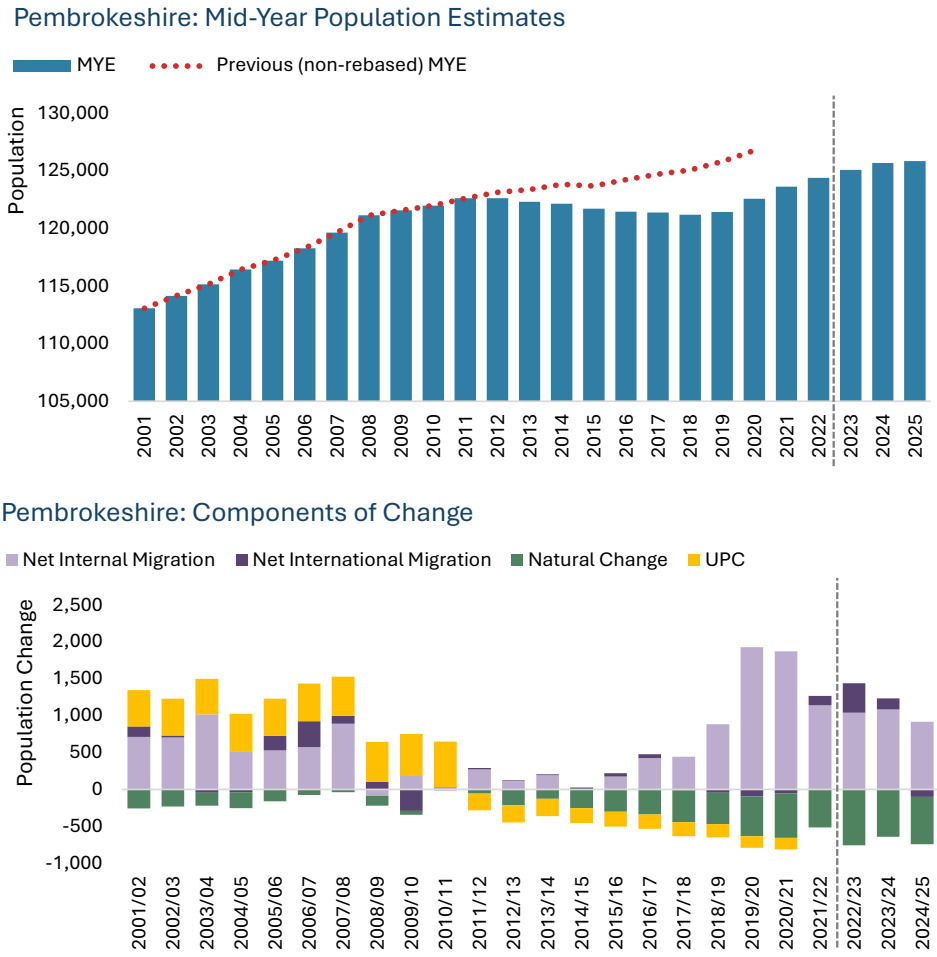


Figure 3: ONS MYE & components of change, Pembrokeshire UA

Source: ONS. Note that the grey dashed line indicates the time period up to mid-year 2022 from which the WG projections' assumptions are based. The MYE presented here include the revised 2022 MYE, published by ONS in July 2026 – see footnote 6.

Natural Change

2.16 As summarised in Table 2, under all the WG scenarios, **natural change** is projected to be negative throughout the projections, reflective of falling fertility rates and continued ageing of the population. Since the 2022-based projections were produced, fertility rates have continued to decline, reaching the lowest levels on record in recent years.[8]

2.17 In Pembrokeshire UA, the total fertility rate (TFR) was 1.46 in 2025; this is lower than the TFR assumed within the 2022-based *Principal, 10yr Migration*, and *15yr Migration* scenarios, in which the TFR was 1.65 in 2022, reducing to 1.58 by 2047. In the *Low Population* variant (which has lower fertility assumptions) the projected TFR in 2025 is comparable to the recorded figure for 2025. The TFR in the *High Population* variant rises from 1.65 to 1.77 over the 25-year projection period.

Migration

2.18 The WG 2022-based *Principal*, *High Population* and *Low Population* projections are based on a 5-year migration trend to mid-year 2022, with adjustments to life expectancy and fertility rates in the *High* and *Low* variants. In these three scenarios, WG has aligned the **international migration** figures in 2022/23 and 2023/24 with the published ONS estimates available at the time (this does not apply in the other variants nor to any of the other components of change). Since the 2022-based projections were formulated, the international migration estimates have been revised downwards slightly by ONS in these years.

2.19 Although contributing little to population change in Pembrokeshire UA, net international migration increased between 2021/22 and 2023/24, in line with regional and national trends. Since then, net international migration to the UK has fallen from the unprecedented levels seen between 2021 and 2024.[9] This is reflected in the Pembrokeshire UA data, where net international migration was estimated to be negative in 2024/25.

2.20 With regards to net **internal migration**, there was a notable uptick between 2019 and 2021, a result of an increased inflow to the authority and a reduced outflow. This resulted in the largest annual population increase seen since 2008 in Pembrokeshire UA, at around 0.9% per year. Similar trends have been seen in other Welsh authorities, particularly those that are more rural; these changes are likely linked to changes to population mobility and migration as a result of the COVID-19 pandemic.

2.21 As highlighted in the March 2026 Edge Analytics note, much of Pembrokeshire net migration inflow has been from cross-border flows originating from outside Wales, primarily English local authorities. In addition, the age structure of the migration balance has been characterised by a net growth in the older age-groups, particularly 45–64, plus a consistent net loss in the younger 16–24 age category.

2.22 Since 2021, levels of net internal migration have reduced, averaging approximately 1,000 per year between 2021 and 2025. Although lower than the peak of just under 2,000 in 2019/20 and 2020/21, recent levels of net internal migration still exceed the long-term (20-year) historical average of 630 per year.

[8] ONS (2026) Births in England and Wales: 2025
[9] ONS (2026) Long-term international migration, provisional: year ending December 2025

2.23 The changing pattern of internal (and to a lesser extent international migration) mean that between 2021 and 2025, population growth averaged 0.4% per year, down from the peak seen between 2019 and 2021. Between 2024 and 2025, the population of Pembrokeshire grew by only 179 people (0.1%).

2.24 The assumed exclusion of UPC, the alignment with the ONS international migration estimates in 2022/23 and 2023/24 (in the *Principal*, *High Population*, and *Low Population* scenarios), and the higher levels of net internal migration seen in 2019/20 and 2020/21 **mean that the WG projections largely result in annual migration outcomes above recent trends** (Figure 4). As illustrated in the components of change (Figure 3), net migration has decreased from the high point in 2019–2021. The latest 5-year migration trend to mid-year 2025 is still relatively high (1,285 per year) but is still lower than the average annual net migration implied by the three highest WG scenarios.

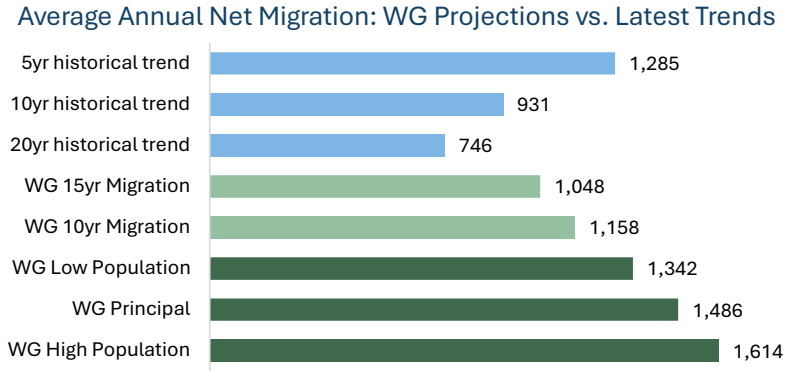


Figure 4: Average annual net migration, Pembrokeshire UA

Source: ONS, WG. Note that the historical trends have been calculated up to mid-year 2025 and include UPC. The WG migration is the average annual migration over the 2022–2047 projection period (assumed to exclude UPC).

2.25 Combined with the fertility rate assumptions that are higher than recent trends, the above suggests that **caution should be exercised when relying on the highest of the WG population projections for planning purposes**. As highlighted in the March 2026 Edge Analytics note, the WG subnational population projections are also not constrained to a national projection (as ONS does in its projections for England); the result of this is that the sum of the local authority projections is higher than the national projection.

2.26 Furthermore, the projected populations in 2023, 2024 and 2025 in each of these three scenarios are *higher* than the MYE, i.e. **these projections have overestimated population growth** in the first three years of the projection (Figure 5).

2.27 The WG *10yr Migration* and *15yr Migration* scenarios both utilise longer-term migration trends, which result in overall lower levels of net migration and population growth compared to the *Principal*, *High Population* and *Low Population* scenarios. The populations estimated in first three years of the projection are slightly lower than the MYE (as illustrated in Figure 5). Net migration across the full 25-year projection period in these scenarios is, however, higher than the latest 10-year and 15-year trend (including UPC), as illustrated in Figure 4 above.

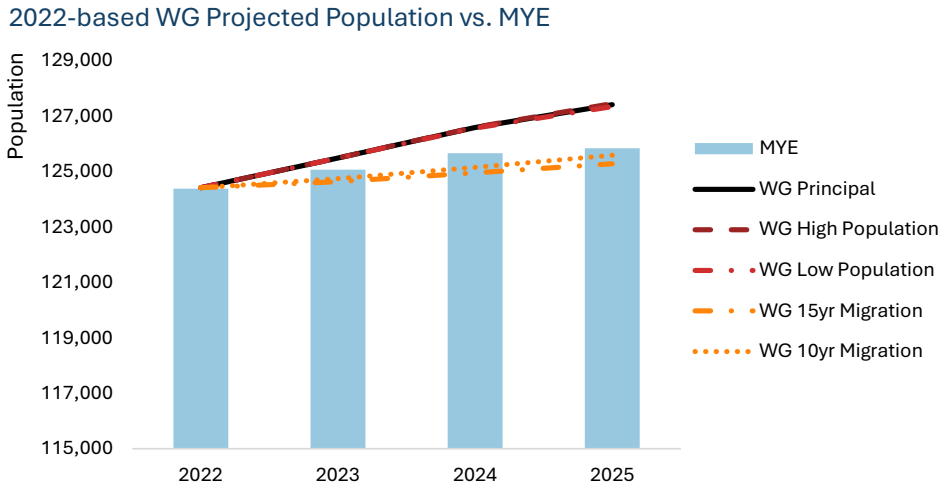


Figure 5: 2022-based WG projections vs. MYE, Pembrokeshire UA

Source: ONS, WG.

WG Household Projections

Methodology

2.28 The official household projections provide an indication of number of households and their composition over a 25-year period and are underpinned by the official population projections and household assumptions derived from successive Censuses.

2.29 Within the Edge Analytics study that informed LDP2, household growth assumptions from the 2018-based WG projections were applied in the scenario modelling, providing the link between population and households. As with the population projections, the 2018-based household projections have now been superseded by the 2022-based round. To assist in answering the Inspector's question on whether this new evidence means that the LDP2 housing requirement should be adjusted, it is important to first understand the **household projection methodology** and the assumptions used by WG in formulating the projections.

2.30 The WG household projections are generated through the application of communal population, membership rate and average household size assumptions to a population (Figure 6). Membership rates are defined by sex and 5-year age groups and determine the proportion of each age group in each household size group.

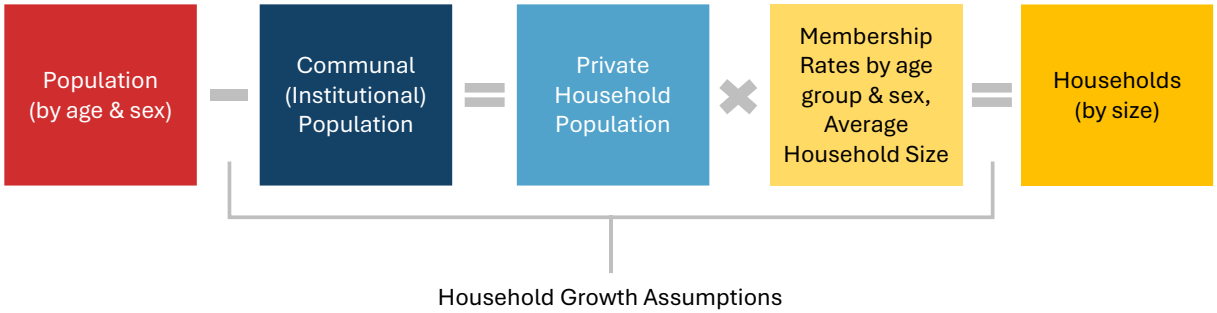


Figure 6: Population and household projection methodology

2.31 Note that this approach is replicated by Edge Analytics in its scenario modelling within VICUS: the household growth assumptions from the official projections are used to provide the link between population and households.

2.32 As with the population projections, the technical methodology documentation for the household projections is yet to be published. From the information that is available, the 2022-based household projection methodology appears broadly consistent with the methodology used in the earlier round of projections, except that the 2022-based projection uses data from the past three Censuses (2001, 2011, 2021) to generate the household membership rates. The previous 2018-based projections used only the 2001 and 2011 Census data.

2.33 Note that there is **only one set of membership rates** within each round of projections for each local authority in Wales. WG has applied the same membership rate, communal population and average household size assumptions to each of the 2022-based variant population projections to generate the corresponding household projections. The different household growth outcomes associated with each variant are therefore a result of the **different levels of population growth** in each corresponding scenario (rather than differences in the underpinning membership rates, communal population, and average household size assumptions).

Household Growth Overview

2.34 The household growth trajectories for each of the 2022-based household projections are illustrated in Figure 7, with the WG household estimates up to mid-year 2024 and the 2018-based WG *Principal* household projection included for context. Table 3 summarises the growth outcomes over the 25-year projection period.

2.35 The number of households under the 2022-based *Principal* scenario is projected to increase by 11,098 (19.8%) between 2022 and 2047, compared to 5,898 (10.5%) under the *15yr Migration* variant (see Table 3, next page). The *High Population* variant achieves the highest household growth at 24.2%. With zero migration, the number of households is projected to decrease by -11.5%, highlighting the importance of migration in sustaining the size and structure of Pembrokeshire's population.

2022-based Welsh Government Household Projections: Pembrokeshire

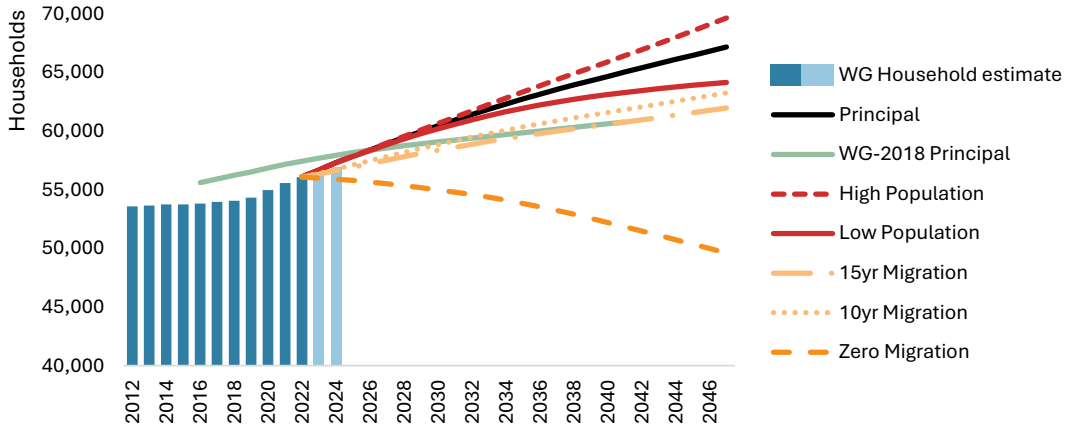


Figure 7: WG 2022-based household projections & WG household estimates, Pembrokeshire UA

Source: WG.

Table 3: WG 2022-based household projection summary, Pembrokeshire UA

Scenario Variant	Household Growth 2022–2047		
	Change	% Change	Change per year
High Population	13,565	24.2%	543
Principal	**11,098**	**19.8%**	**444**
Low Population	8,084	14.4%	323
10yr Migration	7,184	12.8%	287
15yr Migration	5,898	10.5%	236
Zero Migration	-6,475	-11.5%	-259

Source: WG. Scenarios are ranked in order of household change.

Comparison to 2018-based Projections

2.36 The 2022-based *Principal* household projection results in a comparatively higher level of household growth (19.8%) than the now superseded 2018-based household projection (9.3%).

2.37 Although the technical methodology documentation for the 2022-based household projections has yet to be published, the core projection methodology (multiplying the projected household population by household membership rates and average household size) remains the same. As outlined in the March 2026 Edge Analytics report, the reasons for the differences between the 2022 and 2018 round of projections are the **underpinning population growth trajectories** (the 2022-based projections result in higher population growth than the 2018-based projections), plus the **changes to the household projection methodology** (the inclusion of 2021 Census data in the 2022 round of projections).

2.38 Under the 2018-based *Principal* projection, average household size was projected to be higher than under the 2022-based *Principal* projection, starting at 2.21 in 2018 and reducing to 2.10 by 2043 (Table 4). In comparison, average household size in the 2022-based projections starts at 2.19 in 2022 and reduces to 2.07 by 2027, which is a comparable level of decline as under the 2018-based *Principal* projection.

Table 4: 25-year growth comparison: *Principal* household projections, Pembrokeshire UA

Principal Projection	Household Growth		Household Population Growth		Average Household Size		
	Change	% Change	Change	% Change	Start	End	Change
2018-based *(2018–2043)*	5,175	9.3%	4,363	3.5%	2.21	2.10	-0.12
2022-based *(2022–2047)*	11,098	19.8%	16,562	13.5%	2.19	2.07	-0.12

Source: WG

2.39 The result of these differences, combined with the different underpinning population projections, is that the 2022-based *Principal* projection estimates an overall higher growth in the number of one- and two-person households compared to the previous 2018-based projection (Table 5). The profiles of growth are linked to the relatively elderly population profile of Pembrokeshire and the projected

growth in the older ages with continued population ageing. There is projected to be a negligible change in the number of larger four- and five-person households under both *Principal* projections. In the 2018-based round, there was a projected *decline* in three-person households; the reverse is seen in the 2022-based *Principal* projection.

Table 5: Household Growth by size comparison: *Principal* projections, Pembrokeshire

	2018-based Principal				2022-based Principal			
	2018	2043	Change	% Change	2022	2047	Change	% Change
1-person	18,149	22,541	4,392	24%	18,861	25,838	6,978	37%
2-person	21,262	23,380	2,118	10%	20,891	23,657	2,766	13%
3-person	7,024	5,942	-1,082	-15%	7,605	8,946	1,342	18%
4-person	5,972	5,724	-248	-4%	5,748	5,778	30	1%
5+ person	3,212	3,206	-6	0%	2,993	2,976	-17	-1%
Total	55,618	60,793	5,175	9%	56,098	67,196	11,098	20%

Source: WG

Membership Rates

2.40 The official household projections suggest different profiles of household growth between the 2018 and 2022 rounds, as illustrated above. **The difference in the overall level of household growth is, however, largely a result of the population trajectories to which the underpinning household growth assumptions are applied**.

2.41 Whilst the 2018-based official household projections result in lower household growth than the 2022-based projections (as illustrated in Table 4 and Table 5 above), the application of both sets of household growth assumptions to the same population trajectory results in broadly comparable levels of overall household growth (with the 2022-based outcomes marginally higher than the 2018-based).

2.42 For example, applying the 2018-based and 2022-based WG household assumptions (communal population, membership rates, and household size) to the WG-2022 *Principal* population projection results in approximately 20% household growth in both instances over the 25-year projection period.

2.43 This similarity does, however, mask the difference in the **profile of household growth that is produced**, which is a product of (a) the different membership rate profiles by age and sex, and (b) the age/sex structure of the population to which the rates are applied. For the above example (2022-based WG *Principal* projection with both 2018-based and 2022-based household assumptions applied), the resulting household growth profile is illustrated in Figure 8.

2.44 One-person household growth is slightly *higher* using the 2022-based assumptions, but the growth in the number of two-person households is *lower*. A more pronounced difference is in three-person households, which are projected to increase using the 2022-based assumptions.

2.45 **Given that the 2022-based household projections have superseded the previous 2018-based round, it is appropriate to assess future levels of household growth using the latest data**. In

Section 3, the household growth outcomes generated by these assumptions have been compared to those from the LDP2 scenarios, as well as to the trends suggested by the latest MYE evidence.

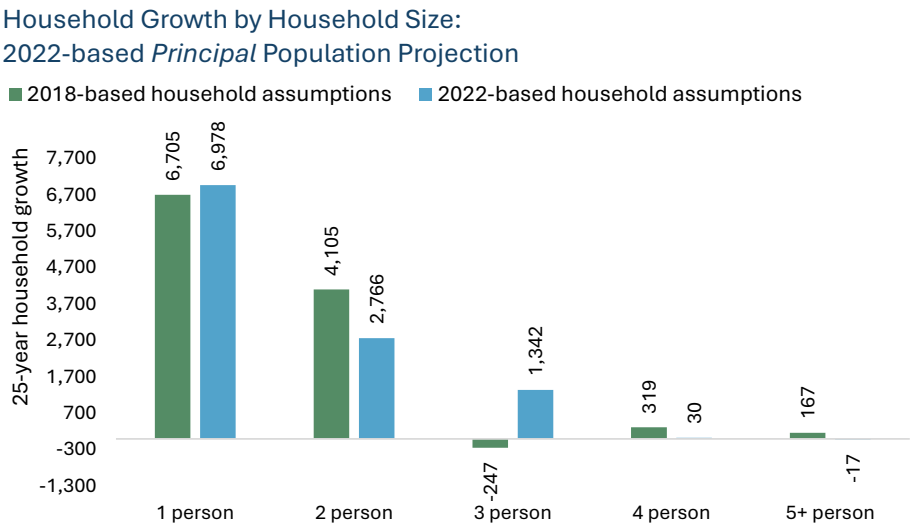


Figure 8: Household growth comparison, 2022-based *Principal* projection, Pembrokeshire UA

Source: WG, Edge Analytics

3 LDP2-WG SCENARIOS COMPARED

Introduction

3.1 Pembrokeshire's LDP2 **housing requirement** for 5,840 new homes (**365** per year) between 2017 and 2033, was derived from the average of three scenarios:

- Long Term Population Projection which forecasts a need for 295 dwellings p.a.
- Dwelling-led, 5-year average completion rate (2014/15–2018/19) of 413 dwellings p.a.
- Dwelling-led, 10-year average completion rate (2009/10–2018/19) of 378 dwellings p.a.

3.2 This target relates only to the Pembrokeshire LPA (i.e. excluding PCNP). In the March 2026 report, the 2022-based WG *Principal* and *15yr Migration* scenarios were apportioned to the LPA using a simple address-based method for comparison with the LDP2 scenarios.

3.3 With the full detail for the projections now available, it has been possible to integrate the official projections within Edge Analytics in-house forecasting models, which have a built-in apportioning methodology that utilises both address counts and small area statistics.[10] This means that the unique age/sex structure of the population of the LPA is taken into account when modelling the official projections at a sub-district level. The WG scenarios have been apportioned to the LPA using this methodology for comparison with the LDP2 scenarios. The scenario definitions are presented below in Table 6.

Table 6: LDP2 scenarios and WG 2022-based projections

Scenario Name	Description
WG-22-Principal	2022-based WG Principal projection, apportioned to the LPA
WG-22-HighPop	2022-based WG High Population variant, apportioned to the LPA
WG-22-LowPop	2022-based WG Low Population variant, apportioned to the LPA
WG-22-10YR	2022-based WG 10yr Migration variant, apportioned to the LPA
WG-22-15YR	2022-based WG 15yr Migration variant, apportioned to the LPA
WG-22-ZeroMig	2022-based WG Zero Migration variant, apportioned to the LPA
LDP2 Dwell-led (10yr Av)	Replicates the Dwelling-led, 10-year average completion rate scenario from the 2022 Edge Analytics analysis
LDP2 Dwell-led (5yr Av)	Replicates the Dwelling-led, 5-year average completion rate scenario from the 2022 Edge Analytics analysis
LDP2 PG Long Term	Replicates the long-term population trend scenario from the 2022 Edge Analytics analysis

[10] 2021 Census Output Areas and Ordnance Survey AddressBase Plus

3.4 The household growth outcomes of the WG scenarios have been derived through the application of the 2022-based household growth assumptions (membership rates and average household size) to the population projections. Between 2017 and 2022, population growth is aligned with the MYE (for output areas) and household growth is aligned with the WG local authority household estimates (apportioned to the LPA). Note that the LDP2 scenarios retain all assumptions as set out in the 2020 Edge Analytics study (household growth in these scenarios was derived using the previous 2018-based WG household growth assumptions).

3.5 To estimate the number of dwellings implied by the WG household growth outcomes, a dwelling 'vacancy rate' has been applied, derived from Census statistics and consistent with the previous 2020 Edge Analytics analysis and LDP2 scenarios (8.1%).

Population Growth

3.6 The population growth trajectories for the LDP2 scenarios are presented alongside the apportioned 2022-based WG scenarios in Figure 9. The historical MYE for the LPA are also included up to the 2022 MYE base year of the WG projections. Note that the starting point of the LDP2 scenarios is not consistent with the MYE due to the post-2021 Census rebasing carried out by ONS (see paragraph 2.5).

Pembrokeshire LPA: LDP2 Scenarios vs. WG-2022

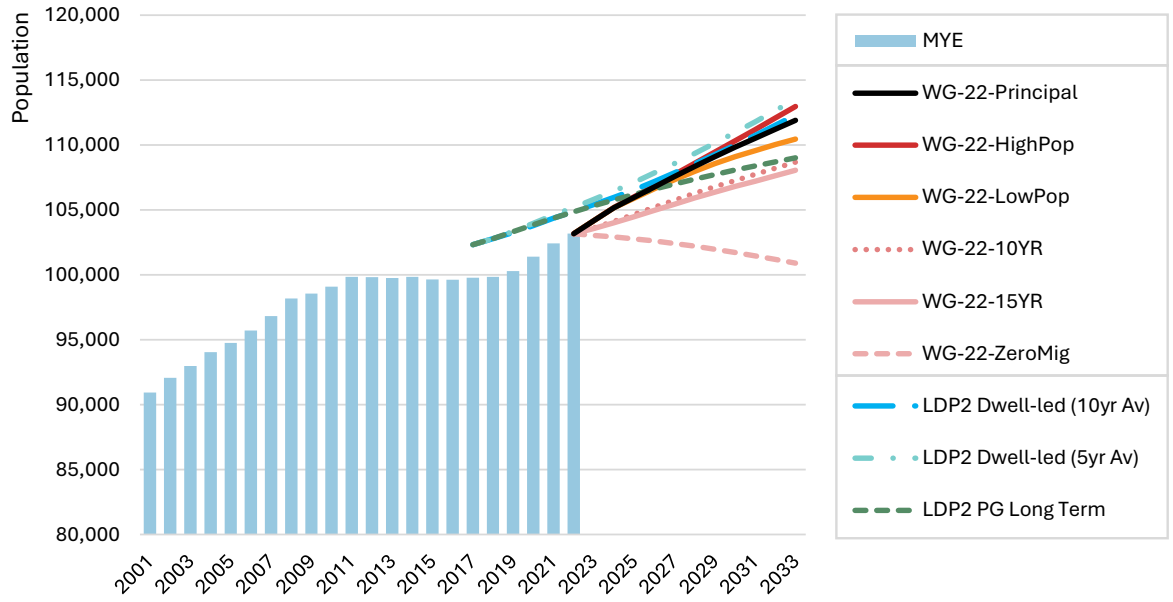


Figure 9: LDP2 scenarios and WG 2022-based projection comparison, Pembrokeshire LPA

Source: ONS, WG, Edge Analytics

3.7 The population, migration and natural change outcomes for each of the WG projections are compared to the LDP2 scenarios in Table 7 below. Note that the apportioned WG scenarios presented here are different to those presented in the March 2026 Edge Analytics due to the different apportioning methodologies.

3.8 Although the starting point is not comparable, **growth over the plan period under the three LDP2 scenarios sits within the range implied by the WG scenarios**.

Table 7: LDP2 scenarios and WG 2022-based projections, population outcomes, Pembrokeshire LPA

Scenario Variant	Population Growth 2017–2033		Average Annual Change	
	Change	% Change	Natural Change	Net Migration
WG-22-HighPop	13,193	13.2%	-354	1,178
WG-22-Principal	**12,125**	**12.2%**	**-401**	**1,159**
LDP2 Dwell-led (5yr Av)	11,199	10.9%	-323	1,023
WG-22-LowPop	10,688	10.7%	-467	1,135
LDP2 Dwell-led (10yr Av)	9,986	9.8%	-331	955
LDP2 Average	**9,289**	**9.1%**	**-336**	**916**
WG-22-10YR	8,904	8.9%	-408	965
WG-22-15YR	8,283	8.3%	-403	920
LDP2 PG Long Term	6,681	6.5%	-353	771
WG-22-ZeroMig	1,124	1.1%	-409	479

Source: WG. Scenarios are ranked in order of population change.

3.9 The *WG-22-Principal* and *WG-22-HighPop* scenarios sit at the top of the range, at 13.2% and 12.2% population growth respectively. As outlined in the previous section, these scenarios are underpinned by relatively high growth assumptions, carrying forwards the higher levels of population growth seen between 2019 and 2021, and (likely) ignoring the historical impact of UPC. This is moderated to some extent in the *WG-22-LowPop* variant, in which fertility rates that are more aligned with recent trends are applied. This scenario is, however, still underpinned by relatively high levels of net migration.

3.10 With only births and deaths contributing to population growth, the hypothetical *WG-22-ZeroMig* scenario sits at the bottom of the range, resulting in only 1.1% growth over the plan period (note that net migration is not zero in this scenario due to the inclusion of the 2017–2022 MYE data; the zero migration assumptions apply from 2022 onwards only).

3.11 The **LDP2 long-term migration trend** scenario (*LDP2 PG Long Term*) sits at the **lower end of the range** (6.5% population growth), a reflection of the relatively lower levels migration in the years preceding the scenario base year (2018). The two LDP2 dwelling-led scenarios (based on a continuation of past housing completion trends) sit within the **middle of the range** either side of the *WG-22-LowPop* scenario. Note that the MYE that informed the development of these scenarios have been superseded by the post-2021 Census rebased MYE time series.

3.12 The two WG migration trend scenarios, which use a 10-year and 15-year migration trend (up to mid-year 2022), result in similar levels of population growth, at 8.9% (*WG-22-10-YR*) and 8.3% (*WG-22-15-YR*). The inclusion of the recent higher years of growth between 2019 and 2022, and the presumed exclusion of the impact of UPC (see paragraphs 2.11–2.14) mean that these two scenarios result in higher growth than the previous LDP2 long-term migration trend scenario.

Household Growth

3.13 The household growth outcomes of the 2022-based WG scenarios are compared to the household growth from the LDP2 scenarios in Table 8. The annual **dwelling growth** figures have been derived through the application of the dwelling vacancy rate to the household growth trajectories. Note that the WG scenarios utilise the 2022-based household growth assumptions and the LDP2 scenario the 2018-based assumptions. The different household and dwelling growth outcomes are therefore a result of (a) the different population growth trajectories and the resulting population age/sex structures and (b) the different household growth assumptions that have been applied.

3.14 As with population growth, **the household and dwelling growth outcomes of the LDP2 scenarios sit within the range implied by the WG projections**. However, at 365 dwellings per year, the LDP2 housing requirement (based on an average of the three LDP2 scenarios) sits towards the lower end of the range of outcomes.

Table 8: LDP2 scenarios and WG 2022-based projections, household outcomes, Pembrokeshire LPA

Scenario Variant	Household Growth 2017–2033		Average Annual Dwelling Growth
	Change	% Change	
WG-22-HighPop	7,698	17.5%	524
WG-22-Principal	**7,357**	**16.7%**	**500**
WG-22-LowPop	6,899	15.7%	469
LDP2 Dwell-led (5yr Av)	6,058	13.5%	413
WG-22-10YR	5,941	13.5%	404
LDP2 Dwell-led (10yr Av)	5,577	12.4%	378
WG-22-15YR	5,546	12.6%	377
LDP2 average	**5,326**	**11.9%**	**365**
LDP2 PG Long Term	4,342	9.7%	295
WG-22-ZeroMig	2,320	5.3%	158

Source: WG. Scenarios are ranked in order of household change.

3.15 **It is important to note that the higher dwelling growth outcomes of the WG scenarios do not necessarily mean that the LDP2 requirement should be adjusted upwards**. As outlined previously, the three highest WG scenarios (*High Population*, *Principal*, and *Low Population*) should be treated with caution due to (a) their reliance on relatively high historical growth trends, (b) the assumed exclusion of UPC, and (c) the relatively higher levels of fertility (with the exception of the *Low Population* variant).

3.16 Although the *WG-22-10yr* and *WG-22-15yr* scenarios result in comparatively lower levels of growth due to the more moderate migration assumptions, all of the WG scenarios are based on MYE evidence up to mid-year 2022 and there are now three more years of evidence now available (and the same caution applies due to the UPC and fertility assumptions).

3.17 **It is therefore important to consider these outcomes within the context of the latest MYE evidence**, which suggests that population growth in Pembrokeshire (and indeed across Wales and the UK) has slowed since 2021 (as outlined in Section 2).

Scenarios vs. Latest Evidence

3.18 Although not a requirement of this briefing note, it is important to consider this evidence within the context of the latest demographic statistics for the authority. The MYE that are now available for 2023, 2024 and 2025 suggest that the population growth rate in Pembrokeshire UA has reduced from the levels seen between 2019 and 2021 (see paragraphs 2.18 to 2.23).

3.19 **Acknowledging the uncertainty around future levels of migration and the continued decline in fertility rates, three alternative migration trend scenarios** for Pembrokeshire LPA have been developed by Edge Analytics using the latest MYE, considering a short-term (5-year), medium-term (10-year), and longer-term (15-year) migration trend, as well as using up-to-date fertility and mortality assumptions. The short-term trend is a **higher-growth scenario** (influenced by the period of relatively high net migration since 2020) and the long-term a **lower-growth scenario** (influenced by the period of population decline seen between 2012 and 2018 – see Figure 3 on page 6).

3.20 Note that as with Edge Analytics' standard approach, UPC has been *included* within the migration history when calibrating future growth assumptions. The impact of this in Pembrokeshire is a slightly lower level of growth than if it was excluded, as UPC is negative between 2011 and 2021.

3.21 The average population growth outcome of the *Trend-5yr* and *Trend-10yr* scenarios is aligned with that of the LDP2 scenarios, at around 9.0% between 2017 and 2033. The longer-term *Trend-15yr* scenario results in growth outcomes lower than the LDP2 average. **Applying the 2022-based household growth assumptions results in household and dwelling growth outcomes that sit either side of the LDP2 scenario average**. The average dwelling growth outcome of the three *Trend* scenarios is **351**, slightly below the LDP2 requirement.

Table 9: LDP2 scenarios vs. alternative trend scenarios, Pembrokeshire LPA

Scenario Variant	Population Growth 2017–2033		Household Growth 2017–2033		Average Annual Dwelling Growth
	Change	% Change	Change	%Change	
Trend-5Yr	11,272	11.3%	6,666	15.2%	453
LDP2 Average	9,289	9.1%	5,326	11.9%	365
Trend-10Yr	6,745	6.8%	4,772	10.9%	325
Trend-15Yr	5,153	5.2%	4,054	9.2%	276

Source: WG. Scenarios are ranked in order of population change.

3.22 **The above analysis suggests that although the LDP2 scenarios are based on out-dated demographic data and assumptions, the level of growth projected and the overall housing requirement identified remain appropriate based on recent trends and the latest WG household growth assumptions.**

4 SUMMARY & CONCLUSIONS

4.1 To assist in answering the Inspector's question on whether the LDP2 housing requirement of 365 dwellings per year should be to account for the 2022-based WG household projections, Edge Analytics has collated and reviewed the WG projection data, making comparison to the previous projections, providing commentary on the assumptions and data inputs used, and considering the projections within the context of the latest demographic evidence.

4.2 The analysis of the WG projections and MYE evidence can be summarised as follows:

- The 2022-based WG population projections for Pembrokeshire UA show substantially **higher growth** than the now superseded 2018-based projections, a result of the changing **demographic profile** and post-Census **rebasing** of the MYE. Migration is projected to be main source of population growth in the projections, with natural change remaining negative due to the ageing population and falling fertility rates. The *Principal* projection results in 13.9% population growth 2022–2047, compared to 4.1% under the 2018-based *Principal* projection.

- In the **years preceding the 2022 WG projection base year**, net internal (i.e. domestic) migration to Pembrokeshire increased, a trend seen across the more rural authorities in Wales. Between 2001 and 2024, net international migration to Pembrokeshire also increased, in line with national trends. Since 2021, **net migration to Pembrokeshire has decreased**, resulting in a reduction in the rate of population growth; between 2024 and 2025, Pembrokeshire UA's population increased by only 179 people (0.1%).

- The **higher migration** levels seen between 2019 and 2021 are carried forwards in the 2022-based WG population projections, resulting in migration outcomes above recent trend. The three highest WG population projections (*Principal*, *High Population*, and *Low Population*), which align with the ONS' international migration estimates in 2022, 2023 and 2024, **project a population larger than that estimated by ONS** for mid-year 2023, 2024 and 2025.

- The higher levels of population growth influence the **household projections**, which are generated by WG through the application of communal population, membership rate, and average household size assumptions to the variant population projections. With higher levels of population growth (and an updated membership rate methodology to include 2021 Census data), the 2022-based *Principal* projection results in 19.8% household growth 2022–2047, compared to 9.3% under the 2018-based *Principal* projection.

- **The analysis has highlighted the need to treat the highest of the WG projections with caution**, as these scenarios are underpinned by relatively **high population growth** assumptions. Furthermore, it is assumed that WG has not accounted for the historical **UPC** adjustment within any of its 2022-based projection variants, misrepresenting the historical growth trend. All but the *Low Population* WG variant also assume higher **fertility rates** than recent trend.

4.3 Using Edge Analytics **VICUS** forecasting models, the WG projections have been **apportioned to the LPA geography**, for direct comparison with the LDP2 scenarios. Due to the differences between the

WG projections and the MYE evidence, and the considerable uncertainty around future levels of migration, three alternative trend scenarios have also been considered. Household growth has been evaluated using the growth assumptions (communal population, membership rate, and average household size assumptions) from the 2022-based projections, which superseded the 2018-based assumptions applied in the LDP2 scenarios.

4.4 The **dwelling growth** outcome of each scenario has been derived through the application of a dwelling vacancy rate to the household figures. These outcomes are summarised below in Figure 10.

4.5 Although the LDP2 dwelling growth figure sits towards the lower end of the range, for the reasons outlined above, the **WG projections should be treated with caution**, particularly the *Principal*, *High Population*, and *Low Population* variants.

4.6 The alternative up-to-date trend scenarios developed by Edge Analytics, based on a short- (i.e. higher), medium, or longer-term (i.e. lower) migration histories produce dwelling requirements ranging from 276 to 453 dwellings per year. **The existing LDP2 figure of 365 dwellings per year falls between these outcomes**.

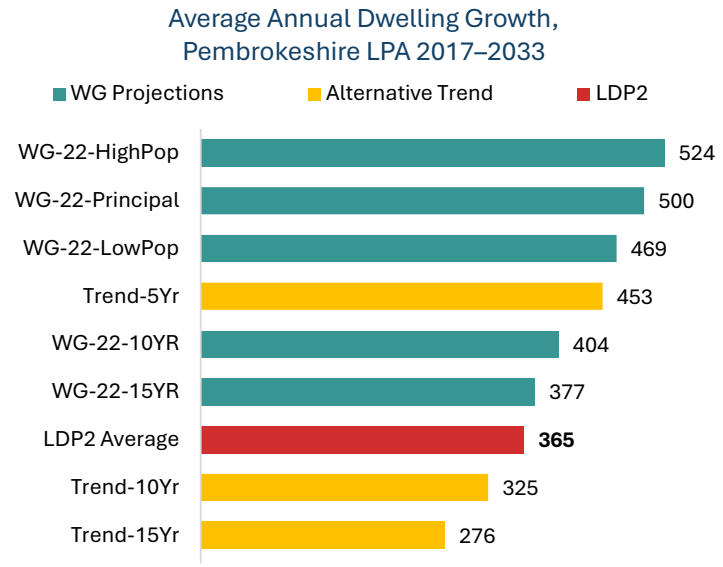


Figure 10: Dwelling growth outcomes 2017–2033, Pembrokeshire LPA

Source: Edge Analytics VICUS forecasting

4.7 **In conclusion, although the LDP2 scenarios are based on out-dated demographic data, the level of growth projected and the overall housing requirement remain appropriate based on recent demographic trends and the latest WG household growth assumptions.**

APPENDIX A
SCENARIO MODELLING ASSUMPTIONS

Forecasting Methodology

A.1 Edge Analytics has used its VICUS forecasting models to generate a range of demographic growth projections for Pembrokeshire LPA.

A.2 The forecasting model utilises a population 'cohort-component' methodology for the projection of population by single year of age and sex using assumptions related to fertility, mortality and migration (internal and international in and out flows), in line with the methodology used by the ONS, Welsh Government and other statistical agencies (Figure 11). Linked to this model is the 'derived forecast' model, which provides a headship/membership rate model for household and dwelling projections and an economic activity rate model for labour force and employment projections.

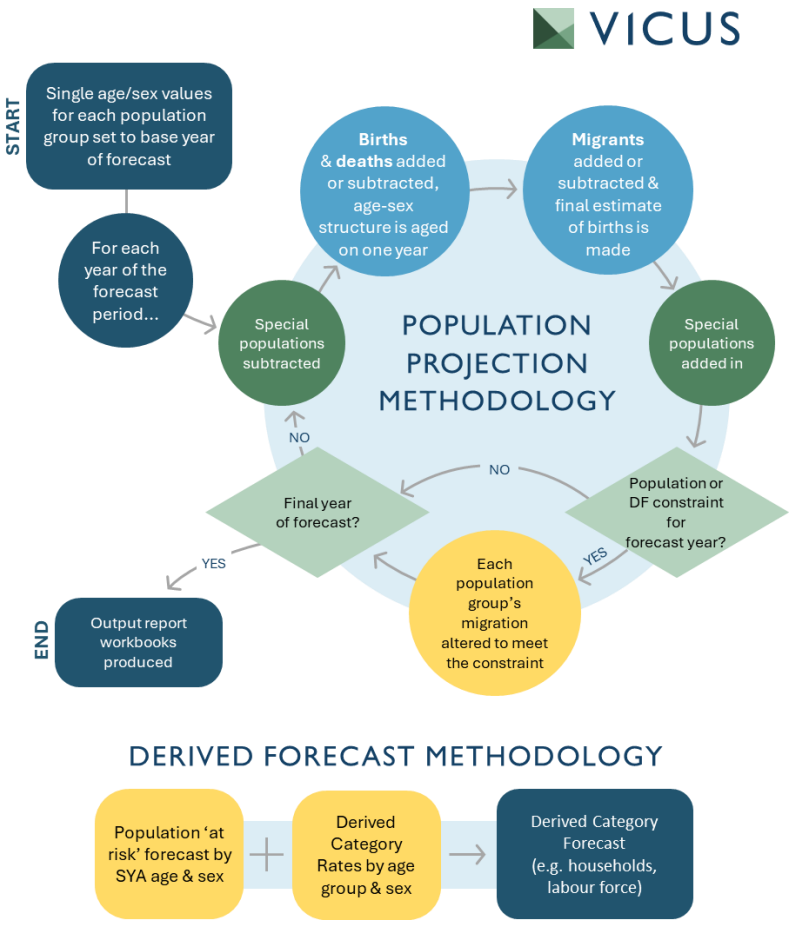


Figure 11: VICUS forecasting methodology

A.3 VICUS has been configured in sub-district mode, utilising a range of district-level and small area statistics to generate scenarios for the unique LPA geography (i.e. excluding the area covered by PCNP).

Scenario Inputs & Assumptions

Population

A.4 The base year population is defined using ONS Output Area (OA) statistics, disaggregated and apportioned to the Pembrokeshire LPA area using an address-based apportionment methodology (OS AddressBase Plus).

A.5 In the *WG-2022-Principal* scenario and associated variants, the 2022 base year and growth trajectories are derived from the official 2022-based projections for Pembrokeshire UA. The projections have been apportioned to the LPA using Edge Analytics address-based apportionment methodology, with alignment to the district-level projections ensured.

A.6 In the Edge Analytics' *Trend* scenarios, the projection base year is defined by the latest MYE. Future population counts are estimated by single year of age and sex, using the defined assumptions on fertility, mortality, and migration.

Births & Fertility

A.7 In the *WG-2022* scenarios, projected birth counts are derived for the LPA from the official UA projections.

A.8 In the *Trend* scenarios, an area-specific and age-specific fertility rate (ASFR) schedule is derived from a 5-year history of historical small area births data. In combination with the 'population at risk' (i.e. all women between the age of 15–49), the ASFR assumptions provide the basis for the calculation of births in each year from 2024 onwards. Over the forecast period, the ASFR is adjusted to reflect the annual rate of change in the long-term fertility assumptions of the 2022-based WG *Principal* projection.

Deaths & Mortality

A.9 In the *WG-2022* scenarios, projected deaths counts are derived for the LPA from the official UA projections.

A.10 In the *Trend* scenarios, an area-specific and age-specific mortality rate (ASMR) schedule is derived from a 5-year history of historical small area deaths data by sex. In combination with the 'population at risk' (i.e. the total population), these ASMR assumptions provide the basis for the calculation of deaths in each year of the forecast period. Over the forecast period, the ASMR is adjusted to reflect the annual rate of change in the long-term mortality assumptions of the 2022-based WG projection.

Migration

A.11 In a sub-district VICUS model, migration is calculated as the 'residual' of the population after taking account of births and deaths. 'Net migration' equates to the cumulative impact of four types of migration used within the forecasting model (in-migration, out-migration, immigration and emigration). Note that in the derivation of future migration assumptions of the *Trend* scenarios, the historical UPC adjustment (at district-level) has been included within migration.

A.12 Using Census statistics, historical estimates of migration have been derived for the LPA by comparing the migration implied by the schedule of rates from the WG 2022-based projection for Pembrokeshire UA with the Census pattern of migration observed for the LPA.

A.13 Once the historical estimates have been derived, a weighted average of estimated migration counts is used directly as input to the scenario forecasts. The weighted average, calculated for each age-sex category and separately for each of the four migration flows, is repeated for each year of the scenario's projection, up to and including the last year.

A.14 In the *WG-2022* scenarios, projected counts of migration are derived for the LPA from the official UA projections.

Households & Dwellings

A.15 The Census defines a household as "one person living alone, or a group of people (not necessarily related) living at the same address who share cooking facilities and share a living room or sitting room or dining room area".

A.16 In the forecasting models, a dwelling is defined as a unit of accommodation which can either be occupied by one household or can be vacant.

A.17 The household and dwelling growth outcomes in the *WG-2022* and *Trend* scenarios have been estimated through the application of communal population statistics, household membership rates, and a household to dwelling conversion factor (vacancy rate).

Communal Population

A.18 Within the forecasting models, household projections exclude the population 'not-in-households' (i.e. the communal/institutional population). This data is drawn from 2021 Census and aligns with the 2022-based WG household projections. Examples of communal establishments include prisons, residential care homes, student hall of residence, and certain armed forces accommodation.

A.19 For ages 0–74, the number of people in each age group 'not-in-households' is fixed throughout the forecast period. For ages 75–85+, the population 'not-in-households' varies across the forecast period depending on the size of the population. The communal population statistics are used to derive the size of the private household population in each scenario.

Household Membership Rates

A.20 Household membership rates are used to calculate the proportion of the household population in each household category by age group and sex, drawn from the WG 2022-based household projection model for Pembrokeshire (Table 10).

A.21 The household population is then converted into households using average household size assumptions, again drawn from the WG 2022-based household model.

Table 10: Welsh Government 2022-based household categories

Household Category	
1 person	4 person (No children)
2 person (No children)	4 person (2+ adults, 1+ children)
2 person (1 adult, 1 child)	4 person (1 adult, 3 children)
3 person (No children)	5+ person (No children)
3 person (2 adults, 1 child)	5+ person (2+ adults, 1+ children)
3 person (1 adult, 2 children)	5+ person (1 adult, 4+ children)

Source: Welsh Government

Household to Dwelling Conversion

A.22 The relationship between households and dwellings has been modelled using a dwelling 'vacancy' rate derived from Census evidence. A figure of 8.1% has been applied for the LPA.

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