

Cambridge Housing Sub-Region Property Size Guide

Summary of Modelling for all Districts



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Introduction

This report presents guide figures for the proportions of differently sized properties appropriate for each district within the Cambridge housing sub-region, in terms of number of bedrooms.

It is intended for use by local authority planners as a basis for informed discussions with developers.

Developers will put forward a proposal for a site which balances their assessment of the local housing market, viability on the site and local planning requirements.

Planners will want to address their LDF requirements for the site and the district as a whole. These will help meet housing need and balance housing markets, as identified in a housing market assessment. Where homes are funded by the Homes and Communities Agency, a proportion of larger family homes may be required¹.

The figures are presented as minimum and maximum percentages for each property size in each district. Two sets of figures are presented: one using the district's existing population structure and the other using the existing population structure, adjusted for market behaviour.

The reason for the two-stage process is to make sure we do not simply encourage developments to follow the existing demographic patterns alone, but also to look at the choices being made by people who have moved into new housing developments in the recent past, and the sizes of homes people prefer to move into. This involves making some assumptions, which are set out in [Appendix 2](#).

The effect of applying market behaviour is to make the figures for the districts converge from an already similar base, with the exception of Cambridge City, which has a different, predominantly younger, population profile. Because of this, the final proportions of each house type are broadly similar for each district.

Geographic coverage

The guide figure covers the Cambridge housing sub-region which comprises five districts in Cambridgeshire and two districts in Suffolk. These are:

- Cambridge City
- East Cambridgeshire
- Fenland
- Huntingdonshire
- South Cambridgeshire
- Forest Heath
- St Edmundsbury

¹ From:

http://www.homesandcommunities.co.uk/public/documents/Regional%20Investment%20State%20-%20Q3%202009.10%20East%20of%20England_1.pdf

Relationship to Planning Policy Statement 3 (PPS3)

PPS3² refers to Strategic Housing Market Assessments (SHMAs) as a source of information for use in Local Development Documents and in planning decisions. SHMAs are mentioned in several places, but Paragraph 22 of PPS3 says:

“Based upon the findings of the Strategic Housing Market Assessment and other local evidence, Local Planning Authorities should set out in Local Development Documents:

- The likely overall proportions of households that require market or affordable housing, for example, x% market housing and y% affordable housing.
- The likely profile of household types requiring market housing e.g. multi-person, including families and children (x%), single persons (y%), couples (z%).
- The size and type of affordable housing required.”

This Size Guide should be read alongside the Cambridge sub-region’s SHMA³ which provides the evidence required in PPS3. However this guide goes further than the requirement, in that it provides a framework to guide decisions on the property sizes appropriate to each district, across all tenures.

Purpose and use of the guide

The figures are a guide to the proportion of differently sized homes which reflect demographic patterns and housing choices, for each district. These are expressed as minimum and maximum proportions for each size of property.

Planners will need to take account of local conditions in agreeing the mix on any specific development. For example, in an area which already has a large proportion of properties of one particular size, the local decision could be to lower the proportion of new properties of that size.

Totalling the minimum proportions of all property sizes within a district will show the amount of flexibility available to build properties of different sizes at district level. An example is shown in Table 1.

This is a key point in using the figures.

Table 1: Illustrative minimum and maximum figures for a district (rounded)

Property size	Minimum %	Maximum %	Difference (Max-min) %
1 bedroom	4	6	2
2 bedroom	15	22	7
3 bedroom	23	37	14
4 bedroom	26	46	20
5+ bedroom	7	15	8
Total (minimum)	75		

² CLG, November 2006, click here to access: <http://www.communities.gov.uk/planningandbuilding/planning/planningpolicyguidance/planningpolicystatements/planningpolicystatements/pps3/>

³ Click here to access the SHMA: www.cambridgeshirehorizons.co.uk/shma

How to use the table:

1. Generally, new development in this district will want a mix of homes as set out in Column 1.
2. This adds up to 75% of the homes to be provided.
3. The remaining 25% of homes can be used to “add” to the minimum provision set out in column 1, but must not exceed the maximum given in column 2.

It will be difficult to apply the guide figures precisely to most individual developments, due to individual site constraints, viability issues, site layout, densities of development required and the character of the existing neighbourhood. That is why this note suggests a “collar and cuffs” approach.

Local planning decisions about new developments at specific sites could be to repeat the sizes of homes that already exist in the neighbourhood or to correct an imbalance. For example, if a neighbourhood has a high proportion of one bedroom properties then a new development in that neighbourhood may seek to balance that, by providing a larger proportion of larger properties. However, it is recognised that some imbalances in total numbers, such as large numbers of one bedroom properties, can be appropriate for specific neighbourhoods and this is one of the reasons why the guide is produced at district level rather than trying to set precise quotas.

The model is designed for use in building general, family, housing and fully applies to City fringe developments, which is where the majority of future development is likely to be. In the central areas of Cambridge City there are high numbers of young single people, many of whom will share for financial reasons or simply by preference. There are also in-migrants who have access to high-cost rented properties and so on. The model covers the needs of these groups in that if implemented it would provide properties which could be shared by several single people or privately let to one family. It does not cover the needs of these groups if those needs include one bedroom properties. However, given that one of the reasons for sharing is affordability it is debatable as to whether more single bed properties would help the housing situation within the central areas of the City. The feasibility of carrying out further work on the City-centre could be explored if required.

Important note: Valid approaches based on the model

It may be tempting to use a mid point between the minimum and maximum figures as a district-wide guide to sizes. The model is not designed to be used in that way and the single figure produced will not be robust. For example, the model provides robust evidence that there is a need for between 23% and 37% of new properties overall in the district in Table 1 to be 3-bedroom. But it does not support the suggestion that the need is for 30% 3-bedroom (the mid-point).

A valid approach based on the model would be to provide the minimum proportion of each home size overall across the district, taking account of the local situation at specific sites, then varying the amount of extra properties of each size up to the maximum of each.

The model does not attempt to specify the type of property in terms of whether properties should be houses, flats, bungalows or other types of property. Again, this has to be a local planning decision based on local knowledge of the individual site and neighbourhood. However, the market behaviour element of the model is based mainly on traditional houses because of being based on developments in rural districts and market towns rather than a city.

Summary of the modelling approach

The model uses:

- Census 2001 data to calculate the population structure in terms of the number of bedrooms required by what proportion of the population
- Market behaviour data from new development surveys carried out by the Cambridgeshire County Council Research Group to show what size of property different sizes of household buy.⁴

These two are brought together in the following way for each district:

- Population structure.
 - A calculation of property sizes required according to the population structure of families with children.
 - A calculation of property sizes required according to the population structure of all-adult households of working age.
 - A calculation of property sizes required according to the population structure of all-pensioner households is calculated.
 - These three are brought together to give an overall figure of property sizes required according to the population structure set out above.
- Market behaviour
 - The proportions of the different property sizes in each district are amended by increasing and decreasing each proportion according to what people buy, as shown in the new development surveys. For example, on the population structure model, a single person household would require a one-bed property. In the new development survey, single people are shown to buy properties with one, two, three, four or more bedrooms. The proportion of one-bedroom properties in our model is decreased by the relevant amount and the proportion of other sizes of property increased by the relevant amount as shown by the surveys.
 - This is repeated for households of each of the different types.

A more detailed explanation is attached in [Appendix 1](#).

Assessing and developing the guide

The final figures have been compared to property sizes for different household sizes from the 2001 Census and to house sales by size provided by the Hometrack system. These comparisons are used to triangulate and provide a test to identify defects in the model, just as the scientific approach aims to disprove theories to test their strength. The comparisons do not appear to demonstrate problems with the model, which leads to increased confidence. The one exception to this is the central area of Cambridge City, which has some specific characteristics as noted above.

Applying the market behaviour tends to make the figures for the different districts converge from an already similar profile, with the exception of Cambridge City. Because of this, the final proportions of each house type are broadly similar for each district. This is to be expected as market behaviour is similar across districts and nationally. For example, many people will buy a house which has more bedrooms than the minimum they need. This model attempts to avoid the situation of future provision being based on what has been provided in the past by starting from the population structure.

⁴ The full reports on new development surveys are available at:
<http://www.cambridgeshire.gov.uk/business/research/housing/Cambourne06results.htm>

It is hoped to make the model more nuanced across the districts as more information becomes available from a programme of new estates surveys, which will provide more data on market behaviour.

It is important to take account of the current housing stock in deciding the final mix of housing to be built on a new development. The model is adjusted by using the behaviour of people buying new properties and is therefore appropriate for use with new developments irrespective of the existing stock. It could be that some people are unable to find what they want in the existing stock, which could be because of a shortage of a size of property in the existing stock. In that case they will be more likely to seek new properties which meet their needs and their exhibited behaviour is an indication of this. Similarly, if there are many properties of a certain size in the existing stock, it is likely that fewer people will seek such properties on new developments. As with all such things, these are not absolutes.

Property sizes for each district in the housing sub-region

Two sets of figures are presented for each district; the proportions of properties of each size based on the population structure and the proportions after applying market behaviour. This is to demonstrate two things: firstly that using a population-based approach alone is not sufficient; secondly the similarity between the figures for each district, both those based on the population structure model (with the exception of Cambridge City) and those once market behaviour is applied. The figures shown are rounded to the nearest full percentage point.

The population structure figures could, if desired, be used as a guide to help inform decisions on the mix of social rented housing, though the model is not designed with that in mind. The population structure figures and allocations to social housing are based on need rather than aspirations. There are considerable levels of under-occupation shown in the Cambridgeshire new development surveys, but very little underoccupation in social rented housing⁵. The most likely explanation for this is the ability of many in the open market to achieve their aspirations for larger properties irrespective of absolute need compared with the level of control over social rented from allocation policies which are design to manage this limited resource.

For open market housing, the figures with the market behaviour applied are more appropriate because these take account of market behaviour – aspirations and what buyers can afford.

A total of the minimum proportions is given for the market-adjusted figures but not for the population-structure based figures. This is because the market-adjusted figures are generally expected to be the ones which are used. If the population-structure figures are used it is expected they will be used very much as a broad guide.

⁵ See SHMA Chapter 29: [Sizes of Homes](#)

The tables

Cambridge City

Property size	Minimum %	Maximum %
Population Structure		
1 bedroom	38	52
2 bedroom	24	44
3 bedroom	9	19
4 bedroom	3	7
5+ bedroom	1	4

Market Behaviour Applied		
1 bedroom	4	6
2 bedroom	15	22
3 bedroom	23	37
4 bedroom	26	46
5+ bedroom	7	15
Total (minimum)	75	

East Cambridgeshire

Property size	Minimum %	Maximum %
Population Structure		
1 bedroom	27	47
2 bedroom	32	56
3 bedroom	10	18
4 bedroom	2	5
5+ bedroom	1	2

Market Behaviour Applied		
1 bedroom	3	5
2 bedroom	13	23
3 bedroom	22	39
4 bedroom	26	47
5+ bedroom	7	14
Total (minimum)	72	

Fenland

Property size	Minimum %	Maximum %
Population Structure		
1 bedroom	30	49
2 bedroom	31	55
3 bedroom	9	16
4 bedroom	2	5
5+ bedroom	1	2

Market Behaviour Applied		
1 bedroom	3	6
2 bedroom	14	23
3 bedroom	23	39
4 bedroom	26	46
5+ bedroom	7	13
Total (minimum)	73	

Huntingdonshire

Property size	Minimum %	Maximum %
Population Structure		
1 bedroom	26	46
2 bedroom	31	55
3 bedroom	12	20
4 bedroom	3	5
5+ bedroom	1	2

Market Behaviour Applied		
1 bedroom	3	5
2 bedroom	13	22
3 bedroom	22	39
4 bedroom	27	48
5+ bedroom	8	14
Total (minimum)	73	

South Cambridgeshire

Property size	Minimum %	Maximum %
Population Structure		
1 bedroom	27	46
2 bedroom	31	55
3 bedroom	11	19
4 bedroom	3	6
5+ bedroom	1	2

Market Behaviour Applied		
1 bedroom	3	5
2 bedroom	13	22
3 bedroom	22	39
4 bedroom	27	48
5+ bedroom	7	14
Total (minimum)	72	

Forest Heath

Property size	Minimum %	Maximum %
Population Structure		
1 bedroom	32	49
2 bedroom	30	52
3 bedroom	10	17
4 bedroom	2	5
5+ bedroom	1	2

Market Behaviour Applied		
1 bedroom	4	6
2 bedroom	14	22
3 bedroom	23	38
4 bedroom	27	46
5+ bedroom	7	13
Total (minimum)	75	

St Edmundsbury

Property size	Minimum %	Maximum %
Population Structure		
1 bedroom	29	49
2 bedroom	31	55
3 bedroom	10	17
4 bedroom	2	5
5+ bedroom	1	2

Market Behaviour Applied		
1 bedroom	3	6
2 bedroom	13	23
3 bedroom	23	39
4 bedroom	26	46
5+ bedroom	7	13
Total (minimum)	73	

Appendix 1 Modelling property mix on new developments by number of bedrooms

Introduction

This note explains the broad methodology used in calculating the house sizes mix to guide decisions on the property sizes on new developments. It does not cover the detailed calculations involved.

The purpose of the model is to give a broad guide to inform planning discussions. It does not and, *in principle* cannot provide a set of single precise figures. However, the ranges of figures provided can be taken as being robust as they are based on a rigorous process.

Overview of the model

The model is based on both the demography and market. Firstly a demographic approach assesses the need for sizes based purely on the number of adults and children in each household, taking account of gender. Secondly the 'demographic' figures are adjusted according to the market – who buys what size of property.

The model works through each of the following in order:

- Separate the population into three broad household types – households with dependent children, working-age all adult households, retirement age households.
- For each of those types, calculate the percentage (of the grand total) of properties of different sizes required to meet their needs.
- Sum the percentages of the three groups to provide a set of demographic-based figures.
- Apply market behaviour to the demographic-based figures to give a final range of figures.
- Compare the final sets of figures with the existing property mix from the 2001 Census, while being aware that this model is itself designed specifically to calculate the house size ratios for new developments.
- Test other modelling approaches.

Each of these is covered in more detail below following a note about the factors involved in the calculations.

Factors

The following factors are involved in the calculations.

Household size and mix

- Household size: the number of adults and children
- Household 'mix':
 - a) the number and gender of children, taking a broad account of ages, but not considering ages in detail;
 - b) the permutations of multi-adult households (e.g. three adults assumed to have either two or three bedrooms between them)
- Household life stage: the age of the adults in the household. Again only a broad approach can be taken.

Market behaviour adjustments to number of bedrooms

- Under-occupation due to personal choice (e.g. couples and singles buying 4-bed houses). This factor is applied.
- 'Over-occupation' due to affordability or personal choice (e.g. a family who might be expected to live in a 4-bed house living in a 3-bed house). This factor is not applied as it could lead to overcrowding in one form or another.

Sources of data

The sources of data used are:

- 2001 Census – provides the base set of population figures in each district.
- New development surveys of Cambourne and of several developments across Huntingdonshire – provides the base data for a market-behaviour analysis. It is intended to update this in 2010 with information from new development surveys in East Cambridgeshire and Fenland.

Method

Step 1 - Separate the population into three broad household types

The proportions of the three groups and the size of the households are from the 2001 Census, which provides figures at district level from 1- person to 8 or more person households. Any households over 5-persons are included in 5-person households as the numbers involved are small. The number of 1-child, 2-children and 3-children households can also be calculated from the Census at district level.

Step 2 – calculate the percentage minimum and maximum bedroom requirements of each group separately.

First, this section gives a comparatively detailed account of the method for households with dependent children. Then the final two stages of bringing the figures together and adjusting them for market-behaviour is explained.

Households with dependent children

- a) Calculate the proportion of families with children that have 1, 2 or 3+ children from the Census data. A further category of 4+ children is added later.
- b) Calculate the minimum and maximum numbers of bedrooms required by each combination of number and gender of children. For example, 50% of 2-children families could have both children in one room, 50% would need two rooms (ignoring very young children).
- c) Adjust the minimum and maximum figures for children's' bedrooms to take some account of potential overcrowding. For example, move half of the two-children sharing a single room to have two bedrooms, giving the proportions of 25% sharing to 75% having their own room.
- d) Apply the minimum and maximum numbers of children's' bedrooms for each family size (1, 2, 3+ children) to the relevant proportion of that family size from the Census. For example: In the Census, in Cambridgeshire 43% of families with children have two children. 75% of those families will need 3-bedrooms (two for the children, one for the adults) and 25% will need 2-bedroom. The maximum proportion of homes with 2-bedroom for families with two children is $25\% \times 43\% = 11\%$ of all homes for families with children (the minimum proportion – 39% - is based on 1-child families only). In calculating the maximum, the proportion of single-child families requiring 2-bedrooms is added to that 11% (next stage).

- e) Sum the relevant figures for minimum and maximum bedrooms based on family size. For example, 11% of families require 2-bedrooms calculated by the needs of 2-children families. A further 39% of Cambridgeshire families with children require 2-bedrooms based on families with 1-child. The maximum proportion of 2-bedroom properties is given by $11\% + 39\% = 50\%$ of properties for families with children.
- f) The proportion of 4-bedroom homes is adjusted to take account of larger families and a further category of 5+ is calculated as follows: a) Find the relative proportion of the total of 6, 7 and 8-person households to 5-person households in the Census; b) remove that proportion of families from the proportion of 4-bedrooms to form the 5+ bedroom requirement. This is based on the assumption that, broadly speaking, a 6+ person household will need a 5+ bed property. As the numbers are small, the lack of precision in this makes little difference to the final figures.
- g) Finally, each of the proportions of bedroom sizes is multiplied by the proportion of the total population that is families with children to give a proportional figure of the total population (rather than just of families with children). For example, a minimum of 39% of families with children require 2-bedrooms and 29% of households are families with children. Therefore, the final minimum proportion of 2-bedrooms to be included in the total is $39\% \times 29\% = 11\%$.

All adult households: A similar approach is taken with the other two groups; working-age all-adult households and retirement age households. These two involve fewer stages, although account is taken of complexities such as that multi-adult households can have a mix of couples and singles.

Step 3 – sum the percentage minimum and maximum requirements for all groups

The final percentages of the three groups to be included in the total are summed to provide a set of demographic-based figures.

Step 4 – Apply market behaviour

Market behaviour is applied to the demographic-based figures to give a final range of figures as detailed here:

- a) Pool the data available from recent new-development surveys and calculate the proportions of households who have 1-bedroom, 2-bedrooms etc.
- b) Cross-tabulate the number of bedrooms against different households sizes. For example, of households who might be expected to have 1-bedroom (singles and childless couples), only 11% have 1-bedroom, 28% have 2-bedrooms, etc.
- c) Apply the proportions of household size to bedroom numbers to redistribute the final demographic proportions (keeping the total the same). For example, move 28% of the 1-bedroom properties from the demographic proportions into the 2-bedroom category. Then move the appropriate proportions of 1-bedroom and 2-bedroom properties from the demographic proportions into the 3-bedroom category. Repeat that in turn for each of the bedroom categories ending with moving a proportion of all 1- to 4-bedrooms into the 5+ bedroom category.

This gives the final market-behaviour adjusted proportions.

Appendix 2 - Some Technical notes, assumptions and caveats to the model

Why a range is used

It would be inappropriate to attempt to provide a single figure for each house size because of the complexity of the planning world. No single figure could be applied in the real world. Also, giving a single figure would suggest that figure to be precise, when the figure would have a large error factor. That is any figure would really be the figure plus or minus so much. Giving a range avoids these problems.

It is important to note that no model can take full account of the complexity of planning.

Assumptions/use of assumptions

The demographic element of the model uses Census data from 2001. This approach assumes that the Census data remains relatively accurate as a model of current household population structures. There are two questions to consider: whether the population structure has changed since 2001; whether social changes since then are large enough to affect the sizes of properties required. The population has changed since 2001, including the populations of new developments, many of whom will have moved into the area, but the proportion of in-migrants to existing residents at 2001 remains comparatively small. The use of market behaviour based on new development brings the data up to take both in terms of changing population and social changes.

The market behaviour is based on surveys of new developments across Huntingdonshire in Cambourne using information from a total of over 1,400 households. It is assumed that the general behaviour demonstrated in these areas can be applied across the board, all other things being equal. For example, that a similar proportion of people living in an area of lower incomes and lower house prices as in an area of higher incomes and house prices will choose to buy the largest property they can afford. The market behaviour part of the model will be refined with further new development surveys.

It is recognized that changing market conditions such as fluctuating property prices, availability of borrowing and other factors will affect affordability and therefore market behaviour, but again it is assumed that other things being equal general market behaviour will apply. For example, in a market with lower house prices and less rather than more availability of mortgages a proportion of people will still choose to buy the largest house they can afford. Similarly in a housing market with high house prices but more easily available mortgages.

The model replicates existing demographic and economic circumstances, but that includes recent in-migrants and others who have moved to new properties through the market behaviour element.

Minimal assumptions are made about adults sharing and about overcrowding. Adult sharers are dealt with in the population structure element as noted above. For example, a proportion of households with three adults sharing are allocated as two bedroom households and the remainder as three bedroom households. Overcrowding is dealt with by *not* applying the number of seemingly overcrowded households from the market behaviour element to the population structure figures.

Data Sources

Secondary data sources are used in the model in line with the Strategic Housing Market Assessment (SHMA) guidance, which encourages the use of secondary sources over surveys. This guide is not part of the SHMA, but is clearly related to it. However, those secondary data source include the new development surveys which are carried out for other reasons, but which supply useful data on market behaviour.

Tenure

The guide figures are tenure neutral. This is because the Census population structure figures are tenure neutral so as to produce a base set of figures which reflects the need (not aspirations) of the population. The market behaviour figures amend these to take account of aspirations, but also affordability both in the market and in affordable housing. By this means, the final figures give a single guide range which can be used across the new development, leaving local planning decisions on the relative balance of sizes between affordable and market housing to be made based on local conditions. Individual sets of figures for different tenures could have been produced, but would have been less robust because of being based on smaller samples than the pool full responses from new development surveys and would have added to the complexity of the figures – i.e. while this guide does not present one single figure for each house size, it does present one single range.

Specific needs

It is not feasible to take account of the need for extra rooms or specific design issues such as:

- Visiting rights for parents or for children to visit parents in separated couples.
- The needs of disabled people, particularly wheelchair users and the needs of carers.
- Non-traditional households, other than the application of market behaviour.

These will partly be taken account of in applying the market behaviour, but how much cannot be quantified.

Author: Trevor Baker, Cambridgeshire County Council Research Group

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