HIGHLAND HOUSING MARKET PARTNERSHIP

TECHNICAL NOTE ON THE POPULATON AND HOUSEHOLD PROJECTIONS USED IN OUR 2014 HOUSING NEED AND DEMAND ASSESSMENT

Introduction

The Highland Council's 2014 Housing Need and Demand Assessment (HNDA) takes into account likely future change in the population and households in the eight Housing Market Areas (HMAs) in Highland. This Note describes the in-house 2012 based projections used in the HNDA and how they build on the projections published by National Records of Scotland (NRS). It is not a detailed note describing the theory behind the forecasts and the techniques, but highlights the relationship with the NRS projections, the key features of the local data used, and occasional differences in approach.

The NRS 2012 Based Population Projections

The NRS population projections use a *single year of age cohort survival model* and are documented at:

http://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-projections/sub-national-population-projections/2012-based

The description *projection* is crucial and the NRS work assumes that recent trends will continue:

- Fertility and Mortality rates are based on vital events recorded in Highland during the five years prior to the base date of the projections.
- Future long term fertility and mortality trends are based on long term analysis of historic vital events in Scotland and a series of annual factors calculated. These factors are then applied to the current vital events rates for Highland to produce projected future rates.
- The profile of current migrants to and from Highland is based on the average by single year of age and gender during the five years prior to the base date of the projections. This profile provides the basis for calculating migration in each year of the projection period and the general pattern is assumed to be constant through time.
- The baseline migration profile is adjusted to achieve the required net total in future years by making equal in and out changes to the numbers moving in and out in each year. The first five years of the projection period are a linear extrapolation between the current and the long term rate.

Within Highland the annual number of births and deaths is roughly in balance: using 2012 vital events rates there is a small excess of deaths over births but this is expected to increase to several hundred per year during the projection period. Highland is dependent on inward migration for population growth: our exchange with the rest of Scotland tends to be net neutral therefore we are dependent on migration from the rest of the UK and overseas for population growth. For the 2012 projections NRS has inherited assumptions made at the UK level on movements between countries within the UK and on overseas migration which have a significant impact on Highland. The result of this is that the 2012 projections present some particular challenges: this is not discussed further in this technical note but more information is available at:

Insert link to scenario note

The NRS 2012 Based Household Projections

The NRS household projections are documented at:

http://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/households/household-projections/household-projections-for-scotland-2012-based

The household projections are based on population projections produced by NRS. The number of people living in private households is estimated by taking the population projections for each year and subtracting the number of people living in communal establishments, such as student halls of residence, care homes or prisons. To estimate the number of households of each type, information on household formation is projected forward from the 1991, 2001 and 2011 Censuses, for each household type, age group and Council area. This information is then applied to the private household population to produce the basic household projections.

Highland Council Population Projections for Areas within Highland

Our in house projection use the same basic approach as NRS with projections for eight areas in Highland – the former District Council areas – produced using the POPGROUP package. These historic areas are used because they are reasonably well defined natural communities, and agreements & computer programmes are in place to allow the migration data to be extracted by NRS. Projected populations for Ross & Cromarty are subsequently split into the three constituent HMAs using an indirect method.

- Fertility and Mortality rates are supplied for each area by NHS Highland as factors equivalent to those supplied for Highland overall by NRS. These are based on the same information as used by NRS with only minor differences where the address and postcode is specific to Highland but not accurate enough to locate it within Highland.
- National factors for future fertility and mortality are also assumed to apply to the areas within Highland.
- NRS supplies us with migration to and from each area in Highland, by gender and five year age band, from the same dataset that they use for Highland overall. The five year bands are broken down to single year of age using the all Highland distribution and give a profile that provides the basis for calculating migration in each year of the projection period.
- The period mid 2007 to mid 2012 for which migration was supplied saw growth that was particularly biased towards Inverness, therefore small adjustments were applied to account for likely growth in the East Ross HMA (there was significant growth at Nigg and Invergordon in 2012 and 2013) and in Nairn (where the housing supply had been constrained by a poorly performing developer at the only large site).
- The baseline migration profile is adjusted to achieve the required net total in future years by making equal in and out changes to the numbers moving in and out in each year.
- A departure from the NRS technique is that this basic profile is converted to in and out migration rates by single year of age and gender. Rather than use fixed migration numbers by age and year through the projection period, we use a feature of the POPGROUP package to keep the in and out migration totals per year fixed, and allow POPGROUP to generate the detailed migration flows in each year based on the baseline migration rates and the population by gender and single year of age. This approach is used to overcome the issues associated with the ageing population in some areas of Highland, notably Skye & Lochalsh and Sutherland, where allowing a fixed number of young people to migrate out each year (mainly to further and higher education) leaves an unrealistically low remaining population and distorts the age profile.

Populations for the three HMAs in Ross & Cromarty are calculated from the area figure by disaggregating the base year population into the population by single year of age (persons) in each data zone in the area, and the proportion of the area total in each data zone calculated. These proportions are assumed to be constant throughout the projection period allowing projected figures for each data zone to be calculated, and these are then re-aggregated to HMAs rather than the area overall. The number of persons for each HMA is disaggregated to male and female using the proportion split for that year and age, for the area overall.

Highland Council Household Projections for Areas within Highland

The numbers of households in each HMA in Highland are calculated from the HMA projected populations and the single set of future headship rates for Highland overall, using the Excel based household projection package produced originally by Norfolk County Council and still in widespread use elsewhere. Communal establishment residents for each HMA are calculated using 2011 Census figures. There are differences in family composition and occupancy rates between the HMAs but the Highland data set is used throughout as the calculation of local figures is technically complex and beyond our resources. However, the use of change in the number of households in the HNDA, rather than the absolute number in each year, eliminates some of the potential error[1].

A summary of the results for the scenario used in our HNDA is given below summarising the number of households and household types for 2012 and 2037 for the eight projection areas in Highland. It shows that the rate of house building assumed in the HNDA would be driven by an increase in the number of households from 103,706 to 127,294 with an increase in the percentage of 1 and 2 person households and a reduction in the number of 3+ person households.

2012

	1 person male	1 person female	2 person 2 adult	2 person 1 parent	3+ person all adult	3+ person 1 parent	3+ person 2 ad + ch	Total (100%)
BS	15.0	18.3	34.5	3.0	8.0	2.4	18.8	**6,042**
CA	15.0	18.2	34.4	3.0	8.0	2.4	19.0	**11,891**
IN	15.0	17.0	32.5	3.5	7.6	2.9	21.4	**34,342**
LO	14.9	17.8	34.1	3.1	8.0	2.5	19.6	**8,838**
NA	15.0	18.7	34.4	2.9	8.0	2.3	18.7	**5,860**
RC	15.0	18.2	34.7	3.0	8.1	2.4	18.7	**24,099**
SL	14.9	18.3	35.5	2.7	8.5	2.2	17.9	**5,930**
SU	15.0	20.1	36.4	2.5	8.3	1.9	15.9	**6,705**
Highland	15.0	17.9	34.0	3.1	7.9	2.5	19.5	**103,706**

2037

	1 person male	1 person female	2 person 2 adult	2 person 1 parent	3+ person all adult	3+ person 1 parent	3+ person 2 ad + ch	Total (100%)
BS	18.3	19.1	34.0	3.9	5.5	3.2	15.9	**7,887**
CA	18.4	20.1	36.1	3.4	5.7	2.6	13.6	**12,334**
IN	18.2	17.7	34.0	4.3	5.9	3.3	16.7	**46,585**
LO	18.3	18.7	35.3	3.8	5.7	3.0	15.2	**10,384**
NA	18.4	19.4	35.2	3.7	5.6	2.9	14.8	**7,160**

[1] Using the methodology described above based on 2011 Census residents in communal establishments, and applying 2012 headship rates to the 2012 base population in each HMA, gives a theoretical Highland total of 103,703 households which compares with the NRS 2012 Household Estimate for Highland of 103,256.

RC	18.4	19.6	35.1	3.7	5.6	2.9	14.7	**28,830**
SL	18.4	20.3	36.5	3.3	5.5	2.6	13.4	**6,960**
SU	18.6	21.6	36.2	3.0	5.5	2.4	12.7	**7,152**
Highland	18.3	19.0	34.9	3.8	5.7	3.0	15.3	**127,294**

Projection Scenarios

Population and household projections are available for four scenarios; the three NRS scenarios (principal, high migration and low migration) plus the in-house scenario developed for use in our HNDA and also described at:

Insert link

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