

Modelling the current and potential accessibility of the housing stock

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Executive summary

This report presents analysis of the 2007 English House Condition Survey (EHCS) dataset that aimed to quantify how far the existing housing stock was accessible for people with mobility problems and how easily it could be modified to improve its overall accessibility. The survey collects some information related to accessibility and this, together with other information about the size, type and configuration of the dwelling and its rooms, has enabled us to make some estimates of the above. We have had to make a number of assumptions within the modelling so the results should be seen as indicative rather than definitive. Also, because of the lack of detailed information on slopes, drainage runs, sizes of downstairs WC compartments etc, these will tend to overstate rather than underestimate the accessibility and adaptability of the existing stock.

The analysis examined 10 aspects of accessibility and adaptability in turn to estimate the overall position in the stock and to highlight parts of the stock which were most and least accessible at the moment and easiest and most problematic to adapt. The main findings were:

- Overall, the current stock scores very well on some of these items – living room already at ground or entry level (94 per cent), bedroom or bedspace at entry level (83 per cent) and space for turning of wheelchairs in kitchens and living rooms (68 per cent). However, it is the larger, and therefore usually more expensive, dwellings that are the most likely to provide these. A significant minority of smaller homes do not already have these and would require the building of extensions, where feasible, to provide them.
- In contrast, only 16 per cent of homes have level access and 20 per cent have a flush threshold. This means that a person with mobility problems is likely to experience some difficulty in simply trying to get through the front door of the majority of homes in England. The most problematic dwellings to improve in this respect are those built before 1919, where we estimate that around half currently lack level access and are not feasible to improve because it is either not possible to build a straight ramp or because the street itself is on a steep slope.
- One in six dwellings in England (17 per cent) is a flat and many of these present significant barriers to those with mobility problems. Although they tend to score quite well in terms of having level access up to the main entrance of the building and flush thresholds into the building and the individual flat, where they fall down is in the provision of lifts. Looking at the 2.2 million flats above ground floor level, only 21 per cent of these have a lift of any description and just 33,000 (1.5 per cent) of all upper floor flats have a wheelchair accessible lift.

Rather than simply looking at numbers of criteria met, the analysis focused on two 'levels' of accessibility:

- **Visitable** – a disabled visitor can physically get into the dwelling, gain access to the main rooms and use the WC. Dwellings are classed as visitable where they have all four of the following: level access, flush threshold, doors/circulation that meets Part M of the Building Regulations and ground/entry level WC.
- **Accessible and adaptable** – the dwelling is suitable as a permanent home for someone with mobility problems. Dwellings must have all four visitability features above plus all of the following: suitable parking on the plot, living room or space for living room downstairs, shower on ground floor

(if three or more bedrooms), bedroom or bedspace on ground floor, adequate space for turning wheelchairs in key rooms, entrance illuminated and covered.

The key findings related to these different levels of accessibility were:

- Altogether, only about 740,000 homes (3.4 per cent) currently possess all four visitability features. Around half of these are newer homes built after 1990 and about a third are owned by RSLs. An additional 2.6 million homes (12 per cent) could be made to comply if minor works costing up to about £1,000 were carried out, and a further 9.6 million could comply if more major work involving internal structural alterations and modifications to drainage were carried out. However, some 28 per cent of the stock or 6.2 million homes are not feasible to improve to this level. Homes built before 1919 are the most problematic to improve.
- Only about 111,000 dwellings (0.5 per cent of the stock) are currently accessible and adaptable (meet all 10 criteria). If we carried out minor works, this number could be raised to about 920,000. The groups of dwellings where minor works would yield the greatest gains are bungalows, ground floor flats and homes built after 1990. There is, however, a residual 'hard core' of homes that could not be made to comply with these 10 criteria, estimated to comprise about a third of the stock. Again it is the older and/or smaller dwellings which are most likely to fall into this group, particularly small terraced houses where 77 per cent are classed as not feasible to improve to this level.

Although those who are likely to be most in need of an accessible and adaptable home are more likely to live in one, there is a very large gap between provision and need, specifically:

- There is huge difference between the 111,000 accessible and adaptable homes and the number of households containing someone in need. The minimum estimate of need is around 2 million households (those containing someone who currently uses a wheelchair or walking/lifting aids or relies on being carried by other people to get around their home). If we were to add in those households where someone has a mobility problem but does not currently use any aids, this would more than double to 4.4 million. Adding in households with older people who do not currently have a mobility problem will increase it further still to 9.4 million.
- Furthermore, a large proportion of households where someone is aged over 60 or has a mobility problem live in a home that is not feasible to make accessible. For example, 28 per cent of households that contain someone aged over 75 or someone aged 60-74 with an existing mobility problem live in homes that are not feasible to make accessible.
- In the owner-occupied sector, the lowest priced homes are the least accessible and the most expensive and problematic to adapt. Home owners in these lower value homes are the least likely to have significant surplus income and may therefore find it difficult to afford to move to a more suitable home or to improve their existing one.

This analysis has really just provided some initial indications of what is possible and where the greatest potential for improvements and the main obstacles lie. We feel that it would be useful for future analysis to explore and take into account a number of additional strands and perspectives including:

- Considering the different the levels of accessibility required by different groups of people
- Assessing accessibility and adaptability for blocks of flats in more detail
- Estimating the total costs of adapting the existing stock to different levels

- Examining how far adaptations are affordable for households and landlords, and options for moving
- Examining provision and need by sector and location in more detail to highlight areas that will be most problematic to address
- Assessing the overall cost benefits to the occupants and society as a whole of making the existing stock more accessible

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Appendix A – Information on accessibility collected in the EHCS

Appendix B – Modelling assumptions

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1 Introduction

Communities and Local Government is developing a national strategy on housing for an ageing society. This requires robust information on the number of existing homes that are physically accessible for people with restricted mobility and/or sensory impairments and the number that could be made more accessible relatively easily and economically. During 2007, we carried out a scoping study to assess how far data from the English House Condition Survey (EHCS) could be used to produce reasonably robust estimates of current accessibility and future adaptability based around the key concepts and criteria of the Lifetime Homes standard and the Code for Sustainable Buildings. This concluded that the following aspects related to Lifetime Homes could be modelled fairly robustly:

- Car parking – size and proximity to dwelling
- Living room at entrance level
- Space for bedroom at entrance level
- Level access to main entrance
- Main entrance covered
- Main entrance illuminated
- Main entrance flush threshold
- Any lifts are wheelchair accessible
- Width of internal doorways and circulation space conforms to Part M
- Space for turning wheelchairs in kitchens, dining areas and living rooms
- WC and shower at entrance level

We also concluded that for dwellings which are not currently accessible under these headings, we could model ease of adaptability according to the following four-point scale:

- Easy – no structural alterations required
- Moderate – rearrangement of internal space required
- Major – building extensions required
- Not feasible – necessary work could not be carried out.

Following on from this, Communities and Local Government commissioned us to carry out more detailed analysis and modelling using EHCS data. The initial work involved establishing whether there were any issues around data quality/definitions or sample sizes that would affect the reliability of the modelling and producing initial estimates. The final agreed assumptions are documented in Appendix B. This report examines how accessible and adaptable the current housing stock is, in terms of both individual aspects and overall the different aspects of accessibility. It also examines the profile of people and households who are most likely to require accessible and adaptable homes and how far they live in homes that are accessible or relatively easily adaptable.

2 Methods and assumptions

2.1 Dataset used

The data are from the English House Condition Survey and use the information for two consecutive years (2005/6 and 2006/7) with a sample size of 16,217 dwellings and 15,604 households in England. The EHCS comprises four main component surveys:

1. Physical inspection of the dwelling by a trained surveyor.
2. Interview with the household.
3. Assessment of market value by a trained valuer based on details and photographs.
4. Interview with the landlord where homes are privately rented.

These are used to form a complete picture of the sampled dwelling and its occupants. The information on accessibility and adaptability is taken from the surveyors' assessments in the physical survey. The EHCS has collected some information on accessibility since 2001, but the survey form was redesigned in 2006/7 to capture key aspects of accessibility which are critical to Part M of the Building Regulations. Appendix A contains the relevant pages of the form and instructions given to surveyors on how to assess each aspect. The surveyors also take measurements of the building and the main rooms as well as assessing the age and condition of building elements and services. The survey collects detailed information on heating systems, fuels used and insulation to estimate the energy efficiency of the stock, and surveyors are also required to carry out a Housing Health and Safety Rating System (HHSRS) assessment. Information on the occupants and their resources, and on adaptations already present in the home comes from the interview with the occupants.

The results correspond to the position in April 2007, so there will have been changes in some aspects as a result of adaptations carried out to the existing stock although the overall accessibility is likely to be broadly the same. Also, any new building between April 2007 and April 2009 will have had some impact, particularly because of the need to comply with Part M of the Building Regulations. However, this will be very small in overall terms if we consider that only around 200,000-250,000 new homes have been built in this period compared to an existing stock in 2007 of some 22 million.

2.2 Assumptions

The EHCS collects some information related to accessibility but this is by no means comprehensive. The modelling therefore follows the broad guidelines and ethos of Lifetime Homes rather than being able to duplicate it exactly. The key assumptions around current accessibility are summarised in Table 2.1. Full details are in Appendix B.

Table 2.1 Assumptions about whether currently accessible

Criterion	Coded as accessible where
Car parking – size and proximity to dwelling (LTH 1)	The surveyor has coded that there is adequate street parking or that there is designated parking and it is located on the plot and the slope is <1 in 12 and the front plot is at least 3.3 m wide and the front plot is at least 4.8 m deep (this is large enough to accommodate a family car). Lifetime Homes specifies a shallower slope than this (1 in 20) but the EHCS only records if the slope of the plot is less than 1 in 12.
Living room on ground floor (LTH 8)	There is already a living room on the ground floor/entry floor to the dwelling or where there is space to easily provide one – this includes those with an additional room on this level that could be used as a living room or where the bedroom is large enough to be split to provide a living area. As agreed with client, the minimum room area is taken be 14 m ² .
Space for bedroom on ground floor (LTH 9)	There is already at least one bedroom on the ground floor/entry floor to the dwelling or where there is space to easily provide one – this includes those with an additional room on this level that could be used as a bedroom or where the living room is large enough to be split to provide a sleeping area. As agreed with client, the minimum room area should be 14 m ² .
Level access to main entrance (LTH 2 and 3)	This is directly assessed by the EHCS surveyors. Level access is defined as no steps between the gate/pavement and the entrance door for a wheelchair to negotiate. The path also has a gradient of less than 1 in 12. Lifetime Homes specifies a shallower slope than this (1 in 20) but the EHCS only records if the slope of the plot is less than 1 in 12.
Main entrance covered (LTH 4)	This is directly assessed by the EHCS surveyors and a covered entrance refers to an entrance where there is sufficient space for a wheelchair user to shelter .This entrance need not be fully enclosed.
Main entrance illuminated (LTH 4)	This is directly assessed by the EHCS surveyors and an illuminated entrance is one where there is an external light at the entrance door.
Main entrance flush threshold (LTH 4)	This is directly assessed by the EHCS surveyors and a flush threshold refers to a threshold where there is no obstruction greater than 15 mm.
The width of internal doorways and hallways conforms to Part M (LTH 6)	EHCS surveyors are briefed to assess this directly and are given a table of widths from Part M. Their assessment has been taken on the doors and circulation space serving habitable rooms, kitchen, bathroom and WC.
There should be space for the turning of wheelchairs in kitchens, dining areas and sitting rooms and adequate circulation	As agreed with the client the minimum room dimensions that should allow for this space, given assumed furniture and fittings, are 2.6 m in both directions for a living room and 2.2 m in both directions for a kitchen. Another complication is kitchen-diners and bed-sitting rooms

space for wheelchair users elsewhere (LTH 7)	and we have assumed minimum dimensions for the former of 2.6 m (same as a living room) and 3.5 m for the latter.
WC and shower at entrance level (LTH 10)	EHCS surveyors record separately whether there is a WC and a shower/bath present at entry floor level. There are no data as to whether either is fully wheelchair accessible. Dwellings with three or more bedrooms comply where both are on the entry floor and dwellings with one or two bedrooms comply if just the WC is located on the entry floor.

In terms of adaptability, we have classified work required/possible into a simple four-point scale as follows:

1. Easy – no structural alterations required. Costs likely to be under £1,000.
2. Moderate – rearrangement of internal space required that will involve removing internal partitions and/or increasing size of doorways. Where new WCs or showers are being provided, this will involve partitioning off existing rooms together with associated works to water supplies, wastes and heating. Costs are likely to be in the region of £1,000-£15,000 depending on the size of dwelling and the precise nature of the work.
3. Major – building extensions required. Works will be in excess of about £15,000 and the precise amount will depend on the size of the extension to be built, the scale of work to water and drainage services and ground conditions.
4. Not feasible – it is not physically possible to carry out the necessary work.

The precise definitions used are detailed in Appendix B. Note that not all categories will apply to all criteria.

It is important to note that because the EHCS does not collect sufficiently detailed information, estimates of the numbers of dwellings meeting each requirement and that are feasible to adapt are likely to be on the optimistic side. This also means that the overall accessibility estimates in section 5 are also likely to overestimate the number of homes that are currently accessible or could be modified to make them so. Table 2.2 summarises those aspects where this is the case.

Table 2.2 Criteria where the overall accessibility of dwellings is likely to be over-estimated

Criterion	Why estimates may be too high
Car parking – size and proximity to dwelling (LTH 1)	On current accessibility, Lifetime Homes specifies a slope of 1 in 20 but the EHCS only records if the slope of the plot is less than 1 in 12. Where there is dedicated parking for the dwelling but this is not located on the plot, there is no information on how far it is from the dwelling. On adaptability, we have assumed that it will be feasible to provide a dedicated marked space on the street outside the dwelling unless there is no parking allowed whatsoever.
Level access to main entrance (LTH 2 and 3)	On current accessibility, Lifetime Homes specifies a slope of 1 in 20 but the EHCS only records if the slope of the plot is less than 1 in 12.
Main entrance covered (LTH 4)	On adaptability, we have assumed that this can always be provided except where the dwelling fronts directly on to the street. In reality, this will be subject to planning restrictions in some areas.

Main entrance illuminated (LTH 4)	On adaptability, we have assumed that this can always be provided, whereas in reality this will be subject to planning restrictions in some areas.
The width of internal doorways and hallways conforms to Part M (LTH 6)	It is important to note that the assessment of current accessibility is based on Part M rather than the full Lifetime Homes standard.
WC and shower at entrance level (LTH 10)	On accessibility, there is no information about whether the entry floor WC is wheelchair accessible. On adaptability, we have assumed that any re-routing of services and mains drainage is feasible; there are likely to be some cases where it is not.

2.3 Errors and reliability

The EHCS is a sample survey and some assessments are based on surveyors' professional judgements. All estimates are therefore subject to sampling and measurement errors which are detailed in the EHCS technical report:

<http://www.communities.gov.uk/documents/housing/pdf/ehcstrp05.pdf>

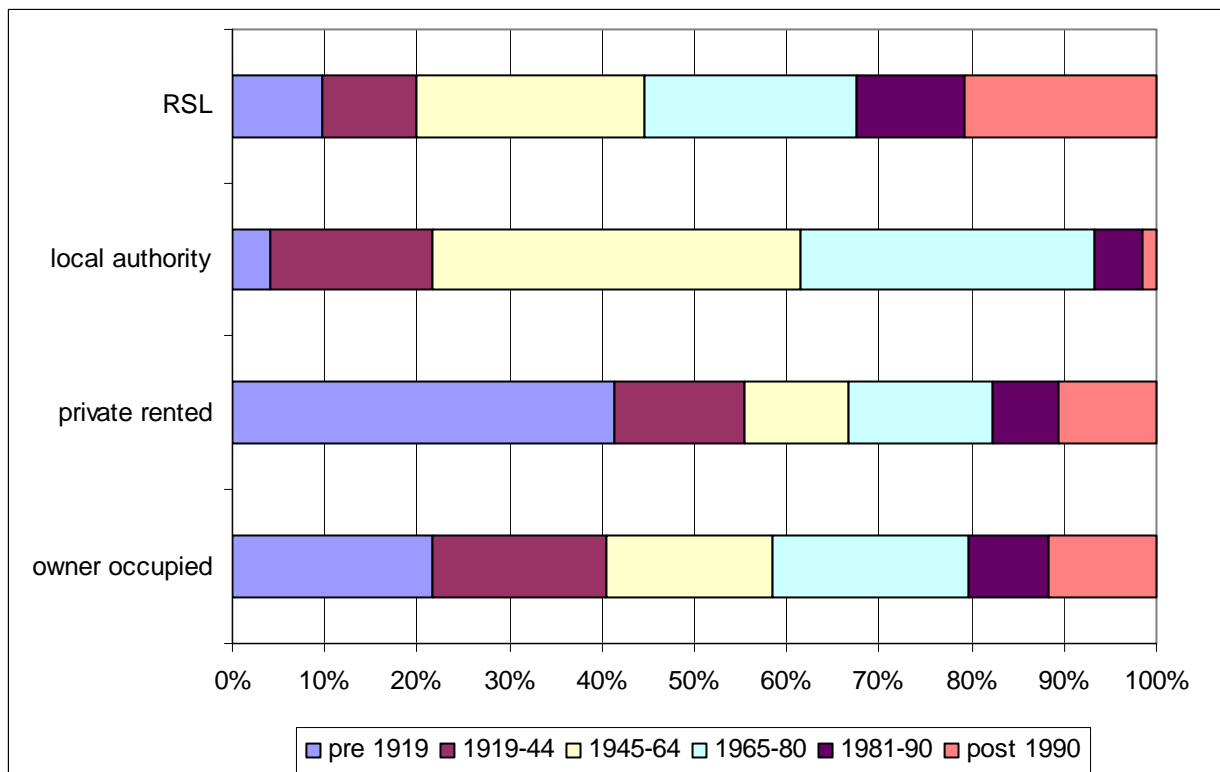
3 Overview of the housing stock

This section provides some background information on the current housing stock to enable the reader to put the later sections into context.

There are some 22.2 million homes in England. Around 4.8 million (22 per cent) of these were built before 1919 and 3.9 million (17 per cent) were built between 1919 and 1945. Only about 11 per cent were built after 1990. The majority of homes (70 per cent) are owner-occupied and around one in eight (12 per cent) are privately rented. The remaining 18 per cent are owned by social landlords; around half by local authorities and half by registered social landlords (RSLs).

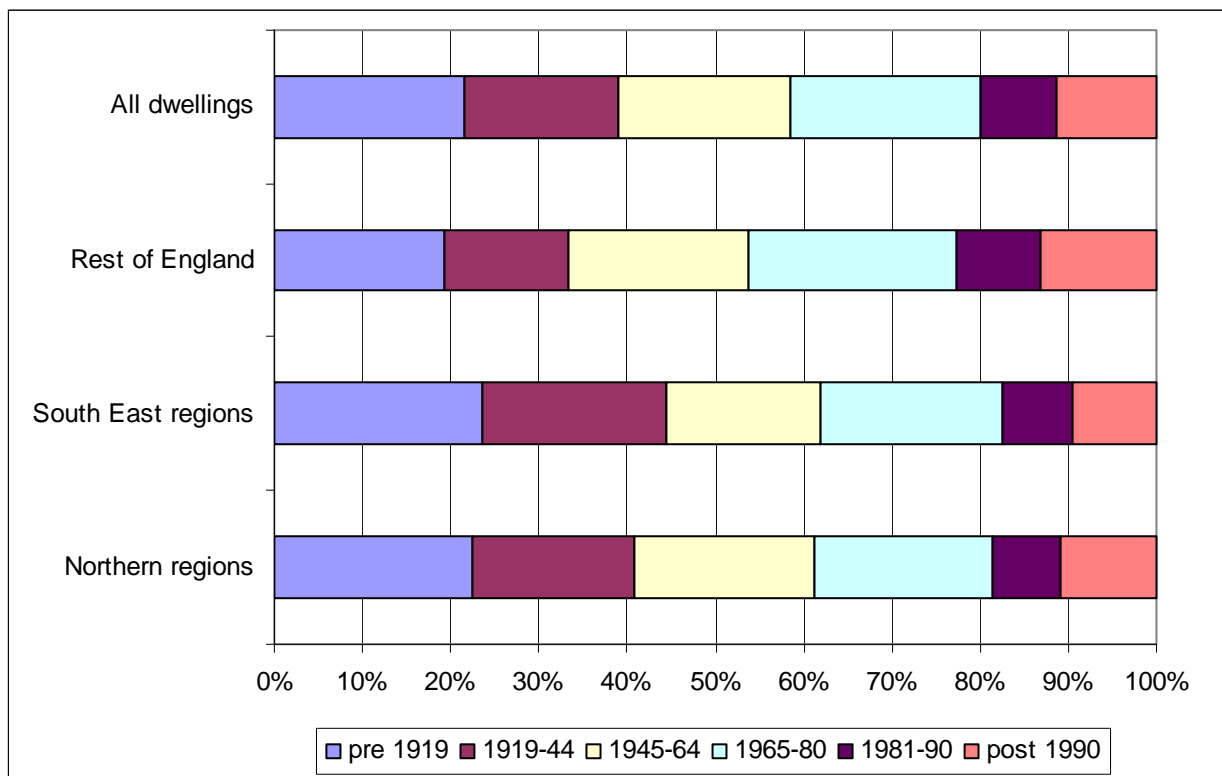
The age profile varies considerably by tenure, particularly in the rented stock. Around 41 per cent of privately rented homes were built before 1919 compared with just 10 per cent of those owned by RSLs and 4 per cent owned by local authorities (Figure 3.1). RSLs have the newest stock with 21 per cent of it built after 1990.

Figure 3.1 Dwelling age by tenure



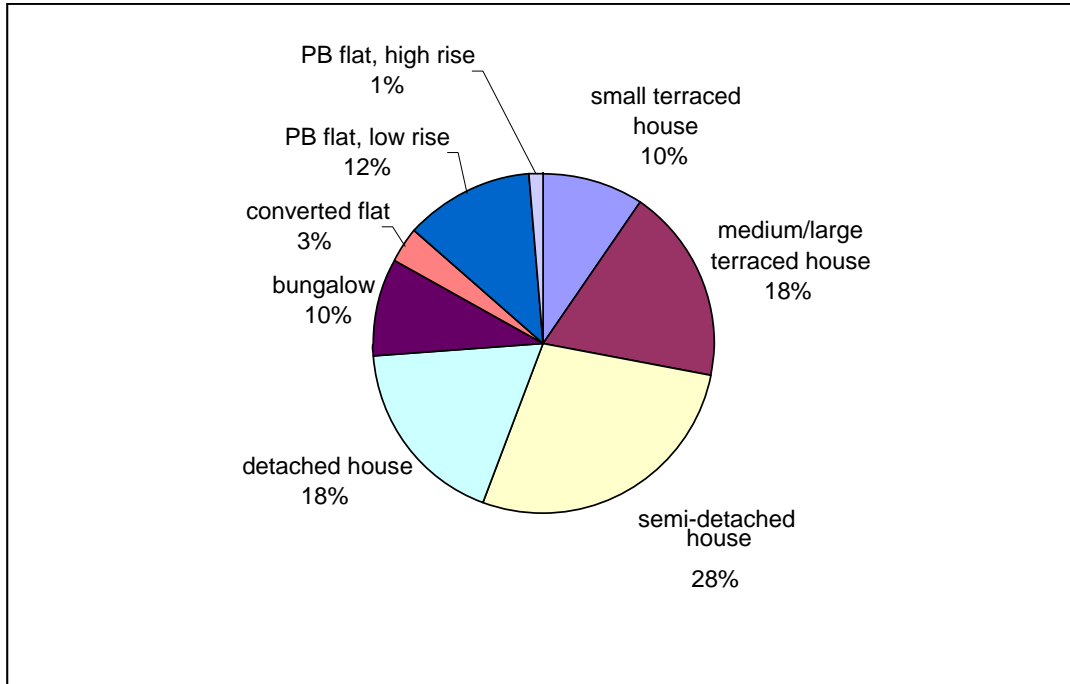
In contrast, there is less variation in the age profile by overall region, the only notable difference being the much higher proportion of homes built between 1919 and 1944 in the South East compared to the Rest of England (21 per cent compared with 14 per cent) (Figure 3.2).

Figure 3.2 Dwelling age by overall region



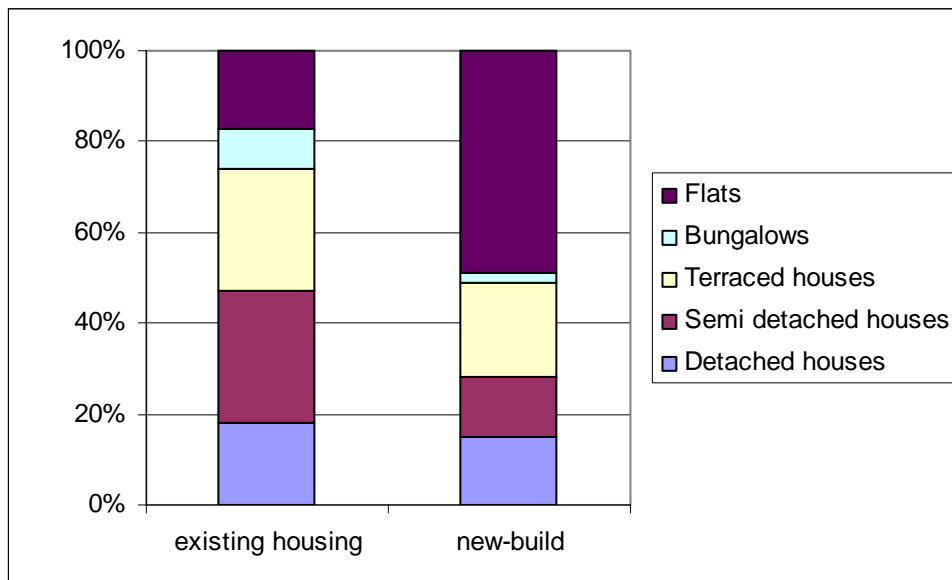
The bulk of the stock (84 per cent) consists of houses and bungalows, with just 1 in 6 (approximately 16 per cent) of homes that are flats (Figure 3.3). The most common type of house is the semi-detached which accounts for 28 per cent of all dwellings, and the most common type of flats are purpose-built in low rise blocks up to five storeys.

Figure 3.3 Breakdown of dwelling types



It is interesting to note that the profile of new stock being built now looks very different from this. NHBC figures on new dwelling starts for 2006-2008 indicate that around half of all new homes being built are flats and just 2 per cent are bungalows (Figure 3.4).

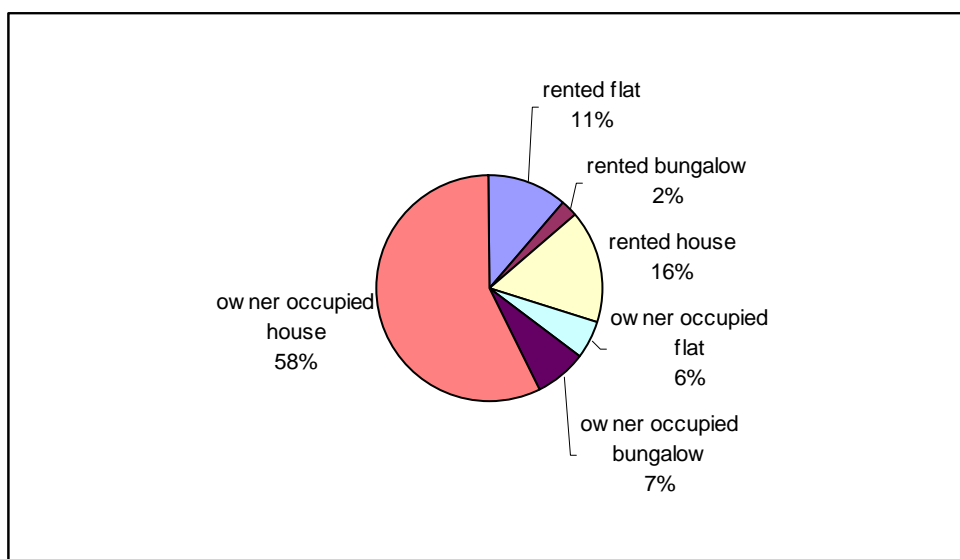
Figure 3.4 Breakdown of dwelling types in existing stock and new homes built 2006-2008



These types are not evenly distributed amongst the tenures; for example, over half of all social rented homes are flats compared with just 8 per cent in the owner-occupied sector. Virtually all detached houses (94 per cent) and three-quarters (75 per cent) of all bungalows are owner-occupied.

Looking at broader combinations of type and tenure, just over half (58 per cent) of dwellings are owner-occupied houses (Figure 3.5). Roughly twice as many flats are rented (11 per cent) than owned, and owner-occupied bungalows (7 per cent) far exceed rented bungalows (2 per cent) within the stock.

Figure 3.5 Breakdown of dwelling type and tenure



There is also considerable variation in dwelling size across the stock. The average total usable floor area across all dwellings is 92 m² but 11 per cent of homes are less than 50 m² and 22 per cent are over 110 m² in area (Table 3.1). Floor area also varies systematically by tenure and type, with rented homes and flats being much smaller than owner-occupied homes and houses. It is particularly striking to note the difference in size between owner-occupied and rented bungalows; some 7 per cent of owner-occupied ones are less than 50 m² in area compared with 47 per cent of rented ones.

Table 3.1 Proportion of homes in each tenure/type with different floor areas and mean floor area

	Usable floor area					Mean sqm
	Less than 50 sqm	50 to 69 sqm	70 to 89 sqm	90 to 109 sqm	110 sqm or more	
Rented flat	48.6	34.7	11.8	2.3	2.5	55.1
Rented bungalow	47.0	39.8	9.3	2.7	1.2	54.6
Rented house	4.2	30.3	43.9	11.6	10.0	82.1
Owner-occupied flat	31.7	42.0	13.4	5.6	7.2	66.0
Owner-occupied bungalow	7.4	30.4	29.1	16.1	17.0	84.0
Owner-occupied house	1.8	16.0	30.6	19.1	32.5	106.9
All dwellings	10.7	23.5	29.0	14.6	22.2	91.8

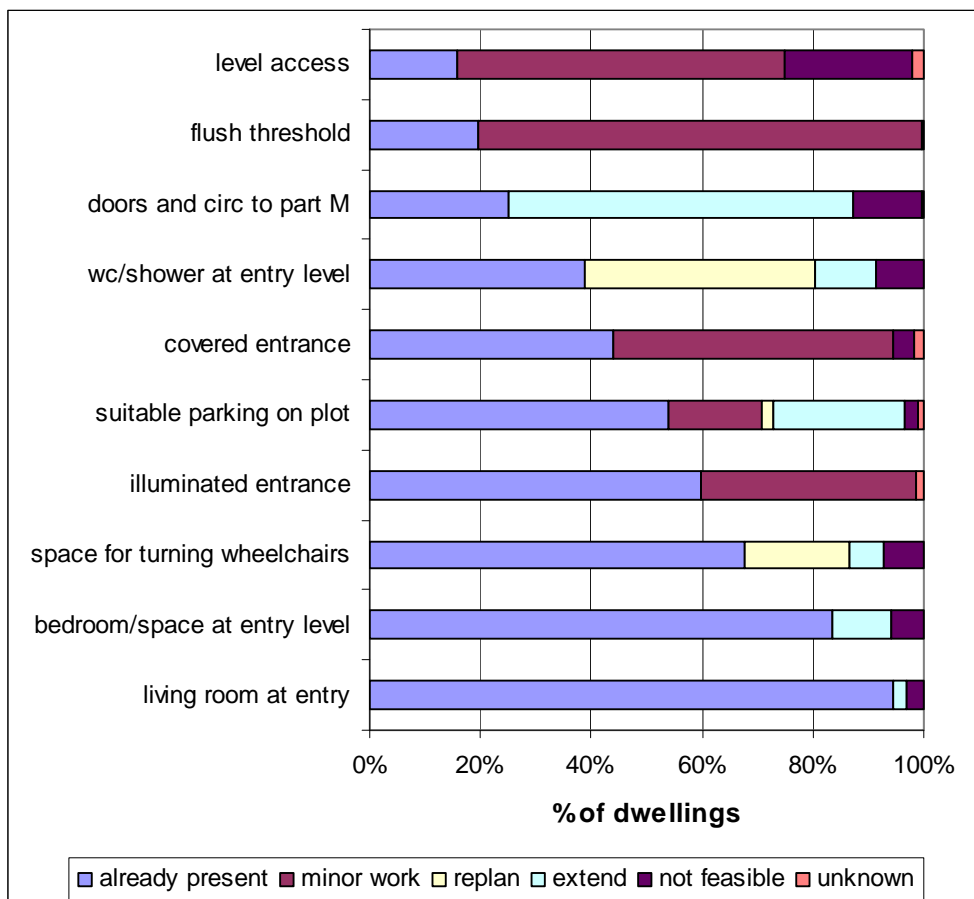
4 Findings – how accessible and adaptable is the current housing stock for each of the aspects?

This section presents the overall figures for current accessibility and future adaptability for each aspect in turn. It starts with an overview and then highlights the types of homes that are most and least accessible and easy to adapt on that particular aspect.

4.1 Overview

Some features are relatively common in the existing stock – living room already at ground or entry level (94 per cent), bedroom or bedspace at entry level (83 per cent), space for turning of wheelchairs in kitchens and living rooms (68 per cent) and lighting to the main entrance (60 per cent) (Figure 4.1). Other features are less common, with only 20 per cent of homes currently possessing a flush threshold and about 1 in 6 (16 per cent) having level access to the main entrance.

Figure 4.1 Proportion of dwellings that could be adapted with different levels of work



Certain items are also easier to deal with than others – the vast majority of dwellings that currently lack a flush threshold or lighting or cover to the entrance could be remedied by relatively minor works. Similarly, we could increase the proportion of homes with level access from about 16 per cent to 75 per cent by carrying out relatively minor work of fitting a simple straight ramp. Others are far more problematic to provide in the existing stock. For example, we estimate that it is simply not feasible to provide level access to 23 per cent of the stock regardless of the extent of work.

The presence of each aspect and the relative ease of undertaking adaptations vary considerably by dwelling type, age, tenure and location. The following paragraphs examine accessibility and adaptability for each aspect in turn, starting with the aspects that are most common.

4.2 Living room at ground or entry level

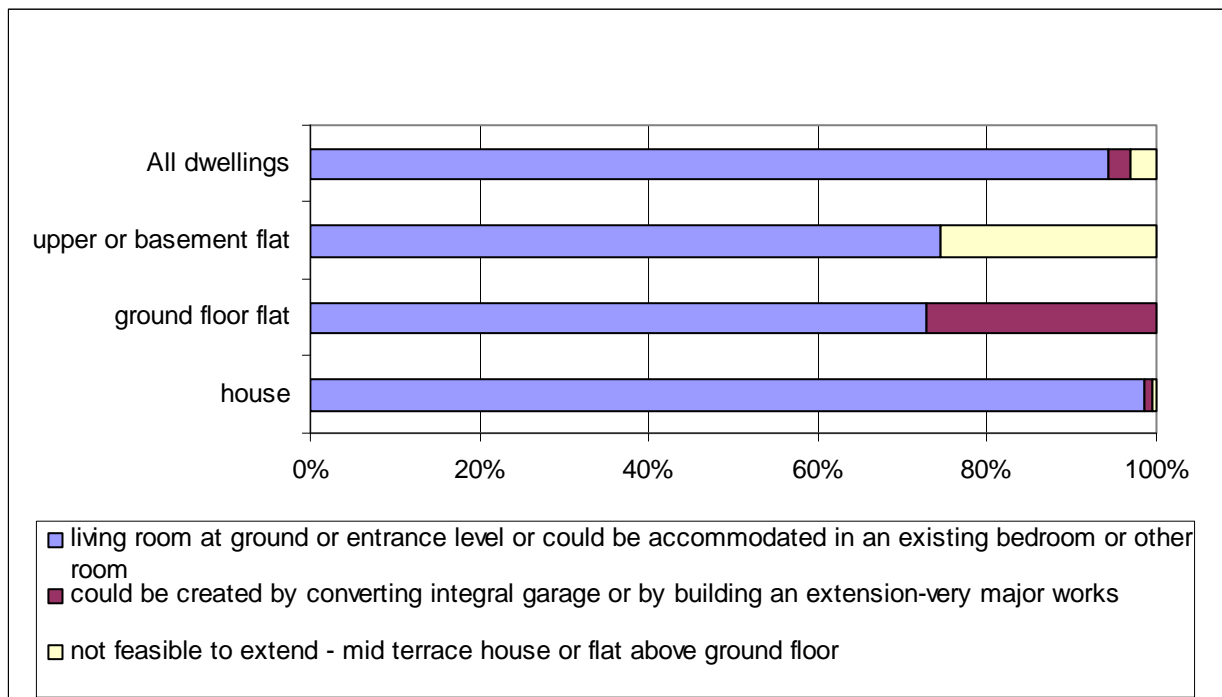
Current accessibility

Although the vast majority (94 per cent) of homes already have this, the proportion is significantly lower for certain types of homes, namely converted flats (73 per cent) and purpose-built low rise flats (74 per cent). Although the majority of flats have all of their rooms on one floor, a significant minority comprise two floors. Furthermore, although there are an estimated 1.3 million upper floor flats that already have their living room at entry level, only 575,000 of these have a lift and most of these will not be wheelchair accessible (see section 4.11.2).

Dwellings built between 1981 and 1990 are also less likely to have this feature (91 per cent), largely a reflection of the trend of building three-storey ‘town houses’ during this period where much of the ground floor area was taken up by an integral garage. As flats are less likely to have this feature, this is likely to account for differences between city and urban areas (88 per cent) and rural areas (98 per cent). There is little regional variation (aside from London because of the very high proportion of flats) or variation according to dwelling condition. There are, however, notable differences in terms of tenure. Owner-occupied dwellings are more likely to have this feature than rented homes in all tenures; again, largely because a much higher proportion of rented homes are flats.

Adaptability

Looking at those dwellings that currently lack this feature, it is likely that about half (3 per cent of the total stock) could be adapted through conversion of an integral garage or an extension, both of which involve very major works. There are differences between flats and houses, however, because it is likely that less than 1 per cent of houses would remain without this feature after all possible works; a marked contrast to upper or basement flats where 26 per cent are not feasible to adapt (Figure 4.2).

Figure 4.2 Providing living room at ground or entry level by dwelling type

4.3 Bedroom or space for bed at ground or entry level

Current accessibility

This feature is relatively common within the housing stock, with approximately 83 per cent of dwellings already possessing it. Not surprisingly, the presence of this is closely related to the type of dwelling, with virtually all bungalows and over 96 per cent of flats complying, compared with just 56 per cent of small terraced houses. However, as was the case with living room at ground or entry level, the majority of the flats on upper floors that meet this criterion do not have a lift. Of the 1.8 million upper floor flats that meet this, 1.2 million do not have a lift. There is surprisingly little variation in this aspect by dwelling age, ranging from 81 per cent of those built in 1919-1964 to 88 per cent of homes built after 1990. Larger numbers of newer dwellings and the prevalence of flats in London are also likely to explain why homes in London and the South East are most likely to meet the criteria (89 per cent) and those in the northern regions least likely (79 per cent).

Adaptability

With regards to adaptability, it may be possible to provide this requirement in a further 11 per cent of the stock, although this would involve very major works involving garage conversions or building extensions. Pre-1919 dwellings are the least feasible to convert/extend (7 per cent) and 1919-1964 dwellings are the easiest to extend (15 per cent). Small terraced houses are the most problematic to improve, with 29 per cent classed as not feasible.

4.4 Space for turning wheelchairs in kitchens and living rooms

Current accessibility

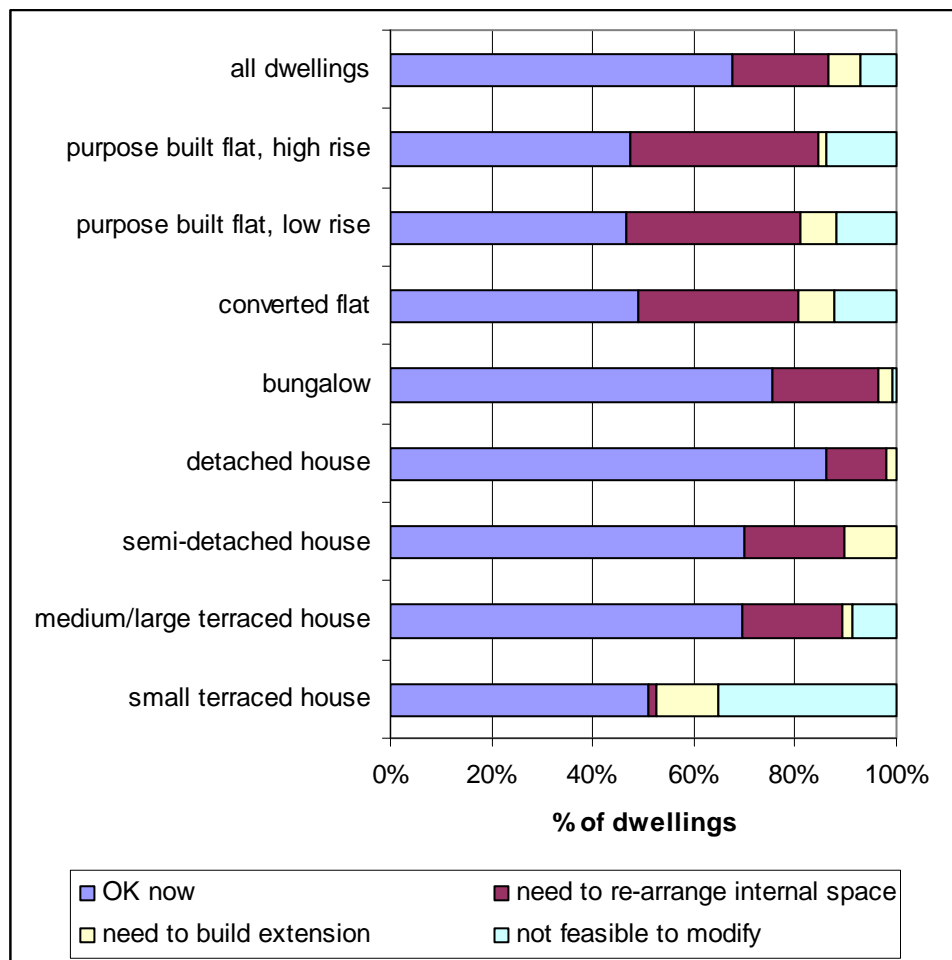
Around two-thirds of existing homes (68 per cent) already have this. Not surprisingly, it is closely related to the type and size of the dwelling. Detached houses are most likely to have this (86 per cent) and all types of purpose-built flats are least likely (47 per cent). Owing to the relatively higher prevalence of flats in the London area, it is not surprising that this region performs less well with just 59 per cent of homes possessing sufficient turning space. Rented dwellings are also less likely to possess this feature (56-59 per cent) than those which are owner-occupied (72 per cent). Again, this is probably due to the higher proportion of flats in all rented sectors.

Adaptability

Adapting dwellings to create sufficient space for turning of wheelchairs can be achieved in one of two ways: where the dwelling is large enough, internal partitions can be removed or moved; where the dwelling is smaller this can only be achieved by building an extension. Moving internal partitions (and associated services) is likely to involve structural works so is classed as major work. The presence of this relatively common feature could rise from 68 per cent among all dwellings, to 87 per cent through such major works. Additional work to build an extension may create 93 per cent of dwellings with sufficient turning space in these rooms. It is not surprising that adaptability, like accessibility, is closely related to size and type of dwelling. It is likely that rearranging the existing space could provide sufficient room for turning wheelchairs in at least 90 per cent of large terraced, semi and detached houses, and in 96 per cent of bungalows (Figure 4.3). The inclusion of extension work in addition to this may allow all semi-detached/detached homes and 99 per cent of bungalows to be accessible in this respect. Rearranging internal space is likely to create 52 per cent (an additional 1.4 per cent) of small terraced houses with this feature. Very major works are likely to have a greater impact for this type of dwelling and may allow a further 13 per cent of homes to have sufficient turning space, although 35 per cent of these houses are not feasible to adapt, far higher than all other dwelling types.

Some 81 per cent of all flats could meet this requirement if re-planning of the existing space were carried out. Very major works are more problematic for high rise flats (only feasible in 1.3 per cent of cases), although more feasible for other flats (7 per cent). About 1 in 8 (12 per cent) of flats are not feasible to improve in this respect.

Figure 4.3 Providing space for turning wheelchairs by dwelling type



The feasibility of undertaking both major and very major works varies by tenure, with approximately 5 per cent of owner-occupied dwellings where it is not feasible to meet this requirement compared with 15 per cent of privately rented homes, 8 per cent of local authority homes and 10 per cent of RSL homes.

4.5 Lighting to the main entrance

Current accessibility

Overall, some 60 per cent of dwellings already possess this feature and its presence is most closely linked to the age and type of dwelling. It is most commonly found in newer homes; some 85 per cent of homes built after 1990 have this feature compared with just 41 per cent of those built before 1919. Main entrance lighting is most likely to be present in purpose-built high rise flats (89 per cent) and least likely to be found in small terraced houses (41 per cent). Illuminated entrances are also most likely to be in owner-occupied dwellings (62 per cent) or RSL dwellings (63 per cent). RSL dwellings compare favourably to local authority dwellings (54 per cent) probably due to the former having a larger proportion of newer homes. Privately rented dwellings are least likely to have this feature (48 per cent). The prevalence of flats in London and larger numbers of newer dwellings in the South East area largely explain why these areas are most likely to

meet the criteria (64 per cent and 67 per cent respectively), whilst the North East is least likely (51 per cent). Dwellings in rural areas are much more likely to have this feature (68 per cent) than those in other types of area; this is probably a direct response to the lack of adequate street lighting in some rural locations.

Adaptability

Where this is not already present, it can be provided very easily in most cases simply by installing a bulkhead light above the entrance door. However, this may be subject to planning restrictions in some circumstances and it has not been possible to establish the number of homes where this might be an issue. It is therefore unclear precisely how many homes could meet this criterion with this simple and relatively cheap measure.

4.6 Suitable car parking space on plot or adequate street parking

Current accessibility

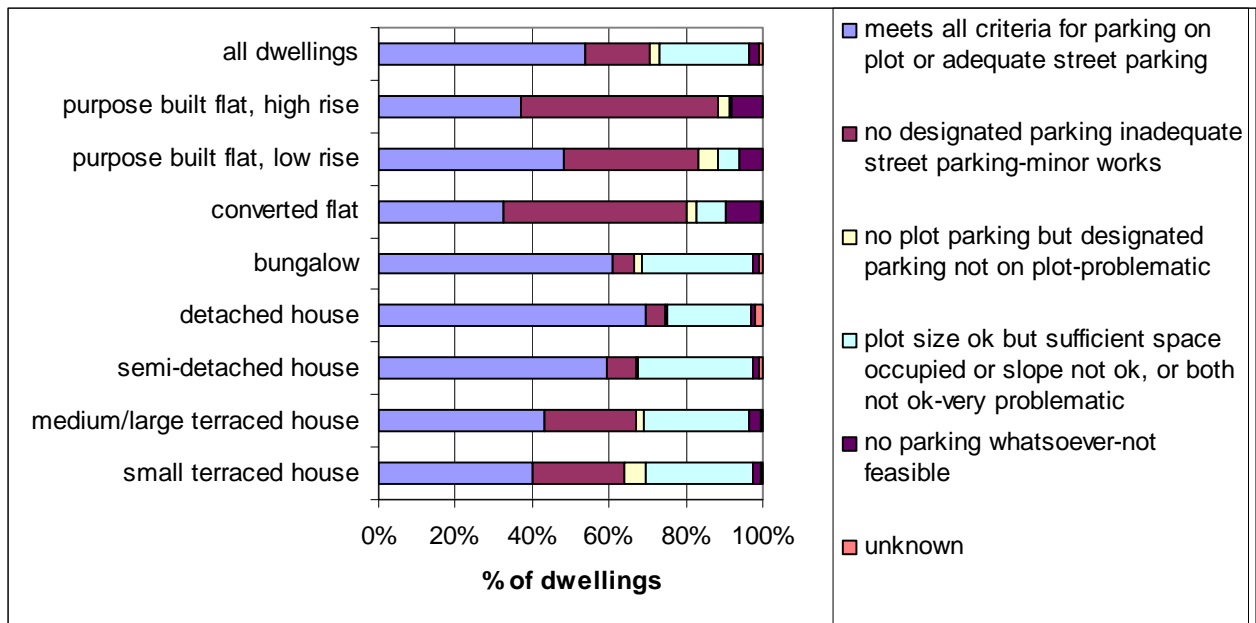
Just over half of dwellings (54 per cent) already meet this criterion. The presence of suitable car parking is closely related to dwelling age, with just 41 per cent of pre-1919 homes possessing this compared with 66 per cent of those built after 1990. Detached houses are most likely to meet the criteria (70 per cent) and converted flats are the least likely (32 per cent). Owner-occupied dwellings are most likely to meet the criteria (58 per cent) and local authority dwellings are least likely (43 per cent). RSL dwellings perform better (50 per cent) and this is likely to be linked to the age profile of the two social rented sectors. Rural homes are most likely to meet the criteria (58 per cent) and city and urban centres are least likely (43 per cent). There are some interesting regional variations, with the South West region performing least well (48 per cent) against all other regions aside from London (44 per cent). The North West area is most likely to have dwellings meeting the criterion (61 per cent).

Adaptability

Undertaking minor work to plots and/or to existing parking areas may increase the overall presence of suitable car parking space from 54 per cent to 71 per cent. Overcoming the difficulties of existing designated parking which is not on the dwelling plot would allow for a further 2 per cent of the stock to have suitable car parking. Overcoming the most problematic issues of occupied plot space and/or sloping plot which could involve the re-siting or demolition of a garage may enable a further 24 per cent of dwellings to have this feature. If all possible works were undertaken, this would leave just 3 per cent of dwellings without sufficient parking space. The largest variations from this occur with converted flats (10 per cent), high rise flats (8 per cent), low rise flats (6 per cent), pre-1919 dwellings (7 per cent) and privately rented dwellings (6 per cent).

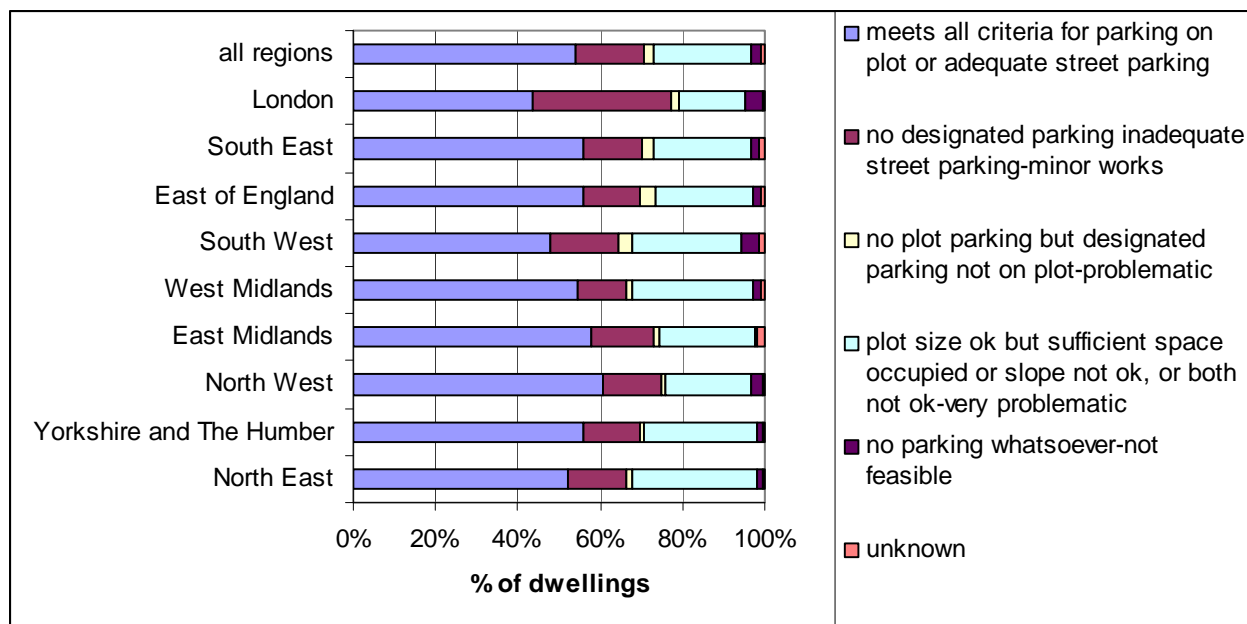
Minor works are least likely to be feasible in pre-1919 properties and most likely in 1945-1964 homes, the latter also being the most feasible to undertake all types of works. In terms of dwelling type, although all types of flats are currently the least accessible in terms of suitable parking, and the hardest to undertake very major work on, if we examine minor works only, these may allow flats to have the most overall accessible car parking (at least 80 per cent), more than detached houses (75 per cent) and other house types (between 64 per cent and 67 per cent) (Figure 4.4).

Figure 4.4 Accessibility and adaptability of suitable car parking by dwelling type



Undertaking minor works may allow at least 71 per cent of properties in the private sector to have this feature, 70 per cent of RSL and 66 per cent of local authority dwellings. Major works are, however, far less feasible for privately rented dwellings. There are regional variations in terms of feasible works. Although London is the poorest in terms of current provision, it could have the highest overall provision if minor works, primarily involving changing parking restrictions, were carried out (Figure 4.5).

Figure 4.5 Accessibility and adaptability of suitable car parking by region



4.7 Main entrance is covered

Current accessibility

Under half (44 per cent) of the housing stock already has this feature and its presence is strongly related to dwelling age and type. Just 30 per cent of pre-1919 dwellings possess this compared with 61 per cent of homes built after 1990. In terms of dwelling types, purpose-built high rise flats are most likely to have this (71 per cent) and small terraced houses are least likely (33 per cent). Covered entrances are most common in the RSL sector (57 per cent) and least common in the private rented sector (39 per cent). Larger numbers of newer dwellings and the prevalence of flats in London largely explain why the South East region is most likely to meet the criteria (51 per cent) and the northern region is least likely (37 per cent).

Adaptability

Where there is no covered entrance, this can in most cases be provided by building a canopy or porch which is classed as minor work, unless the property fronts straight on to the street. Minor works would allow 95 per cent of the total housing stock to meet this requirement. As with providing lighting to the main entrance, this work may be subject to planning restrictions in some circumstances, although it has not been possible to establish the number of homes where this might be an issue. In relation to dwelling age, the notable group where works are not feasible is pre-1919 dwellings (15 per cent). Small terraced houses (13 per cent), converted flats (12 per cent) and other terraced houses (8 per cent) are least likely to be feasible for adaptation compared to the other dwelling types (1 per cent). This is because a significant minority of these types of homes front directly on to the street so it would not be feasible to build a porch or fit a canopy.

4.8 WC/shower at entrance level

Current accessibility

This involves providing a ground floor/entry level WC for all dwellings plus a shower for all houses with three or more bedrooms. Over a third (39 per cent) of existing homes already have this/these. Note that the EHCS does not record whether or not the WC/shower is wheelchair accessible – this is simply the number with any ground floor WC/shower. Their presence is closely related to the type of dwelling. Not surprisingly, all bungalows have a WC/shower at entrance level, and the vast majority of flats also have this. Of the flats, purpose-built low rise are most likely to have this feature (92 per cent) and converted flats are least likely (85 per cent). However, although 1.7 million upper floor flats already have a WC at entry level, only about 550,000 of them have a lift. Focusing on houses, detached houses (22 per cent) are most likely to have a downstairs WC/shower and semi-detached dwellings are least likely (17 per cent). This may seem surprising but probably arises because a significant proportion of older pre-1919 terraced homes have either just two bedrooms or have a bathroom and WC on the ground floor. Around half of all rented dwellings have this feature, rising to 57 per cent for those owned by RSLs. In contrast, owner-occupied dwellings are least likely to have this feature (33 per cent). Dwellings in London are more likely to have this than any other region (51 per cent) because of the much higher proportion of flats in this region and those in the North West and Humberside are least likely (both 29 per cent) because of the large proportion of three-bedroom semi-detached houses in these regions. For the same reason, dwellings in city and urban centres are more likely to have this feature than those in suburban areas (48 per cent compared with 34 per cent).

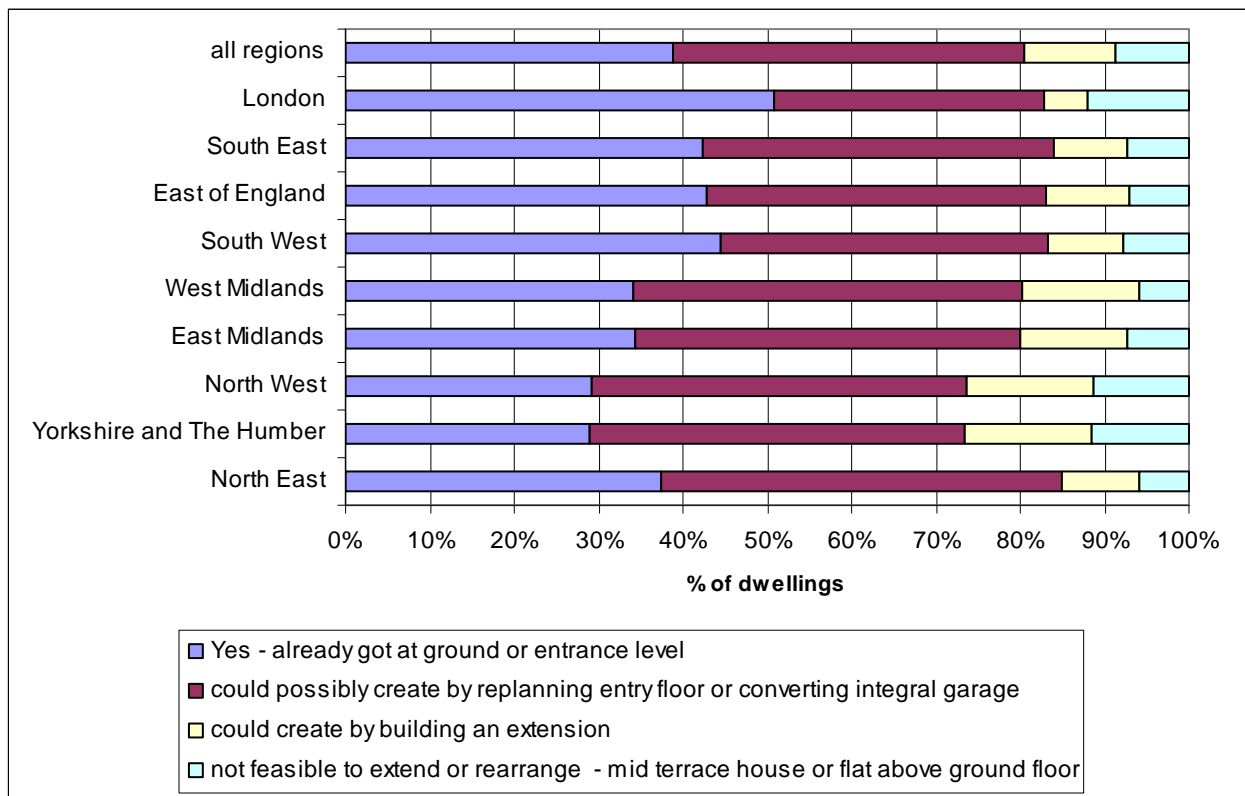
Adaptability

Adapting dwellings to fulfil this requirement would involve at least major works through rearranging internal space at entry level and possibly also re-routing mains drainage, or very major works through a garage conversion or the building of an extension. If all these works were undertaken it is likely that 91 per cent of housing would provide this facility – note that this estimate assumes that it will always be possible to carry out all necessary modifications to mains drainage. Adaptability is also closely related to dwelling type. Not surprisingly, all terraced houses, particularly small terraced, are least likely to be suitable for adaptations. For large terraced homes, re-planning of entry floor level or garage conversion may be possible in 61 per cent of dwellings and an extension feasible in 5 per cent, leaving approximately 17 per cent where it is not feasible to provide this. For small terraced homes re-planning of floor level or garage conversion is likely to be possible in only 3 per cent of dwellings and an extension feasible in 23 per cent, leaving approximately 53 per cent where it cannot be provided. Although semi-detached houses are least likely to have this feature, 61 per cent are likely to be feasible for garage conversion or re-planning of entrance level floor, and the remaining stock is likely to be feasible for the fitting of an extension. Virtually all detached homes could also have this requirement through various works.

Works to flats could increase the proportion of stock with this feature: converted flats 96 per cent, low rise 97 per cent and high rise 94 per cent. However, the entry level of the flat is important to consider. Although, in theory, we could make about 95 per cent of all flats comply by carrying out major and very major works, a large number would still not have a lift.

Carrying out major and very major works could significantly reduce the regional variations in current accessibility. It would increase the proportion of those dwellings with these features in Yorkshire and Humberside and the North West from 29 per cent to 89 per cent.

Figure 4.6 Potential availability of WC/shower by region



4.9 Internal doors and circulation meet Part M of the Building Regulations

Current accessibility

A quarter of the housing stock (25 per cent) already has this feature. Not surprisingly, it is closely related to the age of dwellings and their size. Post-1990 dwellings are most likely to have this feature (45 per cent) and pre-1919 dwellings are least likely (17 per cent). Bungalows and detached houses are most likely to have this feature (35 per cent and 34 per cent respectively) and small terraced houses and converted flats are least likely to comply (16 per cent and 17 per cent respectively). RSL dwellings are more likely to comply with this aspect of Part M than those in other tenures, with almost a third (32 per cent) already possessing this feature.

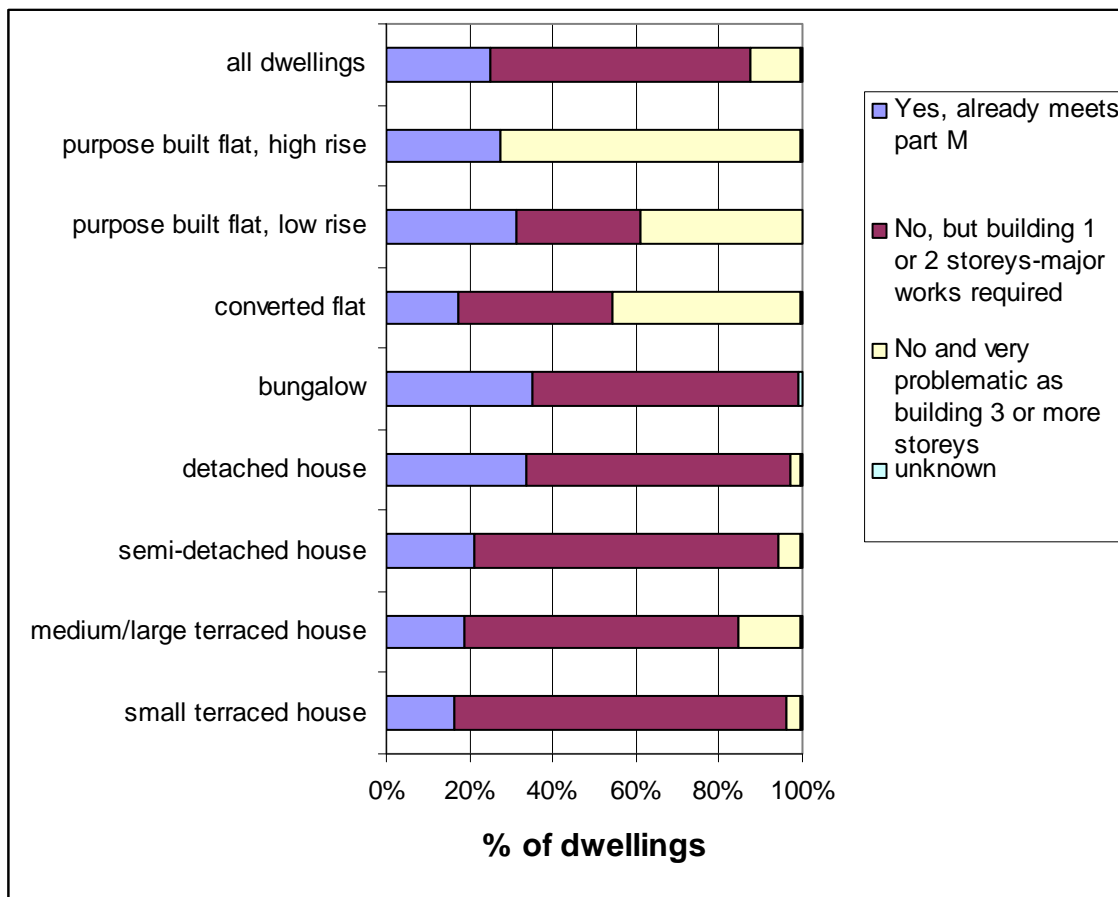
Adaptability

Improving overall accessibility regarding this feature would require at least major works involving creating larger doorways or removing internal partitions. There is insufficient information in the EHCS to estimate which (or both) of these is needed. The category ‘very problematic’ covers all homes with three or more storeys (including flats in blocks that are three or more storeys high) where it would not be possible to remove internal partitions without contravening fire standards, although not all of these homes will

necessarily require this work. Overall, one in eight (12 per cent) homes falls into this ‘very problematic’ category.

The adaptability of dwellings is closely associated with their age and type. A further 60 per cent of pre-1919 homes, which are currently the least accessible with regards to this requirement, may be suitable through major works. This would still leave approximately 23 per cent of such dwellings with very problematic issues regarding accessibility where such buildings are likely to be three or more storeys. This is far higher than all post-1919 homes where at least 88 per cent may be made accessible through major works. Not surprisingly the size and type of dwelling are also significant, with almost three-quarters (72 per cent) of high rise flats classed as problematic (Figure 4.7). Roughly one-third of other types of flats may be adaptable through minor works, leaving 45 per cent of converted flats and 39 per cent of low rise flats as very problematic.

Figure 4.7 Providing circulation and doorsets to conform with Part M by dwelling type



Since flats are much more likely to be very problematic, a high percentage of homes in London are classed as problematic (38 per cent). Linked to this, rented homes are more likely to be very problematic, with 23 per cent of privately rented and 20 per cent of local authority homes where improvements may not be feasible.

4.10 Flush threshold to main entrance door

Current accessibility

Only around 1 in 5 (20 per cent) of existing homes already have a flush threshold. As with many other features, its presence is related to dwelling age. Over a third (37 per cent) of homes built after 1990 have this feature compared with 31 per cent of all those built before 1945. There are marked contrasts between all flat types and other house types in terms of meeting this need. Purpose-built high rise flats are most likely to have a flush threshold (69 per cent) and all types of terraced houses least likely (13 per cent). Interestingly, only 18 per cent of bungalows meet this criterion. Given the proportions of flats within their stock, it is not surprising that city and urban areas are more likely to meet the criteria (27 per cent) in comparison to suburban and rural areas (18 per cent). However, as with all issues related to flats, the level of the flat and presence of a lift need to be taken into account. Although around 1.1 million upper floor flats have a flush threshold, only about 400,000 of these have a lift. If all upper floor flats were required to have a lift to comply with this, then the percentage of flats with a flush threshold would reduce from 47 per cent to 28 per cent of all flats.

Adaptability

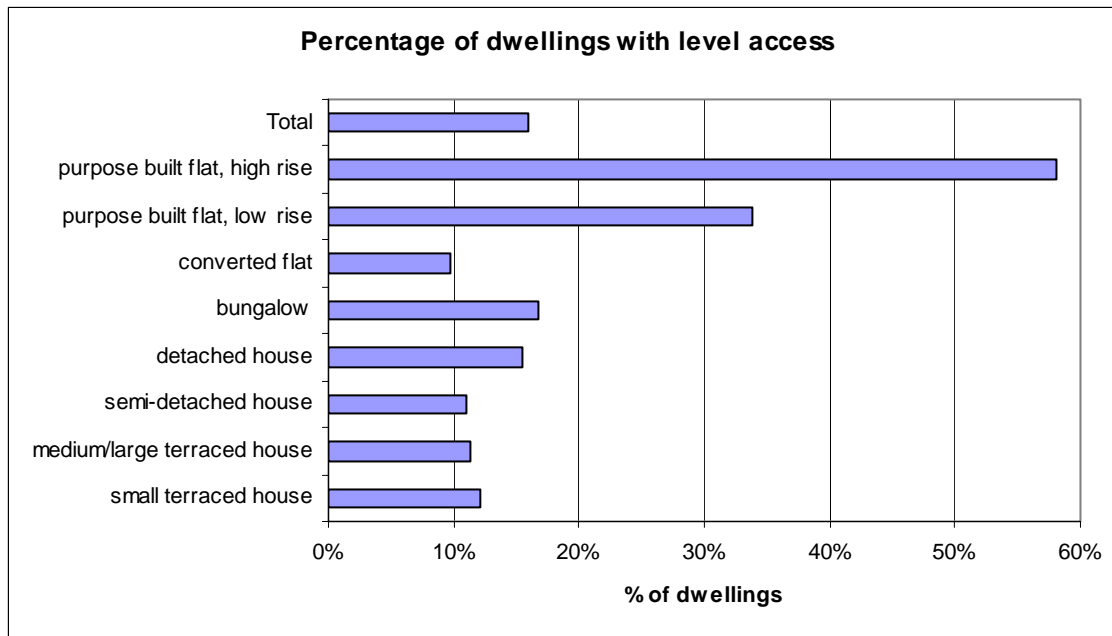
By undertaking minor works to dwellings (replacing the entrance door and frame) it is likely that most dwellings could be made to conform to this requirement. However, we do not know precise details of the door widths and changes of level between inside and outside so it is not possible to estimate how many of these may be more difficult or not feasible to modify.

4.11 Level access to the main entrance

Current accessibility

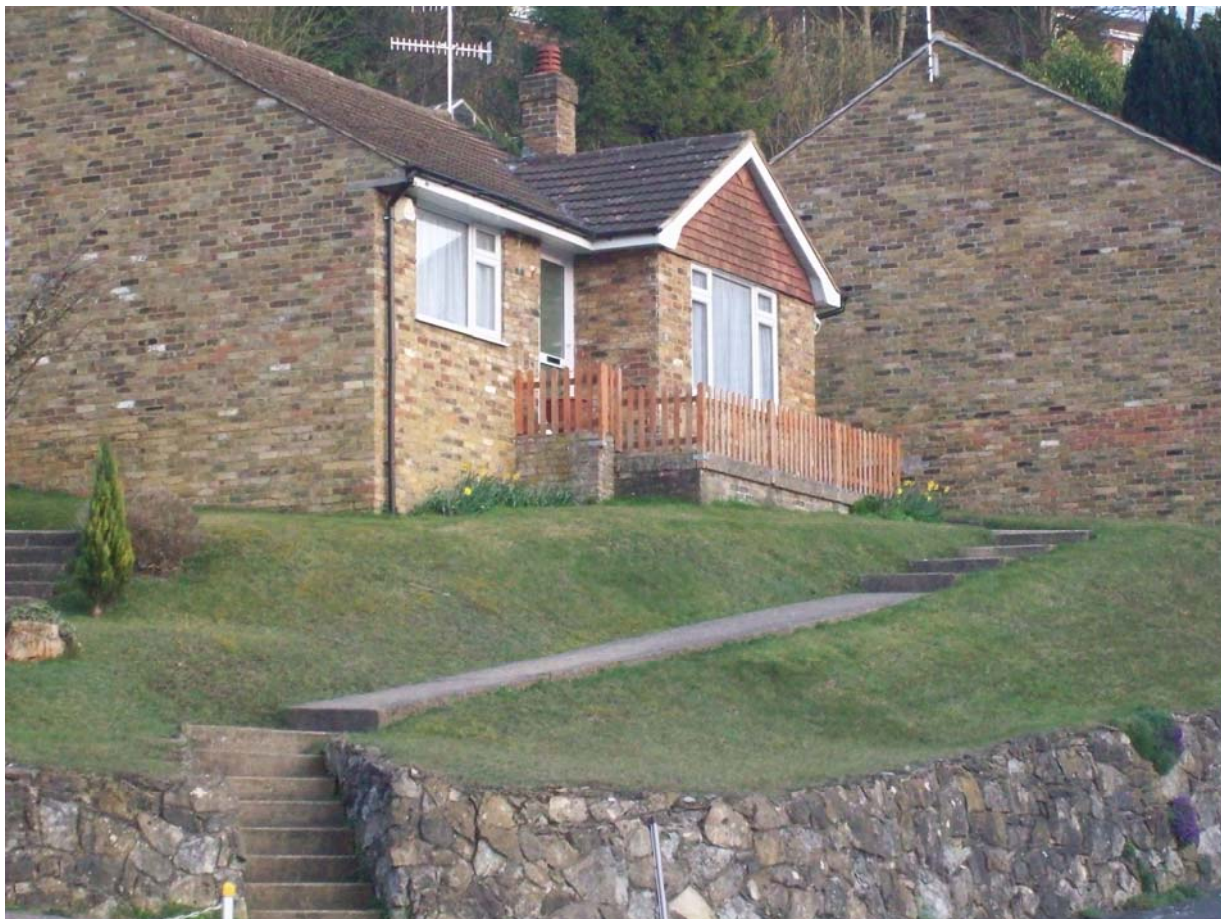
About 1 in 6 (16 per cent) of homes already have level access to the main entrance. High rise flats are by far the most likely to have level access (59 per cent). By contrast converted flats are least likely to have level access (10 per cent) and, interestingly, only 17 per cent of bungalows meet the criteria (Figure 4.8). Again, with flats we need to be clear that this figure takes no account of whether there is a lift. Around half of the 700,000 upper floor flats classed as having level access have a lift.

Figure 4.8 Dwellings with level access by dwelling type



Post-1990 dwellings are most likely to have level access (34 per cent) and all pre-1945 dwellings are least likely (11 per cent). RSL dwellings are most likely to have level access (34 per cent) and owner-occupied properties are least likely (13 per cent). The reduced availability of suitable land for housing over time has meant that some more recently built homes are located on steeply sloping sites where level access does not currently exist. This even applies to bungalows, most of which were designed with older people in mind, as illustrated in Figure 4.9.

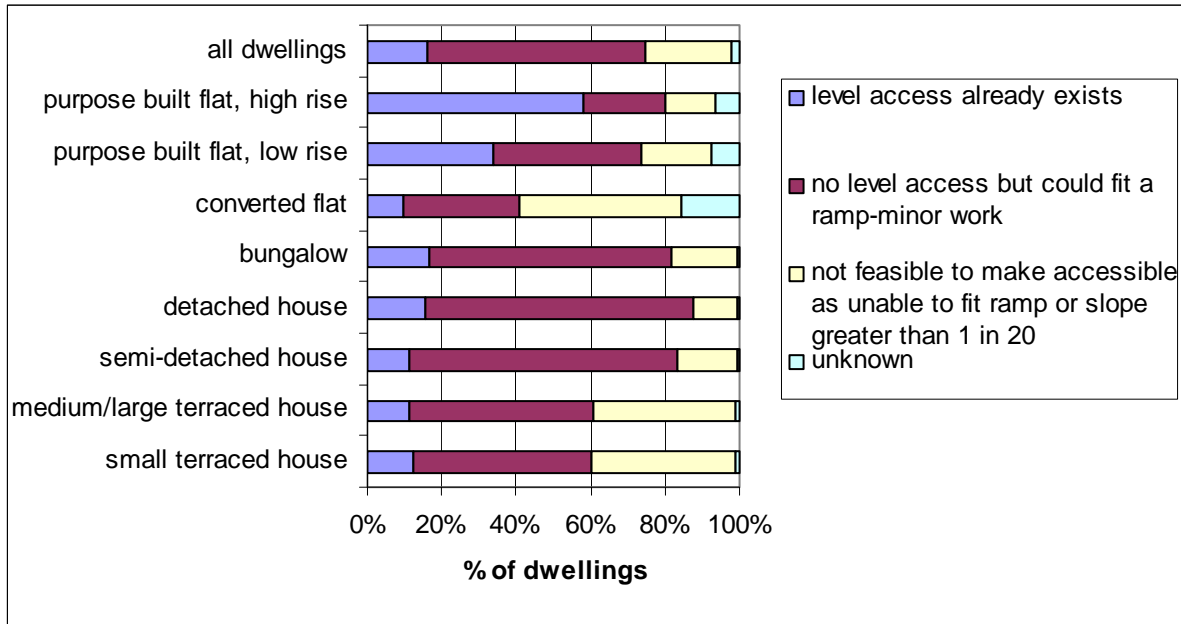
Figure 4.9 Modern bungalow on sloping site



Adaptability

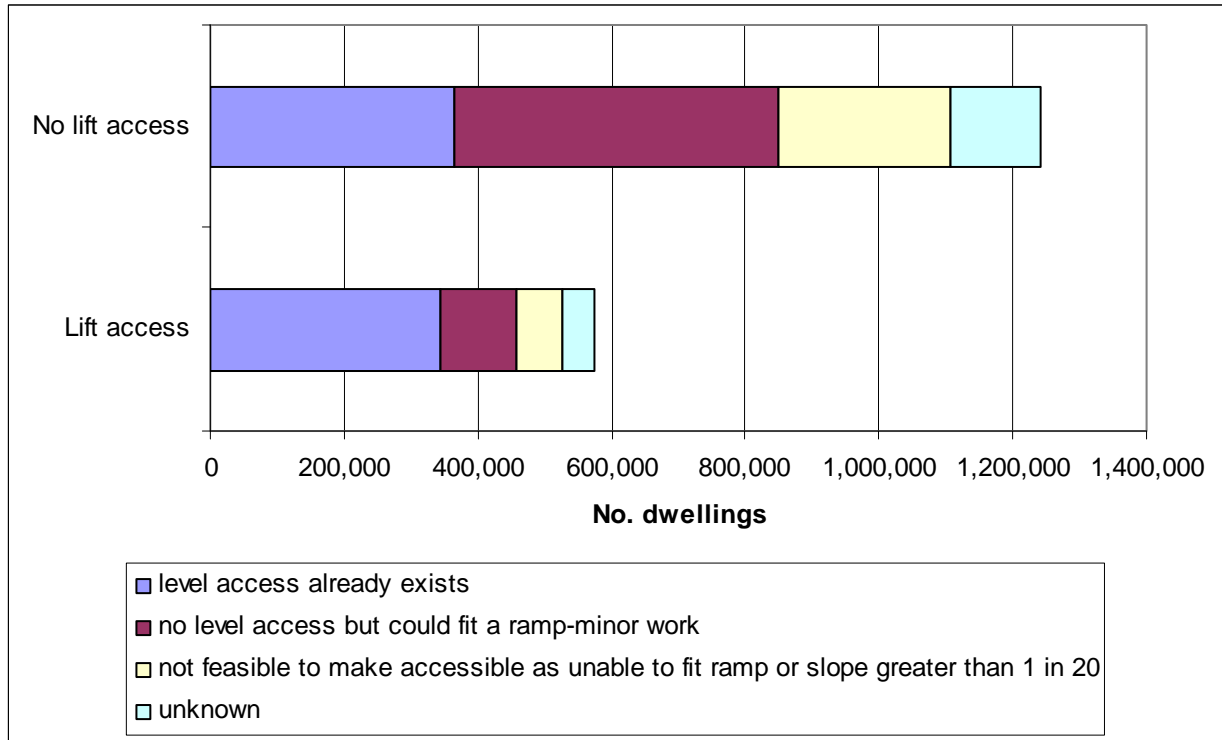
Where this feature does not currently exist, minor work through the fitting of a straight ramp could create level access in a further 59 per cent of the total stock, leaving 23 per cent of overall dwellings not feasible for adaptation. In terms of dwelling age, variations in current accessibility are likely to be overcome through minor work creating this feature in 80 per cent of cases, with the notable exception of pre-1919 dwellings where 50 per cent of homes would remain unsuitable for the fitting of a straight ramp. This arises for two main reasons: firstly these homes are more likely to have steps up to the front door, and secondly they are more likely to front directly on to the street. With regard to dwelling type, converted flats are still most likely to be without level access after possible work (44 per cent) followed by terraced homes (39 per cent) (Figure 4.10). Almost 1 in 5 (18 per cent) of bungalows are also likely to be unsuitable for the fitting of a straight ramp.

Figure 4.10 Accessibility and adaptability – level access to main entrance by dwelling type



A roughly equal proportion of all houses, ground floor flats and upper floor flats are not feasible to provide level access (23-24 per cent). If we look specifically at upper floor flats, we can see this percentage would increase significantly if we took into account whether there was a lift present (Figure 4.11).

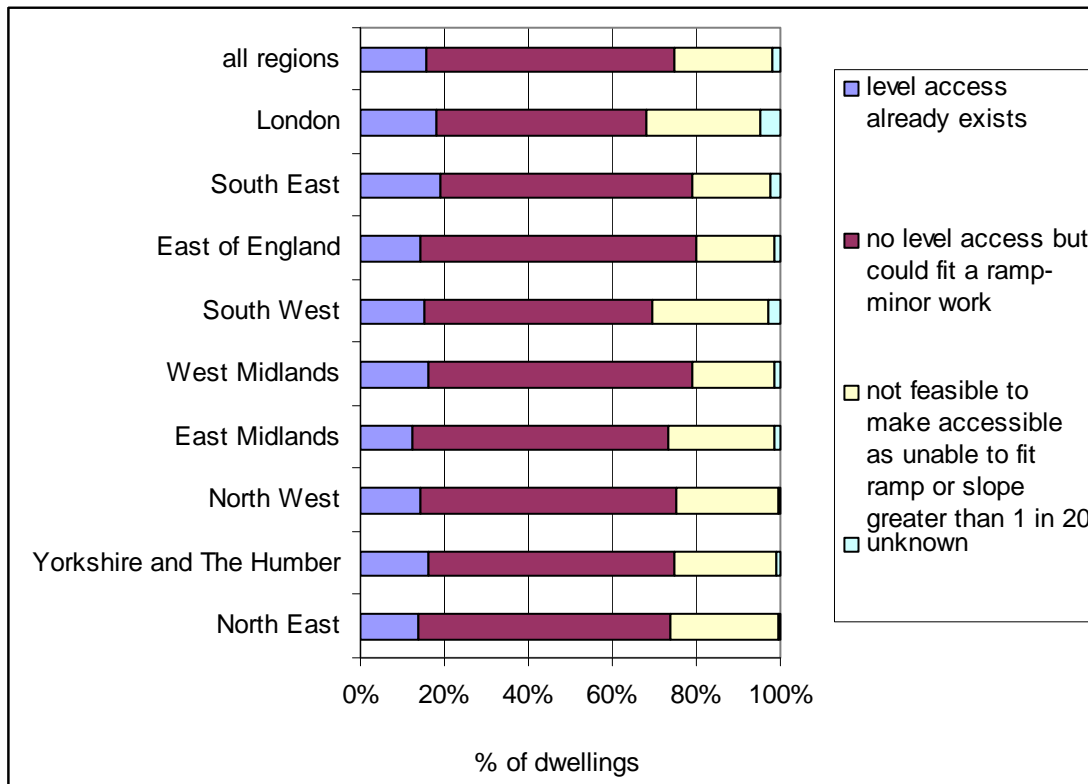
Figure 4.11 Upper floor and basement flats only – providing level access by whether lift present



For owner-occupied homes 64 per cent of dwellings are feasible to improve, leaving 22 per cent of dwellings where it is not feasible to provide this feature. This is higher than for social rented homes where around 19 per cent are not feasible to improve but far lower than privately rented homes where 34 per cent of homes could not be modified to provide level access. A much larger proportion of homes in city and urban centres (37 per cent) would remain without level access even after major works, compared to approximately 19 per cent in other types of area.

There are also substantial regional variations. Around 27 per cent of homes in London, the South West and North East are most likely to remain problematic compared with around 19 per cent of those located in the East, South East and West Midlands (Figure 4.12). This arises owing to the combination of dwelling types and ages together with overall topography (hills and valleys).

Figure 4.12 Providing level access by region

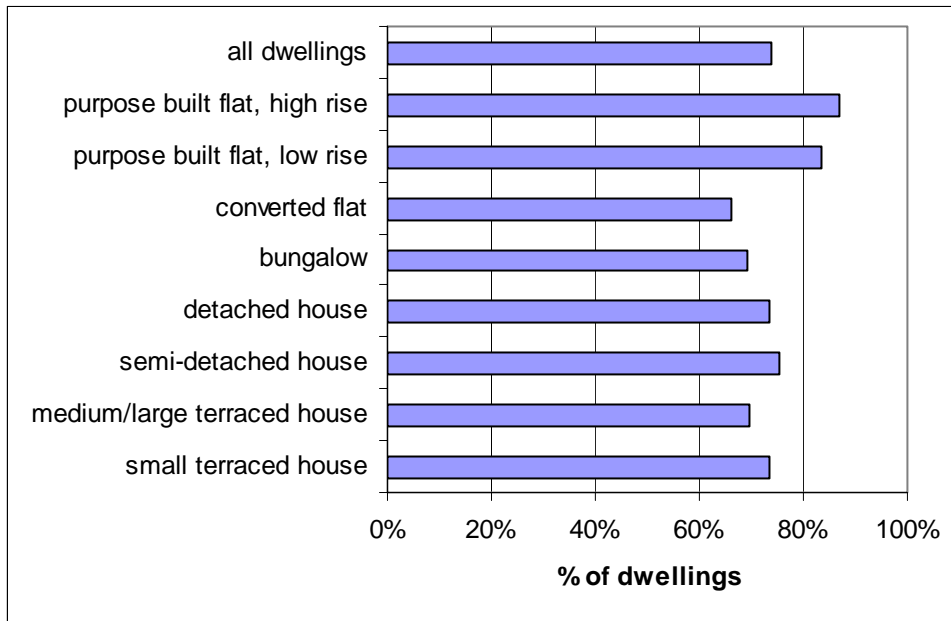


4.12 Other aspects of accessibility investigated

4.12.1 No trip steps or changes of level on the entry floor

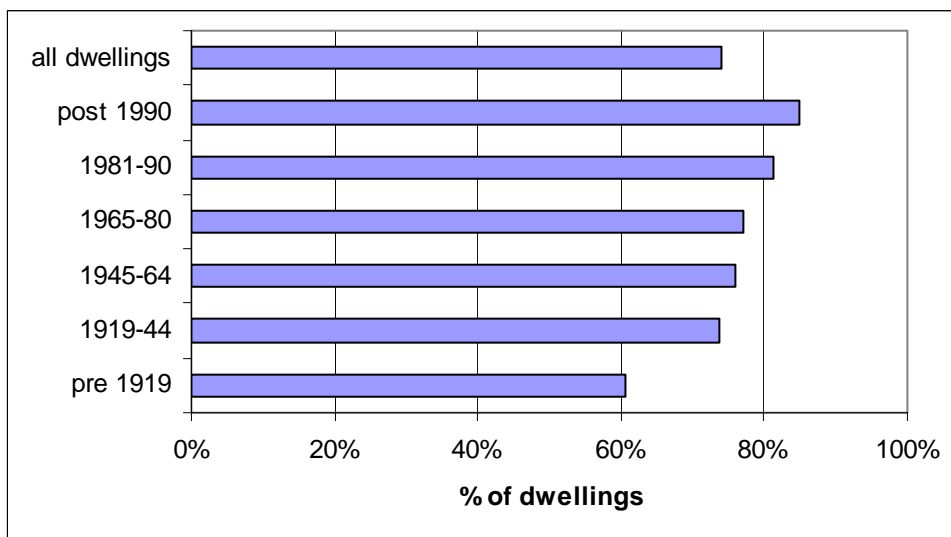
Trip steps or changes of level on the entry floor can create difficulties and dangers for all occupants, especially those with limited mobility. Overall about three-quarters (74 per cent) of homes have none of these. Not surprisingly, purpose-built flats are most likely to be free from such steps, particularly high rise flats (87 per cent). Converted flats are least likely to be free of these hazards (66 per cent) (Figure 4.13). Approximately 70 per cent of larger terraced properties and bungalows are likely to meet this requirement and roughly three-quarters of all other housing types. What is surprising is that bungalows, many of which have been designed with elderly people in mind, are no better than other types of houses in this respect.

Figure 4.13 Percentage of homes with NO trip steps by dwelling type



The presence of trip steps is closely related to the age of the dwelling. Only 60 per cent of pre-1919 homes are free from such hazards compared with 85 per cent of those built since 1990 (Figure 4.14)

Figure 4.14 Percentage of homes with NO trip steps by age of dwelling



It is not possible to use EHCS data to assess whether and how easily these trip steps might be removed because surveyors only record whether there are **any** trip steps on the ground/entry floor. Without knowing the number, size and location of these we cannot assess how easy or feasible it would be to remove them by replacing with a shallow slope.

4.12.2 Wheelchair accessible lifts to flats on basement/upper floors

Across England there are around 2.2 million flats above ground floor level. However, only around 480,000 (21 per cent) of these have a lift of any description. High rise flats (in blocks of six or more storeys) and those in the owner-occupied sector are the most likely to have lifts. Just 33,000 (1.5 per cent) of all upper floor flats have a wheelchair accessible lift.

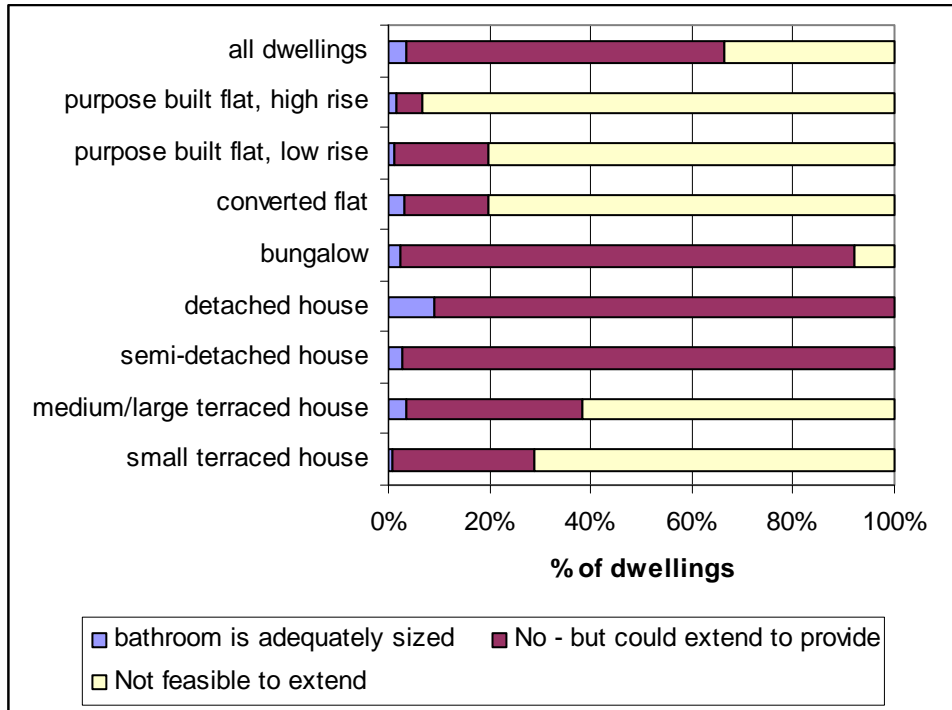
It is not possible to use data from the EHCS to see whether it would be feasible to install a suitable lift where there is currently no lift or to replace the lift with one that is accessible. At best the work involved would be very major, eg constructing a new lift tower and installing a new lift, and in many cases would not be feasible either because there is no space for an additional lift tower or because it would be impossible or extremely problematic to install a lift or a larger lift shaft within the existing structure.

4.12.3 Adequately sized family bathroom

EHCS surveyors assess the overall amount of space in the main family bathroom according to a five-point scale (seriously defective, defective, just acceptable, satisfactory and superior). Only those bathrooms classed as 'superior' in terms of space are likely to be large enough to be adaptable for use by a person in a wheelchair and these are present in only around 4 per cent of the existing housing stock. In terms of dwelling age, pre-1919 dwellings are most likely to have this feature (7 per cent) and dwellings built from 1965-1980 are least likely to have a sufficiently sized family bathroom (2 per cent). In terms of dwelling types, it is not surprising that detached houses are most likely to have this feature (9 per cent) and small terraced houses least likely (1 per cent). Less than 1 per cent of local authority dwellings have a sufficiently sized bathroom compared with 4 per cent of owner-occupied dwellings. Dwellings in rural areas are more likely to have this feature (6 per cent) than those located elsewhere.

Where this bathroom is not big enough, it may be possible to adapt it by rearranging internal space in larger dwellings, although this will mean making other rooms (probably bedrooms) smaller or losing them altogether. Because we cannot really assess how feasible or desirable this is, we have simply estimated in how many of these it may be feasible to provide a sufficiently large bathroom by extending the current home. This work would increase the percentage with a suitable sized bathroom from 4 per cent to 66 per cent but would be very expensive. It is also far more likely to be feasible in larger houses and owner-occupied dwellings. Virtually all detached or semi-detached houses and most (92 per cent) bungalows could have this facility if extended, compared with just 7 per cent of high rise flats and 20 per cent of low rise purpose-built or converted flats (Figure 4.15).

Figure 4.15 Accessibility and adaptability of family bathrooms by dwelling type



These large differences in adaptability by dwelling type translate into large differences by tenure and region because of the high proportion of flats in the rented sectors and in London. Some 60 per cent of homes in London could not provide this compared with between 23 per cent and 35 per cent in other regions. Similarly, only 25 per cent of owner-occupied homes could not be extended to provide this compared with over half (55 per cent) of rented homes.

5 Overall accessibility

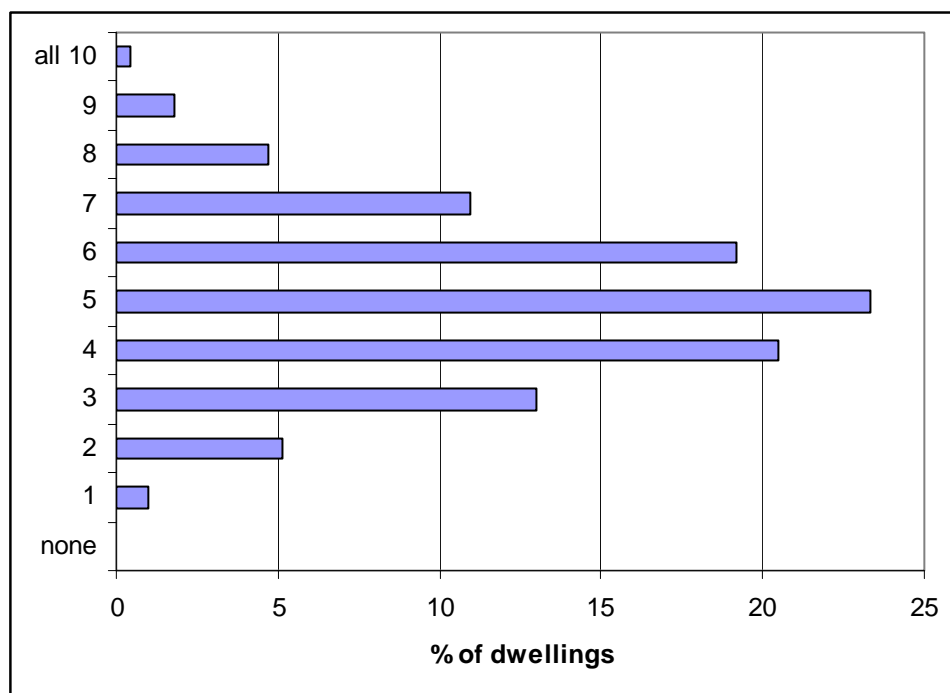
5.1 Introduction

To examine this, we have used the 10 aspects which are most closely linked to Lifetime Homes and where we can model both current accessibility and potential for adaptation reasonably reliably. These are:

- Living room at ground or entry level
- Space for turning wheelchairs in kitchens and living rooms
- Lighting to the main entrance
- Main entrance is covered
- WC/shower at entrance level
- Suitable car parking space on plot
- Bedroom or space for bedroom at ground or entry level
- Internal doors and circulation meet Part M of the Building Regulations
- Flush threshold to main entrance door
- Level access to main entrance

Only around 110,000 or 0.5 per cent of the existing stock meet all 10 of these criteria. Around one in five (19 per cent) meet three or fewer and a similar proportion (18 per cent) meet seven or more (Figure 5.1)

Figure 5.1 Proportion of existing dwellings meeting different numbers of criteria



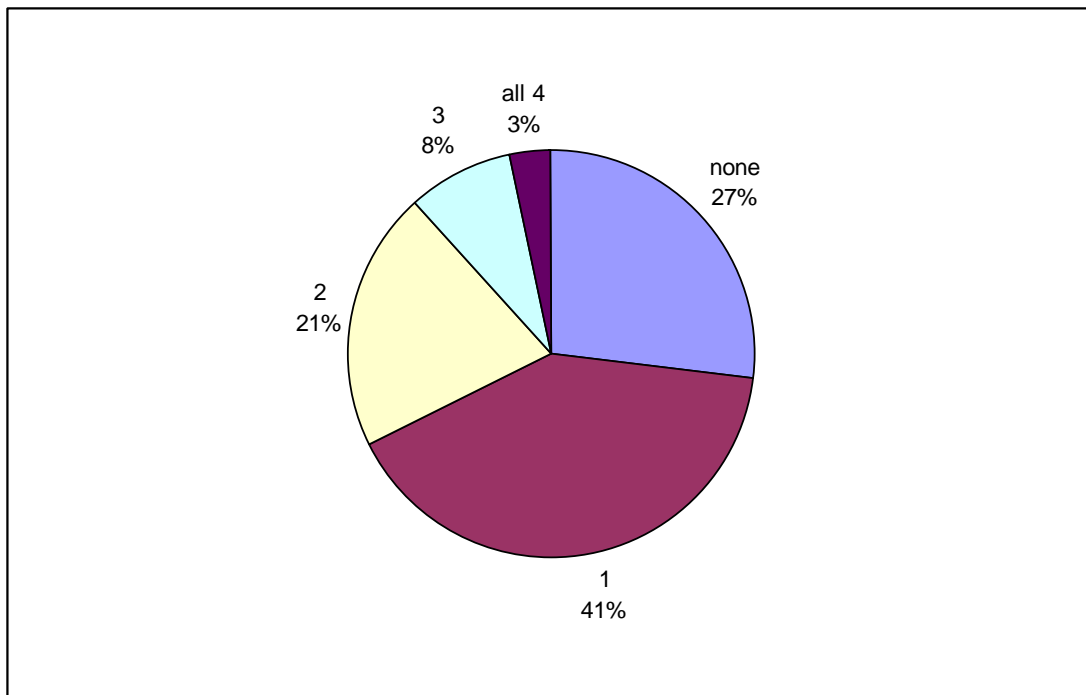
Rather than simply look at numbers of criteria met, it is probably most useful to consider two types of 'accessible dwellings':

- 1 Visitable – a disabled visitor can physically get into the dwelling, gain access to the main rooms and use the WC. The four key items are: level access, flush threshold, doors/circulation that meets Part M of the Building Regulations and ground/entry level WC.
- 2 Fully accessible and adaptable – the dwelling also has additional features linked to Lifetime Homes making it suitable for a person with mobility problems to live there. These additional items are: suitable parking on the plot, living room or space for living room downstairs, shower on ground floor (if three or more bedrooms), bedroom or bedspace on ground floor, adequate space for turning wheelchairs in key rooms, and entrance illuminated and covered.

5.2 Visitability – the current position

The existing housing stock performs very poorly in this respect. Only around 740,000 or 3.4 per cent of existing homes have level access, flush threshold, circulation that meets Part M and a WC at ground/entry level. Over a quarter (27 per cent) of existing homes have none of these.

Figure 5.2 Number of visitability aspects present



Looking at the profile of the 740,000 dwellings with all four features, this is dominated by newer homes. Almost half (48 per cent) of the homes with all four features were built after 1990 and a similar proportion (46 per cent) are social rented with 32 per cent owned by RSLs. A large proportion (47 per cent) are flats. However, over half of these visitable flats are on upper or basement floors and will not have a wheelchair accessible lift (see section 4.11.2).

The homes that are most likely to have all four features are those owned by RSLs (13 per cent), purpose-

built flats (12 per cent) and those built after 1990 (14 per cent) (Figures 5.3 and 5.4). In contrast, less than 1 per cent of small houses (those with one or two bedrooms) or dwellings built before 1945 have all four features and just 2 per cent of the owner-occupied homes possess all of these. Although across the stock 27 per cent of homes have none of these features, the proportion is much higher for small houses (52 per cent) and dwellings in the northern regions (39 per cent).

Figure 5.3 Number of visitability features by dwelling age

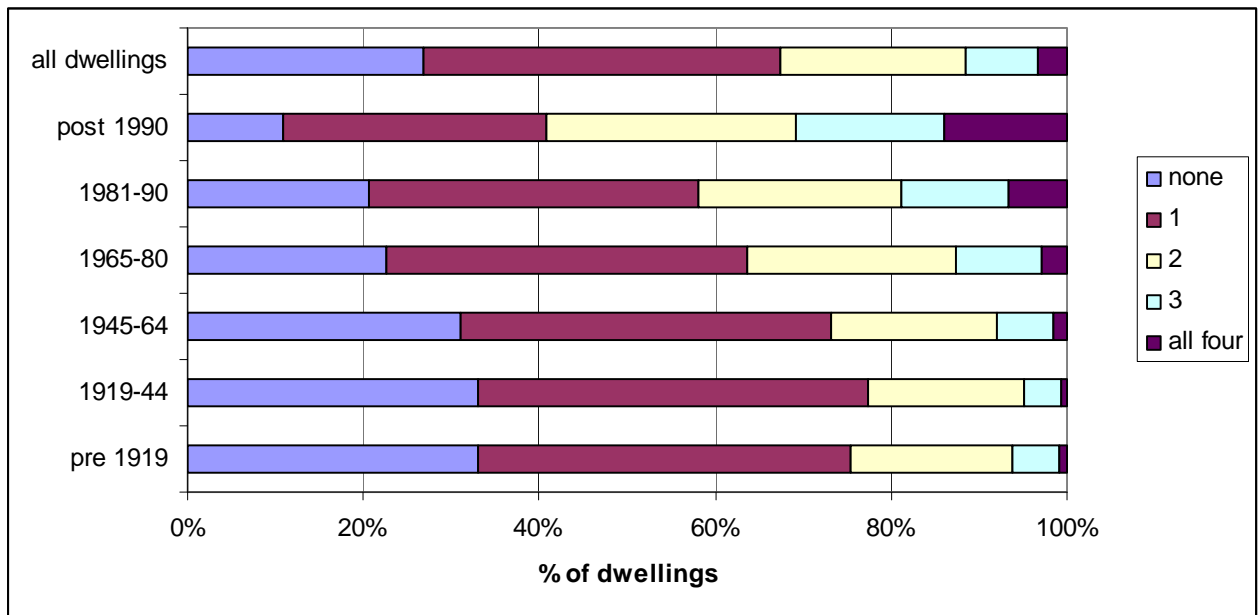
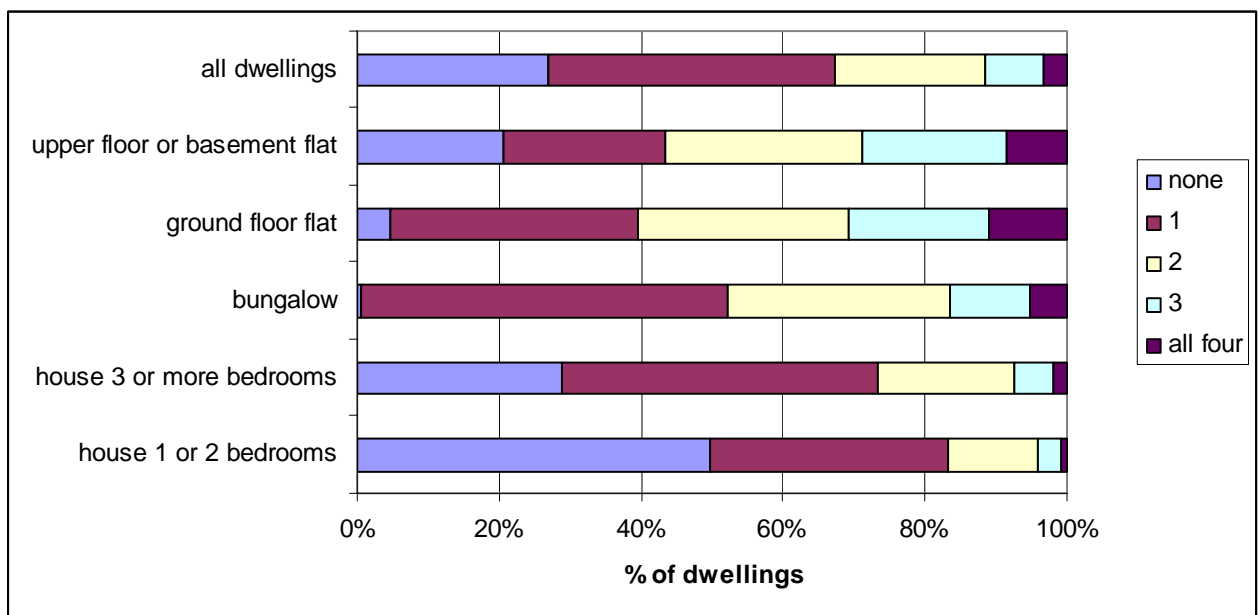


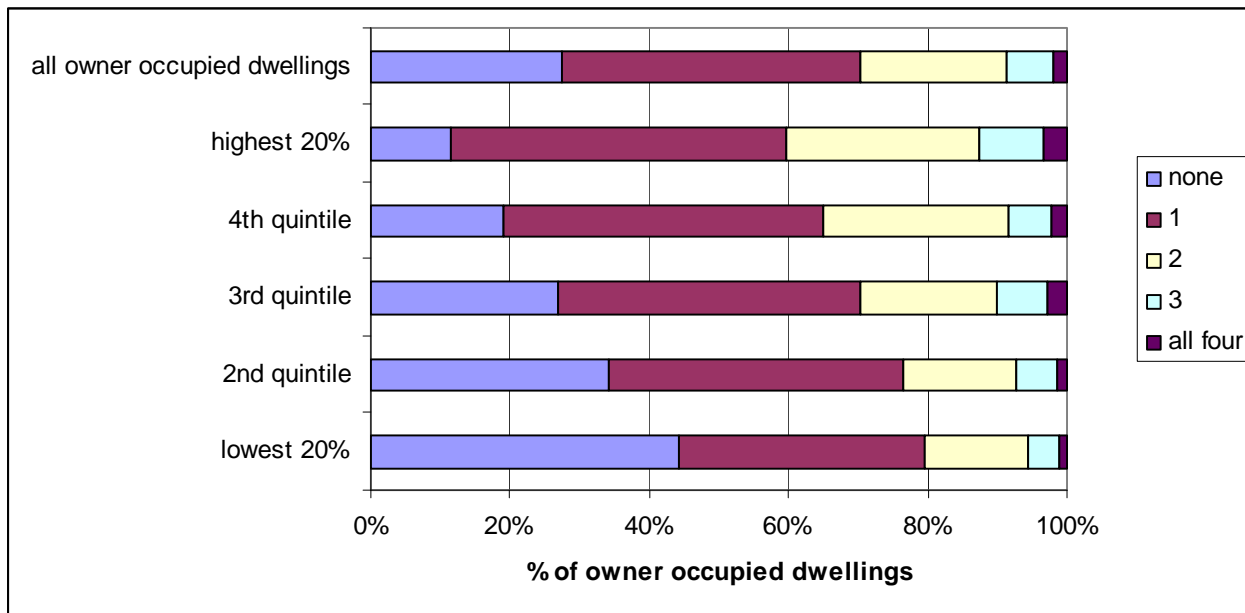
Figure 5.4 Number of visitability features by dwelling type



For owner-occupied homes, the lower the market value, the more likely the dwelling is to have none of

these features. Some 44 per cent of homes in the lowest value band have none of these compared with 11 per cent in the highest value band.

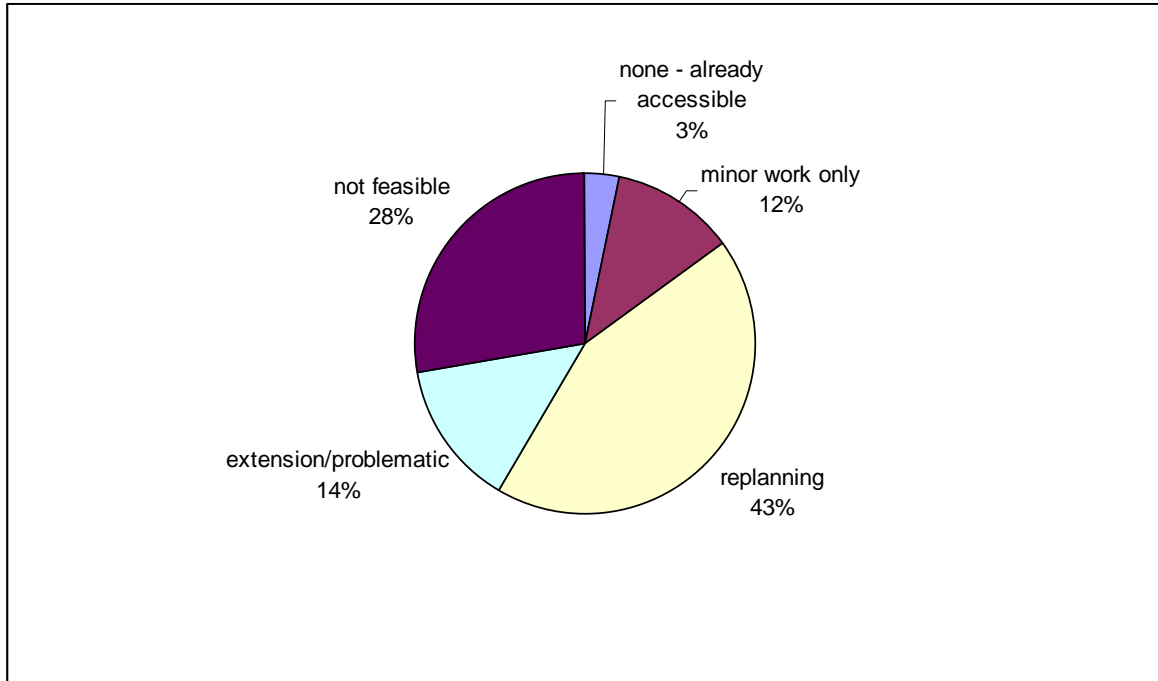
Figure 5.5 Owner-occupied dwellings: number of visitability features by market value



5.3 Visitability – how easy is it to improve the stock to provide all four features?

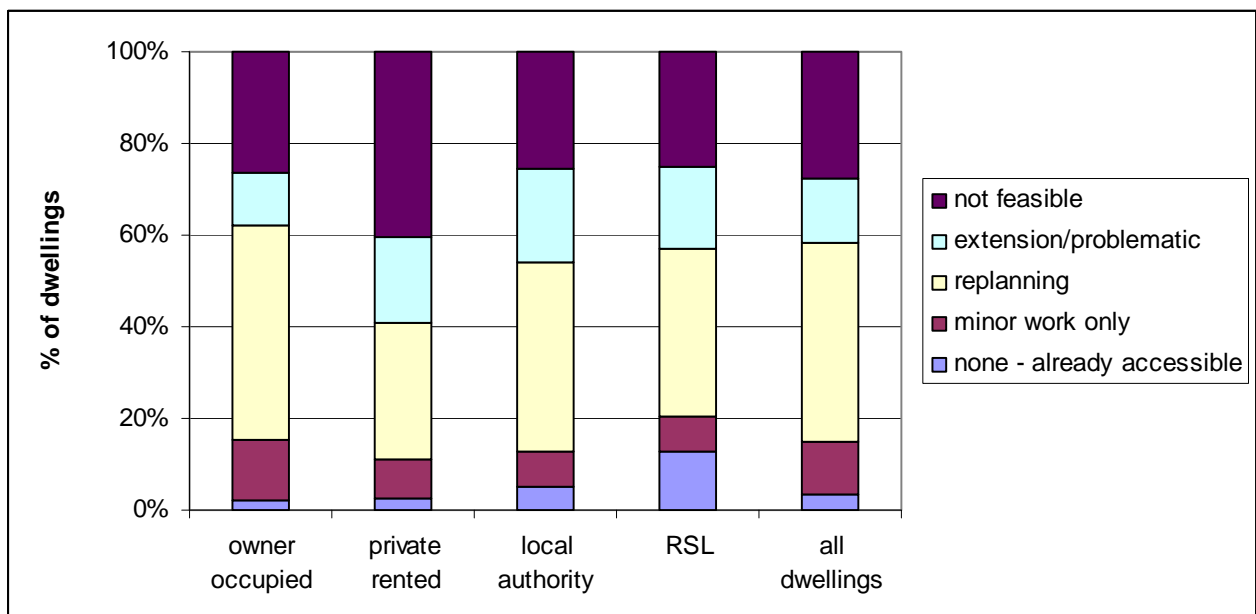
Some 2.6 million existing homes (12 per cent) could be made visitable if minor work only were carried out, and a further 9.6 million (43 per cent) could comply if more major work involving internal structural alterations were carried out (Figure 5.6). However, that leaves us with 3 million (14 per cent) that could only be made visitable by major works involving extending the dwelling, and a further 6.2 million (28 per cent) where it is simply not feasible to make the dwelling visitable. **Note that these figures take no account of the requirement for lifts for flats above ground floor.**

Figure 5.6 Level of work needed to comply with all four aspects of visitability



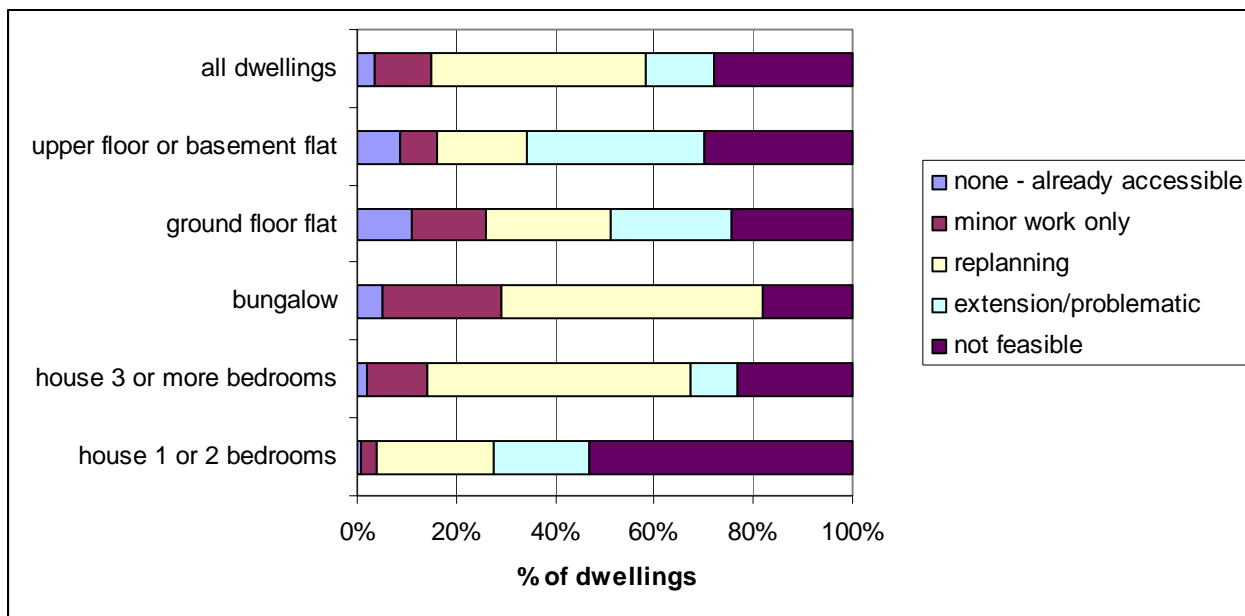
Levels of work required and the overall feasibility of making the stock visitable vary considerably by tenure, type, age, location and, in the owner-occupied sector, market value. Looking first at tenure, privately rented dwellings present the biggest challenge; 40 per cent of homes in this sector are not feasible to adapt (Figure 5.7).

Figure 5.7 Level of work needed to comply with all four aspects of visitability by tenure



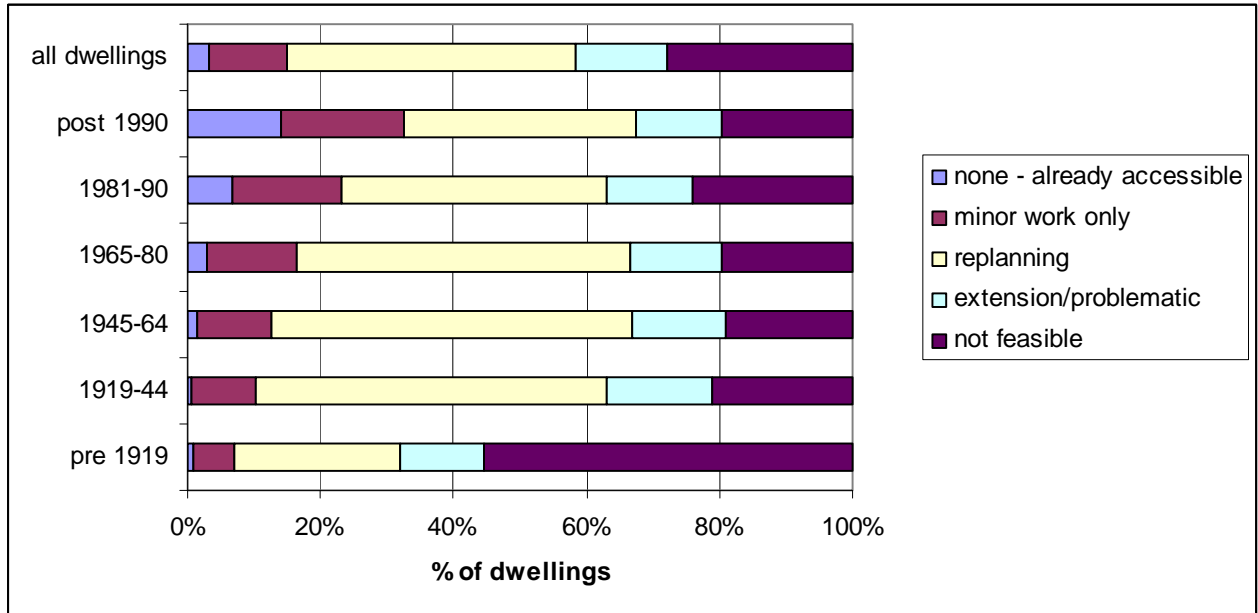
Looking next at dwelling type, around a quarter of bungalows (24 per cent) could comply if minor works were carried out compared with just 3 per cent of small houses (Figure 5.8). Some 14 per cent of ground floor flats could be made visitable with minor works only but the equivalent proportion for upper floor flats is much smaller (7 per cent), and this would reduce significantly if the requirement for a wheelchair accessible lift was added. If we were to add in the requirement for a wheelchair accessible lift, virtually all upper floor and basement flats would be classed as either not feasible or problematic. Small houses present the most difficulty with 53 per cent not being feasible to make visitable – this rises to 69 per cent if we look specifically at small terraced houses.

Figure 5.8 Level of work needed to comply with all four aspects of visitability by dwelling type



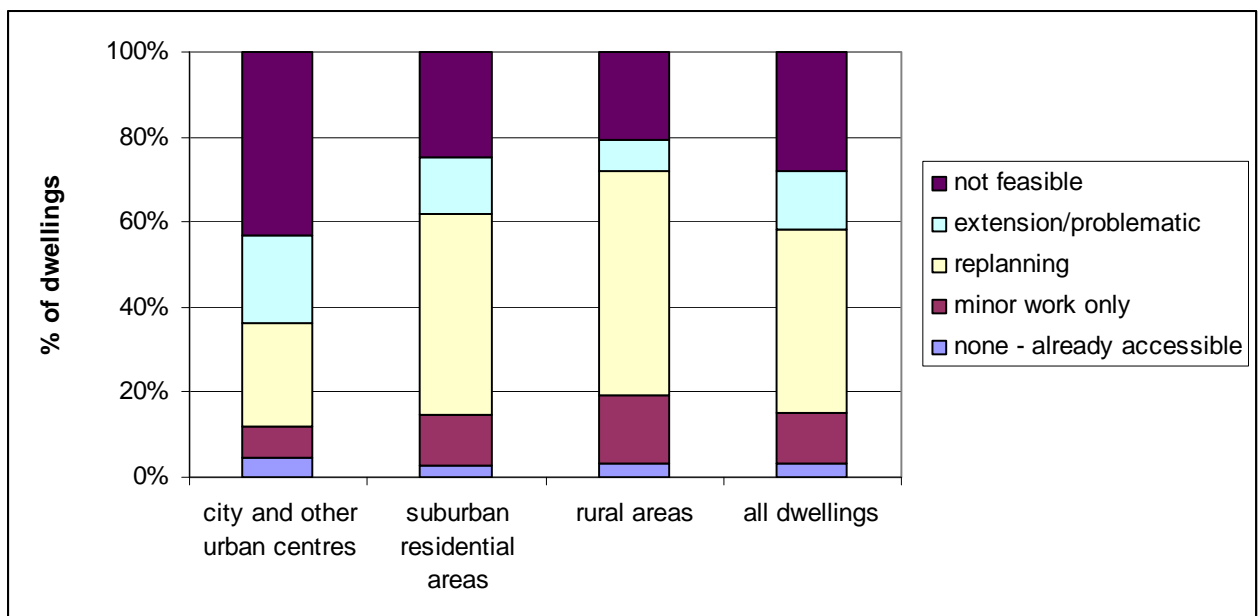
Older dwellings also present much more of a challenge. Only 6 per cent of homes built before 1919 could be made visitable with minor works and over half (55 per cent) are simply not feasible to make visitable (Figure 5.9). Although a relatively high proportion of newer homes built since 1990 (18 per cent) could be made compliant with minor works only, one in 5 (20 per cent) of homes dating from this period are not feasible to make visitable.

Figure 5.9 Level of work needed to comply with all four aspects of visitability by dwelling age



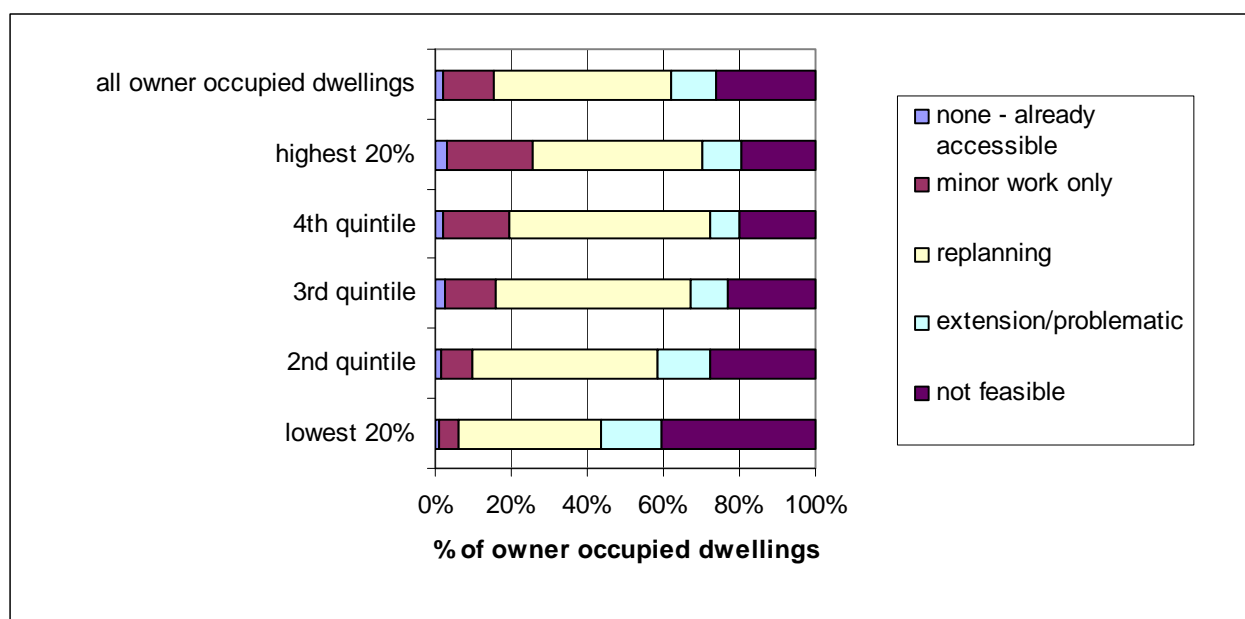
Dwellings in city and urban centres are also more problematic than those located elsewhere, largely due to the higher proportion of flats and small houses (particularly terraced ones) in these types of locations. Only 7 per cent could be made visitable with minor work and 43 per cent could not be made visitable even with very large-scale works (Figure 5.10).

Figure 5.10 Level of work needed to comply with all four aspects of visitability by location



In the owner-occupied sector, there is a clear relationship between ease of making adaptable and market value. Just 5 per cent of those in the lowest value band could be made visitable with minor works compared with 22 per cent in the highest value band. Some 40 per cent of owner-occupied homes in the lowest value band are not feasible to make visitable compared with 19 per cent in the highest band.

Figure 5.11 Owner-occupied dwellings: level of work needed to comply with all four aspects of visitability by market value



5.4 Full accessibility and adaptability – the current position

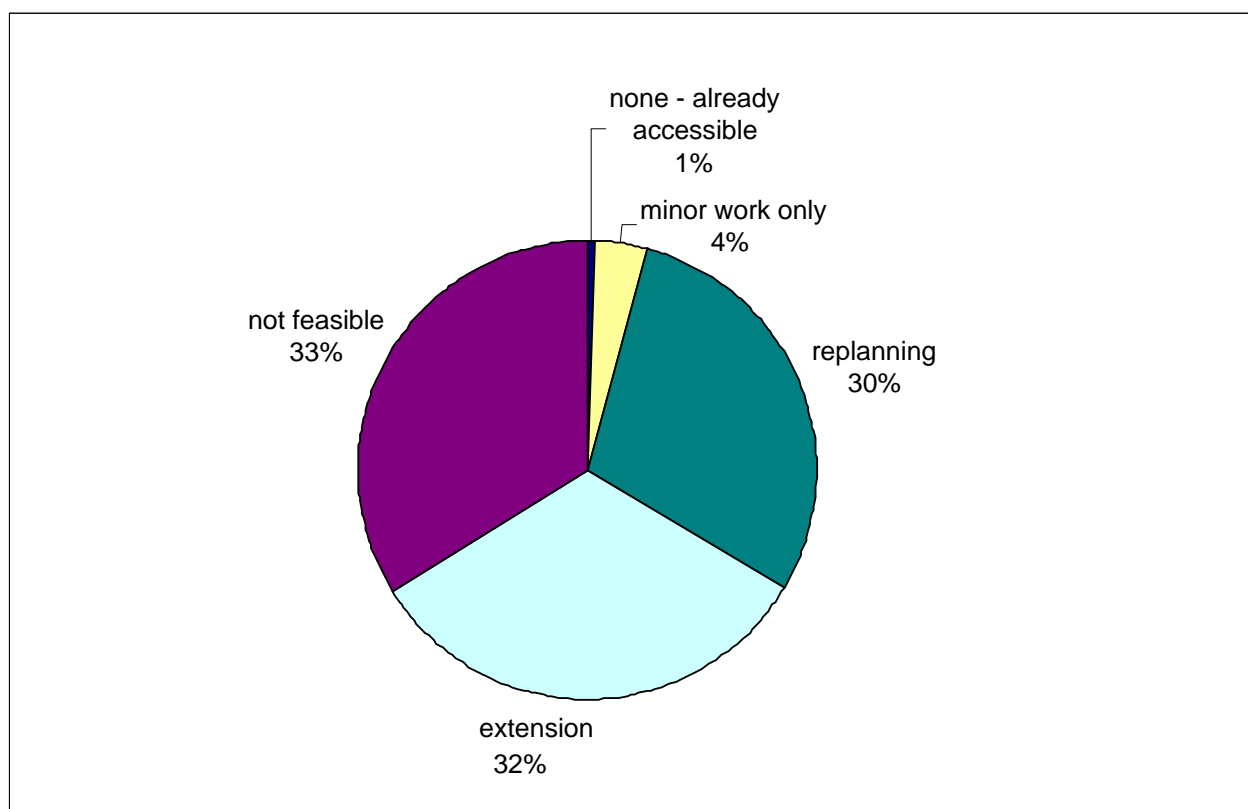
If we add in the additional requirements to make a home suitable for a person with mobility problems to live in, then the number of ‘accessible homes’ reduces still further. Just 110,000 homes or 0.5 per cent of the stock possess all 10 of the features detailed in section 5.1. Because the sample numbers are so small, it is difficult to draw out comparisons between different groups of the stock in relation to current liveability. However, we can provide some indications as to the composition of this small group of homes that are currently accessible and adaptable. Around half of them (52 per cent) are owner-occupied and just over a third (37 per cent) are owned by Housing Associations. Some 38 per cent of them are bungalows and 25 per cent are ground floor flats. In addition, only about 15 per cent are located in city and urban centre locations and just 2 per cent of them are medium/long term vacant.

5.5 How easy is it to improve the stock to provide all 10 features?

If we were to carry out minor works only, an additional 4 per cent of homes could be made accessible (Figure 5.12). We would need to carry out at least moderate levels of work involving internal structural alterations and/or work to drains to get about a third of them accessible. Even if we were to carry out all of

the work that is physically possible, up to and including building extensions, there would remain a 'hard core' of 7.5 million dwellings (34 per cent of the stock) that were inaccessible.

Figure 5.12 Level of work required to meet all 10 criteria



The ease of making dwellings accessible varies considerably by age, type and location of the stock, and the following paragraphs highlight where work might be targeted to achieve quick wins (make homes accessible with minor works) and those where there is limited scope for achieving this level of accessibility. These are highlighted in Table 5.1.

Table 5.1 Key groups of dwellings most and least amenable to being made accessible

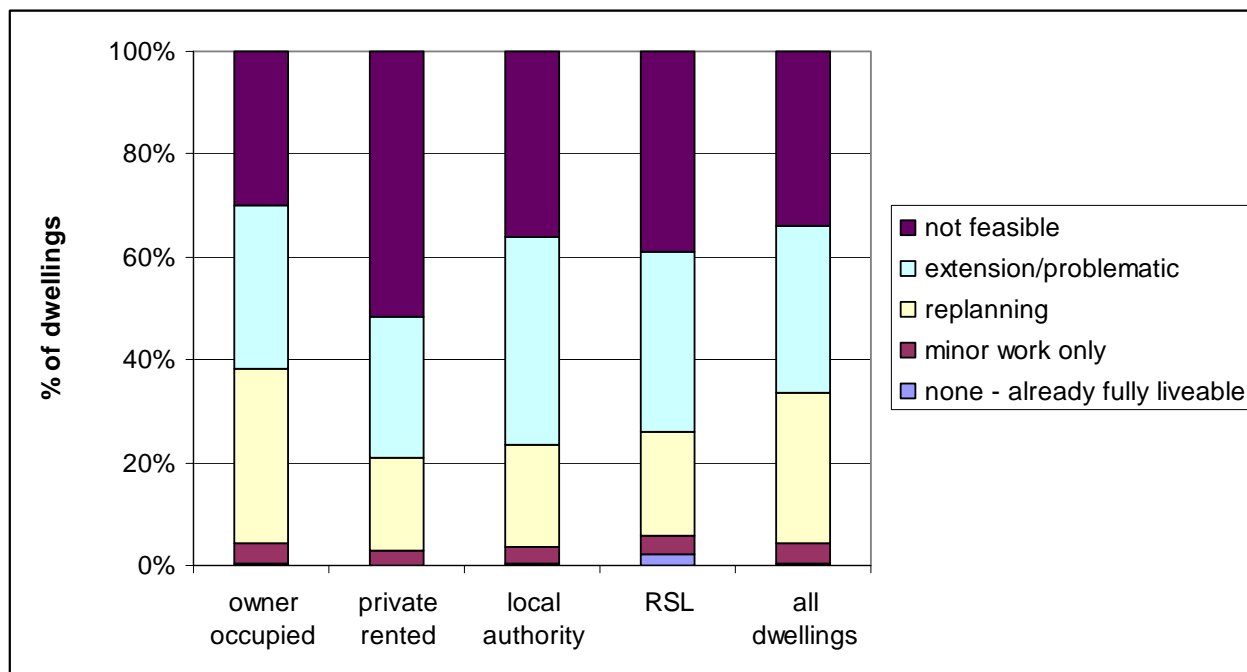
Quick wins – a relatively high % could be made accessible with minor works	Limited potential – over half are not feasible to make accessible
Bungalows (14%)	Built before 1919 (63%)
Ground floor flats (7%)	Houses with 1 or 2 bedrooms (58%)
	Terraced house with floor area <70 m ² (77%)
	Flats on upper or basement level (56%*)

	Homes in city and urban centres (54%)
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* This takes no account of whether there is a lift. If this requirement were added then the proportion that is not feasible to adapt would be significantly higher.

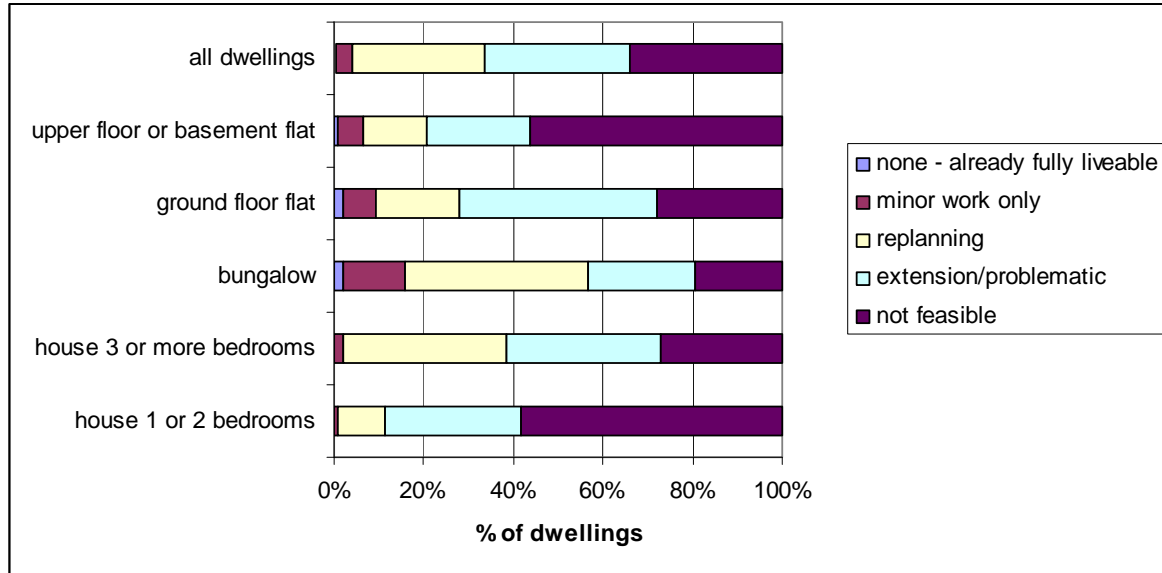
Rented homes, especially those that are privately rented, are more likely to be not feasible to make accessible than owner-occupied homes (Figure 5.13). The main reason for this is that rented homes tend to be smaller or be flats and built/located at higher densities so there is less scope for internal re-planning or building extensions. However, the proportion of the stock that could be made accessible by minor works is roughly the same in all tenures.

Figure 5.13 Level of work required to meet all 10 criteria by tenure



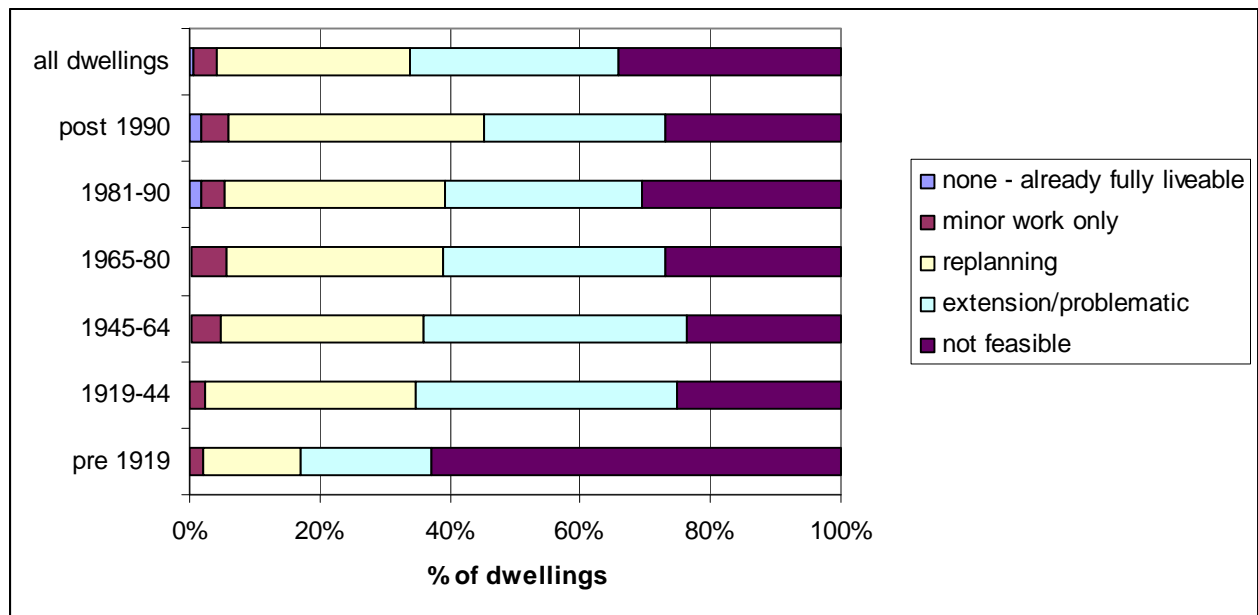
The ease of making homes accessible also varies considerably by dwelling type. Bungalows stand out as being the most likely to be capable of reaching this level by minor work (14 per cent) and having the smallest proportion that are not feasible to adapt (20 per cent) (Figure 5.14). Over half (58 per cent) of smaller houses are not feasible to adapt and this rises to 77 per cent of small terraced houses. Upper floor and basement level flats are also problematic, with a high proportion (56 per cent) not feasible to adapt and this would increase significantly if they were also required to have a lift (let alone a wheelchair accessible one!).

Figure 5.14 Level of work required to meet all 10 criteria by dwelling type



As one would expect, the older (pre-1919 stock) is most problematic to improve in this respect. Just 2 per cent could be made accessible with minor work and 63 per cent are not feasible to provide all 10 items (Figure 5.15). Although the newer stock (built after 1990) is more amenable to adaptation, approximately one in four of these homes (27 per cent) could not be made accessible.

Figure 5.15 Level of work required to meet all 10 criteria by dwelling age



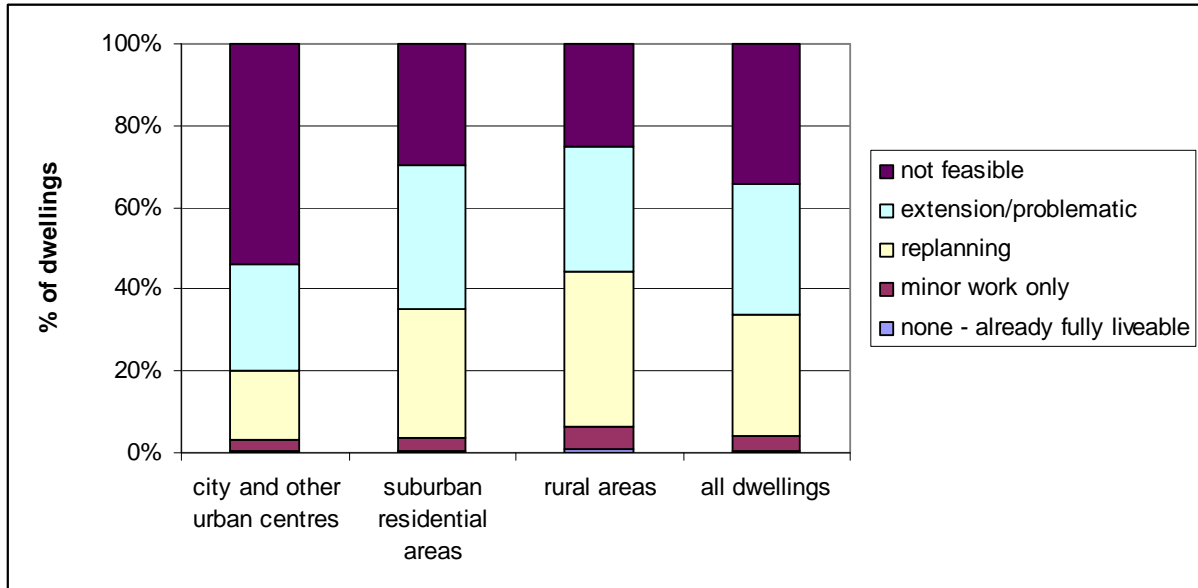
Town houses that were particularly popular in the 1965-80 period can also be very problematic to adapt (Figure 5.16).

Figure 5.16 Town houses built 1965-1980



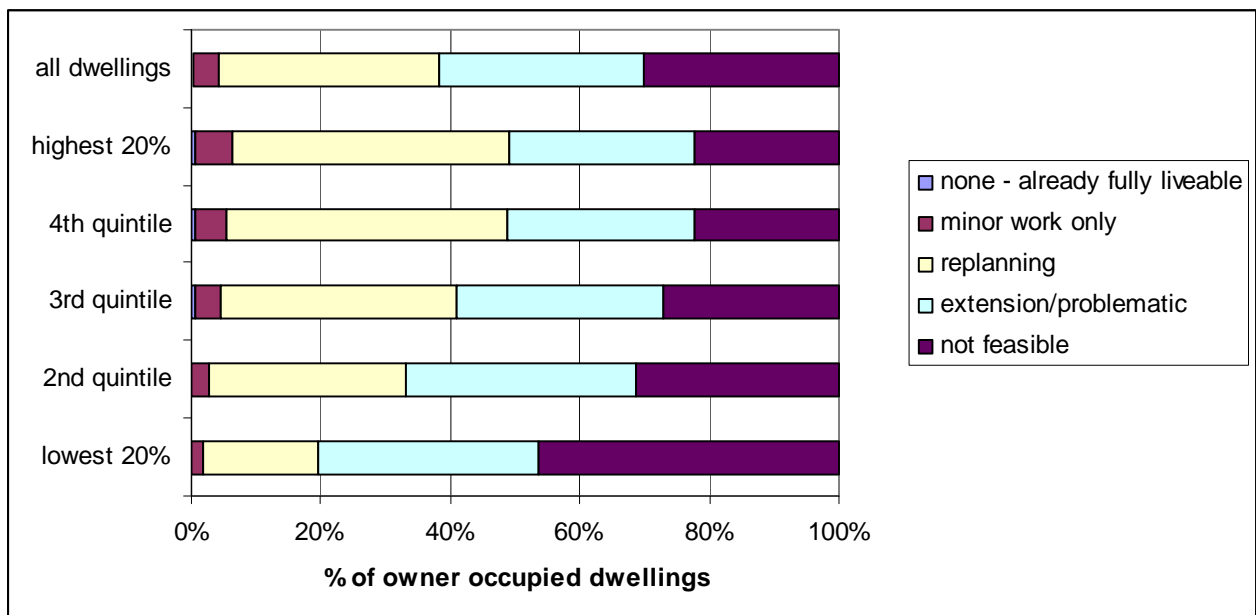
Dwellings in urban and city centres are the most problematic. Just 2 per cent of these could be made accessible with minor works and 54 per cent are not feasible to bring up to this standard (Figure 5.17).

Figure 5.17 Level of work required to meet all 10 criteria by location



In the owner-occupied sector, high value homes are more easily adaptable than lower value ones, mainly because value is strongly related to the type and size of dwelling. Just 2 per cent of those in the lowest value band could be made accessible with minor work only compared with 6 per cent in the highest band (Figure 5.18). Similarly, 46 per cent of low value homes are not feasible to make accessible compared with 22 per cent of the highest band. This means that some of those people most in need of an accessible and adaptable home may not be able to afford one, especially as households that contain one or more people with mobility problems tend to be on lower incomes than those without.

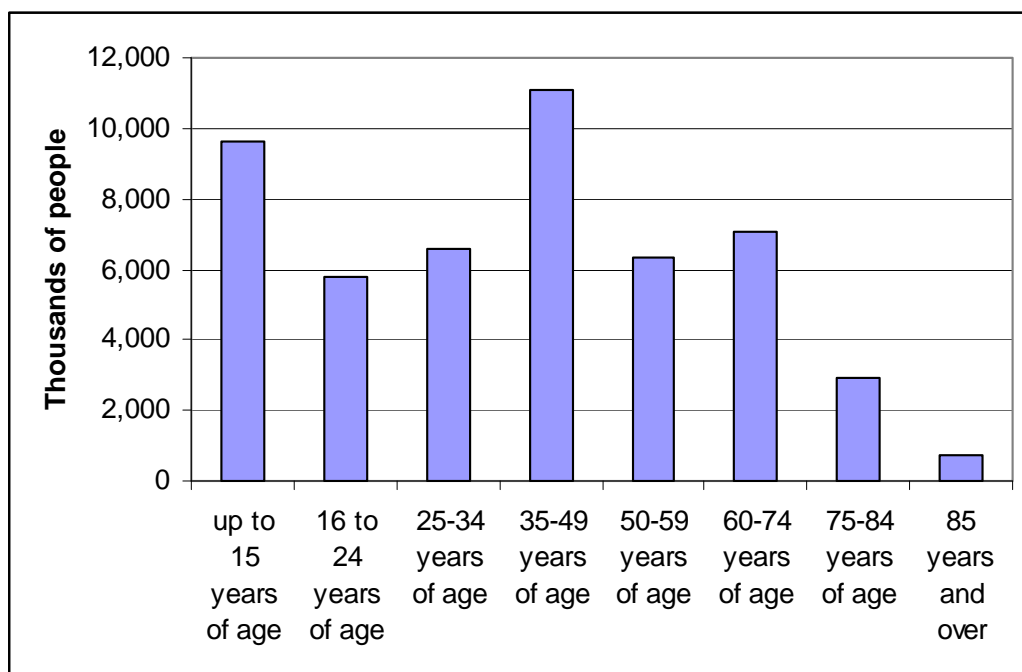
Figure 5.18 Owner-occupied dwellings: level of work required to meet all 10 criteria by market value



6 Overview of people in England

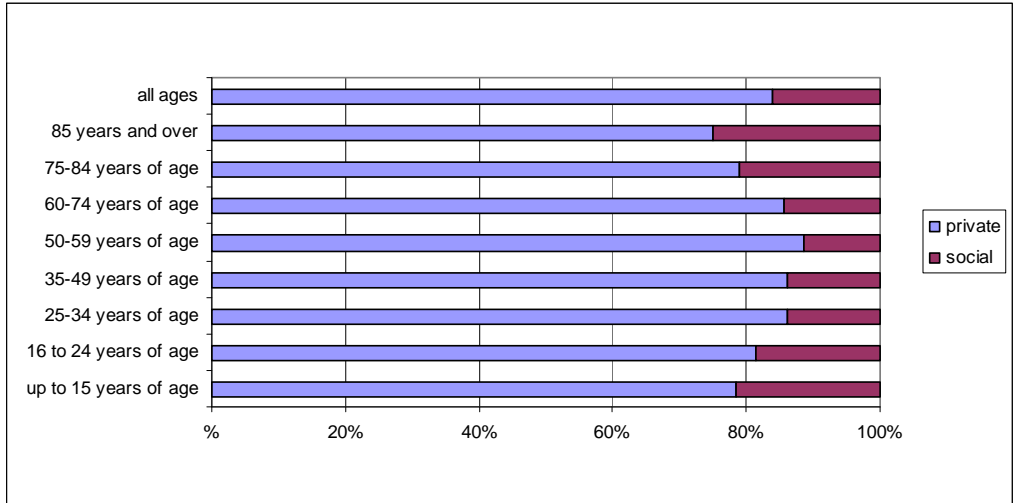
In 2007, there were around 50.1 million people in England, excluding those living in institutions. Some 10.7 million (21 per cent) of people were aged 60 or over and about 3.6 million of these were aged 75 or over (Figure 6.1).

Figure 6.1 Age distribution of population (excluding those in institutions) 2007



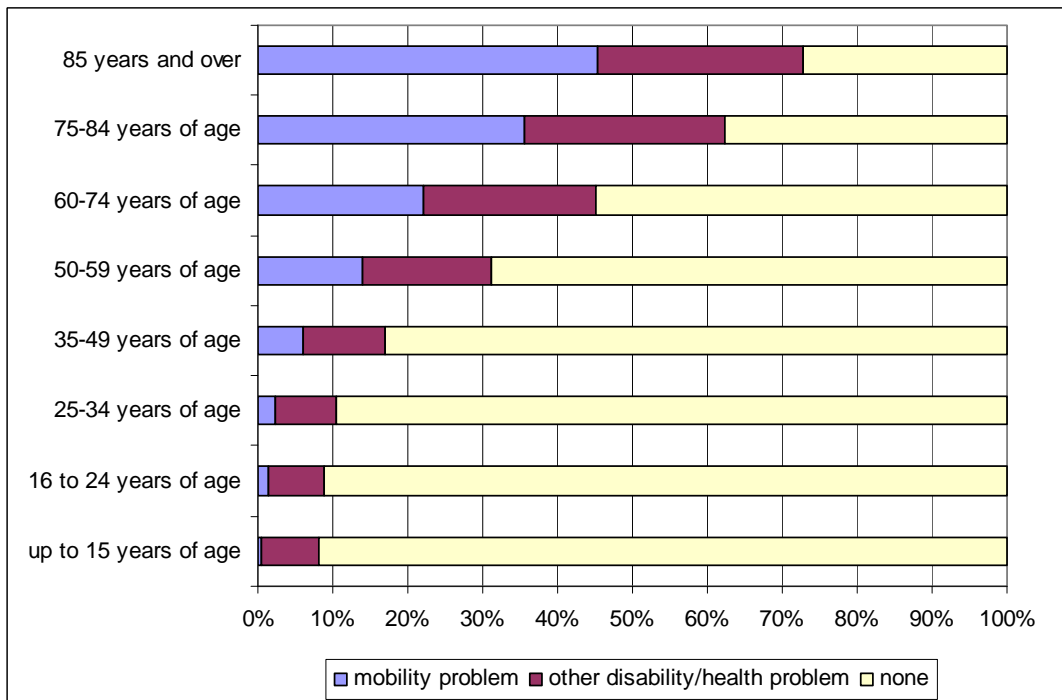
People of different ages are not equally distributed amongst the tenures. The oldest and youngest groups are more likely to live in social housing than those in the middle groups. For example, 25 per cent of those aged 85 or over and 22 per cent of those aged under 15 live in social housing compared with 11 per cent of those aged 50-59 (Figure 6.2).

Figure 6.2 Proportion of people in each age group living in private and social housing



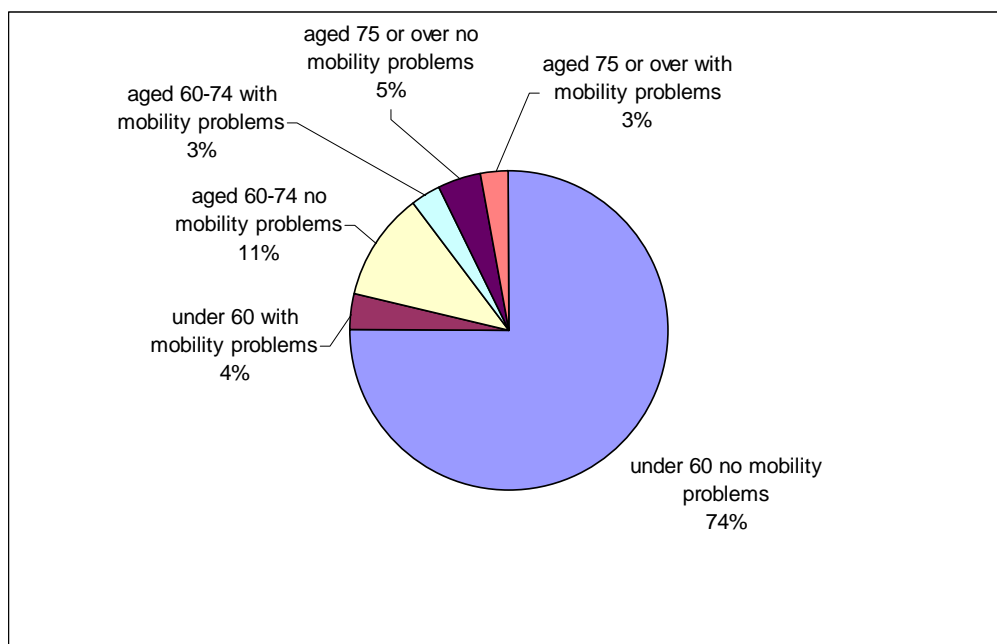
The EHCS interview survey asks whether each person suffers from a long-term illness or disability and, if so, whether they have any mobility problems. The older people get, the more likely they are to suffer from any kind of long-term problem, and mobility problems in particular. Some 22 per cent of those aged 60-74 suffer from a problem that affects their mobility and this rises to 36 per cent of those aged 75-84 and 45 per cent of those aged 85 or over (Figure 6.3).

Figure 6.3 Proportion of people in each age group with mobility or other type of disability or long-term health problem



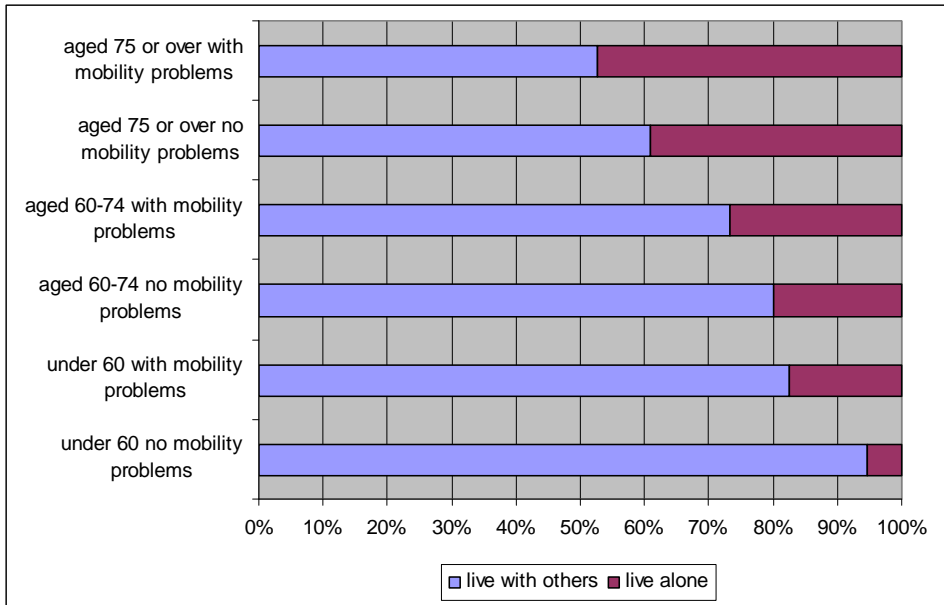
For the purposes of this analysis we have therefore grouped people into the six main categories in Figure 6.4. From this we can see that around 74 per cent of people are aged under 60 and have no existing mobility problems. The remaining 26 per cent are either aged 60 or over or have an existing mobility problem.

Figure 6.4 Percentage of people in each age/mobility group



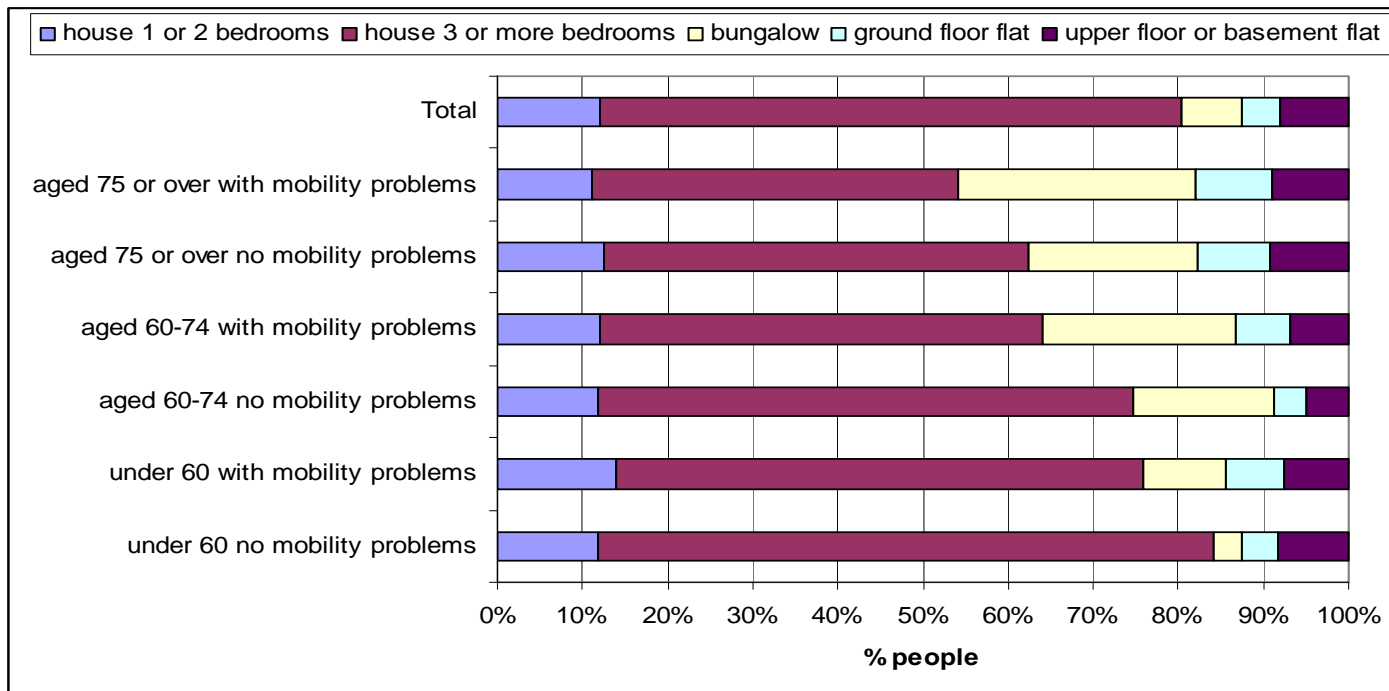
Those who are older and/or have a mobility problem are also more likely to live alone, especially those aged 75 or over. Within this age group, 48 per cent of people with a mobility problem live alone (Figure 6.5).

Figure 6.5 Percentage of people in each group living alone and with others



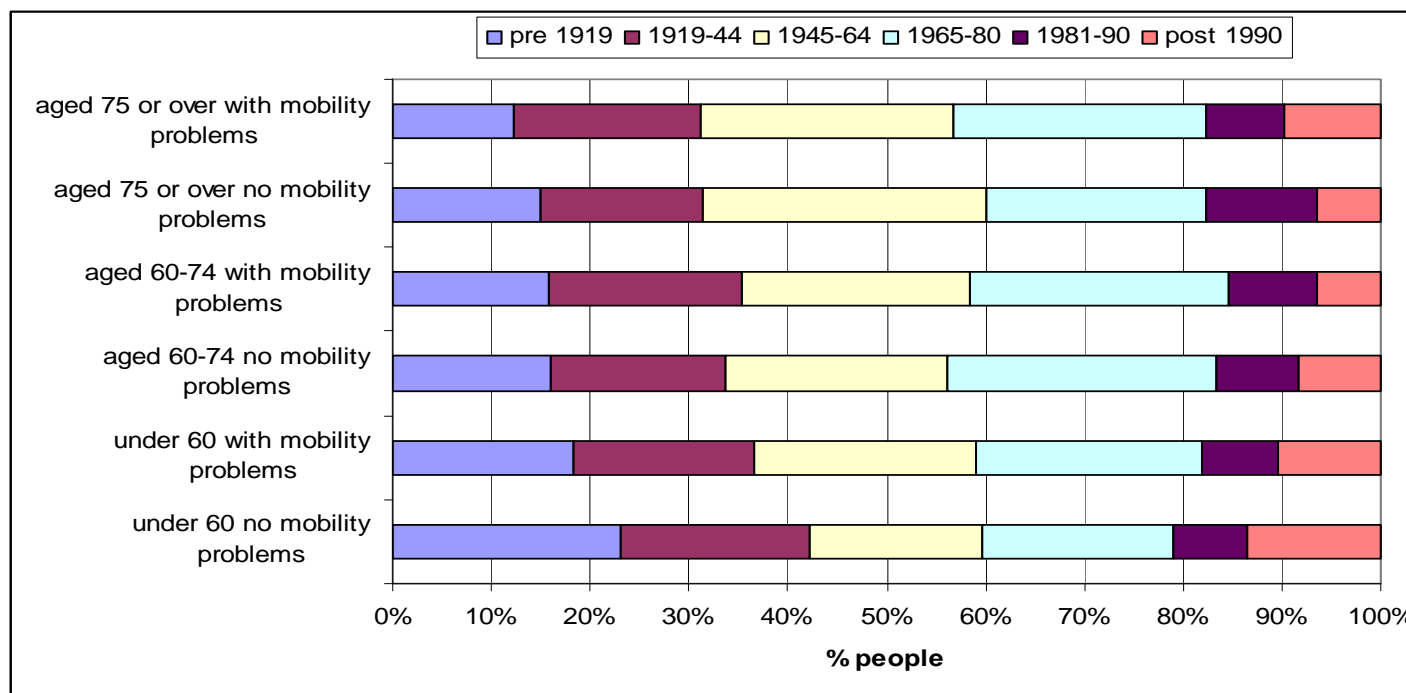
Older people, particularly those with mobility problems, are also much more likely to live in bungalows than other groups (Figure 6.6). Also, a significant minority of people aged 75 or over or aged 60-74 with a mobility problem live in upper floor or basement flats (9 per cent and 7 per cent respectively).

Figure 6.6 Percentage of people in each group living in different types of dwelling



Older people and those with mobility problems are no more likely to live in dwellings of different ages than people as a whole (Figure 6.7). It is, however, interesting to note that people aged under 60 with no mobility problems are the most likely to live in the newest (post-1990) homes.

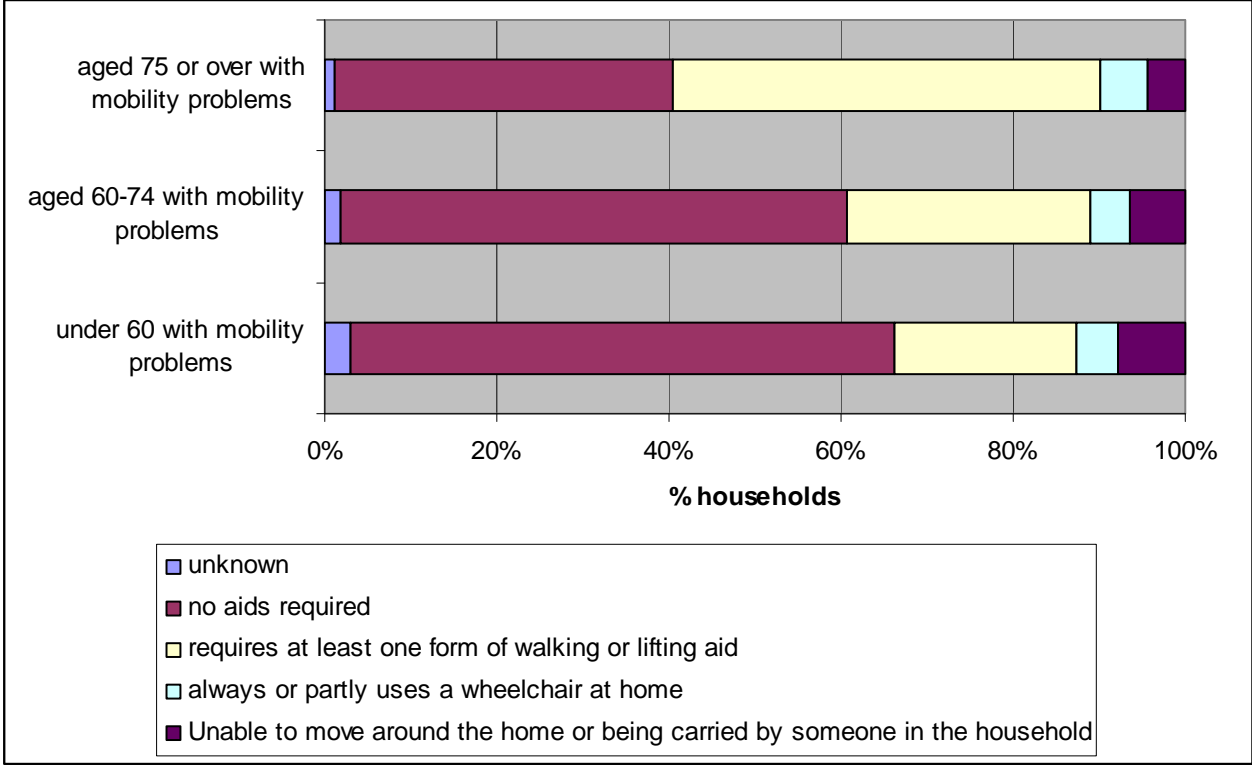
Figure 6.7 Percentage of people in each group living in different ages of dwelling



The EHCS interview survey asks those household members with a long-term illness or a disability whether they are registered as a disabled person with their local authority or local social services. Only about a third of people with a mobility problem are actually registered as disabled.

The interview survey also provides information on the degree of mobility that people have within their home. Where applicable, the person with the most severe problem getting around their home is asked which aids, if any, they use indoors. The data indicate that around 220,000 households in England contain someone who needs to use a wheelchair at least part of the time. The proportion of wheelchair users is evenly spread across the three household age groups, although a higher proportion of people under 60 are likely to be bedbound/in need of being carried around the home (Figure 6.8). People aged 75 or over with a mobility problem are far less likely to manage around their home without some form of walking or lifting aid (walking frame, walking stick, stairlift or other aids such as a bath hoist).

Figure 6.8 Percentage of households with mobility problems requiring different types of mobility aids



7 Findings – who lives in the most accessible and easily adaptable homes?

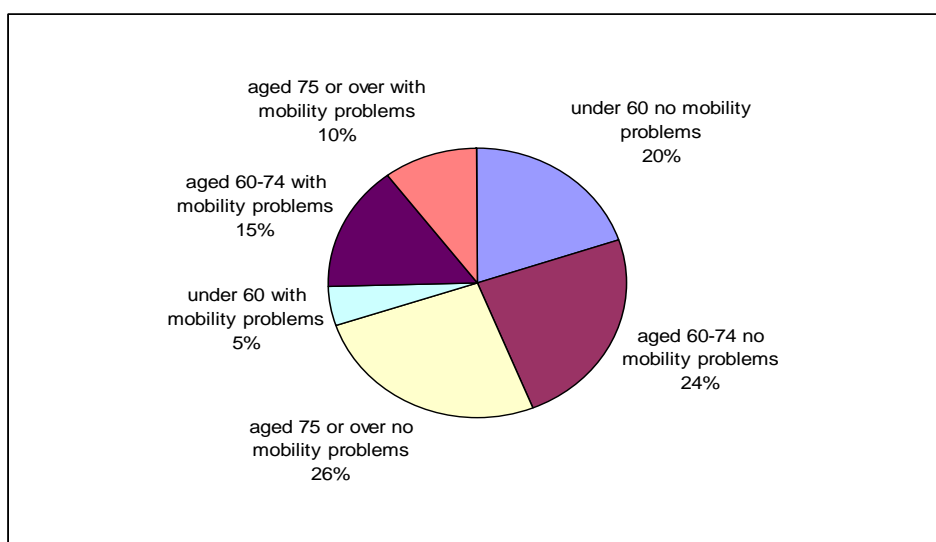
7.1 What sorts of households live in the most accessible and easily adaptable homes?

This analysis focuses on whether homes are accessible (meet all 10 criteria) and how easily this can be achieved. We have used the same groups as in the previous chapter on people but these have been combined to create a variable for the household itself as follows:

- All people are aged under 60 and none has a mobility problem
- The oldest person is aged 60-74 but nobody has a mobility problem
- The oldest person is aged 75 or over but nobody has a mobility problem
- All people are aged under 60 and one or more people have a mobility problem
- The oldest person is aged 60-74 and one or more people have a mobility problem
- The oldest person is aged 75 or over and one or more people have a mobility problem

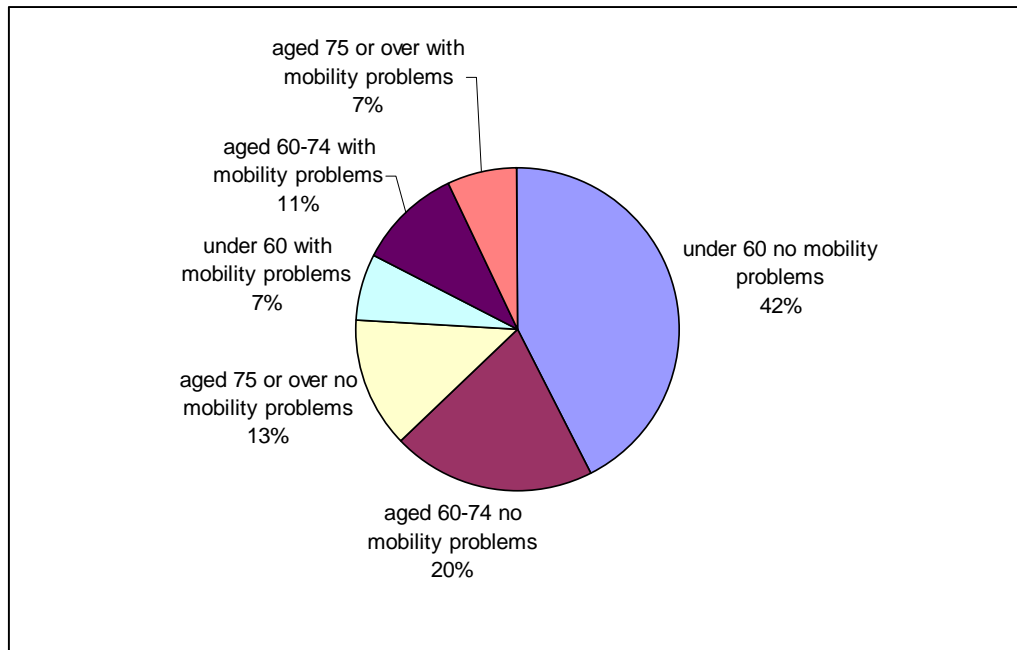
Looking first at the 111,000 (0.5 per cent) of all homes that are classed as accessible now, the vast majority (80 per cent) are occupied by a household containing either at least one person aged 60 or over or a younger person with a mobility problem (Figure 7.1).

Figure 7.1 Profile of households occupying homes that are currently accessible



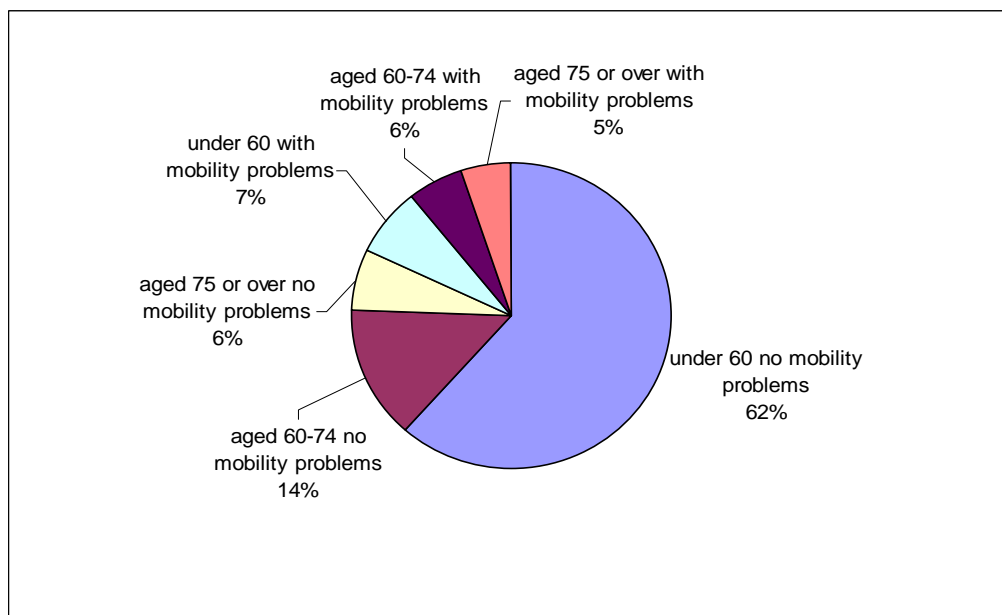
In addition, around half (51 per cent) of these accessible homes are occupied by households in receipt of means-tested or disability-related benefits. However, if we look at homes that could be made accessible with minor works only, then 42 per cent of these are occupied by households where everyone is aged under 60 and nobody has a mobility problem (Figure 7.2).

Figure 7.2 Profile of households occupying homes that could be made accessible with minor work only



Looking at the other side of the coin, homes that are not feasible to make accessible, the majority (62 per cent) are occupied by households where all people are aged under 60 and nobody has a mobility problem.

Figure 7.3 Profile of households occupying homes that are not feasible to make accessible



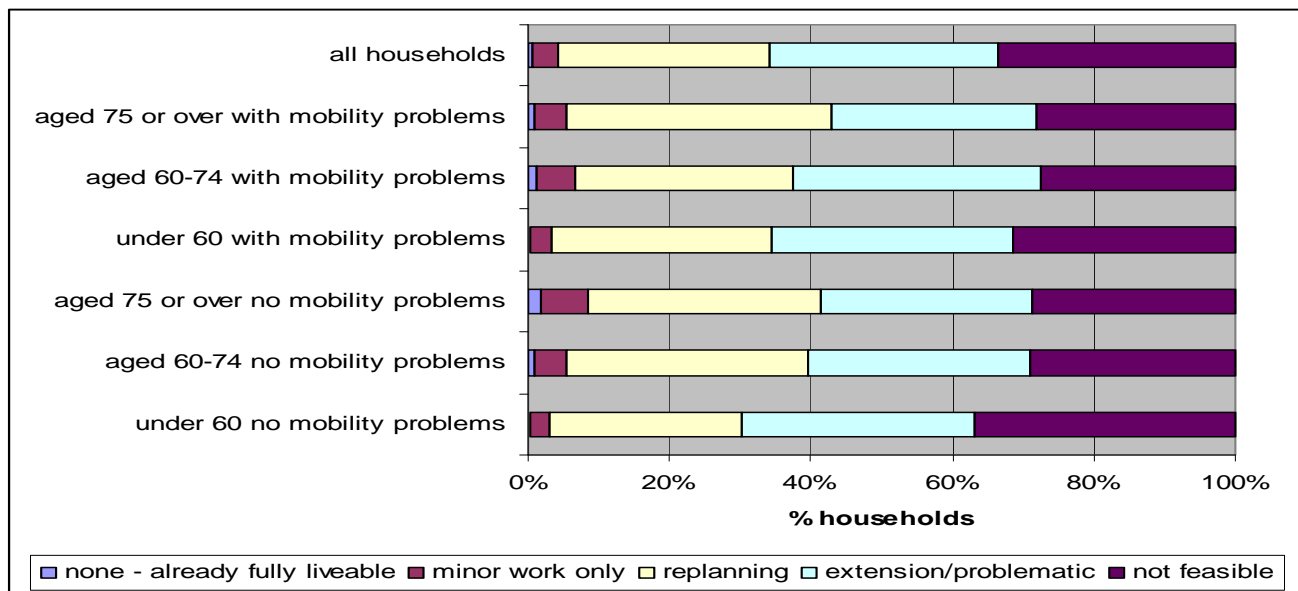
This all points to some degree of match between need and provision (both current and future adaptability), suggesting that at least some of those with mobility problems or worried about developing these as they get older are deliberately selecting housing which is more suitable for their needs. However, such choice and flexibility is constrained by market factors such as affordability and overall supply. There is also a much bigger problem – namely that the supply of homes that is currently accessible or could be made fully accessible with minor work is considerably smaller than the number of households that might need them. Depending on how one classifies need, there could be between about 2.0 million and 9.4 million households who would ideally need a home that is accessible (Table 7.1). The 2.0 million is the number of households that contain someone who currently uses a wheelchair or walking/lifting aids or relies on being carried by other people to get around their home and is probably the minimum estimate of need. If we were to add in those households where someone has a mobility problem but does not currently use any aids, this would more than double to 4.4 million. Adding in households with older people who do not currently have a mobility problem will increase it further still. On the supply side, the total number of homes that are currently accessible or could be made so with minor work is only about 920,000.

Table 7.1 Supply and demand

Supply – number of homes accessible now or could be made so with minor work	Demand – numbers of households containing someone who is likely to need an accessible home
920,000	Households where someone needs to use aids to get around – 2.0 million
	Households containing someone with a mobility problem who does not currently need any aids – 2.4 million
	Household where nobody has a mobility problem but the oldest person is 75 or over – 1.6 million
	Aged 60-74 with no mobility problem – 3.4 million

We would need to carry out all of the internal re-planning involving structural/drainage works plus a significant number of extensions to meet this need in terms of broad numbers. It would also be necessary for some of those with current mobility problems to move to a home that is more easily adaptable, as currently between 28 per cent and 31 per cent of those likely to need to live in a more accessible home live in one that is not feasible to make accessible (Figure 7.3).

Figure 7.3 Percentage of households in each group by adaptability of current home



8 Conclusions and suggestions for further work

8.1 Conclusions

This analysis represents the first attempt to quantify how far the existing housing stock is accessible for people with mobility problems and how easily it could be modified to improve its overall accessibility. The data are not perfect and we have had to make a number of assumptions within the modelling, so the results should be seen as indicative rather than definitive. Because of the lack of detailed information, the estimates err on the optimistic side and will tend to overestimate the numbers that are accessible and adaptable. However, it has provided useful insights into the overall scope of the problem and identified areas where there are 'quick wins', and highlighted those parts of the stock which are simply not feasible to bring up to an accessible and adaptable standard or even to comply with the main 'visitability' requirements in Part M of the current Building Regulations. The main findings are itemised below:

8.1.1 Level access and flush thresholds

The existing stock presents significant obstacles for those with mobility problems in terms of physically getting into the dwelling. Only 16 per cent of homes have level access and 20 per cent have a flush threshold. It is interesting that bungalows, many of which were designed specifically with older people in mind, do not score significantly better on these aspects than other types of dwellings. These two aspects could, in many cases, be improved simply by replacing the door and frame and/or building a simple straight ramp. The most problematic dwellings to improve are those built before 1919, where we estimate that around half currently lack level access and are not feasible to improve because it is either not possible to build a straight ramp or because the street itself is on a slope steeper than 1 in 20. Pre-1919 dwellings are much more likely to have a large number of steps up to the main entrance and are also more likely to have very shallow front plots or front directly on to the street, all of which preclude fitting a straight ramp.

8.1.2 Visitability

Altogether, only about 740,000 (3.4 per cent) of homes currently possess the four key visitability features of level access, flush threshold, WC at entry level and circulation that meets Part M. Around half of these are newer homes built after 1990 and about a third are owned by RSLs. An additional 2.6 million (12 per cent) homes could be made to comply if minor works were carried out and a further 9.6 million could comply if more major work involving internal structural alterations and modifications to drainage were carried out. However, some 28 per cent of the stock or 6.2 million homes are not feasible to improve to this level. The biggest obstacles are around improving the older (pre-1919) stock, where we estimate that over half (55 per cent) of pre-1919 dwellings are not feasible to make visitable. Even the newest stock built after 1990 represents significant challenges; we estimate that it is feasible to make up to about a third (32 per cent) of it visitable with minor works but about half (48 per cent) would need much more major works and one in 5 (20 per cent) is simply not feasible to improve regardless of the level of work carried out.

8.1.3 Flats

One in six dwellings in England (17 per cent) is a flat and many of these present significant barriers to those with mobility problems. Although they tend to score quite well in terms of having level access up to the main entrance of the building and flush thresholds into the building and the individual flat, where they fall down is in the provision of lifts. Looking at the 2.2 million flats above ground floor level, only 21 per cent of these have a lift of any description and just 33,000 (1.5 per cent) of all upper floor flats have a wheelchair accessible lift. We cannot use the data to model whether it would be feasible to install a suitable lift where there is currently no lift or to replace the lift with one that is accessible. At best the work involved would be very major and in many cases would simply not be physically or economically viable.

8.1.4 Room for manoeuvre – space and facilities inside the home

Overall, the current stock scores very well on some of these features– living room already at ground or entry level (94 per cent), bedroom or bedspace at entry level (83 per cent) and space for turning of wheelchairs in kitchens and living rooms (68 per cent). However, it is the larger (and therefore usually more expensive) dwellings that score the best here. A significant minority of smaller homes do not already have these and would require the building of extensions (if feasible) to provide them.

8.1.5 Overall accessibility and adaptability

Only 111,000 dwellings (0.5 per cent) of the stock currently meet all 10 criteria modelled in this research. If we carried out minor works, this number could be raised to about 920,000. The groups of dwellings where minor works would yield the greatest gains are bungalows, ground floor flats and homes built after 1990. There is, however, a residual ‘hard core’ of homes that could not be made to comply with these 10 criteria, estimated to comprise about a third of the stock. Again it is the older and/or smaller dwellings which are most likely to fall into this group, particularly small terraced houses where 77 per cent are classed as not feasible to improve.

8.1.6 Supply and demand

Although those who are likely to be most in need of an accessible home, or one that could be made so relatively easily, are more likely to live in one, there is a huge gap between the 111,000 accessible homes and the 9.4 million households containing someone aged over 60 or with an existing mobility problem. Furthermore, a large proportion of households where someone is aged over 60 or has a mobility problem live in a home that is not feasible to make accessible. For example, 28 per cent of households that contain someone aged over 75 or someone aged 60-74 with an existing mobility problem live in homes that are not feasible to make accessible.

8.2 Suggestions for further work

This analysis has really just provided some initial indications of what is possible and where the greatest potential for improvements and the main obstacles lie. We feel that it would be useful for future analysis to explore and take into account a number of additional strands and perspectives which are outlined in the paragraphs below.

8.2.1 Different ‘levels’ of accessibility and adaptability

This work has focused very much on overall visitability and accessibility. Many households who need or who would benefit from living in a more accessible home do not need all of these features. We should carry

out some further analysis examining other combinations of key features that are most likely to be needed by particular groups. For example, everybody would benefit from having level access up to their dwelling whether they are carrying heavy items, have young children in pushchairs or have to use aids to help them walk, but only those in a wheelchair would need sufficient turning space in key rooms. More consideration also needs to be given to assessing the accessibility and adaptability of flats because the existing standards and regulations were framed with houses in mind, although 17 per cent of the stock overall and half of all social rented homes are flats.

8.2.2 More detailed examination of costs

This work has simply classed adaptability into four broad categories of 'minor', 're-planning', 'major/extension' and 'not feasible'. We already use EHCS data to model the cost of adaptations required for Disabled Facilities Grants and it would be possible to further refine this to produce a better indicator of overall costs. This would be useful in itself and also within the context of examining affordability issues for occupants and the overall cost benefit analysis below. In estimating costs, careful consideration needs to be given to economies of scale open to social landlords and the need to provide temporary accommodation or additional costs incurred through ensuring that occupants' homes are always reconnected to key utility services at the end of each working day.

8.2.3 Affordability and options for occupants

This analysis has highlighted that much of the work needed to make homes accessible will be very expensive and therefore beyond the means of some current occupants. It has also highlighted that the most expensive homes in the owner-occupied sector are the most accessible and adaptable and this may mean that those people most in need cannot afford to move to such homes. The EHCS collects detailed information on occupants' income which is currently used to examine fuel poverty – this detailed income data would also enable us to assess how far the current household could afford any necessary building work or afford to move to another more suitable home. Obviously the survey data could provide broad statistics, but it would also be useful to then use these to examine the choice and affordability for typical groups, eg a person aged under 60 who uses a wheelchair, an older person aged 75 or over who uses a stick or walking frame etc. The work has also indicated that larger homes tend to be much more accessible and adaptable than smaller ones and we need to investigate how far this may act as a barrier to older people who wish to 'downsize' to a smaller and cheaper home.

8.2.4 Provision and need by sector and location

The analysis has highlighted differences between housing sectors, types of areas and regions. Further analysis could help to provide a better understanding of need, current provision and adaptability by sector and location. This is key to highlighting areas where there may be significant problems delivering accessible housing to groups of people so that effective policies can be developed. Areas where there are concentrations of small terraced houses are likely to be particularly problematic and further analysis could help to map these and identify the types of people who tend to live in them.

8.2.5 Cost benefits of making the stock more accessible

There are cost savings to both government and occupants of making homes more accessible in terms of reduced spending on institutional care and also reducing accidents and improving overall quality of life. We have already developed a model that examines the cost benefits of dealing with hazards under the Housing

Health and Safety Rating System which includes many items related to accessibility, such as falls on stairs and falls on the level. This could be developed to examine these issues in more detail (cover all hazards, not just the worst) and to explore other types of costs (the model currently just includes direct costs to the NHS for medical treatment and aftercare).

Appendix A – Information on accessibility collected in the EHCS

Whilst carrying out the main interior survey, surveyors complete the following section of the form:

Accessibility	
Flush threshold <15mm?	Y N
Room on entrance level suitable for bedroom?	Y N
Bathroom at entrance level?	Y N
WC at entrance level?	Y N
Change in floor level/trip steps at entrance level?	Y N
Doorsets and circulation meet part M?	Y N
Straight stairs with landings >900mm?	Y N

The detailed instructions for completing this section from the manual:

ACCESSIBILITY

With these questions we are concerned to establish how many dwellings are accessible, as defined in Communities and Local Government Building Regulations Approved Document M. Accessible dwellings have three principal requirements;

- that entrances to dwellings are accessible to people who use wheelchairs. This means that the entrance must have a ramped or level approach and a flush threshold;
- that internal planning allows for easy movement by ambulant disabled people, including those that have wheelchairs but are not totally chairbound. This means that entrances, doors to habitable rooms and circulation spaces serving these rooms should comply with Table 4 of AD M, see below. There should be no changes of level (trip steps) within this area of circulation;
- that there is a WC at entrance level.

For dwellings which do not meet these criteria, we collect additional information on access, and stair/landing widths to establish how easily they might be converted to meet the Mobility Standard.

Access to flats

Flats above ground floor level can meet the mobility standard if they have a ramped access (no steeper than 1 in 12), or they have lift access which will take a wheelchair.

FLUSH THRESHOLD

Record **Yes** if a wheelchair can be wheeled straight into a dwelling with no steps to negotiate, and no obstruction higher than 15 mm. For houses, this will usually be a specified adaptation. Flats can have a flush threshold if the journey from the street to the inside of the dwelling can be negotiated using an appropriately sized lift. If the lift is not working, the flat will still have a flush threshold.

ROOM ON ENTRANCE LEVEL SUITABLE FOR A BEDROOM

The room must be large enough to accommodate a single bed. It must provide adequate privacy and be heated. The room cannot be the main living room, kitchen or bathroom.

BATHROOM AT ENTRANCE LEVEL

Record **Yes** if there is a bathroom at entrance level. Bathroom must be inside the dwelling. Record **Yes** if there is a bathroom and WC at entrance level.

WC AT ENTRANCE LEVEL

Record **Yes** if there is a WC at entrance level. WC must be inside the dwelling.

CHANGES IN FLOOR LEVEL/TRIP STEPS ON ENTRANCE LEVEL

Record **Yes** if there is either a change in floor level, or trip steps to the level the dwelling is originally accessed on.

DOORSETS/CIRCULATION

Record **Yes** if the doors and circulation space serving habitable rooms, kitchen, bathroom or WC comply with Part M regulations, as follows:

Table 4 **Minimum widths of corridors and passageways for a range of doorway widths**

Doorway clear opening width (mm)	Corridor/passageway width (mm)
750 or wider	900 (when approach head-on)
750	1200 (when approach not head-on)
775	1050 (when approach not head-on)
800	900 (when approach not head-on)

STRAIGHT STAIRS WITH LANDINGS AT LEAST 900 mm.

Record **Yes** if dwelling has internal stairs which are straight and have at least 900 mm square landings top and bottom to allow wheelchair access. In theory it should be possible to install a stairlift.

2. Whilst assessing the plot, surveyors complete the following section of the form:

Accessibility				
Number of steps from gate/pavement to entrance <i>note: entrance maybe in either view</i>				
Level access	No step but slope >1:20	1 step	2 step	3 or more steps
8	7	1	2	3
Space for ramp				
Not applicable	8	Yes 1	No 2	
Is path firm and even?		Y N		
Is path at least 900mm wide?		Y N		
Is gradient less than 1:12?		Y N		
Is entrance adequately lit?		Y N		
Is entrance covered?		Y N		

The detailed instructions on these from the manual are:

ACCESSIBILITY

Record this section of the form considering the accessibility for a wheelchair user. The Main entrance to the dwelling may be in either view.

Record the number of steps from the front gate / pavement to the entrance to the dwelling. A step should be recorded for any planned change in level, excluding the height of the cill at the bottom of the door.

Record **8 – Level access** when there are no steps between the gate / pavement and the entrance door to the dwelling for a wheelchair to negotiate.

Record **7 – No step but slope > 1:20** when there are no steps but the slope is too steep for comfortable wheelchair access.

Space for a ramp?

Record **8 – Not applicable** when there are no steps to replace with a ramp.

Record **Yes** when there are steps but these could be replaced with a ramp.

Record **No** when there are steps although there is no room for these to be replaced by a permanent ramp of 1 in 20 or shallower.

Is the path firm and even?

Record **Yes** if the path is constructed of a firm, even concrete, paving or tarmac surface and is suitable for wheelchair use.

Record **No** if the path is constructed of loose gravel, grass or is in poor condition and unsuitable for wheelchair use.

Is the path at least 900 mm wide?

Record **Yes** when the path is wide enough for wheelchair access, you should include all driveways and paving when making your assessment.

Is the gradient less than 1 in 12?

Record **Yes** where the gradient is steeper than the 1 in 20, recorded above.

Is the entrance adequately lit?

Record **Yes** if there is an external light at the entrance door.

Record **No** if there is no external light (even if there is adequate street lighting nearby).

Is the entrance covered?

Record **Yes** if there is an undercover space suitable for a wheelchair to be used for shelter. This space does not have to be fully enclosed. Code Yes even if the covered entrance is not accessible by a wheelchair.

Record **No**, if there is no cover.

Appendix B – Modelling assumptions

Criterion	Assumptions
<p>Car parking – size and proximity to dwelling (LTH 1)</p>	<p>There is adequate street parking or where there is designated parking and it is located on the plot and the slope is <1 in 12 and the front plot is at least 3.3 m wide and the front plot is at least 4.8 m deep (this is large enough to accommodate a family car). Lifetime Homes specifies a shallower slope than this (1 in 20) but the EHCS only records if the slope of the plot is less than 1 in 12.</p> <p>The assessment of whether present on plot is simply one of whether it could be provided. In many cases where it does not already exist, the plot will not be feasible for adaptation. The only exceptions are cases where it would be feasible if the existing garage was demolished or moved. These are situations where the front plot is at least 3.3 m wide and 4.8 m deep and there is an attached or detached garage present but this encroaches on the plot so that there is no private parking on the plot. These are coded as very problematic because they require demolition or re-siting of a garage.</p> <p>Designated parking but not on the plot is coded as problematic because the distance from the property is unknown as are dimensions of parking space.</p>
<p>Living room on ground floor (LTH 8)</p>	<p>There is already a living room on the ground floor/entry floor to the dwelling or where there is space to easily provide one – this includes those with an additional room on this level that could be used as a living room or where the bedroom is large enough to be split to provide a living area. As agreed with client, the minimum room area is taken be 14 m² to provide a sleeping area of 2 m² together with a reasonable size living area of 12 m². Where a bedroom has sufficient space for a living room, this allows for space to accommodate a single bed, bedside cabinet and space to manoeuvre.</p> <p>Dwellings with other rooms on the ground/entrance floor that could be used as a living room and cases where there is a bedroom that could be split are coded as requiring minor work. If there is an integral garage that could be converted into a living room, this would require very major work. Similarly, if the dwelling is a house or ground floor flat without space for another room, work required would be to build an extension coded as very major. If the dwelling is a flat above ground floor or a mid-terraced house and there are no other rooms that could be used then work is not feasible.</p>

<p>Space for bedroom on ground floor (LTH 9)</p>	<p>There is already at least one bedroom on the ground floor/entry floor to the dwelling or where there is space to easily provide one – this includes those with an additional room on this level that could be used as a bedroom or where the living room is large enough to be split to provide a sleeping area. As agreed with the client, the minimum room area should be 14 m² to provide a sleeping area of 2 m² together with a reasonable size living area of 12 m². This allows for bedspace large enough to accommodate a single bed, bedside cabinet and room to manoeuvre.</p> <p>Cases where there is an integral garage that could be converted into a bedroom would require very major work. If the dwelling is a house or ground floor flat without space for another room, work required would be to build an extension coded as very major. If the dwelling is a flat above ground floor or a mid-terraced house and there are no other rooms that could be used then work is not feasible.</p>
<p>Level access to main entrance (LTH 2 and 3)</p>	<p>For a dwelling with a private plot, level access is defined as no steps between the gate/pavement and the entrance door for a wheelchair to negotiate. The path also has a gradient of less than 1 in 12. Lifetime Homes specifies a shallower slope than this (1 in 20) but the EHCS only records if the slope of the plot is less than 1 in 12.</p> <p>Unlike the 2007 survey, the 2006 survey did not record the existence of a shared plot. The assumption has been made that where there are shared facilities and services, a shared plot will exist. Level access is defined as no steps between the pavement and the entrance door for a wheelchair to negotiate. Paths also have a gradient of less than 1 in 12.</p> <p>Dwellings where there are steps up to the building and a ramp cannot be fitted are classed as not feasible. EHCS surveyors are briefed on how to assess this, but as a check we also compared the depth of the front plot and the number of steps to establish whether there is room for a straight ramp with a slope of <1:20. As agreed with the client, we also allowed for a 'landing' of 1.2 m.</p>
<p>Main entrance covered (LTH 4)</p>	<p>Unlike the 2007 survey, the 2006 survey did not record the existence of a shared plot. The assumption has been made that where there are shared facilities and services, a shared plot will exist.</p> <p>For all dwellings with a private or shared plot, a covered entrance refers to an entrance where there is sufficient space for a wheelchair user to shelter (even if the entrance is not wheelchair accessible). This entrance need not be fully enclosed.</p> <p>Most dwellings should be easy to fit a canopy/porch and are coded as requiring minor work, except where the dwelling fronts on to the street (no front plot) and adaptations are not feasible. Works may also be not feasible where the dwelling is listed or in a conservation area but there</p>

	<p>are no data on this so we have assumed that they can be rectified with minor work unless they front directly on to the street.</p>
<p>Main entrance illuminated (LTH 4)</p>	<p>Unlike the 2007 survey, the 2006 survey did not record the existence of a shared plot. The assumption has been made that where there are shared facilities and services, a shared plot will exist.</p> <p>For all dwellings with a private or shared plot, an illuminated entrance is one where there is an external light at the entrance door. Dwellings which are not illuminated have no external light at the entrance (even if there is a streetlight nearby).</p> <p>Most dwellings should be easy to fit a bulkhead light and are coded as requiring minor work. Works may not be feasible where the dwelling is listed or in a conservation area but there are no data on this so we have assumed that they can be rectified with minor work.</p>
<p>Main entrance flush threshold (LTH 4)</p>	<p>Flush threshold refers to a threshold where there is no obstruction greater than 15 mm. Unfortunately, the EHCS just records whether it is 15 mm or less rather than the actual height and there are no data on the change in level between outside and inside the dwelling. We have assumed that all dwellings without this can be rectified by replacing the door and frame (classed as minor work).</p>
<p>Any lifts should be wheelchair accessible (LTH 5)</p>	<p>Four categories of homes coded here:</p> <p>Not applicable – Houses and ground floor flats</p> <p>No lift present – Upper/basement floor flats with no lift</p> <p>Lift present but not accessible – Upper floor/basement flats where lift coded as ‘average’ or ‘tight’ in terms of space and which are not wide enough to allow wheelchair access.</p> <p>Accessible lift present – Upper floor/basement flats where lift coded as ‘spacious’ in terms of space and can allow wheelchair access.</p> <p>If there is a lift that is not large enough then it is likely that installing a larger lift would mean extensive structural alterations to the lift shaft. As agreed with the client, this work is considered not feasible on practical and economic grounds. Where there is no existing lift, it is not possible from the data to assess the ease of fitting a lift so we would code all of these not feasible.</p>
<p>The width of internal doorways and hallways conforms to Part M (LTH 6)</p>	<p>EHCS surveyors are briefed to assess this directly and are given a table of widths from Part M. Their assessment has been taken on the doors and circulation space serving habitable rooms, kitchen, bathroom and WC.</p> <p>This should be possible to achieve in most dwellings by removing some partitions and/or making door openings wider, and this re-planning is</p>

	<p>coded as major work as it would normally involve inserting RSJs because at least some internal walls are likely to be load-bearing. However, removal of internal partition walls would contravene fire regulations in buildings with three or more floors so it is coded as very problematic (very major works where feasible) for these buildings.</p>
<p>There should be space for the turning of wheelchairs in kitchens, dining areas and sitting rooms and adequate circulation space for wheelchair users elsewhere (LTH 7)</p>	<p>As agreed with the client the minimum room dimensions that should allow for this space, given assumed furniture and fittings, are 2.6 m in both directions for a living room and 2.2 m in both directions for a kitchen. Another complication is kitchen-diners and bed-sitting rooms and we have assumed minimum dimensions for the former of 2.6 m (same as a living room) and 3.5 m for the latter.</p> <p>This should be possible to achieve in most dwellings by removing some partitions, and work would be coded as major as it would normally involve inserting RSJs because at least some internal walls are likely to be load-bearing. However, this may contravene fire regulations in buildings with three or more floors so would be coded not feasible in these cases unless the total ground floor area is large enough to rearrange the space without creating 'open-plan' stairs. We have assumed that all houses that are at least 4.0 m in width and have a total internal floor area of more than 70 m² could be modified in this way. For smaller houses, these could be extended to provide the additional space unless they are mid-terraced houses or flats that are not located on the ground floor. In such cases work is coded as very major.</p>
<p>WC and shower at entrance level (LTH 10)</p> <p>For dwellings with three or more bedrooms or where all rooms are located on one floor, the WC should be fully accessible (but there are no data to assess this). For other dwellings, the WC should be ADM compliant (this should be the case if built after 2000).</p>	<p>EHCS surveyors record separately whether there is a WC and a shower/bath present at entry floor level. There are no data as to whether either is fully wheelchair accessible. Dwellings with three or more bedrooms comply where both are on the entry floor and dwellings with one or two bedrooms comply if just the WC is located on the entry floor.</p> <p>Dwellings with other rooms that could be used or partitioned to create this are coded as requiring major work through re-planning. Owing to small sample sizes, dwellings with integral garages that could be used to accommodate this feature have been combined with the above major works, although in reality are likely to be more extensive and problematic. If the dwelling is a house or ground floor flat without sufficient space for another room, very major work is required to build an extension. If the dwelling is a flat above ground floor or a mid-terraced house that does not already have these, we have assumed that these cannot be provided as it is not really feasible to build an extension in these cases.</p>