

# Dartmoor National Park

## Demographic Forecasts

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**For the attention of:**

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## Acknowledgements

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# Introduction

## Context & Requirements

- 1.1 Dartmoor National Park covers an area of 953 km<sup>2</sup>, including parts of Mid Devon, South Hams, Teignbridge, and West Devon. The latest (2014) mid-year population estimate suggests approximately 34,000 people live within the boundary of the Park, with main settlements at Ashburton, Buckfastleigh, Chagford, and Moretonhampstead.
- 1.2 The Dartmoor National Park Authority is reviewing its Local Plan, including housing demand, land supply and housing targets for the Park over an extended plan period. Evidence for the Local Plan will be compiled from a variety of sources, including demographic estimates and projections, workforce data, household income and house price statistics, housing land supply, housing stock and affordable need estimates.
- 1.3 Whilst ONS regularly publishes population estimates for national parks, population projections are not routinely produced. Dartmoor National Park Authority has requested that a range of demographic evidence be produced to support the Local Plan, including the provision of demographic forecasts of population, household and housing growth for the 2015–2035 plan period.

## Planning Policy Guidelines

- 1.4 The development and presentation of demographic evidence to support local housing plans is subject to an increasing degree of public scrutiny. The National Planning Policy Framework (NPPF)<sup>1</sup> and Planning Practice Guidance (PPG) provide guidance for local planning authorities on the appropriate approach to the objective assessment of housing need.

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<sup>1</sup> <http://planningguidance.planningportal.gov.uk/blog/policy/>

- 1.5 The PPG states that the Department for Communities and Local Government (DCLG) household projections should provide the “starting point estimate of overall housing need” (PPG paragraph 2a-015). Local circumstances, alternative assumptions and the most recent demographic evidence, including Office for National Statistics (ONS) population estimates, should also be considered (PPG paragraph 2a-017).
- 1.6 The use of demographic models, which enable a range of growth scenarios to be evaluated, is now a key component of the objective assessment process. The POPGROUP suite of demographic models, which is widely used by local authorities and planners across the UK, provides a robust and appropriate forecasting methodology.

## Approach

- 1.7 A range of demographic scenarios have been developed for Dartmoor National Park using POPGROUP (v.4) technology. This includes a scenario that aligns with the latest 2014-based sub-national population projection (SNPP) from ONS.
- 1.8 Three alternative trend scenarios are provided, which use the latest demographic statistics to set future migration assumptions. In addition, scenarios that align population and household growth with potential future housing growth trajectories are also included.
- 1.9 Historical demographic statistics for the Park have been derived from district-level, ward-level, and Census Output Area statistics. All scenarios are based on historical evidence for the period 2001–2014 and all consider household growth using assumptions from the Department for Communities and Local Government’s (DCLG) latest 2014-based household projections for South Hams, Teignbridge, West Devon, and Mid Devon, scaled for consistency with the Park geography.
- 1.10 Scenario results have been presented for the Dartmoor National Park area in total, and for those portions of the Park that lie within the Plymouth and Exeter Housing Market Areas (HMAs).

## Report Structure

1.11 This report provides a 'demographic profile' of the Dartmoor National Park, together with detail on the scenario definitions, methodology and forecasting outcomes. The report is structured in the following way:

- **Section 2** of this report presents a demographic profile of the Park.
- **Section 3** provides a definition of the range of scenarios that have been considered, and presents population, household and dwelling growth outcomes for each.
- **Section 4** provides a summary of growth outcomes associated with those portions of the Plymouth and Exeter HMAs that sit within the National Park geography.
- In **Section 5**, a brief summary of the growth outcomes is provided.
- **Appendix A** provides an overview of the POPGROUP methodology.

# 2 Area Profile

## Geography

2.1 Dartmoor National Park, formed in 1951, sits within the boundaries of four local authority districts: Mid Devon, South Hams, Teignbridge, and West Devon (Figure 1). Key transport links to the National Park include the M5 to the north east, the A30 to the north, and the A38 to the south. The portion of the National Park within South Hams and West Devon is part of the Plymouth HMA. The portion within Teignbridge and Mid Devon is part of the Exeter HMA.

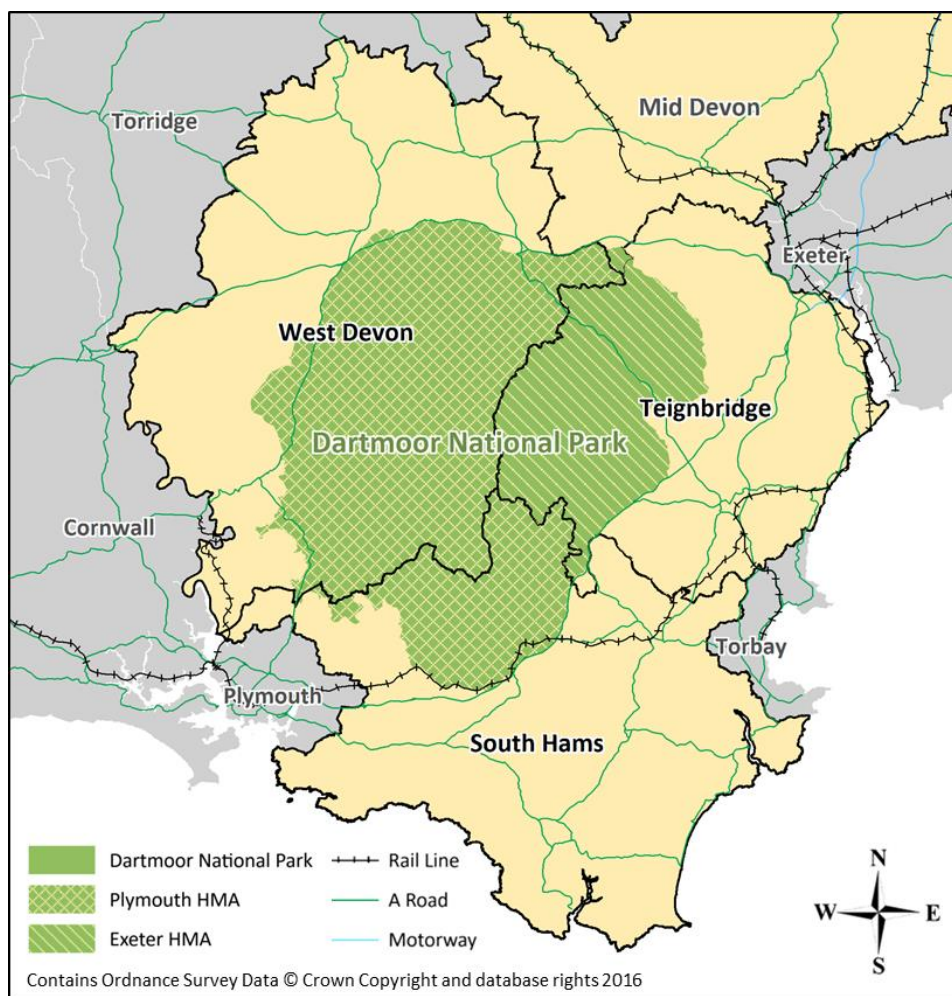


Figure 1: Dartmoor National Park

2.2 Dartmoor National Park accommodates approximately 2.4 million visitors a year; with an estimated visitor spend of £111m.<sup>2</sup>

## Population Change 2001–2014

2.3 Over the 2001–2014 historical period, the population of Dartmoor National Park area has remained relatively stable (Figure 2), from an estimated high of 34,333 in 2007, to its current (2014) population of 33,888.

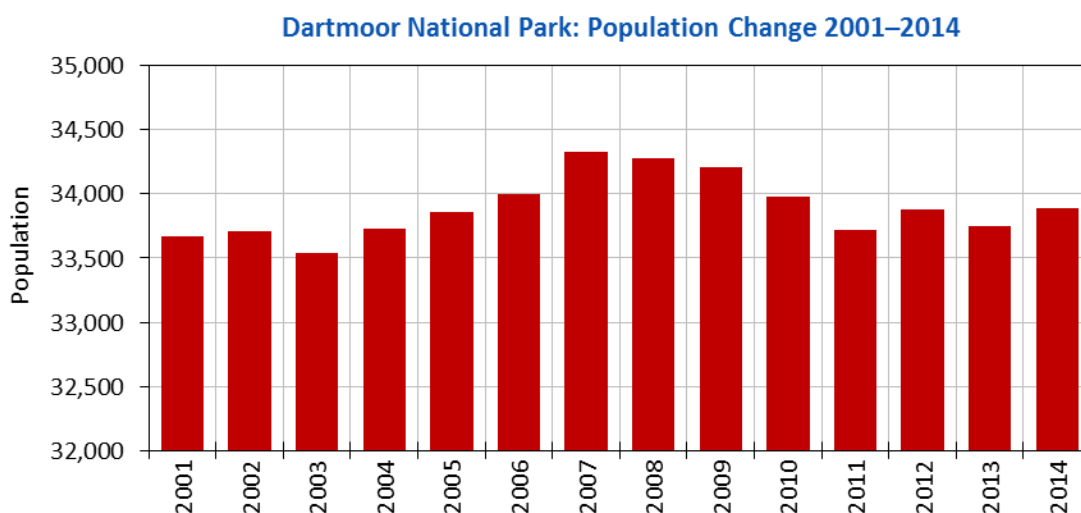


Figure 2: Population change 2001–2014 (source: ONS)

2.4 Approximately 43% of the Park’s population is located within Teignbridge, 41% within West Devon, 16% within South Hams, plus a small proportion within Mid Devon (Figure 3).

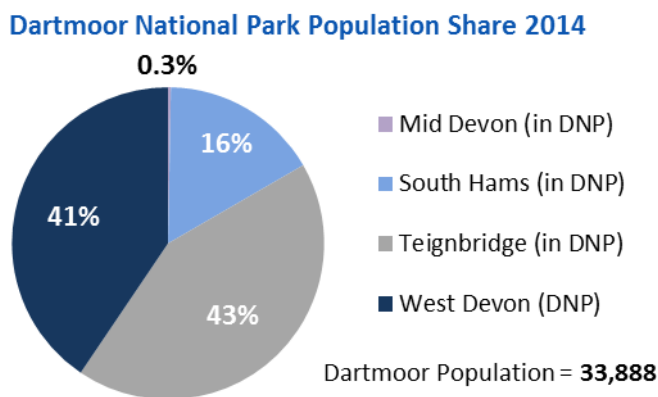


Figure 3: Population growth index 2001–2014 (source: ONS)

<sup>2</sup> <http://www.nationalparks.gov.uk/learningabout/whatisanationalpark/factsandfigures>



2.5 The growth profile of the National Park is reflected in the pattern of growth in its three sub-areas, with the larger Teignbridge geography associated with the most significant fluctuation during 2001–2014 (Figure 4).

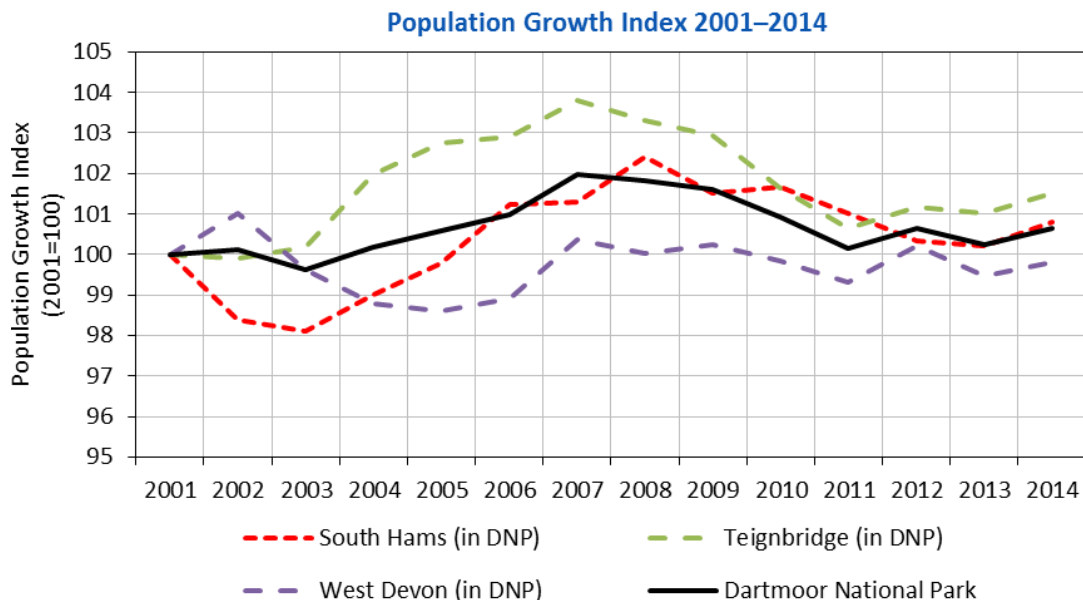


Figure 4: Population growth index 2001–2014 (Source: ONS)

2.6 The growth and decline of the Park’s population is reflected in the ‘components of change’ profile for the 2001/02–2013/14 period (Figure 5). Natural change is the annual balance between births and deaths; net migration is the balance between the inflow and outflow of population moving to and from the area.

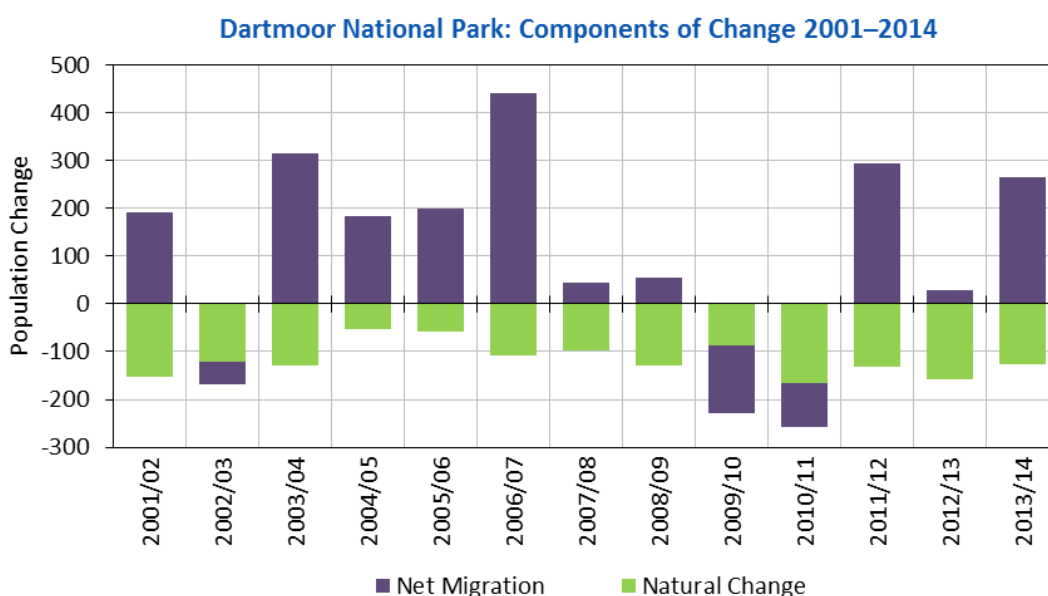


Figure 5: Dartmoor National Park Components of population change 2001/02–2013/14 (Source: ONS)

- 2.7 With an ageing population profile, natural change has contributed a consistent population decline 2001–2014. The main driver of population change historically has been net migration, which contributed to population *growth* throughout most of the 2001/02–2013/14 period, but with a period of relative decline following the financial crisis of 2007/08. During this period, low migration was countered by negative natural change, resulting in a small population decline.

## Population Age Profile

- 2.8 In consideration of the future housing needs for the Dartmoor National Park, the changing age structure over time is key. Over the 2001–2014 period, the profile of the Park’s population has aged, i.e. the proportion of the population in the older age groups increasing relative to the population in the younger age groups (Figure 6). Between 2001 and 2014, the proportion of the population aged 65+ living in the Park increased from 20% to 26%.

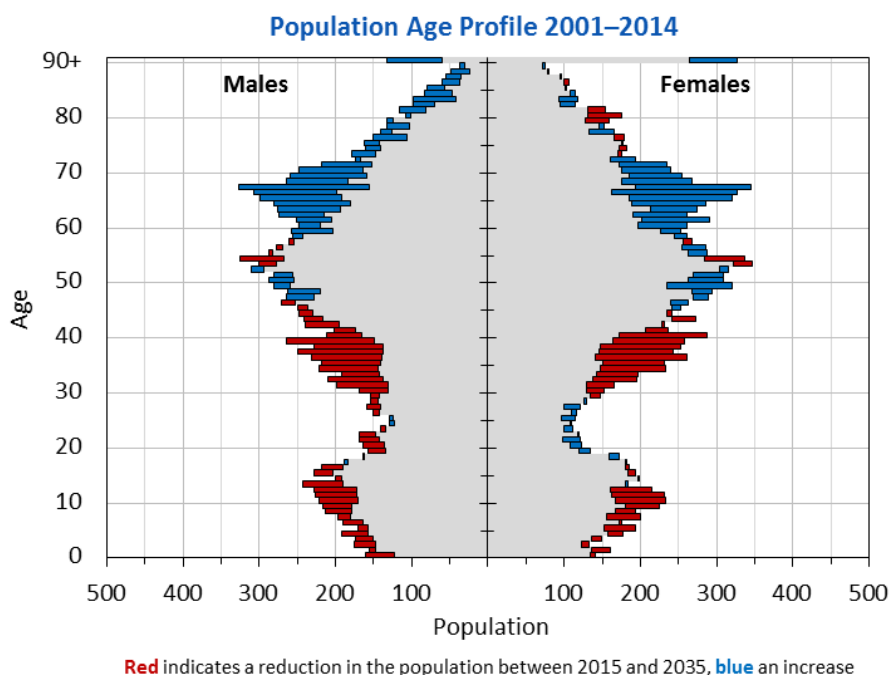


Figure 6: Dartmoor National Park population age profile 2001–2014 (source: ONS)

- 2.9 Using the 2014 base year of the latest ONS projections, Dartmoor National Park’s age profile is compared to the counts of Devon and to England in total (Table 1). Dartmoor has an older age profile than each of these, with a median age of 50, compared to 46 in Devon and 40 for England. The old age dependency ratio (OAD) (43) is also higher in the National Park than the regional and national average (40 and 27 respectively). Dartmoor also has a greater proportion of its population aged 80+, at 7%, compared to the England rate of 5%.

Table 1: Age profile indicators in 2014

Indicator	Dartmoor National Park	Devon	England
Percentage 65+	26%	24%	18%
Percentage 80+	7%	7%	5%
OAD	43	40	27
Median age	50	46	40

OAD = Population aged 65+ / Population aged 15–64. Source: ONS.

## Household & Dwelling Growth 2001–2011

2.10 Statistics from the 2001 and 2011 Censuses illustrate the differences between the growth in the size of the population, and the level of household and dwelling growth that has occurred in the Dartmoor National Park (Table 2).

Table 2: Dwelling vacancy rates (source: 2001 and 2011 Census)

	2001	2011	Change	% Change
Population	33,667	33,718	51	0.2%
Households	13,797	14,279	482	3.5%
Dwellings	14,712	15,581	868	5.9%

2.11 The differences between population, household and dwelling growth in the Park resulted in a reduction in the average household size, and an increase in the dwelling vacancy rate, from 6% in 2001 to 8% in 2011 (Table 3). Compared to Devon and England, the Dartmoor National Park has a relatively high vacancy rate, a reflection of the number of second/holiday homes in the area.

Table 3: Dwelling vacancy rates (source: 2001 and 2011 Censuses)

Area	Dwelling Vacancy Rate	
	2001	2011
Dartmoor National Park	6.2%	8.4%
Devon	5.6%	6.7%
England	3.6%	4.0%

## Commuting Flows

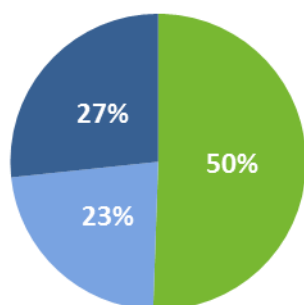
2.12 In terms of travel-to-work commuting flows, the 2011 Census recorded 16,670 workers aged 16–74 *living* in the Dartmoor National Park, and 13,394 people aged 16–74 *working* within the Park. This imbalance between the number of resident workers and the number of workplace-based employed in the National Park results in a net out-commute, at a ratio of 1.24 (Table 4). This compares to a greater net out-commute in Mid Devon (1.27) and a lower net out-commute in Teignbridge and West Devon (1.18 and 1.17). The Travel to Work data for South Hams indicates a net *in*-commute, at a ratio of 0.92.

Table 4: 2011 travel-to-work statistics (source: 2001 and 2011 Census)

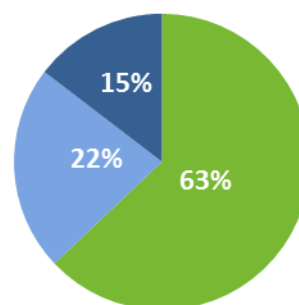
	Workers	Workplace-based Employment	Commuting Ratio
<b>Dartmoor National Park</b>	<b>16,670</b>	<b>13,394</b>	<b>1.24</b>
Mid Devon	38,508	30,336	1.27
South Hams	39,999	43,423	0.92
Teignbridge	58,962	50,060	1.18
West Devon	25,241	21,566	1.17

2.13 Of the 16,670 resident workers in the National Park, 50% work within the Park, with 23% working outside of the Park but still within the districts of South Hams, Teignbridge, West Devon, and Mid Devon (Figure 7). Of the 13,394 people working in the National Park, 63% also live in the Park, with 22% coming from the rest of South Hams, Teignbridge, West Devon, and Mid Devon.

Where do people who live in the Dartmoor National Park work?



Where do people who work in the Dartmoor National Park live?



- Dartmoor National Park
- Rest of South Hams, Teignbridge, West Devon & Mid Devon
- Elsewhere

Figure 7: Dartmoor National Park travel-to-work dynamics (Source: 2011 Census)

# 3 Demographic Scenarios

## Approach

- 3.1 There is no single definitive view on the likely level of growth expected in Dartmoor National Park. Ultimately, a mix of demographic, economic and local policy issues will determine the speed and scale of change.
- 3.2 POPGROUP v.4 model has been configured to draw together population, house, and dwelling forecasts for the part district areas of Mid Devon, South Hams, Teignbridge, and West Devon that are covered by the Dartmoor National Park (see Figure 1). A range of scenarios have been developed for the 2015–2035 plan period. These scenario forecasts incorporate mid-year population estimates for 2001–2014, plus counts of births and deaths for the same period.
- 3.3 Key scenario assumptions have been drawn from the ONS 2014-based sub-national population projections and the DCLG 2014-based household projections for the four Local Authority Districts that are covered by the National Park.
- 3.4 The data listed above have provided the inputs to the calibration of demographic assumptions for the Dartmoor National Park geography, and the basis for the development of the range of growth scenarios.

## Scenario Definition

- 3.5 For a district-level analysis, the ONS 2014-based SNPP from ONS would provide the ‘benchmark’ growth outcome against which other scenarios could be compared. With no equivalent projection for the Dartmoor National Park, a different approach has been required.
- 3.6 The 2014-based SNPP has been disaggregated into a number of geographical areas: the part that sits *within* Dartmoor National Park plus the part that sits *outside* the Park and within each of the four local authority districts. This disaggregation has been implemented in POPGROUP, using

fertility, mortality and migration assumptions for these sub-district areas. The resulting scenario is referred to here as the **SNPP-2014**.

3.7 For comparison with the derived **SNPP-2014** scenario, three alternative 'trend' scenarios have been developed, using the latest historical population statistics<sup>3</sup> for the Dartmoor National Park geography:

- **PG<sup>4</sup> Short-Term**: migration assumptions have been derived from a six-year period prior to 2014 (i.e. 2008/09–2013/14).
- **PG Long-Term**: migration assumptions have been derived from a 13-year period prior to 2014 (i.e. from 2001).
- **PG 10yr**: migration assumptions have been derived from a ten-year period prior to 2014 (i.e. 2004/05–2013/14).

3.8 To complement these trend scenarios, three 'dwelling-led' scenarios are presented. These scenarios evaluate the demographic implications of a defined housing growth trajectory, matching dwelling numbers to household numbers using a vacancy rate, and matching households to population using household representative rates, and communal population statistics. The following scenarios have been developed:

- **Dwelling +50**: this scenario relates to the Park's current dwelling target of +50 dwellings per year for the 2015–2035 plan period.
- **Dwelling +30**: this scenario evaluates the population impact of a lower housing growth than the current target, at +30 dwellings per year.
- **Dwelling +80**: this scenario evaluates the impact of a higher housing growth trajectory than the current target at +80 dwellings per year.

3.9 In all scenarios, household growth has been estimated using household headship rates and communal establishment assumptions from the 2014-based DCLG household projection model, scaled for consistency with 2011 Census household totals for the Dartmoor National Park area. Each of the scenarios has been run to a forecast horizon of 2035.

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<sup>3</sup> Note that for the Dartmoor National Park geography, 2014 is the latest year that population statistics (MYEs) are available for.

<sup>4</sup> Note that 'PG' stands for POPGROUP

## Scenario Results: Dartmoor National Park

- 3.10 The population growth trajectories for all scenarios are compared in Figure 8 for the 2001–2035 time-period. In Table 5, each of the scenarios is summarised in terms of population and household growth for the 2015–2035 plan period, together with an annual average net migration and dwelling growth<sup>5</sup> outcome.
- 3.11 In all but the **SNPP-2014**, **Dwelling-led +80**, and **Dwelling-led +50** scenarios, the population of Dartmoor National Park is forecast to decline over the 2015–2035 period. Under the **SNPP-2014** scenario, the population is forecast to increase by 756 people (+2.2%) by 2035. This equates to a 9.1% increase in the number of households, and an associated dwelling change of +73 per year.
- 3.12 Under the **PG Short-Term** scenario, the population is projected to decline by -6.7% between 2015 and 2035. This scenario results in the lowest dwelling outcome, at a reduction of 1 dwelling per year. Under the **PG Long-Term** and **PG 10yr** scenarios, population decline is reduced, at -2.6% and -2.8% respectively over the 2015–2035 plan period. These similar levels of population change result in similar dwelling outcomes, at 23 and 22 dwellings per year 2015–2035.
- 3.13 The differences between the **PG** scenarios are a reflection of the historical periods from which their respective migration assumptions have been derived. Over the short-term (6-year) historical period, net migration was predominantly negative (see Figure 5 on page 6), whereas between 2001/02 and 2008/09, net migration was positive. This results in the **PG Long-Term** and **PG 10yr** scenarios producing a reduced level of population decline when compared to the **PG Short-Term** scenario. The **PG** scenarios illustrate the impact of Dartmoor’s ageing population, with the levels of net migration under the **PG** scenarios insufficient to replace the population being lost through natural change effects.
- 3.14 In the case of the lower **Dwelling-led +30** scenario, the population of Dartmoor declines by -1.5%. This produces a smaller annual net migration average (+156), that is unable to replace the population lost through natural change. The **Dwelling-led +50** scenario is the current Dartmoor National Park housing target. In this scenario, the population is maintained at its current level, with the estimated in-migration providing a balance to the population ageing effects.

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<sup>5</sup> Dwelling growth outcomes are illustrative and are calculated through the application of a ‘dwelling vacancy rate’ to the household outcomes of each scenario.

- 3.15 In the **Dwelling-led +80** scenario, the population of the Park is forecast to increase by 5.4% 2015–2035. With an average annual growth of 80 dwellings per year, a higher level of average annual net migration results (+261 per year), replacing the population lost through natural change. A dwelling growth of +80 per year is slightly higher than that estimated under the **SNPP-2014** scenario (at +73 per year).

## Population Age Structure

- 3.16 The ageing population of Dartmoor National Park is a key factor when considering the future housing requirements of the area. The population age profiles for the **SNPP-2014**, **PG Short-Term** and **Dwelling-led +80** scenarios in 2015 and 2035 are shown in Figure 9 (on page 15).
- 3.17 The **PG Short-Term** scenario results in the most pronounced ageing, with the proportion of the population aged 65+ increasing from 26% in 2015, to 40% by 2035. This is compared to an increase to 39% under the **SNPP-2014** scenario, and to 36% under the **Dwelling-led +80** scenario. The result of this ageing is an increase in the median age, from 51 in 2015 to 58 in 2035 under the **PG Short-Term** scenario.
- 3.18 Under the **Dwelling-led +80** scenario, with an annual growth in the number of dwellings, the higher level of positive net internal migration is sufficient to reduce the rate of ageing, maintaining a more youthful profile to the Park's population.



### Dartmoor National Park: Scenario Results

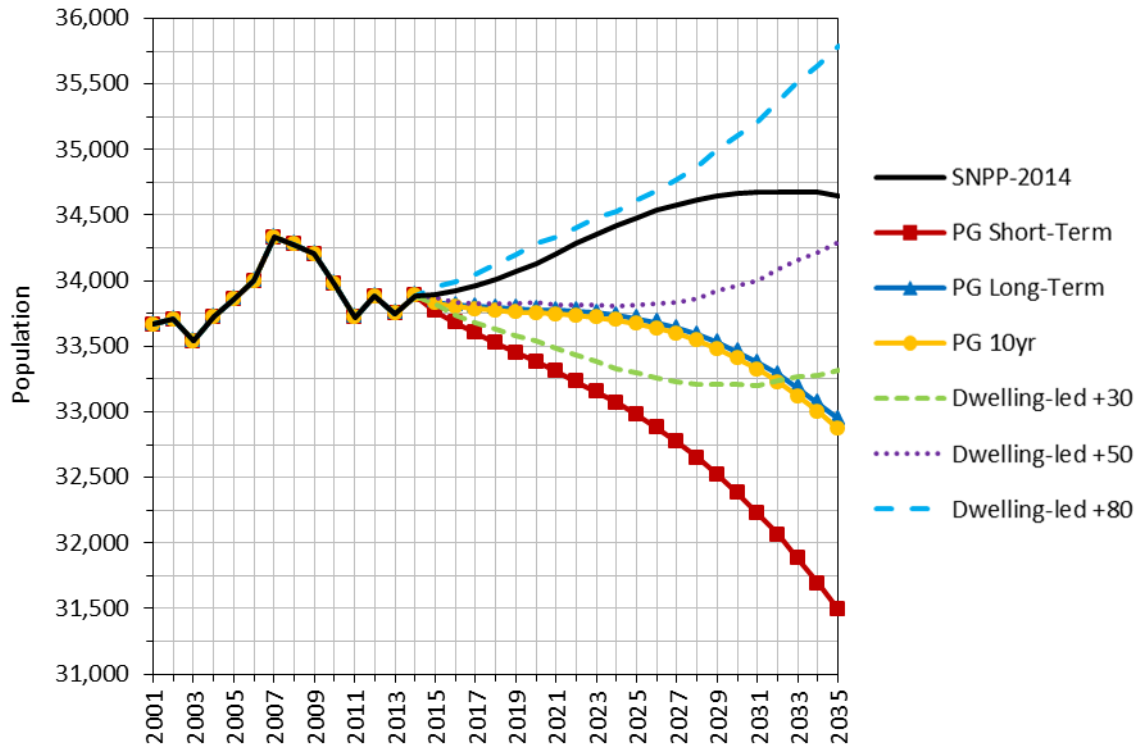


Figure 8: Dartmoor National Park scenario outcomes: 2015–2035

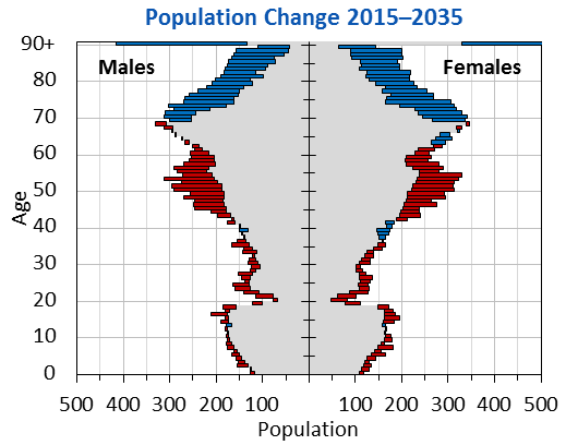
Table 5: Dartmoor National Park scenario outcomes 2015–2035

Scenario	Change 2015–2035				Average per year	
	Population Change	Population Change %	Households Change	Households Change %	Net Migration	Dwellings
Dwelling-led +80	1,838	5.4%	1,468	10.0%	261	80
SNPP-2014	756	2.2%	1,335	9.1%	232	73
Dwelling-led +50	422	1.2%	915	6.2%	197	50
Dwelling-led +30	-507	-1.5%	553	3.8%	156	30
PG Long-Term	-894	-2.6%	417	2.9%	133	23
PG 10yr	-957	-2.8%	398	2.7%	127	22
PG Short-Term	-2,277	-6.7%	-19	-0.1%	68	-1

Note that household growth has been calculated using 2014-based headship rates and the dwelling growth figures using a fixed 8% vacancy rate. Scenarios are ranked in order of population change.

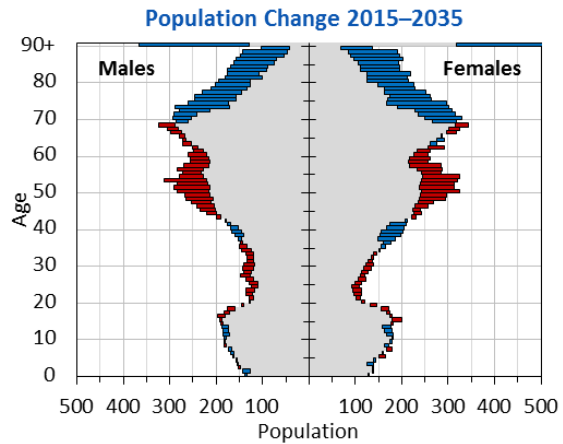
**SNPP-2014**

Indicator	2015	2035	Change
% 65+	27%	39%	12%
% 80+	7%	14%	7%
OAD	44.8	79.8	35.0
Median Age	50.8	56.6	5.9



**Dwelling-led +80**

Indicator	2015	2035	Change
% 65+	26%	36%	9%
% 80+	7%	13%	6%
OAD	44	71	26
Median Age	51	54	4



**PG Short-Term**

Indicator	2015	2035	Change
% 65+	26%	40%	13%
% 80+	7%	14%	7%
OAD	45	85	41
Median Age	51	58	7

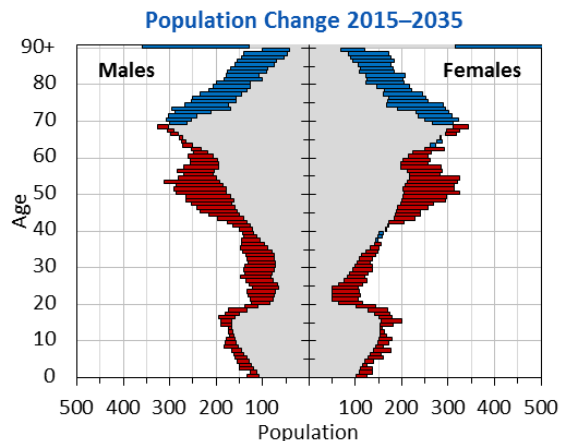


Figure 9: Population age profile of the Dartmoor National Park  
 (Red indicates a reduction in the population between 2015 and 2035, blue an increase)  
 OAD = Old Age Dependency Ratio = (Population aged 65+ / Population aged 15–64)

## Household Growth Profile

3.19 In all but the **PG Short-Term** scenario, household growth in the Dartmoor National Park is positive over the 2015–2035 plan period.

3.20 Using the latest 2014-based household projection model from DCLG, the age profile and *types* of household that are estimated for the plan period under the **SNPP-2014** scenario have been calculated (Figure 10 and Figure 11). Decline in the number of households only occurs in the ‘Two children’ and ‘Three+ children’ categories, with a decrease of -19 and -59 households respectively. Growth is seen in all other categories, particularly the ‘One Person’ and ‘Couple no child’ households.

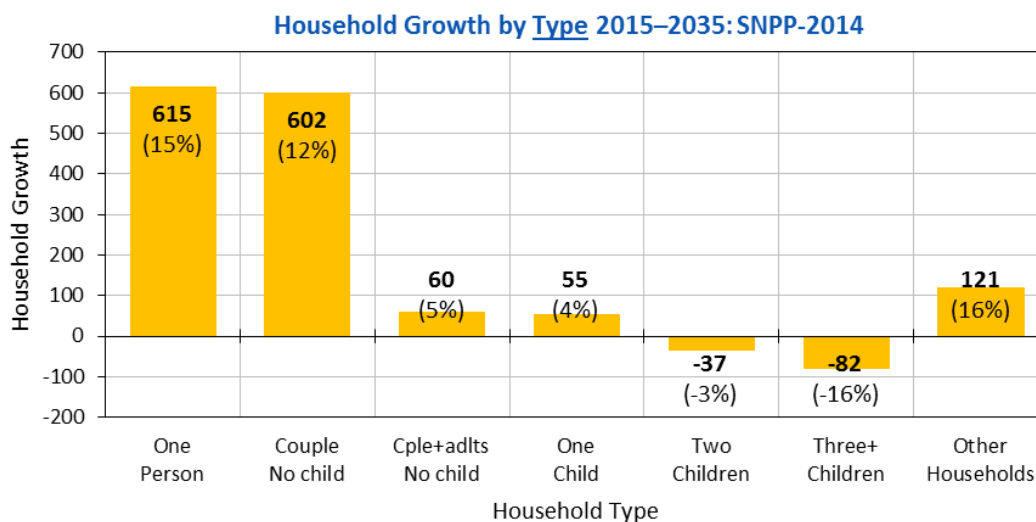


Figure 10: Dartmoor National Park SNPP-2014 household growth by type<sup>6</sup>

3.21 The increase in the number of ‘One person’ and ‘Couple no child’ households is a reflection of the ageing population. This is emphasised in Figure 11, in which household growth over the 2015–2035 plan period is presented by the age of household representative. The oldest 75+ age groups experience the highest levels of household growth, with an expected decline in all age-groups under 60. The decline is most pronounced in the 45–54 age group, at -22% over the 2015–2035 plan period.

<sup>6</sup> The 8 different household categories from the 2012-based DCLG model are:

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

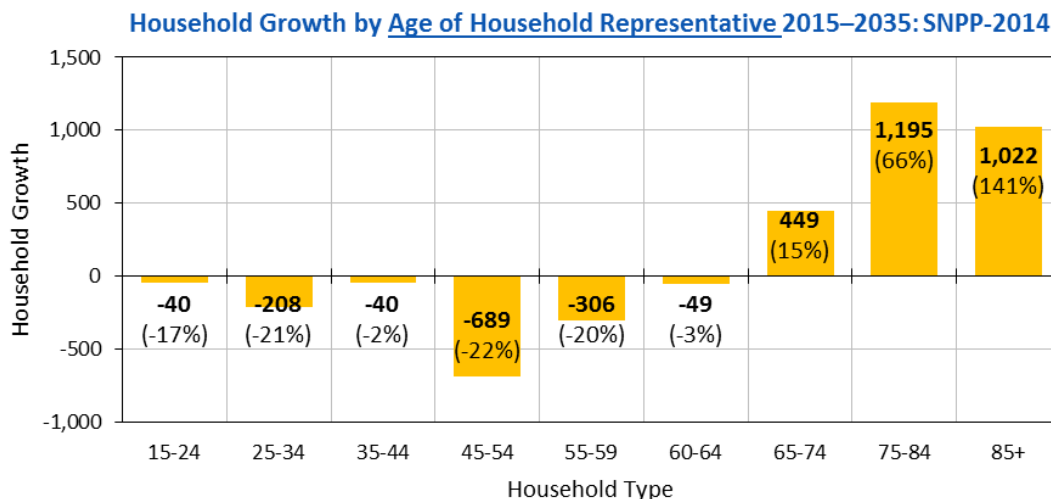


Figure 11: Dartmoor National Park SNPP-2014 household growth by age of household representative

3.22 The age profile and household type changes for the Dartmoor National Park are compared to the England rates in Table 6. The pronounced ageing of the Park’s population is highlighted in the level of growth expected in the older age groups, which is higher than the national average for ages 75+.

Table 6: DCLG 2014 Household growth 2015–2035: Dartmoor National Park and England

Category	% Change 2015–2035	
	Dartmoor National Park	England
<b>Change by household type</b>		
One Person	15%	21%
Couple No child	12%	16%
Cple + adlts No child	5%	20%
One Child	4%	21%
Two Children	-3%	6%
Three+ Children	-16%	4%
Other Households	16%	40%
<b>Change by age group of household representative</b>		
15-24	-17%	11%
25-34	-21%	-11%
35-44	-2%	11%
45-54	-22%	7%
55-59	-20%	11%
60-64	-3%	21%
65-74	15%	28%
75-84	66%	51%
85+	141%	118%

Source: Edge Analytics & DCLG

# 4 HMA Scenario Results

## Summary

- 4.1 The following series of charts present population growth for the 2001–2035 period for the National Park areas that fall within the Plymouth HMA (areas in West Devon and South Hams), and Exeter HMA (areas in Teignbridge and Mid Devon). The accompanying tables present population and household change for the 2015–2035 period, plus average annual net migration, and the implied average annual dwelling growth outcomes. Scenarios are ranked in order of population change. For the **Dwelling-led** scenarios, the forecast National Park totals of 30, 50 and 80 housing units per year have been allocated to the individual HMA geographies based upon the existing population distribution.
- 4.2 The scenarios have been run using household growth assumptions from the 2014-based DCLG household model.
- 4.3 The portion of the National Park within the Plymouth HMA has experienced little population growth since 2001. This is reflected in a lower **SNPP-2014** outcome compared to the Exeter HMA portion, where recent population growth has been positive.
- 4.4 With the Plymouth HMA comprising the larger share of the National Park population total, a larger allocation of housing growth in the dwelling-led scenarios results. This produces higher population growth in each of the **Dwelling-led** scenarios compared to the **SNPP-2014**.
- 4.5 In contrast, the Exeter HMA portion of the National Park achieves its highest growth rate under the **SNPP-2014** scenario. Lower growth outcomes result from the **Dwelling-led** alternatives, a result of the smaller population share in the Exeter HMA, and its recent population growth.

### Dartmoor National Park in Plymouth HMA

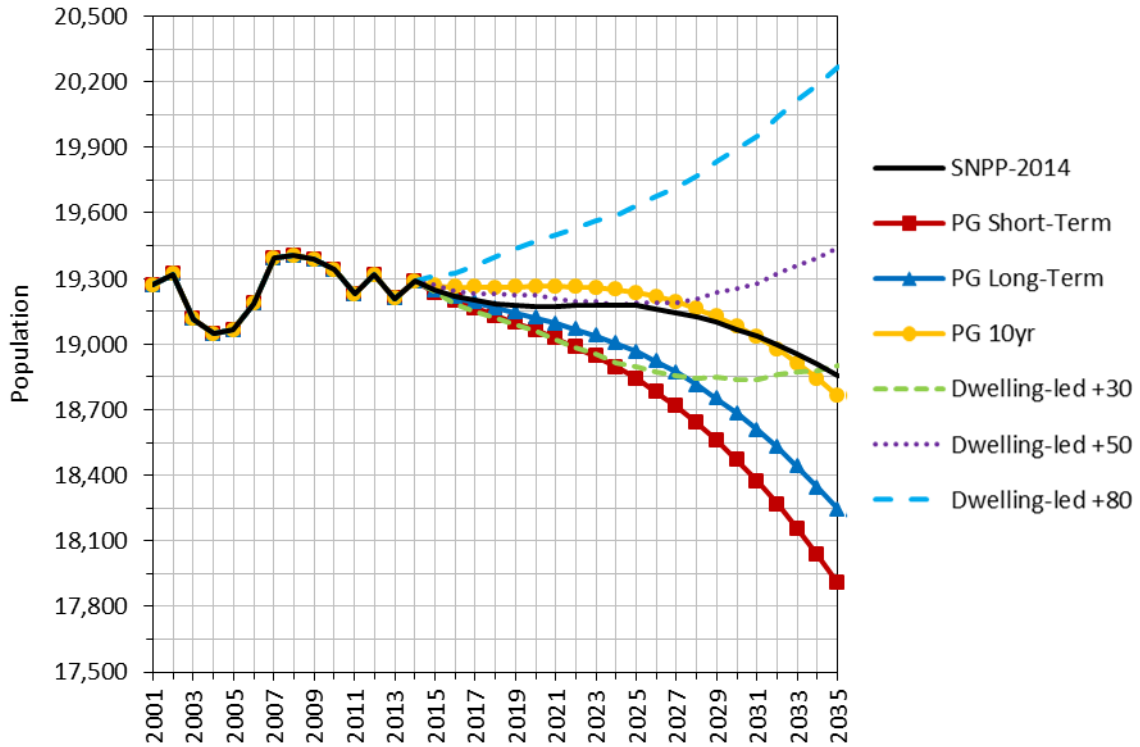


Figure 12: DNP in Plymouth HMA scenarios: population growth 2001–2035

Table 7: DNP in Plymouth HMA scenarios: 2015–2035

Scenario	Change 2015–2035				Average per year	
	Population Change	Population Change %	Households Change	Households Change %	Net Migration	Dwellings
Dwelling-led +80	955	4.9%	819	9.9%	177	45
Dwelling-led +50	168	0.9%	510	6.2%	141	28
Dwelling-led +30	-341	-1.8%	310	3.8%	117	17
SNPP-2014	-392	-2.0%	430	5.2%	124	23
PG 10yr	-502	-2.6%	290	3.5%	108	16
PG Long-Term	-1,000	-5.2%	66	0.8%	85	4
PG Short-Term	-1,329	-6.9%	84	1.0%	77	5

Note that household growth has been calculated using 2014-based headship rates and the dwelling growth figures using an estimated vacancy rate of 9.1% for the West Devon portion of the DNP, and 7.6% for the South Hams portion. Scenarios are ranked in order of population change.

### Dartmoor National Park in Exeter HMA

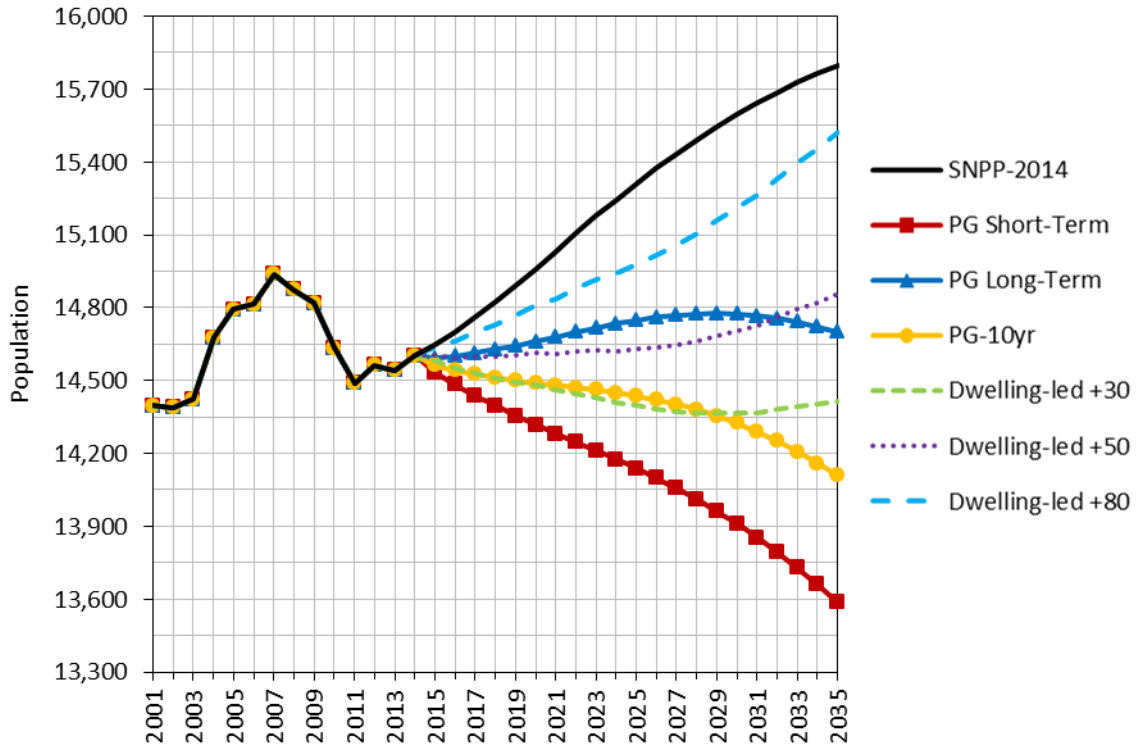


Figure 13: DNP in Exeter HMA scenarios: population growth 2001–2035

Table 8: DNP in Exeter HMA scenarios: 2015–2035

Scenario	Change 2015–2035				Average per year	
	Population Change	Population Change %	Households Change	Households Change %	Net Migration	Dwellings
SNPP-2014	1,149	7.8%	905	14.1%	107	49
Dwelling-led +80	882	6.0%	649	10.1%	84	35
Dwelling-led +50	254	1.7%	406	6.3%	57	22
PG Long-Term	106	0.7%	351	5.5%	49	19
Dwelling-led +30	-166	-1.1%	243	3.8%	38	13
PG-10yr	-455	-3.1%	108	1.7%	20	6
PG Short-Term	-948	-6.5%	-103	-1.6%	-9	-6

Note that household growth has been calculated using 2014-based headship rates and the dwelling growth figures using an estimated 7.9% vacancy rate for Exeter portion of the DNP, and 5.6% for the Mid Devon portion. Scenarios are ranked in order of population change.

# 5 Summary

## Approach

- 5.1 The Dartmoor National Park Authority is in the process of reviewing its Local Plan. Edge Analytics has produced a range of demographic scenarios, to support the preparation of the demographic evidence required by the Local Plan.
- 5.2 Scenarios have been developed in POPGROUP v.4, configured for the Dartmoor National Park geography. Demographic statistics have been derived from district-level, ward-level, and Census Output Area statistics.
- 5.3 The latest 2014-based sub-national population projection (SNPP) from ONS has been considered, plus alternative trend-based scenarios with assumptions derived from the latest statistics on demographic change. A number of 'dwelling-led' scenarios have been presented, which align population and household growth with potential future housing growth trajectories of 30, 50 and 80 units per year.
- 5.4 All scenarios are based on historical evidence for the period 2001–2014 and all consider household growth using assumptions from the DCLG's 2014-based household projections for Mid Devon, South Hams, Teignbridge and West Devon, scaled for consistency with the Dartmoor National Park. All scenarios have been run to a 2035 forecast horizon.



## Growth Outcomes

5.5 Population change ranges from -6.7% under the **PG Short-Term** scenario, to +5.4% under the **Dwelling-led +80** scenario, resulting in an estimated dwelling growth range of -1 to +80 per year (Figure 14). Under the **SNPP-2014** scenario, which aligns with the latest population projection from ONS, the population of the Park is estimated to increase by 2.2% by 2035.

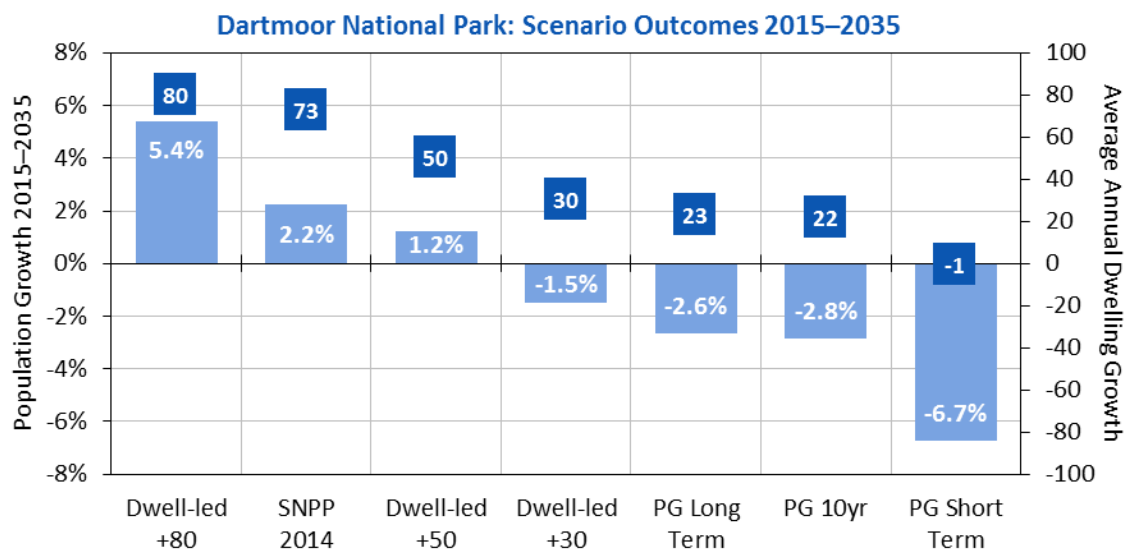


Figure 14: Dartmoor National Park scenario outcomes 2015–2035

5.6 Estimates of how these dwelling growth outcomes relate to the Plymouth HMA and Exeter HMA portions of the National Park have been estimated (Table 9).

Table 9: Dwelling growth estimates 2015–2035 for Exeter HMA and Plymouth HMA areas

Scenario	Average Dwellings per year 2015–2035	
	Exeter HMA	Plymouth HMA
SNPP-2014	49	23
Dwelling-led +80	35	45
Dwelling-led +50	22	28
PG Long-Term	19	4
Dwelling-led +30	13	17
PG-10yr	6	16
PG Short-Term	-6	5

- 5.7 For the benchmark **SNPP-2014** scenario, housing growth of +49 per year is estimated for the Exeter HMA and +23 per year for the Plymouth HMA. This disproportionate allocation is a reflection of the most recent trends in demographic change in the respective areas.
- 5.8 In contrast, with an allocation of future housing based upon the existing dwelling distribution, each of the dwelling-led scenarios results in a larger allocation to the Plymouth HMA, albeit with a lower resulting population change.
- 5.9 The majority of the Dartmoor National Park population is aged 50+, with 26% aged 65+ in 2014. With higher life expectancies, coupled with a continuation of its existing migration trends, the ageing profile of the resident population of the Park will become more exaggerated over the plan period. Household growth is projected to be most pronounced in the oldest age groups, with a reduction in the number of households for all ages under 64. This has important implications for the level and type of service provision in the area, particularly in relation to housing.

# Appendix A

## POPGROUP Methodology

### Forecasting Methodology

- A.1 Evidence is often challenged on the basis of the appropriateness of the methodology that has been employed to develop growth forecasts. The use of a recognised forecasting product which incorporates an industry-standard methodology (a cohort component model) removes this obstacle and enables a focus on assumptions and output, rather than methods.
- A.2 Demographic forecasts have been developed using the POPGROUP suite of products. POPGROUP is a family of demographic models that enables forecasts to be derived for population, households and the labour force, for areas and social groups. The main POPGROUP model (Figure 15) is a cohort component model, which enables the development of population forecasts based on births, deaths and migration inputs and assumptions.
- A.3 The Derived Forecast (DF) model (Figure 16) sits alongside the population model, providing a headship rate model for household projections and an economic activity rate model for labour-force projections.
- A.4 For further information on POPGROUP, please refer to the Edge Analytics website:  
<http://www.edgeanalytics.co.uk/>.

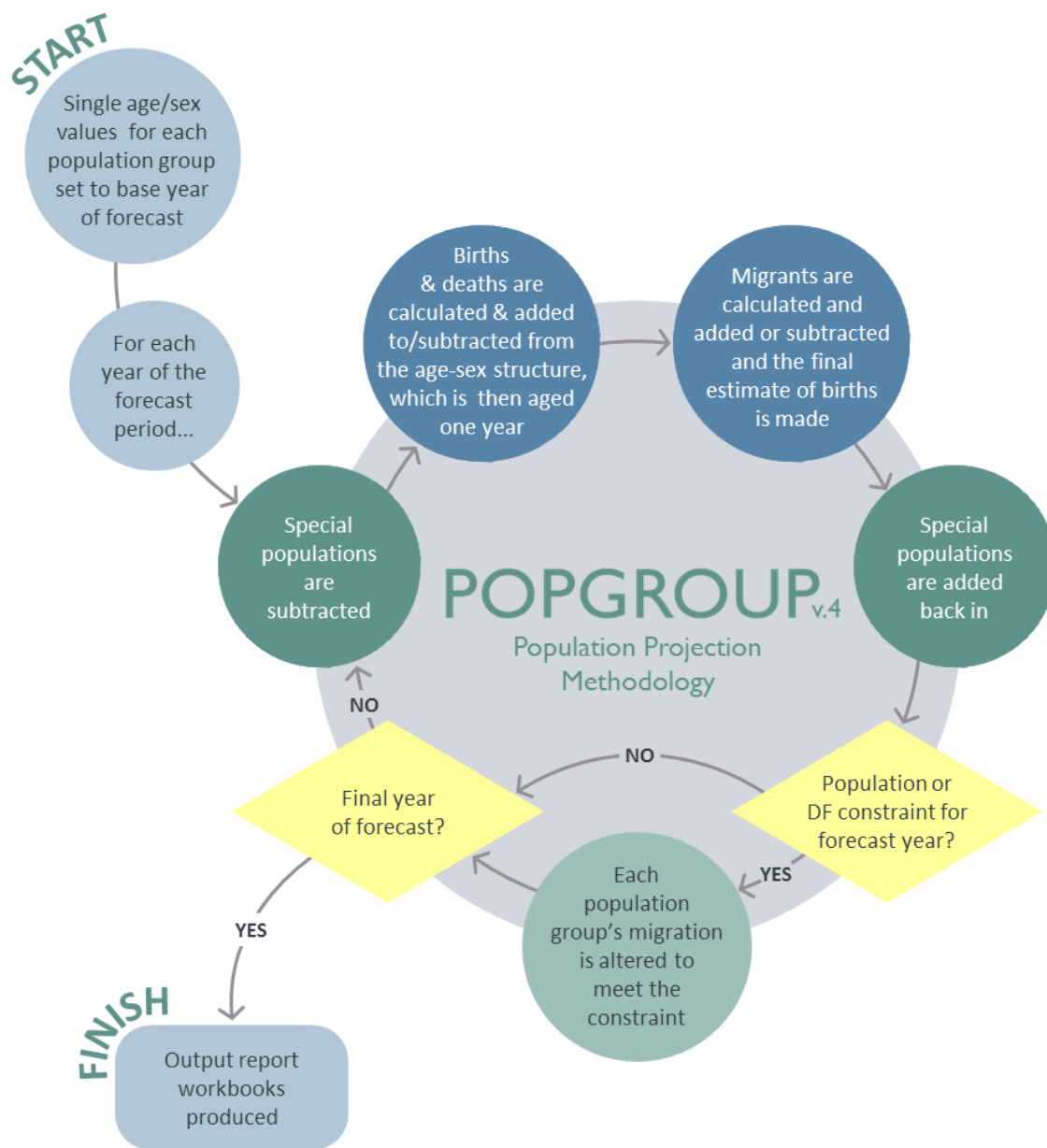
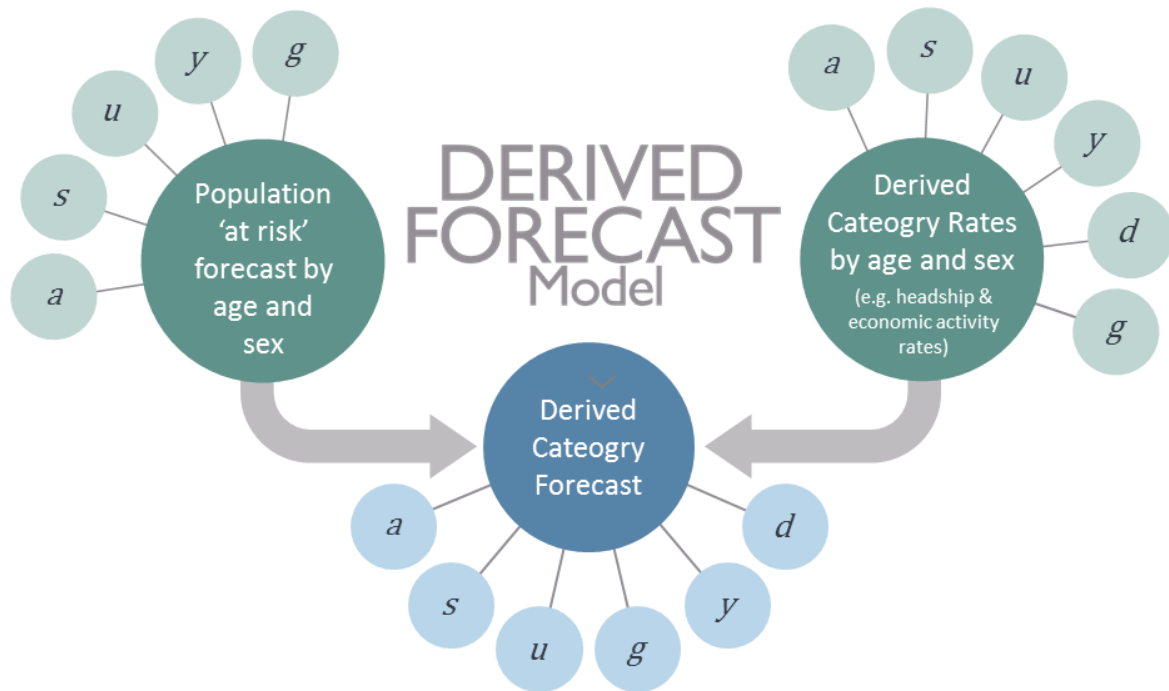


Figure 15: POPGROUP population projection methodology.



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

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

Figure 16: Derived Forecast (DF) methodology