Highland's Housing Need & Demand Assessment

Appendix A

HIGHLAND HOUSING NEED AND AFFORDABILITY MODEL REPORT

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Introduction

This report presents and discusses the findings from the modelling analysis carried out within the Housing Need and Affordability Study for The Highland Council (THC). This work has been carried out during late 2008 and early 2009. Interim reports were provided to the Council in late November, mid-December 2008 and mid-February 2009. Detailed comments were provided by the Council in response, together with a range of supplementary and revised data items. This final revision applies a number of agreed changes to key assumptions, which mainly affect the forward projection, together with some detailed revisions to data items.

The model developed for Highland is a fusion of the model used in the previous studies for the Scottish Government, particularly the projections undertaken under their Call-Off Contract (COC Update) in October 2007, and the sub-regional model developed for the West of England Housing Partnership during 2007-08. Technical descriptions of the model are set out in a number of published studies including 'Local Housing Need and Affordability Model for Scotland, Research Report 21, Communities Scotland, 2003' and its various updates e.g. 2004 and 2005. We refer to some comparable figures from the SG projection model for 2006 and the earlier (published) model estimates for former LA areas for 2005.

The model is in line with the Scottish Government's Housing Need and Demand Assessment Guidance, 2008. This is demonstrated within a supplementary paper available from the Council.

Outputs for Target Years

As in the previous research for the Scottish Government, the approach to forward projection is to project the situation in target years (i.e. 'snapshots') at five year intervals. Values for intervening years may if desired be estimated by interpolation. We would argue that this approach is perfectly adequate for the purposes of informing local plans and housing strategies. The combination of 4 snapshots should give a good enough picture of the prospects over the planning period. Providing individual years pretends a level of precision and certainty about the unknown future which could be misleading.

Key Assumptions

The model requires a lot of assumptions. We do not discuss all of these here, particularly those which basically follow the approach of the previous models, particularly those for the Scottish Government[1]. However, certain assumptions or sources have been modified a bit to fit the circumstances of 2007 and beyond and the data available to us, and we do comment on these:

[1] For more information see e.g. Scottish Local Housing Need And Affordability Model: Update (2005), Communities Scotland

Affordability norms. 2007 was a period of high house prices and came at the end of a period of relatively generous mortgage lending (preceding the Credit Crunch). We therefore in the initial run use lending multipliers of 4.0 (single earner) and 3.4 (2 earners), which was the higher assumption used in the SG COC work, for that year only. For years after 2011 we reverted to previous norms of 3.5 and 2.9, reflecting more cautious lending following the Credit Crunch. After comments and further consideration, we have reverted to the simpler and more consistent approach of applying multipliers of 3.5/2.9 throughout. These assumptions, and those used for intermediate and private renting tenures, generate ratios of outgoings to gross income of around 25%, as suggested in the Guidance, but a bit higher in some cases (e.g. single earners buying). A secondary test based on residual income is also applied in all cases. Full details are provided in Box 1 below.

Private rents. We have two data sources on private rents, Rents Service rents referred for HB purposes in the period up to 2005, and recent 'spot' data on asking rents from the Highland Solicitors Property Centre and other lettings agents, covering some but not all of the districts. The latter data indicate that a substantial 'markup' from the earlier HB-related data would be appropriate to represent current asking rents. This is important because, in most areas private renting is currently the market threshold which counts, being generally cheaper than buying. After the interim report, additional data were generated from a larger range of letting agents covering more of the areas and property sizes, and this is now the main basis for the private rent levels used in the model[2]. Local (housing benefit) allowance rates were also provided for triangulation[3].

Household Formation. In the Scottish Government model, household formation was forecast using fairly complicated regression models to predict headship rates for different age groups. We have tried this in the Highland model but the results are not very satisfactory for these rather smaller units. Therefore, we use a slightly simpler and more robust approach, based on the headship rates for two key age groups in 2001. However, we also apply a controlling process, to ensure consistency between overall household growth and its main components (new formation, dissolutions, net migration). This means each of these components is adjusted where there is a discrepancy. This has resulted in more conservative estimate than the Scottish Government model.

Migrant need (for affordable housing). The revised baseline model uses a mixture of (four) ways of estimating the need for affordable housing associated with migration. It aimed to improve the approach taken to measuring migrant need. The explanation is set out later in the report. The first applies affordability rates to a fraction (one-third) of net migration (household equivalents) based on the population projections (high scenario). A second approach estimates the relative affordability of migrants, versus the resident population, based on the household type composition at the 2001 Census. A third approach is based on data on the proportion of new local authority (LA) and Registered Social Landlord (RSL) tenants coming from outside the Highland area. A final approach takes the number of Housing Register applicants from outwith Highland and applies an average rehousing rate (15%) to this. The current migration need estimates are an average of these four figures. A limitation here is that Census data do not reflect the substantial migration from new

[2] A table showing for this additional data, average rents is included at appendix 1.
[3] Following the study rents were also checked against information on market rents provided to The Highland Council in 2008 by the Valuation Office.

European Union (EU) member states after 2004, although this migration is reflected to some extent in the overall population numbers. New EU migrants are not initially eligible for social rented housing but are for low cost home ownership, but they may add to pressure on the private rented sector and, in some instances, may become clients for social rented housing at a later date.

Ex-Owners Need. The existing model uses estimates derived from national surveys. However, data provided by THC and for RSLs via SCORE, provides an alternative estimate based on actual lettings. We currently use an average of these two (the latter is smaller). These estimates will include the modest number of ex-owners rehoused as homeless.

Backlog. The previous SG model based this mainly on a combination of survey-based estimates and proxies, and only used waiting lists to indicate recent changes. THC provided Highland Housing Register data which is up to date[4] (with applications now being annually reviewed). They applied need thresholds (filters) in line with the SG HNDA Guidance to remove cases who were not in housing need. Therefore, we are now using the Housing Register data for this purpose.

Basing housing need on Highland's Housing Register is likely to have resulted in an undercount of households in housing need as it is recognised that not all households in need apply for social rented housing.

Price of New Build Shared Equity. The current model uses data on the price (value) of newly procured shared equity units where these are available within Highland. Where there are no recent actual cases, and for future provision, it is assumed that such values would vary in proportion to median house prices. The revised figures show that new build shared equity (NBSE) is affordable at a 60% tranche by a significant number of people in housing need. Open Market shared equity is rather more affordable because the prices used are threshold prices (related to the lower quartile).

Affordable Housing Targets for New Build. There were explored to inform Highland's Affordable Housing Policy which currently expects that 25% of developments over a certain size are affordable. The need for additional affordable housing can be expressed as a target percentage of prospective new build numbers. We illustrate this with snap-shot figures for 2007 and later years. The base for the target has been taken as the higher of new build i.e. average over 2005-07 or projected household growth (2006-2011). For future years, new build is projected to run at the same level as net household growth in the central demographic scenario. We show unconstrained targets and a constrained target (in the range 0-50% of the total new build projected), the rationale being that it is not feasible/viable to seek more than a certain proportion of affordable housing as part of private housing developments. We also show the amount and proportion of need which would be unmet by such a constrained target if new build is not increased e.g. via the release of additional land. Some of this excess need might be met by Open Market Shared Equity or other methods (e.g. leasing houses from the private sector for use as social rent) albeit that this may create pressures in other parts of the housing market.

[4] Highland's Housing Register was established in May 2008 - all applicants had to complete an application form in the months prior to this to be on the register.

Box 1: Affordability Criteria

Market Purchase: House priced at lower quartile level for relevant size category.
-95% mortgage, 25 year annuity repayment basis;
-Borrowing 3.5 times gross annual income (single earner) or 2.975 times income (2 earners);
-Residual income after tax, NI and mortgage costs to exceed 120% of Housing Benefit 'Applicable Amount' for that type of household
On average across Highland in 2007, threshold incomes to buy are £412pw/£21,405pa (single 1 BR) and £633pw/£32,888pa (couple 2 BR) and ratios of mortgage payment to gross income would be 26.7% (single) and 22.7% (couple).
(Threshold incomes for couples are significantly higher because of both the lower lending multiplier and the larger size of accommodation required).
House prices taken from Register of Scotland sasines dataset. The data was cleaned to extract out non-market transactions and possible errors.

Private Rent: Rents based on web-survey of properties offered for letting in Highland in 2008, averaging £99pw/426pcm for 1-bedroom flat and £117pw/£503pcm for 2-bedroom flat/house
Private rental affordability based on rent:net income ratio of 30%, subject also to …
Residual income after tax, NI and rent to exceed 120% of Housing Benefit 'Applicable Amount' for that type of household
On average across Highland threshold incomes to rent are £431pw/£22,418pa (single1 BR) and £466pw/£24,227pa (couple 2BR) and ratios of rent to gross income are 23.0% and 25.4%

New Build Shared Equity Prices/values based on combination of observed values for recent schemes in Highland and median market prices.
60% minimum stake purchased, with mortgage for this full amount
Outgoings on mortgage payment (25 year annuity), rental (if any, currently zero) and management/maintenance/services (set at zero) not to exceed 33% of net income, subject also to…
Residual income after tax, NI and rent to exceed 120% of Housing Benefit 'Applicable Amount' for that type of household
On average across Highland threshold incomes to buy NBSE are £360pw/£18,738pa (single 1BR) and £340pw/£17,692 (couple 2BR) and ratios of rent to gross income are 25.9% (single) and 30.2% (couple)
[Comments: these criteria originally evolved for shared ownership, which NBSE tends to replace; with SO there was a rental payment as well, and often a service charge. The criteria are geared to taking account of these, as in England for example 'New Build Homebuy' typically involves a rental. It is possible that these might feature in future Scottish schemes. The justification for the higher ratio for NBSE than for renting is that people are purchasing an asset (the equivalent for renters would be using that money to save for a deposit). A byproduct of this overall approach is that the ratio of outgoings to gross income is relatively higher for couples, compared with the lending

multiplier approach. The apparently low threshold income for couples is partly to do with this and partly the limited availability/higher imputed value of 1BR NBSE]

Open Market Shared Equity: House priced/valued at lower quartile level for relevant size category (same as market purchase).
60% minimum share purchased with full mortgage on 25 year annuity repayment basis;
Borrowing 3.5 times gross annual income (single earner) or 2.975 times income (2 earners)
Residual income after tax, NI and mortgage costs to exceed 120% of Housing Benefit 'Applicable Amount' for that type of household
On average across Highland in 2007, threshold incomes to buy are £260pw/£13,519pa (single 1 BR) and £400pw/£20,771pa (couple 2 BR) and ratios of mortgage payment to gross income would be 26.7% (single) and 22.7% (couple).

Intermediate Rent. Rents based on mid-point between private rents as above and estimated new let Housing Association Rent, averaging £77pw/331pcm for 1-bedroom flat and £88pw/£378pcm for 2-bedroom flat/house
Intermediate rental affordability based on rent:net income ratio of 30%, subject also to …
Residual income after tax, NI and rent to exceed 120% of Housing Benefit 'Applicable Amount' for that type of household
On average across Highland in 2007, threshold incomes to buy are similar to those for Open Market Shared Equity.

Key Results – Recent Affordability

Table 1 below shows the key results for affordability in 2007. It looks at younger households, aged less that 35 years, as representative of emerging households. Across Highland only 29% of younger (under 35) households have enough income to buy in the market. This rises to 34% when allowance is made for access to wealth for larger deposits (e.g. from savings). However, 38% could afford to rent privately – this assumes availability of lettings at what we estimate to be current asking rents. In all areas except Sutherland, private renting appears to be more affordable than buying. This reflects the high level of house prices in 2007.

Taking the ability to either buy or rent in the market, affordability is 'best' in Caithness (55%), followed a long way behind by Badenoch and Strathspey (41%). It is lowest in West Ross (31%), Mid Ross (32%) and Skye and Lochalsh (33%). In West Ross and Skye and Lochalsh, less than one quarter of younger households could afford to buy in 2007.

Table 1: Ability of Younger Households to Afford to Buy or Rent in the Market in 2007 by Housing Market Area (HMA) (Percent of under-35 households)

HMA	% Buy Based on income only	% Buy Based on income & savings	% Rent Private	% Buy or Rent	% Buy Working Households
	*Pctbinc**	*pbwadj*	*pctpr*	*pctaff*	*pctbw*
Sutherland	35.4	39.1	31.2	39.1	44.9
Caithness	49.1	52.6	54.7	54.7	59.8
East Ross	28.6	32.7	34.8	34.8	36.3
West Ross	19.1	24.1	30.6	30.6	25.5
Mid Ross	25.8	31.2	32.2	32.2	33.2
Skye & Lochalsh	19.6	24.5	33.1	33.1	26.8
Lochaber	26.7	30.6	36.8	36.8	33.9
Inverness	27.3	32.3	35.4	35.4	34.8
Nairn	25.5	30.6	35.8	35.8	33.1
Badenoch & Strath	28.1	33.1	41.0	41.0	36.3
Highland	29.4	34.0	37.1	37.6	37.4
SG Model 2006					
HIGHLAND	36.4	41.7	*No Data*	47.0	38.3
SCOTLAND	41.2	44.4	*No Data*	46.2	44.4

* Note: these codes, throughout the report, refer to column headings in the detailed output tables.

Affordability across Highland in 2007 is significantly worse than that shown for 2006 in the Scottish Government (SG) projections, using similar assumptions. House prices rose in 2007, and ability to buy deteriorated markedly. Affordability to buy is nearly 10% points lower than in the previous published estimates for 2005 at LAD level, and this is true in all areas except Sutherland where the fall was slight. The previous estimates provided a single figure for Ross & Cromarty, whereas the new

figures show, compared to East and Mid Ross, affordability to buy is much lower in West Ross.

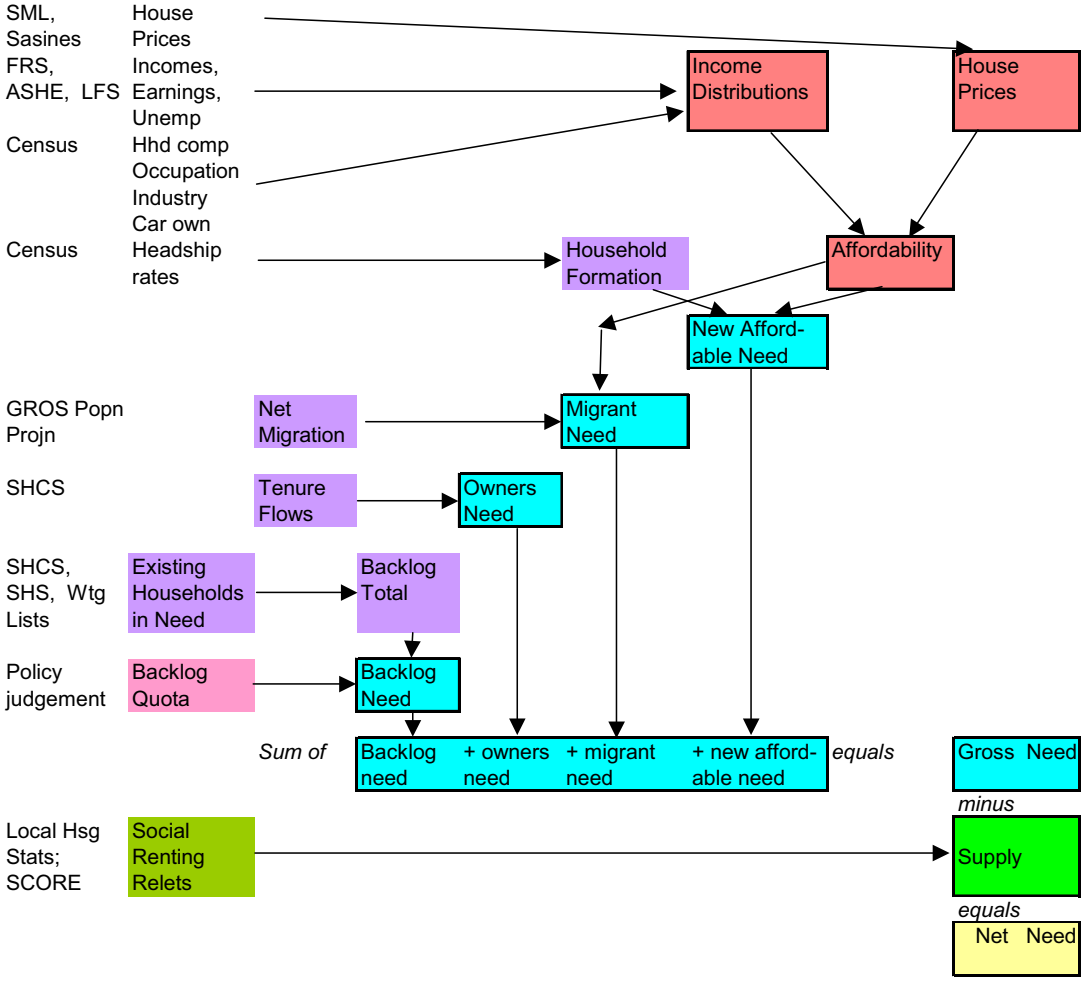
New build shared equity (NBSE (based on a minimum of a 60% share (or tranche) being purchased by the household with the remain 40% being grant funded by an RSL) is significantly more affordable than private renting or buying, enabling an extra 10% to buy across Highland. This option widens affordability most in East and Mid Ross, Nairn and Inverness. It would offer only limited additional affordability in Sutherland.

Open market shared equity (OMSE) would be affordable by nearly 15% of households overall who could not otherwise afford accommodation in the market, and could help in all HMAs..

Key Findings – Current Need

Figure 1 provides a schematic view of the model used to link affordability to the need for additional affordable housing. This is built up from a number of components, of which new households unable to afford housing in the market is numerically the largest. The most important balancing item on the supply side is the turnover (relets) of existing social housing.

Figure 1: Schematic View of Model



The next table (2) shows a summary of the need position in 2007, with a further table below showing the components of affordable need. The headline net annual need figure for Highland is 890, compared with 625 in 2006 from the SG model. If we discount the 91 surplus in Caithness, the sum of positive needs is 981. The highest absolute needs are in Inverness (411), Mid Ross (139) and Lochaber (90). The lowest positive numbers are for Sutherland (18).

Table 2: Affordable Need Summary by* Housing Market Area *2007
(number of households per year)

HMA	Household Growth *hhgronty*	Gross Hhd Formation *ghhfmty*	Net Relets *reletnty*	Net Need *nneed*	Positive Need *posneed*	Surplus Lets *surp*
Sutherland	42	97	89	18	18	0
Caithness	56	205	266	-91	0	91
East Ross	112	176	144	47	47	0
West Ross	58	62	22	55	55	0
Mid Ross	127	189	67	139	139	0
Skye & Lochalsh	63	99	56	82	82	0
Lochaber	78	158	94	90	90	0
Inverness	445	529	321	411	411	0
Nairn	82	98	38	82	82	0
Badenoch & Strath	70	86	51	57	57	0
Highland	**1133**	**1698**	**1147**	**890**	**981**	**91**
HIGHLAND SG mod	2170	1230	625	625		
SCOTLAND	53902	45290	6155	10940	4785	

The table also shows for comparison some of the key background numbers, household growth, new household formation and relets. While these numbers obviously reflect the population size of the different districts, their relative size varies. Gross household formation is typically a bit larger than household growth, but it is much larger in Caithness, probably due to migration, but relatively similar in West Ross.

These need numbers could be expressed as percentage of households or as affordable housing targets (see Tables 3 and 6 below). As a percentage of all households, net need is highest in Nairn (1.50%) Skye & Lochalsh and (1.46%), Mid Ross (1.42%), West Ross (1.36%) and Inverness (1.35%).

The quantity of relets is very important for the overall net need outcome. Relet numbers and rates are net of new supply and transfer lets to social tenants and refer to both LA and RSL combined[5]. It can be seen that relets are quite large in number in Inverness, Caithness and East Ross, while they are few in number in West Ross, Nairn and Badenoch and Strathspey. The relet rate as a percentage of the social stock, shown in the first column of Table 3, can given an indication of the relative popularity of social housing in an area. This may include the effects of demographic

[5] The number shown for relets also includes an allowance for 'resales' of shared ownership/equity properties, and turnover of any other 'intermediate' sector housing.

and economic factors and the affordability of market alternatives. Relet rates are higher in Caithness and Sutherland, consistent with other evidence that these areas currently have lower demand. The lowest rates are in Nairn and Mid Ross, and the highest in Caithness and Sutherland. We use three year average figures to estimate relets, in line with guidance and to provide a robust base for forward forecasts. Relet numbers fell in 2007, a further indication of increasing pressure.

Table 3: Net Relets, Affordable, Net and Intermediate Need Rates 2007 (percent of stock; percent of households)

HMA	Net Social Rent Relets % Stock *reletrty*	New Hhd Unafford % Hhds *affneedr*	Net Need per annum % Hhds *nneedr*	NBSE Net Need % Hhd *soneedr*
Sutherland	7.49	0.91	0.28	0.00
Caithness	9.45	0.84	-0.82	0.00
East Ross	5.29	1.29	0.53	0.08
West Ross	5.43	1.06	1.36	0.03
Mid Ross	4.32	1.31	1.42	0.31
Skye & Lochalsh	6.47	1.18	1.46	0.14
Lochaber	5.15	1.17	1.05	0.12
Inverness	5.92	1.12	1.35	0.13
Nairn	4.06	1.16	1.50	0.21
Badenoch & Strath	5.79	0.93	1.04	0.08
Total	6.04	1.11	0.93	0.12

NBSE – new build shared equity

Table 4 shows the components that go to make up the overall net annual need calculation. New households unable to afford to enter the market is the largest category, contributing 1050 households per year or about half of gross need. This is driven by the number of new households forming (Table 2) and the affordability rate (Table 1).

New affordable need is actually slightly lower in this model run than in the 2006 SG projection, as shown below. The reason for this is that new household formation is estimated at a lower level than in the SG model, offsetting the worse affordability. This is due to a combination of technical differences in the forecast, particularly controlling for consistency with overall household growth, and a substantive effect of tight housing market conditions (with potentially new households delaying or being frustrated in forming new households). This suggests that the estimates of housing need may be somewhat conservative.

The distinction between *gross and net household formation* should be noted here. The above calculations refer to gross household formation, that is the number of households which form during a year which were not separate households at the beginning of the year. Examples would be young people leaving home to live alone or with a partner; or someone previously flatsharing moving to live alone. Some people use the term ‘net household formation’ for what we would term household growth, that is the net increase in the total number of households in an area over a

one year period. Net household growth is equal to gross household formation, *minus* the number of household dissolutions during a year, *plus* the number of extra households arising from net migration.

Table 4: Components of Need by Housing Market Area in 2007
(number of households per year)

HMA	New Hhd Unable to Afford *affneed*	Migrant Need *migneed*	Ex Owners Need *ownneeda*	Backlog Allowance *backlog*	Net Relets *reletnty*	Net Need *nneed*
Sutherland	59	16	9	22	89	18
Caithness	93	27	24	31	266	-91
East Ross	114	16	11	50	144	47
West Ross	43	14	9	12	22	55
Mid Ross	128	18	10	50	67	139
Skye & Lochalsh	66	41	6	25	56	82
Lochaber	100	25	10	49	94	90
Inverness	342	115	41	234	321	411
Nairn	63	19	6	32	38	82
Badenoch & Strath	51	19	9	30	51	57
Total	1059	309	134	535	1147	890
SG Model 2006						
HIGHLAND	1150	40	230	430	1230	625
SCOTLAND	28995	775	6510	15175	45290	6155

Note: Net need equals the sum of cols 1 to 4 minus column 5.

Migrant need is mainly driven by the net migration numbers, with some allowance for affordability. In addition, as explained above, we also take account of actual recent data on social lettings to people from other areas. (It is this factor which accounts for the positive figure for Caithness). Overall migrant need accounts for 15% of gross need. All areas have a positive score, reflecting the generally positive demographic growth picture for Highland[6].

The ex owners need is intended to capture the process of (mainly) older households moving into social housing after repossession, relationship breakdown, or because of problems managing and maintaining an own home in later years. Numbers estimated from national survey propensities are modified by local lettings data, and as expected this is a smaller component of need (7% overall). This element is proportionately higher in Caithness, West Ross, Sutherland and Badenoch & Strathspey.

The other component of need is the backlog allowance, set at 10% of the backlog estimate, which itself is based on the current housing register numbers above a minimum need theshold. This allowance accounts for 26% of need overall, a total of 535 households per year. The largest backlogs in absolute terms are in Inverness, Lochaber, Mid Ross and East Ross. As a share of need the backlog is higher in

[6] We have refined the estimates of migrant-related need, including taking account of the occupational and household type mix of in- and out-migration, and making use of data from rehousing and housing register information.

Inverness and Badenoch & Strathspey. Its share is lowest in West Ross, Caithness and Skye and Lochalsh. The low share in Caithness is not surprising given the other evidence of lower demand in that district. For the other two areas, the widely – recognised tendency for housing registers to understate need in remoter rural communities where the availability of social rented housing is limited or non-existent may be a factor.

For triangulation purposes, these components may be compared with equivalent figures from the 2006 SG model estimates. While the magnitudes are generally similar, the new estimates for migrant need are markedly higher. This is likely to be because, as noted above, these estimates take account of a wider range of evidence. Sensitively analysis was also undertaken on migration data to explore whether different approaches resulted in different outputs.

We have been provided with more data on housing register and transfer register stocks and flows, some of which will be reported in more detail below. One interesting comparison is between the net flow onto the register (new applications less deletions/non-renewals) in 2007/08 and our modelled estimates of new need (i.e. gross need less the backlog allowance). In this particular year net applications exceeded modelled new need by a substantial margin (2082 vs 1502), while both figures exceed relets (1147). If the modelled figure was realistic in the medium term, then the backlog would be expected to creep up slowly. If the recent net applications flow persists, then the backlog will grow rapidly. A high net flow in 2007/08 is not unexpected given the tight housing market pressures of that period, but is less likely to persist in the medium term. We would however suggest that net flows are monitored regularly by The Highland Council.

Key Findings – Needs and Supply

The next two tables (5-6) relate estimated annual need to recent and prospective dwelling and household growth numbers and actual affordable housing provision. This is still really a snapshot and background information for consideration of future planning targets for affordable housing. We discuss these later in the context of forward projections.

Household growth in the baseline (central demographic) projection is running at 1260 per year in 2007. New build output in the recent period (2005-07) appears to have been at a significantly higher rate than this (1658 pa). This high level of output is unlikely to be sustained in the immediate aftermath of the credit crunch and the onset of recession. Nevertheless, the differences between supply and household growth at housing market area level are worthy of comment. New build was running well ahead of household growth in Caithness, Skye and Lochalsh, Inverness and Badenoch & Strathspey. In some instances, as in Caithness where many indicators suggest low demand (and associated limited economic growth prospects), building well ahead of household numbers in this way may be questionable in terms of its subsequent impact on vacancies. In other instances, much of this apparently excess supply may go into the second and holiday home markets. It has also been suggested that new build supply in Inverness was at low levels in past years and only recently picking up; therefore it was possibly meeting constrained demand. A further possibility is that the availability of supply in one HMA rather than another may mean that actual migration and household growth shifts in favour of that HMA (a not implausible scenario for Inverness)

Conversely, new build was significantly below projected household growth in Mid Ross which is interesting given that this area, is part of the wider 'Inner Moray Firth' sub-region which is experiencing buoyant economic growth and therefore might be expected to contribute more to new dwelling supply.

The scale of net need relative to total new build is a starting point for considering affordable housing targets. The snapshot from this recent period suggests that the level of need in at least four areas was 'infeasibly high' to be met by the levels of new building at that time (i.e. above 100% in Table 6, col. 1). These areas were West and Mid Ross, Lochaber and Nairn. Other things being equal, and subject to the forward projections telling a similar story, this suggests these areas probably need to be seeing more new housing being built in total.

The SG Guidance on Planning and Affordable Housing (PAN74) talks about a norm or benchmark share of affordable housing contribution of 25% from each development site, albeit that some sites may include a higher provision. The figures just referred to (Table 6, col 1) suggest that current needs exceed that level in all Highland housing market areas (HMAs) except Caithness. The figures in the second column of Table 6 may be compared with this benchmark as well. Currently 4 areas have 25% or more of output in the affordable categories (Mid Ross, Skye & Lochalsh, Lochaber, Badenoch & Strathspey). However, Nairn had no output despite high need, while Sutherland and East & West Ross had provision in the range 9-14% affordable despite significant needs.

Another way of looking at it is to consider actual affordable provision as a percentage of net need, as in the final column of Table 6 which shows the number of units which it is estimated will be completed via Highland's Affordable Housing Investment Programme (AHIP) . The areas which stand out as having particularly low provision are Nairn and Mid and West Ross. Other than Caithness, only one HMA had provision which was commensurate with its estimated needs, Badenoch & Strathspey.

Although policy conclusions are a matter for the Council, and should reflect forward projections and sensitivity tests as well as snapshots of need vs provision, it is already clear that there is an issue of a potential redistribution of some of the affordable investment between the housing market areas (HMAs), to better reflect need.

Table 5: New build, household growth, net need and affordable provision by* Housing Market Area *c.2007 (number per year)

HMA	New Build Units 2005-7 *newdwg*	Household Growth *hhgronty*	Net Need *nneed*	Afford Units 2005-7	Affordable Housing Programmed Units* 2008
Sutherland	62	50	20	6	26
Caithness	135	63	-91	24	26
East Ross	104	120	47	11	47
West Ross	54	61	56	8	7
Mid Ross	91	136	141	25	26
Skye & Lochalsh	106	73	86	27	123
Lochaber	86	84	91	22	58
Inverness	787	502	422	159	104
Nairn	79	90	84	0	18
Badenoch & Strath	154	81	59	46	3
Highland Total	1658	1260	915	327	436

Table 6: Affordable Need and Provision relative to Total New Build c. 2007

HMA	Net Need % New Build	Afford Units % Newbuild	Afford Units % Net Need
Sutherland	32	9	29
Caithness	-68	18	-26
East Ross	46	11	23
West Ross	103	14	14
Mid Ross	155	27	18
Skye & Lochalsh	82	26	31
Lochaber	105	25	24
Inverness	54	20	38
Nairn	106	0	0
Badenoch & Strath	39	30	78
Highland Total	55	20	36

Key Findings – Intermediate Sector

New build shared equity (NBSE, part of the SG's 'LIFT' initiative) is of particular interest, given the ability of the model to make estimates of the potential scope for this in terms of affordability. On the revised assumptions used for 2007[7] NBSE does appear to be affordable to a group of younger households unable to find housing in

[7] Detailed data on sales values in recent NBSE schemes across Highland were used to adjust the general market values in line with recent values.

the open market. Table 7 shows a net need for 112 units of this kind in 2007, with positive needs in eight out of ten HMAs. The 2006 Scottish Government study showed scope for some provision of this kind, in moderate numbers. Again, the longer term projection described below shows some continuing scope.

Other forms of intermediate sector provision – Open Market Shared Equity (OMSE) and Intermediate Rent (IR) – may have some complementary role to play and so we provide estimates of net affordable need for these alternative forms of provision. It should be emphasized that all of these categories of need overlap. However, OMSE and IR tend to be rather cheaper and more affordable than NBSE, giving net need figures of 170-180 units per year, or an extra 50 -60 over and above the reach of the new build scheme.

Actual recent new provision of NBSE has been running at about 110 units pa, with a programmed level for 2008 of 140 units. This compares fairly well with the level of net need for intermediate affordable housing shown for 2007, for Highland as a whole. Therefore recent policy appears to be more effective at meeting these needs rather than the needs of households unable to enter the housing market at any level.

Table 7: Intermediate Sector Need Estimates and Provision Levels by HMA c. 2007 (number per year)

District	Net Need NBSE 2007	Net Need OMSE 2007	Net Need Interm Rent 2007	Intermed Provision 2005-7	Intermed Programme* 2008
Sutherland	0	4	1	0	9
Caithness	0	0	0	8	6
East Ross	7	6	5	3	23
West Ross	1	7	9	1	7
Mid Ross	30	36	35	5	3
Skye & Lochalsh	8	8	14	17	48
Lochaber	10	16	16	3	0
Inverness	40	77	74	60	35
Nairn	11	13	16	0	8
Badenoch & Strath	4	5	8	13	3
Highland Total	112	172	178	110	140

* Units estimated to be completed in year through the Affordable Housing Investment Programme.

Key Findings – Size Mix

This model goes beyond the published SG studies in providing a size mix analysis of social and intermediate need and supply.

The results shown in Table 8 appear to indicate that there is a large excess need for small (1-bedroom) accommodation, compared with a relatively moderate amount of need for 2 bedroom and 3 bedroom accommodation. There is also a significant need for four-bedroom accommodation, a type of unit that rarely becomes available for re-letting. The authority with an overall surplus (Caithness) still appears to be short of larger accommodation, whilst authorities may be short overall but have a surplus in particular size groups (e.g. East Ross, 3 bedroom).

As an indicator of relative pressure we show the ratio of net need to relets by size (middle section of Table 8). This confirms the pressure on four bedroom accommodation in most districts. It shows that the pressure on 1-bedroom units is greatest in Lochaber; that there is significant pressure on 2-bedroom in West and Mid Ross and Nairn; and similarly on 3-bedroom in West and Mid Ross, Inverness and Badenoch & Strathspey.

Some of these imbalances may of course be resolved by ‘underletting’ some 2 and 3-bed accommodation, or possibly even by letting shared accommodation although doubtless the latter would require consideration of challenging management issues.

The lower part of Table 8 shows the net need for intermediate sector accommodation (NBSE and other forms) broken down by size. This suggests that the largest element of need would be for 2-bedroom, with also significant numbers requiring at 1-bedroom or 3-bedroom. A note of qualification here is that people buying shared equity are generally allowed to have an ‘extra’ bedroom if they choose to and can afford it. As people making a financial commitment to purchase they can exercise some choice and may not choose to buy at the one-bedroom level, for example. Therefore this indicative mix may not be fully realistic for the intermediate sector, and one would expect in practice less emphasis on one-bedroom and slightly more emphasis on 3-bedroom.

Table 8: Size Mix Analysis of Need for Social Renting and Intermediate Affordable Housing by HMA c.2007 (number per year; ratio)

HMAt *Social Rent Net Need*	1 Bedrm *rneed1b*	2 Bedrm *rneed2b*	3 Bedrm *rneed3b*	4+ Bedrm *rneed4b*
Sutherland	14	0	11	5
Caithness	-19	-70	8	7
East Ross	72	29	-12	6
West Ross	20	17	14	3
Mid Ross	55	39	28	7
Skye & Lochalsh	32	13	11	5
Lochaber	70	2	7	7
Inverness	210	70	78	28
Nairn	37	20	13	3
Badenoch & Strath	23	14	17	5
Total Highland	513	135	176	76
Ratio Net Need:Relets bacode	1 Bedrm *rneedrs1b*	2 Bedrm *rneedrs2b*	3 Bedrm *rneedrs3b*	4+ Bedrm *rneedrs4b*
Sutherland	0.4	0.0	1.0	4.7
Caithness	-0.2	-0.5	0.3	3.3
East Ross	2.1	0.6	-0.2	1.6
West Ross	1.2	2.3	13.9	3.4
Mid Ross	1.5	1.7	3.0	3.2
Skye & Lochalsh	1.3	0.6	0.9	4.6
Lochaber	5.6	0.0	0.3	7.1
Inverness	1.5	0.5	2.0	27.7
Nairn	2.0	1.5	1.8	1.1
Badenoch & Strath	0.8	0.7	4.0	5.4
Total Highland	1.6	0.6	2.0	11.4
Intermediate Need ineed1b	1 Bedrm *ineed1b*	2 Bedrm *ineed2b*	3 Bedrm *ineed3b*	4+ Bedrm *ineed4b*
Sutherland	-2	0	0	0
Caithness	-2	-2	-1	0
East Ross	5	5	2	0
West Ross	4	8	3	0
Mid Ross	24	37	19	0
Skye & Lochalsh	9	14	6	0
Lochaber	11	16	7	0
Inverness	43	71	33	1
Nairn	12	19	9	0
Badenoch & Strath	8	12	6	0
Total Highland	113	179	84	2

Table 9: Difference to Net Need Attributable to Meeting Transfer Demand by HMAc.2007
(number per year, based on quota of transfer list)

District	1 Bedrm *ntran1bb*	2 Bedrm *ntran2bb*	3 Bedrm *ntran3bb*	4+ Bedrm *ntran4bb*
Sutherland	0	0	0	0
Caithness	1	-3	1	1
East Ross	3	-3	-2	3
West Ross	0	0	0	0
Mid Ross	-2	-2	2	2
Skye & Lochalsh	0	-1	0	1
Lochaber	3	-5	0	1
Inverness	-1	-13	7	7
Nairn	0	-1	1	0
Badenoch & Strath	-1	-1	1	0
Total (Quota of List)	3	-29	11	15
Total (Actual Lets)	3	-25	20	2

Transfers within the social rented stock do not add to the net need for affordable stock, but they may alter the distribution of need between size/type categories. In this way they may still point to a need for additional provision in particular size/type categories, to alleviate problems of unsuitably-housed (including overcrowded) households in the social sector and to free up movement generally within the sector. Table 9 looks at the impact on need across the size categories and areas of meeting a 10% quota of transfer demand as recorded on the transfer register. The general story is one of transfers shifting demand from 2-bedroom to 3-bedroom and 4-bedroom categories. This effectively means that the existing imbalances just described are more exacerbated when transfers are considered. So, for example, the net need for 76 4-bed units would be raised to 91 units once allowance were made for transfers, while the need for 133 2-bed units would be reduced to 104 units.

Table 9 is primarily based on the transfer list, but one may also look at transfers actually made (final row). These appear to have a similar effect, but the net demand for extra 4-bed units is not revealed so clearly in this way, because so few lettings of this size were actually made.

Types of Need in Backlog

We can also draw on information from the Highland Housing Register analysis to provide a profile of the types of unmet need (backlog need) currently registered in the different areas within Highland. Table 10 shows this breakdown in percentage terms. To avoid double counting applicants have only been shown under the most significant need category. As households often have a variety of points for different needs. some categories are therefore under-represented e.g. poor house condition.

The most common category is 'insecurity[8]', typically within the private rented sector), accounting for 46% of cases. Another 15% are recorded as homeless; this includes households within temporary accommodation. Of a similar order numerically are households with health or disability problems in unsuitable accommodation, which accounts for 17% of cases. There is another 'unsuitability' category accounting for another 2.4% of cases (people with grounds other than health for regarding their accommodation as unsuitable, mainly to do with house condition. Overcrowding is the main need factor for 12% of cases while another 7% are sharing. Social grounds for rehousing (e.g. requiring a larger house to provide room for a carer or access to specialist services) only account for under 1% of cases.

Experience with other studies suggests that different local authorities use different classifications when analysing their housing lists in this way, so it is difficult to make comparisons. One comparison we attempt to make, not very successfully, is with the analysis of the 'backlog' as estimated for 2005 in the published SG study of affordability and need. These figures were mainly derived from analysis of national surveys and the categories clearly do not map closely onto those used in THC Housing Register. For what it is worth, these earlier independent estimates suggest that insecurity is less dominant in Highland, but that overcrowding, sharing and disability/health are more common. Also more important in these earlier estimates were house condition (shown under the other unsuitability category here).

Homelessness is most common in East and Mid Ross, and less common in Sutherland and Caithness. Insecurity is most common in Caithness, Sutherland and Skye and Lochalsh. Overcrowding is relatively more common in Badenoch & Strathspey and West Ross. Unsuitability (condition) is a bit more common in Sutherland and Skye and Lochalsh. Sharing is most common in Caithness. Disability/health issues are most common in Sutherland and Nairn – this probably reflects age structure. Social grounds are slightly more common in Skye & Lochalsh.

[8] The Highland Housing Register defines insecurity as a) staying in housing that is deemed to be insecure because they could be asked to leave at short notice (e.g. B&B, c/o friends or relatives, lodgings, shared accommodation) or b) households with a notice to quit living in a short-assured tenancy, tied tenancy, or HM forces accommodation. It does not include those in arrears or who can't afford their housing.

Table 10: Need Categories on Housing Register by HMA in 2007
(percent of cases above need threshold – applicants only counted once against the most acute need category)

HMA	Home-less	Insecure	Over-crowded	Unsuit-able	Sharing	Disabled Health	Social
	hrhl	*hrinsec*	*hroc*	*hruns*	*hrshare*	*hrdis*	*hrsoc*
Sutherland	2.2	52.9	9.4	4.0	6.7	23.3	1.3
Caithness	2.8	58.5	8.2	2.5	10.7	17.3	0.0
East Ross	24.5	45.7	10.6	2.4	5.1	11.4	0.4
West Ross	14.0	43.0	14.9	1.8	3.5	21.1	1.8
Mid Ross	20.0	47.5	10.3	2.6	3.8	15.2	0.6
Skye & Lochalsh	12.6	51.4	7.3	4.0	6.1	15.8	2.8
Lochaber	16.5	43.8	13.4	2.1	7.0	17.3	0.0
Inverness	15.4	44.8	13.6	2.0	7.4	16.3	0.7
Nairn	11.7	43.6	10.7	2.8	6.4	23.0	1.8
Badenoch & Strath	14.6	39.7	18.5	3.3	6.6	15.9	1.3
Highland Total	15.1	46.1	12.3	2.4	6.7	16.6	0.8
SG Study 2005 Highland		28.2	21.5	12.9	11.0	26.4	

Older People

We can use some of the information obtained on housing register stocks and flows and lettings to new tenants to make some estimates of the net need for accommodation suitable for older people (including sheltered accommodation). These estimates are for the annual net need, allowing for relets, in two size categories (1-bedroom and 2+ bedroom). Two methods are compared, the first based on the net flow of new applications (less deletions), and the second based on a standard 10% quota from the Housing Register backlog 'stock' of cases. The results are shown in Table 11.

Table 11: Estimates of Need for Older Persons Accommodation by HMA and Size, 2007 (number per year, based on two alternative methods)

	Net flow HR based		Backlog based	
	1 Bed	2 Bed	1 Bed	2 Bed
	nop1ba	*nop2ba*	*nop1bb*	*nop2bb*
Sutherland	-7	-1	-4	7
Caithness	2	16	-2	11
East Ross	0	4	3	13
West Ross	-3	4	-3	4
Mid Ross	-3	15	-3	15
Skye & Lochalsh	0	-1	2	5
Lochaber	-6	-11	3	8
Inverness	-16	12	-10	30
Nairn	3	6	1	7
Badenoch & Strath	-3	-4	1	8
Highland Total	-33	41	-11	106

Both methods suggest that there is something of a surplus of 1-bedroom older persons accommodation in the social sector, whereas there is a shortage of 2-bedroom accommodation, with the latter being larger in scale than the former. The second method (based on backlog) shows a greater overall need for 2 bedroom and a smaller surplus of 1-bedroom.

The general pattern by size applies across most of the districts. Only Nairn has positive needs for 1 bedroom under both methods, but East Ross and Skye and Lochalsh have positives under method 2 but zero under method 1. The numbers are small anyway. The more significant needs appear to be for 2-bedroom accommodation, especially in Inverness, Mid Ross, Caithness, East Ross and Nairn.

Household Incomes

The data on household incomes generated by the model used in this study[9] are shown in Table 12. These are consistent with previous Scottish Government studies while taking account of national data on recent trends in incomes. The model tries to take account of changes in household composition, economic activity and unemployment, and to estimate from various proxy measures variation in the distribution (spread) as well as the average level of income.

Household incomes in Highland are slightly below the Scottish average. Within Highland, there is considerable variation between highs of c. £556 (Badenoch & Strathspey, Mid Ross), £548 (Inverness) and £545 (Nairn) down to and £467 (East Ross, Lochaber) and £457 (Sutherland). These figures refer to gross weekly household income[10] for all age groups. Restricting it to households aged under-35, the range is from £534 (Mid Ross) to £442 (Lochaber and East Ross). If we just look at working households, the average income is higher at £637 overall, with a range from £693 in Mid Ross to £570 in Lochaber.

Lower incomes (below a threshold of £235 which is roughly a lower quartile across Great Britain) vary from 27% (Badenoch & Strathspey, Mid Ross) to 38% (Sutherland). Poverty-level incomes vary from 10% up to 17% (same areas). This may be compared with the percentage of working age receiving state benefits, which ranges from 7.5% (Badenoch & Strathspey) up to 17% (East Ross). These different measures place somewhat different emphasis on different aspects of low income, benefit dependence versus low pay in work (including casual and part time jobs and self-employment), and there is some difference in the geography of these.

[9] Methodology described in previous Scottish Government reports and Bramley and Karley 2005 H*ousing Studies*

[10] Gross household income excludes secondary 'benefit units' in complex multi-adult households, i.e. the incomes of grown-up non-dependent children, lodgers and unrelated flatsharers is not counted.

Table 12: Income Measures For Different Types of Households for 2007

	Mean Hhd Income Gross £pw	Mean Income <35 Hhd Gross £pw	Mean Income Working Hhd Gross £pw	% Hhd Income Below £235 pw	% Hhd In Poverty (<120%) AppAmt	% Hhlds Working Age on Benefits
	Mnyall	*Mnyyng*	*mnywkg*	*pctt*	*pctp*	*pbenwa*
Sutherland	457	457	588	37.6	16.6	12.2
Caithness	491	472	613	33.8	14.6	13.3
East Ross	467	442	572	34.6	15.4	16.6
West Ross	505	472	609	30.5	12.5	9.1
Mid Ross	555	534	693	26.9	10.2	9.4
Skye & Lochalsh	513	487	632	31.2	12.9	10.7
Lochaber	466	442	570	35.3	15.5	11.4
Inverness	548	511	665	28.0	11.0	11.4
Nairn	545	525	683	28.5	11.1	10.3
Badenoch & Strath	556	526	680	26.9	10.2	7.5
Highland Total	518	492	637	30.7	12.7	11.5

Pw - Per Week

House Prices

House prices are clearly crucial to the modelling of affordability to buy in the market and also LCHO options. The figures used in this model run for 2007 are shown in Table 13. 'Threshold' entry-level prices are based on the Sasines lower quartile (2 & 3 bed) or lower decile (1 bed) (second-hand) with proportional adjustments to get the best estimate for that size group. These were established by looking at data for wider areas from the Regulated Mortgage Survey, which enables quartile analysis by size.

For Highland as a whole the threshold entry-level prices are around £79,000, £103,000 and £124,000 in 2007, for the three size groups. For 2-bedroom, the range of variation is from £65,000 in Caithness to c.£125,000 in West Ross and Skye & Lochalsh – double the price. One may speculate that the 'external' demand from retirement migrants, holiday and second home purchasers would be a significant factor in the price levels in these latter districts.

For new RSL provision (e.g. shared equity, SE) we use data on values from recent programme approvals where available; in other cases we impute values based on these data and the median price of all sales, again adjusted for size. For Highland as a whole, this would give a 2-bedroom (house) price of £115,000, with variation between £83,000 in Caithness and £138,000 in West Ross (i.e. two-thirds higher).

Table 13: Threshold (Lower Quartile LQ) and New Provision House Prices in 2007

HMA	Threshold	Threshold	Threshold	New RSL SE	New RSL SE	New RSL SE
	LQ 1 Bed	LQ 2 Bed	LQ 3 Bed	1 Bed	2 Bed	3 Bed
	tp1bty	*tp2bty*	*tp3bty*	*Temp1*	*temp2*	*temp3*
Sutherland	59441	85207	102249	111713	122140	148951
Caithness	51688	65075	78090	76154	83261	101538
East Ross	73528	92150	110580	83588	91390	111451
West Ross	91000	123500	148200	126553	138364	168737
Mid Ross	89908	118750	142500	113680	124290	151573
Skye & Lochalsh	87906	126113	151335	115352	126118	153802
Lochaber	75257	93845	112614	100010	109344	133347
Inverness	86450	109250	131100	114073	124720	152098
Nairn	87087	118750	142500	110336	120634	147115
Badenoch & Strath	81809	114000	136800	104161	113882	138881
Highland Total	78861	102992	123590	105275	115101	140367

LQ – lower quartile

Market Rents

We commented above on the key role of market rents and the difficulty of getting robust and consistent data on this.

Using the method adopted (based on currently advertised properties), the rents for one and two-bedroom accommodation are shown. These average £99 pw and £119 pw respectively. Table 14 shows that the variation between areas is as expected less spectacular than for prices, but still noticeable. For 2-bedroom, rents range from £85 pw in Caithness to £135 in Mid Ross (a ratio of 1.6 to 1). The low rental values in Caithness are consistent with other evidence of lower demand, while the high values for Mid Ross are also consistent with some of the evidence of pressure on this district.

We also show for comparison a possible level of 'intermediate rent' which might be offered – this is pitched halfway between these market rents and an estimate of the cost rent (after subsidy) of a new RSL dwelling. These indicate an average 2-bedroom rent of £89 per week with a range of variation from £67 in Caithness to £99 in Mid Ross.

Table 14: Market and Intermediate Rents by HMA in 2007
(£ per week)

HMA	Market	Market	Intermed	Intermed	Est RSL
	1 Bed	2 Bed	1 Bed	2 Bed	New Let
	mrent1	*mrent2*	*irent1*	*irent2*	*HRENT2*
Sutherland	115	115	86	88	57
Caithness	65	85	55	67	45
East Ross	95	110	71	81	48
West Ross	110	125	86	96	62
Mid Ross	120	135	89	99	58
Skye & Lochalsh	110	120	84	91	58
Lochaber	95	105	74	81	53
Inverness	100	130	79	96	58
Nairn	115	125	86	93	57
Badenoch & Strath	90	120	72	89	55
Total	99	119	77	89	55

Forward Projections

Methodology

The forward projection element of the model is an important way of making the results useful for planning. The methodology here broadly follows that used in the Scottish Government study (recent COC update), but with some changes and refinements. A number of issues arise in the projection and these are discussed first before considering the results.

Population and Household Projections. The approach used here takes the population and household projections provided as given by The Highland Council. Although this makes sense in many ways, there are potential problems which can arise. At a general level, this approach assumes that the future will be like an extension of the past, in terms of trends in key factors like migration, mortality and headship. If some of these factors actually changed in response to changing economic or housing market conditions, then the projection may not prove to be an accurate forecast. But the current methodology does not allow for such feedback. It does however control the gross flows for consistency with the overall household growth. Both 'low variant' and 'high variant' sets of demographic numbers were provided; these are used as the bases for low and high growth scenarios. Following discussion with THC and SG representatives, it was decided to treat the central demographic'/migration scenario as the baseline assumption for assessing housing needs. Although this is lower than recent evidence, including rates of new building, might suggest, it is perhaps prudent allowing for the aftermath of the Credit Crunch. In our view it would probably make most sense to link these with lower and higher assumptions about economic growth, although no specific economic forecasts or scenarios are available for Highland.

Effects of Credit Crunch. It is now clear that the Credit Crunch is having a significant effect on the housing market and on the wider economy. We reflect this in assuming that a substantial downward price 'correction' will take place between 2007 and 2011. Our central assumption is that this will reduce prices by 20% in real terms relative to their trend. The trend for house prices we assume will be 1.6% increase per year in real terms, similar to the past long run trend for Scotland and similar to the SG model assumption. We also use the average of independent economic forecasts published by the Treasury to get figures for growth and inflation in the next few years; these have recently become quite pessimistic. The effect is that income barely rises in real terms to 2011 and unemployment rises significantly. After that we assume that growth is resumed at a trend rate of 2.3% for GDP with unemployment falling gradually but not to 2007 levels. 2.3% is a bit more pessimistic than the customary 2.5% assumed a couple of years ago. It is also very noticeable that average household incomes grow more slowly than this, due to demographic change – the increase in one-adult households and the increase in retired households, the latter being very marked in Highland. The model embodies slight variations in projected income growth in the different areas due to different trends in occupational mix and the interactions with changing demography.

House Price Growth. Apart from the credit crunch and trend effects described above, house prices are modelled as responding to local market conditions, particularly the balance between stock and households (vacancies), as well as income differences. Generally, prices are forecast to grow more (or rather, decrease less) in more pressured areas (e.g. Skye & Lochalsh, Mid & West Ross, Nairn). We do not

assume any change in the cost of travel/living in remoter areas, which might in theory affect the demand for second and retirement homes.

Private Rents. Perhaps the most difficult, but interesting, issue is how to forecast the future course of private rents. Given current conditions in the Highlands, private renting is often the operative threshold for affordability. Therefore, the treatment of this variable is crucial. A statistical model was used in the SG study. After considering a simpler approach based on price and income trends, we have moved to an approach which seems theoretically more satisfactory.

There is a well-established concept in housing economics called (in jargon) 'the user cost of capital' (UCC). This measures the annual opportunity cost of owning and running a house, whether as an owner occupier or a landlord. The main factors in UCC are the interest rate (plus a margin for risk), the expected rate of capital gain (a negative offset to cost), and the cost of maintenance, management, insurance, and physical depreciation. The first two are percentages of market value, while the latter is a percentage of rebuilding cost. How are expectations of future capital growth formed? Most economic models assume that this is based on trends in the recent past, but substantially discounted for uncertainty. We take a combination of the long run trend (1.6%) and the actual/modelled change over the previous five years (which varies over time and space), and discount the resulting factor by two thirds (similar to some other recent national models). It should be noted that UCC will not be a fixed ratio (yield) on capital value, (a) because of variations in expected price growth and (b) because of the maintenance etc factor which is not tied to capital value but to costs.

Our theory says that UCC is the level towards which rents will trend and reach in equilibrium. However, rents do not change dramatically from year to year, so we base them partly on the previous period's level and only partly on UCC. We then also include a third factor, which is current period imbalance of supply and demand in the flow market for renting. This we base on the modelled 'net need' for affordable housing less supply, along with an estimated normal turnover rate in private renting. So our chosen model for private rents, in summary, is based on three factors: previous rent level; user cost of capital; and current 'excess demand/supply'. This model seems to work in a plausible way, although it is necessary to put a floor on the third factor (otherwise Caithness's rents would fall too much). For example, between 2007 and 2011, although house prices fall (reducing UCC), expected capital growth goes quite negative (increasing UCC) – this accounts for the rise in rents to 2011, along with the initial excess demand factor which was also positive. After 2011, this model generates rents which fall slightly in real terms, overall and in less pressured areas, while tending to be maintained or slightly increased in more pressured areas.

Another insight from theory is that we would expect the supply of private renting to respond to the relationship between current rent and UCC. Where rents are above UCC, it appears profitable to invest in private renting, typically entailing a switch of accommodation from owner occupation into renting; and vice versa. This relationship is what now drives the modelled changes in private rental share of dwellings/households.

Vacancies are projected in the model by comparing numbers of households and dwellings (one should also adjust for sharing, but there is not very much of this in Highland and it is difficult to measure). We constrain predicted vacancy rates to

maximum and minimum values. The minimum value actually applies to certain districts, which is a possible indicator that this aspect of the model is not operating in a completely realistic fashion. There are two underlying problems here. One problem is measuring vacancies in a consistent way (separately from second and holiday homes) in the base period. Revised data supplied by the Highland Council from their Council Tax database for 2007 help to improve the picture but we are still sceptical about whether there is fully consistent measurement compared with 2001. A second problem arose when we tried basing new build numbers partly on a continuation of those recently observed (social and intermediate) and partly based on the planning land availability numbers. This meant that stock might grow either faster or slower than households, and although there is some feedback this is not enough to prevent vacancies shrinking to the minimum or rising towards the upper limit. This aspect of the model was subsequently altered, for the baseline projection, by basing new affordable supply on base period need, and by setting new private build to match the projected household growth. Despite this adjustment, vacancies remain at the minimum constraint level in Mid Ross and Nairn.

Relet Rates in social rented and intermediate sector are forecast to change using the results of a statistical model originally calibrated on 20 years' data for local areas in England, the same basis as used in the SG model. The result is that relet rates are predicted to rise over the projection period, because of the effects of lower prices, higher incomes and (after 2011) falling unemployment. But allowing for the credit crunch, we have assumed that this increase does not happen until after 2011. The social rented stock is predicted to be fairly stable in percentage terms, with a slight overall decline. This means that the assumed level of new additions is more or less enough to offset the losses through RTB, which are assumed to be on a gently declining trend. The forecast level of new additions, however, is based on past levels of subsidy for affordable housing being maintained which is considered to be optimistic. The distribution between HMAs is based on need in the base period 2007. Overall, this model gives rise to a substantial increase in relets over the period, leading to a corresponding reduction in net need from the high levels seen in 2007. It is not clear quite how realistic this is and the model therefore may underestimate net need.

Projecting the Backlog. The backlog of unmet need is assumed to increase in those periods and areas where newly arising need is less than the supply from relets and new affordable units, and vice versa. We assume, as in previous SG and other versions of this model, that only a proportion of the difference (one-half) is added to the backlog, because of the effects of other market adjustment mechanisms. Ongoing work for the Government's Communities and Local Government Department (CLG) on developing a housing needs model for England does in fact provide empirical support for this level of supply-backlog need feedback. As indicated above, forecast assumptions for new affordable completions are optimistic which may result in the on-going / accumulative backlog being higher than projected.

Appendix B sets out some of the data on which various projections were based.

Projected Affordability

Affordability to buy or rent in the market is expected to improve by 7% points to 45% for Highland as a whole by 2016 (table 15). This is caused by the big price correction (20% in real terms relative to the trend), but modified by the rise in market rents and very limited income growth. Thereafter, affordability declines very slightly to 2021. In 2011, buying is again more affordable than renting, in all districts. By 2021, buying is still more affordable than renting in most districts, except Caithness, East Ross, Lochaber and Badenoch & Strathspey. However, buying and renting are quite similar in a number of areas e.g. East and West Ross, Skye & Lochalsh, Inverness.

Over the whole period, taking the average, the most affordable HMAis Caithness at 62%, followed by Badenoch and Strathspey (45%) and Sutherland (43%). The least affordable areas are West Ross (33%), Skye & Lochalsh (33%) Mid Ross (35%) and Nairn (37%). Inverness is close to the overall average at 42%.

Table 15: Affordability to Buy or Rent in the Market for Younger Households by HMA 2007-2021 (percent)

District	2007	2011	2016	2021	Average
Sutherland	39.1	48.8	45.7	40.1	43.4
Caithness	54.7	59.9	65.0	69.3	62.2
East Ross	34.8	40.6	41.3	39.7	39.1
West Ross	30.6	35.2	33.5	31.2	32.6
Mid Ross	32.2	39.4	36.8	30.2	34.7
Skye & Lochalsh	33.1	31.9	34.9	33.7	33.4
Lochaber	36.8	40.0	41.8	43.1	40.4
Inverness	35.4	40.5	45.9	45.7	41.9
Nairn	35.8	38.3	38.3	36.1	37.1
Badenoch & Strath	41.0	44.8	46.7	49.3	45.4
Highland Total	37.6	42.5	44.8	44.0	42.2
SG Model 2006	(2006)				
HIGHLAND	47.0	54.0	58.0	61.0	55.0
SCOTLAND	46.1	54.0	56.3	58.6	53.8

Table 15 contains comparative figures from the SG projections based on 2006. These show generally greater affordability, because they did not factor in the extent of actual price rises in 2006 and 2007. The treatment of rents was different, with different data, different ratios and a different way of forecasting future rents. We would regard our approach in this Highland study as more robust in that regard.

Table 16: Extra Affordability of New Build Shared Equity by HMA2007-2021

District	2007	2011	2016	2021	Average
Sutherland	1.4	0.1	0.0	0.0	0.4
Caithness	4.0	3.4	1.4	0.0	2.2
East Ross	18.9	17.4	18.0	17.6	18.0
West Ross	5.5	12.1	10.3	7.0	8.7
Mid Ross	16.3	15.9	14.1	10.5	14.2
Skye & Lochalsh	9.4	18.0	17.6	15.5	15.1
Lochaber	8.7	12.6	13.1	10.3	11.2
Inverness	10.6	12.5	12.0	11.3	11.6
Nairn	13.0	16.9	15.8	13.7	14.8
Badenoch & Strath	12.0	16.6	16.8	12.3	14.4
Highland Total	10.3	12.2	11.6	9.9	11.0

The incremental affordability of new build shared equity (NBSE) stood at 10% in 2007 (Table 16). From 2011 onwards this option becomes slightly more affordable, averaging around 11% for Highland. The affordability contribution of NBSE is particularly sizeable in East and Mid Ross, Skye & Lochalsh, Nairn and Badenoch & Strathspey (14-18%). There is little affordability scope for this option in Sutherland and limited scope in Caithness (where wider need/low demand issues would suggest that there is no scope).

Intermediate rent offers smaller scope overall (8-9%) in the later years. Open market shared equity offers about 4-5% points more affordability (in incremental terms) than NBSE, and this applies across most districts. It would be particularly helpful in widening access in Sutherland, West and Mid Ross.

Projected Need

The net need for Highland as a whole peaks in 2007 at 890 (or 981 positive need, discounting the surplus in one HMA) – see Table 17. It remains at quite high levels through 2011, allowing for the Credit Crunch effect on relets. It falls from this level in 2007-11 by about 40% by 2016, to 464 (net) or 628 (positives). It then remains stable between 2016 and 2021. The biggest factor in the decline in projected need to 2016 is the forecast rise in relets; this in turn reflects the lower house prices, which also directly reduce new affordable need.

Because we would not generally assume that surpluses in one HMA can balance shortages elsewhere, in such a dispersed area as Highland, it is probably more informative to look at the 'positive needs' total at the bottom of the Table. This falls by about a 30% between 2011 and 2016 (from 882 to 628), but then rises again marginally to 646 by 2021.

By the end of the period (2021), one HMA (Caithness) has a large modelled surplus, while all others remain in positive need. It is the HMA with the largest initial need, Inverness, which shows the largest absolute and proportionate fall; there is also a

fall in Sutherland, East Ross Lochaber, and Badenoch & Strathspey. Numbers remain persistently high in West and Mid Ross, Skye & Lochalsh, and Nairn.

Table 17: Projected Net Need for Affordable Housing by HMA 2007-2021
(number of household units per year)

District	2007	2011	2016	2021	Average
Sutherland	18	11	1	10	10
Caithness	-91	-99	-165	-177	-133
East Ross	47	49	24	31	38
West Ross	55	56	53	54	54
Mid Ross	139	119	118	140	129
Skye & Lochalsh	82	81	67	73	76
Lochaber	90	84	56	51	70
Inverness	411	355	206	185	289
Nairn	82	87	78	82	82
Badenoch & Strath	57	40	25	20	35
Highland Total	890	783	464	469	651
Total of Positives	981	882	628	646	784
SG Model 2006 (B)	616	454	187	256	378

The intensity of need relative to the household population is greatest, over the period as a whole, in Nairn, Skye & Lochalsh, West & Mid Ross. For each of these areas net annual need for affordable housing exceeds 1.2% of the total resident households. Lochaber, Inverness and Badenoch & Strathspey show an intermediate level of need (over 0.5%), while the ratios are more moderate for Sutherland and East Ross (0.15-0.45%).

One cautionary note to be sounded about these need figures is that no account has been taken in these summary projections of size/type imbalances. Some areas with a net surplus overall may still require some new provision to meet pressing shortfalls of particular sizes and types of dwellings. Recent evidence of size imbalance was presented above (Tables 8-9), but we comment further on future size mix below. Another cautionary note is that, equally, in large areas covering a number of rural communities e.g. Sutherland, it is likely that there will be mis-matches between where need occurs and where vacancies arise.

Components of Need

Trends in the composition of net need relative to relets supply are shown graphically in Figure 2.

New households unable to afford to enter the market is generally the largest component of need. This is forecast to remain stable, then to increase somewhat at the end of the period. These numbers reflect the interaction of demographics and affordability.

Net relets are forecast to rise significantly after 2011, from around 1200 to around 1600 in the later years. As has already been noted, this reflects forecast responses to lower house prices and economic growth, against a relatively stable social rented

stock. The upward direction of the change in relet rates is quite reasonable on all past experience; however, one might debate the extent of this, and also extent of decreases in social rented stock which may be associated with RTB.

The model assumes that RTB rates will fall; this may be plausible as a response to previous reforms restricting eligibility and discounts; further reforms might impose additional restrictions. The model assumes that recent affordable new build rates are maintained, with a slightly higher rate in 2011, both for social renting and intermediate sector. In later years, about 225 social units and 100 intermediate units are assumed to be provided per year, with a distribution between HMAs reflecting need in 2007 (but note, these are NOT counted directly in the net need calculation; they indirectly affect future backlog and stock/relet numbers). In addition, it should be noted that the relet numbers include an allowance for intermediate sector relets and resales; this is set at half the social rental relet rate, consistent with other evidence of LCHO resale rates. The intermediate stock is also assumed to experience decreases through a 5% pre annum 'staircasing' rate as households purchase larger shares of their shared equity housing.

The backlog allowance over time provides some tracking of whether affordable supply is running ahead of or behind need – are things getting better or worse? On this projection, things get slightly better for Highland as a whole. The total backlog (stock) is projected to fall from 5,350 in 2007 to 4,920 in 2011, 4,500 in 2016 and 3,950 in 2021. Backlogs fall in most of the districts, although they are static in Nairn and do not decrease much in the three Ross HMAs, or in Skye & Lochalsh . In Caithness the backlog would be almost eliminated by 2021.

If new affordable provision bears any relationship to our calculation of need, then the backlog should fall each year because we have included an allowance for the backlog in our calculation. So this outcome of falling backlog is not unexpected and should not be regarded as a problem. In fact it is what housing organisations hope to achieve. An important technical point to note is that we do not assume that the backlog falls 'one-for-one' with the balance between supply and new need. We assume that there are several adjustment mechanisms (migration, household formation, other moves etc) which mean that only part of any 'shortfall' or 'surplus' impacts on the backlog.

Figure 2

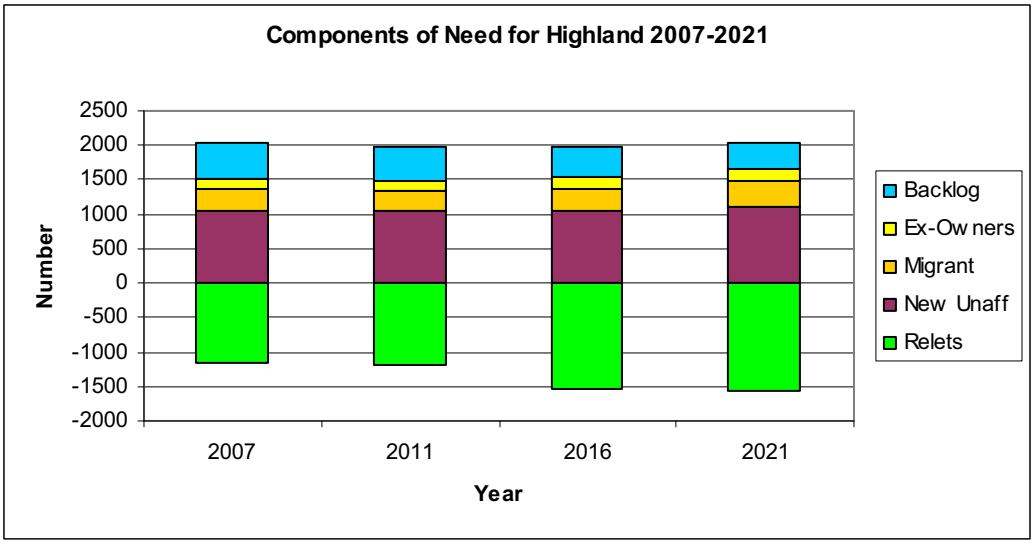


Figure 3 shows the composition of need compared with relets supply averaged over the whole projection period. Perhaps the most significant difference between the areas is in the relative scale of relets (shown below the line) compared with the sum of gross needs (shown above the line). Areas with a relatively larger relets supply include Caithness, East Ross and Inverness These are the areas where changes in need, related to affordability or demography, can make a proportionately larger impact on net need.

The backlog is relatively more important in Inverness, East and Mid Ross, and Lochaber. Migrant need is more significant in Inverness and Skye and Lochalsh.

Figure 3

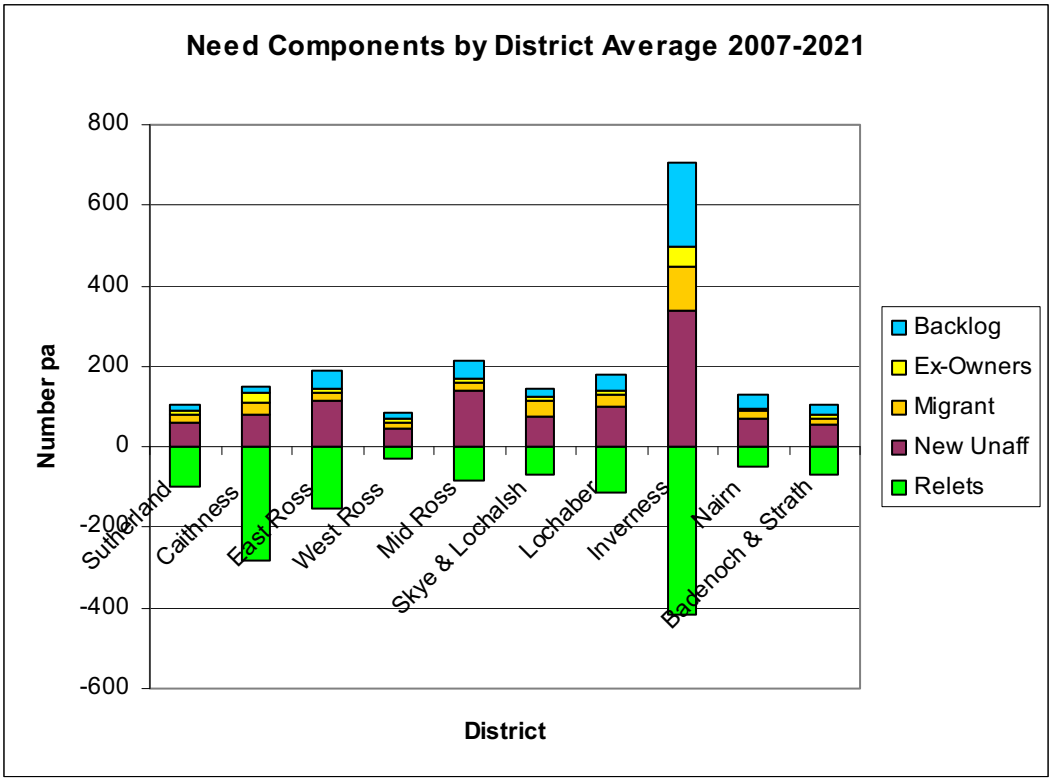


Table 18 shows the need for new build shared equity (NBSE) over time. This amounts to about 110 units per year throughout the period, with a slightly higher figure in 2011 (148). Interestingly, this level of need is similar to the level of provision projected. The largest NBSE need is in Inverness (34) and Mid Ross (25), although in these cases the numbers tend to fall later as the overall net need falls. There is little or no scope in Sutherland or Caithness. These estimates are conservative, insofar as they are scaled down proportionately where net need is quite small relative to gross need. The total would be higher if we did not do this proportional scaling, i.e. if we prioritised NBSE wherever there was a need for it.

There is limited scope for intermediate rent over the period, insofar as the number able to afford this is less than the number affording NBSE. However, it might be preferred by some households, including those who may have difficulties accessing mortgages e.g. because they are self-employed or without access to deposits. In the current post-credit-crunch conditions, there may be an additional role for

intermediate rent as these mortgage access problems are more acute. The potential scope for Open Market Shared Equity is considerably larger in most areas, totalling between 157 and 210 units per year across Highland. This number overlaps with the numbers shown for NBSE or intermediate rent; therefore the extra households who might be helped by this route, after making use of new build intermediate options, would be of the order of 50-70 households per year. The areas where this would be most helpful are those which tend to be most pressured: Mid and West Ross, and also Inverness.

We noted earlier that OMSE is a possible method of meeting excess need in areas where limits on new build numbers and quotas and/or affordability conditions make it difficult to meet need through new social or intermediate provision. It is a way of giving affordable access to the existing stock. Provision requires an initial cash subsidy, but this might be funded from 'commuted sums' relating to planning agreements where on-site provision was not considered appropriate.

Table 18: Need for New Build Shared Equity by HMA 2007-2021

	2007	2011	2016	2021	Average
Sutherland	0	0	0	0	0
Caithness	0	0	0	0	0
East Ross	7	8	4	7	6
West Ross	1	8	6	4	5
Mid Ross	30	29	23	16	25
Skye & Lochalsh	8	16	13	11	12
Lochaber	10	15	11	7	11
Inverness	40	48	26	23	34
Nairn	11	19	16	13	15
Badenoch & Strath	4	6	4	2	4
Highland Total	112	148	102	83	111

Affordable Provision Targets

This analysis of affordable housing needs provides some basis for the setting of planning targets for proportions of affordable housing. However, it should be emphasised that planning contributions are policy decisions that represent a balancing of several considerations in addition to 'need' – viability/feasibility, subsidy availability, existing commitments (including social housing only sites), site size thresholds, and other matters. So far as need is concerned, the targets should really reflect a picture of need projected forward over the plan period.

'Unconstrained' affordable housing targets simply divide net need by the (higher of) dwelling or household growth projected for future years (Table 19). It assumes that **all** the housing need in the year should be met through the new build housing. We have just commented on the limitations of these crude numbers and the practical and policy considerations which have to be weighed in setting targets. There is as expected wide variation in these unconstrained targets between districts, between at one extreme West & Mid Ross and Nairn (over 100% on average) and Sutherland

(26%), East Ross (35%) and Badenoch & Strathspey (42%), let alone Caithness (*minus* 291%). There is also some variation over time: for example, Lochaber falls from 104% to 83%, Inverness from 52% to 42% while West Ross sees an increase over time.

This evidence indicates that there may be a case for planning to enable a larger increase in supply through greater land release for new housing development in areas where unconstrained targets are very high, such as West and Mid Ross, Skye & Lochalsh, Lochaber and Nairn. In addition, comparison of projected new build (based on household projections) and land availability indicates that this assumed level of provision would significantly exceed currently available land in Nairn. The proposed A96 Corridor development would alleviate this particular pressure point.

The averages over the period are probably a better guide for planning purposes, although it is also important to anticipate any possible emergent surpluses. There is also a case for looking at the Inner Moray Firth HMAs as a group, because the very high figures for Mid Ross and Nairn can be balanced to some extent by the lower figures for Inverness. The combined IMF area would have an average indicative target of 68%, which is somewhat closer to a 'realistic' figure than say Mid Ross's 106%.

Table 19: Unconstrained Affordable Housing Targets by HMA2007-2021
(percent of new build/household growth)

District	2007	2011	2016	2021	Average
Sutherland	30	29	5	40	26
Caithness	-67	-189	-396	-512	-291
East Ross	42	43	22	31	35
West Ross	95	101	100	107	101
Mid Ross	109	93	99	122	106
Skye & Lochalsh	78	115	93	102	97
Lochaber	104	110	83	83	95
Inverness	52	78	47	42	55
Nairn	100	108	99	108	104
Badenoch & Strath	37	57	40	33	42
Highland Total	56	78	59	62	63
Inner Moray Firth	62	85	63	64	68

A more realistic approach might be to apply maximum and minimum constraints to targets – working from Table 19, we illustrate this with 0% and 50% constraints (i.e making an assumption that the Council would expect either none or only 50% of the new build be provided as affordable to meet the housing need). What is then perhaps of more interest is how much need is left 'unmet'. This would amount to between a quarter and two-fifths of annual need, a positive total of between 170 and 350 units per year. The largest amounts of unmet need would be in Mid & West Ross, Nairn, Skye & Lochalsh, and Lochaber.

As discussed above, an element of this unmet need could be tackled through mechanisms like Open Market Shared Equity (OMSE), which could in theory make a contribution without being a claim on new build targets. Nevertheless the Council has a preference to use new build provision rather than open market.

If we constrained targets in any year to the range 0-50%, then in 2016 five areas (Mid & West Ross, Skye & Lochalsh, Lochaber and Nairn) would have maximum 50% targets and one (Caithness) would have zero. By 2021 these five would still have the 50% maximum,

Size Mix over Time

We have already seen that in 2007 there was a relative imbalance in net need between the size categories of accommodation in social renting. This tends to become more accentuated over time, but with some local differences.

There is a lot more net need for one-bedroom accommodation across Highland, than there is for two-bedroom. This net need for 1 bed is forecast to fall substantially from c.510 in 2007 to c.375 by 2021, but would still remain substantial then. The net need for 2-bed homes would be a lot less and would fall to lower levels by 2016, before increasing again up to 2021.with surpluses in three areas (Caithness, Sutherland, Lochaber). Clearly, in the latter two areas, one-bedroom need could be met by some under-letting of 2-bed accommodation.

Most areas, other than East Ross, are short of larger (3+ bed) accommodation, and this situation generally persists over the period (except in Caithness). There is still a net need of c.200 pa for 3+ bedroom accommodation in social renting in 2016 and 2021. As noted earlier, there is a particular shortage of 4-plus bedroom accommodation.

Income Changes

The model shows real incomes increasing by a modest 7.3% for Highland over the projection period (Table 20). This is a lot less than the headline GDP growth trend (2.3%) would suggest. There are two main reasons for this difference: the recession happening between 2007 and 2011, and the effects of demographic change entailing more smaller and older households, particularly in the Highlands. The differences in income changes shown between areas are partly as expected, with more ‘depressed’ areas such as Sutherland and East Ross growing less and Inverness and Lochaber doing better. However, some of the differences are not entirely as expected; for example Mid Ross looks surprisingly negative (although starting from a high base)

Low income poverty is forecast to rise a little in the economically weaker areas up to 2011 (Table 20a). After that it is expected to fall noticeably over the period. Poverty here is measured against a benchmark (Income Support /Housing Benefit Applicable Amounts) which is assumed to be indexed to inflation, not general earnings.

Table 20: Household Income Levels by HMA2007-2021
(£ per week, gross, @ 2007 prices; percent change)

District	2007	2011	2016	2021	Average	Change 2007-21
Sutherland	457	441	447	440	446	-3.7
Caithness	490	481	504	522	499	6.5
East Ross	466	455	473	477	468	2.4
West Ross	504	495	516	520	509	3.1
Mid Ross	554	538	548	532	543	-4.1
Skye & Lochalsh	513	511	541	551	529	7.3
Lochaber	465	460	487	508	480	9.1
Inverness	548	548	591	630	579	14.9
Nairn	544	538	563	571	554	5.0
Badenoch & Strath	555	548	576	595	568	7.1
Highland Total	517	511	538	555	530	7.3

Table 20.a : Percentage of Households in Poverty by HMA 2007-2021

	2007	2011	2016	2021	Average
Sutherland	16.6	16.9	14.3	11.9	14.9
Caithness	14.6	14.5	11.9	9.4	12.6
East Ross	15.4	15.5	13.0	10.8	13.7
West Ross	12.5	12.4	10.3	8.6	11.0
Mid Ross	10.2	10.2	8.4	6.9	8.9
Skye & Lochalsh	12.9	12.4	10.0	8.2	10.9
Lochaber	15.5	15.3	12.5	10.0	13.3
Inverness	11.0	10.6	8.2	6.4	9.1
Nairn	11.1	10.8	8.7	6.9	9.4
Badenoch & Strath	10.2	10.0	8.0	6.4	8.6
Highland Total	12.7	12.5	10.1	8.1	10.8

House Price and Rent Changes

House prices in 2021 will be generally similar to 2007 levels, due to the expected 'correction' and recession effects early on just offset by the subsequent trend increase (Table 21). However, prices are expected to be around 4% lower in Caithness, 3% lower in Badenoch & Strathspey, and 2% lower in Inverness. Conversely, they will have risen by 5-6% in Mid Ross and Nairn, and by about 3% in Sutherland and East Ross. As noted earlier, these forecasts are based on a rather limited and simple model with several uncertainties, one of which is the possibly changing influence of second and holiday home investment.

Table 21: Real House Prices by HMA 2007-2021
(threshold prices for 2-bedroom homes in £ @ 2007 general price level; percent change 2007-2021)

District	2007	2011	2016	2021	*Average*	Change 2007-21
Sutherland	85,207	70,906	80,510	88,115	*81,185*	3.4
Caithness	65,075	55,199	56,673	62,189	*59,784*	-4.4
East Ross	92,150	80,277	86,409	95,119	*88,489*	3.2
West Ross	123,500	100,146	113,237	124,336	*115,305*	0.7
Mid Ross	118,750	102,605	114,970	125,365	*115,422*	5.6
Skye & Lochalsh	126,113	110,873	116,468	128,177	*120,408*	1.6
Lochaber	93,845	79,374	84,814	93,760	*87,948*	-0.1
Inverness	109,250	95,475	96,742	106,913	*102,095*	-2.1
Nairn	118,750	104,481	114,752	126,118	*116,025*	6.2
Badenoch & Strath	114,000	93,619	99,772	110,133	*104,381*	-3.4
Highland Total	102,992	88,603	93,958	103,410	*97,241*	0.4

The forecasting approach for market rents was discussed in considerable detail earlier. House prices will influence rents but not in a simple way. Our expectation is now that market rents will rise slightly in real terms (2%) over the period 2007-21, but that there will be considerable variation between districts. We expect rents to rise by 16% in Skye and Lochalsh and 13% in Nairn, while falling by 12% in Sutherland and 16% in Caithness.

Household Demographics

We expect the rate of gross household formation per year to be relatively static in Highland over the period, with only slight differences of trend in the different areas. This finding is partly a product of the relatively simple method used to estimate household formation, and the linkage to the household projections.

Net migration is projected to contribute a larger positive element to household numbers in 2021 compared with earlier years.. Migration is expected to increase more strongly in Sutherland, Caithness (albeit from a low base), East and Mid Ross and Skye & Lochalsh. By contrast, the migration rate remains static in Inverness. These findings flow primarily from the household projections provide by THC. We would question the realism of increasing migration gains for some of the northerly

areas given other evidence of economic and housing market weakness. We would expect stronger migration increases in the more south-eastern areas (IMF and Badenoch & Strathspey). This aspect of the projection may merit further discussion.

Vacancies

For Highland as a whole, vacancy rates (shown in Table 22 below) appear to be quite reasonable in 2007, at 4.1% overall, although it was indicated by The Highland Council that there are measurement/definitional difficulties within current Council Tax data particularly around whether a home is a second or holiday home.

Vacancies appear to be particularly high in Sutherland, Caithness, West Ross and Badenoch & Strathspey, indicative of a remoteness effect but also perhaps definitional ambiguity in relation to second and holiday homes.

The trend over time for Highland is for rates to rise sharply to 6.6% by 2011, followed by a slight fall to 5.3% in 2021. However, for constituent areas the trends diverge. Vacancies tend to rise strongly in Caithness and in Inverness, while tending to fall in Sutherland, West and Mid Ross, and Nairn. Indeed, in two of these areas vacancies have hit the buffers of our minimum constraint of 1%. This is a further indication of a need for greater land release for new building in these HMAs.

Table 22: Vacancy Rates by HMA2007-2021 (percent, all tenures)

District	2007	2011	2016	2021	Average
Sutherland	8.3	4.3	3.9	3.8	5.1
Caithness	6.0	11.5	11.0	10.9	9.9
East Ross	3.0	4.1	3.3	2.9	3.3
West Ross	7.9	5.3	4.9	4.6	5.7
Mid Ross	2.6	1.0	1.0	1.0	1.4
Skye & Lochalsh	2.8	6.5	5.6	4.9	4.9
Lochaber	4.8	6.2	5.3	4.8	5.3
Inverness	2.7	8.4	7.4	6.5	6.2
Nairn	2.4	1.7	1.0	1.0	1.5
Badenoch & Strath	6.7	8.2	7.4	6.9	7.3
Total	4.1	6.5	5.8	5.3	5.4

Tenure

Table 23 shows the projection of tenure shares in 2007 and 2021, showing how this is expected to change. Homeownership is forecast to decline significantly across the Highlands, from 68.7% to 66.9%. Given the government's recent policy rhetoric about promoting wider home ownership this may be seen as something of a setback, and clearly the previous expansion will not be maintained. However, this is an inevitable corollary of the advance of other tenures (particularly private renting), and the stemming of the decline of social renting. Most of the intermediate tenures will be forms of home ownership, so to that extent the picture is more positive. However, allowing for staircasing, intermediate tenures are actually expected to decline slightly. Ownership (excluding LCHO) is expected to fall by more than the 2% point average in West & Mid Ross, Skye & Lochalsh and Inverness.

Social renting is predicted to be relatively static, with a share across Highland remaining around 18%. The share would actually rise in West and Mid Ross and Badenoch & Strathspey. It would fall in Caithness and East Ross.

Private renting is forecast to increase somewhat, from 10.8% to 12.8%., across Highland. However, it is expected to increase rather more in Inverness and Nairn.

Table 23: Tenure Shares by HMA in 2007 and 2021

District	Own 2007	Own 2021	Inter 2007	Inter 2021	Social 2007	Social 2021	Pr Rent 2007	Pr Rent 2021
Sutherland	67.7	66.4	1.3	1.0	17.6	18.0	13.3	14.6
Caithness	69.6	70.8	0.8	0.6	24.9	24.2	4.7	4.3
East Ross	57.2	59.8	7.1	4.4	26.6	25.2	9.1	10.5
West Ross	70.2	66.9	2.3	1.4	8.5	11.3	19.0	20.4
Mid Ross	68.1	64.1	2.4	3.1	14.6	16.0	14.9	16.7
Skye & Lochalsh	70.5	67.2	0.4	1.4	15.1	16.4	14.0	14.9
Lochaber	63.2	60.9	0.8	1.1	21.0	22.1	15.0	16.0
Inverness	73.6	69.9	2.4	2.3	16.4	16.9	7.6	10.9
Nairn	65.9	63.8	4.0	2.9	15.2	15.8	15.0	17.5
Badenoch & Strath	68.9	66.9	3.9	3.7	13.5	15.3	13.7	14.1
Highland Total	68.7	66.6	2.5	2.2	18.0	18.5	10.8	12.6

Sensitivity Analyses

The next section of this report discusses the results of various sensitivity analyses. The purpose of these is to explore and quantify the impact on key output numbers of changes in particular, key variables or assumptions. It also enables housing need and other values to be expressed as a range, as expected in the SG Guidance on assessing housing need and demand.

Sensitivity analyses featured in the previous published Scottish Government reports on the affordability and needs model. In some cases, e.g. house prices, it is appropriate to present these as ‘ready reckoner’ tables, for use in future monitoring activity.

Three sensitivity tests are presented:

- Alternative base for migrant need.
- Higher or lower house prices after 2011
- A higher or lower demographic growth scenario.

Migrant Need

In the baseline model migrant need was estimated using the average of four different bases, drawing on different sources of information, as described earlier. However it was agreed to explore further whether these estimates could be improved. Subsequently, we were able to operationalise a further method of estimating the relative income level of migrants, as well as refine the use of data from the lettings and housing register systems. On this basis a new, and hopefully improved estimate of the annual need for affordable housing for migrants was developed.

The new or different elements are as follows

(a) Census data on the occupations (NS-SEC) of households and 'moving groups' moving home in the year 2000-01 were interrogated at ward level for Highland and aggregated to the 10 HMAs. These show the number of moves within each HMA, the number of moves in and out to/from rest of Highland, and the number of moves in and out to/from the rest of UK/world[11] broken down by broad occupational group. Broad occupational groups are assigned an average household income from analysis of the Family Resources Survey (FRS), cross-tabulating household income by grouped NS-SEC. These figures are used to impute average incomes to in- and out-migrant flows – the results of this exercise are shown in Table 24 below. Affordability rates for in- and out-migrants are estimated for each HMA by taking the 'marginal affordability rate' (as assessed for OMSE) and applying it to the percentage difference between the average income for the migrant groups and the average (under-35) income for the HMA from the income model. This yields estimates of the 'unaffordable' in- and out-migrants, with the difference between these two numbers being the net addition to need on account of migration.

(b) The figures for new lettings to people moving from outside Highland are modified from a gross to a net basis, by multiplying by the ratio of net (in-)migrants to gross in-migrants. The reason for this is that the logic of the needs model suggests a net figure, even though this may be derived from gross figures. Basically, the model calculates newly arising need based on the population living within the district. Migration brings in some new people who need affordable housing, but it also takes away some of the people forming new households, many of whom would have been estimated to need affordable housing. That is why a net measure is better (this assumes that the majority of such migration happens either at the point of new household formation or when people are young and mobile, and typically living in the PRS.)

Element (a) replaces the previous element which simply took 'one third' of the net migration (household) number times the district-level (indigenous) unaffordability rate. The one-third assumption was an arbitrary device to allow for the fact that migrants tended to have higher incomes and were less likely to seek or be allocated social housing. We no longer apply this one-third factor in the modified formula. For this reason we would expect the new estimate to be higher than the previous one,

[11] For out-movers, the Census does not record those moving to other countries outside the UK.

although this would be accentuated to the extent that migrants really did tend to belong to high-earning occupations (Table 24 suggests that they do).

Element (b) involves a reduction in the resulting figure. In practice, this effect tends to offset the increase associated with element (a).

The resulting net migrant need for affordable housing is still based on four factors, two relating to proxied income levels of migrants and two related to recorded flows into and requests for social tenancies in the Highland area. One of the former has been substantially changed, while the latter two have been modified from a gross to net basis.

Table 24 shows the estimated incomes (based on occupations) for the various migrant groups across the Highland districts. It is generally the case that movers in (and out) have higher incomes than movers 'within' districts', who themselves tend to have higher incomes than people remaining living within the HMA without moving. In-migrant incomes are relatively high compared with residents (under 35) in Caithness and Lochaber, and relatively lower in West and Mid-Ross. In-migrant incomes are higher than out-migrant incomes in Sutherland, with least difference in Inverness. In-migrant incomes are markedly higher than movers within the HMA in Nairn.

Table 24: Average Incomes of Households Moving Within, into and Out of Areas in Highland,
(£ per week, 2005 values based on 2001 Census analysis by NS-SEC occupation)

	Movers within dist *WithinInc*	In-Migrants *InMigInc*	Out-Migrants *OutMigInc*	Residents under 35 *mnyyng*	Difference *In-Out*	Difference *In-Within*	Difference *In-Resid*
Sutherland	559	601	518	423	83	42	178
Caithness	598	638	611	437	26	40	201
East Ross	553	588	554	410	34	35	178
West Ross	553	585	560	437	25	32	147
Mid Ross	595	635	610	494	25	41	141
Skye & Lochalsh	568	608	577	451	31	40	157
Lochaber	570	609	579	409	30	39	200
Inverness	588	631	628	474	3	43	158
Nairn	555	646	608	486	39	92	160
Badenoch & Strath	587	608	571	487	37	21	121

An alternative way of estimating incomes of migrants is based upon their household type composition, again based on the Census. This suggests that the net migrant flow has a relatively high potential income in Mid and East Ross compared with other districts. Relatively low figures come out for Caithness and Lochaber. Our composite migrant need estimates take account of this information as well.

It was suggested above that the alternative migration need figures would probably, on balance, be lower than those used in the baseline. This is borne out by the figures shown in Table 25. For 2007 the migrant need numbers would fall from just

326 to 275, a reduction of one-sixth. The reduction is relatively greater in Caithness, Sutherland, Lochaber and Badenoch & Strathspey. It is rather slight in other districts, including Mid Ross and Inverness.

Table 25: Baseline and Alternative Migrant Need Estimates by District, 2007

District	Gross In-Migrant Hhlds *ginmhhty*	Gross Out-Migrant Hhlds *gomhhty*	Net Migrant Hhlds *nmighty*	Baseline Migrant Aff Need *migneed*	Alternative Migrant Aff Need *altmigneed*
Sutherland	273	224	76	17	11
Caithness	292	296	52	28	13
East Ross	116	91	84	16	15
West Ross	273	213	62	14	13
Mid Ross	470	367	121	18	18
Skye & Lochalsh	266	209	69	44	38
Lochaber	330	290	73	26	17
Inverness	1269	965	425	122	116
Nairn	257	188	87	20	17
Badenoch & Strath	287	218	83	20	17
Total	3834	3062	1132	326	275

The absolute magnitude of overall migration numbers alongside the 'unaffordable'/need' figures area worth underlining. The 'need' associated with migration is only between 23% and 29% of the net migration figure, while being only 6-8% of the gross in-migration figure.

A further comment on migration is in order here. The increase in migration after 2004 was mainly accounted for by working age migrants from new EU member states. As noted earlier, this group are not initially candidates for subsidized affordable or social housing, although if they remained indefinitely they could become so. This group will have relatively modest incomes and are likely to be housed initially in the private rented sector. This may have increased pressure in this sector, raising rents somewhat and increasing the size of the sector. Our base period rental figures should have already reflected this impact on rents. The extent to which these migrants remain in the UK in general, or the Highlands specifically, is rather unclear, although there is already evidence of a falling-off in the rate of inflow. It is a limitation of our methodology for estimating migrant need that, insofar as it is based on 2001 Census, it does not fully reflect the particular characteristics of these new EU migrants.

House Prices

One of the most useful sensitivity tests is to look at the effects of different house price levels in future years. House prices are rather volatile, difficult to predict, and have a big impact on housing needs through the affordability mechanism. We look at the effect of different house price levels in forward years of the projection, rather than creating a hypothetical alternative past situation. Essentially, in the current situation of market downturn following the credit crunch and associated recession, this is a question about at what level house prices will 'bottom out' after their current fall. This can be tested by changing the parameter in the model for the extent of 'house price correction' between 2007 and 2011. The baseline assumption is currently for a 20% correction in real terms relative to the trend. The alternatives considered are a 4% correction (prices are higher than the baseline) and a 36% correction (prices fall more than the baseline); these are effectively equivalent to +20% and -20% relative to the base scenario.

The baseline fall of 20% is argued to be a not unreasonable assumption for Scotland. We would point out that Nationwide's respected price index showed a fall of 15.5% in the year to January 2009 for UK as a whole. For Q4 2008, this fall was 14.7%, and at that stage Scotland's prices had fallen by 8.1% over the year. It is a matter of opinion whether Scotland will continue to perform markedly better than the rest of the UK. Some have suggested that Scotland may experience less of a correction due to having had less of a boom in the past, and lower levels of indebtedness. Our view tends towards suggesting that the level of price correction will be similar to UK in the end, because (a) the fundamental driver, shortage of mortgage lending, applies equally, (b) the second driver, onset of recession in wider economy, will hit Scotland as hard, while (c) the argument that Scottish house prices did not previously experience an unsustainable boom does not stand up – there was very strong growth in the four years or so up to 2007.

It should be noted that the model assumes an underlying growth trend in real house prices of 1.6% pa above inflation – the price correction is overlaid on this, and growth at this rate is resumed post-correction.

Table 26 shows the impact of 20% higher house prices on affordability to buy or rent in the market, by HMA and for two forward years, 2011 and 2016. This degree of difference in price makes a difference of about 9% points in ability to buy, with slight variation between years and areas – e.g. a lower figure in Caithness. Expressed as an 'elasticity' (relative proportional change – see footnote 10), the average impact is around -1.0, ranging from -0.63 in Caithness to -1.27 in Skye and Lochalsh in 2011.

The impact on ability to rent privately, however, is rather slight, especially in 2011 when the absolute impact is only a fall of 0.2% (an elasticity of -0.03). The impact is rather more substantial by 2016, but still considerably smaller than the impact on ability to buy (absolute -3.3%, elasticity -0.42). Private rents do not fall initially, because of the offsetting effects of capital gains on landlords target return, but eventually the higher level of prices feeds through to some extent (6.6% rise in rents in 2016). The overall impacts on affordability of the market then depend on which tenure was initially more affordable, giving a mixture of higher effects where it is homeownership and lower effects where it is private renting.

The effects of lower prices are shown in the Appendix to save space (tables A.2 and 3). They are roughly mirror images of those described above. The percentage able

to afford the market rises by 11.0% points in 2011 and 10.8% in 2016 with prices 20% lower than baseline.

Table 26: Impact of Higher Prices on younger (<35) Households Affordability to Buy or Rent , 2011 and 2016

(impact of 20% higher house prices, in % points and expressed as elasticity[12])

District	Hhlds Able to Buy (wealth adjusted)	Hhlds Able to Rent (PR)	Hhlds Able to Afford either	Hhlds Able to Buy (wealth adjusted)	Hhlds Able to Rent (PR)	HAble to Afford either
	2011	2011	2011	2016	2016	2016
	pbwadj	*pctpr*	*pctaff*	*pbwadj*	*pctpr*	*pctaff*
Sutherland	-9.1	-0.3	-9.1	-8.9	-3.2	-8.9
Caithness	-7.6	-0.2	-1.4	-7.6	-1.2	-1.2
East Ross	-9.2	-0.2	-5.4	-9.1	-4.0	-6.3
West Ross	-8.8	-0.4	-7.6	-8.3	-2.9	-5.0
Mid Ross	-9.3	-0.3	-8.2	-8.8	-3.3	-6.7
Skye & Lochalsh	-8.1	-0.2	-2.6	-8.4	-3.1	-5.3
Lochaber	-9.0	-0.3	-5.3	-9.0	-3.2	-5.2
Inverness	-9.3	-0.2	-9.1	-9.5	-4.0	-9.5
Nairn	-9.0	-0.2	-7.0	-8.7	-3.1	-6.9
Badenoch & Strath	-9.8	-0.4	-3.9	-9.7	-3.3	-3.6
Total	-9.0	-0.2	-6.6	-8.9	-3.3	-6.6

	Price-Elasticity					
	Buy	Rent	Afford	Buy	Rent	Afford
	2011	2011	2011	2016	2016	2016
Sutherland	-0.93	-0.04	-0.93	-0.97	-0.42	-0.97
Caithness	-0.63	-0.02	-0.12	-0.60	-0.10	-0.10
East Ross	-1.14	-0.03	-0.66	-1.12	-0.52	-0.78
West Ross	-1.25	-0.07	-1.08	-1.26	-0.47	-0.76
Mid Ross	-1.18	-0.04	-1.04	-1.20	-0.50	-0.90
Skye & Lochalsh	-1.27	-0.04	-0.40	-1.22	-0.48	-0.77
Lochaber	-1.13	-0.04	-0.66	-1.09	-0.40	-0.63
Inverness	-1.15	-0.03	-1.13	-1.06	-0.56	-1.06
Nairn	-1.18	-0.03	-0.91	-1.16	-0.45	-0.93
Badenoch & Strath	-1.09	-0.05	-0.43	-1.05	-0.36	-0.39
Total	-1.06	-0.03	-0.77	-1.01	-0.42	-0.75

[12] The 'Elasticity' measures the proportional change in affordability for one unit change in price (i.e. a doubling).

Table 27: Impact of Higher Prices on Incremental Affordability of Intermediate Sector Options by District, 2011 and 2016
(impact of 20% higher house prices, in % points)

	Afford NBSE 2011 *iphs2*	Afford OMSE 2011 *iphb2*	Afford Int Rent 2011 *ipir2*	Afford NBSE 2016 *iphs2*	Afford OMSE 2016 *iphb2*	Afford Int Rent 2016 *ipir2*
Sutherland	-0.1	3.8	7.1	0.0	2.6	4.8
Caithness	-3.4	-2.5	0.2	-1.4	-2.5	-0.7
East Ross	-1.3	-1.7	3.7	-0.7	-1.2	1.8
West Ross	-2.8	-1.6	5.1	-5.2	-4.8	0.5
Mid Ross	-2.2	-0.8	6.0	-4.1	-3.4	1.9
Skye & Lochalsh	-7.5	-7.0	0.3	-4.7	-4.2	0.9
Lochaber	-3.2	-1.7	3.3	-4.3	-2.2	1.4
Inverness	-1.1	0.7	6.9	-0.6	1.5	4.6
Nairn	-3.2	-2.0	4.8	-3.2	-2.5	2.6
Badenoch & St	-4.5	-4.3	1.6	-6.0	-4.7	-0.7
Total	-2.4	-1.0	4.6	-2.2	-1.1	2.4

Higher house prices, by worsening affordability and increasing overall need, tend to increase the scope for intermediate housing options. However, Table 27 shows that the effect on shared equity is rather mixed, because of course the price of the shared equity scheme will also be increased. The effect of higher prices on the potential for intermediate rent is more positive, accounting for 4.6% points more in 2011 and 2.4% points in 2016. This scope is less however, in Badenoch & Strathspey and in Caithness.

Lower prices would reduce the affordability scope for any of the schemes in nearly all districts, with an overall impact of -1.8% points on NBSE, -3.8% points on OMSE, and -5.8% on intermediate rent.

Table 28 shows the impact of higher prices on the net annual need for affordable housing across the areas in 2011 and 2016. This table also shows impacts on the components of need, so one can see what is contributing to the overall effect. Higher prices (20% higher) would raise net need substantially, by 270 units per year (31%) in 2011 and by 323 units per year (51%) in 2016.

The largest contributors to this large change in net need are new affordable need (+121/+127), and net relets (-128/-159); the relets prediction function is quite sensitive to house prices. Migrant need would increase moderately in both years (+27/+31), while the backlog would grow gradually larger, increasing annual needs in 2016 (+13).

The impact of (20%) lower house prices on net need is larger in numerical terms (-344/-365), but slightly less significant in practice because more areas would move into surplus (three .by 2016). Nevertheless, positive net needs in 2016 would be 365 units (58%) less. This underlines the point that the net need numbers generated by

the projection model are really quite sensitive to the general level of house prices, which is an inherently uncertain factor.

Table 28: Impact of Higher Prices on Components of Net Need by District, 2011 and 2016
(impact of 20% higher prices; number of household units per year)

District	New Aff Need	Migrant Need	Ex-Owner Need	Backlog Allowance	Net Relets	Net Need*
2011	*affneed*	*migneed*	*ownneeda*	*backlog*	*reletnty*	*nneed*
Sutherland	10	2	0	0	-8	19
Caithness	3	2	-1	0	-18	22
East Ross	10	0	-1	0	-18	27
West Ross	5	1	-1	0	-3	9
Mid Ross	17	2	0	0	-11	30
Skye & Lochalsh	3	5	0	0	-6	13
Lochaber	9	2	0	0	-12	23
Inverness	53	11	-2	0	-38	101
Nairn	8	2	0	0	-7	15
Badenoch & Strath	4	1	0	0	-6	10
Total	121	27	-6	0	-128	270

2016	*affneed*	*migneed*	*ownneeda*	*backlog*	*reletnty*	*Nneed**
Sutherland	10	2	0	1	-9	22
Caithness	3	2	-1	1	-22	27
East Ross	12	1	-1	1	-22	36
West Ross	4	1	-1	0	-4	8
Mid Ross	14	2	0	1	-15	32
Skye & Lochalsh	6	4	0	1	-8	19
Lochaber	9	2	-1	1	-15	27
Inverness	57	13	-2	5	-49	122
Nairn	8	2	0	1	-8	18
Badenoch & Strath	4	1	-1	1	-8	13
Total	127	31	-8	13	-159	323

* As this shows the impact, .this figure should be added to the main assumption net need

Table 29 looks at the impact of the higher price scenario on new build output and 'unconstrained' planning targets for affordable housing.

Higher prices would generate more private sector output. The amount of extra output is projected at around 40 units per year (c.4%) – however, this is a product of a broad brush supply response parameter included within the model, which has not been specifically calibrated on Scottish data and should therefore be treated with caution as housing supply in Scotland may be less responsive to house price changes e.g. if housing supply is less responsive then the impact of affordable housing targets may be higher still. .

The level of unconstrained affordable housing planning targets resulting from this higher price scenario would be very much larger, 24% points in 2011 rising to 33%

points in 2016, with higher-still figures in some districts. The low price scenario leads to even larger changes in the other direction (-38% to -50%). Although seven areas would then still have positive targets, three would be below 25% while the other four would at least be closer to being in the feasible range (54% to 72%). However, the magnitude of the swings in target figures sounds a cautionary note about sensitivity of this relationship.

Table 29: Impact of Higher House Prices on New Build and Affordable Housing Targets by District, 2011 and 2016
(number of units per year; percentage points difference in unconstrained planning target)

District	New Dwellings 2011 *newdwg*	Afford'y Target % 2011 *afftarg1*	New Dwellings 2016 *newdwg*	Afford'y Target % 2016 *afftarg1*
Sutherland	1	47	1	71
Caithness	2	47	1	70
East Ross	5	22	5	31
West Ross	1	13	2	11
Mid Ross	3	21	4	22
Skye & Lochalsh	3	14	3	22
Lochaber	3	25	2	37
Inverness	19	18	17	25
Nairn	4	13	3	19
Badenoch & Strath	2	13	2	18
Total	42	24	40	33

Higher Population and Household Growth

The next alternative scenario considered is one entailing higher levels of household growth, essentially driven by higher migration. The rationale for this scenario is that there is inevitably some uncertainty about future demographic prospects for Highland and given that forward projections of need are tied to demographic projections it is desirable to show how sensitive results are to this factor. The baseline is built around a central projection which has a lower level of growth and migration than that seen in the recent past, although consistent with longer term experience. While there is no certainty that the recent higher population growth rate will be maintained, it seems appropriate to test the implications of this happening. Because of their policy drive as expressed through documents such as the Housing Need and Demand Assessment and Scottish Planning Policy 3 (SPP3), the Scottish Government particularly wished to see this test included.

As implemented here, this scenario entails only changing the demographic numbers and other factors within the model which respond to this, particularly new private development. We do not change the forecasts for real income levels per household or rates of unemployment or economic activity. That implies an equivalent degree of adjustment in jobs and economic activity to match the higher working population numbers.

The basic population and household numbers for the two scenarios are shown in Table A.1, Appendix A.

Table 30 shows the trajectory of increases in household growth and the resulting impacts on annual affordable need (positive values) over the period 2011-2016-2021. The increase in household growth builds up from 163 pa in 2011 to 215 pa by 2021. The largest absolute increase is in Inverness, which gets about 40% of the increase. Otherwise the reductions are spread rather evenly.

The impact of this higher household growth on affordable needs would be positive, rising from 53 more in 2011 to 110 more households needing affordable housing per year by 2021. Thus between 33% and 51% of the difference in households would be reflected in the affordable housing need.

Table 30: Differences in Household Growth and Affordable Need by HMAand Year (High vs Medium Demographic Growth Scenario) – number per year

District	Hshld Growth			Positive Need		
	2011	2016	2021	2011	2016	2021
	hgronty	*hgronty*	*hgronty*	*posneed*	*posneed*	*Posneed*
Sutherland	11	15	16	3	6	8
Caithness	10	12	12	0	0	0
East Ross	11	14	13	5	7	10
West Ross	5	6	6	1	2	2
Mid Ross	11	14	14	2	5	6
Skye & Lochalsh	11	14	15	7	10	13
Lochaber	8	11	12	3	6	8
Inverness	68	84	88	23	34	42
Nairn	12	16	18	3	7	9
Badenoch & Strat	15	20	20	5	8	11
Total	163	207	215	53	83	110

The increase in affordable need would be more skewed towards Inverness, and. , with significant increases also in Skye & Lochalsh, Badenoch & Strathspey and East Ross.

Table 31 provides detail on the changes in the components of the need calculation, compared with the baseline, for the final year of the projection, 2021. Three elements mainly account for the increase– new affordable need, migrant need, and reduced relets.

Table 31: Differences in Components of Need by HMA in 2021 (High vs Medium Demographic Growth Scenario) – number per year

District *2021*	New Aff Need *affneed*	Migrant Need *migneed*	Ex-Owner Need *ownneeda*	Backlog Allowance *Backlog*	Net Relets *reletnty*	Net Need *nneed*
Sutherland	3	3	0	0	-2	8
Caithness	1	2	0	0	-2	6
East Ross	5	2	0	1	-2	10
West Ross	0	2	0	0	0	2
Mid Ross	2	2	0	0	-2	6
Skye & Lochalsh	3	7	0	1	-2	13
Lochaber	3	3	0	0	-2	8
Inverness	14	15	0	3	-10	42
Nairn	3	4	0	0	-2	9
Badenoch & Strat	4	4	0	1	-2	11
Total	38	43	1	7	-26	115

The increase in migrant need follows directly from the fact that most of the extra demographic growth comes from higher migration. Household formation increases slightly because of larger population and this increases new affordable need, but this is reinforced by a modest rise in market rents (see below).

We have tested the impact of using the alternative basis for calculating migrant need, as discussed above. This makes only a moderate difference overall (4 extra units of need in 2021).

Table 32 shows the impacts of this scenario on a range of market variables, expressed in percentage terms, again looking at the end of the projection period.

Table 32: Impacts of Higher Demographic Growth Scenario on Selected Market Variables by HMA2021 (percent)

District *2021*	House Price %	Market Rent %	Hhld Growth %	New Build %	Gross Hhld Form %	Vacancy Rate % pts
Sutherland	-0.2	0.9	59.6	63.1	1.5	0.1
Caithness	0.0	0.0	33.1	36.0	0.9	-0.1
East Ross	-0.1	1.1	11.7	13.2	1.7	0.1
West Ross	-0.1	0.2	9.7	11.1	-1.8	0.0
Mid Ross	0.0	0.3	11.0	12.5	-0.4	0.0
Skye & Lochalsh	0.0	1.7	18.8	20.9	0.4	0.0
Lochaber	-0.1	0.6	18.6	19.7	0.5	0.0
Inverness	0.0	1.6	16.9	19.3	1.2	-0.1
Nairn	0.0	0.7	20.5	23.8	1.0	0.0
Badenoch & Strat	-0.1	1.3	28.0	33.0	2.0	0.0
Total	0.0	1.0	18.3	20.4	0.8	0.0

There are very small impacts on house prices, which can effectively be ignored (essentially, this is because we have based new build on household growth numbers and assume that growth will be matched by an increase in housing supply). Market rents rise modestly as a result of the increased number of households. This is forecast to be highest in Skye and Lochalsh and Inverness, but in absolute terms it is still small,

Household growth would be 18% higher overall, but with greater proportional increase in Sutherland, and least in the Ross HMAs. This is based on a positive view of the economic future of Highland. We have some doubts about whether this geographical distribution of higher growth is fully realistic.

New build also increases by a similar amount, given the way the model is designed.

Gross household formation increases by 0.8% overall, much lower than the household growth increase. This applies to varying degree in all districts, except West Ross. The main driver here is younger adult population..

Finally, vacancy rates do not change much in this scenario. This is because of the way new dwelling numbers have been linked to household growth. .

As the comments on these results illustrate, we do not regard this demographic scenario as wholly realistic, for some areas. This has also been a rather mechanistic exercise, and there may be merit in exploring further scenarios entailing more linkage between demographics, economic performance, and land allocations /new building levels.

Range of Housing Need

Because single figures imply an exactness which could be challenged – figures such as housing need are expected to be presented as a range. Table A.4 in the appendix summarises net housing need in each of the HMAs under the two principal scenarios – house price and demographic change.

The demographic scenarios indicate the net housing need for Highland is in the range of 838 – 934 units in 2011; 557-711 in 2016 and 552-756 in 2021. Apart from Caithness, all the HMAs have a requirement for additional affordable housing over the period. Albeit if there is lower demographic growth in 2016 Sutherland has a small modelled surplus.

The wider range of net housing need under different house price scenarios (from prices dropping by 36% in real terms to a small drop of only 4%) can be seen. Recent indications from the housing market are that prices will not experience as large a drop as has been modelled.

Principal Conclusions

Only a third of younger households in Highland could afford to buy in the market in 2007, although rather more (38%) could afford private market rental. There is wide variation in affordability, from 31% in West Ross to 55% in Caithness. Affordability is expected to improve with lower house prices following the current recession, reaching 45% in 2016.

In 2007, the annual net need for affordable housing totalled 981 units per year, with positive needs in all HMAs except Caithness. Relative to population, need is highest in Nairn, Skye & Lochalsh, Mid and West Ross. Net need is projected to fall to around 600-650 per year in 2016-2021, with all HMAs remaining in positive need except for Caithness. The biggest factor in this fall is an increase expected in relets. Need backlogs would fall slightly with current levels of new provision.

A need for intermediate provision such as shared equity is identified, at a level of rather over 100 units per year over the projection period, similar to current levels of provision. Additional households could be helped by open market shared equity, particularly in some areas where overall new supply may be restricted.

In 2007 need for affordable housing exceeds total new build in three HMAs and exceeds 50% of new build in three other HMAs. Over the whole projection period need exceeds 90% of new build in five HMAs, while only three HMAs have positive targets less than 50%, which might be considered to be a feasible range for affordable housing planning targets. This suggests that there is a case for increasing overall new housing plans in West and Mid Ross, Skye and Lochalsh, Lochaber and Nairn. However, Caithness shows a persistent and growing surplus over the period.

There is a large excess need for small (1-bedroom) social rented accommodation, compared with a relatively moderate amount of need for 2 bedroom and 3 bedroom accommodation. There is also a significant need for four-bedroom accommodation, a type of unit that rarely becomes available for re-letting. For intermediate housing the emphasis should be more on 2 and 3-bedroom housing. For older people's accommodation, there appears to be a shortage of 2-bedroom housing but a surplus of one-bed.

The prospects for household income growth in Highland are quite modest, due to the current recession and to the effects of demographic change in household composition.

Owner occupation is projected to fall slightly as a share of all households, while social renting and intermediate tenures are expected to roughly maintain their share. Private renting is projected to increase.

Migration contributes significantly to affordable housing need in Highland, accounting for around 250-300 households per year. This estimate is based on a range of data, although it is difficult to take full account of the recent phenomenon of migration from new EU member states.

A 20% difference in future house prices would have a substantial impact on affordability and net need, of the order of 300 households per year in the latter case. Such a difference would alter affordable housing targets by between 25% and 333% points. Nevertheless, given the excess of need over feasible affordable housing

provision targets (as a proportion of new build) in the baseline projection, uncertainty about future price levels does not undermine the case for greater provision.

The level of future migration and household growth assumed in projections also makes a difference to future need estimates, although these are somewhat smaller in magnitude, of the order of 50-100 households per year.

APPENDIX A: DEMOGRAPHIC SCENARIOS

Table A.1. Baseline and High Demographic Growth Scenarios: Population and Household Numbers

HMA	*npop01*	*npop06*	*npop11*	*npop16*	*npop21*	*hipop11*	*hipop16*	*hipop21*
Sutherland	13,778	13,524	13,524	13,377	13,195	13,624	13,645	13,633
Caithness	25,195	24,994	24,839	24,534	24,111	24,932	24,775	24,490
East Ross	20,200	20,353	21,046	21,546	21,965	21,153	21,821	22,405
West Ross	8,822	8,781	9,154	9,456	9,738	9,196	9,564	9,914
Mid Ross	20,633	21,728	22,494	23,050	23,506	22,605	23,335	23,962
Skye & Lochalsh	12,136	12,465	12,864	13,198	13,533	13,000	13,491	14,001
Lochaber	18,740	18,988	19,404	19,614	19,736	19,485	19,818	20,071
Inverness	66,576	70,207	73,922	77,039	79,923	74,662	78,760	82,696
Nairn	11,071	11,998	12,513	12,902	13,255	12,631	13,209	13,768
Badenoch & Strath	11,763	12,272	12,802	13,210	13,567	12,936	13,555	14,134
Total	**208,914**	**215,310**	**222,562**	**227,926**	**232,529**	**224,224**	**231,973**	**239,074**
HMA	*nhh01*	*nhh06*	*nhh11*	*nhh16*	*nhh21*	*hihhd11*	*hihhd16*	*hihhd21*
Sutherland	6,281	6,460	6,668	6,839	6,965	6,708	6,952	7,159
Caithness	10,870	11,070	11,350	11,593	11,766	11,385	11,690	11,924
East Ross	8,536	8,866	9,426	9,973	10,466	9,466	10,081	10,641
West Ross	3,794	4,053	4,341	4,609	4,863	4,358	4,655	4,937
Mid Ross	8,422	9,781	10,417	11,028	11,590	10,459	11,143	11,776
Skye & Lochalsh	5,167	5,606	5,921	6,278	6,619	5,972	6,393	6,810
Lochaber	8,055	8,504	8,894	9,267	9,567	8,925	9,351	9,712
Inverness	28,664	30,497	32,723	34,878	37,032	33,006	35,560	38,154
Nairn	4,687	5,450	5,858	6,259	6,631	5,902	6,378	6,840
Badenoch & Strath	5,057	5,474	5,826	6,152	6,458	5,878	6,302	6,709
Total	**89,533**	**95,760**	**101,424**	**106,877**	**111,958**	**102,060**	**108,504**	**114,661**

Table A.2 Impact of Lower Prices on Affordability including Intermediate Affordability 2011 and 2016

	% Buy wlth-adj	% Rent Private	% Buy or Rent	% Buy wlth-adj	% Rent Private	% Buy or Rent	Extra NB Sh Eq	Extra OM Shr Eq	Extra intermed rent	Extra NB Sh Eq	Extra OM Shr Eq	Extra Intermed Rent
	2011	2011	2011	2016	2016	2016	2011	2011	2011	2016	2016	2016
Sutherland	9.8	0.7	9.8	10.6	4.0	10.6	-0.1	-4.8	-7.6	0.0	-5.2	-6.2
Caithness	6.6	0.5	6.6	6.5	1.4	4.9	-1.0	-2.9	-5.2	0.7	-1.2	-2.9
East Ross	11.3	0.7	11.3	11.6	6.0	11.6	-4.4	-5.1	-9.5	-4.4	-5.1	-6.8
West Ross	11.9	0.9	11.9	11.5	3.8	11.5	-1.5	-3.4	-9.0	1.3	-1.7	-6.0
Mid Ross	12.1	0.7	12.1	11.9	4.4	11.9	-3.4	-4.1	-9.4	0.0	-2.3	-6.1
Skye & Lochalsh	11.4	0.7	11.4	11.5	4.6	11.5	-1.8	-1.7	-8.7	-1.2	-1.8	-5.9
Lochaber	11.1	0.8	11.1	11.4	4.4	11.4	-3.5	-4.9	-9.1	-3.6	-4.9	-7.0
Inverness	12.0	0.6	12.0	11.7	5.5	11.7	-2.9	-4.7	-9.4	-2.7	-4.8	-5.8
Nairn	11.8	0.7	11.8	11.5	4.2	11.5	-3.4	-3.5	-9.2	-1.0	-2.4	-6.1
Badenoch & Strath	12.1	0.9	12.1	11.9	4.7	11.9	-5.0	-5.6	-9.5	-4.6	-4.8	-6.4
Total	11.0	0.7	11.0	11.0	4.5	10.8	-2.8	-4.3	-8.7	-1.8	-3.8	-5.8

Table A.3 Impact of Lower Prices on Components of Net Need, 2011 and 2016

	2011						2016					
	New Hhd Unafford	Migrant Need	Ex Owners Need	Backlog Allowance	Net Relets	Net Need	New Hhd Unafford	Migrant Need	Ex Owners Need	Backlog Allowance	Net Relets	Net Need
Sutherland	-10	-2	0	0	10	-21	-12	-3	1	-1	12	-26
Caithness	-14	-2	1	0	22	-37	-10	-2	2	-2	27	-40
East Ross	-21	-2	1	0	22	-45	-23	-2	1	-2	27	-53
West Ross	-8	-2	1	0	3	-13	-8	-2	1	-1	5	-15
Mid Ross	-25	-2	0	0	14	-41	-26	-4	0	-2	18	-49
Skye & Lochalsh	-12	-4	0	0	7	-24	-13	-6	0	-1	10	-29
Lochaber	-19	-3	1	0	15	-37	-20	-4	1	-2	19	-44
Inverness	-69	-15	2	0	47	-129	-71	-16	3	-6	60	-150
Nairn	-13	-3	0	0	8	-23	-13	-3	0	-1	10	-27
Badenoch & Strath	-12	-3	1	0	8	-22	-12	-3	1	-1	10	-26
Total	-203	-39	8	0	157	-391	-208	-46	9	-20	196	-459

Table A4 Range of Net Housing Need over different house price and demographic assumptions

	2011						**2016**						**2021**	
	lower prices	main price assump tion	higher price	Low demog growth	Mid demog assump-tion	High demog growth	lower prices	Main price assump-tion	higher price	low demog growth	Mid demog Assum p-tion	High demog growth	low demog growth	Mid demog assum p-tion
Sutherland	-10	11	30	9	11	14	-25	1	23	-2	1	8	5	10
Caithness	-136	-99	-77	-101	0	-95	-204	-165	-138	-167	-165	-160	-180	-177
East Ross	4	49	76	44	49	53	-30	24	59	15	24	30	19	31
West Ross	43	56	65	57	56	57	38	53	61	52	53	54	53	54
Mid Ross	78	119	149	118	119	121	69	118	149	113	118	122	133	140
Skye & Lochalsh	57	81	94	73	81	88	38	67	86	56	67	77	58	73
Lochaber	47	84	107	78	84	88	13	56	84	47	56	62	39	51
Inverness	227	355	456	338	355	379	56	206	328	179	206	240	154	185
Nairn	64	87	102	83	87	90	51	78	96	72	78	85	74	82
Badenoch & Strath	18	40	50	37	40	44	0	25	38	22	25	33	16	20
Highland Positive Net Need	**538**	**882**	**1129**	**838**	**882**	**934**	**263**	**628**	**925**	**557**	**628**	**711**	552	646

Appendix B – Background Figures for Assumptions

Average of Private Rental Charges Asked for on Web Based Adverts in Jan. 2009

Area	Average rent per month	no. of records
Badenoch & Strathspey	496	12
Caithness	388	12
Inverness	655	44
Lochaber	512	13
Nairn	569	13
Ross & Cromarty	621	19
Skye & Lochalsh	664	9
Sutherland	528	17
Highland Total	577	139

RTB Numbers assumed

HMA	2007	2011	2016	2021	Average	*Data for previous period*		
						rtb06	*rtb07*	*ave0206*
Sutherland	22	20	19	17	19	*19*	*25*	*36*
Caithness	31	28	25	23	27	*35*	*27*	*65*
East Ross	39	36	34	31	35	*59*	*25*	*48*
West Ross	7	6	7	8	7	*7*	*7*	*11*
Mid Ross	29	30	28	27	29	*39*	*21*	*58*
Skye & Lochalsh	15	15	14	14	15	*20*	*11*	*22*
Lochaber	31	29	28	26	29	*28*	*35*	*62*
Inverness	59	55	54	52	55	*64*	*56*	*130*
Nairn	11	10	10	10	10	*14*	*9*	*21*
Badenoch & Strath	13	12	12	12	12	*11*	*15*	*27*
Highland Total	256	241	232	221	237	*296*	*231*	*481*

Net Relets Projected including resales of intermediate housing

	Net Relets				
	2007	2011	2016	2021	Average
Sutherland	89	88	104	105	96
Caithness	266	255	310	307	284
East Ross	144	137	167	167	154
West Ross	22	23	33	37	29
Mid Ross	67	76	92	97	83
Skye & Lochalsh	56	59	79	85	70
Lochaber	94	97	125	130	112
Inverness	321	360	482	508	418
Nairn	38	39	53	57	47
Badenoch & Strath	51	65	81	84	70
Highland Total	1147	1199	1526	1578	1363

Backlog (multiply these numbers by 10 to get total backlog)

	Backlog Allowance (10% pa)				
	2007	2011	2016	2021	Average
Sutherland	22	20	18	15	19
Caithness	31	21	15	6	18
East Ross	50	46	44	41	45
West Ross	12	12	10	8	10
Mid Ross	50	41	40	40	43
Skye & Lochalsh	25	23	21	18	22
Lochaber	49	45	42	38	43
Inverness	234	222	204	179	210
Nairn	32	34	33	31	33
Badenoch & Strath	30	26	23	19	24
Highland Total	535	492	450	395	468

New Affordable Completions Projected

	2007	2011	2016	2021	Average
Sutherland	6	15	6	6	8
Caithness	24	18	0	0	10
East Ross	11	30	16	16	18
West Ross	8	6	18	18	12
Mid Ross	25	70	46	46	47
Skye & Lochalsh	27	22	27	27	26
Lochaber	22	21	30	30	25
Inverness	159	122	136	136	138
Nairn	0	2	27	27	14
Badenoch & Strath	46	42	19	19	31
Highland Total	327	348	325	325	331

New Private Completions Projected

HMA	2007	2011	2016	2021	Average
Sutherland	56	23	24	19	30
Caithness	111	35	40	34	55
East Ross	93	82	89	85	87
West Ross	47	49	34	33	41
Mid Ross	66	57	73	68	66
Skye & Lochalsh	79	48	45	44	54
Lochaber	65	55	38	31	47
Inverness	628	333	306	310	394
Nairn	79	78	52	49	64
Badenoch & Strath	108	28	44	42	55
Highland Total	1331	787	746	715	894