

Technical Paper

Our ref 41306/02/MW/BOC/CRO
Date 15 November 2013
To High Peak Borough Council / Staffordshire Moorlands District Council
From Nathaniel Lichfield & Partners

Subject Housing Requirement Technical Note

1.0 Introduction

1.1 The purpose of this briefing note is to provide an overview of the PopGroup model and the HEaDROOM methodology underpinning the housing projections. It also sets out the preliminary modelling results and emerging findings for High Peak Borough Council [HPBC] and Staffordshire Moorlands District Council [SMDC].

2.0 Overall Approach

2.1 NLP uses specialist demographic modelling and forecasting tool PopGroup to model future trends in demography, household and dwelling estimates. The PopGroup software uses a variety of inputs including ONS population projections and comparable CLG household forecasts. It is widely used by over 100 LA and private sector bodies including Sheffield and Leeds.

2.2 Essentially, PopGroup is a family of software developed to forecast population, household and labour force for areas and social groups. Users develop alternative assumptions as scenarios. PopGroup replicates official projections in regular Data Modules for population and households, with plans for Data Modules for illness and disability, the labour force, ethnic groups and adult care. PopGroup incorporates an age cohort component methodology for its population projection model; a headship rate model for its household projections; and an economic activity rate model for its labour-force projection model.

2.3 Historical data on population, births, deaths and migration flows provides the basis for the development of alternative population forecasts. PopGroup provides national fertility, mortality and migration schedules against which local profiles can be calibrated. For scenario development, users may choose a time horizon up to 50 years and may select a variety of demographic assumptions and constraints to which scenarios are linked, allowing comparisons of a variety of official projections, trend-based scenarios or policy-constrained forecasts.

2.4 More information on PopGroup and the technical methodology of the model itself, can be found via the following weblink: www.ccsr.ac.uk/popgroup.

3.0 **Underlying Assumptions**

3.1 For the purposes of the High Peak and Staffordshire Moorlands SHMA, a baseline PopGroup model has been run for both areas. This produces a trajectory of demographic change over the Local Plan period (between 2011 and 2031), incorporating the latest government projections to provide population, households, economically active residents and job growth over time (of which the latter can be translated into a supply-led employment land requirement for the purposes of the scenario modelling).

3.2 The most up-to-date information available for the PopGroup model comprises the 2011-based (interim) ONS SNPP and the equivalent 2011-based (interim) CLG household projections.

3.3 There are a number of underlying assumptions in the modelling including:

- Fertility rates are applied to the population using projected Fertility Rates and differentials for High Peak and Staffordshire Moorlands from the ONS 2010 based SNPP;
- Mortality rates are applied to the population forecast using projected Mortality rates and differentials for High Peak and Staffordshire Moorlands from the ONS 2010-based SNPP;
- Inputs on headship rates apply the CLG 2011-based household forecast headship rates up to 2021, indexed to the 2008-based rate of change after this time;
- In High Peak and Staffordshire Moorlands (as in any area), it is expected that housing vacancies and second homes will result in the number of dwellings exceeding the number of households. In establishing future projections, it is likewise expected that the dwelling requirement will exceed the household forecast. Hence a rate of 3.2% and 4.6% has been factored into the model for High Peak and Staffordshire Moorlands respectively, based upon the most recent vacancy data available for the districts;
- To calculate the unemployment rate, NLP took the December 2010 NOMIS unemployment figure (6.7% and 4.6% for High Peak and Staffordshire Moorlands respectively) to equate to the 2010 rate; the December 2011 figure (6.4% and 5.6) to equate to the 2011 rate; and the December 2012 figure (7.4% and 5.5%) to equate to 2012. NLP kept the former figure constant for 2013 and 2014 to reflect initial stabilisation at the current high rate, and then gradually reduced the rates on a linear basis to the 7-year averages (05-12) of 5.48% and 4.24% over a five year time frame. These figures were then held constant to the end of the forecasting period on the grounds that this is a better reflection of the long term trend than the current high rates;

- It has been assumed that the commuting rates remain static (1.32 and 1.45 for High Peak and Staffordshire Moorlands respectively) with no inferred increase or decrease in commuting levels for the majority of the scenarios (see below). We have run sensitivities on reducing out-commuting by 5% on a number of the economic led scenarios.

3.4 There will also be an additional driver underpinning growth in household formation due to the strong trend towards smaller average household sizes nationally.

3.5 A more detailed tabulated methodology is provided in Appendix 1.

4.0 **Scenario Modelling**

4.1 Whilst the above baseline assumptions are able to be tweaked, the main input which will be changed between each modelled scenario is the level of migration.

4.2 The scenarios adopted for testing fall into three broad groups: demographic-led, economic-led and supply/policy-led. These are set out as follows:

Demographic-led – *“How much development is required to meet projected levels of population change?”*:

- i **Scenario A: Baseline 2011** – A scenario utilising the latest ONS 2011-based sub-national population projections [SNPP] and the headship rates from the CLG 2011-based household projections. It has been assumed that post 2021, the 2008-based headship rates are applied (the ‘index’ approach);

Sensitivity Tests:

- **Scenario Aa: Static Headship Rates** – A scenario which incorporates the ONS/CLG inputs of Scenario A to provide a projections to 2021; between 2022 and 2030, the 2021 headship rate are held constant;
- **Scenario Ab: Trend Headship Rates** – As above, although post-2021 the CLG 2011-based household projection trends are continued on a linear basis;
- **Scenario Ac: Catch-Up Headship Rates** – As above; change post 2021 is targeted to achieve the CLG 2008-based Household Projections end-rates by 2033;
- ii **Scenario B: Natural Change** – Where in and out-migration is reduced to zero, hence growth is driven purely by natural change, or the interaction between births and deaths;
- iii **Scenario C: Zero Net-Migration** – A theoretical demographic scenario whereby in and out migration is balanced, meaning there is only population ‘churn’ within each district and no growth from net in-migration;

- iv **Scenario D: Short Term Migration Trends** – A scenario based upon migration trends observed for High Peak and Staffordshire Moorlands over the previous 5 years;
 - v **Scenario Da: Short Term Migration Trends + 50% Unattributable Change** – A scenario based upon migration trends observed for High Peak and Staffordshire Moorlands with a 50% allowance for ‘unattributable change’¹ over the previous 5 years;
 - vi **Scenario E: Long Term Migration Trends** – A scenario based upon migration trends observed for High Peak and Staffordshire Moorlands over the previous 10 years;
 - vii **Scenario Ea: Long Term Migration Trends + 50% Unattributable Change** – A scenario based upon migration trends observed for High Peak and Staffordshire Moorlands with a 50% allowance for unattributable change over the previous 10 years;
 - viii **Scenario F: CLG Household Projections** – annualising the CLG Household Projections (2011-2021) whilst making an allowance for vacancy rates (416 dpa for High Peak and 252 dpa for Staffordshire Moorlands);
- 2 Economic-led – *“How much development is required to ensure forecasts of future employment change are supported by the local labour supply?”:*
- i **Scenario G: Oxford Economics Job Growth** – A ‘policy-off’ trend-scenario based upon Oxford Economics local area-based econometric model. This provides potential unconstrained employment growth in High Peak (-73 jobs 2013-2031) and Staffordshire Moorlands (2,538 jobs 2013-2031) over the Plan period;
 - ii **Scenario Ga: Oxford Economics Job Growth + 5% Reduction in Out-commuting** – A ‘policy-off’ trend-scenario based upon Oxford Economics local area-based model. This provides potential unconstrained employment growth in High Peak and Staffordshire Moorlands between 2011 and 2031 whilst factoring in a 5% reduction in out-commuting;
 - iii **Scenario H: Employment Land Review Job Target** – estimating the number of jobs created on a pro rata basis based on the employment land needs as set out in the relevant Employment Land Review (based on making an assumption as to the likely level of job growth associated with a net increase in employment land of 35ha for High Peak and 22.2ha for Staffordshire Moorlands);

¹ Within the ONS’s revised Mid-Year Population Estimates rebased to the 2011 Census, an allowance is made for ‘other unattributable populations’. These comprise differences between the rolled forward MYE and the revised MYE, which ONS are unable to statistically account for (i.e. they are people that are definitively living in a particular area, but ONS cannot specifically account for how they got there). One explanation is that the level of migration estimated in the MYE, which is notoriously difficult to accurately register, was incorrect.

- iv **Scenario Ha: Employment Land Review Job Target** – estimating the number of jobs created on a pro rata basis based on the employment land needs as set out in the ELR for both districts whilst factoring in a reduced commuting rate of 5%;
 - v **Scenario I: Job Stabilisation** – taking forward a net total of zero job growth over the period 2013-31.
- 3 Policy/Supply led – “What are the implications in terms of the number of people, households and jobs of delivering a certain amount of development?”
- i **Scenario J: Average Past Delivery** – using past delivery trends to illustrate what the market has previously delivered and project these forward over the Plan periods (287 dpa for High Peak and 227 dpa for Staffordshire Moorlands net).
 - ii **Scenario K: Regional Strategy Housing Requirement** – using the housing requirements as set in the relevant Regional Strategies as a comparator (300 dpa for both authority areas).

5.0 Dealing with Housing Backlog

- 5.1 The draft beta Planning Practice Guidance has the following to say regarding how past under-delivery should be factored into the establishment of OAN:
- “Formation rates may have been suppressed historically by under-supply and worsening affordability of housing. The assessment will therefore need to reflect the consequences of past under-delivery of housing. As household projections do not reflect unmet housing need, LPAs should take a view based on available evidence of the extent to which household formation rates are or have been constrained by supply.”*
- 5.2 This is clarified further: *“If the historic rate of development shows that actual supply falls below planned supply, future supply should be increased to reflect the likelihood of under-delivery of a plan.”*
- 5.3 In respect of how this is practically achieved, the Planning Advisory Service [PAS] Guidance note on OAN (July 2013) [1] discusses the issue of backlog. It provides two views surrounding unmet need:
- a that household projections, if they are based on the most up to date data, take into account unmet need and as such does not need adding into a future housing target based on these projections;
 - b that both demand and supply side constraints on housing development in recent years has forced people into sub-optimal housing arrangements which have manifested themselves in the household projections, with the PAS guidance stating this view is taken:

“...because there has been a lack of suitable accommodation, households have not formed which means that the trends on which the projections are based do not reflect the real need. This creates a ‘pent-up demand’ for housing, which should be measured or estimated, and added on to household projections.”

- 5.4 One way to overcome the difficulties of dealing with backlog needs is to compare past completions against the relevant housing requirement for that period; assuming that this housing requirement was a reasonable and fully tested basis for that period in order to meet development requirements. This provides an indicator of the extent to which there may have been previous unmet needs.
- 5.5 The backlog of housing need identified between 2006 and 2011 would equate to an additional 4 dpa for High Peak, and an additional 22 dpa for Staffordshire Moorlands between 2011 and 2031. This has been included in the total dwelling requirement per annum of each demographically modelled scenario. It is assumed that this backlog element is necessary to meet needs that have been suppressed within the existing demographic characteristics of the two districts, and therefore would only meet change within the existing population such as allowing concealed households to 'emerge'.
- 5.6 An additional allowance for backlog of need has not been added to the economic scenarios. This is because the economic scenarios are modelled to a constrained job number and housing need is measured against this figure, hence adding on an additional backlog requirement would be unnecessary when the outcome of the scenario is solely linked to labour force jobs. Furthermore, it could be argued that the economic scenarios (particularly the more aspirational projections), are already planning for an upsurge in demand and levels of in-migration, which would eliminate a significant proportion of the outstanding backlog.

6.0 **Draft Results**

6.1 The emerging results are presented in the following Tables and Figures:

Table 1 High Peak Demographic Modelling Scenarios 2011 - 2031

High Peak	Demographic led									
	A. Baseline	Aa. Baseline - STATIC HEADSHIP	Ab. Baseline - TREND HEADSHIP	Ac. Baseline - CATCH UP HEADSHIP	B. Natural Change	C. Zero Net Migration	D. Short Term Migration Trends	Da. Short Term Migration Trends + Sens	E. Long Term Migration Trends	Ea. Long Term Migration Trends + Sensi
Population Change	14,773	14,773	14,773	14,773	3,524	2,585	7,424	4,981	7,969	5,723
of which Natural Change	3,800	3,800	3,800	3,800	3,173	2,373	3,048	2,743	3,114	2,832
of which Net Migration	10,173	10,173	10,173	10,173	326	326	4,170	2,172	4,620	2,784
Household Change	8,731	8,675	8,201	8,975	3,526	3,716	5,477	4,461	5,649	4,716
Dwelling Change	9,020	8,962	8,472	9,271	3,642	3,839	5,658	4,609	5,836	4,872
Dwellings p.a.	451	448	424	464	182	192	283	230	292	244
Economic Activity	1,595	-1,595	1,595	1,595	-5,624	-5,454	-2,692	-4,250	-2,442	-3,875
Jobs	1,492	1,492	1,492	1,492	-3,660	-3,538	-1,567	-2,679	-1,389	-2,411
Jobs p.a.	75	75	75	75	-183	-177	-78	-134	-69	-121

Table 2 High Peak Economic Modelling Scenarios 2011 - 2031

High Peak	Employment led					Policy/Supply Led	
	G. Oxford Economics Job Growth	Ga. Oxford Economics Job Growth + 5% Reduction in Comm	H. ELR Land Requirement	Ha. ELR Land Requirement + 5% reduction in Comm	I. Job Stabilisation	F. CLG Projections and Vacancy	J. Average Past Delivery
Population Change	9,020	4,840	16,695	12,159	9,640	-	-
of which Natural Change	3,105	2,529	4,153	3,526	3,111	-	-
of which Net Migration	5,565	2,204	11,819	8,192	6,190	-	-
Household Change	6,137	4,567	9,013	7,322	6,374	-	-
Dwelling Change	6,339	4,718	9,311	7,564	6,585	-	-
Dwellings p.a.	317	236	466	378	329	416	287
Economic Activity	-1,614	-4,077	2,959	276	-1,187	-	-
Jobs	-798	-808	2,465	2,462	-494	-	-
Jobs p.a.	-40	-40	123	123	-25	-	-

Table 3 Staffordshire Moorlands Demographic Modelling Scenarios

Staffordshire Moorlands	Demographic led									
	A. Baseline	Aa. Baseline - STATIC HEADSHIP	Ab. Baseline - TREND HEADSHIP	Ac. Baseline - CATCH UP HEADSHIP	B. Natural Change	C. Zero Net Migration	D. Short Term Migration Trends	Da. Short Term Migration Trends + Sens	E. Long Term Migration Trends	Ea. Long Term Migration Trends + Sens
Population Change	6,436	6,436	6,436	6,436	-2,502	-5,393	-438	1,000	870	2,172
of which Natural Change	-3,400	-3,400	-3,400	-3,400	-3,105	-5,996	-5,275	-5,034	-5,221	-5,002
of which Net Migration	9,836	9,836	9,836	9,836	603	603	4,837	6,034	6,091	7,174
Household Change	4,534	4,380	3,634	4,496	312	315	2,053	2,603	2,567	3,064
Dwelling Change	4,752	4,592	3,810	4,713	327	330	2,152	2,729	2,690	3,212
Dwellings p.a.	238	230	190	236	16	17	108	136	135	161
Economic Activity	-3,745	-3,745	-3,745	-3,745	-7,249	-9,339	-6,663	-5,731	-6,029	-5,183
Jobs	-2,011	-2,011	-2,011	-2,011	-4,313	-5,686	-3,928	-3,316	-3,512	-2,956
Jobs p.a.	-101	-101	-101	-101	-216	-284	-196	-166	-176	-148

Table 4 Staffordshire Moorlands Economic Modelling Scenarios

Staffordshire Moorlands	Employment led					Policy/Supply Led	
	G. Oxford Economics Job Growth	Ga. Oxford Economics Job Growth + 5% Reduction in Comm	H. ELR Land Requirement	Ha. ELR Land Requirement + 5% reduction in Comm	I. Job Stabilisation	F. CLG Projections adn Vacancy Rate	J. Average Past Delivery
Population Change	16,829	12,029	15,073	10,354	10,161	-	-
of which Natural Change	-3,278	-3,811	-3,556	-4,073	-4,126	-	-
of which Net Migration	20,106	15,840	18,629	14,427	14,287	-	-
Household Change	8,413	6,656	7,775	6,043	5,969	-	-
Dwelling Change	8,819	6,977	8,150	6,335	6,257	-	-
Dwellings p.a.	441	349	407	317	313	252	227
Economic Activity	2,450	-66	1,589	-887	-982	-	-
Jobs	2,057	2,059	1,492	1,492	-197	-	-
Jobs p.a.	103	103	75	75	-10	-	-

Figure 1 High Peak Modelling Scenarios

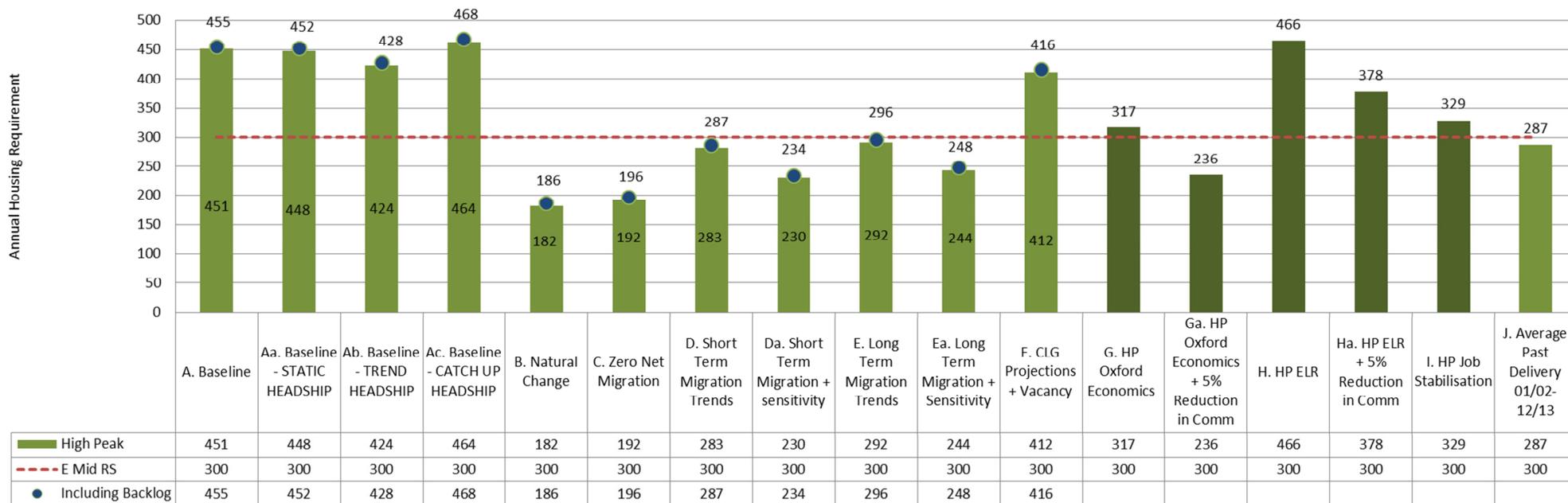
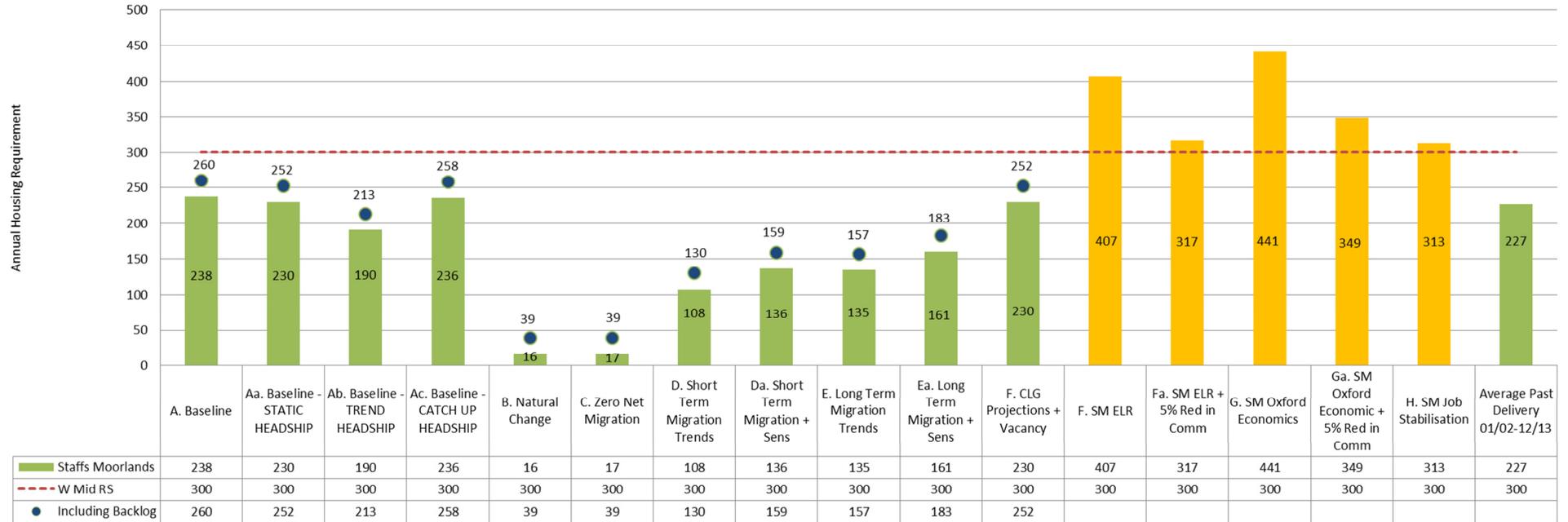


Figure 2 Staffordshire Moorlands Modelling Requirement



DEMOGRAPHIC	PopGroup Baseline
Population	
Baseline Population	A base population for the two districts is derived from 2011 Mid-Year Population Estimates by single year of age and gender which are based on the 2011 Census population counts. Equivalent 2012 Mid-Year Population Estimates by single year of age and gender are also factored into the model.
Births	Fertility rates are applied to the population forecast using projected Fertility Rates and differentials for High Peak and Staffordshire Moorlands from the ONS 2010-based SNPP.
Deaths	Mortality rates are applied to the population forecast using projected Mortality rates and differentials for High Peak and Staffordshire Moorlands from the ONS 2010-based SNPP
Internal Migration	Gross domestic in and out migration flows are adopted based on forecast migration in High Peak and Staffordshire Moorlands from the ONS 2010-based SNPP for 2010, and using the 2011-based Interim SNPP for the actual internal migration flows 2011-2021. This is the sum of internal migration (elsewhere in England) and cross-border migration (elsewhere in the UK) (SNPP Table 5). Internal migration includes moves to all other Local Authority areas, including to neighbouring areas (i.e. a move of two streets might be classed as internal migration if it involves a move to another LA area). Beyond 2021, a trend rate is applied.
International Migration	Gross international in and out migration flows are adopted based on forecast migration in High Peak and Staffordshire Moorlands from the ONS 2010-based SNPP for 2010, and using the 2011-based Interim SNPP for the actual internal migration flows 2011-2021. Beyond 2021, a trend rate is applied.
Propensity to Migrate (Age Specific Migration Rates)	Age Specific Migration Rates (ASMigR) for both in and out domestic migration are based upon the age profile of migrants to and from High Peak and Staffordshire Moorlands in the 2010-based SNPP. These identify a migration rate for each age cohort within each district (for both in and out flows separately) which is applied to each individual age providing an Age Specific Migration Rate. This then drives the demographic profile of those people moving into and out of the two districts (but not the total numbers of migrants).
Housing	
Headship Rates	Headship rates that are specific to High Peak and Staffordshire Moorlands are forecast over the period to 2021 were taken from the government data which was used to underpin the 2011-based CLG household forecasts and applied to the demographic forecasts for each year as output by the PopGroup model. These headship rates were split by age cohort and by household typology. These are the most up-to-date headship rates available at the time of writing. Beyond 2021 this is assumed to resume the long term trends identified within the 2008-based household projections; i.e. indexed trends from the 2008-based projections are applied from 2021 to the end point of the Plan period post 2021.
Population not in households	The number of population not in households (e.g. those in institutional care) is similarly taken from the assumptions used to underpin the 2011-based CLG household forecasts. No change is assumed to the rate of this from the 2008 CLG identified rate.
Vacancy / 2nd Home Rate	A vacancy and second homes rate is applied to the number of households, representing the natural vacancies/not permanently occupied homes which occur within the housing market. This means that more dwellings than households are required to meet needs. The vacancy/second home rate in High Peak Borough totals 3.2%, estimated using data from the Council Tax Base for Formula Grant Purposes (October 2012), held constant over the forecast period. The equivalent rate for Staffordshire Moorlands is 4.6%.

DEMOGRAPHIC	PopGroup Baseline
Economic	
Economic Activity Rate	<p>Age and gender specific economic activity rates are used. The basis for this is ONS 2006-based National Labour Force Projections. The economic activity annual growth rates for each age cohort from these national projections are applied to the Census 2001 economic activity profile for each district across the forecast period. At 2011 these have been rebased from their 2011 estimate using a uniform adjustment to all age cohorts to meet current total economic activity in the districts from the Annual Population Survey (APS). These are assumed to remain the same as the projection with the exception of an adjustment to take account of changing pension ages beyond that already taken into account in the ONS 2006-based projections (i.e. to account for pension age increases for both men and women above age 65).</p> <p>In this regard, 1% has been added to the female 60-64 age cohort activity rates in 2011, 2% in 2012, 3% in 2013 and so forth up to 8% in 2018. This 2018 rate has then been held constant across the remainder of the forecasting period. Furthermore, 1% has been added to the Male 65-69 and Female 65-69 age cohorts' economic activity rates in 2019 and 2% in 2020. These 2020 rates were then held constant across the forecasting period.</p>
Commuting Rate	<p>A standard net commuting rate is inferred through the modelling using a Labour Force Ratio which is worked out using the formula: (A) Number of employed workers living in area ÷ (B) Number of workers who work in the area (number of jobs).</p> <p>For High Peak, data from the 2012 APS and 2012 BRES identifies an LF ratio of 1.32 (42,300 employed people ÷ 31,931 jobs in High Peak).</p> <p>For Staffordshire Moorlands, data from the 2012 APS and 2012 BRES identifies an LF ratio of 1.458 (41,800 employed people ÷ 28,668 jobs in Staffordshire Moorlands).</p> <p>This has not been flexed over the forecasting period with no assumed increase or reduction in net commuting rates.</p>
Unemployment	<p>To calculate the unemployment rate, NLP took the December 2010 NOMIS unemployment figure (6.7% for High Peak and 4.6% for Staffordshire Moorlands respectively) to equate to the 2010 rate; the December 2011 figure (6.4% and 4.6) to equate to the 2011 rate; and the December 2012 figure (7.4% and 5.5%) to equate to 2012. NLP kept the former figure constant for 2013 and 2014 to reflect initial stabilisation at the current high rate, and then gradually reduced the rate on a linear basis to the 7-year average (05-12) of 5.48% and 4.24% over a five year time frame. This figure was then held constant to the end of the forecasting period on the grounds that this is a better reflection of the long term trend than the current high rate.</p> <p>This figure was then held constant to the end of the forecasting period because as the economy grows out of recession it is considered that unemployment is likely to fall back to a similar rate as seen pre-recession.</p>