KEY SUMMARY AND TECHNICAL ANNEXE | Published May 2002

Bristol Housing Needs and Affordability Model: 2001 Update

ANNEXE TO POLICY ADVICE NOTE NO.12

AFFORDABLE HOUSING

BRISTOL CITY COUNCIL

Technical report to accompany the Bristol Local Plan Policy Advice Note No 12 - Affordable Housing (PAN 12)

CONTENTS

Introduction

This note contains the key results of a 2001 update of the Bristol Housing Needs & Affordability Model. The model was first set up by Professor Bramley, now based at the Edinburgh School of Art/Heriot Watt University. It provides a robust and up-to-date assessment of the need for affordable housing over the next 3 to 5 years, making use of available demographic, housing and fiscal data.

The model reflects advice set out in the Government's Good Practice Guide, published in July 2000, that:

> *"housing need assessments to support affordable housing policies in Local Plans must be rigorous, up-to-date and clearly derived from relevant evidence"*
>
> *(Local Housing Needs Assessment: A Guide to Good Practice, page 12)*

The 2001 update was carried out by Bristol City Council's Strategic & Citywide Policy Team. The calculations provide the technical justification for the council's Supplementary Planning Guidance on

Affordable Housing (PAN 12). The results of the model are intended to inform negotiations for the provision of affordable housing within private housing developments.

This summary contains the key results of the 2001 update for the City of Bristol area, and for the Housing Management Areas (HMAs). Further information about the data inputs and assumptions used in the 2001 update, and technical issues for future updates are set out in a Technical Annexe attached.

Key Results for Bristol

The 2001 update of the model has identified a substantial shortfall between the gross need for affordable housing in the City of Bristol, and the supply from re-lets of existing affordable stock. This shortfall or "net need" is 905 dwellings per annum, the difference between gross need of 3865 per annum and supply from re-lets of 2960 per annum.

The model has been used on two previous occasions in Bristol, with summary reports published in January 1995 and November 1998 respectively. The estimated shortfall or "net need" in 1994/95 was 514 dwellings per annum, which reduced to 261 dwellings per annum in the 1998 update – see **Graph 1**.

The increase in net need to 905 dwellings per annum in 2001 is due to a number of factors, in particular:

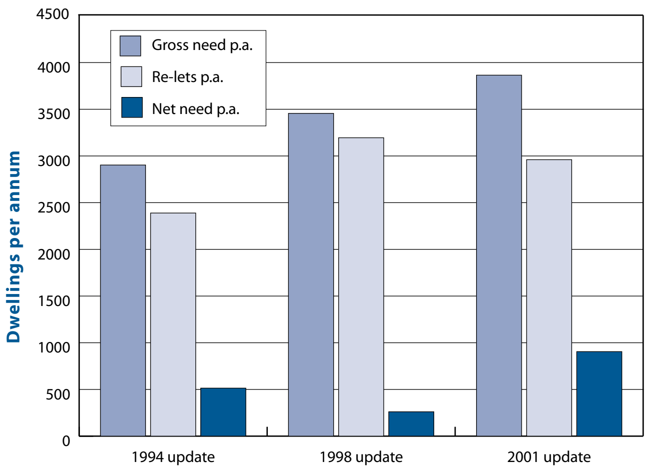
i) *a higher level of existing need (the "backlog" on the waiting list)*

ii) *changes in the size, age structure and distribution of population in the city*

iii) *a wider "affordability gap" (an increasing divergence between incomes and house prices)*

iv) *a reduction in the number of re-lets*

Of these factors, it is the "affordability gap" that is most critical in explaining the increase in net need. Graph 2 illustrates the divergence in recent rates of increase in incomes and house prices in Bristol. This divergence is not expected to persist; the 2001 update of the model assumes some convergence between changes in earnings and house prices in the next 3-5 years. However this is still not enough to make housing in Bristol in the mid 2000s as affordable (in relation to incomes) as it was when previous updates of the model were carried out.

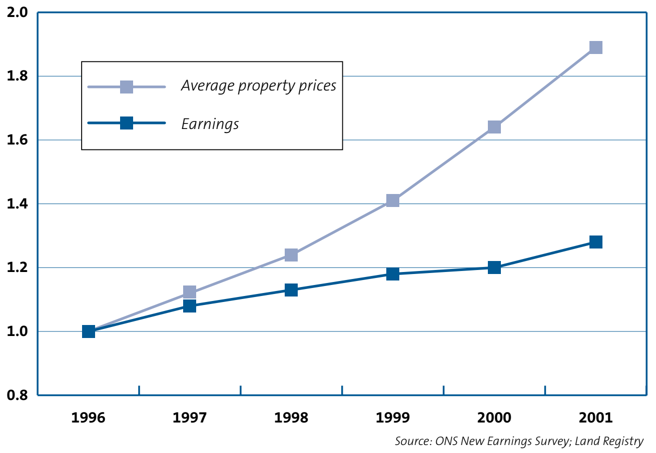


Graph 1 : Net need for affordable housing in Bristol

It is important to remember that the model is predicated upon a single "market" for social housing in Bristol. In other words, it is assumed that residents on the Housing Register will accept re-lets that become available in any part of the city, rather than necessarily within their area of residence or area of first choice. What this means (in relation to PAN 12) is that affordable housing will be sought for all new private housing schemes of 25+ dwellings in the city, and not just for those schemes in the areas of highest net need.

Sensitivity tests show that if housing did return to the affordability levels of the early 1990s, the shortfall (net need) would reduce to about 550 dwellings per annum.

In recent years the total supply of new affordable housing in Bristol to meet the shortfall has averaged about 300 dwellings per annum.



Graph 2 : The affordability gap: index of changes in earnings and house prices in the City of Bristol (1996 = 1.00)

Housing Management Areas in Bristol

The model also produces estimates of the need for affordable housing in the 14 Housing Management Areas (HMAs), as constituted in 2001 (see Figure 1). These estimates help to determine the level of need (say 10%, 20% or 30%) for particular developments .

The 2001 update shows that the majority of the city's shortfall is found in the Clifton HMA, which covers the City Centre, Clifton, Cotham and Redland. This area has the highest house prices in the city and a high level of new household formation.

The estimates of need for the HMAs should be treated as indicative rather than as precise requirements. This is because some data used in the 2001 update (for example changes in earnings) are available at city level only.

For more information about the model, see the technical annexe to this note, or contact:

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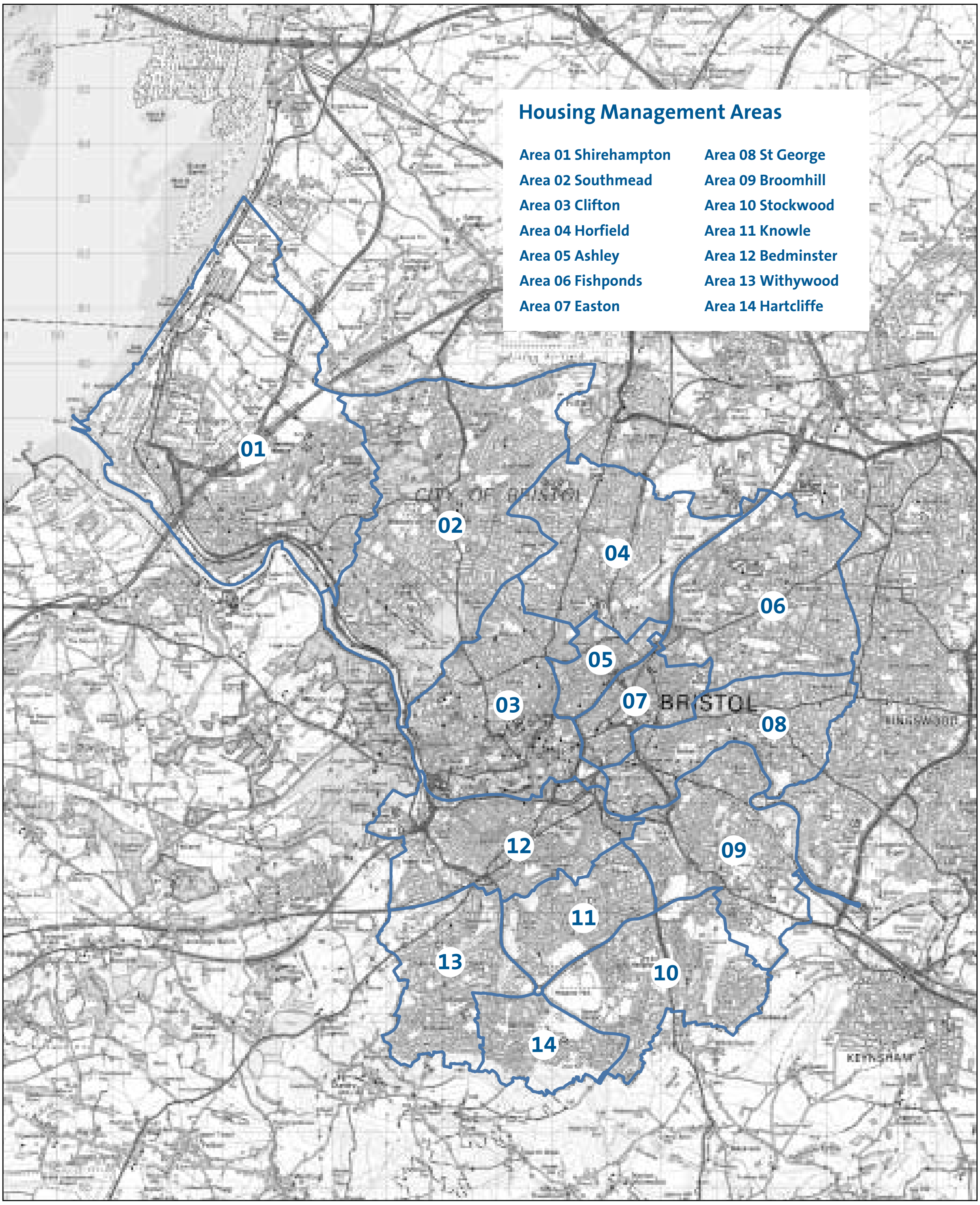

Figure 1 : Bristol Housing Management Areas

About the Model

Calculating the annual gross need for affordable housing

The basic output of the model is a numerical assessment, for the forthcoming 3-5 year period, of the annual gross need for affordable housing in an area, in terms of households (and hence dwellings). This calculation of gross need is based upon two main elements:

a the backlog of existing need. This is based upon information from the waiting list (the Bristol Common Housing Register).

b newly-arising need. This is an estimate of how many newly-forming households will be unable to purchase or rent properties on the open market, and hence require affordable accommodation. It is calculated by the use of demographic data to determine household formation. "Affordability" for newly-forming households is then estimated by using earnings/incomes data, house prices & costs, and economic/fiscal data.

Supply of affordable housing

The estimates of gross need are then compared to the anticipated supply of affordable housing from re-lets of existing Local Authority/Registered Social Landlord (RSL) stock.

Net need for affordable housing

The numerical difference between gross need, and supply, is known as the net need for affordable housing. This is in effect the "shortfall" that may be tackled through the provision of new affordable housing.

The model produces results for the city as a whole, and also for the 14 Housing Management Areas (HMAs) in the city.

Good practice

The model meets the essential requirements (recommended in the Government Good Practice Guide) that housing needs assessments must:

- estimate need both in relation to the existing backlog of unmet need and newly-arising need
- project need forward over...at least three years, and possibly up to five years
- be expressed in annual terms and related to annual supply from within the existing stock of affordable housing together with committed additions to that stock.

(Local Housing Needs Assessment: A Guide to Good Practice, page 20)

Data Inputs and Assumptions

Backlog of existing need

The Bristol Common Housing Register, which encompasses the waiting lists operated by Bristol City Council and other Registered Social Landlords (RSLs) in Bristol, provides a consolidated and up-to-date picture of some of the existing needs for affordable housing.

The Government's Good Practice Guide states that whilst the backlog of existing need cannot be expected to be met immediately, it is feasible to clear the backlog within 5 years (DETR, 2000 p25). The Bristol model builds in this assumption, but also incorporates a 40% "deadwood" factor. In other words, it is assumed that 40% of the households currently on the Bristol Common Housing Register need not be provided with affordable housing in Bristol in the next 5 years - because some households will "dissolve", move out of Bristol or transfer into other forms of tenure. This assumption is based upon national research.

The backlog of existing need used in the 1998 update totalled 7802 households (March 1998 data). A backlog total of 10410 households has been used for the 2001 update, which is similar to the total used in the 1994 study. The latest figure is based upon the register at July 2001, but excludes persons seeking social housing in Bristol who currently live outside the city.

Newly-arising need

The key factors affecting the estimate of how many "newly-forming" households will be unable to purchase properties, and hence require affordable accommodation, are set out below:

Demographic data

The model uses demographic data to estimate the number of households that will form in the city in the next 3-5 years. Of these, the number likely to be able to purchase competitively-priced accommodation is estimated using information on affordability. The residue (those unable to afford to buy) provides the estimate of newly-arising need.

The population data used in the 2001 update reflect the key demographic change of recent years in Bristol, namely the reversal of population losses seen in previous decades. Mid year population estimates produced by the Government's Office for National Statistics (ONS) suggest that in the 1990s the population of the City of Bristol climbed back over the 400,000 mark.

In the 1998 update, a population total of 377,017 was used, similar to the 1991 Census population count. The 2001 update uses a population estimate for Bristol of 408,299. This figure, estimated by the Strategic & Citywide Policy Team, has been "rolled-forward" from the latest ONS mid year population estimate of 406,200 for mid 2000.

The updated population data set out in Table 1 affect the calculations of household formation and hence housing need. The updated population figures are most noticeably different for the 16-29 age group. There are now far more residents in this age group than assumed in the 1998 update. This reflects the recent growth in the population of young adults in Bristol. This is the key age group for new household formation. In contrast, the 60+ population is now substantially less than previously estimated, which affects the calculations of elderly persons in need of affordable housing.

The distribution of population within Bristol has also changed in the last decade, with increases in population in the inner parts of Bristol, and a decline in many suburban areas including the outer estates. Therefore the revised population figures for 2001 are substantially higher than used in the 1998 update in the Clifton, Ashley and Easton HMAs. In contrast the 2001 population figures for the outer parts of south Bristol are lower than previously used (see Table 2).

Economic data

Since the 1998 update, economic recovery has continued with improved employment prospects in Bristol. The reduction in unemployment implies more adults in employment and greater wealth. In the model this means a slightly lower level of need for affordable housing.

In the 2001 update, a single adjustment factor of 0.28 is used to model changes in unemployment. This factor reflects the decrease in claimant-count unemployment in Bristol from 24476 in April 1994, to 6897 in April 2001.

Affordability: earnings and house prices

In recent years there have been substantial changes in earnings and in house prices, which (amongst other things) have affected the affordability of housing in Bristol. The way in which future levels of affordability are modelled in the 2001 update is through an "affordability" factor. This adjusts the household income/housing costs relationship for Bristol that was originally set up in the model using 1991 Family Expenditure Survey and 1994 house price data. The data sources that inform this adjustment factor are the Government's New Earnings Survey (NES), and Land Registry data on property prices.

NES data show that earnings through employment have increased by an average of nearly 5% per year since 1991, both locally and nationally. This gives a 50% increase in incomes in the 1991-2001 period, which is built into the 2001 update of the model.

However despite these increases in incomes, housing in Bristol has become less affordable. The average price of properties sold in the City of Bristol increased by nearly 90% between 1996 and 2001 (using April to June quarter data), based upon data published by the Land Registry.

The data which show how local property prices have outstripped increases in earnings are set out in Tables 3 and 4, and are illustrated in Graph 2.

TABLE 1: BRISTOL AGE STRUCTURE USED IN 1998 AND 2001 UPDATES

Age Group	1998 update	2001 update	Difference (2001, compared to 1998) No.	%
0-15	74,151	73,711	-439	-0.6
16-29	68,321	93,287	24,966	36.5
30-59	150,424	166,545	16,122	10.7
60+	84,121	74,756	-9,366	-11.1
TOTAL	377,017	408,299	31,282	8.3

Source: ONS, Bristol City Council estimates

TABLE 2: POPULATION TOTALS USED IN 1998 AND 2001 UPDATES

Housing Management Area	1998 update	2001 update	Difference (2001, compared to 1998) No.	%
Shirehampton	23,552	23,560	8	0.0
Southmead	51,897	55,123	3,226	6.2
Clifton	39,730	56,248	16,519	41.6
Horfield	32,525	35,530	3,004	9.2
Ashley	10,996	14,210	3,214	29.2
Fishponds	33,827	36,239	2,413	7.1
Easton	15,622	19,443	3,821	24.5
St George	27,453	27,748	295	1.1
Broomhill	23,410	24,118	708	3.0
Stockwood	27,098	25,734	-1,364	-5.0
Knowle	20,762	20,422	-341	-1.6
Bedminster	35,085	36,648	1,563	4.5
Withywood	19,986	19,387	-600	-3.0
Hartcliffe	15,073	13,889	-1,183	7.9
TOTAL	377,017	408,299	31,282	8.3

Source: ONS, Bristol City Council estimates

Figures are subject to rounding

Affordability Scenarios

Three alternative affordability scenarios for the 3 to 5 year period ahead have been tested in the 2001 update. The results of the scenarios are set out below in Box 1. They show that the gross need for affordable housing varies substantially in response to the assumed future earnings:house prices relationship.

Forecasting changes in earnings and house prices over the next 3-5 years is extremely difficult and there is no current consensus on what lies ahead. A report published in May 2001 by Cambridge Econometrics highlights the current divergence between earnings and house prices, which is most prominent in London & the South East, East Anglia and the South West. The report states that this generates echoes of previous retrenchments in house prices (for example in the late 1980s and early 1990s), especially if households again borrow beyond their means.

Box 1: Effect of affordability scenarios on the gross need for affordable housing in Bristol

Scenario 1: Continuation of the affordability gap (-40%). This assumes that the 40 percentage point differential between increases in earnings and house prices that has occurred in Bristol since the model was first calibrated will remain unchanged in the next 3-5 years. This scenario gives a gross need of 4565 dwellings per annum.

Scenario 2: Reversion to affordability (0% gap). This assumes a surge in wages/earnings, with house prices remaining unchanged. This results in a return to the level of "affordability" of housing seen in the early 1990s. This scenario gives a gross need of 3522 dwellings per annum.

Scenario 3: Affordability gap of -15%. This assumes some convergence between the growth of earnings and house prices, but still leaving housing in Bristol 15% less affordable in relation to incomes than was the case in the early 1990s. This scenario gives a gross need of 3865 dwellings per annum.

However it would require a severe recession in house prices and/or a boom in earnings to enable a return to the affordability levels of the early 1990s. In early 2002 there is still little evidence that this is taking place. For example house price data for April-June 2001 show a 15% increase in Bristol compared to the same period in 2000. And until summer 2001 there were no clear signs of an economic recession that might lead to a rapid cooling of house price increases. Although the global picture is now more uncertain, interest rates are currently at their lowest since the early 1970s, and mortgage lending in the UK in early 2002 is at an all-time high. All this suggests that Scenario 2 (a return to early 1990s affordability levels) might be the least likely outcome for the next 3-5 years.

However with house prices currently "out of kilter" with earnings, some readjustments may be expected in the next 3-5 years. Therefore rather than using Scenario 1, which assumes a continuation of the present affordability gap, it may be more realistic to use **Scenario 3**, which assumes some convergence between earnings and house prices, but builds in the factors that are helping to maintain high house prices in Bristol, which include:

- A combination of relatively low unemployment and low mortgage interest rates.
- Population growth and in-migration to Bristol in the key household- forming age groups which fuels the demand the housing.
- A relatively limited supply of new housing in the city.

Therefore Scenario 3 has been used to estimate the gross need for affordable housing in the 2001 update which is 3865 dwellings per annum.

TABLE 3 CHANGES IN AVERAGE PRICE OF DWELLINGS SOLD, 1996-2001

	AVERAGE SALE PRICE, £		INDEX OF CHANGE (1996 = 1.00)	
	CITY OF BRISTOL UA	ENGLAND & WALES	CITY OF BRISTOL UA	ENGLAND & WALES
1996	58315	70141	1.00	1.00
1997	65307	77325	1.12	1.10
1998	72436	84391	1.24	1.20
1999	82394	91846	1.41	1.31
2000	95422	107146	1.64	1.53
2001	110366	118048	1.89	1.68

Source: The Land Registry (April to June quarter data)

TABLE 4: CHANGE IN AVERAGE EARNINGS

	AVERAGE GROSS WEEKLY EARNINGS OF FULL TIME EMPLOYEES INCLUDING OVERTIME, £	
	CITY OF BRISTOL UA	INDEX OF CHANGE (1996=1.00)
1996	339.10	1.00
1997	367.60	1.08
1998	384.80	1.13
1999	399.90	1.18
2000	407.80	1.20
2001	433.38	1.28

Source: ONS New Earnings Survey

TABLE 5: CALCULATING THE NET NEED FOR AFFORDABLE HOUSING

	1994 update	1998 update	2001 update
a) GROSS ANNUAL NEED FOR AFFORDABLE HOUSING	2903	3456	3865*
b) SUPPLY: ANNUAL HA/LA RE-LETS	2389	3195	2960
NET NEED P.A. [a) b)]	514	261	905

*Affordability scenario 3

Source: Bristol City Council

TABLE 6: GROSS NEED FOR AFFORDABLE HOUSING PER ANNUM

HOUSING MANAGEMENT AREAS	1998 update	2001 update	Change since 1998
1. Shirehampton	235	243	8
2. Southmead	354	356	2
3. Clifton	399	646	246
4. Horfield	317	323	6
5. Ashley	135	200	65
6. Fishponds	329	349	20
7. Easton	188	284	97
8. St George	248	218	-30
9. Broomhill	211	191	-20
10. Stockwood	222	199	-23
11. Knowle	193	223	29
12. Bedminster	322	324	3
13. Withywood	179	171	-8
14. Hartcliffe	123	138	14
BRISTOL CITY	3456	3865	409

Source: Bristol City Council

Supply of affordable housing

The re-letting of existing social housing is the biggest component of supply to meet the gross need for affordable housing. In the model, only re-lets to "new applicants" (households on the common housing register) are considered. Re-lets to existing RSL tenants do not count, as they have no net effect upon meeting affordable housing needs.

Re-lets figures used in previous model updates are set out in Table 5, and suggest some volatility in total numbers of re-lets from year to year. Therefore an average figure covering a number of years are now used. For the 2001 update, it is assumed that annual re-lets in the next 3-5 years in Bristol will reflect the average supply for the 1996-2001 period of **2960 relets per annum.**

Net need for affordable housing

Net need is the difference between gross need, and the re-lets figure above. With gross need estimated as 3865 dwellings per annum (Scenario 3), and with future supply from re-lets assumed to be 2960 p.a., the net need for affordable housing for the next 3-5 years is estimated as 905 dwellings per annum
(see Table 5 and Graph 1).

This net need or "shortfall" of 905 per annum is about 640 units greater than the net figure of 261 per annum calculated in 1998. The approximate effects of the main factors contributing to this change are summarised in Box 2.

There are a number of potential sources of new affordable housing to tackle the shortfall of 905 per annum. However care must be taken to avoid double-counting.

Box 2: Net need for affordable housing in Bristol: approximate effect of key factors since the 1998 update

FACTOR	EFFECT	
• Increased "backlog" to clear from the existing register:	+300	per annum.
• Future "affordability gap" - the continued (but declining) mismatch between earnings and property prices:	+340	per annum
• Changes in population:	+250	per annum
• Economic factors:	-50	per annum
• recent increases in incomes:	-400	per annum
• reduction in the assumed supply from re-lets:	+200	per annum
TOTAL	+640	per annum

In recent years new affordable housing provision has been about 300 units per annum, comprising:

- New local authority/RSL schemes (about 255 dwellings per annum)
- The conversion of existing dwellings into new RSL units (about 30 units per annum)
- Wasted Homes Initiative (about 15 units per annum)

The contribution of low-cost homes for sale, and new affordable housing arising from private-sector housing developments (negotiated using PAN 12) has to date been minimal.

Clearly there is a substantial difference between the net need of 905 dwellings, and new supply of about 300 units per annum. Tackling this gap in provision is one of the challenges for those involved in implementing PAN 12.

1994 and 1998 estimates of need

Previously-calculated estimates of gross need, re-lets and the net need for affordable housing in Bristol are set out in Table 5. The 1994 calculations were used to inform policies for affordable housing in the Bristol Local Plan (adopted December 1997) – see paragraphs 8.4.26 to 8.4.39 of the plan. The 1998 calculations showed that although the gross need for affordable housing had increased since 1994, greater supply was coming forward through re-lets and so the net need was reduced to 261 dwellings p.a. This is the figure quoted in the March 2000 consultation version of PAN 12 (para. 3.3).

Results for Housing Management Areas in Bristol

The calculations of gross need for affordable housing for the City of Bristol have also been disaggregated for the 14 Housing Management Areas (HMAs). This information is used to help to establish the level of affordable housing required for particular developments (either 10%, 20% or 30%).

Data sources

The data that are directly available for the territory covered by each HMA include: the resident population; the existing "backlog" on the housing register; the number of re-lets; and the supply of new affordable housing.

Other data are only available for the city as a whole (e.g. earnings) and have to be "modelled" to produce results for the appropriate areas. Property prices and unemployment data are available for postcode sectors and electoral wards respectively and have to be factored within the model to produce figures for each HMA.

Gross need for affordable housing

The "affordability gap" associated with Scenario 3 has been used as a standard assumption in calculating the gross need for each HMA. Annual gross need is highest in the Clifton HMA (646 households pa), and lowest in the Hartcliffe HMA (138 households pa) – see Table 6. This disparity partly reflects the differences in property prices between Clifton and Hartcliffe, although the differing size of the HMAs also has an effect – because there are four times more residents living in the Clifton HMA than in the Hartcliffe HMA.

The HMAs with the highest gross need for affordable housing generally coincide with the areas with the highest property prices, which include the central area, and suburbs in north Bristol, covering most of the BS6, BS8 and BS9 postcode districts. This is evident from Figure 2, which shows average selling price bands for postcode sectors in the Bristol area. In the July 2000 – June 2001 period, the average sales price in Bristol was about £104,000. The property price information is also used to help to establish the level of affordable housing required for particular developments.

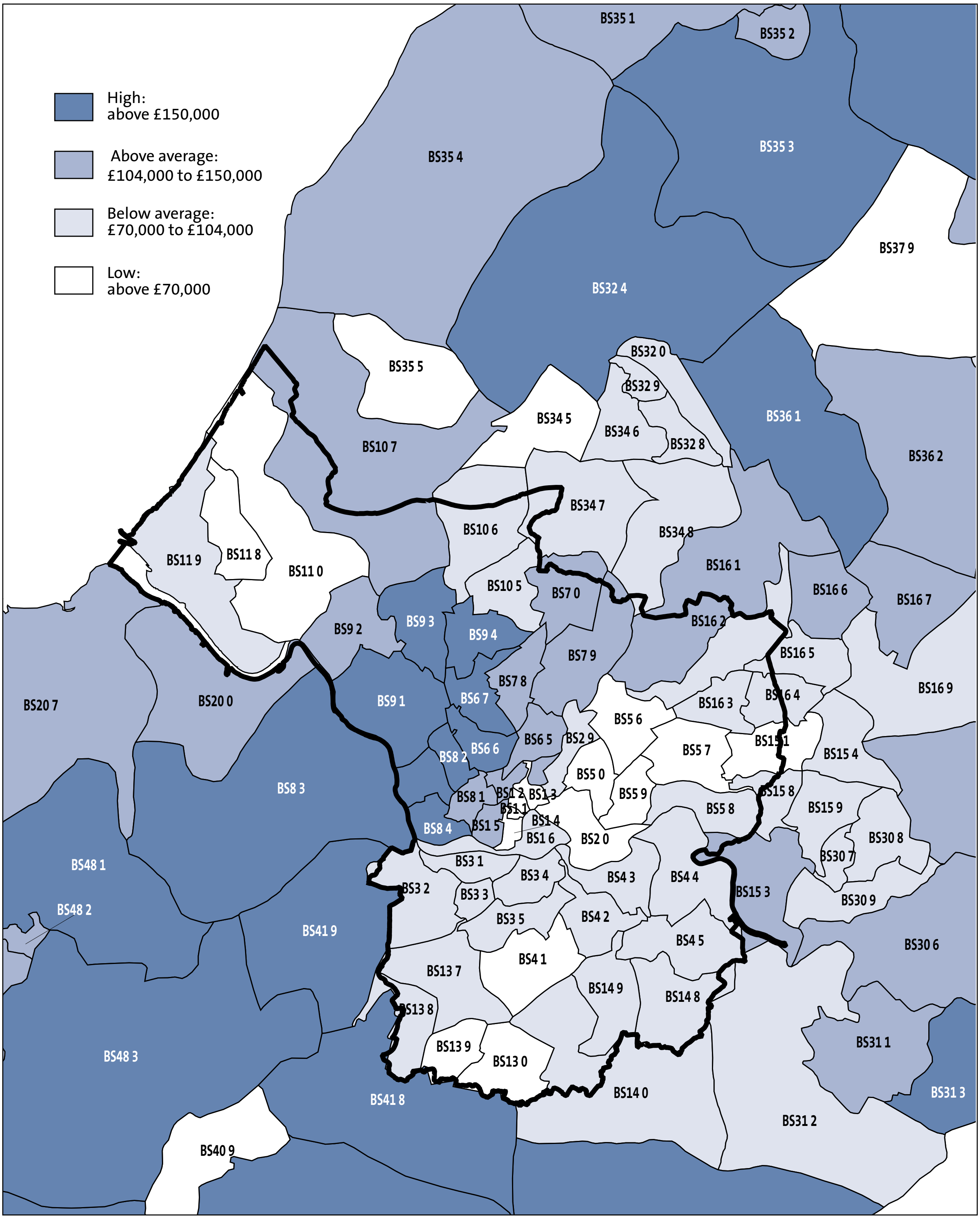

Figure 2 : Average House Prices in the Bristol Area
July 2000 to June 2001 by Postcode Sector
Source : The Land Registry

Issues for future Updates

Household projections

Since the 1998 update of the model, the Government has published a new set of household projections for England and the regions (DETR, 1999). These 1996-based projections incorporate (amongst other things) revised assumptions about future rates of household formation. Broadly speaking, these new "household representative rates" suggest a slight slackening of future household growth from a given population – compared to the previous 1992-based set of projections.

It was not possible to incorporate these new assumptions about household formation into the 2001 model update. This is because the model has fixed formulae for calculating household formation, which cannot be adjusted by the user and are difficult to validate. Therefore the levels of household formation generated by the model are subject to a degree of uncertainty. It will be necessary to comprehensively review the assumptions about household representative rates in the model after 2001 Census data become available in the first half of 2003.

Net migration assumption

For many decades the City of Bristol has experienced a net loss of population through migration, mainly to adjacent local authority areas. In the 1990s this process of counterurbanisation has been somewhat neutralised by an increased inflow of migrants into the city, many from overseas. As a result, net migration losses have been stemmed. Recent mid year population estimates suggest that in-migration now matches the level of out-migration.

However in the 2001 update, it is assumed that Bristol will experience net out-migration for the next 3-5 years. This assumption needs to be critically reviewed in the next update.

Changes in the affordability of housing in different Housing Management Areas

The model was originally calibrated in 1994 using 1991 Family Expenditure Survey and 1994 property price data. The 2001 update takes account of subsequent changes in earnings and property prices by applying citywide factors to each Housing Management Area. It is hoped that a future update may be able to model local variations in affordability, by using Land Registry data and local area income estimates that ONS intend to produce in due course.

Monitoring re-lets

The importance of monitoring and understanding changes in the number of re-lets was outlined on page 10 of the January 1995 report. One reason for the decline in re-lets since 1998 may be the reduced size of the local authority housing stock from which re-lets can take place, as a result of continuing losses from demolition, and due to "Right to Buy".

Future updates of the model will be carried out on an annual basis, with the results of the 2002 update available in September 2002. A comprehensive update in 2003 will be the first to make use of data from the 2001 Census.

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