



# English Housing Survey HOMES 2010



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- are well explained and readily accessible;
- are produced according to sound methods, and
- are managed impartially and objectively in the public interest.

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# English Housing Survey: HOMES

## **Annual report on England's housing stock, 2010**

July 2012  
Department for Communities and Local Government

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The Office for National Statistics (ONS) managed the EHS on behalf of the Department. ONS undertook the household interviews and the subsequent data validation and creation of derived analytical measures. It also had responsibility for the sampling and weighting of the data sets. ONS were also involved in the production of tables and analytical reports.

Miller Mitchell Burley Lane (MMBL) undertook the visual inspection of the properties working in partnership with ONS. MMBL employed and managed a large field force of professional surveyors who worked in close co-operation with the ONS interviewers to maximise response rates and deliver high quality data.

The Building Research Establishment (BRE) helped develop the physical survey questionnaire and surveyor training materials, and delivered the surveyor training sessions. The BRE also had responsibility for developing and implementing a new automated data collection and validation process for the physical survey. It was involved in analysing the data and developing and running models to create the key measures and analytical variables for the survey, and reporting the findings.

The interviewers and surveyors who collected information from households and carried out the visual inspections.

The households who took part in the survey.

The Department's staff who managed and worked on the survey.

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# Introduction

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1. In April 2008 the English House Condition Survey was integrated with the Survey of English Housing to form the English Housing Survey (EHS). This report provides the findings from the third round of reporting of the EHS, and follows from the 2010-11 Headline report which was published in February 2012.
2. This annual report focuses on HOMES and is one of two which are published at the same time. The sister publication is called HOUSEHOLDS.
3. This report on Homes is organised in a similar way to previous reports on the housing stock, and covers familiar themes such as amenities and services, condition of the housing stock, energy performance and improvement potential.
4. However, information on vacant dwellings now appears under the heading Empty Homes in the Households report, Chapter 3. Another change concerns analysis relating to vulnerable and disadvantaged groups. An overview of the sorts of housing stock occupied by these groups still appears in this report in Chapter 2. However, a more detailed look at living conditions experienced by each type of household, now appears as Chapter 6 of the Households report.
5. Results which relate to the physical dwelling are presented for '2010' and are based on fieldwork carried out between April 2009 and March 2011 (a mid-point of April 2010). The sample comprises 16,670 occupied or vacant dwellings where a physical inspection was carried out and includes 16,047 cases where an interview with the household was also secured. These are referred to as the '**dwelling sample**' and the '**household sub-sample**' respectively in the reports.
6. Results for households (not in relation to the physical condition of the home) are presented for '2010–11' and are based on fieldwork carried out between April 2010 and March 2011 of a sample of 17,556 households. This is referred to as the '**full household sample**' in the reports.
7. Most of the analyses in this report are based on the dwelling sample. Where this is not the case it has been noted in the text, and made clear in the footnotes to the tables and figures.



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8. Where the numbers of cases looked at in the sample are too small for any inference to be drawn about the national picture, the cell contents are replaced with an asterisk. This happens where the number of samples is fewer than 30. Where the cell contents are in italics this indicates a sample size between 30 and 50, and the results should be treated with caution.
  9. Where comparative statements have been made in the text, these have been significance tested to a 95% confidence level. This means we are 95% confident that the statements we are making are true.
  10. Additional annex tables, including the data underlying the figures and charts, are published on the website [www.communities.gov.uk/housing/housingresearch/housingsurveys/](http://www.communities.gov.uk/housing/housingresearch/housingsurveys/) alongside many supplementary tables, which are updated each year but are too numerous to include in our reports. Further information on the technical details of the survey, and information and past reports on the Survey of English Housing and the English House Condition Survey can also be accessed via this link.
  11. If you have any queries about this report or would like any further information please contact [ehs@communities.gsi.gov.uk](mailto:ehs@communities.gsi.gov.uk)
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# Chapter 1

## Stock profile

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This chapter examines the overall profile of the housing stock by age, dwelling type, tenure and area. It also examines the extent to which certain types of households are concentrated in particular types of stock in the different tenures.

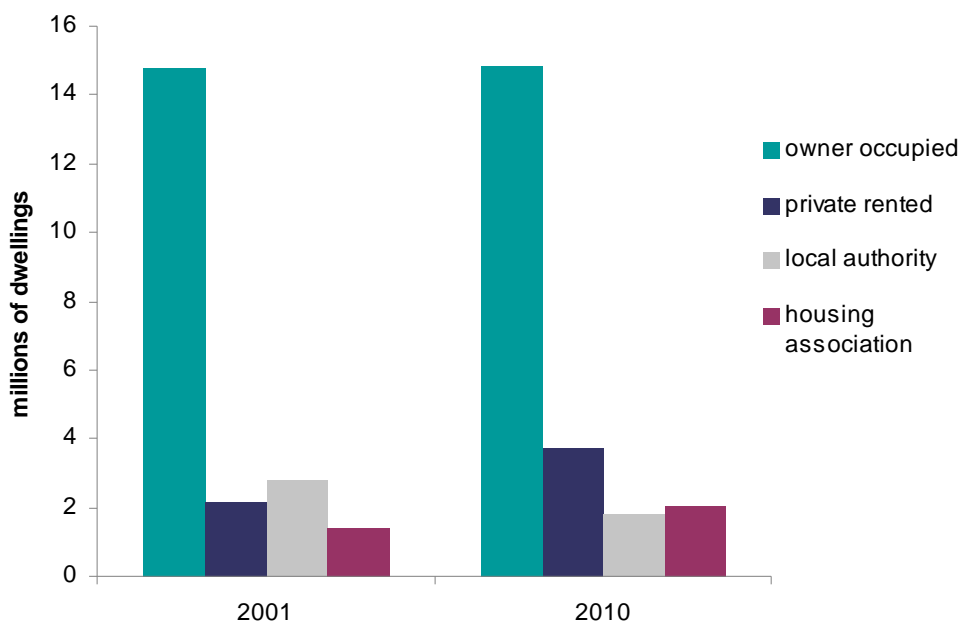
### Key findings

- In 2010, there were 22.4 million dwellings in England. Some 66% of these were owner occupied and the rest were rented, split fairly evenly between the private rented sector (17%) and social rented sector (17%). There were slightly more housing association dwellings (2 million) than local authority dwellings (1.8 million).
- Some 52% of the private rented stock was built before 1945 including 40% built before 1919. Also, 15% of private rented homes were converted flats.
- The majority of flats were in small or medium sized blocks – 37% were in blocks of less than 11 flats and 67% were in blocks of less than 25 flats.
- The majority of vacant homes (83%) were in the private sector and 37% were flats.
- Across the stock, 20% of dwellings had four or more bedrooms and 10% had one bedroom. Some 44% of two bedroom homes had one twin size and one single sized bedroom.
- Some 6.9 million dwellings did not have cavity walls and 64% of these had building features that would probably make the installation of solid wall insulation more expensive or problematic.
- Some 66% of households from ethnic minorities and 45% of social rented households containing someone aged 60 or over lived in flats.
- Households containing someone aged 60 or over were much more likely to live in bungalows than other households, whereas households in poverty were more likely to live in terraced houses than other households.

## Housing stock profile

- 1.1 In 2010, there were 22.4 million dwellings in England. Of these, 66% were owner occupied and the rest were rented, split evenly between the private rented sector (17%) and social rented sector (17%). There were slightly more housing association dwellings (2 million) than local authority dwellings (1.8 million), Annex Table 1.1.
- 1.2 The tenure profile of the stock has changed significantly since 2001. The number of private rented homes has increased from 2.2 to 3.7 million over this period whilst the number of owner occupied homes has remained almost constant. The social sector has seen significant changes over this period, partly because many local authority dwellings were transferred to housing associations through Large Scale Voluntary Transfers, and partly because of new building by housing associations. In 2001 local authorities owned 2.8 million homes (13% of the stock) but this had reduced to 1.8 million (8% of the stock) by 2010. Over the same period, the number of housing association homes has increased from 1.4 to 2.0 million, Figure 1.1.

**Figure 1.1: Numbers of dwellings by tenure in 2001 and 2010**



**Base: all dwellings**

**Note: underlying data are presented in Annex Table 1.1**

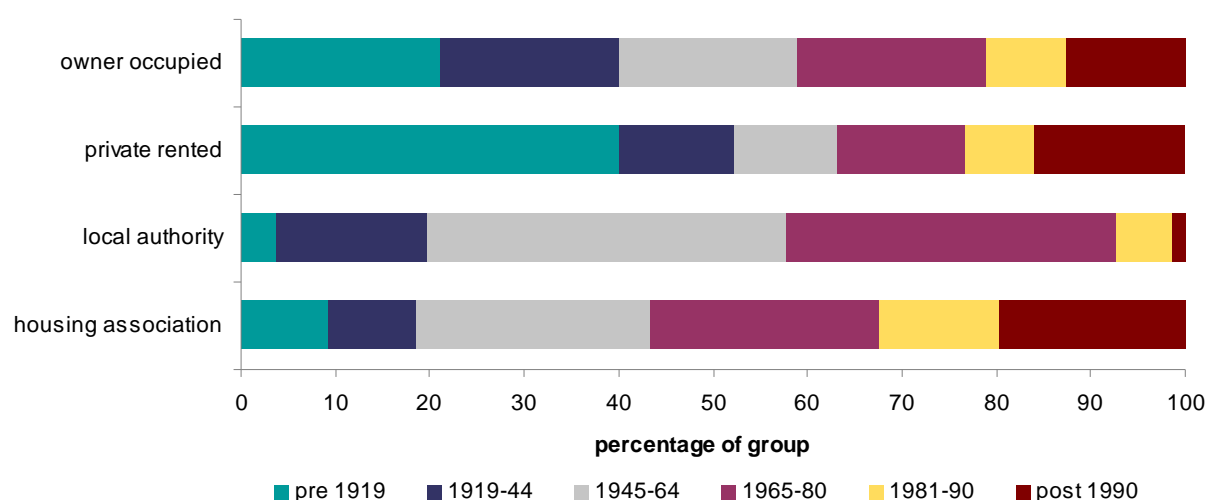
**Sources:**

2001: English House Condition Survey, dwelling sample

2010: English Housing Survey, dwelling sample

1.3 Overall, 22% of homes were built before 1919. A similar proportion was built after 1980 (21%). Private rented dwellings tended to be older - some 40% of private rented dwellings were built before 1919 compared with 21% of owner occupied, 9% of housing association and 4% of local authority dwellings. The owner occupied stock was the most evenly distributed across the dwelling age bands whereas 73% of local authority homes were built between 1945 and 1980 and 32% of housing association dwellings were built after 1980, Figure 1.2.

**Figure 1.2: Percentage of dwellings in each tenure by dwelling age, 2010**



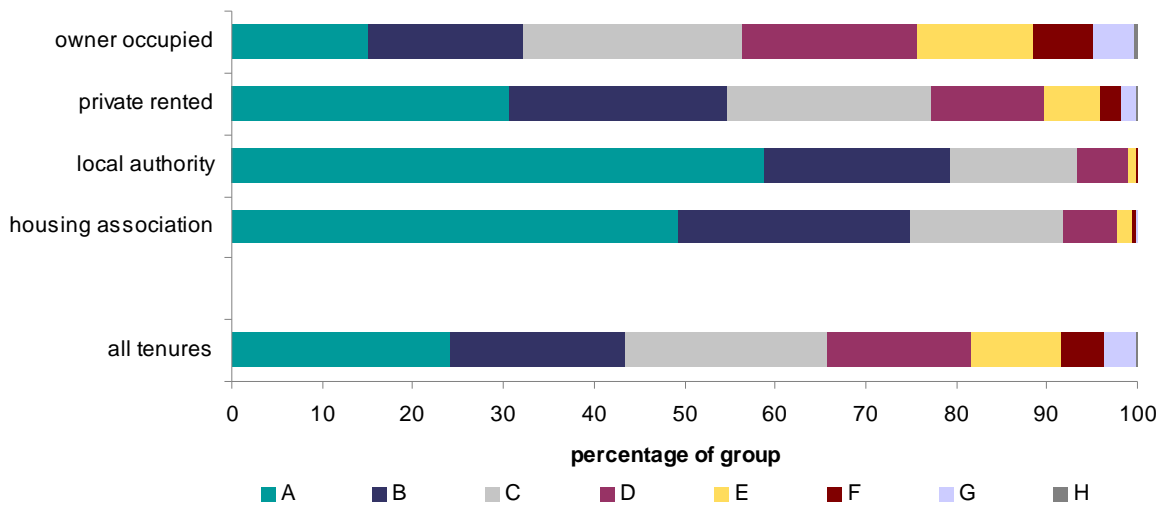
**Base: all dwellings**

**Note: underlying data are presented in Annex Table 1.2**

**Source: English Housing Survey, dwelling sample**

1.4 The most common council tax band was A, the lowest band, accounting for 24% of dwellings. The second most common was band C (22%). Only 8% of the stock was located in the three highest bands (F, G and H). However, this varied considerably by tenure. More than 90% of social rented dwellings were in bands A, B and C compared with 77% of private rented homes and 56% of owner occupied dwellings. Some 59% of local authority and 49% of housing association dwellings were in band A, Figure 1.3.

**Figure 1.3: Percentage of dwellings in each tenure by council tax band, 2010**



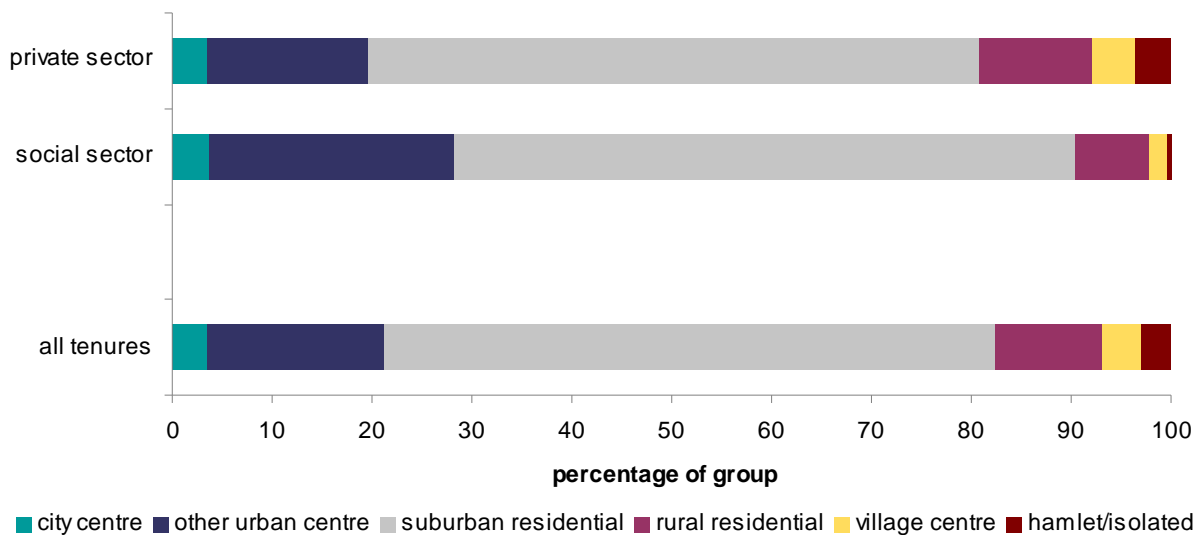
**Base: all dwellings**

**Note: underlying data are presented in Annex Table 1.3**

**Source: English Housing Survey, dwelling sample**

1.5 Overall, 18% of dwellings were located in rural areas, with 0.7 million of these (3%) being isolated dwellings or located in hamlets. Almost all (98%) of these more isolated rural dwellings were in the private sector, Figure 1.4.

**Figure 1.4: Percentage of dwellings in each tenure by type of area, 2010**



**Base: all dwellings**

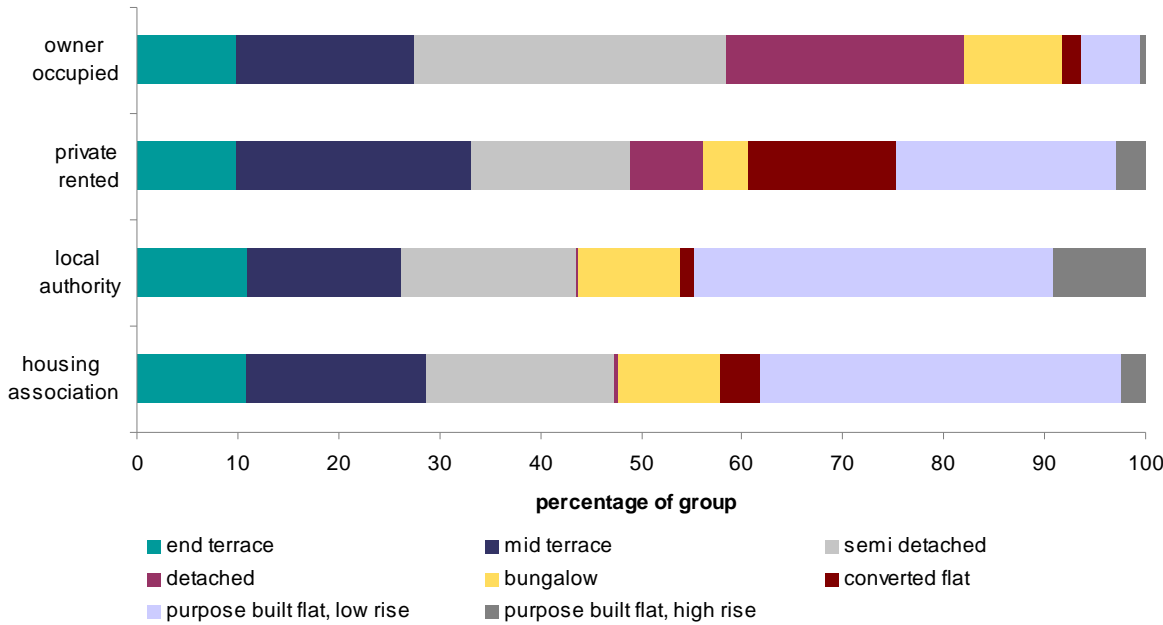
**Note: underlying data are presented in Annex Table 1.4**

**Source: English Housing Survey, dwelling sample**

# Types of dwellings

1.6 Some 20% of all homes were flats, although this ranged from 8% in the owner occupied sector to 46% for local authority homes, Figure 1.5 and Annex Table 1.5. The owner occupied sector contained the largest proportions of houses which were detached and semi-detached (26% and 34% respectively).

**Figure 1.5: Percentage of dwellings in each tenure by dwelling type, 2010**



**Base: all dwellings**  
**Note: underlying data are presented in Annex Table 1.5**  
**Source: English Housing Survey, dwelling sample**

1.7 The majority of these (69%) were in low rise purpose built blocks. A further 9% were in high rise purpose built blocks and the rest (22%) were converted flats. Overall, some 43% of flats were located at ground floor level, 3% at basement level and 3% above 6th floor level, Annex Table 1.6.

1.8 The majority of flats were in small or medium sized blocks – 37% were in blocks of less than 11 flats and 67% were in blocks of less than 25 flats. Private sector flats were more likely to be in either the smallest blocks (less than 8 flats) or largest blocks (100 or more flats) than those in the social sector. Some 28% of private sector flats were located in blocks of less than 8, and 9% in blocks of 100 or more, compared with 21% and 7% respectively for social sector flats, Annex Table 1.7.

1.9 There were much higher proportions of flats in the rented sectors, (ranging from 39% for private rented to 46% for local authority) than in the owner occupied sector (8%). However, in the rented sectors the type of flats varied by tenure. The private rented sector had the highest proportion of converted

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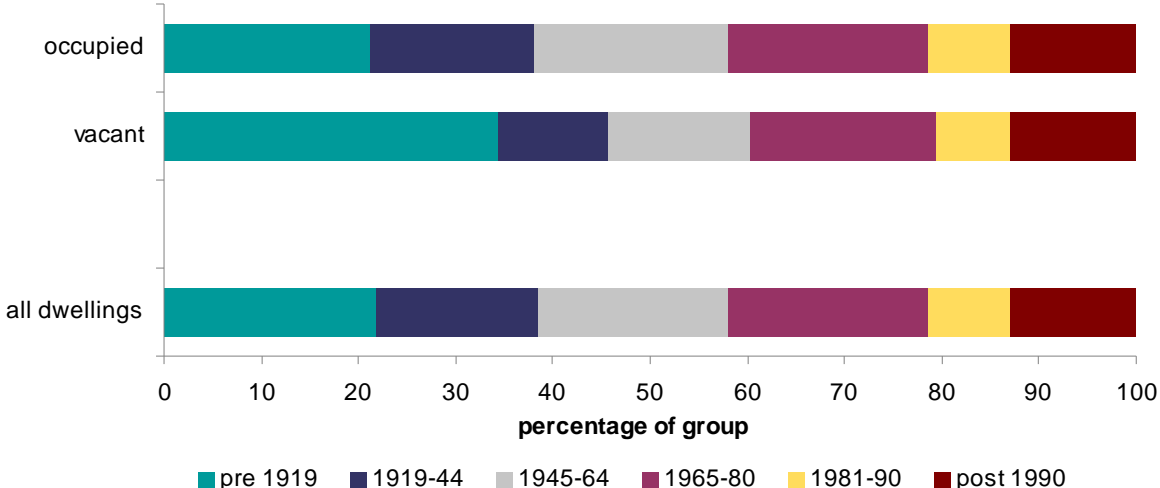
flats (38% of all private rented flats); the proportion of high rise purpose built flats was largest in the local authority sector at 20%; and the housing association sector had the largest proportion of low rise purpose built flats (85% of housing association flats).

- 1.10 The majority of houses had 2 storeys (80%), some 11% were bungalows (one storey only) and 9% had 3 or more storeys, Annex Table 1.8. For 13% of houses, the top floor was an attic and for 2% the lowest floor was at basement level, Annex Table 1.9. However, this varied by tenure and location. The social sector had a much higher proportion of houses that were bungalows (19% for local authority and 18% for housing association). London had a much lower proportion of bungalows (3%) but a much higher proportion of houses that were 3 or more storeys in height (20%).
- 1.11 The majority of bungalows were detached – although this was only strictly true in the private sector where 70% of owner occupied and 59% of private rented bungalows were detached. In the social rented sector only 8% of bungalows were detached, 45% were built as semi-detached pairs, and the rest in terraces of three or more, Annex Table 1.10.
- 1.12 Looking at terraced houses of two or more storeys, 36% were in short terraces of 3 of 4 houses and only 6% were located in very long terraces of 25 or more houses. Generally, terraced houses built before 1919 tended to be in longer terraces than those built later – some 47% of those built before 1919 were in a terrace of more than ten compared with 8% of those built from 1919 onwards, Annex Table 1.11.

# Occupancy

1.13 Some 940 thousand dwellings were vacant at the time of the survey. The majority of these (83%) were in the private sector and 37% of vacant homes were flats, Annex Table 1.12. Vacant dwellings were more likely to have been built before 1919 than occupied homes (34% compared with 21%), Figure 1.6.

**Figure 1.6: Percentage of occupied and vacant dwellings by dwelling age, 2010**



**Base: all dwellings**  
**Note: underlying data are presented in Annex Table 1.12**  
**Source: English Housing Survey, dwelling sample**

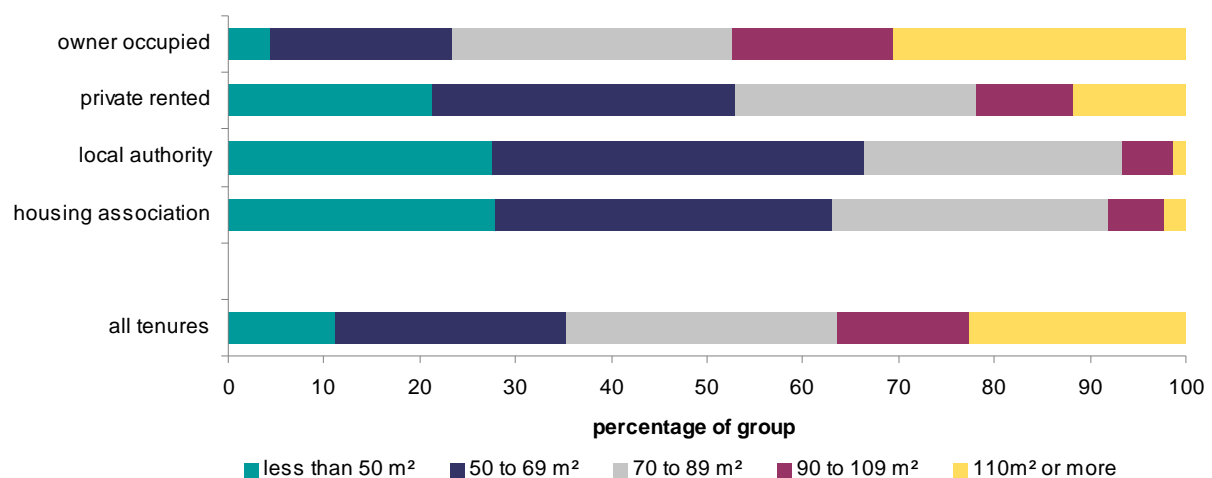
1.14 Of the 21.4 million occupied dwellings, the vast majority (97%) were occupied by a single household or person. The remainder were occupied on a shared basis i.e. as shared houses/flats, bedsits, or contained lodgers who were not part of the main household, Annex Table 1.13.



## Dwelling and room size

1.15 The average dwelling had a total usable floor area of 92 m<sup>2</sup>. However, this average size varied by tenure, from 103 m<sup>2</sup> in the owner occupied sector to 75 m<sup>2</sup> for private rented dwellings and 64 m<sup>2</sup> for both local authority and housing association homes, Annex Table 1.14. Some 31% of owner occupied dwellings were at least 110 m<sup>2</sup> in area and only 5% were smaller than 50 m<sup>2</sup>. Conversely, in the social rented sector only 2% of homes were at least 110 m<sup>2</sup> and 28% were smaller than 50 m<sup>2</sup>, Figure 1.7.

**Figure 1.7: Percentage of dwellings by tenure and by floor area, 2010**



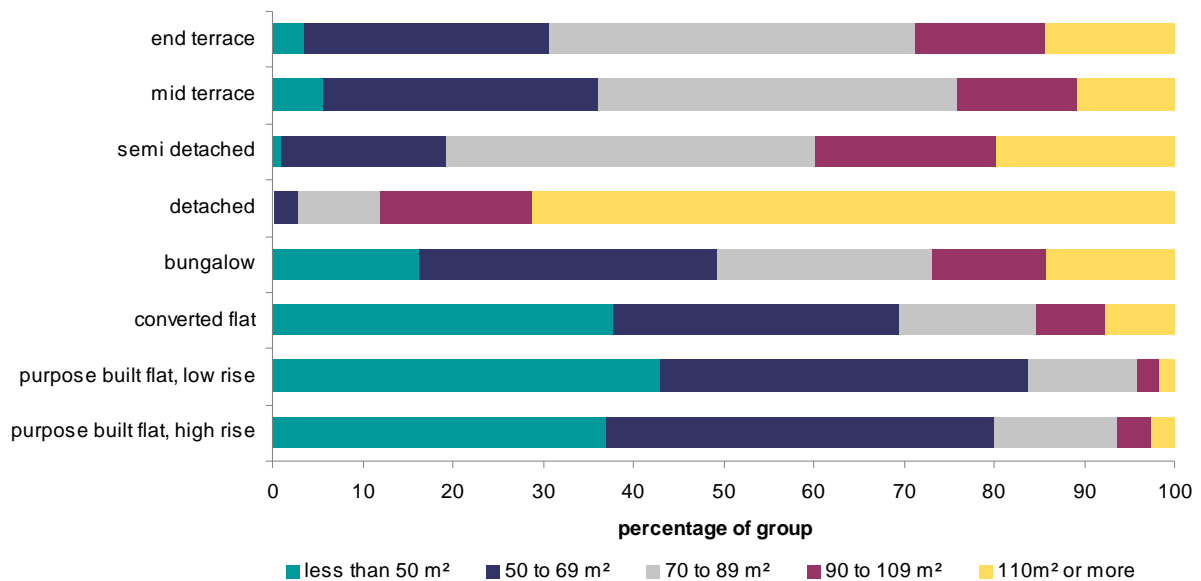
**Base: all dwellings**

**Note: underlying data are presented in Annex Table 1.14**

**Source: English Housing Survey, dwelling sample**

1.16 The main reason why social sector dwellings tended to be smaller than privately owned dwellings was that they were much more likely to be purpose-built flats, which were smaller on average than houses or converted flats (see Figures 1.5 and 1.8). Only 6% of owner occupied dwellings were purpose built flats compared with 45% of local authority and 38% of housing association homes. Some 43% of purpose built low rise flats and 37% of purpose built high rise flats were smaller than 50m<sup>2</sup>, Figure 1.8.

**Figure 1.8: Percentage of dwellings by dwelling type and by floor area, 2010**



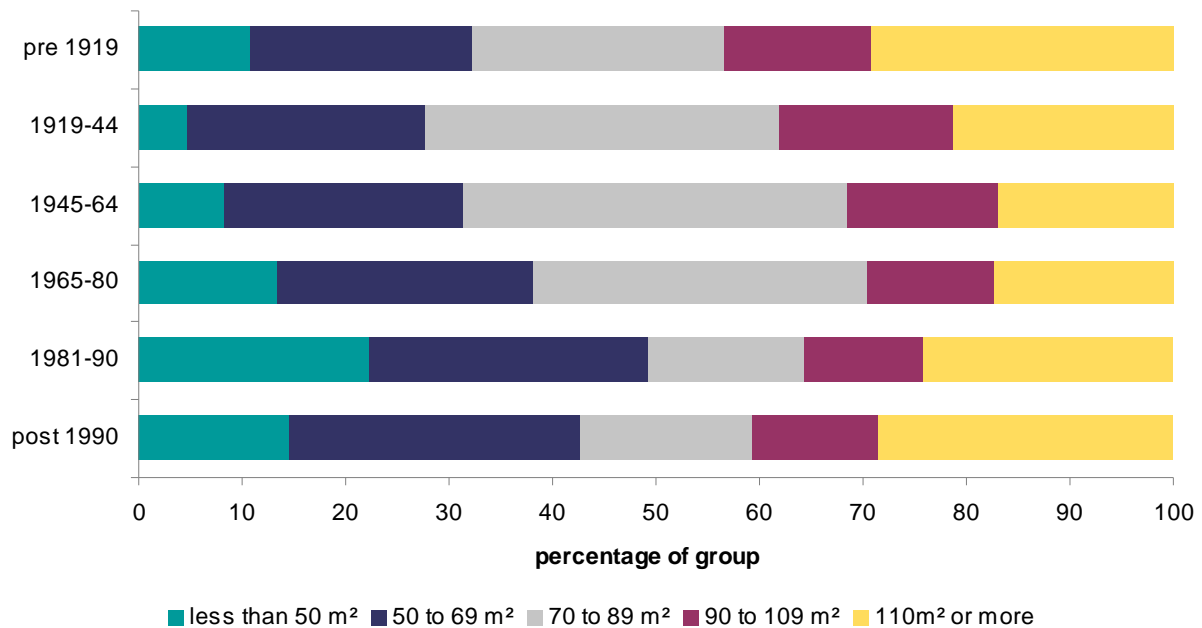
**Base: all dwellings**

**Note: underlying data are presented in Annex Table 1.14**

**Source: English Housing Survey, dwelling sample**

1.17 On average, dwellings built before 1919 were the largest dwellings, with a mean useable floor area of 103m<sup>2</sup> compared with less than 94m<sup>2</sup> for other age bands, Annex Table 1.14. This is partly because many of these older homes have had extra space added over the years – some 39% have been extended and 11% have had their loft converted into useable living space, Annex Table 1.15. On average dwellings built between 1945 and 1990 were significantly smaller than those built during other periods, with average useable floor areas between 84m<sup>2</sup> and 87m<sup>2</sup> respectively. Over a fifth (22%) of homes built during the 1980s were less than 50m<sup>2</sup> in area, mainly because a high proportion of dwellings built during this period were purpose built flats. Dwellings built after 1990 were significantly larger than those built between 1945 and 1990, with a mean floor area of 93m<sup>2</sup>, Figure 1.9.

**Figure 1.9: Percentage of dwellings by dwelling age and by floor area, 2010**



**Base: all dwellings**

**Note: underlying data are presented in Annex Table 1.14**

**Source: English Housing Survey, dwelling sample**

1.18 The size of ‘similar’ houses sometimes varied considerably by tenure. Three bedroom semi-detached houses that were owner occupied had a mean useable floor area of 88m<sup>2</sup> which was significantly larger than the average of 85m<sup>2</sup> for those that were private rented; this in turn was significantly larger than the 80m<sup>2</sup> for social sector three bedroom semis. There was less variation for 2-bedroom terraced houses, although those that were privately rented were on average smaller than those that were owner occupied (64m<sup>2</sup> compared with 67m<sup>2</sup>). On average, one bedroom flats were very similar in size across the 3 main tenures (44-45m<sup>2</sup>), Annex Table 1.16.

## Number and size of bedrooms

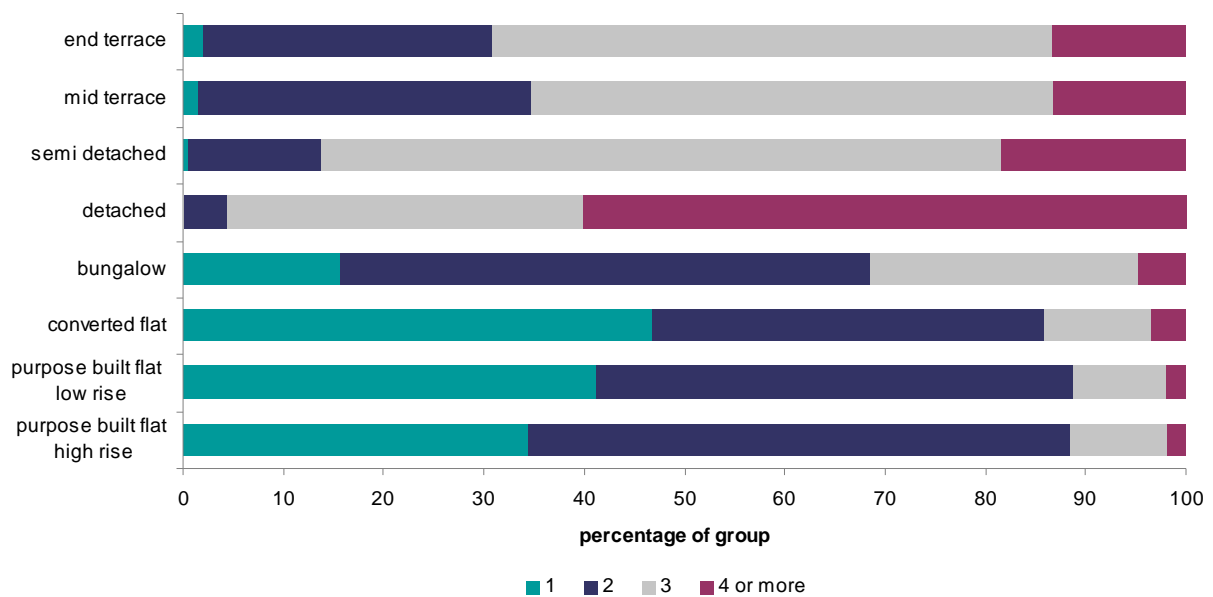
1.19 Most commonly, homes in England had three bedrooms (43%). Only 10% had one bedroom, 27% had two bedrooms and 20% had four or more bedrooms. However, rented dwellings (both private and social) tended to have fewer bedrooms, typically two. Some 28% of social rented and 18% of privately rented homes had one bedroom compared with just 4% of owner occupied homes.

1.20 The number of bedrooms also varied with dwelling age, with only 3% of dwellings built between 1919 and 1944 having one bedroom compared with 19% of those built in the 1980s. Looking at homes built after 1944, there appears to have been a steady reduction in the proportion of dwellings with 3 bedrooms (from 52% for those built 1945-1964 compared with 28% for those

built after 1990) and a steady increase in the proportion with four or more bedrooms (from 14% for those built 1945-1964 to 28% for those built after 1990), Annex Table 1.17.

1.21 Not surprisingly, the number of bedrooms also varied with dwelling type. Purpose built flats were more likely to have 2 bedrooms than 1 bedroom (54% compared to 34% for high rise and 48% compared to 41% for low rise). Converted flats were more likely to have one bedroom than two (47% compared to 39%). The majority (68%) of all semi-detached houses had 3 bedrooms whereas the majority (60%) of detached houses had four or more bedrooms, Figure 1.10.

**Figure 1.10: Number of bedrooms by dwelling type, 2010**



**Base: all dwellings**

**Note: underlying data are presented in Annex Table 1.17**

**Source: English Housing Survey, dwelling sample**

1.22 However, not all bedrooms were the same size. The EHS physical survey assesses whether bedrooms are single (big enough for one single bed) or twin (big enough for two or more single beds). Dwellings with fewer bedrooms were less likely to have any single sized bedrooms. For example, the majority of one bedroom dwellings had a twin bedroom (93%) but only 56% of two bedroom and 14% of three bedroom houses had all of their bedrooms as twin sized, Annex Table 1.18.

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## Size of living rooms

1.23 For those dwellings that had a living room<sup>1</sup>, the average living room floor area was around 17m<sup>2</sup>. There was some variation by tenure, dwelling age and dwelling type although no consistent patterns emerged. However, on average, detached houses had larger living rooms than all other types (average of 20m<sup>2</sup>). The cost and speed of heating a living room is not only dependent on floor area, but also ceiling height because this affects the volume of air to be heated. Across the whole stock the average ceiling height for a living room was 2.5m. Again the main variation was seen for dwelling type; the mean ceiling height for converted flats was significantly higher than for all other types at 2.7m, Annex Table 1.19.

## Building features

1.24 This section looks at the prevalence of building features which can make dwellings more problematic and/or expensive to insulate. The findings provide background information to the analyses in Chapter 4 on non decent homes that are hard to treat and in Chapter 7 on energy improvement works.

### Dwellings with cavity walls

1.25 Some 15.5 million dwellings (69%) had cavity walls, Annex Table 1.20. However, there are situations where installing cavity wall insulation in these dwellings is likely to be more problematic or more expensive or simply not feasible. These include dwellings where:

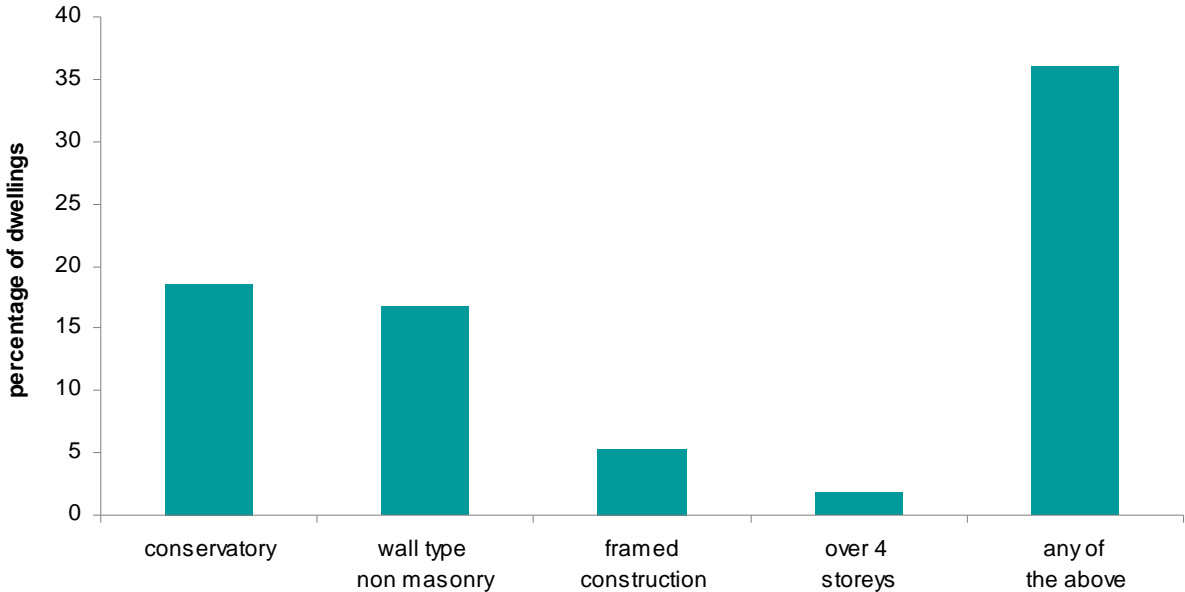
- the wall finish is not masonry pointing
- the home has a conservatory
- the house or block is over 4 storeys high
- the dwelling has a framed construction (of concrete, timber or metal)

1.26 Among those dwellings with cavity walls, around 2.6 million (17%) did not have masonry pointing and 2.8 million (19%) had a conservatory. A smaller proportion (2%) were over 4 storeys high whilst around 800,000 (5%) were of framed construction. In all, 36% of dwellings with cavity walls had at least one of these features, Figure 1.11.

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<sup>1</sup>where a dwelling has more than one living room, the main living room is considered in this section.

**Figure 1.11: Percentage of dwellings with cavity walls with key features, 2010**

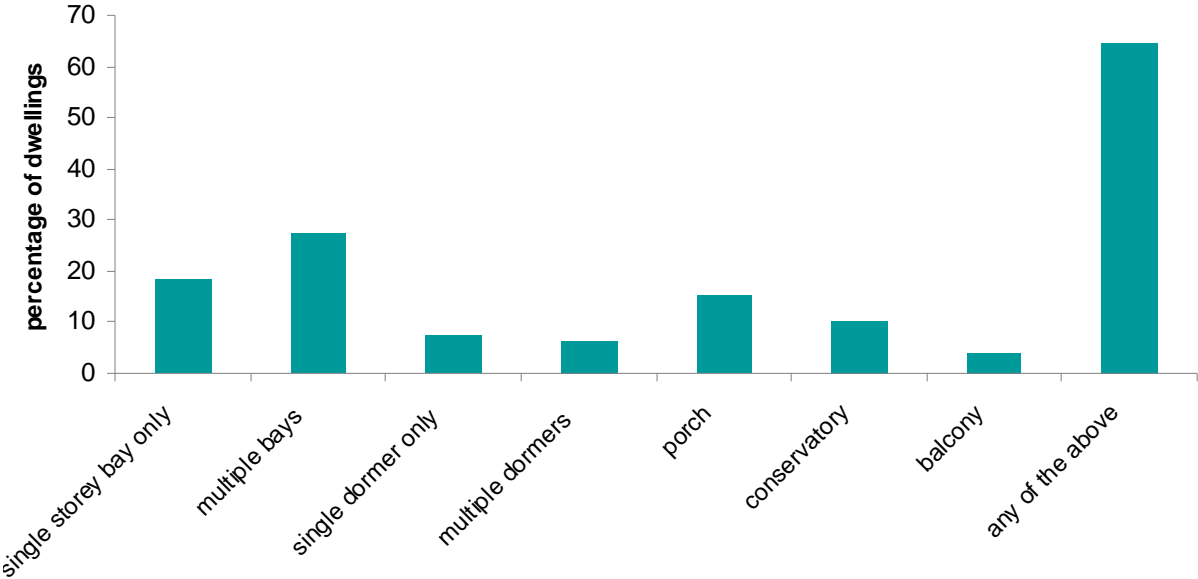


**Base: all dwellings with cavity walls**  
**Note: underlying data are presented in Annex Table 1.21**  
**Source: English Housing Survey, paired dwelling sample**

**Dwellings with other types of external walls**

1.27 Some 6.9 million dwellings had other types of wall; this includes solid masonry, concrete, timber framed, steel framed etc, Annex Table 1.20. In these dwellings, the existence of bay or dormer windows, porches and conservatories would make the installation of external solid wall insulation more problematic and thus more costly. Some 64% of these dwellings had at least one such feature; most commonly one or more bays, Figure 1.12.

**Figure 1.12: Percentage of dwellings with solid walls or non-traditional construction having key external features, 2010**



**Base: all dwellings without cavity walls**  
**Note: underlying data are presented in Annex Table 1.22**  
**Source: English Housing Survey, paired dwelling sample**

## The housing of key vulnerable or disadvantaged households

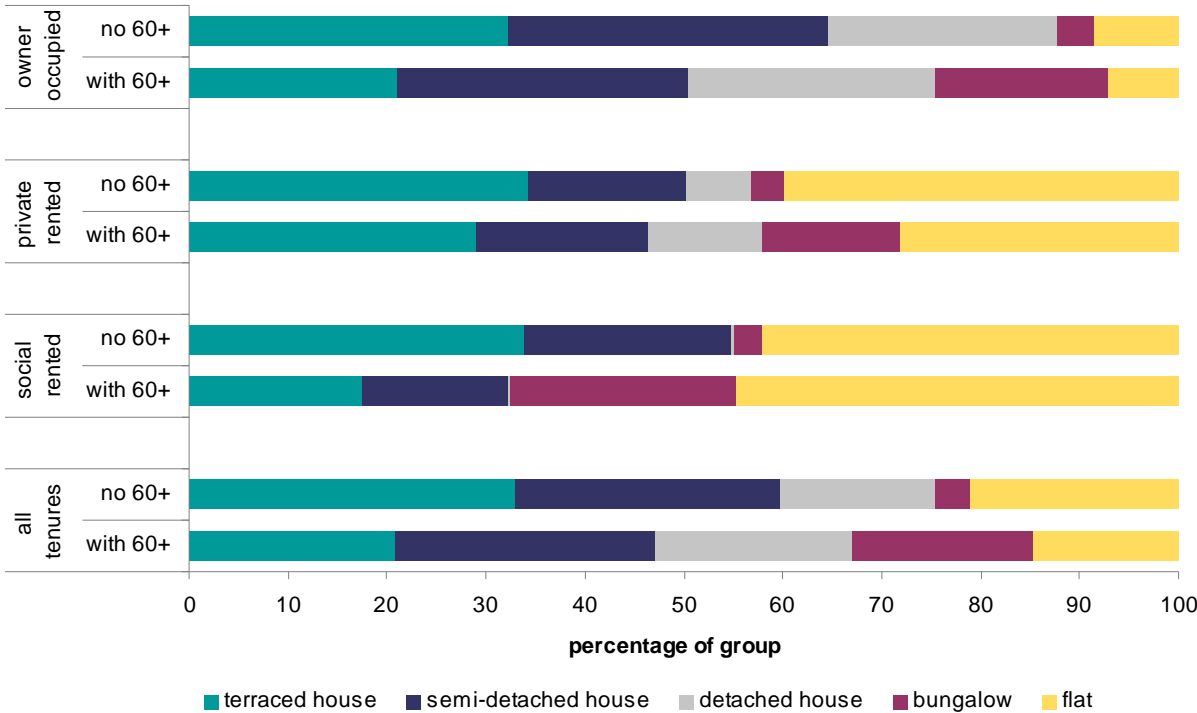
1.28 This section examines the type of dwellings that key groups of households lived in, both across the stock as a whole and within each tenure. These groups include households more likely to experience poor housing conditions due to resource or other constraints that might limit their ability to improve their housing circumstances. Such households were those including people aged 60 years or more, and people with a disability or long term health problem. They also include those with limited income (households in relative poverty) or who might face pressures and cultural factors related to ethnicity (ethnic minority households).

1.29 The detailed definition of each of these household groups is provided in the Glossary. This analysis provides a broader context for understanding why these households were more or less likely to live in homes which have problems related to the provision of amenities; condition; safety; or energy performance that are described in Chapter 6 of the EHS Households Report. The EHS Households Report 2010-11, Chapter 6, also examines larger households but it has not been possible to provide the detailed analysis covered in this section for this group due to small sample sizes.

## Households with older people

1.30 Overall, households containing at least one person aged 60 or over were six times more likely to live in bungalows than other households (18% compared with 3%) and this difference was most pronounced in the social rented sector (23% compared to 3%). Households with older people were less likely to live in flats (15% compared with 21%), but this varied considerably by tenure. Only 7% of owner occupier households with people aged 60 or over lived in flats compared with 28% of such households in the private rented sector and 45% in the social rented sector, Figure 1.13.

**Figure 1.13: Percentage of households with and without people aged 60 or over by dwelling type by tenure, 2010**



**Base: all households**  
**Note: underlying data are presented in Annex Table 1.23**  
**Source: English Housing Survey, paired dwelling sample**

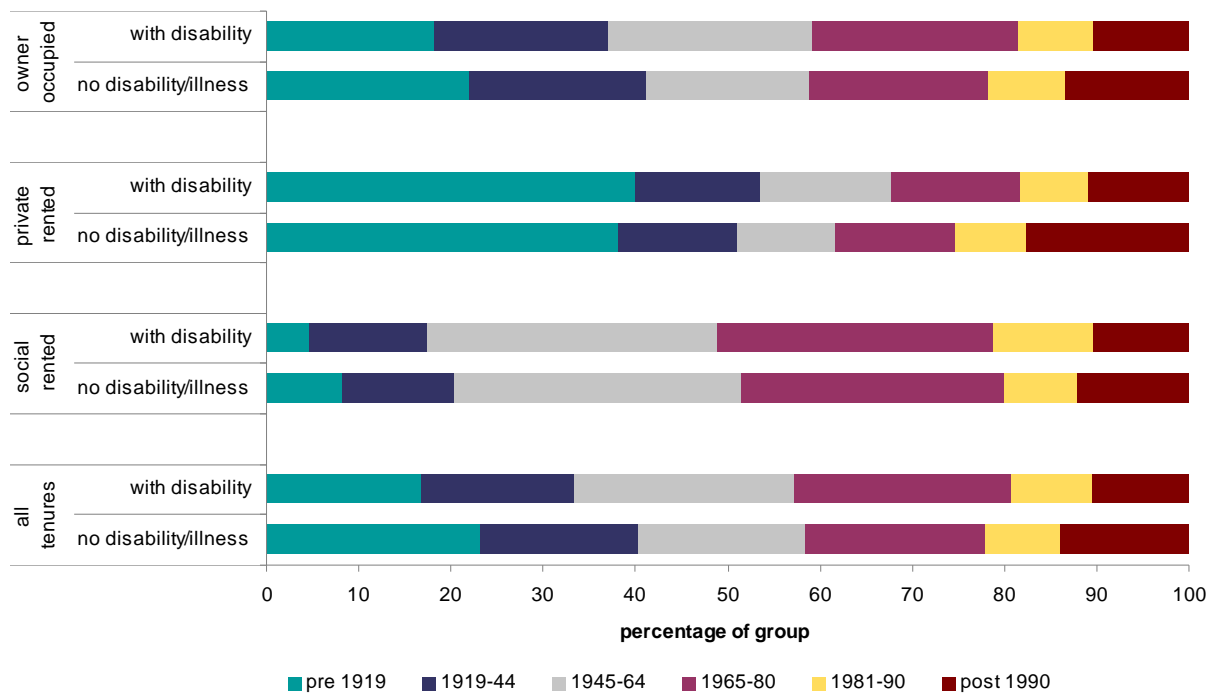
1.31 Overall, households containing older people were less likely to live in the very oldest (pre 1919) dwellings than other households (17% compared with 24%) and also less likely to live in homes built after 1990 (8% compared with 16%). However, in the private rented sector, households with over 60's were just as likely to be living in homes built before 1919 as other households, Annex Table 1.24.



## Households containing people with a disability or long term illness

- 1.32 Across all tenures, households that included one or more people with a disability or long term illness (see Glossary) were twice as likely to live in bungalows as other households (14% compared with 7%) although they were equally likely to live in flats (19% compared with 18%), Annex Table 1.23.
- 1.33 Overall, households with members who were disabled or had a long-term illness were less likely to live in the very oldest (pre 1919) and newest (post 1990) homes than other groups (17% compared with 23%, and 10% compared to 14% respectively). This trend was evident in all sectors apart from the private rented sector where a similar proportion of households with and without people with disabilities lived in pre 1919 homes, Figure 1.14.

**Figure 1.14: Percentage of households with and without people with a disability or long term illness by dwelling age by tenure, 2010**



**Base:** all households

**Note:** underlying data are presented in Annex Table 1.24

**Source:** English Housing Survey, paired dwelling sample

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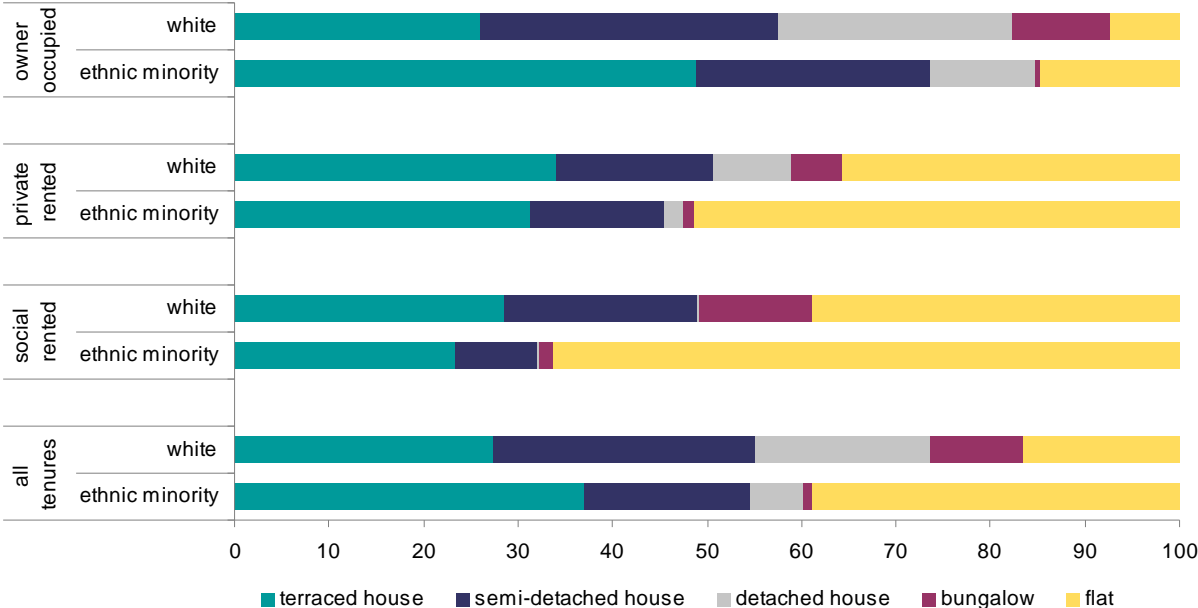
## Households in poverty

- 1.34 Households in poverty are defined as households whose equivalised income is less than 60% of the median value (see Glossary for further details). Households in poverty were much more likely to live in flats than other households (29% compared with 16%). This is partly because flats tended to be cheaper to rent than houses, and also because a high proportion of this group living in flats (52%) rent from social landlords and some 39% of households in this sector are in poverty. If we look within each tenure, then there was virtually no difference between the percentage of households in poverty and not in poverty who lived in flats, Annex Table 1.25.
- 1.35 Those in poverty were less likely to live in detached or semi-detached houses or bungalows and more likely to live in terraced houses and this applied in all sectors. However, in the private sector 10% of those in poverty lived in detached houses.
- 1.36 Overall, there was less variation in the age profile of dwellings occupied by those in poverty and other households. Those in poverty were less likely to live in houses built after 1990 than other households, especially in the private rented sector where only 12% of those in poverty lived in these newer homes compared with 18% of other private renters, Annex Table 1.26.

## Ethnic minority households

- 1.37 Generally, ethnic minority households were much more likely to live in flats or terraced houses and much less likely to live in detached or semi-detached houses or bungalows than other households. This is partly because, until very recently, ethnic minority households were more likely to live in urban areas where terraced houses and flats are more common. However there was some variation across tenures. For example, although ethnic minority households were more likely than other households in the owner occupied sector to live in terraced houses (49% compared with 26%), this was not the case in the private rented sector (31% compared with 34%), Figure 1.15.

**Figure 1.15: Percentage of households by ethnicity of HRP by dwelling type by tenure, 2010**



Base: all households

Note: underlying data are presented in Annex Table 1.25

Source: English Housing survey, paired dwelling sample

1.38 Generally, ethnic minority households were more likely to live in homes built before 1945 than other households (46% compared with 37%). In the owner occupied sector they were also less likely to live in homes built after 1980 (16% compared with 21%). However, in the private rented sector, there were no real differences in the age profile of dwellings occupied by ethnic minority and other households, Annex Table 1.26.

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## Chapter 2

# Amenities, services and the local environment

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This chapter firstly examines key services and amenities present in homes in 2010 and how these vary by the tenure, type, age and location of the dwelling. These include mains services, kitchens, bathrooms, secondary amenities, security features, shared facilities and parking provision. The EHS Housing Stock Report 2009 contains more detail about time trends in relation to some of these amenities— none of these are likely to have changed significantly in 2010. Additional findings relating to amenities and services can be found in web tables DA2101 to DA2303. The chapter then examines problems that existed in the local environment, which include those associated with traffic and noise and the general upkeep and misuse of the area.

### Key findings

- Around 86% of dwellings had a mains gas supply, although this varied considerably by dwelling characteristics including tenure and type of area. Private rented dwellings were less likely to have mains gas (78%), as were those located in rural areas (61%).
- Across England, the average sized kitchen was 11m<sup>2</sup>, although a small proportion of dwellings (5%) had a kitchen of less than 5m<sup>2</sup> and around 17% had one that was at least 15m<sup>2</sup> in area.
- The average age of kitchens was 12 years whilst the average age for bathrooms was slightly higher at 15 years. Local authority dwellings were far more likely to have kitchens that were at least 30 years old (14% compared with 6-7% in other tenures) and were twice as likely to have bathrooms that were at least 40 years old (13% compared with 6% in other tenures).
- Around 41% of all dwellings had a second WC and 22% had a second bath or shower room. Some 46% of private sector dwellings had a second WC, compared with only 18% of social sector dwellings. The provision of a second bath or shower room varied more markedly by tenure, from just 2% of social sector dwellings to 26% of private sector dwellings.

- Certain features that would make dwellings more accessible to those with mobility problems were relatively common - 62% had a WC at entrance level, 24% had a flush threshold at the entrance to the property, and 23% had wider doors and circulation space. However, only 16% had level access. Overall, only around 1 million dwellings (5%) possessed all four of these features.
- Across the stock, 76% of dwellings had secure windows and doors, 62% had external lighting, 55% had a door viewer and 30% had a burglar alarm.
- Some 4.2 million dwellings (19%) had at least some shared facilities and services. These were far more prevalent in the social sector (44%) and private rented sector (32%) than in the owner occupied sector where just 9% of homes had any such facilities.
- Some 16% of dwellings were in areas with at least some significant problems in the locality, most commonly those associated with upkeep and misuse. Local authority and private rented dwellings were more likely to be located in areas with these problems than those in other tenures.
- Households consisting of a single person aged under 60; single parent with children; or multi-adult households were more likely to live in homes with significant problems in the local environment than other groups.

## Mains services

### Electricity

- 2.1 Virtually all dwellings in England had a mains electricity supply and 17% of dwellings had an off peak electricity supply<sup>1</sup>, Annex Table 2.1.
- 2.2 The likelihood of dwellings having an off-peak electricity supply was related to their location, build type and age. Dwellings in rural areas were more likely to have an off peak supply (25%), as were homes built after 1980 (22%). Purpose built flats were also much more likely to have off peak electricity, with some 39% of high rise and 29% of low rise possessing this compared with around 13% of semi-detached and terraced houses, Annex Table 2.2.

### Mains gas

- 2.3 Around 86% of dwellings had a mains gas supply, although this varied considerably by dwelling characteristics including tenure and type of area. Private rented dwellings were less likely to have mains gas (78%), as were those located in rural areas (61%), Annex Table 2.3. The web tables DA2201

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<sup>1</sup> a supply offered at a lower price than on peak supply. This can be utilised by storage heaters to reduce the cost of heating.

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to DA2203 contain further information on the types of dwellings and households with mains gas.

## Mains drainage

- 2.4 The vast majority (97%) of homes were connected to the mains drainage system. Virtually all (99%) of homes with other types of drainage were located in rural areas and the most common system was a septic tank, found in around 513,000 homes, Annex Table 2.1.

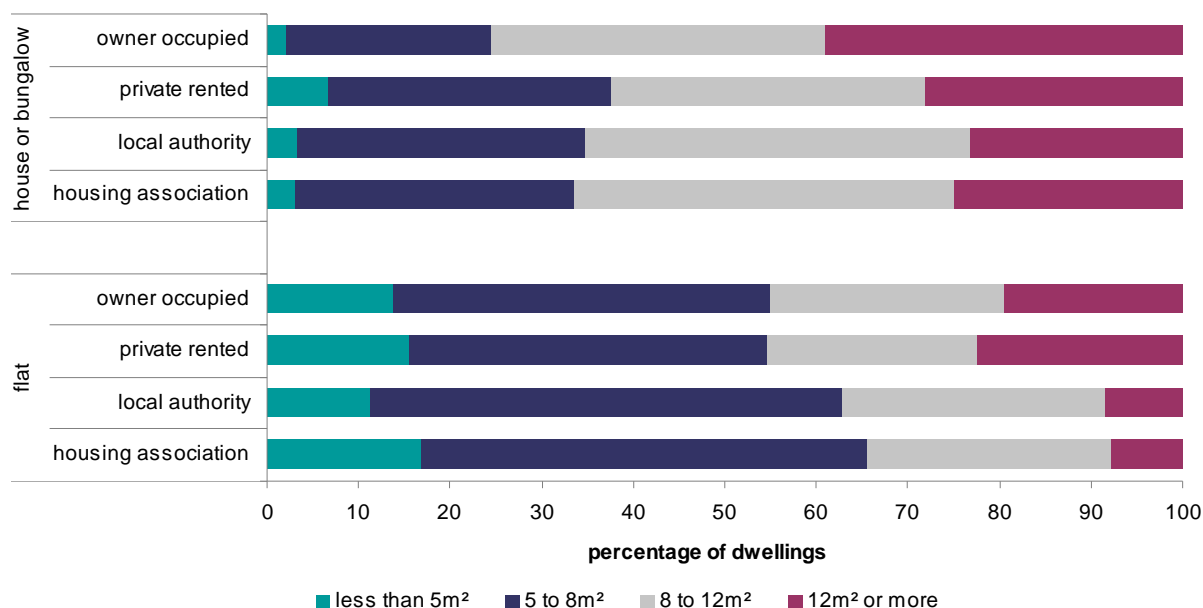
## Kitchens and bathrooms

- 2.5 This section examines the size of kitchens and how this varied by tenure. It then examines the age of kitchens and bathrooms and how these varied by both tenure and dwelling age.

### Size of kitchens

- 2.6 The average sized kitchen had a floor area of 11m<sup>2</sup>, although a small proportion of dwellings (5%) had a kitchen area of less than 5m<sup>2</sup> and around 17% had a kitchen of at least 15m<sup>2</sup>, Annex Table 2.4. Some 3 million dwellings (13%) also had additional space to accommodate amenities in a separate utility room. Those dwellings with smaller kitchens (under 8m<sup>2</sup>) were, however, very unlikely to have the additional space provided by a utility room: just 6% of such dwellings had this facility, Annex Table 2.5.
- 2.7 Owner occupied dwellings were less likely to have kitchens of 8m<sup>2</sup> or less (27%) than those in other tenures (44%-48%). Similarly, owner occupied dwellings were significantly more likely to have larger kitchens. Around 38% of owner occupied dwellings had kitchens of at least 12m<sup>2</sup> in area compared with 26% of privately rented, 18% of housing association and 16% of local authority homes, Annex Table 2.4.
- 2.8 Whilst flats were more likely to have smaller kitchens, and the social sector had a higher proportion of these among its stock, the type of dwelling did not account for all of the variation in kitchen size between the tenures. Around 22% of private rented flats had a kitchen of 12m<sup>2</sup> or more compared with just 9% of housing association flats and 8% of local authority flats. Some 24% of owner occupied houses and bungalows had a kitchen of 8m<sup>2</sup> or less compared with 38% that were private rented, 35% rented from housing associations and 33% from local authorities, Figure 2.1.

**Figure 2.1: Percentage of kitchens in given size groups by tenure and dwelling type, 2010**



**Base: all dwellings**

**Note: underlying data are presented in Annex Table 2.6**

**Source: English Housing Survey, dwelling sample**

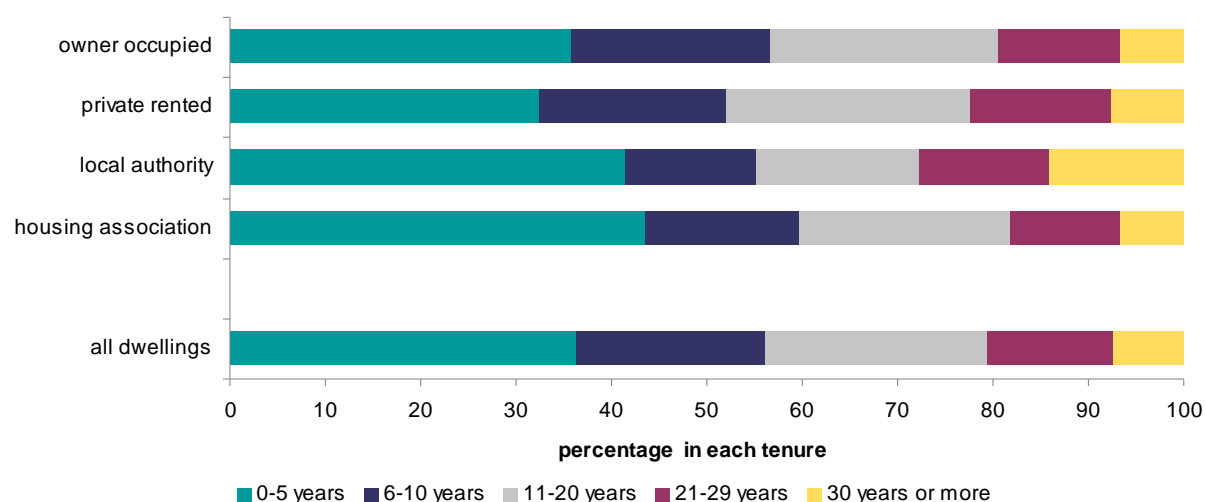
## Age of kitchens

2.9 The average age of kitchens across the housing stock was 12 years, Annex Table 2.7. Around 36% of kitchens were 5 years old or less, but around 7% were at least 30 years old<sup>2</sup>.

2.10 Whilst the average age for kitchens showed little variation by tenure, the age distribution of kitchens did vary in this respect. Local authority dwellings were far more likely to have kitchens that were at least 30 years old (14%) compared with all other sectors (6-7%), Figure 2.2. The private sector had a slightly lower proportion of dwellings with kitchens that were 5 years old or less (33-36%) than social sector (42-43%).

<sup>2</sup> following consultation with social landlords, the decent homes standard considered a reasonable life expectancy for kitchens to be 30 years, after which they would most likely need replacing on grounds of repair (while acknowledging that tenants may prefer those amenities to be replaced more frequently). See *A Decent Home: Definition and Guidance for implementation* (2006).

**Figure 2.2: Percentage of kitchens in different age groups by tenure, 2010**



**Base: all dwellings**

**Note: underlying data are presented in Annex Table 2.7**

**Source: English Housing Survey, dwelling sample**

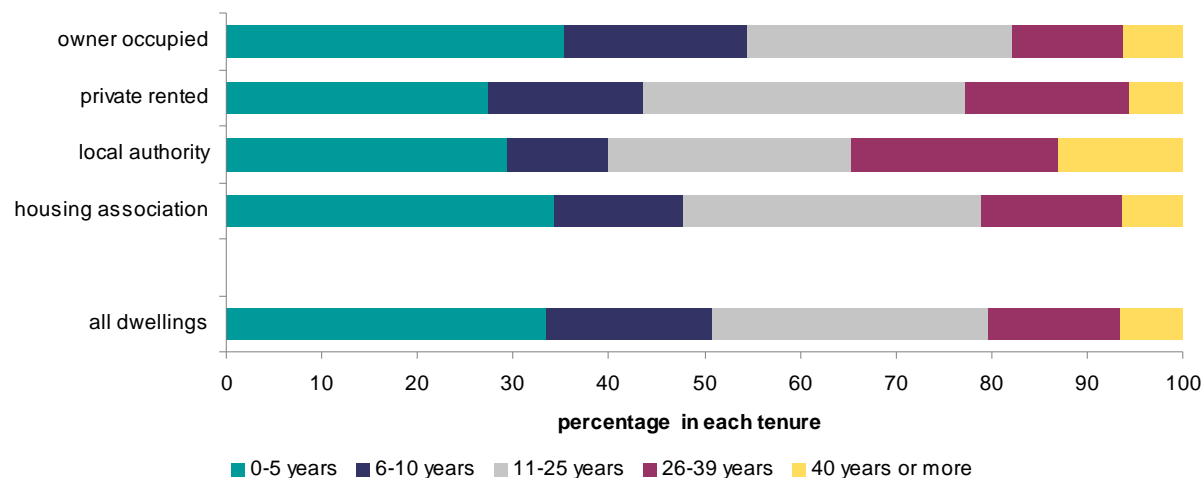
## Age of bathrooms

- 2.11 The average age for bathrooms across the housing stock was slightly higher than for kitchens, at 15 years, Annex Table 2.8. Some 34% of dwellings had bathrooms that were less than 6 years old and 7% had bathrooms that were at least 40 years old, Figure 2.3<sup>3</sup>.
- 2.12 The average age for bathrooms was notably higher in local authority dwellings (around 20 years), compared to those that were owner occupied (14 years). Local authority dwellings were also twice as likely to have bathrooms at least 40 years old than all other tenures (13% compared to 6%). Private rented dwellings (28%) and local authority dwellings (30%) were less likely to have newer bathrooms (under 6 years old) than owner occupied and housing association dwellings (around 35%).

<sup>3</sup> following consultation with social landlords, the decent homes standard considered a reasonable life expectancy for bathrooms to be 40 years, after which they would most likely need replacing on grounds of repair (while acknowledging that tenants may prefer those amenities to be replaced more frequently). See *A Decent Home: Definition and Guidance for implementation* (2006).



**Figure 2.3: Percentage of bathrooms in different age groups by tenure, 2010**



Base: all dwellings

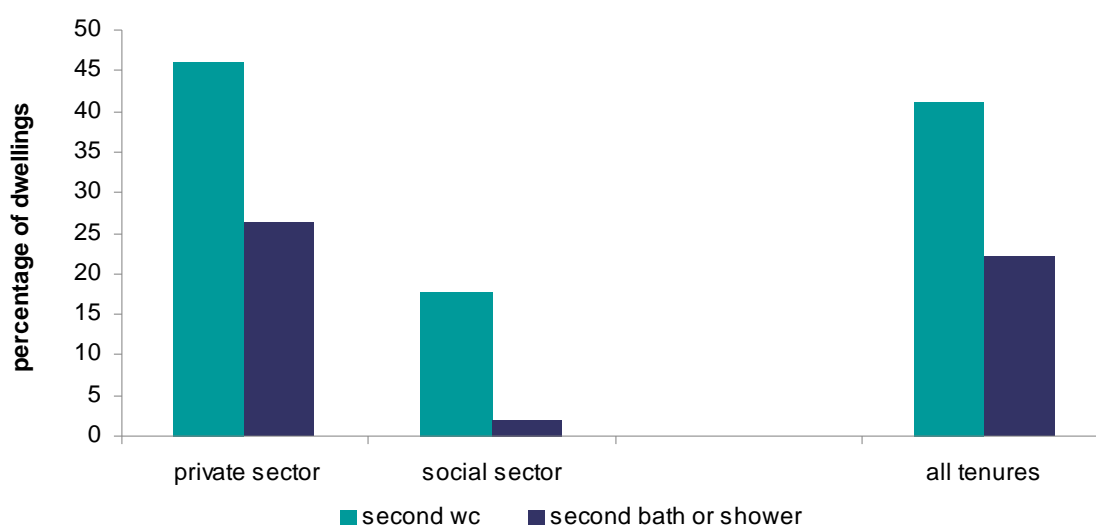
Note: underlying data are presented in Annex Table 2.8

Source: English Housing Survey, dwelling sample

## Secondary amenities

2.13 Around 41% of all homes had a second WC and 22% had a second bath or shower. The proportion with secondary amenities, however, varied considerably by tenure: 46% of private sector dwellings had a second WC, compared with just 18% of social sector dwellings. The provision of a second bath or shower varied more markedly, with just 2% of social sector dwellings possessing this amenity compared with 26% of private sector dwellings, Figure 2.4.

**Figure 2.4: Secondary amenities by tenure 2010**



Base: all dwellings

Note: underlying data are presented in Annex Table 2.9

Source: English Housing Survey, dwelling sample

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- 2.14 The web tables DA2101 to DA2103 provide further details of the incidence of secondary amenities for dwellings and households.

## Accessibility

- 2.15 In 2010, around 4 million households contained at least one person with a mobility problem. The EHS physical survey assesses the presence of a number of features that enable dwellings to be more accessible for these and other people. The four features<sup>4</sup> which are considered to be the most important for enabling people with mobility problems to either access their home or visit another home are: level access; flush threshold; sufficiently wide door and circulation space to move around; and use of a WC on the ground or entry floor.
- 2.16 Overall, 62% of dwellings had a WC at entrance level, 24% had a flush threshold to the property and 23% had sufficiently wide doors and circulation space. However, only 16% had level access into the dwelling. Only around 1 million dwellings (5%) possessed all four of these features and could therefore be considered fully 'visitable'. Around 9% of dwellings had three features, 20% had two and 40% had one. Almost 6 million dwellings (26%) had none of these four features, Annex Table 2.10.
- 2.17 The 'visitability' of homes varied markedly according to the age and type of dwelling. The newest homes built after 1990 and flats were far more likely to have three or all four visitability features, Table 2.1.

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<sup>4</sup>these four features form the basis for the requirements in part L of the Building Regulations, although the EHS cannot exactly mirror the detailed requirements contained there.

**Table 2.1: Proportion of dwellings with visitability features, by age and type, 2010**

|                             | number of visitability features |             |             |            |            | total        | sample size   |
|-----------------------------|---------------------------------|-------------|-------------|------------|------------|--------------|---------------|
|                             | none                            | one         | two         | three      | all four   |              |               |
| <i>percentages</i>          |                                 |             |             |            |            |              |               |
| <b>dwelling type</b>        |                                 |             |             |            |            |              |               |
| terraced house              | 43.8                            | 37.4        | 11.9        | 4.8        | 2.2        | 100.0        | 4,816         |
| larger houses and bungalows | 23.3                            | 46.8        | 20.6        | 6.5        | 2.9        | 100.0        | 8,287         |
| flats                       | 10.0                            | 26.2        | 28.9        | 20.6       | 14.2       | 100.0        | 3,567         |
| <b>dwelling age</b>         |                                 |             |             |            |            |              |               |
| pre 1945                    | 33.4                            | 43.8        | 17.4        | 4.7        | 0.8        | 100.0        | 5,933         |
| 1945-64                     | 32.1                            | 41.7        | 18.6        | 6.2        | 1.5        | 100.0        | 3,609         |
| 1965-80                     | 21.9                            | 43.1        | 22.0        | 9.8        | 3.3        | 100.0        | 3,593         |
| 1981-90                     | 20.3                            | 38.4        | 24.0        | 11.9       | 5.3        | 100.0        | 1,429         |
| post 1990                   | 8.8                             | 23.2        | 22.1        | 21.1       | 24.7       | 100.0        | 2,106         |
| <b>all dwellings</b>        | <b>26.5</b>                     | <b>40.1</b> | <b>19.8</b> | <b>8.8</b> | <b>4.9</b> | <b>100.0</b> | <b>16,670</b> |

Base: all dwellings

Note: underlying data are presented in Annex Table 2.11

Source: English Housing Survey, dwelling sample

2.18 Housing association homes were far more likely to have all four features than dwellings in other tenures; especially owner occupied. Around 14% of housing association dwellings had all four features compared with 3% of owner occupied dwellings, Annex Table 2.11. This is largely because a relatively high proportion of housing association homes are newer flats.

## Security

2.19 This section examines key security features present in homes in 2010 and how these vary by dwelling characteristics. These features are: security afforded by windows and doors; external lighting; burglar alarms; door viewers; and additional security measures for flats with common areas. The web tables DA2301 to DA2303 contain further details on the types of homes and households with these security features.

### Windows, doors and external lighting

2.20 The survey assesses the security afforded by the main entrance door to the dwelling; other external doors; and any accessible windows in terms of how easy it would be to physically break into the dwelling.

- 
- 2.21 Around 76% of dwellings had secure windows and doors, although this proportion varied considerably for different groups of homes. Dwellings that were most likely to have secure windows and doors were those built after 1990 (90%) and purpose built high rise flats (86%). Homes least likely to have secure windows and doors were converted flats (57%), dwellings built before 1919 (58%) and private rented homes (66%), Annex Table 2.12.
- 2.22 Some 62% of all dwellings had external lighting (this includes those where external communal lighting was provided as a shared facility). Around 68% of housing association dwellings had this feature compared with 53% of private rented homes. The proportion of dwellings with external lighting varied markedly by dwelling age, from just 42% of dwellings built before 1919 to 88% of those built after 1990. Less than 50% of terraced houses and converted flats had external lighting compared with 95% of purpose built high rise flats, Annex Table 2.13.

### Burglar alarms and door viewers

- 2.23 Some 30% of dwellings had a burglar alarm. Burglar alarms were far more common in the owner occupied sector (37%) than in private rented (20%) and social sector homes (12%). Detached houses (55%) and dwellings built after 1990 (43%) were also more likely to have burglar alarms. Interestingly, dwellings in the northern regions were much more likely to have burglar alarms than those located elsewhere (43% compared with 27% in rest of England and 21% in London and the south east), Annex Table 2.14.
- 2.24 Some 55% of all dwellings had a door viewer and these were more common in the social sector, particularly among housing association dwellings where 75% of stock had this security feature. In contrast, only 48% of privately rented dwellings had a door viewer. This feature was also particularly common in high rise flats (84%) and newer dwellings built after 1990 (72%). Converted flats (38%) and dwellings built before 1919 (44%) were significantly less likely to have a door viewer, Annex Table 2.15.

### Additional security for flats with common areas

- 2.25 Some 3.2 million flats had common areas<sup>5</sup>, and the survey recorded the presence of additional security measures for these dwellings. The survey estimates that 76% of these flats had a controlled entry system, most (94%) of which were working at the time of survey. These systems were most prevalent in flats built after 1980 (90%), northern regions (83%), and in city centres and other urban areas (78%). Flats built before 1919 were least likely to have entry systems (61%), along with those in the private rented sector (69%), Annex Table 2.16.

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<sup>5</sup> common areas are accessways and shared spaces located inside the block. Accessways include entrance lobbies, stairs, landings and corridors.

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- 2.26 Concierges were less common, being present for around 200,000 (6%) of all flats with common areas. Of those flats with a concierge service, 57% were in the private rented sector and 55% were in the newest dwellings built after 1980. In terms of location, 49% of all flats with concierges were located in London and south east regions, Annex Table 2.17.

## Shared facilities

- 2.27 Shared facilities are those used by, or provided for, the occupants of more than one dwelling. Whilst they are sometimes essential and often useful, these facilities and services can also act as the locus for anti-social behaviour as they do not ‘belong’ to any individual dwelling. The EHS examines the following key types of facilities and services which may be associated with the survey dwelling<sup>6</sup>:

### **Box 1: Shared facilities and services**

**stores and common rooms, including any of the following:** tenant stores; bin stores; paladin stores; laundry; drying room; community room; warden /caretaker office.

**communal parking facilities, including any of the following:** garages; multi storey parking; underground parking; roof parking; other covered parking; open air parking bays.

**common/electrical services, including any of the following:** CCTV; TV reception; lightning conductors; communal heating; burglar alarm system; external lighting.

**surfaces, including any of the following:** drying areas; children’s play areas; unadopted estate roads.

**landscaping, including any of the following:** paths; walls and fences; hard landscaping; grass and planting.

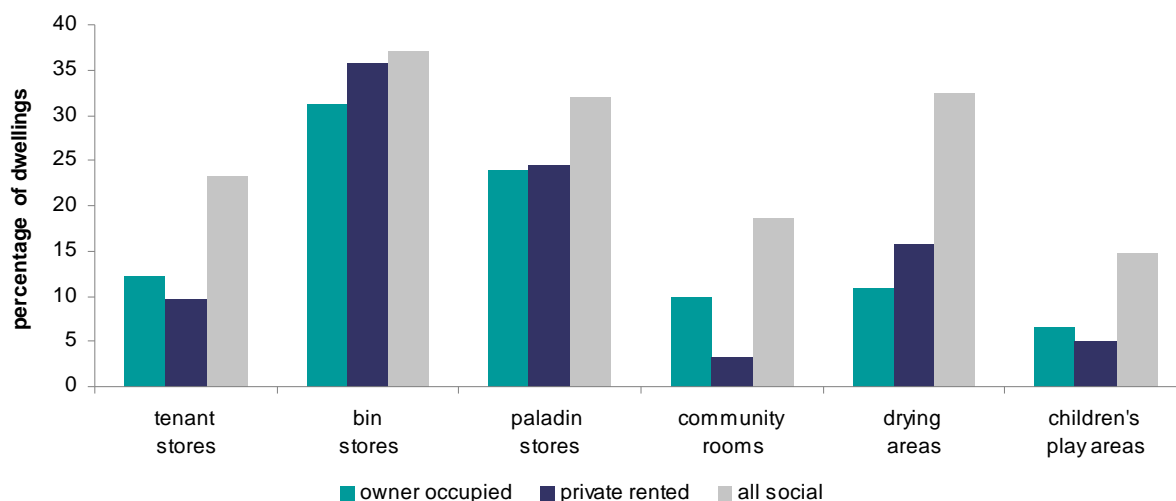
- 2.28 Some 4.2 million homes (19%) had at least some shared facilities and services. Of these, 74% were low rise flats and 40% were social rented. Some 34% of them were built after 1980 and a further 28% were built between 1965 and 1980, Annex Table 2.18.
- 2.29 Shared facilities were more common with social rented homes (44% of all dwellings) than private rented homes (32%). Only 9% of all owner occupied

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<sup>6</sup>EHS counts all facilities and services that might be used by occupants of the survey dwelling. For large estates, it only covers those facilities located within a 100m radius of the survey dwelling.

dwellings had any such facilities, Annex Table 2.19. Of all dwellings with some shared facilities, social sector dwellings were far more likely to have each of the key facilities and services, with the exception of bin stores, Figure 2.5<sup>7</sup>.

**Figure 2.5: Percentage of dwellings with key facilities and services, by tenure, 2010**



**Base: all dwellings with shared facilities and services**

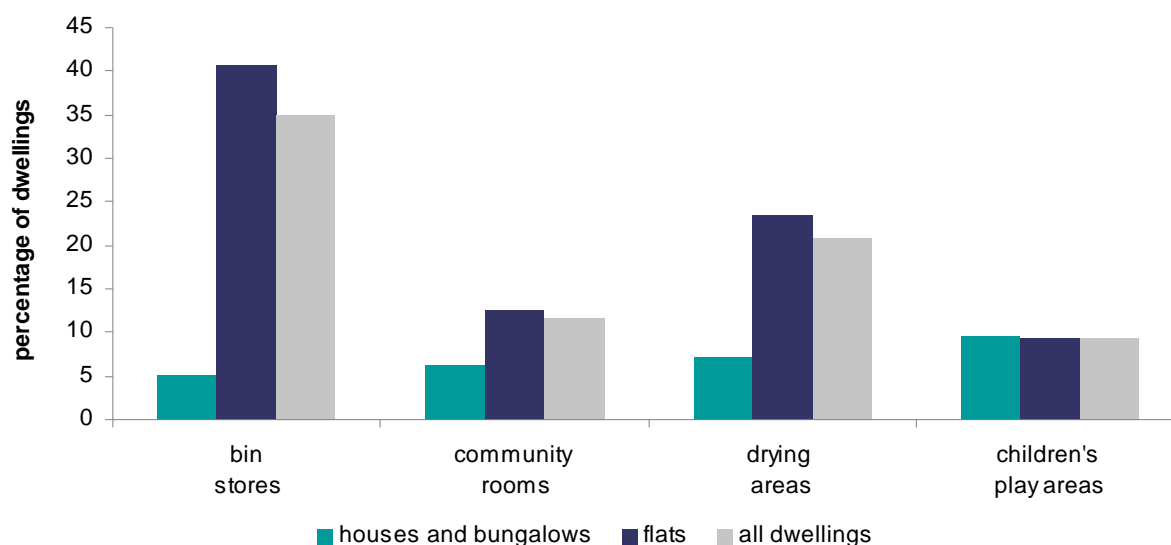
**Note: underlying data are presented in Annex Table 2.20**

**Source: English Housing Survey, dwelling sample**

2.30 The majority (80%) of flats had some shared facilities, compared with just 4% of houses and bungalows. Flats were much more likely than houses to have each main type of shared facilities, with the exception of children's play areas, Figure 2.6.

<sup>7</sup> the survey records the provision of children's play areas which for the exclusive use of residents of dwellings with this shared facility. Any additional children's recreational areas in the vicinity are not recorded.

**Figure 2.6: Percentage of dwellings with key facilities and services, by dwelling type, 2010**



**Base: all dwellings with shared facilities and services**

**Note: underlying data are presented in Annex Table 2.21**

**Source: English Housing Survey, dwelling sample**

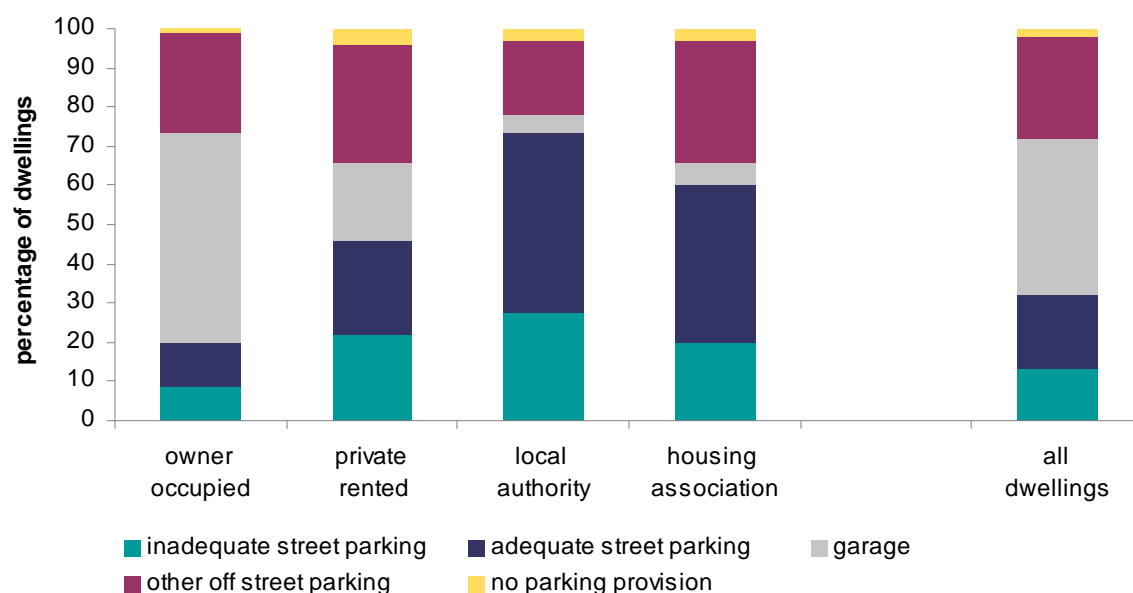
2.31 High rise flats were more likely to have children's play areas (25%) and community rooms (18%) compared with low rise flats (8% and 12% respectively), Annex Table 2.21.

## Parking

2.32 The web tables DA2201 to DA2203 provide further information on the type of parking provision by different dwelling and household characteristics.

2.33 In 2010, 40% of dwellings had use of a garage, 26% had other off street parking, 32% relied on street parking, and 2% of homes had no parking provision whatsoever. The type of parking provision varied considerably by tenure – 73% of local authority dwellings relied on street parking compared with 20% of owner occupied homes. Similarly, 54% of owner occupied dwellings had a garage compared with just 5-6% of social sector dwellings, Figure 2.7.

**Figure 2.7: Parking provision by tenure, 2010**



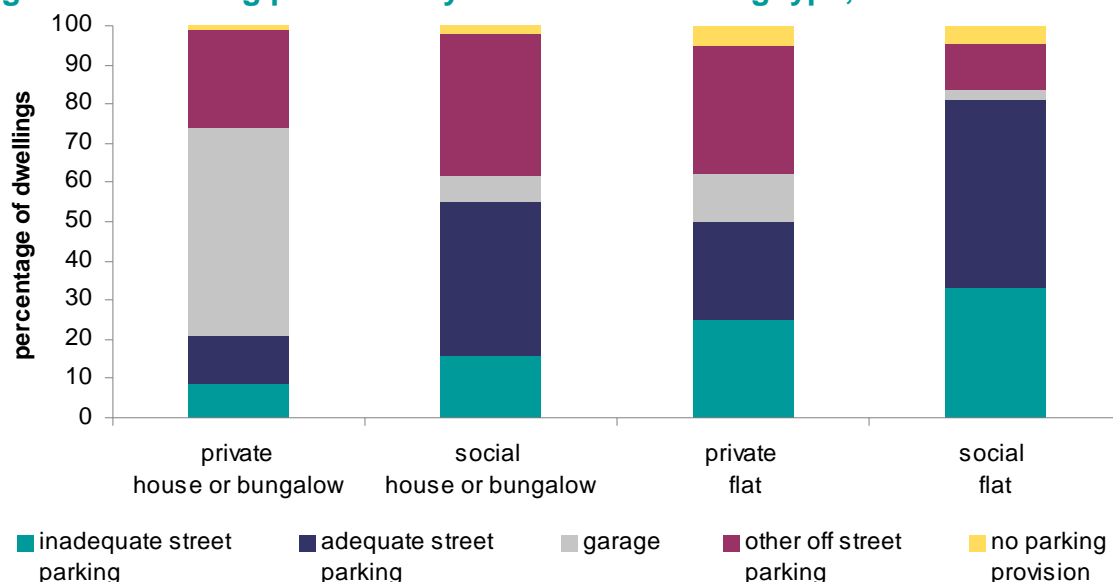
Base: all dwellings

Note: underlying data are presented in Annex Table 2.22

Source: English Housing Survey, dwelling sample

2.34 Dwelling types also affect the level of parking provision. Generally speaking, houses and bungalows were much more likely to have garages than flats (48% compared with 9%), Annex Table 2.23. However, social sector houses or bungalows were less likely to have garages (7%) than private sector flats (13%), Figure 2.8.

**Figure 2.8: Parking provision by tenure and dwelling type, 2010**



Base: all dwellings

Note: underlying data are presented in Annex Table 2.23

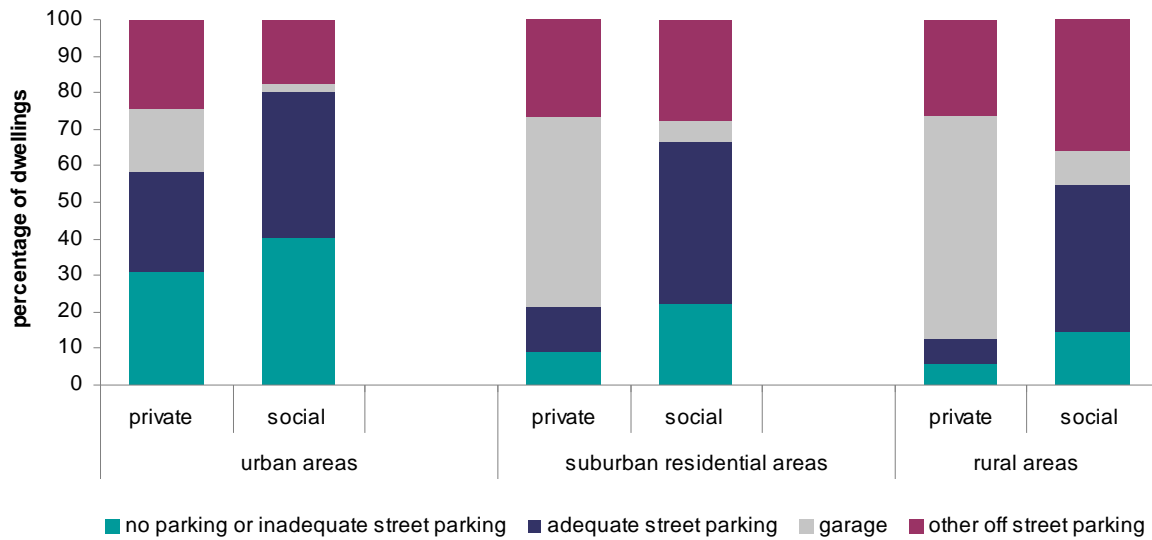
Source: English Housing Survey, dwelling sample

2.35 Parking provision was also strongly related to dwelling location. For example, 56% of homes in rural areas had a garage compared with 44% in suburban



areas and just 14% in city and urban areas. In both the private and social sectors, parking provision worsened as building density increased, Figure 2.9

**Figure 2.9: Parking provision by tenure and location, 2010**



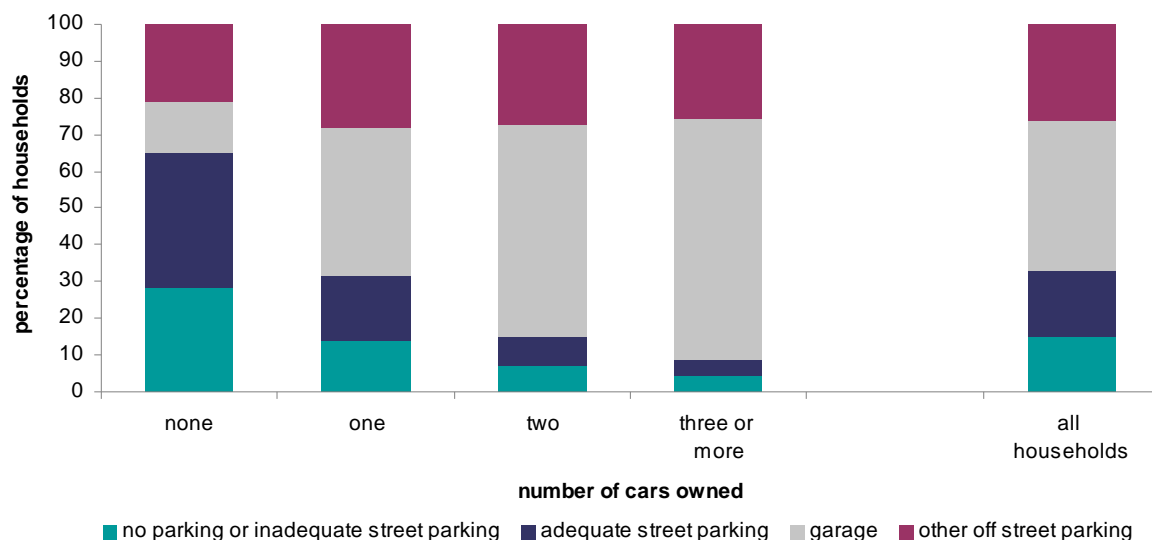
Base: all dwellings

Note: underlying data are presented in Annex Table 2.24

Source: English Housing Survey, dwelling sample

2.36 Parking was not necessarily an issue for all households because 23% did not have a car. In general, the more cars a household had, the more likely they were to have a garage or other off street parking. About 6% of households had 3 or more cars and 91% of these had a garage or off street parking provision. Around 14% of households with one car and 7% with two cars had no or inadequate street parking, Figure 2.10.

**Figure 2.10: Parking provision by car ownership, 2010**



Base: all households

Note: underlying data are presented in Annex Table 2.25

Source: English Housing Survey, household sub-sample

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## Problems in the local environment

- 2.37 Environmental problems can have a significant impact on how residents feel about their home and neighbourhood. Some types of problems are symptomatic of wider social and economic problems such as anti-social behaviour and low demand. Some can adversely affect the physical and mental health of residents e.g. accumulations of rubbish may attract vermin, high levels of air pollution may trigger or aggravate respiratory conditions, persistent or continual noise can cause stress.
- 2.38 This analysis uses information from the surveyors' assessments and observations rather than the occupants' assessments or opinions. The surveyors' assessments will miss some problems because they represent a snapshot at the time of survey e.g. at the time of their visit there may be no problem of street parking. However, because the assessments are impartial and made according to the same specified guidelines, they provide a more consistent benchmark for comparing the level and seriousness of problems in different types of areas than those made by the occupants.
- 2.39 The problems can be grouped into three main types as below:

### **Box 2: Types of problem in local environment**

**utilisation:** vacant sites; vacant or boarded-up buildings; non-conforming uses; and intrusive industry

**traffic and transport:** heavy traffic; intrusion from motorways or arterial roads; railway/aircraft noise; and ambient air quality

**upkeep and misuse:** litter/rubbish; graffiti; dog/other excrement; condition of dwellings; vandalism; scruffy gardens/landscaping; scruffy/neglected buildings; condition of roads/pavements and street furniture; and nuisance from street parking

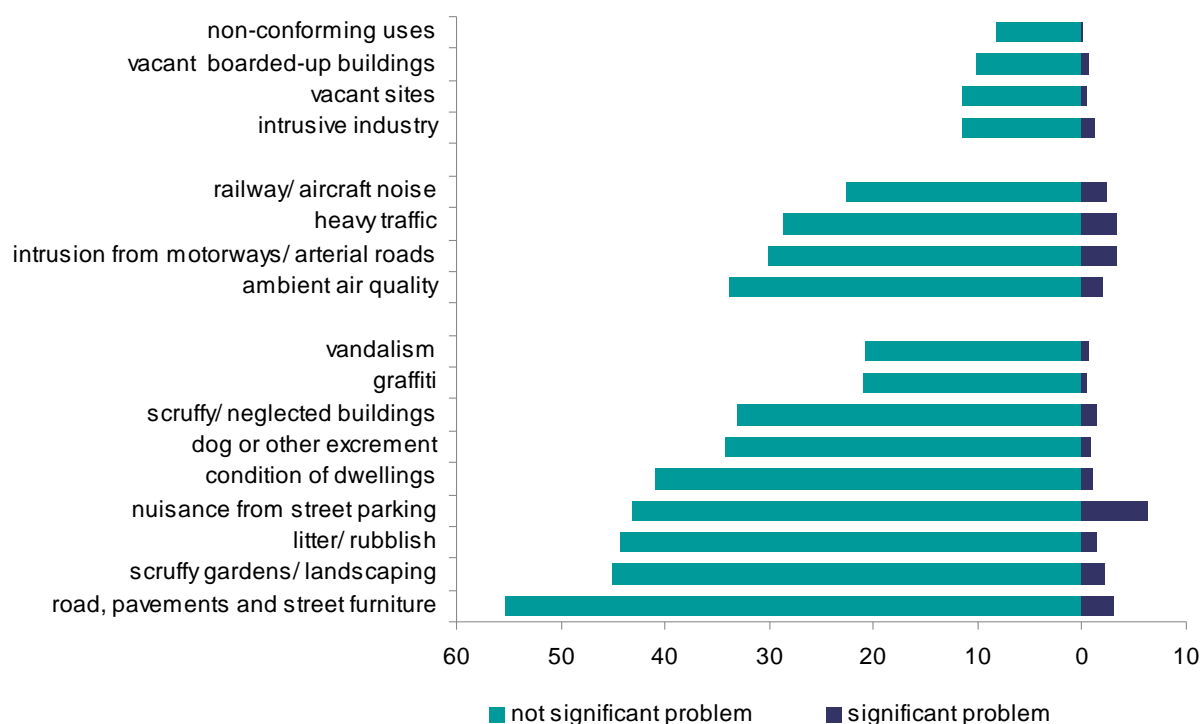
- 2.40 The most common individual problem of any type noted by surveyors related to the poor condition of roads, paths and street furniture, recorded for 58% of dwellings. Other common problems found were nuisance from street parking (49%); scruffy gardens and landscaping (47%); and litter/rubbish (46%). In all of these categories, however, the vast majority were recorded as not being significant problems<sup>8</sup>, Figure 2.11.
- 2.41 The level of problems which surveyors classed as significant was much lower, and the most common significant problems were concerned with parking and

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<sup>8</sup> surveyors assessed the extent of each problem on a 5 point scale where 1='no problems' and 5= 'major problems'. Those coded as either 4 or 5 on this scale have been termed 'significant problems'.

traffic – nuisance from street parking (6%); heavy traffic (3%); and intrusion from motorways or arterial roads (3%).

**Figure 2.11: Proportion of dwellings with different problems in the local environment, 2010**



Base: all dwellings

Note: underlying data are presented in Annex Table 2.26

Source: English Housing survey, dwelling sample

### Homes with significant problems in the local environment in 2010

2.42 Some 11% of dwellings were located in areas with significant problems with upkeep and misuse, 7% were affected by significant problems relating to traffic and 2% by significant problems around utilisation. Altogether 16% of dwellings were affected by at least one of these environmental problems. Whilst most of the affected dwellings experienced only one of the main types of problem, around 3% or 680,000 of all dwellings had 2 or all 3 types of problem, Annex Table 2.27.

2.43 The incidence of upkeep and misuse problems was higher for private rented and local authority dwellings (15%) than those owned by housing associations (12%) or those that were owner occupied (9%). The incidence of traffic problems was also higher for private rented homes (11%) than those in other tenures (6-8%). Overall, private rented and local authority dwellings had the highest incidence of any local environmental problem, Figure 2.12.

**Figure 2.12: Proportion of dwellings with significant problems in the local environment by tenure, 2010**



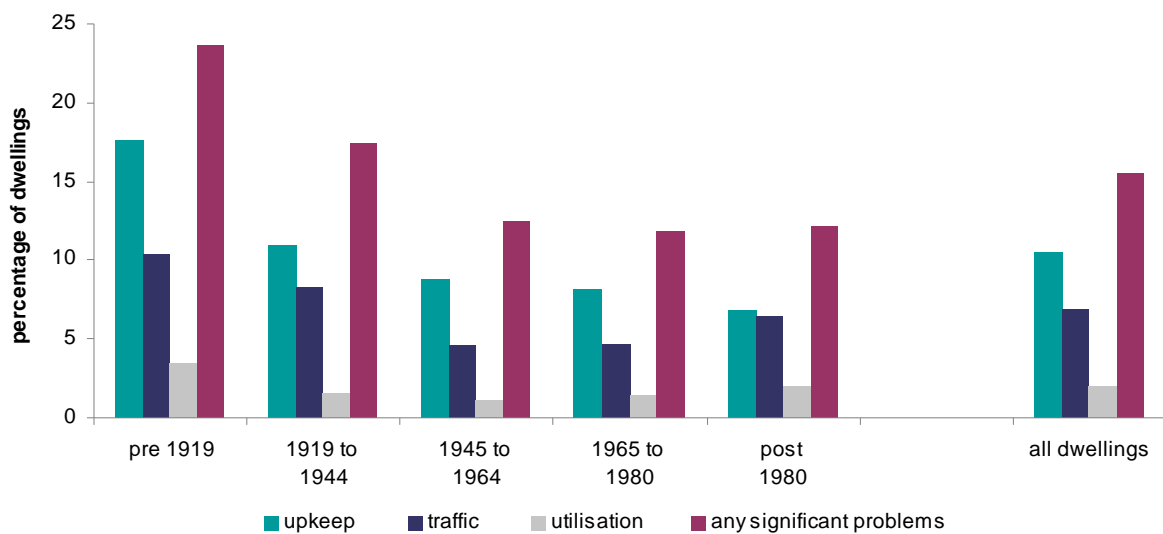
Base: all dwellings

Note: underlying data are presented in Annex Table 2.28

Source: English Housing survey, dwelling sample

2.44 The incidence of significant problems was higher for homes built before 1919 (24%) than those built between 1919 and 1945 (17%), which in turn had a higher incidence than homes built after 1944 (12-13%). This trend was most pronounced for problems related to upkeep; just 7% of dwellings built after 1980 experienced such problems compared with 18% of those built before 1919, Figure 2.13.

**Figure 2.13: Proportion of dwellings with significant problems in the local environment, by dwelling age, 2010**



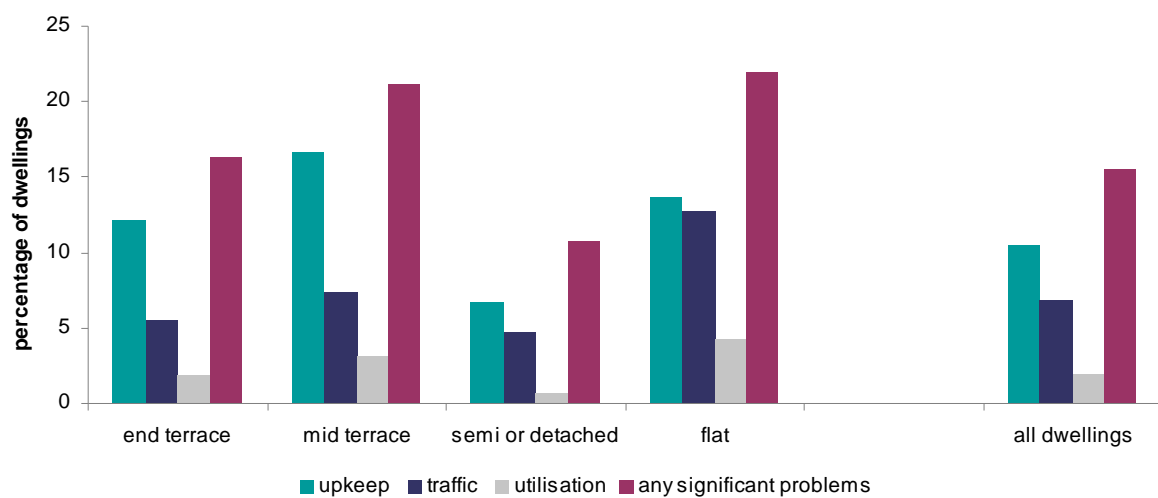
Base: all dwellings

Note: underlying data are presented in Annex Table 2.29

Source: English Housing survey, dwelling sample

2.45 Flats (22%) and mid terrace houses (21%) were more likely to have one or more significant problems than other types of dwellings. Semi or detached houses were least likely to be affected by these problems (11%). The incidence of upkeep problems was also higher for mid terrace houses (17%) than either end terraced houses (12%) or semi or detached houses (7%), Figure 2.14. Flats were more likely to have significant problems related to traffic than all other dwelling types (13% compared with 5-7%). Problems relating to utilisation were higher for flats and mid-terraced houses than for other types of houses.

**Figure 2.14: Proportion of dwellings with significant problems in the local environment by dwelling type, 2010**



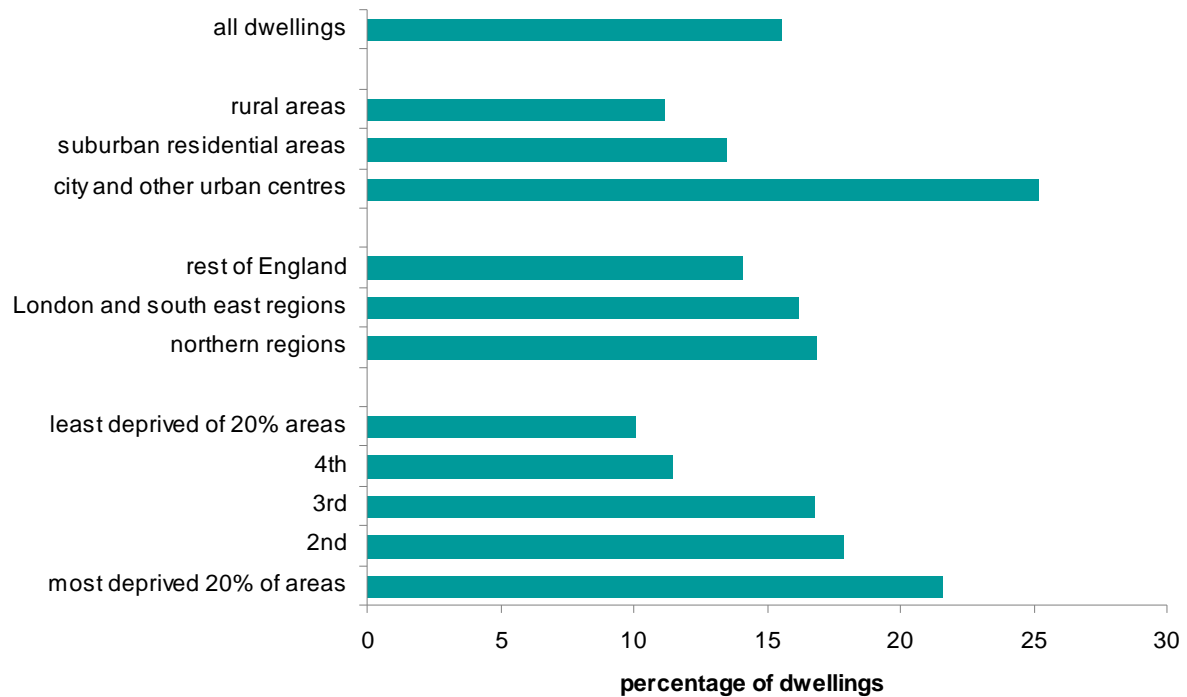
**Base: all dwellings**

**Note: underlying data are presented in Annex Table 2.30**

**Source: English Housing survey, dwelling sample**

2.46 The incidence of significant environmental problems was highest for dwellings in city and urban areas (25%) and those located in areas of greatest deprivation (22%). In contrast the incidence was relatively low for those in rural areas (11%) and the least deprived areas (10%), Figure 2.15. Geographically, these problems were most evident in the North (17%) and London and the Southeast (16%) than elsewhere (14%).

**Figure 2.15: Proportion of dwellings with significant problems in the local environment by dwelling area and location, 2010**



**Base: all dwellings**

**Note: underlying data are presented in Annex Table 2.31**

**Source: English Housing survey, dwelling sample**

2.47 Some 15% of all households lived in a home with significant problems in the local environment. The incidence of these problems was, however, highest among other multi-person households (22%); one person households under 60 (19%); and lone parents with dependent children (18%), Annex Table 2.32.

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# Chapter 3

## Disrepair and dampness

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This chapter examines the total cost of disrepair to the housing stock and how this cost is distributed amongst different categories of homes. It then summarises the changing cost of disrepair over time and examines the incidence of faults to shared facilities. The EHS Housing Stock Reports in 2008 and 2009 examined the incidence of other possible types of faults within the housing stock: as none of these are likely to have changed significantly, they are not covered again in this Report. The final section explores the incidence of dampness and mould within the stock and how this has changed over time.

### Key findings

- The total cost of dealing with basic disrepair (day to day maintenance) within the stock was around £31.8 billion at 2010 prices and the average cost of this type of disrepair was £1,418 per dwelling.
- Over 40% of the total basic repair bill related to homes built before 1919, and just under one quarter related to homes in the private rented sector.
- Since 2001, average basic standardised repair costs (at 2001 prices) have fallen from £19/m<sup>2</sup> to £12/m<sup>2</sup>. All tenures have seen a fall in these costs but the largest reductions were evident in the private rented sector where costs fell by 56% from £40/m<sup>2</sup> in 2001 to £18/m<sup>2</sup>.
- However, in 2010 levels of disrepair in the private rented sector were still significantly higher than in other tenures with an average basic standardised repair cost of £21/m<sup>2</sup> compared with £14/m<sup>2</sup> for all dwellings.
- Of the 4.2 million dwellings with shared facilities around 1.8 million (44%) had some faults to these facilities. Such faults tended to be more common in social rented homes than those in the private sector.
- Most of the faults to shared facilities were the result of normal wear and tear or inadequate maintenance. However, vandalism was a factor in 18% of homes with faults. It was an even larger factor for high rise flats (33%) and social sector homes (28%).

- 
- The proportion of dwellings with damp problems fell from 10% in 2001 to 7% in 2010. This was mainly due to a fall in the incidence of problems caused by penetrating damp.

## Disrepair to dwellings, 2010

### Cost of dealing with disrepair to dwellings in 2010

- 3.1 The cost of dealing with disrepair is examined in two ways: actual or 'required expenditure', and 'standardised costs'. 'Required expenditure' costs are intended to reflect the actual cost for each individual property; these costs incorporate regional and tenure factors and are not adjusted for dwelling floor area, so will be higher for larger dwellings. An index of disrepair, referred to as 'standardised repair cost' is used to compare repair costs for different dwellings, regardless of size, tenure and area, on the same basis, Box 1

#### **Box 1: Repair cost measures**

**required expenditure:** total cost per dwelling in pounds that represents the best estimate of what the specified work would actually cost. These costs are influenced by regional variations in prices and assume different project sizes for work to houses in different tenures. In the owner occupied and private rented sector the contract size for work to houses is taken to be one. In the social rented sector, the contract size is taken as the number of dwellings on the estate, unless the house is not on an estate when it is assumed to be a street property with a contract size of one. For flats, the contract size for exterior works is the size of the block regardless of tenure. This measure assumes that all work is carried out by contractors who operate to health and safety regulations. The costs do not include any VAT or mark up for profit. These costs should not be used for assessing differences in condition between different tenures or dwelling types as they vary according to dwelling size tenure and location.

**standardised repair costs:** this is an index of disrepair which expresses costs in pounds per square metre (£/m<sup>2</sup>) based on prices for the East Midland region (where prices can be regarded as a mid point in the range of regional prices).

Under the standardised repair cost measure it is assumed that all work is undertaken by contractors on a block contract basis. For flats, the size of the contract is assumed to be the whole block. For houses, regardless of tenure, it is taken as a group of five dwellings, representing costs that are more typical of those which may be incurred by a landlord organising the work on a planned programme basis. By reducing costs to a £/m<sup>2</sup> basis the effect of building size on the amount of disrepair recorded is removed. Standardised repair costs should *not* be used as an indication of the actual expenditure required to remedy problems.



3.2 In addition, the survey distinguishes between three different levels and types of repairs needed, Box 2. The bulk of the analysis in this chapter focuses on basic repair costs (day to day maintenance).

**Box 2: Categories of repair measured in the survey**

**urgent repairs:** work which needs to be undertaken to tackle problems presenting a risk of health, safety, security or further significant deterioration in the short term; examples include leaking roofs, broken locks to external doors, and cracked socket covers.

**basic repairs:** any urgent repairs plus additional visible work to be carried out in the medium term.

**comprehensive repairs:** the above two categories, plus any replacements the surveyor has assessed as being needed in the next 10 years.

3.3 Table 3.1 illustrates the average and total expenditure<sup>1</sup> needed to carry out different levels of repairs to the stock. This represents the best estimate of what the work would actually cost at 2010 prices<sup>2</sup>. The average cost of carrying out all basic repairs to the stock was £1,418 per dwelling, which equates to a total repair bill of around £32 billion.

**Table 3.1: Required expenditure to remedy disrepair, 2010**

| <i>all dwellings</i>  | mean<br>expenditure<br>per dwelling (£) | total expenditure<br>(£ billion) |
|-----------------------|---|----------------------------------|
| urgent repairs        | 903                                     | 20.2                             |
| basic repairs         | 1,418                                   | 31.8                             |
| comprehensive repairs | 3,637                                   | 81.4                             |
| <i>sample size</i>    |   | 16,670                           |

**Base: all dwellings**

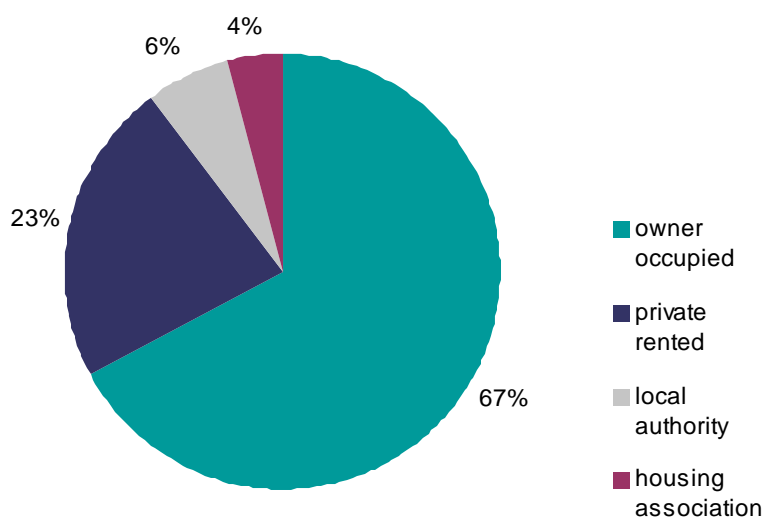
**Source: English Housing Survey, dwelling sample**

<sup>1</sup>for all analyses in this section, average and total expenditure relates to the total housing stock and not just those dwellings requiring each type of repair

<sup>2</sup>required expenditure costs do not include VAT, fees or profit.

3.4 The distribution of these costs between the four tenures was roughly the same for all three types of repair. Although private sector homes made up 83% of the housing stock, they accounted for around 90% of the total required expenditure for basic repairs and comprehensive repairs and 88% of the total for urgent repairs, Figure 3.1.

**Figure 3.1: Distribution of basic repair costs by tenure, 2010**



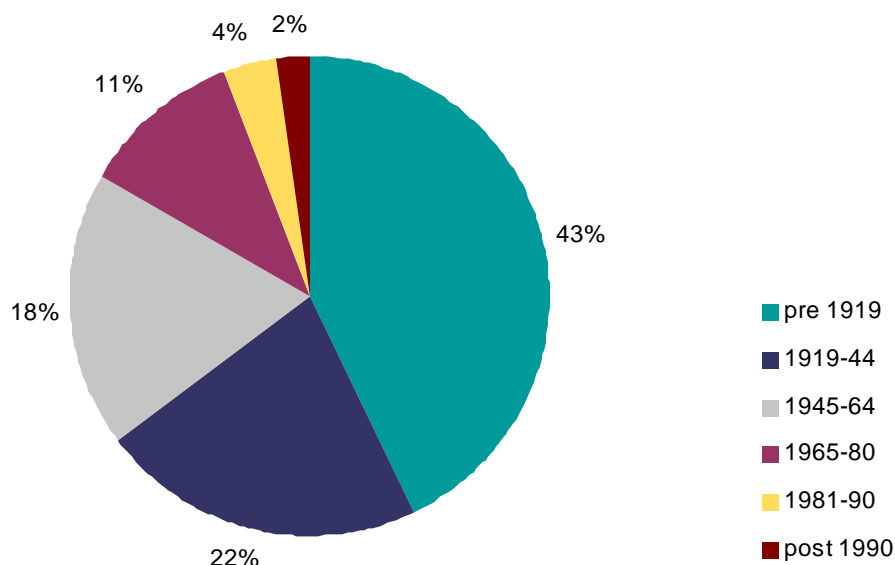
**Base: all dwellings**

**Note: underlying data are presented in Annex Table 3.1**

**Source: English Housing Survey, dwelling sample**

3.5 Not surprisingly, disrepair to dwellings built after 1980 accounted for only a small proportion of basic repair costs (8%). In contrast, dwellings built before 1919, which comprised 22% of the total stock, accounted for around one third of total comprehensive repair costs and over 40% of total urgent and basic repair costs, Figure 3.2 and Annex Table 3.1.

**Figure 3.2: Distribution of basic repair costs by dwelling age**



**Base: all dwellings**

**Note: underlying data are presented in Annex Table 3.1**

**Source: English Housing Survey, dwelling sample**

### Disrepair within different types of dwellings

- 3.6 Standardised repair costs enable comparisons of the level of disrepair in different types of homes and across the different sectors. In 2010 the average standardised basic repair cost per dwelling was £13.6/m<sup>2</sup>. This repair cost, however, varied considerably by dwelling and area characteristics and further information is provided in the web tables DA5201 to DA5203.
- 3.7 Average standardised repair costs were significantly higher for private rented dwellings than those that were owner occupied or social rented (£20.6/m<sup>2</sup> compared with £12.1/m<sup>2</sup> and £12.8/m<sup>2</sup> respectively). This was not simply because private rented dwellings tended to be older (see Chapter 1). Within dwellings built before 1945, the average standardised basic repair cost was around 50% higher for private rented homes than for those in other tenures (£30/m<sup>2</sup> compared with about £20/m<sup>2</sup>), Table 3.2. In comparison, the average level of disrepair was broadly similar in the two rented sectors for homes built from 1945 onwards.

**Table 3.2: Average standardised basic repair cost (£/m<sup>2</sup>) by dwelling age and tenure, 2010**

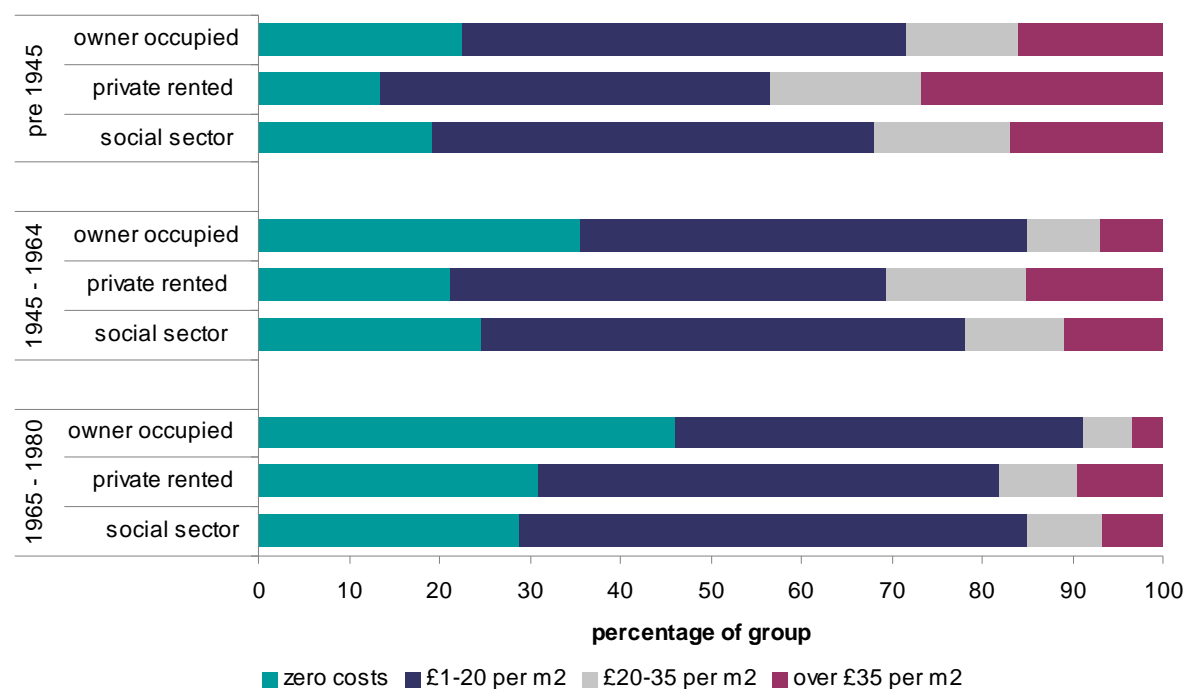
| <i>all dwellings</i> |                       |                       |                      |                    |
|----------------------|-----------------------|-----------------------|----------------------|--------------------|
|                      | <b>owner occupied</b> | <b>private rented</b> | <b>social rented</b> | <b>all tenures</b> |
| pre 1945             | 20.0                  | 30.4                  | 20.5                 | 22.4               |
| 1945-64              | 11.1                  | 19.3                  | 15.2                 | 12.9               |
| 1965-80              | 6.2                   | 12.5                  | 10.6                 | 8.0                |
| post1980             | 3.7                   | 4.1                   | 5.1                  | 4.0                |
| <b>all ages</b>      | <b>12.1</b>           | <b>20.6</b>           | <b>12.8</b>          | <b>13.6</b>        |
| <i>sample size</i>   | <i>8,791</i>          | <i>3,096</i>          | <i>2,276</i>         | <i>2,507</i>       |

**Base: all dwellings**

**Source: English Housing Survey, dwelling sample**

- 3.8 The highest levels of disrepair (dwellings with repair costs over £35m<sup>2</sup>) were more common among private rented dwellings than those in other tenures, irrespective of the age of the dwelling. This was most pronounced among dwellings built before 1945: 27% of private rented dwelling had repair costs of over £35m<sup>2</sup> compared with 17% of social sector dwellings and 16% of owner occupied dwellings, Figure 3.3.

**Figure 3.3: Distribution of standardised basic repair costs by age and tenure, 2010**



**Base: all dwellings built before 1981**

**Note: underlying data are presented in Annex Table 3.2**

**Source: English Housing Survey, dwelling sample**

3.9 The web tables DA5201 to DA5203 provide further information on banded repair costs by different types of dwellings and households.

### Change in disrepair over time from 2001–2010

3.10 This section examines overall changes in the amount of disrepair in the stock since 2001, and which tenures have seen the greatest and least improvement. The section uses the basic standardised costs (£/m<sup>2</sup>) converted to 2001 prices using the Building Cost Information Service (BCIS) National Index<sup>3</sup>. As some of the year on year change in the level of disrepair arises from random fluctuations related to sampling and measurement effects, the section focuses on overall trends from 2001 onwards rather than annual differences.

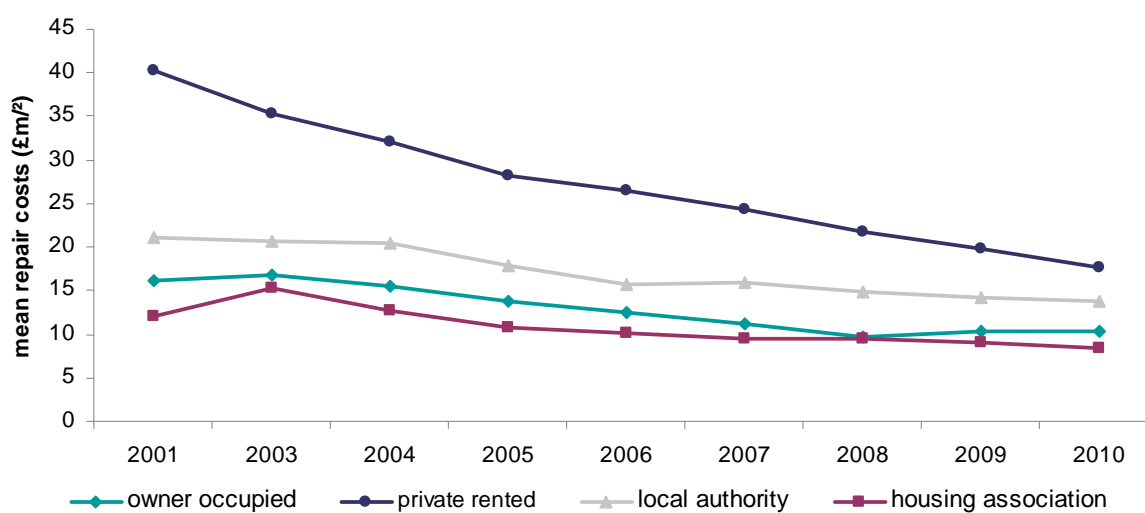
3.11 Since 2001, average basic repair costs have fallen among all tenures from £19/m<sup>2</sup> to £12/m<sup>2</sup> (Annex Table 3.3), indicating a significant overall improvement in the way dwellings have been maintained by owners and landlords on a day to day basis. The largest reductions were evident in the private rented sector where costs fell by 56% from £40/m<sup>2</sup> to £18/m<sup>2</sup>, although

<sup>3</sup>the BCIS is the Royal Institution of Chartered Surveyors' Building Cost Information Service. The data provides an inflation factor for building costs enabling the cost of disrepair in the housing stock in any given year to be measured against a baseline cost.

costs in this sector have always been significantly higher than those in other tenures.

- 3.12 Average basic repair costs have fallen the least dramatically (by 30%) within the housing association sector. Repair costs here have, however, always been the lowest among the tenures, mainly because housing associations have a relatively higher proportion of new dwellings which normally require fewer repairs than older properties, Figure 3.4

**Figure 3.4: Mean basic standardised repair costs by tenure, 2001– 2010**



Base: all dwellings

Note: underlying data are presented in Annex Table 3.3

Sources:

2001 to 2007: English House Condition Survey, dwelling sample

2008 onwards: English Housing Survey, dwelling sample

### Disrepair to key shared facilities

- 3.13 This is examined in relation to those facilities listed in Box 2.1 in Chapter 2: Amenities, Services and the Local Environment, and the analysis relates to the 4.2 million dwellings that had use of at least one of these facilities<sup>4</sup>. For a profile of dwellings with these shared facilities and services, see Chapter 2.
- 3.14 It is estimated that 1.8 million of these dwellings (44%) had a fault to one or more of their shared facilities and services. Although the incidence of any faults was higher in the social sector (48%) compared to the private sector (41%), this was mainly because social sector dwellings were more likely to share a larger number of facilities so there was automatically a greater likelihood of there being a problem present in one or more of them, Annex Table 3.4.

<sup>4</sup>these shared facilities are stores and common rooms, communal parking facilities, common and electrical services (CCTV, TV reception, lightning conductors, communal heating, burglar alarm system and external lighting), surfaces (drying and play areas and unadopted estate roads) and landscaping.

3.15 Around 6% of dwellings with common security and electrical services had some disrepair to these services. At the other end of the scale, over one third of dwellings with shared landscaping had some disrepair to these features, Table 3.3.

**Table 3.3: Number and percentage of faults to shared facilities and services among dwellings with each type of facility, 2010**

*all dwellings with each type of shared facility or service*

| <b>type of shared facility or service</b> | <b>number of dwellings with type of fault (000s)</b> | <b>as percentage of all dwellings with this feature</b> | <b>sample size</b> |
|---|--|---|--------------------|
| common security and electrical services   | 192  | 6.1   | 2,666              |
| stores and common rooms                   | 476  | 17.3  | 2,333              |
| communal parking facilities               | 546  | 18.6  | 2,426              |
| surfaces                                  | 462  | 24.3  | 1,694              |
| landscaping                               | 1,445  | 35.6  | 3,449              |

**Base:** all dwellings with shared facilities and services

**Note:** underlying data are presented in Annex Table 3.4

**Source:** English Housing Survey, dwelling sample

3.16 The incidence of faults in each of these key shared facilities and services was generally higher within the social sector; except in relation to surfaces, Table 3.4.

**Table 3.4: Percentage of faults to shared facilities and services among dwellings with these services by tenure, 2010**

*all dwellings with each type of shared facility or service*

| <b>type of shared facility or service</b> | <b>private sector</b> |                    |                    | <b>public sector</b>  |                    |                    |
|---|-----------------------|--------------------|--------------------|-----------------------|--------------------|--------------------|
|   | <b>without faults</b> | <b>with faults</b> | <b>sample size</b> | <b>without faults</b> | <b>with faults</b> | <b>sample size</b> |
| common/electrical services                | 95.0                  | 5.0                | 1,089              | 92.5                  | 7.5                | 1,577              |
| stores and common rooms                   | 86.6                  | 13.4               | 916                | 78.0                  | 22.0               | 1,417              |
| communal parking facilities               | 83.2                  | 16.8               | 1,098              | 78.6                  | 21.4               | 1,328              |
| surfaces                                  | 76.0                  | 24.0               | 599                | 75.4                  | 24.6               | 1,095              |
| landscaping                               | 67.4                  | 32.6               | 1,496              | 60.1                  | 39.9               | 1,953              |

**Base:** all dwellings with shared facilities and services

**Note:** underlying data are presented in Annex Table 3.4

**Source:** English Housing Survey, dwelling sample

3.17 The survey also assessed the extent to which specific factors contributed to the disrepair evident in shared facilities and services. Among the 1.8 million dwellings affected, normal wear and tear was a contributory factor in 74% of

dwellings, and inadequate maintenance was a factor in 60% of dwellings, Annex Table 3.5. Vandalism was a contributory factor to disrepair in 18% of these dwellings and was more likely to be a contributory factor among social sector dwellings. It was also more likely to be a contributory factor among high rise flats, Table 3.5.

**Table 3.5: Percentage of dwellings where vandalism was a contributory factor to disrepair among shared facilities and services, 2010**

*all dwellings with any fault to shared facilities and services*

|                      | <b>vandalism as a contributor to disrepair</b> | <b>sample size</b> |
|----------------------|--|--------------------|
|                      | <i>% of dwellings</i>                          |                    |
| private sector       | 10.3   | 638                |
| social sector        | 27.5   | 936                |
| low rise flat        | 17.2   | 275                |
| high rise flat       | 32.9   | 1,161              |
| houses and bungalows | 13.8   | 138                |
| <b>all dwellings</b> | <b>17.9</b>                                    | <b>1,574</b>       |

**Base:** all dwellings with shared facilities and services  
**Note:** underlying data are presented in Annex Table 3.6  
**Source:** English Housing Survey, dwelling sample

## Dampness and mould

3.18 Untreated damp conditions and mould growth in the home can have a significant impact on the health of occupants, by increasing the risk of development of respiratory problems. They can also impact significantly on the fabric of the dwelling, leading to its rapid deterioration, creating further problems and so adding to the costs of repair.

### Damp problems in 2010

3.19 This section examines the incidence of any damp, and the three types of dampness that can occur: rising damp; penetrating damp; and serious condensation and mould growth. Full definitions of these terms appear in the Glossary.

3.20 In 2010 around 7% of dwellings had some damp problems. However, damp problems were evident in around 13% of all the following types of homes: private rented dwellings; converted flats; and all dwellings built before 1919. In contrast, just 1% of dwellings built after 1990; 3% of dwellings located in the



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least deprived 20% of areas; and 3% of detached houses were affected by such problems (see web tables DA5101 to DA5103)

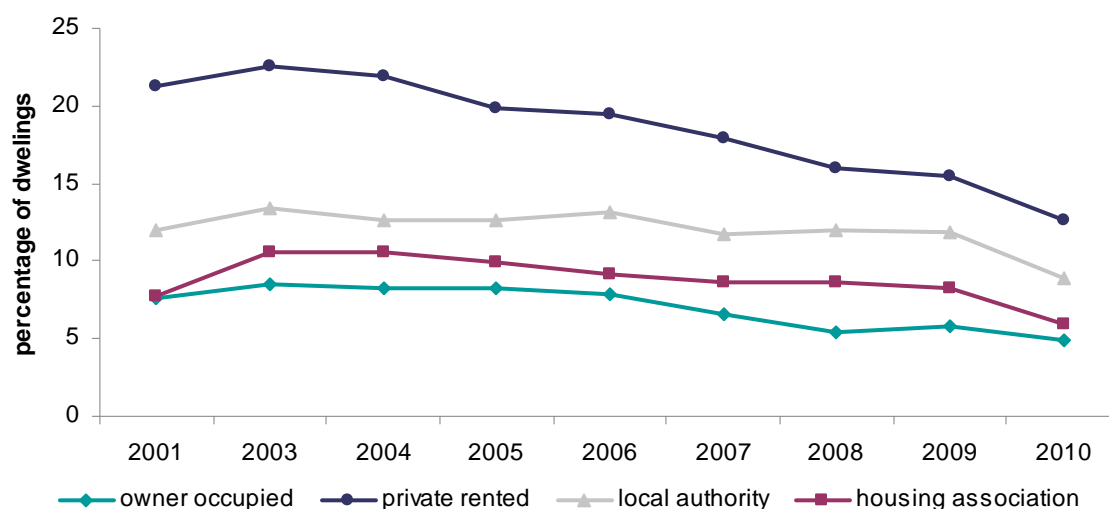
3.21 Serious condensation and mould growth were the most common type of damp problems, and affected 4% of homes in 2010. Rising damp and penetrating damp were less prevalent, each affecting around 2% of homes. Web tables DA5101 to DA5103 provide further details on the prevalence of any damp and on each type of damp by dwelling and household characteristics.

### Damp problems over time from 2001–2010

3.22 As some of the year on year change in the level of damp problems arises from random fluctuations related to sampling and measurement effects, the section focuses on overall trends from 2001 onwards rather than annual differences.

3.23 Overall, the proportion of homes with damp problems reduced from 10% in 2001 to 7% in 2010, Annex Table 3.7. The private rented sector showed the most noticeable improvement from over 21% of homes affected in 2001 to around 13% in 2010. The level of such problems has improved less dramatically in the housing association sector, Figure 3.5.

**Figure 3.5: Any type of damp problem by tenure, 2001–2010**



**Base:** all dwellings

**Note:** underlying data are presented in Annex Table 3.7

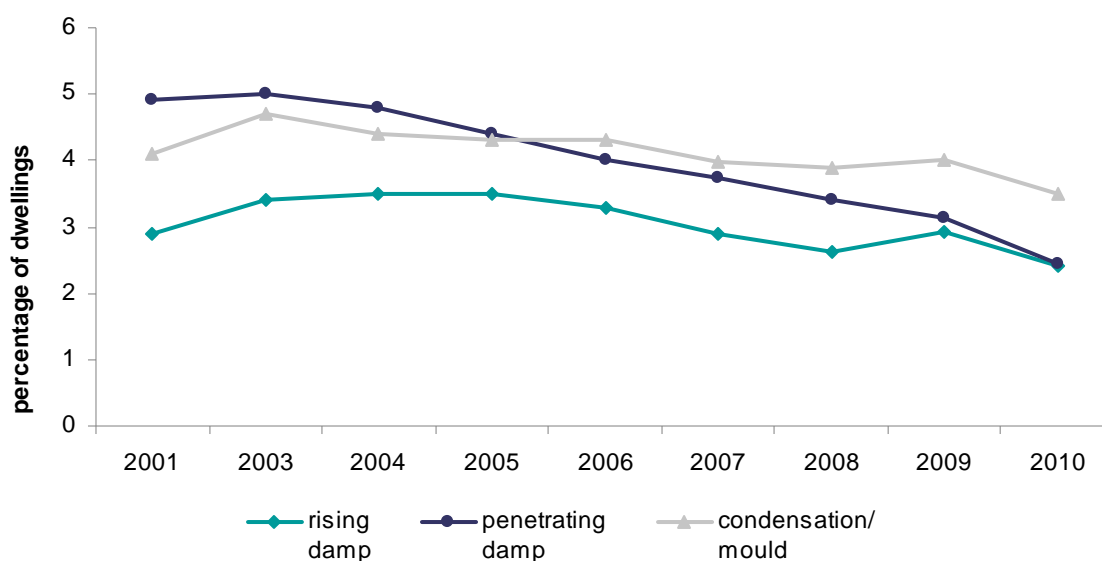
**Sources:**

2001 to 2007: English House Condition Survey, dwelling sample

2008 onwards: English Housing Survey, dwelling sample

3.24 The main reason for this appears to be a reduction in problems related to penetrating damp; these are mainly caused by leaks through the external fabric or leaks from internal plumbing (including central heating radiators). The incidence of these problems has roughly halved from about 5% in 2001 to 2.5% in 2010. This reduction in problems is mirrored by a significant reduction in the total repair costs over the same period (see Figure 3.4). Whilst there appears to have been a small reduction in the incidence of rising damp, the proportion of homes affected by serious condensation or mould has remained almost constant over this period, Figure 3.6.

**Figure 3.6: Incidence of each type of damp, 2001–2010**



**Base:** all dwellings

**Note:** underlying data are presented in Annex Table 3.8

**Sources:**

2001 to 2007: English House Condition Survey, dwelling sample

2008 onwards: English Housing Survey, dwelling sample

3.25 It may appear surprising that the incidence of problems with condensation and mould has not reduced substantially significantly given that considerable progress has been made in improving heating and insulation in dwellings between 2001 and 2010. For example, the average SAP rating in dwellings increased from 47 in 2001 to 55 in 2010 and the proportion of homes with lofts that had at least 150mm of insulation increased from 24% to 43% from 2003 to 2010<sup>5</sup>. However, the same period has also seen marked fluctuations and, in most recent years, increases in fuel costs. These would be likely to increase the incidence of problems with condensation because households may struggle to heat their homes adequately and so may be more reluctant to use extractor fans or to open windows.

<sup>5</sup>see EHS Home Report 2010, chapter 6, Figures 6.1 and 6.6. It is not possible to give equivalent 2001 figures for loft insulation as the English House Condition Survey only surveyed lofts in houses built before 1980.

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# Chapter 4

## Decent homes

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This chapter summarises how the number of dwellings failing the Decent Homes standard has changed over time and how this varies by tenure. It identifies which categories of homes were most likely to be non-decent in 2010, and the reasons for failure. It also presents estimated costs for carrying out the necessary work to make these dwellings decent and explores the number and profile of homes where such work may be problematic.

### Key findings

- The proportion of dwellings failing the Decent Homes standard declined steadily from 35% in 2006 to 27% in 2010. The largest improvements were evident in the local authority sector.
- The main reason for the improvements has been the reduction in the proportion of homes failing the thermal comfort criterion over this period (from 17% to 10%). There were smaller, but still significant, reductions in the proportions failing due to HHSRS and disrepair, although the proportion failing due to lack of modern facilities has remained at a fairly constant level throughout this period.
- In 2010, homes built before 1945; converted flats; and those located in hamlets or isolated areas were much more likely to fail the standard than average.
- The average costs of works required to deal with non-decent homes was £5,537 per dwelling. However, costs varied considerably and average costs of work were significantly higher for private sector homes; homes built before 1919; detached houses; and those located in hamlets or isolated areas.
- It is estimated that some 27% of non-decent homes were difficult to treat because the required work presented technical complications or the costs of work exceeded £20,000.

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## Decent Homes

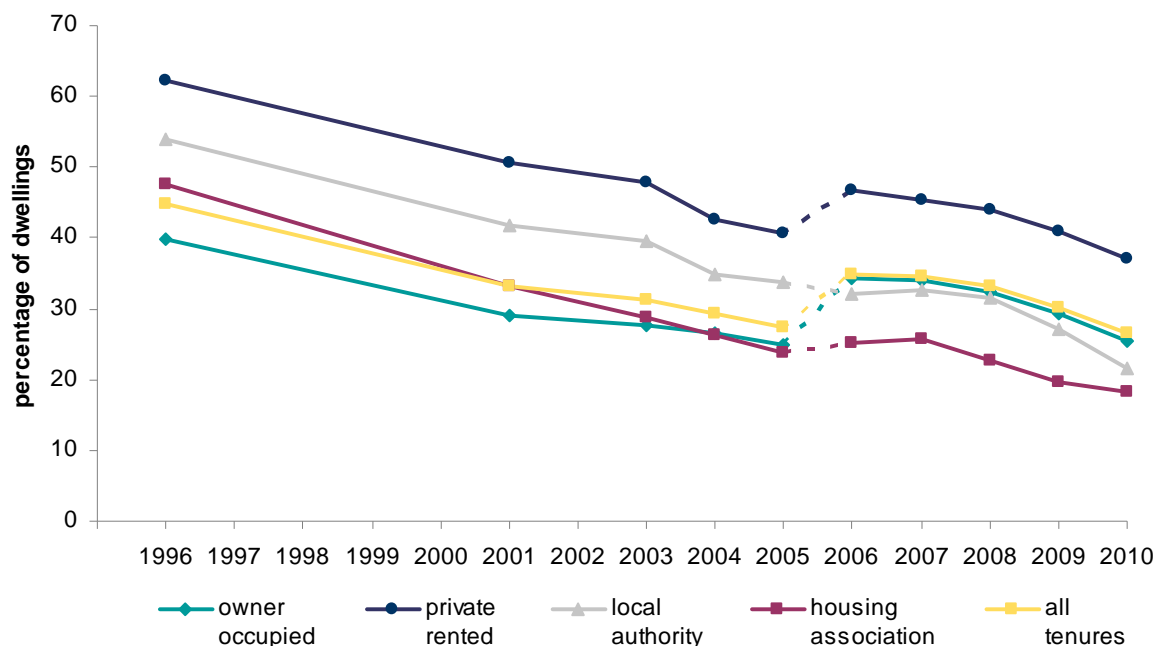
### Trends over time

**Box 1: For a dwelling to be considered ‘decent’ it must**

- meet the statutory minimum standard for housing (the Housing Health and Safety System (HHSRS) since April 2006). Homes posing a Category 1 hazard under the HHSRS are considered non-decent.
- be in a reasonable state of repair.
- have reasonably modern facilities and services.
- provide a reasonable degree of thermal comfort.

- 4.1 It is not possible to produce a consistent time-line back to 1996 because the definition of Decent Homes was updated in 2006, when the Fitness Standard was replaced by the Housing Health and Safety Rating System (HHSRS) as the statutory criterion of decency. Across the housing stock, the proportion of dwellings failing the Decent Homes standard declined steadily from 45% in 1996 to 28% in 2005. Since 2006, when 35% of all dwellings failed the updated standard, the rate of failure decreased progressively to 27% in 2010, Figure 4.1. The local authority stock showed the largest reduction in the proportion of non-decent homes – it reduced by 33%, from 32% in 2006 to 22% in 2010. The smallest improvement was seen in the private rented sector, where the percentage of non-decent homes fell from 47% to 37% (a 20% reduction) over the same period.

**Figure 4.1: Percentage of dwellings failing the Decent Homes standard<sup>1</sup>, by tenure, 1996 – 2010**



<sup>1</sup>from 2006 the Decent Homes model incorporated HHSRS instead of unfitnes

Base: all dwellings

Notes:

1) 2010 - uses SAP09 instead of SAP05

2) underlying data are presented in Annex Table 4.1

Sources:

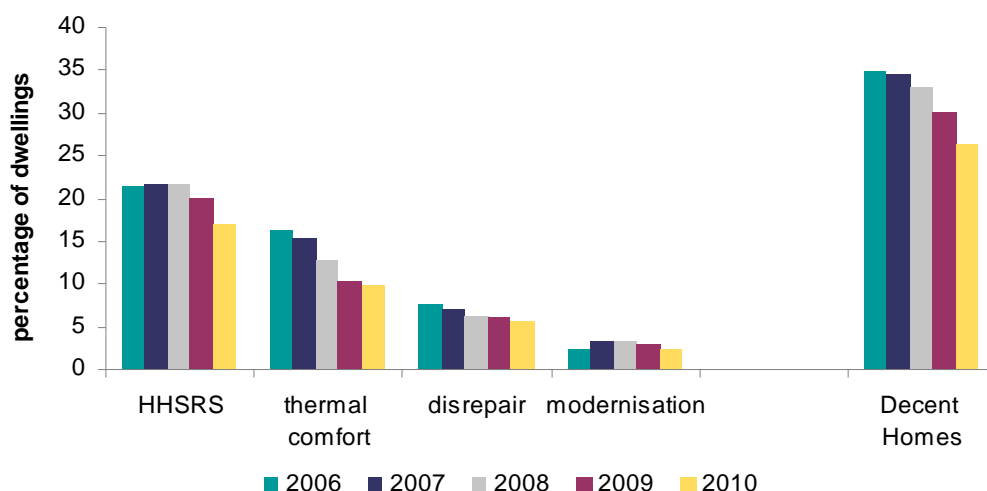
1996 to 2007: English House Condition Survey, dwelling sample

2008 onwards: English Housing Survey, dwelling sample

4.2 Since 2006, there have been significant reductions in the proportions of homes failing on HHSRS<sup>1</sup> and disrepair, but the proportion failing on modern facilities has remained at a fairly constant (and low) level throughout this period. The largest improvements were evident for thermal comfort and the proportion of homes failing on this component reduced from 17% to 10% over this period (40%), Figure 4.2.

<sup>1</sup>the HHSRS figures here and in the rest of this chapter relate to just the 15 hazards covered by EHS since 2006. The figures are therefore slightly lower than those presented in Chapter 5.

**Figure 4.2: Percentage of dwellings failing different components of the Decent Homes standard, 2006 – 2010**



Base: all dwellings

Note: underlying data are presented in Annex Table 4.2

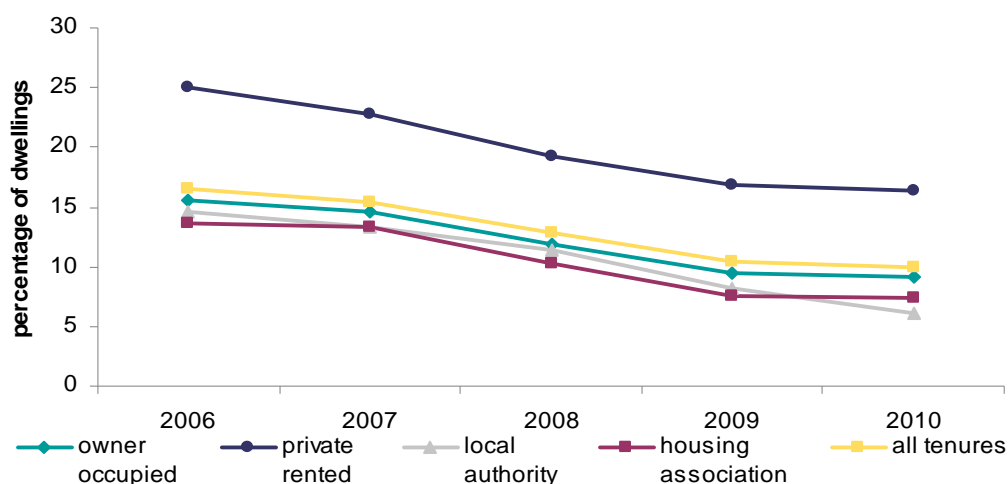
Sources:

2006 to 2007: English House Condition Survey, dwelling sample

2008 onwards: English Housing Survey, dwelling sample

4.3 Local authority homes showed the greatest continuing improvements in thermal comfort: the proportion failing on this component reduced from 15% to 6%, ie by 58%, over this period. The private rented sector showed the least improvement (although the reduction was still 35%) and in 2010 still had a significantly higher proportion of homes failing the Decent Homes standard on this aspect than any other tenure, Figure 4.3.

**Figure 4.3: Percentage of dwellings failing the thermal comfort component by tenure 2006 – 2010**



Base: all dwellings

Note: underlying data are presented in Annex Table 4.3

Sources:

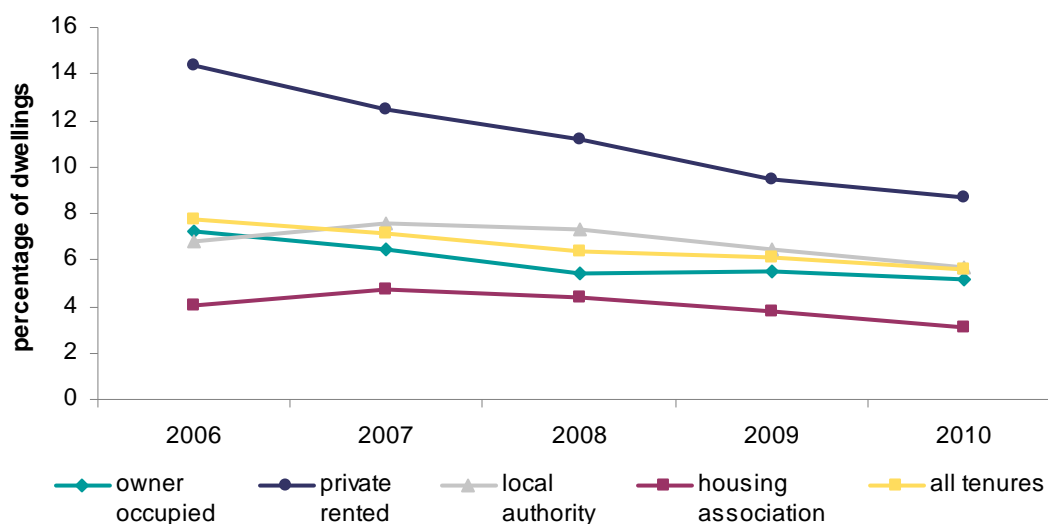
2006 to 2007: English House Condition Survey, dwelling sample

2008 onwards: English Housing Survey, dwelling sample

4.4 Overall, the proportion of dwellings failing the disrepair component fell from 8% to 6% (a 28% reduction) between 2006 and 2010. The improvement was

greatest in the private rented sector, where the percentage of homes failing on disrepair fell from 14% in 2006 to 9% in 2010 (by 39%). The least improvement on this component occurred in the local authority sector, where the proportion fell by just 16%, Figure 4.4.

**Figure 4.4: Percentage of dwellings failing the disrepair component by tenure 2006 – 2010**



Base: all dwellings

Note: underlying data are presented in Annex Table 4.4

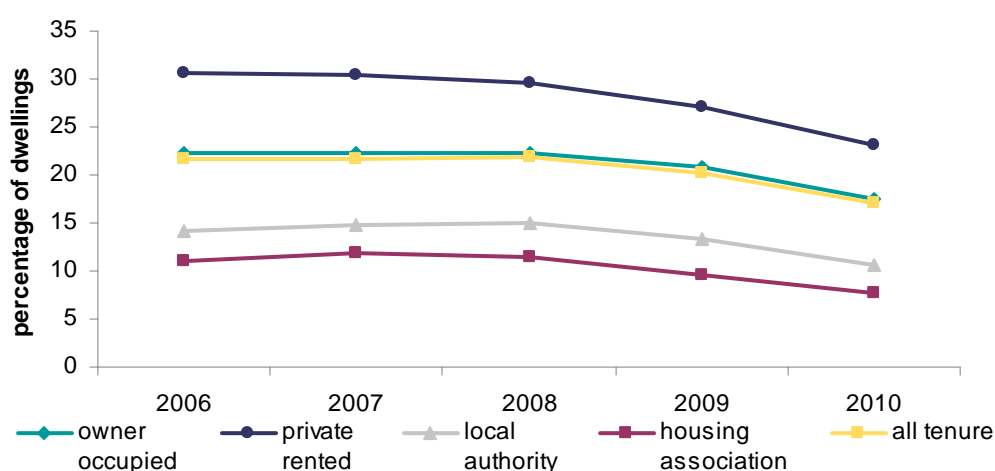
Sources:

2006 to 2007: English House Condition Survey, dwelling sample

2008 onwards: English Housing Survey, dwelling sample

4.5 Across the stock, the proportion of dwellings failing the HHSRS component reduced by 21% (from 22% to 17%), Figure 4.5.

**Figure 4.5: Percentage of dwellings failing the HHSRS component by tenure, 2006 – 2010**



Base: all dwellings

Note: underlying data are presented in Annex Table 4.5

Sources:

2006 to 2007: English House Condition Survey, dwelling sample

2008 onwards: English Housing Survey, dwelling sample

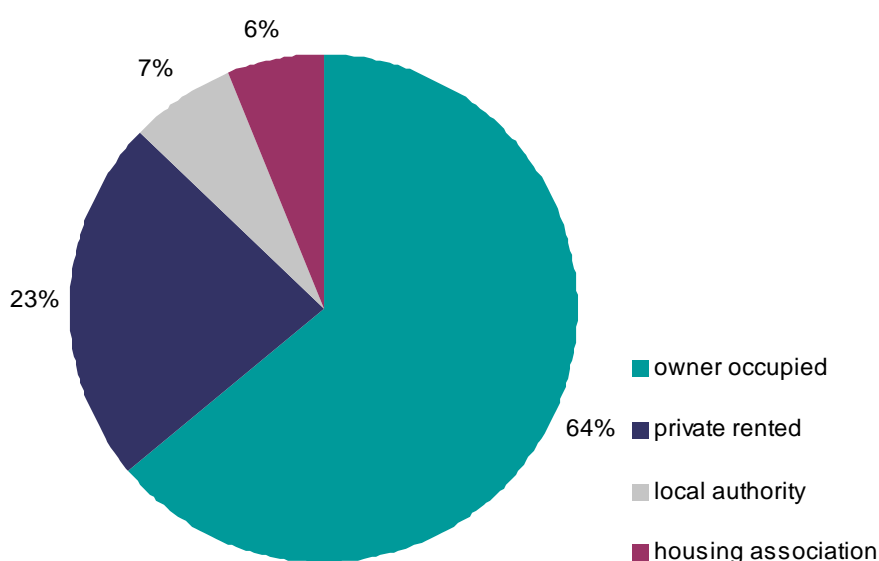


4.6 The housing association sector showed the biggest proportional improvement, reducing by 31% from 11% in 2006 to 8% in 2010. Owner occupied homes showed the lowest proportional improvement, Figure 4.5.

## Characteristics of non-decent homes, 2010

4.7 In 2010, some 5.9 million homes (27% of the stock) still failed to meet the Decent Homes standard. The majority (87%) of these non-decent homes were in the private sector and 23% were privately rented, Figure 4.6.

**Figure 4.6: Distribution of non-decent homes by tenure, 2010**



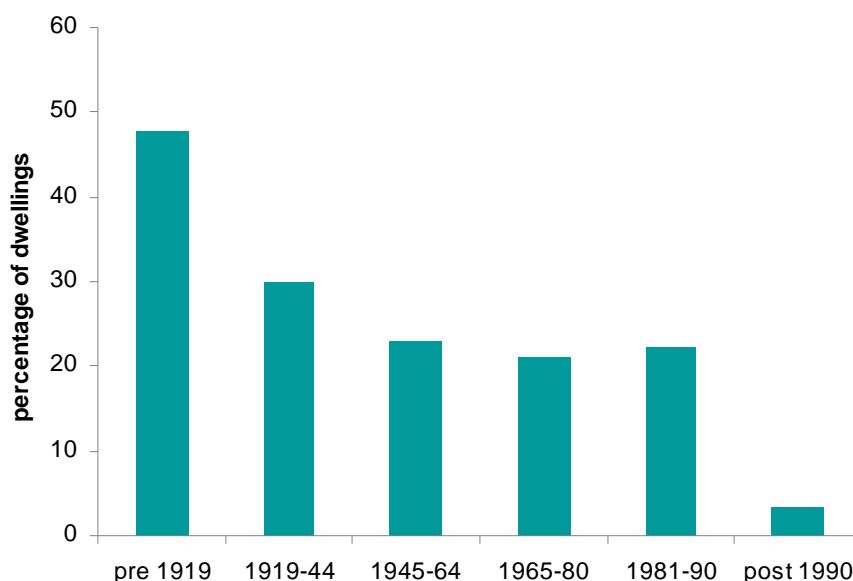
**Base: all dwellings**

**Note: underlying data are presented in Annex Table 4.6**

**Source: English Housing Survey, dwelling sample**

4.8 Homes built before 1945 were significantly more likely to fail than newer homes. Some 48% of homes built before 1919 and 30% of those built between 1919 and 1944 failed to meet the standard in 2010, compared with only 3% of dwellings built since 1990, Figure 4.7. It may seem odd that any properties that are less than 25 years old fail the standard because of improvements in Building Regulations. However, there are no regulations governing certain 'alterations' occupiers may carry out that may inadvertently create Category 1 hazards e.g. removing handrails or balustrading from stairs, constructing very steep stairs up to loft conversions or creating unexpected changes of level inside and outside.

**Figure 4.7: Dwellings failing Decent Homes by dwelling age, 2010**



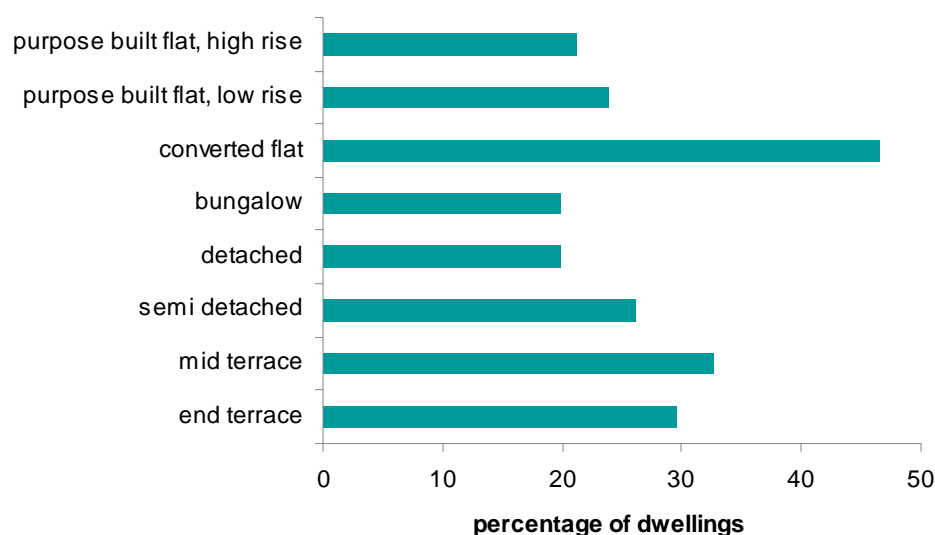
**Base: all dwellings**

**Note: underlying data are presented in Annex Table 4.6**

**Source: English Housing Survey, dwelling sample**

4.9 Converted flats were more likely to fail than other types of dwellings (47%), largely because most of them were built before 1919. Mid terraced houses were also more likely to fail (33%) than other types of houses or purpose built flats, for the same reason, Figure 4.8.

**Figure 4.8: Dwellings failing Decent Homes by dwelling type, 2010**



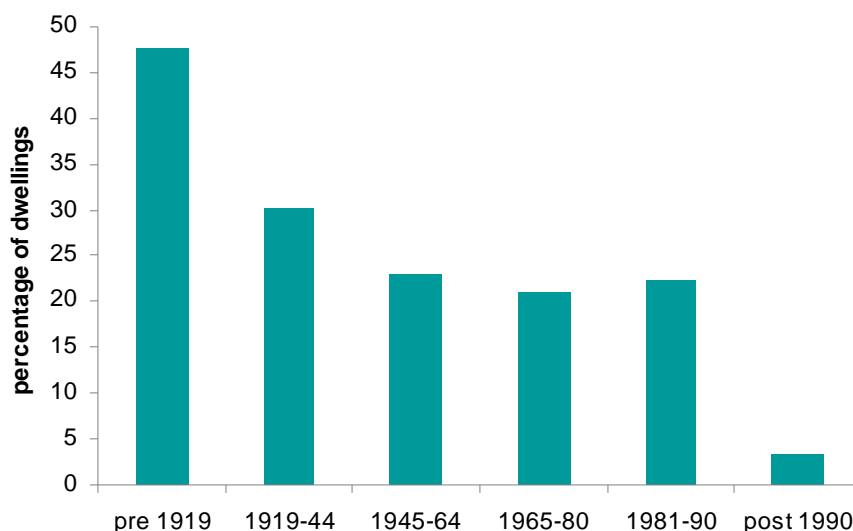
**Base: all dwellings**

**Note: underlying data are presented in Annex Table 4.6**

**Source: English Housing Survey, dwelling sample**

4.10 Interestingly, dwellings located in city centres had a similar incidence of non-decency as those in village centres (both 35%). However, those in small hamlets or isolated dwellings, many of which were old farmhouses or labourers' cottages, were much more likely to fail the standard (56%), Figure 4.9.

**Figure 4.9: Dwellings failing Decent Homes by type of area, 2010**



**Base: all dwellings**

**Note: underlying data are presented in Annex Table 4.6**

**Source: English Housing Survey, dwelling sample**

4.11 Further information on the incidence of non-decent homes in 2010 among different types of dwellings and households can be found in web tables DA3201 to DA3203.

### Non-decent dwellings in 2010: reasons for non-decency

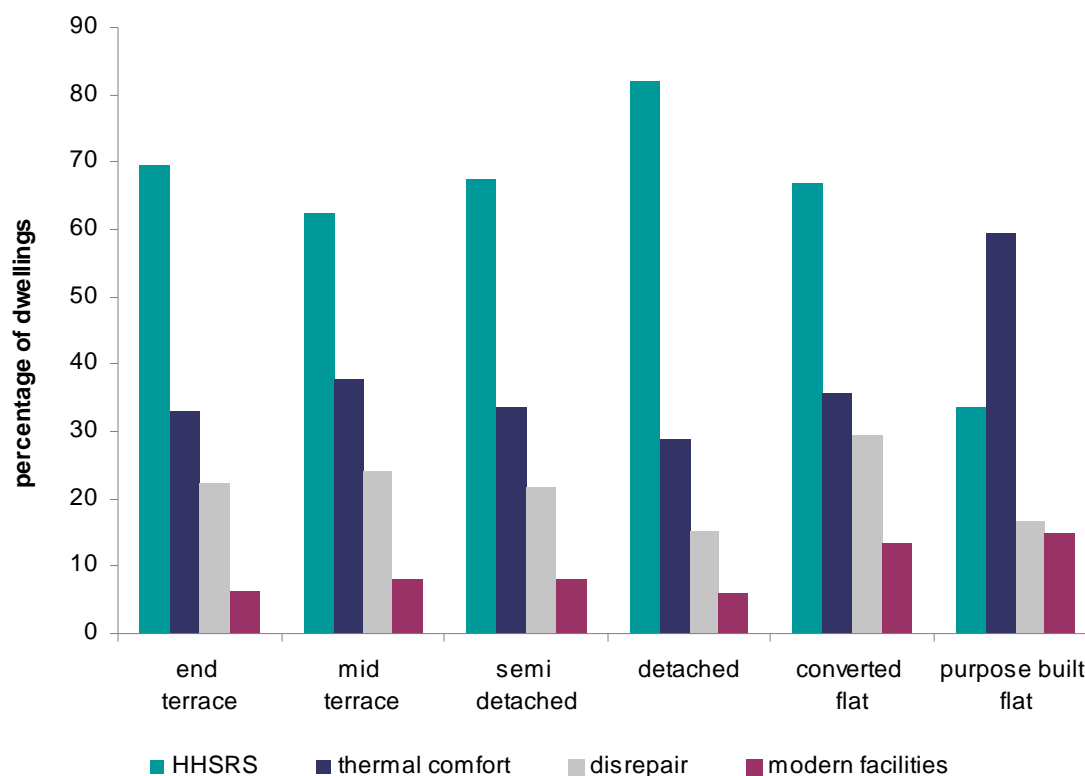
4.12 Of the total 5.9 million non-decent dwellings, 74% failed on one of the Decent Homes criteria, 22% on two with the remaining 6% failing on three or all four criteria. The most common reason for failing was the presence of Category 1 HHSRS hazards – these were present in 3.8 million (64%) of all non-decent homes. Some 2.2 million (37%) did not meet the thermal comfort criterion, 1.3 million (21%) failed due to disrepair and around 500,000 (9%) failed due to lack of modern facilities<sup>2</sup>, Annex Table 4.7. However, this general pattern varied by dwelling type.

4.13 Some 82% of non-decent detached dwellings failed due to HHSRS, whereas only 29% of this group failed on thermal comfort and 15% due to disrepair. The pattern of failure for purpose built flats was very different because a much higher proportion failed due to thermal comfort than to HHSRS (59% compared with 34%). Lack of modern facilities was a more common reason

<sup>2</sup>percentages do not sum to 100% as dwellings can be non-decent due to failing more than one criterion

for failure for both purpose built and converted flats (accounting for 15% and 13% of non-decency respectively) than for houses. Non-decent converted flats were also more likely to fail due to disrepair than other dwelling types (29% compared with 21% for all dwellings), Figure 4.10.

**Figure 4.10: Reason for failing Decent Homes by dwelling type, 2010**



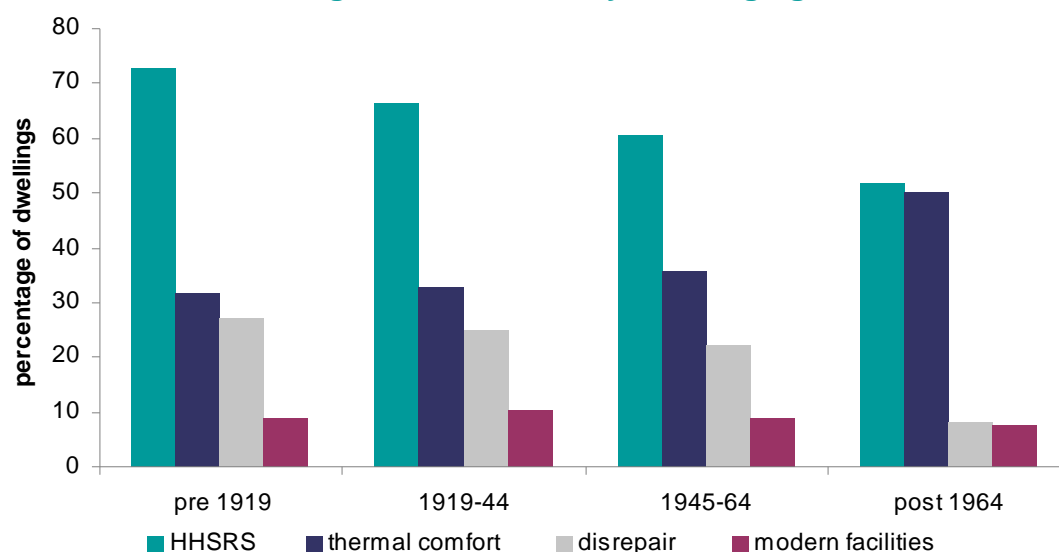
**Base: all non-decent dwellings**

**Note: underlying data are presented in Annex Table 4.8**

**Source: English Housing Survey, dwelling sample**

4.14 For non-decent dwellings built before 1965, the predominant reason for failing the standard was HHSRS, followed by thermal comfort and then disrepair. However, the pattern of failure for homes built after this date was rather different. For homes built after 1964, the proportions failing due to thermal comfort and HHSRS were roughly the same (50% and 52% respectively) whilst the proportion of these newer non-decent homes failing on modern facilities was almost identical to that failing on disrepair (both 8%), Figure 4.11. This different pattern is largely because a much higher proportion of dwellings built after 1964 are flats, which have a relatively high rate of failure on modern facilities and low rate on HHSRS compared with houses.

**Figure 4.11: Reason for failing Decent Homes by dwelling age, 2010**



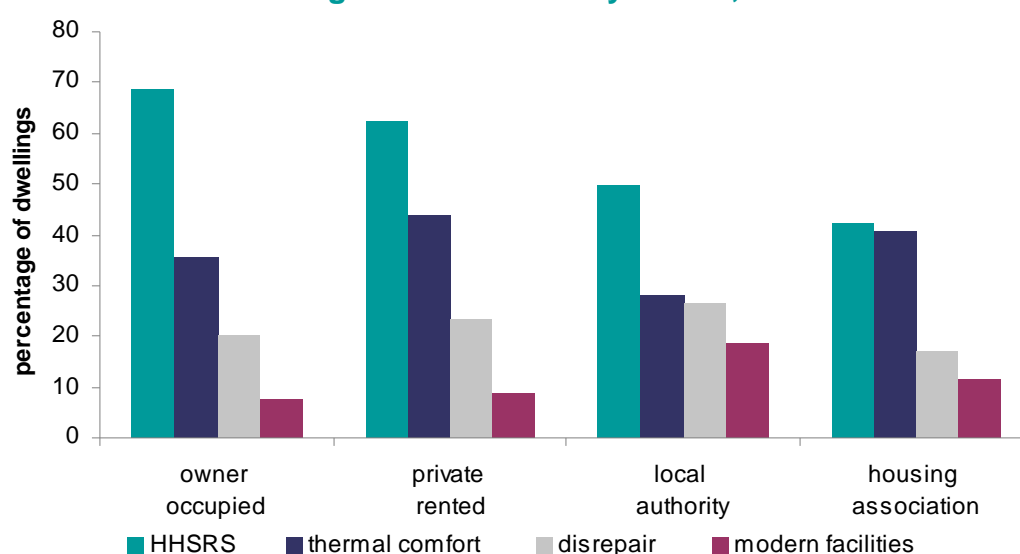
Base: all non-decent dwellings

Note: underlying data are presented in Annex Table 4.9

Source: English Housing survey, dwelling sample

4.15 Owner occupied and private rented non decent homes showed a similar pattern of failure to each other and to the stock as a whole. In the local authority sector, although HHSRS was the predominant reason for failure, the proportions failing thermal comfort and disrepair criteria were similar (28% and 26% respectively). In the housing association sector, non-Decent Homes were as likely to fail on HHSRS as on thermal comfort (42% and 40% respectively but this difference was not significant). Lack of modern facilities was a much more common reason for failure in the local authority sector (18%), Figure 4.12.

**Figure 4.12: Reason for failing Decent Homes by tenure, 2010**



Base: all non-decent dwellings

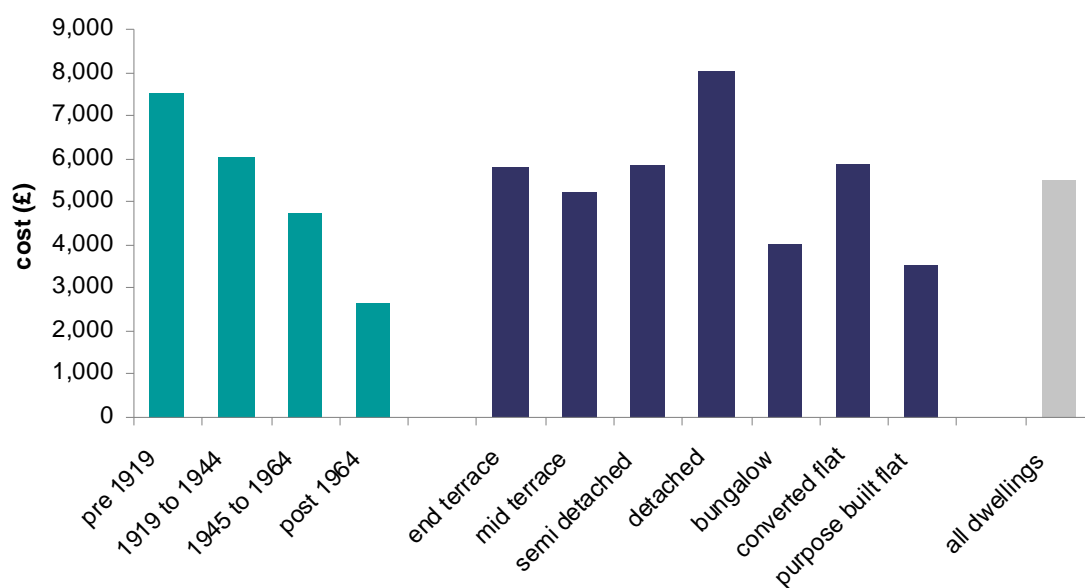
Note: underlying data are presented in Annex Table 4.10

Source: English Housing Survey, dwelling sample

## The costs of making homes decent, 2010

- 4.16 The total costs of carrying out remedial works to non-decent homes was around £32.9 billion, and 92% of this total was required to deal with non-decency in the private sector, Annex Table 4.11. The average cost of work required was £5,537 per dwelling but this varied considerably. It is estimated that some 20% of non-decent homes could be made decent for less than £500. At the other end of the scale, 10% of non-decent homes would require works costing in excess of £15,000 to meet the standard. This variability also means that various groups of dwellings may appear to have different average costs of work when these differences are really not statistically significant.
- 4.17 Average costs of works required to make homes decent varied with the tenure, age, type and location of the dwelling. These average costs were broadly similar for private rented and owner occupied homes (£6,004 and £5,782 per dwelling respectively) and significantly higher than those for social rented homes. The average costs of work to non-decent local authority homes was significantly higher than the average for housing association homes (£4,174 compared with £2,703), Annex Table 4.12.
- 4.18 Average costs were strongly related to dwelling age, being significantly higher for homes before 1919 (£7,494) and significantly lower for homes built after 1964 (£2,662). Detached houses also had higher average costs than all other dwelling types (£8,031) apart from converted flats (£5,883), whilst purpose built flats had significantly lower average costs (£3,511) than most dwelling types apart from bungalows, Figure 4.13.

**Figure 4.13: Average costs to make homes decent, by dwelling type and age, 2010**



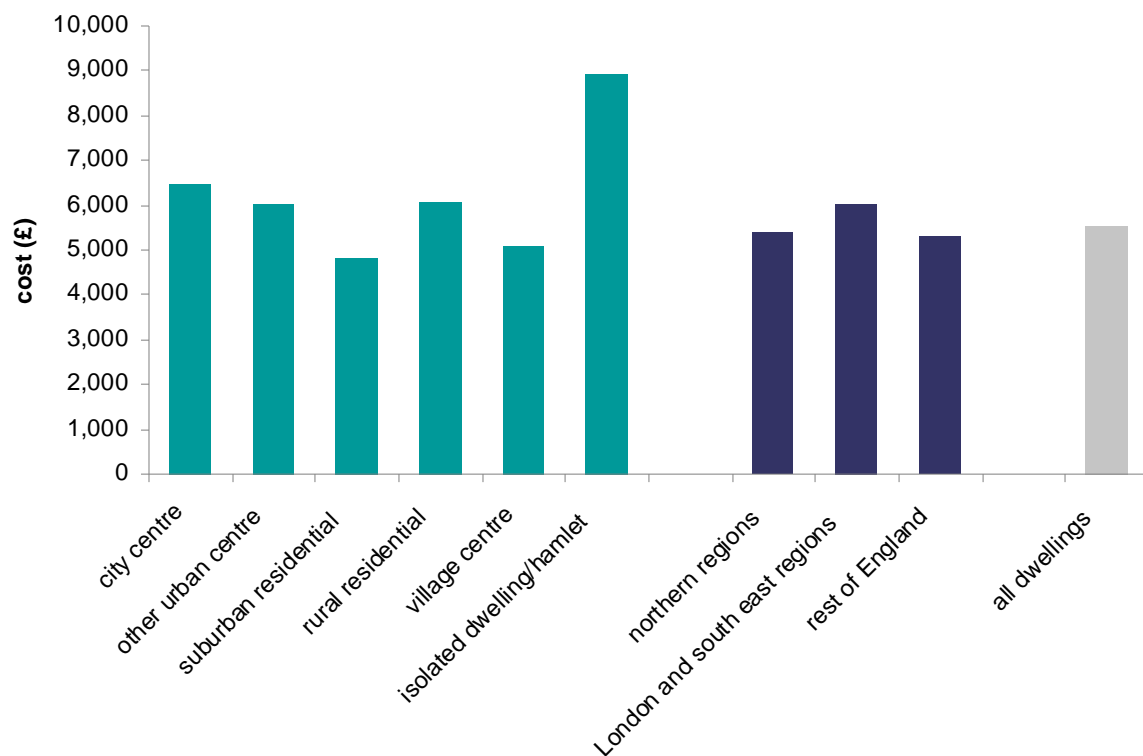
**Base: all non-decent dwellings**

**Note: underlying data are presented in Annex Table 4.12**

**Source: English Housing Survey, dwelling sample**

4.19 Average costs to make decent were significantly higher than average among isolated dwellings and those in small hamlets (£8,942). These average costs were also significantly higher for dwellings in London and south east regions than those in the Rest of England (£6,038 compared with £5,299), Figure 4.14.

**Figure 4.14: Average costs to make homes decent by dwelling location, 2010**



Base: all non-decent dwellings

Notes:

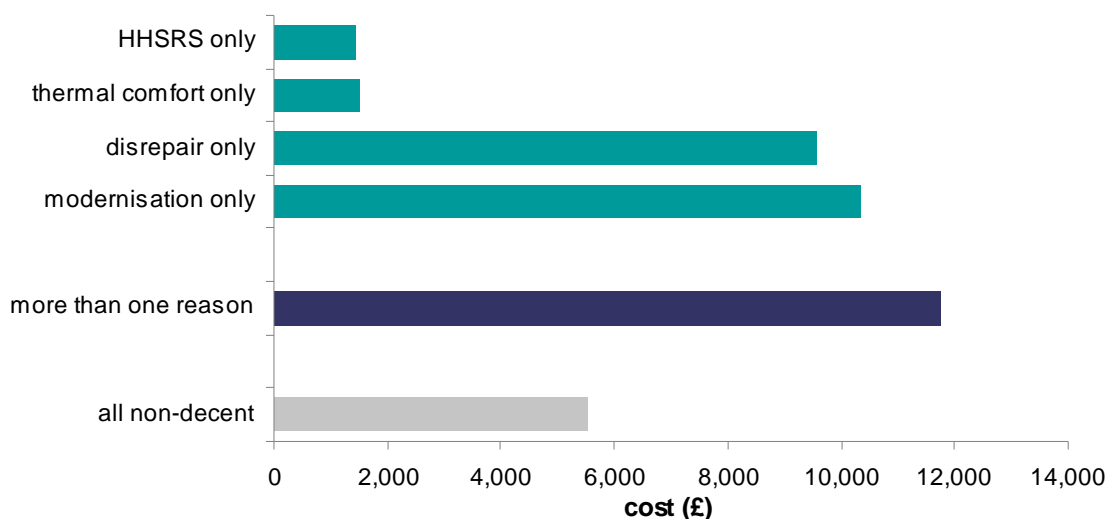
1) underlying data are presented in Annex Table 4.12

2) details of regional areas are given in the Glossary

Source: English Housing Survey, dwelling sample

4.20 Costs of works required to make homes decent were strongly related to the number and type of reasons for non-decency. Average costs were significantly higher for those failing on two or more criteria than on just one (£11,755 compared with £3,313), Annex Table 4.13. Where dwellings failed on just one aspect, average costs for dealing with lack of modern facilities and disrepair were broadly similar (£10,327 and £9,549) and significantly higher than for dwellings failing due to thermal comfort (£1,512) or HHSRS (£1,445), Figure 4.15.

**Figure 4.15: Average costs to make homes decent by reason for non-decency, 2010**



**Base: all non-decent dwellings**

**Note: underlying data are presented in Annex Table 4.13**

**Source: English Housing Survey, dwelling sample**

## Non-decent dwellings which are difficult to treat, 2010

- 4.21 Action to make dwellings decent is not always straightforward because in some cases it may be practically difficult or even not feasible. Cost considerations may also mean that improvement to the dwelling is not necessarily the best solution, whilst some dwellings, although technically non-decent, may be performing at a level that is acceptable in terms of what the standard is seeking to achieve.
- 4.22 A five-point scale (see box below) has been developed to indicate how easy it would be to make dwellings decent. The scale is applied to each of the four Decent Homes criteria (see Appendix C for further details). It should be emphasised that the purpose of the scale is to provide indicative stock estimates of non-Decent Homes where the course of action may be less straightforward, rather than provide definitive guidance on which non-Decent Homes should/should not be treated, as this can only be undertaken on a case by case basis.
- 4.23 The scale is derived by examining each criterion of Decent Homes individually, and then taking the worst scenario, e.g. if it is inappropriate to treat on thermal comfort but not feasible to treat on HHSRS, then it would be coded as 'not feasible' overall. Details of how the treatment scale is applied to each of the Decent Homes criteria for the EHS are contained in Appendix C.



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### **Box 2: Treatment scale for non-decent homes**

**straightforward to treat:** where the required treatment can be readily carried out

**inappropriate to treat:** where treatment would be straightforward but measurable performance is already of a good standard even though the property fails the formal Decent Homes criterion. Typically these are newer purpose built flats which do not strictly comply with the thermal comfort requirements but have SAP ratings in excess of 65.

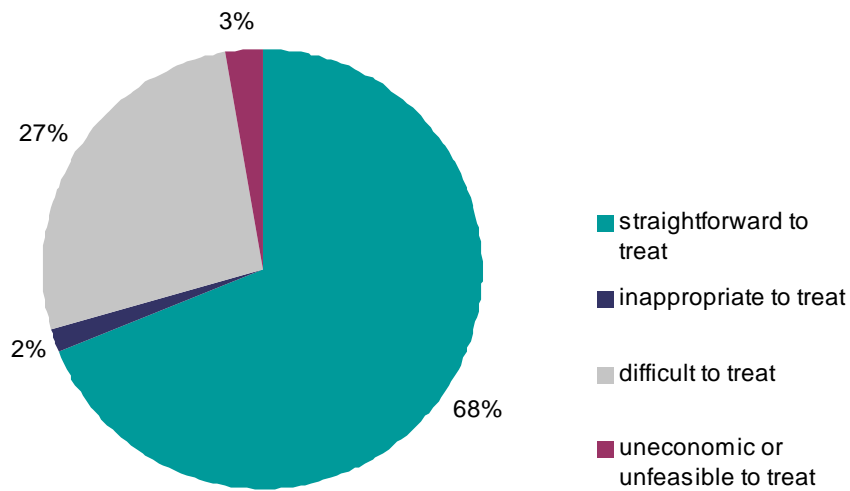
**difficult to treat:** where the required work is subject to technical issues/difficulties and/or the cost of the work is high. Examples include homes where installing cavity wall insulation is more problematic; and those where the total costs of the work would exceed £20,000.

**uneconomic to treat:** where the cost of work would be over 50% of the market value of the dwelling

**not feasible to treat:** where the required treatment to make decent is not possible given the design, layout or construction of the property, or where the treatment may itself create new problems. Examples include extending kitchens in flats above ground floor level and installing cavity wall insulation in timber framed dwellings.

- 4.24 It must be emphasised that the most appropriate course of action for any non-decent home is a matter of professional judgement, taking all the facts and circumstances into consideration. The EHS cannot fully replicate such professional judgements as the information it collects is unlikely to be comprehensive or sufficiently sensitive to individual cases. A level of simplification is therefore inevitable in using the survey in this way and the statistical results of the treatment scale should be seen as indicative.
- 4.25 Among the 5.9 million non-decent dwellings, the majority (69%) were straightforward to treat, and only a small percentage was either uneconomic or not feasible to treat (2%). Some 27% or 1.6 million dwellings were difficult to treat, Figure 4.16.

**Figure 4.16: Treatability of non- decent dwellings, 2010**



**Base: all non-decent dwellings**

**Note: underlying data are presented in Annex Table 4.14**

**Source: English Housing Survey, dwelling sample**

4.26 Of the 1.6 million non-decent homes classed as difficult to treat, some 26% were privately rented and just 10% were social sector dwellings. A disproportionate number (735,000, or 46% of all difficult to treat homes) were built before 1919, Table 4.1. These pre 1919 homes were mainly difficult to treat because of the high costs of improvements such as redesigning staircases, installing external wall insulation and extending kitchens.

**Table 4.1 Profile of difficult to treat non- decent dwellings, 2010**

|  | non-decent dwellings<br>which are difficult to treat |                   | sample<br>size |
|--|--|-------------------|----------------|
|  | <i>number</i>  | <i>percentage</i> |                |
| <b>tenure</b>  |  |                   |                |
| owner occupied   | 1,016  | 63.6              | 580            |
| private rented   | 415  | 26.0              | 353            |
| local authority  | 88   | 5.5               | 102            |
| housing association                                      | 78   | 4.9               | 92             |
| <b>dwelling type</b>                                     |  |                   |                |
| end terrace  | 138  | 8.6               | 95             |
| mid terrace  | 296  | 18.5              | 200            |
| semi detached  | 338  | 21.1              | 248            |
| detached   | 323  | 20.2              | 214            |
| purpose built  | 349  | 21.8              | 267            |
| converted flat   | 155  | 9.7               | 103            |
| <b>dwelling age</b>                                      |  |                   |                |
| pre 1919   | 735  | 46.0              | 502            |
| 1919 to 1944   | 247  | 15.4              | 168            |
| 1945 to 1964   | 204  | 12.8              | 151            |
| post 1964  | 412  | 25.8              | 306            |
| <b>dwelling location</b>                                 |  |                   |                |
| city and other urban<br>centres                          | 433  | 27.1              | 298            |
| suburban residential areas                               | 748  | 46.8              | 528            |
| rural areas  | 416  | 26.1              | 301            |
| northern regions   | 366  | 22.9              | 269            |
| London and south east<br>regions                         | 523  | 32.8              | 351            |
| rest of England  | 709  | 44.4              | 507            |
| <b>degree of deprivation</b>                             |  |                   |                |
| most deprived 20% of<br>areas                            | 162  | 10.1              | 248            |
| least deprived 20% areas                                 | 99   | 6.2               | 151            |
| <b>all difficult to treat non -<br/>decent dwellings</b> | <b>1,598</b>   | <b>100.0</b>      | <b>1,127</b>   |

Base: all difficult to treat dwellings

Source: English Housing Survey, 2010 dwelling sample

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# Chapter 5

## Dwelling safety issues

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This chapter examines the risks to health and safety present in dwellings in 2010. It then looks at the cost of work required to remedy the most serious (Category 1) hazards in order to reduce risks to an acceptable level, and identifies the number and profile of dwellings that may be problematic to improve. It also focuses on the risks related to domestic and personal hygiene that are covered by the Housing Health and Safety Rating System (HHSRS). This includes the safety and hygiene of kitchen and bathroom amenities in terms of space, layout and cleanability and, for bathroom amenities, their location.

The HHSRS is a risk-based assessment that identifies hazards in dwellings and evaluates their potential effects on the health and safety of occupants and visitors (see Glossary for further details). The EHS assesses 26 out of the 29 hazards covered by the HHSRS.

### Key findings

- Almost 4 million dwellings (18%) had a Category 1 hazard in 2010. Category 1 hazards relating to one of the four categories of falls were the most common types of hazard and were present in 10% of dwellings.
- Homes built before 1919 (36%) and converted flats (32%) were most likely to have a Category 1 hazard, compared to just 3% of dwellings built after 1990.
- The total expenditure required to remedy all the Category 1 hazards to an acceptable level of risk was around £10.4 billion. The vast majority of this total expenditure (94%) was required to remedy hazards among private sector dwellings.
- The average cost of work required to remedy Category 1 hazards was £2,610 per dwelling, although 10% of dwellings required less than about £125 of remedial work and, at the other end of the scale, 10% of dwellings required work of around £6,500 or more.
- Around 82% of dwellings with Category 1 hazards were straightforward to treat, 17% were difficult to treat and the remaining dwellings were not feasible to treat.

- 
- Some 955,000 dwellings posed significantly higher than average risks related to either personal or domestic hygiene. However, only a small number of these (around 40,000 in each case) were sufficiently problematic to represent Category 1 hazards. A further 2 million dwellings had some significant health and safety issues with their kitchen and/or bathroom.
  - Homes that were private rented; built before 1919; vacant; were small terraced houses; or were located in the most 20% of deprived areas or in city and urban locations were relatively more likely to have significantly higher risks related to personal or domestic hygiene than other groups of dwellings.

## Housing Health and Safety Rating System (HHSRS)

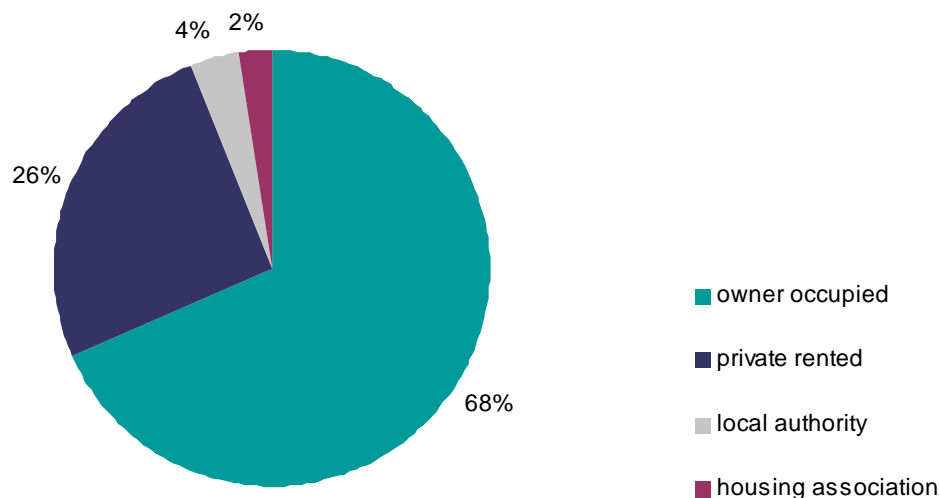
### HHSRS 2010

- 5.1 Almost 4 million dwellings (18%) had one or more Category 1 hazards in 2010. The most common types of Category 1 hazards were related to falls, affecting 10% of all dwellings, followed by excess cold (7%). Other Category 1 hazards were far less common; just 4% of dwellings had Category 1 hazards relating to one or more of the remaining 21 hazards covered by the survey.
- 5.2 Those dwellings most likely to have any Category 1 hazard were those built before 1919 (36%); converted flats (32%); those in rural areas or which were vacant (26%); and those which were private rented (24%). In contrast, only 3% of homes built after 1990 had such a hazard, as did 8% of purpose built low rise flats; those owned by housing associations; and those built between 1981 and 1990, Annex Table 5.1.
- 5.3 Further details on the likelihood of different dwellings and household types having any Category 1 hazards (and the different types of these hazards) are provided in the web tables DA3201 to DA3203.

### Cost to remedy Category 1 HHSRS hazards to an acceptable level of risk

- 5.4 The total required expenditure required to remedy all the Category 1 hazards to an acceptable level of risk was around £10.4 billion. The vast majority of this total expenditure (94%) was required to remedy hazards among private sector dwellings. Although the private rented sector accounted for 17% of the total housing stock, it accounted for 26% of the total cost of required remedial work, Figure 5.1.

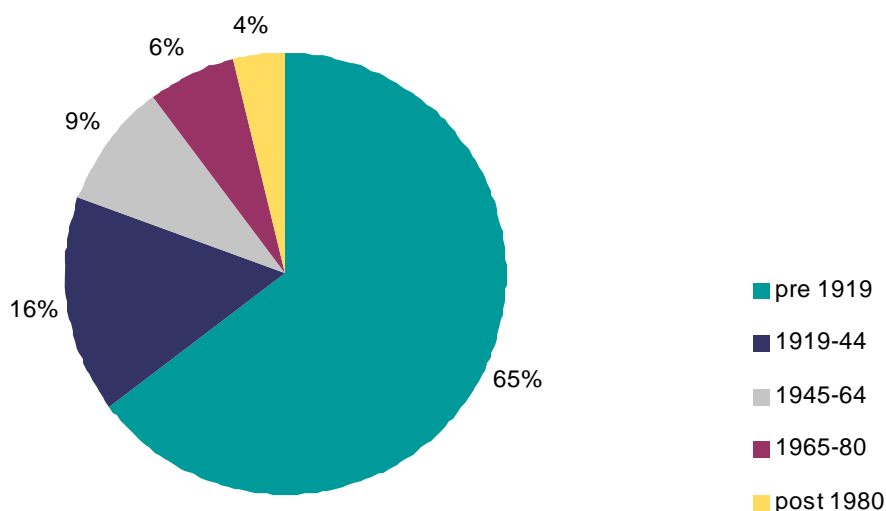
**Figure 5.1: Profile of expenditure required to remedy Category 1 hazards to an acceptable level of risk, by tenure, 2010**



**Base:** all dwellings with a Category 1 HHSRS hazard  
**Note:** underlying data are presented in Annex Table 5.2  
**Source:** English Housing Survey, dwelling sample

5.5 Whilst dwellings built before 1919 accounted for 22% of the total housing stock, they accounted for 65% of the total expenditure required to remedy Category 1 hazards to an acceptable level of risk. By contrast the newest homes built after 1980, which made up 21% of the total stock, accounted for just 4% of this total expenditure, Figure 5.2.

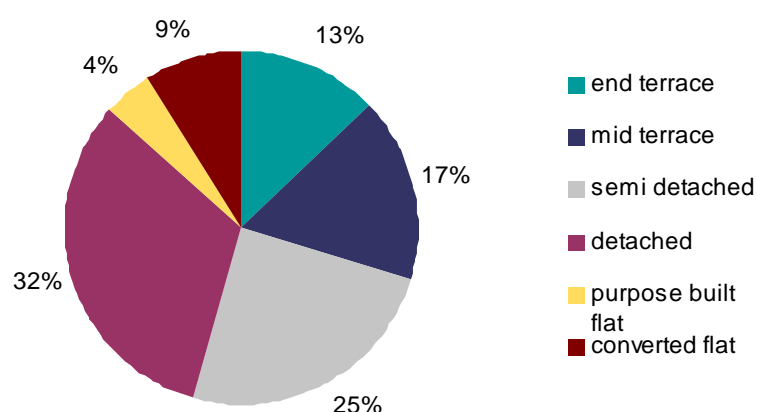
**Figure 5.2: Profile of expenditure required to remedy Category 1 hazards to an acceptable level of risk, by dwelling age, 2010**



**Base:** all dwellings with a Category 1 HHSRS hazard  
**Note:** underlying data are presented in Annex Table 5.2  
**Source:** English Housing Survey, dwelling sample

5.6 Category 1 hazards were less common in purpose built flats, and these dwellings accounted for just 4% of the total expenditure required to reduce Category 1 hazards to an acceptable level. Almost one third (32%) of all expenditure was required to undertake work to detached homes. Although converted flats made up 4% of the total housing stock, they required 9% of all expenditure, Figure 5.3. These flats had a higher incidence of Category 1 hazards relating to falls on stairs and steps owing to dwelling design.

**Figure 5.3: Profile of expenditure required to remedy Category 1 hazards to an acceptable level of risk, by dwelling type, 2010**



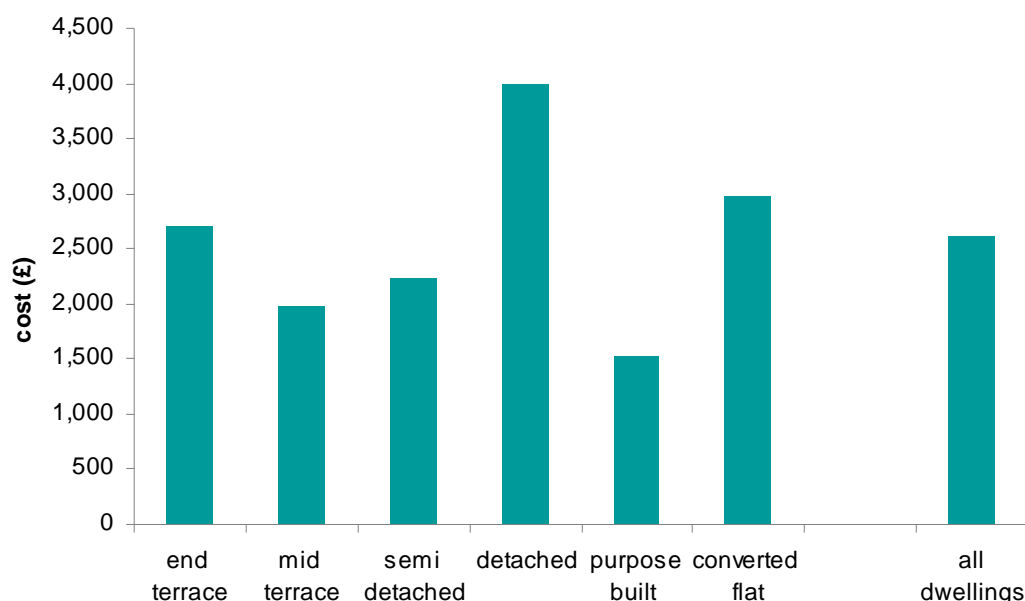
**Base:** all dwellings with a Category 1 HHSRS hazard  
**Note:** underlying data are presented in Annex Table 5.2  
**Source:** English Housing Survey, dwelling sample

5.7 The average cost of work required was £2,610 per dwelling, although 10% of dwellings required less than £125 of remedial work and, at the other end of the scale, 10% of dwellings required work of around £6,500 or more, Annex Table 5.2.

5.8 The average cost of remedial work was significantly higher for private sector homes, especially for private rented dwellings where average costs were £2,951 compared with £1,784 for local authority and £1,569 for housing association dwellings. Homes built before 1919 also had significantly higher costs than those in other age bands, averaging £3,893 per dwelling.

5.9 Detached houses had significantly higher costs (£3,983) than all other types of dwellings apart from converted flats (£2,976). Purpose built flats had the lowest average costs of £1,521, Figure 5.4.

**Figure 5.4: Average cost expenditure required to remedy Category 1 hazards to an acceptable level of risk, by dwelling type, 2010**



**Base: all dwellings with a Category 1 HHSRS hazard**  
**Note: underlying data are presented in Annex Table 5.2**  
**Source: English Housing Survey, dwelling sample**

## Difficult to treat Category 1 hazards

- 5.10 Using the scale developed to determine how easy it would be to make homes decent (see Chapter 4 of this Report)<sup>1</sup>, some 3.2 million homes were straightforward to treat (82% of those with any Category 1 hazards). At the other end of the scale, it is estimated<sup>2</sup> that only a small proportion (in the order of 1%) were not feasible to treat given the design, layout or construction of the property or where the treatment may itself create new problems. There were, therefore around 690,000 dwellings where Category 1 hazards were possible to treat but where technical issues made it difficult to reduce them to an acceptable level, Annex Table 5.3.
- 5.11 Looking specifically at these 690,000 difficult to treat dwellings, some 64% were built before 1919; 38% were located in rural areas; and 23% were detached houses, Table 5.1.

<sup>1</sup> no Category 1 hazards are modelled as either inappropriate or uneconomic to treat under the methodology used

<sup>2</sup> sample size is small but figure is estimated by deducting the number of straightforward and difficult to treat dwellings from the overall number of dwellings with a Category 1 hazard



**Table 5.1: Profile of difficult to treat dwellings with Category 1 hazards, 2010**

|   | dwellings with a Category 1 hazard<br>which are difficult to treat |                        |
|---|--|------------------------|
|   | numbers<br>(1000s)   | percentage<br>of group |
| <b>tenure</b>                           |  |                        |
| owner occupied                          | 475  | 68.7                   |
| private rented                          | 168  | 24.3                   |
| social sector                           | 48   | 7.0                    |
| <b>dwelling type</b>                    |  |                        |
| end terrace house                       | 77   | 11.2                   |
| mid terrace house                       | 108  | 15.6                   |
| semi detached                           | 148  | 21.3                   |
| detached                                | 161  | 23.3                   |
| bungalow                                | 50   | 7.3                    |
| converted flat                          | 95   | 13.7                   |
| purpose built flat                      | 52   | 7.6                    |
| <b>dwelling age</b>                     |  |                        |
| pre 1919                                | 440  | 63.7                   |
| 1919 to 1944                            | 99   | 14.3                   |
| 1945 to 1964                            | 66   | 9.6                    |
| post 1964                               | 87   | 12.5                   |
| <b>dwelling location</b>                |  |                        |
| city and other urban centres            | 176  | 25.4                   |
| suburban residential<br>areas           | 256  | 37.1                   |
| rural areas                             | 259  | 37.5                   |
| <b>degree of deprivation</b>            |  |                        |
| most deprived 20% of areas              | 129  | 18.7                   |
| 2nd%                                    | 117  | 16.9                   |
| 3rd%                                    | 162  | 23.4                   |
| 4th%                                    | 181  | 26.2                   |
| least deprived 20% areas                | 103  | 14.9                   |
| <b>all difficult to treat dwellings</b> | <b>692</b>   | <b>100.0</b>           |
| <b>sample size</b>                      | <b>482</b>   |                        |

Base: all difficult to treat Category 1 HHSRS hazards

Notes: figures in *italics* are based on small samples and should be treated with caution

Source: English Housing Survey, dwelling sample

- 
- 5.12 In 2010, some 640,000 households lived in homes with Category 1 hazards that were difficult to treat: 40% of these households were couples without dependent children; 26% had an HRP who was at least 65 years old; 31% contained at least one person with a long term limiting illness or disability; and 18% were in poverty, Annex Table 5.5.

## Personal and domestic hygiene

- 5.13 In making their assessment of the levels of risks to personal hygiene at the dwelling, EHS surveyors have to consider the potential risks of harm which may arise as a result of deficiencies to personal washing and clothes washing facilities, sanitation and drainage.
- 5.14 For their assessment of levels of risks to domestic hygiene, surveyors have to consider risks of harm which can result from:
- poor design, layout and construction such that the dwelling cannot be readily kept clean and hygienic
  - access into, and harbourage within, the dwelling for pests
  - inadequate and unhygienic provision for storing and disposal of household waste
- 5.15 Because these hazards occur relatively infrequently in their extreme form, surveyors do not go through the full scoring procedure for these. Instead they indicate the overall level of risk on a 4-point scale: significantly lower risk than average; average risk; significantly higher risk than average; and extreme risk. An 'extreme risk' represents a Category 1 hazard.
- 5.16 Feeding into the surveyors' overall assessment of HHSRS risks related to domestic and personal hygiene (and food safety), is their assessment as to whether kitchens and bathrooms are defective in terms of space, layout, cleanability and, additionally for bathroom amenities, location. Some of these items are also used to assess whether dwellings meet the requirements of the modernisation component of Decent Homes<sup>3</sup>. The criteria for assessing these aspects as 'defective' are set out in Box 5.1.

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<sup>3</sup>see Glossary for definition

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**Box 5.1: Kitchen and bathroom - criteria for assessment as defective**

**space:** the kitchen or bathroom is so small that it is impossible to fit all the necessary amenities into the room. For kitchens, these essential amenities are a cooker, sink and drainer and a food preparation area; additionally, opposite doors (e.g. oven and cupboard) should not touch when open, and the kitchen width should not be less than 1.8m. For bathrooms, the essential amenities are a WC, wash hand basin, and a bath or shower.

**layout:** the kitchen or bathroom layout is dangerous (rather than inconvenient), for example, where a cooker is positioned adjacent or close to a doorway.

**cleanability:** the wall, ceiling, floor or amenity surfaces are uncleanable (e.g. a badly cracked sink, bath or WC).

for bathrooms only:

**location:** the only bath/shower or WC is externally located or located in, or accessed through, a bedroom. The main WC does not have a wash hand basin situated on the same floor. A WC opening directly onto a kitchen (rather than via a ventilated lobby) does not have a wash hand basin (which is particularly important if it opens next to a food preparation area).

## Personal and domestic hygiene - Category 1 hazards

5.17 Only a small number and percentage of dwellings had a Category 1 hazard relating to either personal or domestic hygiene, and the sample sizes are too small to report national estimates. Nonetheless a far larger number of dwellings, some 955,000 (4%), had a significantly higher than average risk related to either of these hazards<sup>4</sup>, Annex Table 5.6. This next section examines the profile of these dwellings which, for ease of reporting, will be referred to as 'having an increased risk of a hygiene hazard'.

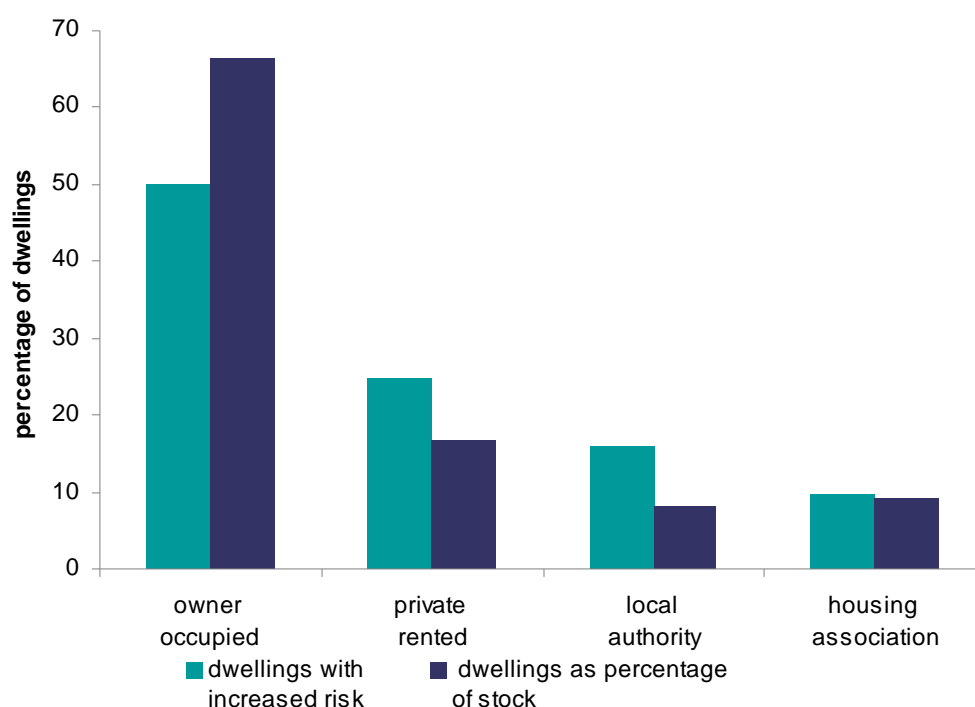
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<sup>4</sup> this number includes those dwellings with Category 1 domestic or personal hygiene hazards

## Dwellings with an increased risk of a hygiene hazard<sup>5</sup>

5.18 Both private rented and local authority dwellings were over-represented amongst those with increased risks. Although 17% of the total housing stock was private rented and 8% was owned by local authorities in 2010, a quarter (25%) of all dwellings with increased risks were private rented and 16% were owned by local authorities, Figure 5.5. Conversely, only 50% of dwellings with increased risks were owner-occupied, despite this sector comprising 66% of the total stock.

**Figure 5.5: Incidence of increased risk of a hygiene hazard, by tenure, compared with tenure distribution of stock, 2010**



**Base: all dwellings**

**Note: underlying data are presented in Annex Table 5.7**

**Source: English Housing Survey, dwelling sample**

5.19 The profile of dwellings with increased risk for these two hazards also contained a disproportionate number of older homes; especially those built before 1919 (34%). Vacant dwellings, small terraced houses and homes located in city and urban centres or in the 20% most deprived areas were also significantly over-represented amongst this group, Table 5.2.

<sup>5</sup> dwellings with a significantly higher than average risk of a domestic or personal hygiene Category 1 hazard

**Table 5.2: Incidence of increased risk of a hygiene hazard, by dwelling characteristics, compared with distribution of stock, 2010**

|                              | dwellings with increased hygiene risks |                        |                                       |
|------------------------------|--|------------------------|---------------------------------------|
|                              | numbers<br>(1000s)                     | percentage<br>of group | percentage of total<br>dwelling stock |
| <b>vacancy</b>               |  |                        |                                       |
| occupied                     | 853                                    | 89.3                   | 95.8                                  |
| vacant                       | 102                                    | 10.7                   | 4.2                                   |
| <b>dwelling type</b>         |  |                        |                                       |
| small terrace house          | 128                                    | 13.4                   | 9.7                                   |
| medium terrace house         | 184                                    | 19.3                   | 18.7                                  |
| other houses and bungalows   | 430                                    | 45.0                   | 52.1                                  |
| flat                         | 213                                    | 22.3                   | 19.6                                  |
| <b>dwelling age</b>          |  |                        |                                       |
| pre 1919                     | 321                                    | 33.6                   | 21.7                                  |
| 1919 to 1944                 | 205                                    | 21.5                   | 16.8                                  |
| 1945 to 1964                 | 189                                    | 19.8                   | 19.6                                  |
| 1965 to 1980                 | 148                                    | 15.5                   | 20.6                                  |
| post 1980                    | 92                                     | 9.6                    | 21.3                                  |
| <b>dwelling location</b>     |  |                        |                                       |
| city and other urban centres | 288                                    | 30.2                   | 21.1                                  |
| suburban residential areas   | 474                                    | 49.7                   | 61.2                                  |
| rural areas                  | 192                                    | 20.1                   | 17.7                                  |
| <b>degree of deprivation</b> |  |                        |                                       |
| most deprived 20% of areas   | 317                                    | 33.2                   | 19.8                                  |
| least deprived 20% areas     | 113                                    | 11.8                   | 19.9                                  |
| <b>all dwellings</b>         | <b>955</b>                             | <b>100.0</b>           | <b>100.0</b>                          |
| <b>sample size</b>           | <b>778</b>                             |                        |                                       |

Base: all dwellings

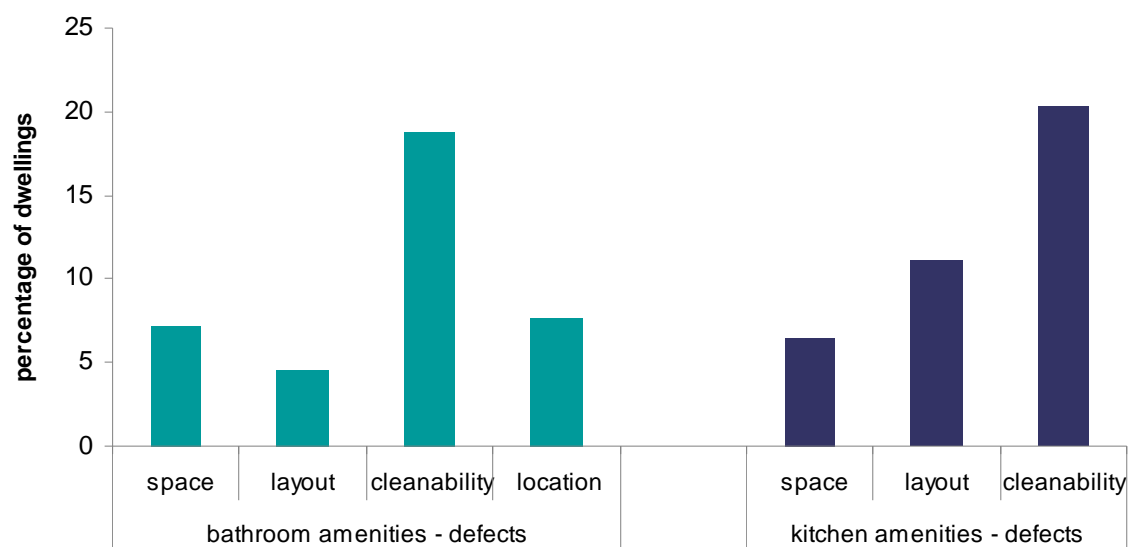
Note: underlying data are presented in Annex Table 5.8

Source: English Housing Survey, dwelling sample

## Dwellings with increased risk of a hygiene hazard - kitchen and bathroom defects<sup>6</sup>

5.20 Among those 955,000 dwellings which had increased risk of a hygiene hazard, around 356,000 (37%) had a kitchen or bathroom where at least one of the items listed in Box 1 was present, Annex Table 5.9. These were most commonly the lack of cleanability of the kitchen (20%) and the bathroom (19%). Some 11% of these dwellings also had dangerous kitchen layouts, Figure 5.6.

**Figure 5.6: Incidence of kitchen and bathroom defects in dwellings with increased risk of a hygiene hazard, 2010**



**Base:** all dwellings with increased risk of a personal or domestic hygiene Category 1 health and safety hazard

**Note:** underlying data are presented in Annex Table 5.10

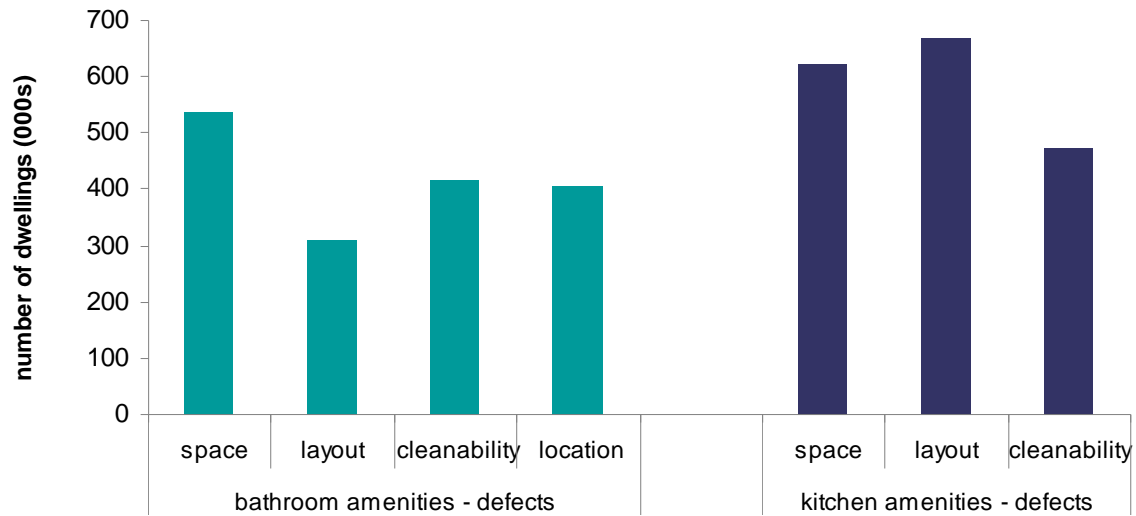
**Source:** English Housing Survey, dwelling sample

### Kitchen and bathroom defects in other dwellings

5.21 An additional 2 million (9%) of dwellings that were not assessed to increased higher risk related to personal or domestic hygiene were nonetheless assessed as 'defective' on at least one item related to kitchen and bathroom health and safety (see Box 1). For these dwellings, the most common defects were dangerous kitchen layouts and inadequate kitchen space (over 600,000 dwellings each), Figure 5.7.

<sup>6</sup> dwellings without a significantly higher than average risk of a domestic or personal hygiene Category 1 hazard

**Figure 5.7: Incidence of kitchen and bathroom defects in dwellings with no increased risk of a hygiene hazard, 2010**



**Base; all dwellings without increased risk of a personal or domestic hygiene Category 1 health and safety hazard**

**Note: underlying data are presented in Annex Table 5.10**

**Source: English Housing Survey, dwelling sample**

5.22 Looking at the profile of these 2 million dwellings, a disproportionate number were private rented (22%); built before 1919 (30%) or between 1919 and 1945 (20%); or were small terraced houses (15%), Table 5.3.

**Table 5.3: Profile of dwellings with any kitchen or bathroom defect without but no increased risk of a hygiene hazard, 2010**

|                            | dwellings with a kitchen or bathroom defect |                        |                                       |
|----------------------------|---|------------------------|---------------------------------------|
|                            | numbers<br>(1000s)                          | percentage<br>of group | percentage of total<br>dwelling stock |
| <b>tenure</b>              |   |                        |                                       |
| owner occupied             | 1,168                                       | 58.3                   | 66.4                                  |
| private rented             | 447   | 22.3                   | 16.6                                  |
| local authority            | 203   | 10.2                   | 8.0                                   |
| housing association        | 183   | 9.2                    | 9.0                                   |
| <b>dwelling type</b>       |   |                        |                                       |
| small terraced house       | 309   | 15.4                   | 9.7                                   |
| medium terraced house      | 355   | 17.7                   | 18.7                                  |
| other houses and bungalows | 878   | 43.9                   | 52.1                                  |
| flat                       | 460   | 23.0                   | 19.6                                  |
| <b>dwelling age</b>        |   |                        |                                       |
| pre 1919                   | 601   | 30.0                   | 21.7                                  |
| 1919 to 1944               | 397   | 19.8                   | 16.8                                  |
| 1945 to 1964               | 428   | 21.4                   | 19.6                                  |
| 1965 to 1980               | 337   | 16.8                   | 20.6                                  |
| post 1980                  | 239   | 12.0                   | 21.3                                  |
| <b>all dwellings</b>       | <b>2,002</b>                                | <b>100.0</b>           | <b>100.0</b>                          |
| <b>sample size</b>         | <b>1,521</b>                                |                        |                                       |

Base: all dwellings without increased risk of a Category 1 personal or domestic hygiene health and safety hazard

Source: English Housing Survey, dwelling sample



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# Chapter 6

## Energy performance

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This chapter assesses the performance of the housing stock in terms of its energy efficiency and carbon dioxide emissions. This report uses the latest version of the energy efficiency methodology (SAP09) to calculate both SAP ratings and carbon dioxide (CO<sub>2</sub>) emissions. The first section of this chapter reports on the headline trend under this methodology, and provides a brief comparison with the previous method. Additional 2010 findings relating to energy performance, heating and insulation can be found in web tables DA6101 – DA6203.

The EHS Housing Stock Report 2009 contains more detailed information about how energy efficiency and carbon dioxide emissions relate to dwelling characteristics and key household groups, and these overall trends and patterns are unlikely to have changed significantly by 2010.

### Key findings

- The average energy efficiency rating for the whole stock (using SAP09) has increased from 45 in 1996 to 55 in 2010.
- The average SAP rating in the social sector in 2010 was around eight points higher than either owner occupied or private rented homes (62 compared with 54).
- The average carbon dioxide (CO<sub>2</sub>) emissions per dwelling were 5.8 tonnes per year. Owner occupied homes had the highest average at 6.3 tonnes per dwelling per year.
- Dwellings built before 1919, converted flats and those in rural areas were the most likely to be in the lowest energy efficiency bands. Around 20% of homes in each of these groups were assessed to be in Energy Efficiency Rating bands F or G.
- In 2010, 61% of homes with cavity walls had some evidence of cavity wall insulation; a substantial increase from the 39% in 2001. Around 300,000 homes had some form of solid wall insulation.

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- The proportion of dwellings with at least 150mm of loft insulation has increased steadily from 24% of dwellings with lofts in 2003 to 43% in 2010.
  - The majority (87%) of homes had central heating with a boiler and radiators. However, over a third (38%) of flats built after 1990 had electric storage heaters instead.
  - Energy efficient condensing boilers, first introduced around 10 years ago, were used in around a third (32%) of all dwellings in 2010.
  - In 2010, around half a million dwellings used some kind of renewable energy technology such as solar hot water, solar photovoltaic panels or a domestic wind turbine.

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## Energy efficiency, 1996 – 2010

- 6.1 Virtually all dwellings in England had a mains electricity supply and 17% of dwellings had an off peak electricity supply<sup>1</sup>, Annex Table 2.1.
- 6.2 The key measures of energy performance of the housing stock used throughout this chapter are the energy efficiency (SAP) rating and carbon dioxide (CO<sub>2</sub>) emissions, Box 1.

### Box 1: Key measures of energy performance

**energy efficiency rating:** The SAP rating is based on each dwelling's energy costs per square metre and is calculated using a simplified form of the Standard Assessment Procedure (SAP). The energy costs take into account the costs of space and water heating, ventilation and lighting, less any cost savings from energy generation technologies. The rating is expressed on a scale of 1–100 where a dwelling with a rating of 1 has poor energy efficiency (high costs) and a dwelling with a rating of 100 represents a completely energy efficient dwelling (zero net energy costs per year).

The energy efficiency rating is also presented in an A to G banding system for an Energy Performance Certificate, where Energy Efficiency Rating (EER) Band A represents low energy costs (i.e. the most efficient band) and EER Band G represents high energy costs (i.e. the least energy efficient band).

**carbon dioxide emissions:** The carbon dioxide (CO<sub>2</sub>) emissions are derived from space heating, water heating, ventilation and lighting, less any emissions saved by energy generation, and are measured in tonnes per year. This chapter deals with the average emissions per dwelling and the total emissions for different sub-sections of the stock.

It is important to emphasise that this assessment of the housing stock is not based on actual energy consumption and emissions, but on the consumption (and resulting emissions) assumed under a standard occupancy and standard heating pattern for each dwelling. This enables the performance of the housing stock to be assessed on a comparable basis (between sections of the stock and over time).

- 6.3 Previous reports have used the SAP05 methodology for energy efficiency comparisons, but this report uses the updated SAP09, originally published in 2010. The majority of the raw EHS data collected and used in the calculation is the same so the difference between the two sets of figures is due to

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<sup>1</sup> a supply offered at a lower price than on peak supply. This can be utilised by storage heaters to reduce the cost of heating.

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different assumptions and values used in SAP09<sup>2</sup>. Box 2 summarises the main differences between the two methods:

**Box 2: Key differences between SAP05 and SAP09**

- Assumptions made about energy used for domestic hot water have been revised;
- Weather data has been updated;
- CO<sub>2</sub> emissions factors have been updated using the latest available data;
- The calculation of boiler efficiency from test data has been amended;
- Assumptions about internal heat gains have been revised.

6.4 Table 6.1 illustrates the change in mean SAP rating for the stock between 1996 and 2010, using SAP09, and additionally compares the 2010 estimate with that which would be obtained using the SAP05 methodology. The average (mean) SAP rating has increased from 45 in 1996 to 55 in 2010. Using the SAP05 methodology, the 2010 average for the whole stock would be around half a point lower, although this varies for different groups of stock. For example, the SAP05 average for social sector homes would be a SAP point higher than that for SAP09 whereas the average for private sector homes would be almost a point lower.

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<sup>2</sup>the SAP methodology is also used in the HHSRS and Decent Homes indicators, however the change to SAP09 has made a negligible difference to these results

**Table 6.1: Trend in mean SAP rating, and comparison between SAP05 and SAP09 for 2010**

| <i>all dwellings</i> |                       |                      |                    |
|----------------------|-----------------------|----------------------|--------------------|
|                      | <b>private sector</b> | <b>social sector</b> | <b>all tenures</b> |
| 1996                 | 43.5                  | 48.6                 | <b>44.6</b>        |
| 2001                 | 45.3                  | 52.1                 | <b>46.7</b>        |
| 2003                 | 46.3                  | 53.6                 | <b>47.6</b>        |
| 2004                 | 47.0                  | 54.9                 | <b>48.5</b>        |
| 2005                 | 47.4                  | 56.1                 | <b>49.0</b>        |
| 2006                 | 48.0                  | 56.7                 | <b>49.6</b>        |
| 2007                 | 49.2                  | 57.0                 | <b>50.6</b>        |
| 2008                 | 50.3                  | 57.9                 | <b>51.7</b>        |
| 2009                 | 51.9                  | 59.6                 | <b>53.2</b>        |
| 2010                 | 53.7                  | 61.4                 | <b>55.0</b>        |
| <i>2010 (SAP05)</i>  | <i>52.9</i>           | <i>62.4</i>          | <i>54.5</i>        |

**Base: all dwellings**

**Note: underlying data are presented in Annex Table 6.1**

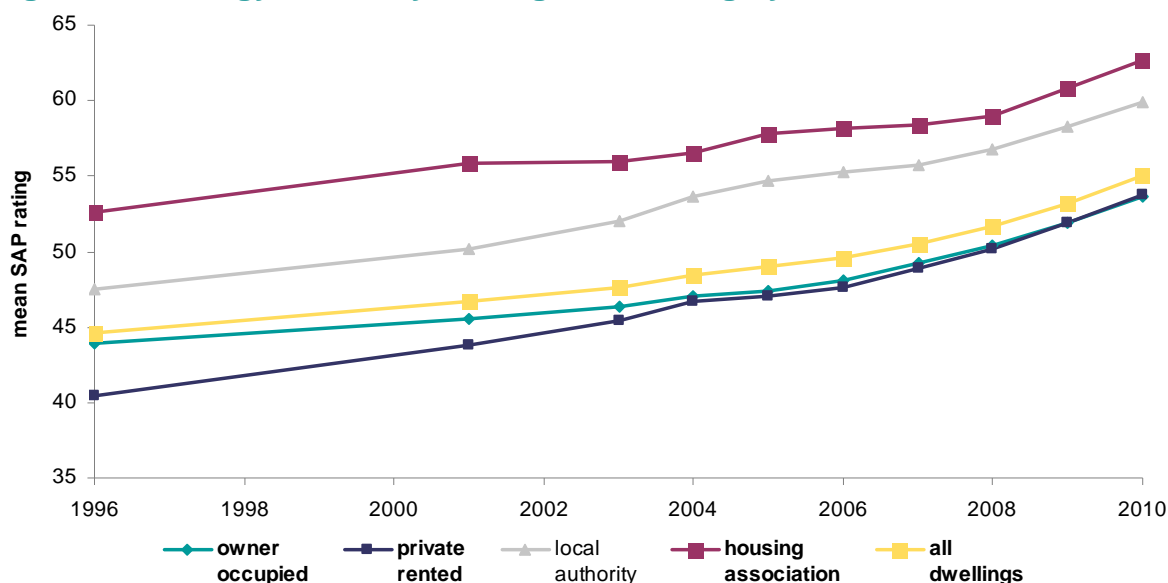
**Sources:**

1996-2007: English House Condition Survey;

2008 onwards: English Housing Survey, dwelling sample

6.5 The average SAP rating has increased in all tenures since 1996, Figure 6.1. The largest increase was in the private rented sector, where the average SAP rating increased by 13 SAP points; this sector has gone from having the lowest average rating to having an almost identical average rating to that for owner occupied homes. This is partly because of changes in the composition of the sector, with a much higher proportion of newer homes. Housing association dwellings have consistently had the highest average SAP rating, reaching 63 in 2010, eight SAP points above the stock average. However, local authority homes have gradually moved closer to parity with them in terms of energy efficiency. In part, this is attributable to the programme of stock transfers to housing associations, the transferred stock generally being less energy efficient.

**Figure 6.1: Energy efficiency, average SAP rating by tenure, 1996 – 2010**



**Base: all dwellings**

**Note: underlying data are presented in Annex Table 6.2**

**Sources:**

1996-2007: English House Condition Survey;

2008 onwards: English Housing Survey, dwelling sample

6.6 There are several reasons for the difference in the energy efficiency of private and social sector housing. Social sector homes tend to have higher levels of insulation; partly because they tend to be newer and partly because of their built form, for example type of house. The social sector contains a far higher proportion of terraced houses and flats than the private sector and these have far less exposed surface area (external walls and roofs) through which heat can be lost than detached or semi-detached houses (see Chapter 1).

6.7 The energy efficiency of a dwelling reflects the type of heating system, the fuel used, and the fabric and insulation of the building. The amount of carbon dioxide (CO<sub>2</sub>) emitted is based on similar factors, but unlike the SAP rating (which is calculated per m<sup>2</sup> of floor area), emissions are calculated for the whole dwelling. This means that the size of the dwelling is an important factor and larger dwellings tend to emit more CO<sub>2</sub> each year as they use more fuel for space heating, water heating, lighting and ventilation. Across the stock, the mean CO<sub>2</sub> emitted per dwelling was 5.8 tonnes per year in 2010, Table 6.2.

**Table 6.2: Mean SAP, mean CO<sub>2</sub> and total CO<sub>2</sub> by tenure, 2010**

|                     | % of stock   | mean SAP  | % in SAP bands F and G | mean CO <sub>2</sub> (tonnes per dwelling) | % of total CO <sub>2</sub> | sample size   |
|---------------------|--------------|-----------|------------------------|--|----------------------------|---------------|
| <b>tenure</b>       |              |           |                        |  |                            |               |
| owner occupied      | 66.4         | 54        | 10.4                   | 6.3  | 72.7                       | 8,791         |
| private rented      | 16.6         | 54        | 13.5                   | 5.3  | 15.2                       | 3,096         |
| local authority     | 8.0          | 60        | 4.3                    | 4.3  | 6.0                        | 2,276         |
| housing association | 9.0          | 63        | 2.4                    | 3.9  | 6.0                        | 2,507         |
| <b>all tenures</b>  | <b>100.0</b> | <b>55</b> | <b>9.7</b>             | <b>5.8</b>                                 | <b>100.0</b>               | <b>16,670</b> |

Base: all dwellings

Note: underlying data are presented in Annex Table 6.3

Source: English Housing Survey, dwelling sample

6.8 In 2010, there was a steady trend of increasing SAP ratings and decreasing CO<sub>2</sub> emissions from the oldest to the newest housing stock. The average CO<sub>2</sub> emissions of dwellings constructed after 1990 were almost half of those constructed before 1919 (4.1 and 7.7 tonnes per year respectively), Annex Table 6.5. Almost 30% of CO<sub>2</sub> emissions were attributed to dwellings built before 1919 compared with only 9% from those built after 1990. The SAP ratings also show a comparable difference, with dwellings built before 1919 having a mean SAP rating of 47 compared with a mean of 66 for homes built after 1990.

6.9 For houses, average SAP ratings vary considerably by built form, in particular by the ratio of total size (volume) to the total area of exposed surfaces (external walls and roofs). If we compare dwellings built during the same period to minimise the variation in dwelling fabric and heating systems seen in stock from different periods, the effects of this become clearer. For example, for dwellings built between 1965 and 1980, the highest average SAP rating and lowest average CO<sub>2</sub> emissions were in mid-terrace houses (with two walls adjoining other homes), followed by end terraces and semi-detached (with one adjoining wall), followed by detached dwellings (with heat losses to the outside through all walls), Table 6.3.

**Table 6.3: Houses built 1965-1980: mean SAP, mean CO<sub>2</sub> and total CO<sub>2</sub> by house type, 2010**

|   | % of all houses | mean SAP  | % in SAP bands F and G | mean CO <sub>2</sub> (tonnes per dwelling) | % of total CO <sub>2</sub> for houses | sample size  |
|---|-----------------|-----------|------------------------|--|---------------------------------------|--------------|
| <b>houses built between 1965 and 1980</b> |                 |           |                        |  |                                       |              |
| end terrace                               | 14.4            | 56        | *                      | 4.9  | 12.8                                  | 420          |
| mid-terrace                               | 18.4            | 61        | *                      | 4.0  | 13.4                                  | 533          |
| semi detached                             | 32.0            | 56        | 4.1                    | 4.9  | 28.6                                  | 772          |
| detached                                  | 35.2            | 52        | 10.5                   | 7.1  | 45.1                                  | 815          |
| of which,                                 |                 |           |                        |  |                                       |              |
| detached house                            | 23.1            | 54        | 6.8                    | 7.5  | 31.4                                  | 534          |
| detached bungalow                         | 12.0            | 47        | 17.5                   | 6.3  | 13.7                                  | 281          |
| <b>all houses (1965-1980)</b>             | <b>100.0</b>    | <b>55</b> | <b>6.4</b>             | <b>5.5</b>                                 | <b>100.0</b>                          | <b>2,540</b> |

Base: houses built between 1965 and 1980

Note: underlying data are presented in Annex Table 6.4

Source: English Housing Survey, dwelling sample

- 6.10 Heat losses are higher for bungalows than comparable houses because all rooms are adjacent to the ground and the roof. The average SAP rating for detached bungalows built between 1965 and 1980 was 47 compared with an average of 54 for detached houses from the same period.
- 6.11 Purpose built flats were the most energy efficient dwelling type with the highest SAP ratings (64) and the lowest carbon emissions (3.8 tonnes per dwelling per year), Annex Table 6.5. Converted flats had the lowest mean SAP rating (47), with 21% of these in bands F and G compared with only 5% of purpose built flats. However, the average CO<sub>2</sub> emissions for converted flats were the same as the average for the stock. This was because, although they tended to have low SAP ratings, converted flats were considerably smaller than the stock as a whole, having an average floor area of 65m<sup>2</sup> compared with 92m<sup>2</sup>.
- 6.12 Dwellings in rural areas tended to have lower SAP ratings than those in urban or suburban areas (an average of 50 compared with an average of 56 for suburban areas). They also tended to have higher average annual CO<sub>2</sub> emissions (8.1 tonnes per year, compared with 5.3 for dwellings in suburban areas). This was because rural dwellings were more likely to be older, larger, detached, have solid walls and be off the gas network than homes in more urban areas.



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- 6.13 The variations in average SAP and CO<sub>2</sub> emissions by dwelling age, type and location partly explain the differences seen between the tenures, shown in Table 6.3. The housing association stock had the highest average SAP rating (63), the lowest proportion of dwellings in bands F and G (2%) and the lowest average CO<sub>2</sub> emissions (3.9 tonnes per dwelling). This is largely because this tenure had the highest proportion of homes built after 1990 (20%) and because a relatively high proportion of the stock (38%) was purpose built flats (see Chapter 1).

## Energy improvement measures 1996 - 2010

- 6.14 This section examines trends in the take up of energy improvement measures such as improved insulation and energy efficient heating systems.

### Cavity wall insulation

- 6.15 External walls of cavity construction normally provide greater energy efficiency than solid walls by restricting heat losses, and this type of construction become more prevalent from around 1930 onwards. Overall, the number of dwellings with predominantly cavity walls<sup>3</sup> increased from around 13.2 million in 1996 to about 15.5 million in 2010, Annex Table 6.6.
- 6.16 Most dwellings built since 1990 with cavity walls had cavity wall insulation fitted as part of the original construction in order to comply with Building Regulations; however compliance could also be achieved through other techniques. Older cavity wall homes can have cavity wall insulation installed by injecting insulating material into the cavity, and this very often leaves some evidence that would be recognised by a trained surveyor.
- 6.17 The EHS collects data on the existence of cavity wall insulation by examining the dwelling for evidence of insulation. This means that it may under-estimate the total number of dwellings with cavity wall insulation by excluding newer homes with insulation fitted at construction.
- 6.18 This section considers the number of dwellings showing evidence of cavity wall insulation as a proportion of all cavity-walled homes, along with the number of additional dwellings built post-1990 which may have been built with insulated cavity walls but where there was no visible evidence of this, Figure 6.2. Combining these two categories provides the most reliable estimate of the total number of homes with cavity wall insulation because, although there will be some post-1990 dwellings without cavity wall insulation, there will also

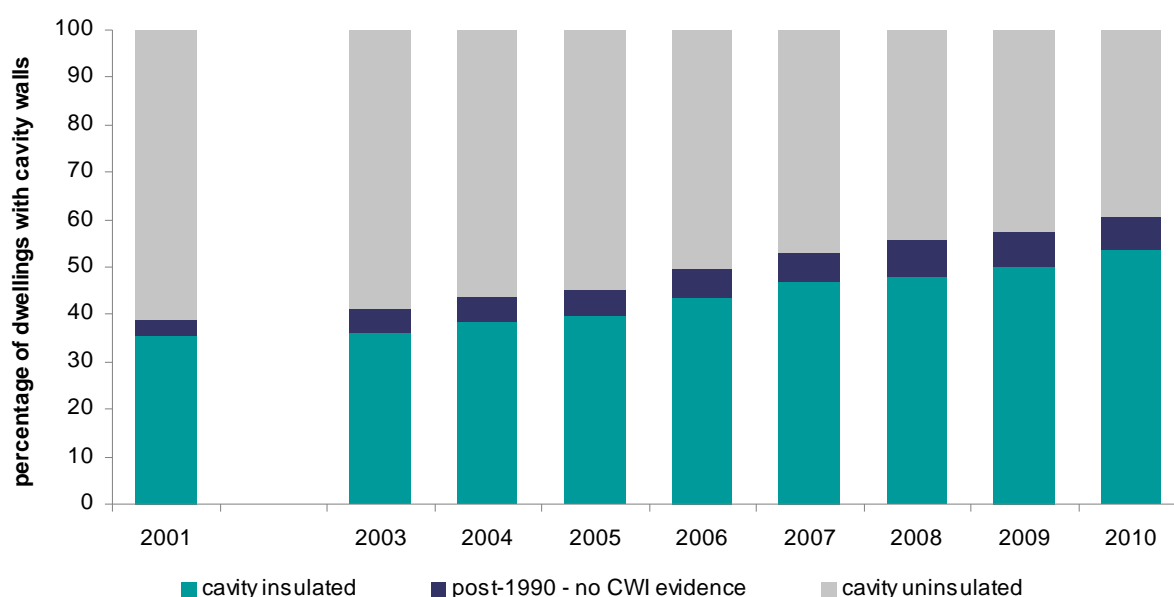
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<sup>3</sup> this represents a change from reporting on cavity wall insulation in previous EHS reports. Further details of the difficulties in providing an estimate are given in the Technical Advice Note on Energy Efficiency and Energy Improvements

be some dwellings built with insulated cavity walls in the 1980s where there is no visible evidence of cavity wall insulation<sup>4</sup>.

6.19 In 2001, around 5.2 million dwellings showed evidence of cavity wall insulation (35% of all cavity walled homes), with an additional 0.5 million (4%) in the post-1990 category. In 2010 these figures had risen to 8.3 million (54%) observed cases and 1.1 million (7%) post-1990 showing no evidence. Combining these categories reveals a steady increase in the proportion of cavity wall dwellings with cavity wall insulation from 39% in 2001 to 61% in 2010, Figure 6.2.

**Figure 6.2: Proportion of dwellings with insulated cavity walls, 2001-2010**



**Base: all dwellings with cavity walls**

**Note: underlying data are presented in Annex Table 6.7**

**Sources:**

1996-2007: English House Condition Survey;

2008 onwards: English Housing Survey, dwelling sample

6.20 In 2010, housing association dwellings had the highest estimated incidence of cavity wall insulation (69% of cavity-walled dwellings), Annex Table 6.8. The private rented sector had the lowest proportion of cavity walls with cavity wall insulation; just 37% showed evidence of cavity wall insulation and an estimated 48% probably had cavity wall insulation.

6.21 Where dwellings do not have cavity walls, external or internal wall insulation can be installed to improve energy efficiency where the thermal properties of the external walls are poor. However, both of these methods are much more expensive than installing cavity wall insulation, and other measures to improve the efficiency of the heating and/or reduce heat loss through the

<sup>4</sup> this represents a change from reporting on cavity wall insulation in previous EHS reports. Further details of the difficulties in providing an estimate are given in the Technical Advice Note on Energy Efficiency and Energy Improvements.

fabric may be more appropriate. Installing external insulation may also alter the physical appearance of the building and may not be permitted in some areas or buildings due to planning restrictions, e.g. in conservation areas, or may not be seen as acceptable to building owners. Installing internal insulation is disruptive because it involves moving and refitting electrical sockets, radiators etc. and redecoration. Such barriers are analysed further in Chapter 7.

- 6.22 Given these constraints it is not surprising that in 2010, only 3% of dwellings with non-cavity walls had external insulation and around 2% had internal wall insulation, Table 6.4. By tenure, some 15% of social rented dwellings with non-cavity walls had either external or internal insulation fitted compared with just 3% of such dwellings in the private sector. Of all dwellings with external solid wall insulation, around half (54%) were in the social rented sector whilst the majority (81%) of dwellings with internal insulation were privately owned or rented.

**Table 6.4: Dwellings with solid wall insulation by tenure, 2010**

| <i>all dwellings with solid walls</i> |                                  |                      |                    |                    |
|---------------------------------------|----------------------------------|----------------------|--------------------|--------------------|
|                                       | <b>private sector</b>            | <b>social sector</b> | <b>all tenures</b> | <b>sample size</b> |
|                                       | <i>dwellings (000s)</i>          |                      |                    |                    |
| no solid wall insulation              | 5,909                            | 697                  | 6,606              | 4,545              |
| solid wall with external insulation   | 82                               | 95                   | 178                | 186                |
| predominant internal insulation       | 130                              | 30                   | 160                | 123                |
| <b>total</b>                          | <b>6,121</b>                     | <b>823</b>           | <b>6,944</b>       | <b>4,854</b>       |
|                                       | <i>percentages within tenure</i> |                      |                    |                    |
| no solid wall insulation              | 96.5                             | 84.7                 | 95.1               |                    |
| solid wall with external insulation   | 1.3                              | 11.6                 | 2.6                |                    |
| predominant internal insulation       | 2.1                              | 3.6                  | 2.3                |                    |
| <b>total</b>                          | <b>100.0</b>                     | <b>100.0</b>         | <b>100.0</b>       |                    |
|                                       | <i>percentages within group</i>  |                      |                    |                    |
| no solid wall insulation              | 89.4                             | 10.6                 | 100.0              |                    |
| solid wall with external insulation   | 46.3                             | 53.7                 | 100.0              |                    |
| predominant internal insulation       | 81.2                             | 18.8                 | 100.0              |                    |
| <b>total</b>                          | <b>88.2</b>                      | <b>11.8</b>          | <b>100.0</b>       |                    |

**Base: all dwellings with non-cavity walls**  
**Source: English Housing Survey, dwelling sample**

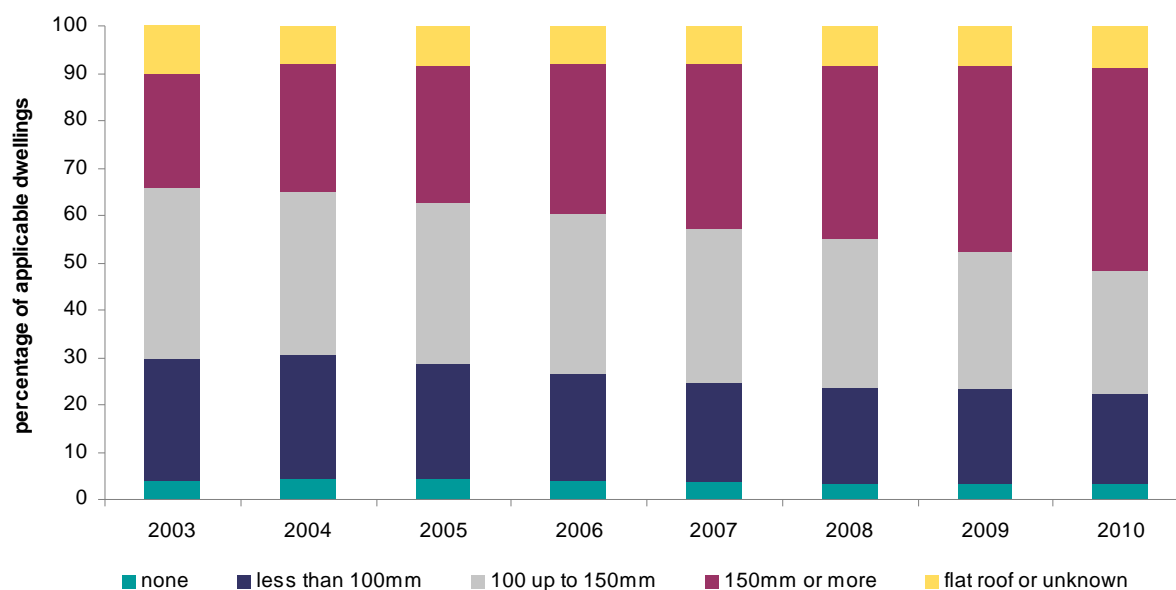
## Loft insulation

- 6.23 As with cavity wall insulation, this report presents findings on loft insulation in a slightly different way to previous reports. Information on loft insulation could

not be collected for some homes, e.g. where there was no access to the loft or where the roof had a very shallow pitch. Also, a number of dwellings have flat roofs above and these do not have a loft space<sup>5</sup>.

- 6.24 Figure 6.3 includes these inaccessible or unknown cases as they will be considered further in Chapter 7, where the remaining potential for loft insulation measures is analysed. These dwellings formed a consistent 8% - 10% of dwellings which should be considered for some type of roof insulation.
- 6.25 To comply with current Building Regulations, new dwellings normally require around 270mm of loft insulation. In 2010, only 43% of applicable dwellings with a loft space above had at least 150mm of loft insulation. Although this represents a significant improvement from the 24% in 2003, there is clearly considerable potential for improving this further. The proportion with at least 150mm of loft insulation varied considerably by tenure from 29% of private rented dwellings to 59% of housing association dwellings, Annex Table 6.9.
- 6.26 The proportion of dwellings with no loft insulation has remained fairly constant over this period at around 3-4%, whilst the proportion with less than 100mm fell from 26% in 2003 to 19% in 2010.

**Figure 6.3: Percentage of dwellings with different amounts of loft insulation, 2003-2010**



**Base: all dwellings adjacent to a loft space or flat roof (all houses and all flats that have one or more rooms on the top floor)**

**Note: underlying data are presented in Annex Table 6.10**

**Sources:**

**1996-2007: English House Condition Survey;**

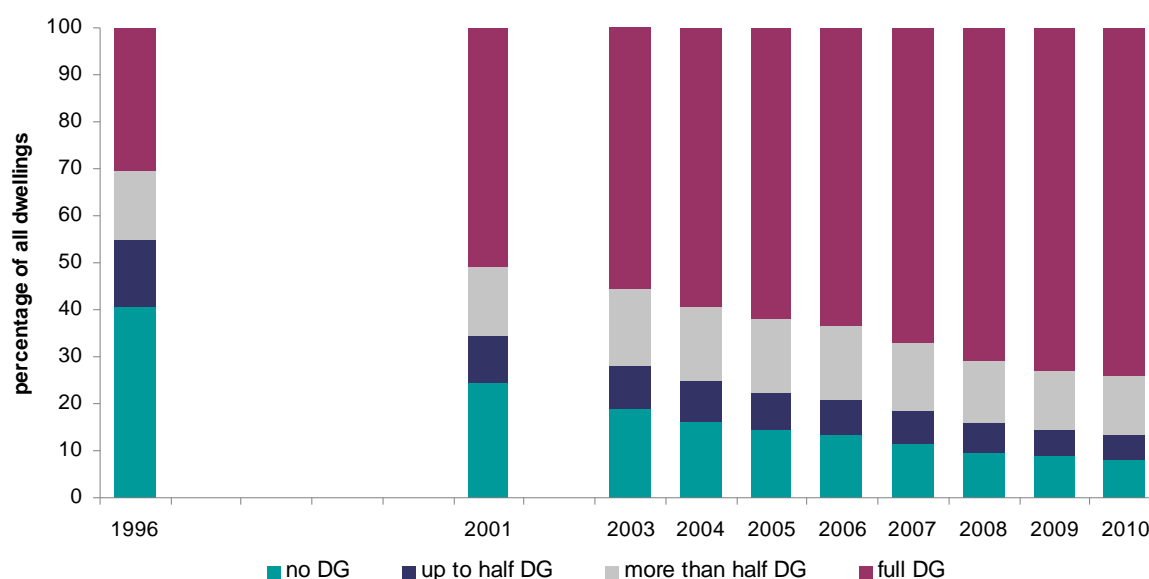
**2008 onwards: English Housing Survey, dwelling sample**

<sup>5</sup> further detail of these categories and their treatment in the energy modelling are given in the Technical Advice note on energy efficiency and energy improvements.

## Double Glazing

6.27 From 2006, Building Regulations have required that all windows in new dwellings, and any that are replaced in older dwellings, are double glazed. Although relatively cost inefficient as an energy improvement measure, double glazing has been very popular from the 1990s onwards and the proportion of dwellings with full double glazing increased substantially from 30% in 1996 to 74% in 2010, Figure 6.4.

**Figure 6.4: Distribution with given levels of double glazing, 1996-2010**



**Base:** all dwellings

**Note:** underlying data are presented in Annex Table 6.11

**Sources:**

1996-2007: English House Condition Survey;

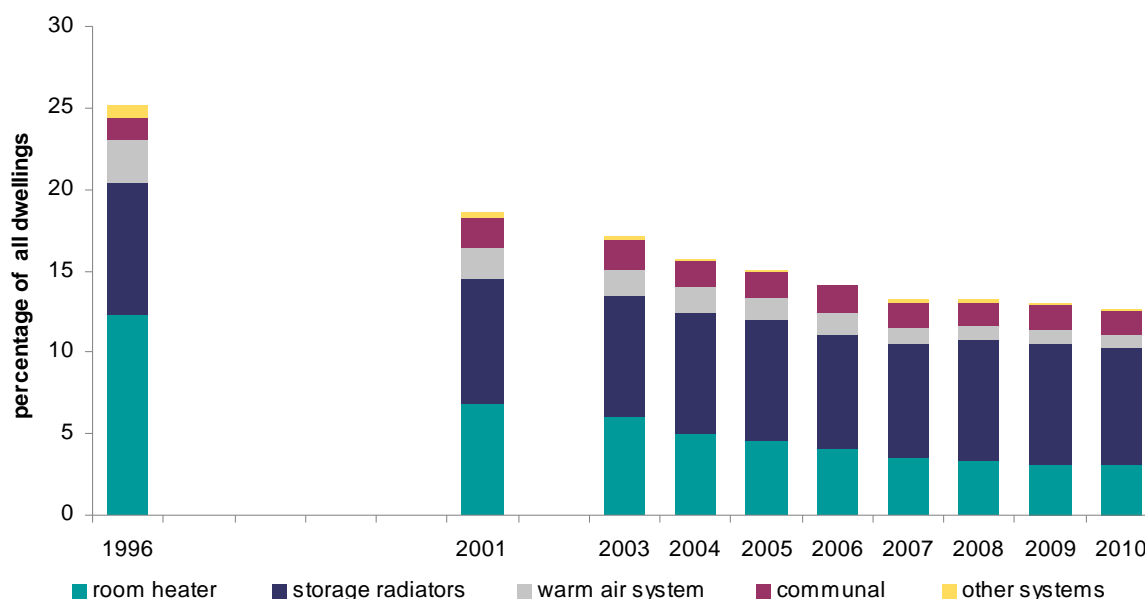
2008 onwards: English Housing Survey, dwelling sample

## Heating systems

6.28 The most substantial change in the heating systems of homes since 1996 has been the increase in central heating<sup>6</sup>; especially gas central heating. The percentage of homes with central heating rose from 75% in 1996 to 87% in 2010. Over the same period the proportion of homes with individual room heaters (e.g. gas fires or fixed electric heaters) as the main heating fell from 12% in 1996 to 3% in 2010. The proportions of homes with communal heating and electric storage heaters have remained fairly constant since 1996.

<sup>6</sup>central heating is defined as a system with a boiler that feeds radiators. It does not include warm air, underfloor or ceiling systems or electric storage heaters.

**Figure 6.5: Distribution of non-boiler heating systems, 1996-2010**



**Base: all dwellings**

**Note: underlying data are presented in Annex Table 6.12**

**Sources:**

**1996-2007: English House Condition Survey;**

**2008 onwards: English Housing Survey, dwelling sample**

6.29 Recent changes to Building Regulations made it mandatory for replacement boilers to be of the more efficient condensing types (where feasible). In 2010, around a third (32%) of all dwellings had either a condensing or condensing combination boiler compared with only 2% in 2001, Figure 6.6. The increase has been mainly due to the large number of condensing-combination boilers installed – these provide hot water instantaneously and tend to be installed in smaller houses and flats in preference to standard boilers (with a hot water cylinder), at least partly to reduce future maintenance or replacement of hot water cylinders and associated piping. Alongside this, the number of back boilers fell from 14% to 6% between 1996 and 2010 and the proportion of homes with standard boilers fell from 51% in 1996 to 29% over the same period.

**Figure 6.6: Percentages of dwellings with given boiler types, 1996-2010**



**Base: all dwellings**

**Note: underlying data are presented in Annex Table 6.13**

**Sources:**

**1996-2007: English House Condition Survey;**

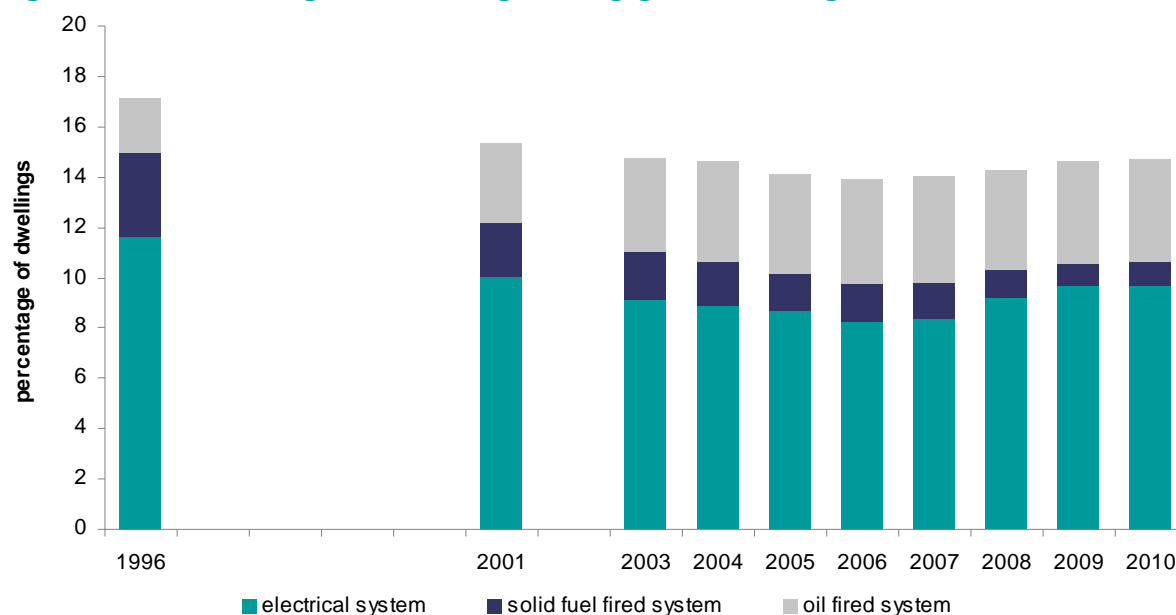
**2008 onwards: English Housing Survey, dwelling sample**

6.30 The increase in central heating has corresponded with a rise in the use of mains gas for heating dwellings. This is generally a more energy and cost efficient fuel than others, though the effectiveness of the heating system as a whole also depends on the type of boiler and distribution system. In 2010, 85% of dwellings with individual heating systems<sup>7</sup> used mains gas as the main heating fuel, a very slight increase from 83% in 1996, Annex Table 6.14.

6.31 The proportion of homes using solid fuel has decreased from 3% to 1% whereas the proportion of electrically heated homes has fluctuated in recent years, Figure 6.7. Although electric storage or other electric heaters have been replaced by gas central heating in some homes, many newer purpose built flats use storage heaters. Some 21% of all electrically heated homes were built after 1990, Annex Table 6.15, with 38% of purpose built flats from this period using storage radiators, Annex Table 6.16. Private rented homes were the most likely to have electric heating (19% compared with 7% of owner occupied homes), Annex Table 6.17. Only 77% of private rented homes used mains gas.

<sup>7</sup> this analysis excludes communal heating systems as EHS does not collect details of the fuel used for these.

**Figure 6.7: Percentage of dwellings using given heating fuels, 1996-2010**



Base: all dwellings except those with communal heating systems

Note: underlying data are presented in Annex Table 6.18

Sources:

1996-2007: English House Condition Survey;

2008 onwards: English Housing Survey, dwelling sample

6.32 Renewable energy measures are gradually becoming more common within the housing stock. The EHS estimates that just over 500,000 dwellings had either solar panels for hot water, solar photovoltaic panels or a domestic wind turbine contributing to electricity production in 2010, Table 6.5. Photovoltaic panels were slightly more common than the other measures and these may be at least partly due to the Feed-in Tariffs (FITs) scheme introduced in 2010, rewarding investment in low-carbon technology.

**Table 6.5: Distribution of renewable energy measures, 2010**

| <i>dwellings with a renewable energy measure</i> | <b>number of dwellings (000s)</b> | <b>percentages<sup>1</sup></b> |
|--|-----------------------------------|--------------------------------|
| solar hot water                                  | 168                               | 32.6                           |
| photovoltaic                                     | 217                               | 42.1                           |
| wind turbine                                     | 158                               | 30.6                           |
| <b>any renewable energy measure</b>              | <b>515</b>                        | <b>100.0</b>                   |
| <b>sample size</b>                               | <b>378</b>                        |                                |

<sup>1</sup>percentages do not sum to 100 because some dwellings have more than one of these measures

Base: all dwellings with any renewable energy measures

Source: English Housing Survey, dwelling sample



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# Chapter 7

## Potential for improving energy performance

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The previous chapter described the energy performance of the housing stock in 2010 and how this had improved since 1996. This chapter examines the number and profile of homes that could potentially benefit from relatively straightforward and cost-effective works to heating and insulation. It then examines some key barriers to installing loft and wall insulation in homes and produces estimates of the number of homes where these improvements may be particularly problematic or expensive.

### Key findings

- Some 17.8 million dwellings could potentially benefit from one or more of the improvement measures recommended in the Energy Performance Certificate (EPC) methodology. At 2010 prices, these works would cost in the region of £19 billion (an average of about £1,100 per dwelling).
- Most of the EPC recommended measures had greater improvement potential in the private sector.
- Even after these works some 17% of homes would still be relatively energy inefficient (in bands E-G) and 12% would still have CO<sub>2</sub> emissions that exceeded 7 tonnes per year. Other measures like solid wall insulation would need to be installed to improve the performance of these homes.
- If all of the potential measures were installed, the mean SAP rating would increase by 7 points and the mean annual fuel costs (based on 2009 fuel prices) would fall by £162. The total CO<sub>2</sub> emissions would reduce by 20% which would represent a reduction of 25.9 million tonnes across the stock. However, in a proportion of cases there are significant barriers to installation in terms of costs and practicality.
- Only 16% of homes where external solid wall insulation could be fitted, 40% where loft insulation could be added and 51% where cavity wall insulation could be installed would involve standard, straightforward work with no additional complications or expense.

## Potential for installing improvement measures

- 7.1 The cost effective improvement measures included in this section are based on the lower and higher cost recommendations covered by the Energy Performance Certificate (EPC). These individual measures are shown in Table 7.1 and described in more detail in the Glossary. Details of the modelling are described in the Technical Advice Note on Energy Efficiency and Energy Improvements. Note that the figures in this report are based on SAP09 and are therefore not directly comparable with the estimates used in previous EHS reports which were calculated using the SAP05 methodology.
- 7.2 In 2010, some 17.8 million dwellings (80% of the housing stock) could theoretically benefit from at least one of the cost effective improvements listed in Table 7.1. Some 12.5 million (56%) of homes could potentially benefit from one or more of the lower cost measures, most commonly installing cavity wall insulation (7.0 million) and installing or topping up loft insulation (6.3 million). Overall, 14.4 million (64%) of homes could potentially benefit from one or more of the higher cost measures, most commonly replacing an existing conventional central heating boiler with a condensing unit (11.5 million).

**Table 7.1: EPC recommended energy efficiency measures, 2010**

|   | size of applicable group <sup>1</sup> (000s) | number of dwellings (000s) that would benefit from the measure | percentage of applicable group |
|---|--|--|--------------------------------|
| <b>low cost measures (less than £500)</b>     |  |  |                                |
| loft insulation                               | 19,647                                       | 6,298  | 32.1                           |
| cavity wall insulation                        | 15,522                                       | 6,959  | 44.8                           |
| hot water cylinder insulation                 | 11,967                                       | 3,801  | 31.8                           |
| <b>any low cost measure</b>                   | <b>22,386</b>                                | <b>12,530</b>  | <b>56.0</b>                    |
| <b>higher cost measures (more than £500)</b>  |  |  |                                |
| hot water cylinder thermostat                 | 11,967                                       | 1,751  | 14.6                           |
| heating controls                              | 19,716                                       | 4,566  | 23.2                           |
| boiler upgrade                                | 19,552                                       | 11,492   | 58.8                           |
| install biomass system <sup>2</sup>           | 555  | 110  | 19.9                           |
| storage heater upgrade                        | 2,317  | 1,537  | 66.3                           |
| replacement warm air system                   | 164  | 92   | 55.7                           |
| <b>any higher cost measure</b>                | <b>22,386</b>                                | <b>14,413</b>  | <b>64.4</b>                    |
| <b>any low or higher cost measure</b>         | <b>22,386</b>                                | <b>17,827</b>  | <b>79.6</b>                    |
| <b>mean cost of measures per dwelling (£)</b> |  | 1,065  | -                              |
| <b>total cost of measures (£billion)</b>      | -  | 18.99  | -                              |
| <b>sample size</b>                            | 16,670                                       |  |                                |

<sup>1</sup>the number of dwellings where this improvement might be possible, e.g. for cavity wall insulation this is the number of dwellings with cavity walls

<sup>2</sup>this improvement is applied to homes with solid fuel heating

Base: all dwellings

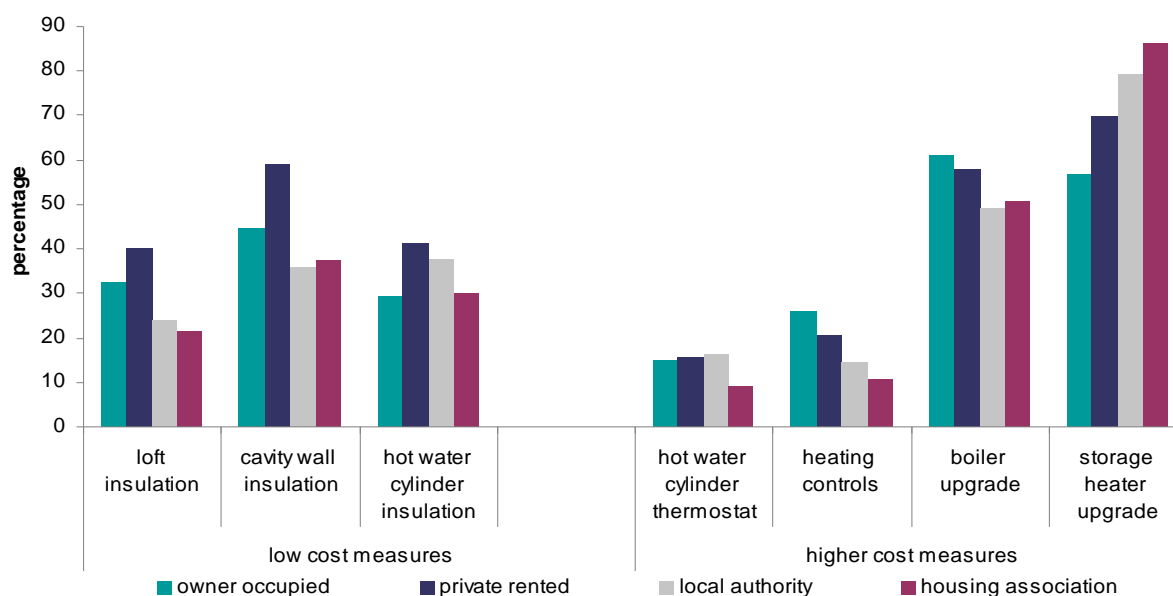
Note: improvement costs at 2010 prices

Source: English Housing Survey, dwelling sample

7.3 A further 2.3 million dwellings, without mains gas, had storage radiators or other non-central, electric heating systems: around 66% of these would benefit from their replacement with more modern slim-line storage heaters. Of the small number of homes with warm air heating systems, 56% would benefit from an upgrade. Additionally, 20% of dwellings that used a solid fuel boiler or room heaters would benefit from an upgrade to a HETAS<sup>1</sup> approved biomass boiler. Around 32% of the 12.0 million dwellings with hot water cylinders could be improved by upgrading the cylinder insulation and around 15% by fitting a cylinder thermostat.

7.4 The private rented sector had the highest proportion of dwellings where there was potential to install the low cost measures. Some 40% of all private rented dwellings with lofts and 59% of those with cavity walls could potentially benefit from insulating these, Figure 7.1. Owner occupied homes had the greatest potential for upgrades to boilers and heating controls (61% and 26% respectively). Social sector homes had less potential for improvements to boilers, heating controls and loft and cavity wall insulation than those in the private sector; partly because many of these works had already been carried out through the Decent Homes programme. However, social sector homes were more likely to be able to benefit from storage heater upgrades than those in the private sector.

**Figure 7.1: Percentage of applicable groups that would benefit from EPC recommended energy efficiency measures by tenure, 2010**



**Base: number of dwellings where this improvement might be possible, e.g. for cavity wall insulation the base is the number of dwellings with cavity walls**

**Notes:**

1) replacement warm air systems and installation of biomass systems have been omitted due to the small number of dwellings that would benefit

2) underlying data are presented in Annex Table 7.1

Source: English Housing Survey, dwelling sample

<sup>1</sup>the official body of solid fuel domestic heating appliances, fuels and services.

- 
- 7.5 The potential for installing beneficial energy efficiency measures varied by dwelling age but was not always highest for the oldest dwellings, Annex Table 7.2. This was because many of these older homes had been upgraded to reasonable modern standards whilst many newer homes retained the adequate level of energy efficiency with which they were built. For example, very few dwellings built before 1919 would have originally been built with loft insulation, but for that reason were more likely to have had a sufficient amount fitted retrospectively. The proportion that could benefit from upgrading heating controls was broadly similar in all age bands apart from those built after 1990. Generally, there was far less potential to improve dwellings built after 1990, largely because the requirements for energy efficiency in the Building Regulations have continued to improve in the last 20 years.
- 7.6 The potential for installing the different measures also varied by dwelling type. Overall, houses were more likely to be able to benefit from improvements to heating controls and boiler upgrades whereas flats were more likely to be able to benefit from storage heater upgrades, Annex Table 7.3. Converted flats were the most likely to benefit from additional hot water cylinder insulation. Looking at houses, end terraces were the type least likely to benefit from new or additional loft insulation.

## Post-improvement performance

- 7.7 If all of the potential cost effective improvement measures<sup>2</sup> were installed, the mean SAP rating<sup>3</sup> for the stock would rise by 7 points from 55 to 62, Table 7.2. Under the standard occupancy and heating patterns used by SAP to assess stock performance, this could result in the following:
- a potential 16% reduction in heating, lighting and ventilation costs of average fuel bills for all households (from £995 to £834 at 2009 standard energy prices)
  - average CO<sub>2</sub> emissions falling by 1.2 tonnes/year across the whole stock (from 5.8 to 4.6 tonnes/year)
  - a total saving of 26 million tonnes/year of CO<sub>2</sub> (or 20% of total emissions accounted for by the housing stock).

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<sup>2</sup> replacing warm air system has been included in the post-improvement Energy Efficiency Rating/CO<sub>2</sub> emissions but, due to modelling complexity, installation of a biomass boiler has not. Given the relatively small number of dwellings that could benefit from a HETAS approved biomass boiler this will not have any significant effect on the overall indicators of post-improvement performance used in this section.

<sup>3</sup> using SAP 2009 methodology, see Chapter 6.

**Table 7.2: Potential improvements in energy efficiency (SAP) ratings, CO<sub>2</sub> emissions and fuel costs, by tenure, 2010**

|                                     | current performance |                                |               | post-improvement |                                |               | difference            |                                |                      | sample size   |
|-------------------------------------|---------------------|--------------------------------|---------------|------------------|--------------------------------|---------------|-----------------------|--------------------------------|----------------------|---------------|
|                                     | SAP (rating)        | CO <sub>2</sub> (tonnes /year) | cost (£/year) | SAP (rating)     | CO <sub>2</sub> (tonnes /year) | cost (£/year) | SAP increase (rating) | CO <sub>2</sub> (tonnes /year) | cost saving (£/year) |               |
| owner occupied private rented       | 53.7                | 6.3                            | 1,099         | 61.1             | 5.1                            | 920           | 7.4                   | 1.2                            | 179                  | 8,791         |
| local authority housing association | 53.8                | 5.3                            | 912           | 61.3             | 4.2                            | 751           | 7.6                   | 1.1                            | 161                  | 3,096         |
|                                     | 59.9                | 4.3                            | 694           | 65.7             | 3.3                            | 593           | 5.7                   | 1.0                            | 101                  | 2,276         |
|                                     | 62.6                | 3.9                            | 651           | 67.6             | 3.1                            | 564           | 5.0                   | 0.8                            | 88                   | 2,507         |
| <b>all dwellings</b>                | <b>55.0</b>         | <b>5.8</b>                     | <b>995</b>    | <b>62.1</b>      | <b>4.6</b>                     | <b>834</b>    | <b>7.1</b>            | <b>1.2</b>                     | <b>162</b>           | <b>16,670</b> |

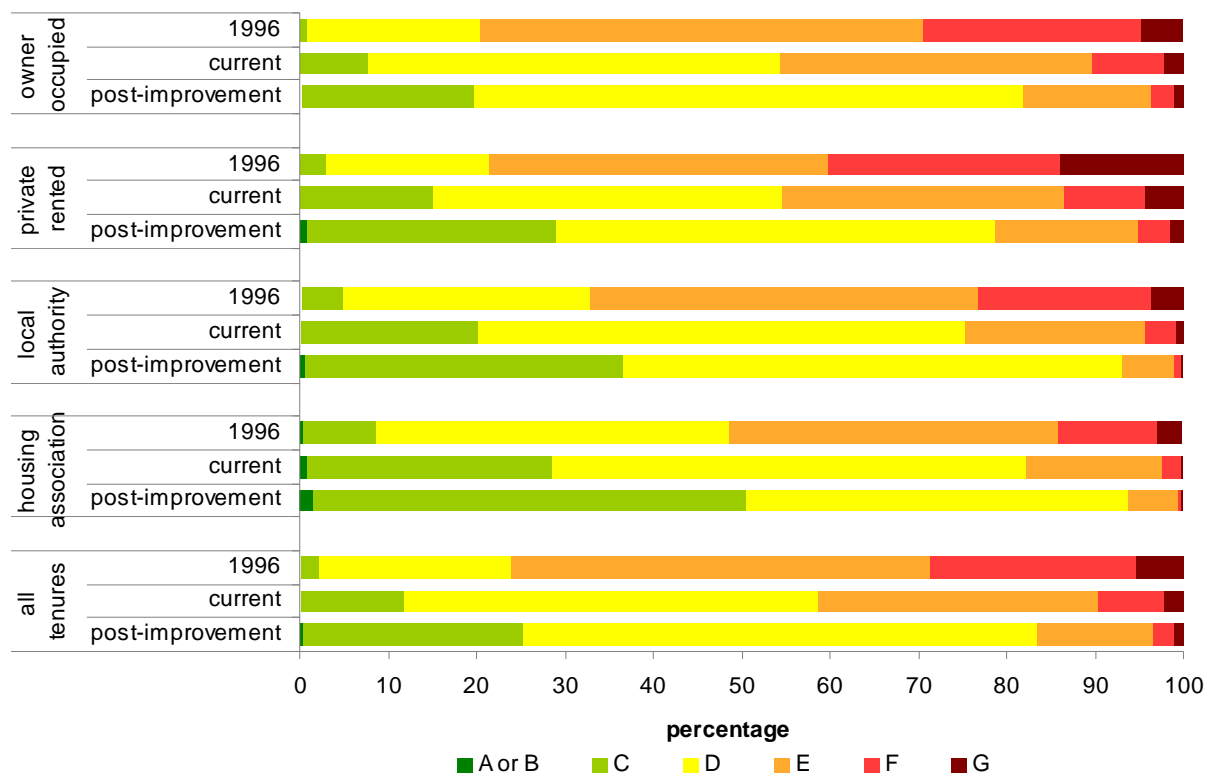
**Base: all dwellings**

**Note: energy costs at standard 2009 prices**

**Source: English Housing Survey, dwelling sample**

7.8 From 1996 to 2010 there were substantial improvements in energy efficiency (see Chapter 6). Applying the full range of cost effective EPC measures would further increase the percentage of dwellings in Bands A to C to 25% (calculated using the SAP 2009 methodology) and reduce the percentage in the least efficient Bands E to G to 17%, Figure 7.2. Most (93%) of these homes that would still be in bands E-G would be in the private sector and 54% would have been built before 1919, Annex Table 7.4. Some 51% of housing association dwellings would be in Bands A to C and the proportion of owner occupied dwellings in the most inefficient Bands E to G would fall from 46% to just 18% of the sector.

**Figure 7.2: Percentage of dwellings in each Energy Efficiency Rating Band by tenure – 1996, current and post-improvement performance, 2010**



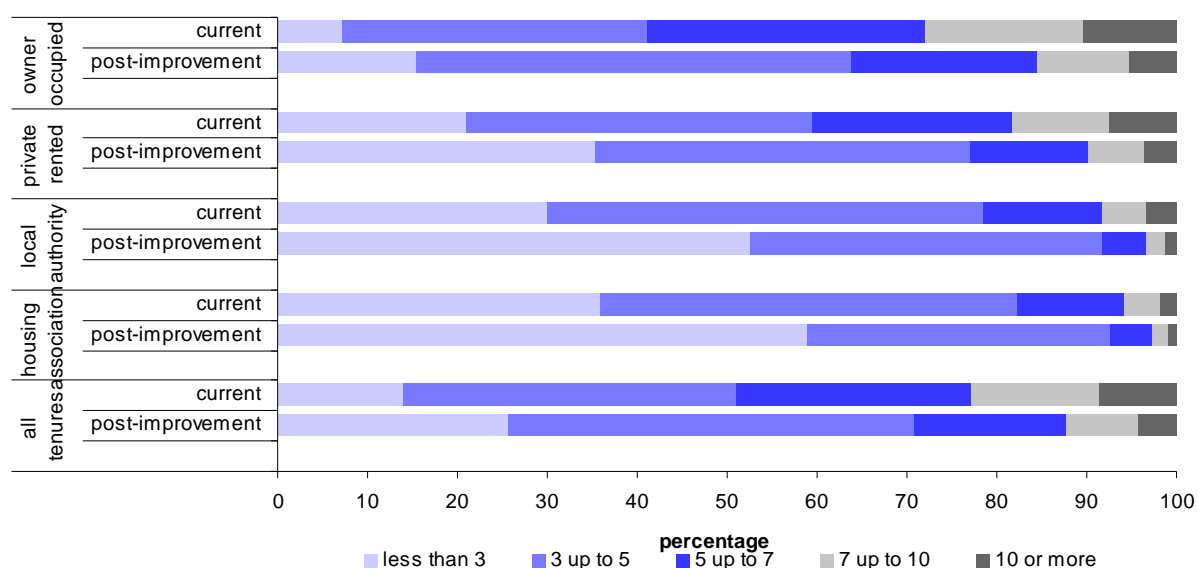
Base: all dwellings

Note: underlying data are presented in Annex Table 7.5

Source: English Housing Survey 1996 and 2010, dwelling sample

7.9 If all of the potential cost effective EPC recommended measures were installed, CO<sub>2</sub> emissions would reduce by 20% from 5.8 to 4.6 tonnes per dwelling per year, Table 7.2. Across the stock as a whole the proportion of dwellings notionally emitting less than three tonnes/year of CO<sub>2</sub> would rise from 14% to 26% while the proportion emitting seven or more tonnes/year would reduce from 23% to just 12%, Figure 7.3. Virtually all (96%) of the homes that would still emit seven or more tonnes would be in the private sector, some 52% would have been built before 1919 and 45% would be detached houses, Annex Table 7.6. The majority (59%) of housing association dwellings would emit less than three tonnes/year compared with just 16% of owner occupied homes.

**Figure 7.3: Percentage of dwellings with given levels of carbon dioxide (CO<sub>2</sub>) emissions (tonnes/year) by tenure – current and post-improvement performance, 2010**



Base: all dwellings

Note: underlying data are presented in Annex Table 7.7

Source: English Housing Survey, dwelling sample

7.10 The mean cost<sup>4</sup> of carrying out all of the cost effective improvements would be around £1,065 per improved dwelling, amounting to a total of £19 billion. However, in 20% of cases the works would cost less than about £500, Annex Table 7.8. On average, the most expensive dwellings to improve using the cost effective measures were those in the owner occupied sector (£1,089) and detached houses (£1,303), Annex Table 7.9.

## Barriers to improving insulation

7.11 This section examines the three main types of insulation in turn and explores the practical and other barriers to actual installation that can occur, in order to provide a more realistic indication of the potential for carrying out these improvements. It should be emphasised that the purpose of this analysis is to identify common typical scenarios where these types of work may be less straightforward, rather than provide definitive guidance on which types of homes and situations should or should not be treated, as this can only be undertaken on a case by case basis.

<sup>4</sup> costs per measure are adjusted from 2006 prices using BCIS inflation factors for 2009/10.

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## Loft insulation

- 7.12 The presence and type of loft will affect the ease of fitting insulation in the roof space. The figures and analysis in this section cover 9.1 million dwellings: the 6.3 million already identified where there was potential to do so, plus an additional 2.8 million homes where the amount of loft or roof insulation may possibly be insufficient. The analysis does not include those dwellings that have no roof above i.e. flats that do not have any rooms on the top floor of a building. Box 1 identifies the different types of barriers for each category:

### **Box 1: Ease of installing or topping up loft insulation**

#### **potentially upgradeable**

**non problematic:** installation would be straightforward with no barriers.

**more problematic:** loft is fully boarded across the joists which would lead to extra work and expense.

#### **possibly inadequate**

**room in roof:** insulation would need to be added between the rafters which would involve very extensive work and considerable expense.

**flat or shallow pitched roof:** not feasible to install loft insulation as there is no access into the loft or no loft space.

- 7.13 Some 60% of these 9.1 million homes should be straightforward to upgrade, whilst 9% would be more problematic due to the floor being fully boarded, Table 7.3. A further 25% had a permanent room in the roof and 6% had a flat roof or a pitch that was too shallow to permit easy access. The latter two categories are not described as 'potentially upgradeable' in Table 7.3 because the level of existing insulation is usually unknown. These cases may already have had sufficient insulation installed during construction, but this analysis highlights the numbers of such dwellings that would be difficult to improve to a high level of thermal insulation.



**Table 7.3: Barriers to installing loft insulation by sector, 2010**

|                                | private sector |            | social sector |            | all tenures   |            |
|--------------------------------|----------------|------------|---------------|------------|---------------|------------|
|                                | number (000s)  | % of group | number (000s) | % of group | number (000s) | % of group |
| <b>potentially upgradeable</b> |                |            |               |            |               |            |
| non problematic                | 4,896          | 59.2       | 594           | 71.5       | 5,490         | 60.3       |
| more problematic               | 785            | 9.5        | 23            | 2.7        | 807           | 8.9        |
| <b>possibly inadequate</b>     |                |            |               |            |               |            |
| room in roof                   | 2,190          | 26.5       | 44            | 5.2        | 2,234         | 24.5       |
| flat or shallow pitched roof   | 398            | 4.8        | 170           | 20.5       | 568           | 6.2        |
| <b>all dwellings</b>           | 8,269          | 100.0      | 831           | 100.0      | 9,100         | 100.0      |
| <b>sample size</b>             | 5,287          |            | 1,011         |            | 6,298         |            |

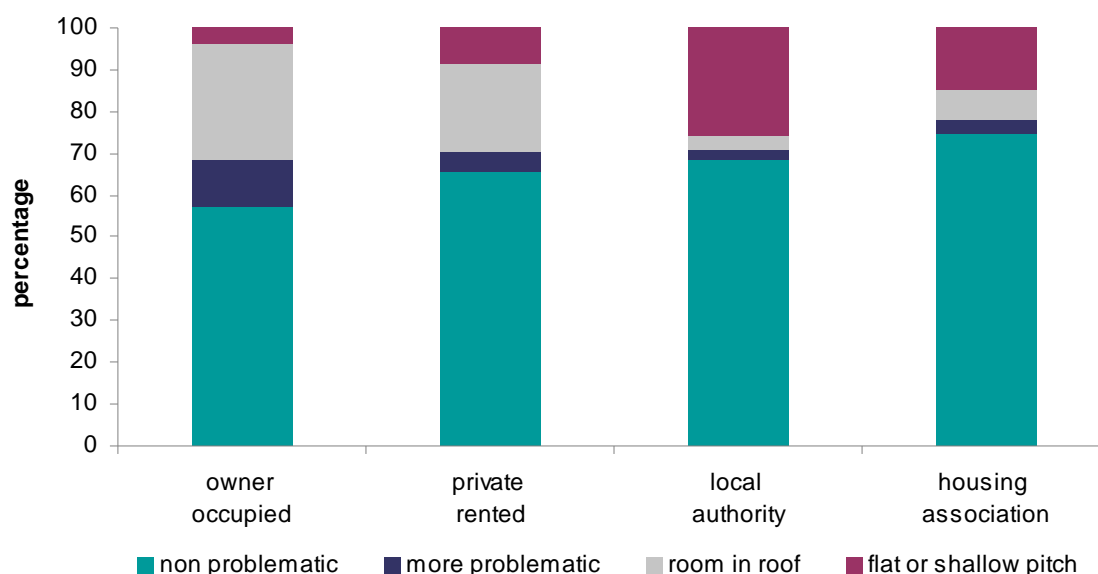
Base: all dwellings with theoretical potential to improve loft insulation and those that may have insufficient loft insulation

Note: underlying data are presented in Annex Table 7.10

Source: English Housing Survey, dwelling sample

7.14 Social sector dwellings with potential for loft insulation were more likely to be straightforward to improve than those in the private sector. Some 75% of housing association homes were non-problematic in this respect, compared with only 58% of owner occupied dwellings. Local authority homes were the most likely to not be feasible to improve due to having flat or shallow pitched roofs (26%). Rooms in the roof, normally resulting from loft conversions, were a much more common barrier in private sector homes (27% of the potential group compared with just 5% of the social sector), Figure 7.4.

**Figure 7.4: Barriers to installing loft insulation, by tenure, 2010**



Base: all dwellings with theoretical potential to improve loft insulation and those that may have insufficient loft insulation

Note: underlying data are presented in Annex Table 7.10

Source: English Housing Survey, dwelling sample

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## Cavity wall insulation

7.15 This section uses a scale (see Box 2 below) that was devised to give some indication of the ease with which uninsulated wall cavities may be filled.

### **Box 2: Cavity wall ‘fillability’**

The scale of ease of filling uninsulated cavity walls is:

**standard fillable:** no compelling physical barrier to installation exists. These are typically houses with masonry cavity walls and masonry pointing or rendered finishes and no conservatory attached.

**non-standard, less problematic:** These are homes with cavity walls that are fillable but include features such as conservatories (that may necessitate the use of scaffolding) or small areas of non-masonry wall finish (that will increase the costs).

**non-standard, more problematic:** These cases present more serious barriers e.g. the majority of the wall finish is not masonry pointing or there is a mixture of wall structure types, necessitating more than one insulation solution. It also includes all flats, in which dealing with multiple leaseholders could provide a serious barrier, and houses with four or more storeys. This is an issue in all tenures as a large number of former social sector flats are now privately owned due to right to buy.

**unfillable:** These include timber or steel framed dwellings that have masonry cavity walling. They also include all homes where none of the wall finish is masonry pointing or render.

7.16 Of the 7 million dwellings that could potentially benefit from the installation of cavity wall insulation, only 51% were assessed to fall into in the standard fillable category, Table 7.4. Of the remaining homes, 20% presented some, less problematic, issues; 25% would be more problematic; and 4% were classed as unfillable. The majority of the ‘unfillable group were of timber frame construction, where the industry recommendation is not to inject insulation as this can hamper ventilation between the frame and the external wall that may lead to rot in the timber frame.

**Table 7.4: Barriers to installing cavity wall insulation, by sector, 2010**

|                                   | private sector   |               | social sector    |               | all tenures      |               |
|-----------------------------------|------------------|---------------|------------------|---------------|------------------|---------------|
|                                   | number<br>(000s) | % of<br>group | number<br>(000s) | % of<br>group | number<br>(000s) | % of<br>group |
| standard<br>fillable              | 3,088            | 52.8          | 467              | 42.1          | 3,555            | 51.1          |
| non standard,<br>less problematic | 1,377            | 23.5          | 31               | 2.8           | 1,408            | 20.2          |
| non standard,<br>more problematic | 1,154            | 19.7          | 558              | 50.2          | 1,712            | 24.6          |
| unfillable                        | 229              | 3.9           | 55               | 4.9           | 284              | 4.1           |
| not recommended<br>or has CWI     | 6,661            | -             | 1,902            | -             | 8,564            | -             |
| non cavity                        | 6,057            | -             | 806              | -             | 6,863            | -             |
| <b>sample size</b>                | <b>11,887</b>    |               | <b>4,783</b>     |               | <b>16,670</b>    |               |

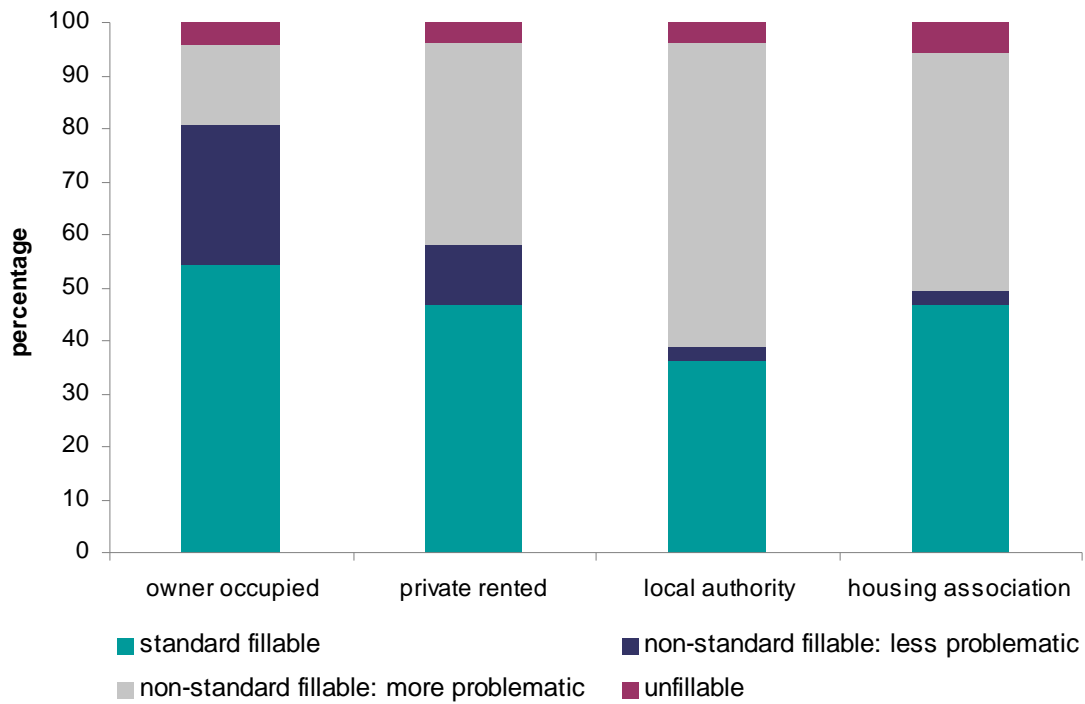
**Base: all dwellings with theoretical potential to install cavity wall insulation**

**Note: underlying data are presented in Annex Table 7.11**

**Source: English Housing Survey, dwelling sample**

- 7.17 The proportions falling in each category varied considerably by tenure. Owner occupied homes that could potentially benefit from cavity wall insulation were more likely to be straightforward (54%) than those that were private rented or housing association properties (both 47%) or local authority (36%), Figure 7.5.
- 7.18 Owner occupied homes were also the most likely to fall into the 'less problematic category' (27%) – largely because they were much more likely to have conservatories than homes in other tenures, Annex Table 7.12. Local authority homes which could potentially benefit were the most likely to fall into the problematic category (57%), partly because of the relatively higher proportion, in this tenure, of homes with concrete or other types of cladding as the main wall finish, Annex Table 7.13.

**Figure 7.5: Barriers to installing cavity wall insulation, by tenure 2010**



**Base: all dwellings with theoretical potential to install cavity wall insulation**

**Note: underlying data are presented in Annex Table 7.11**

**Source: English Housing Survey, dwelling sample**

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## External solid wall insulation

7.19 Although not covered in the previous analyses because it is generally much more expensive, there is considerable theoretical potential for installing external wall insulation. Overall, the survey estimates that there were some 7.1 million<sup>5</sup> homes which could potentially benefit from the installation of some form of solid wall insulation, of which 0.25 million already had this applied (either internally or externally) to the majority of their walls. There are a number of external wall insulation systems on the market but most involve fixing the insulation boards/material to the outside walls and rendering over the top. This means that the type and condition of the existing wall finish and the presence of projections such as bays or conservatories will affect the complexity and cost of the work. There are also other factors which are likely to increase costs and technical complexity which described in more detail in Box 3:

### **Box 3: Ease of installing external wall insulation**

**Non-problematic** – none of the barriers listed below

**Masonry-walled dwellings with attached conservatories or other features:** fixing the insulation round any projections like conservatories, porches or bays requires additional work and therefore additional expense.

**Dwellings with a predominant rendered finish:** this may add to the costs of the work as the render may need to be removed, repaired or treated before the insulation can be installed.

**Dwellings with a predominant non-masonry wall finish:** improving dwellings with wall finishes such as stone cladding, tile, timber or metal panels would either add to the cost of the work or even preclude external solid wall insulation where the wall structure itself is stone or timber.

**Flats:** These can be problematic for 2 reasons. Firstly, there are likely to be issues related to dealing with multiple leaseholders (getting their agreement and financial contribution to the work). Also, the height of the module for high-rise flats would present significant complications in applying external solid wall insulation.

There are other barriers such as planning restrictions that apply in conservation areas or listed building status that will affect the real potential for installing solid wall insulation but EHS does not collect data on these.

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<sup>5</sup>this includes all dwellings with non-cavity walls plus those classed as 'cavity walls' that have a timber or steel frame where cavity wall insulation is not recommended.

7.20 Of the 6.9 million dwellings where there is some potential to install solid wall insulation, some 1.1 million (16%) were non-problematic houses with masonry pointing wall finish and none of the barriers listed in Box 3, Table 7.5. An additional 28% had non-problematic solid walls, but had attached features such as conservatories, bays or porches, whilst 31% had predominantly rendered walls. Whilst the addition of solid wall insulation to these homes is still feasible, it may be more costly than for non-problematic cases.

**Table 7.5: Barriers to installing solid wall insulation, by sector, 2010**

|                         | private       |            | social       |            | all tenures   |            |
|-------------------------|---------------|------------|--------------|------------|---------------|------------|
|                         | number        | % of group | number       | % of group | number        | % of group |
| non-problematic         | 1,029         | 16.8       | 94           | 12.5       | 1,122         | 16.3       |
| external features       | 1,881         | 30.7       | 73           | 9.7        | 1,954         | 28.4       |
| rendered wall finish    | 1,972         | 32.2       | 133          | 17.7       | 2,105         | 30.6       |
| non-masonry wall finish | 142           | 2.3        | 44           | 5.8        | 185           | 2.7        |
| dwelling is a flat      | 1,109         | 18.1       | 407          | 54.2       | 1,516         | 22.0       |
| <i>already has SWI</i>  | <i>154</i>    | <i>-</i>   | <i>111</i>   | <i>-</i>   | <i>265</i>    | <i>-</i>   |
| <i>cavity walled</i>    | <i>12,280</i> | <i>-</i>   | <i>2,959</i> | <i>-</i>   | <i>15,238</i> | <i>-</i>   |
| <b>sample size</b>      | <b>11,887</b> |            | <b>4,783</b> |            | <b>16,670</b> |            |

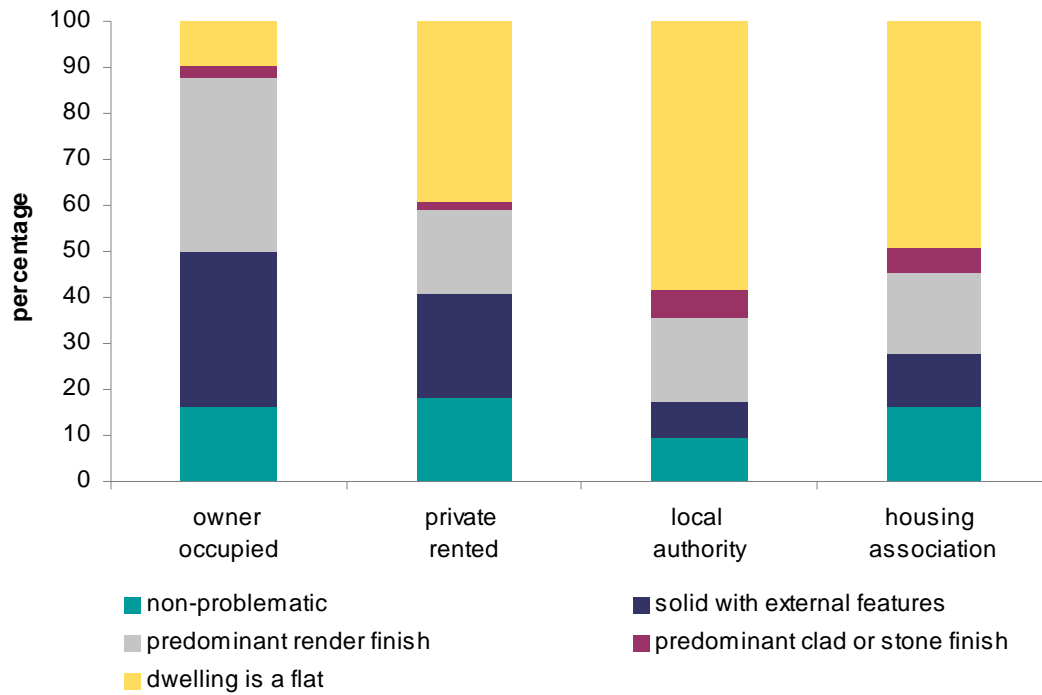
**Base:** all dwellings with theoretical potential to install solid wall insulation

**Note:** underlying data are presented in Annex Table 7.14

**Source:** English Housing Survey, dwelling sample

7.21 There were more likely to be complications in installing external solid wall insulation in local authority homes, because a high proportion of them are flats. Only 10% of local authority homes that could potentially benefit from solid wall insulation would be classed as non-problematic, compared with 16-18% in the other tenures. For the owner occupied homes, the most common barriers were the presence of external features (34%) and over half of the wall surface being rendered (38%). For rented homes, the most common barrier was that the dwelling was a flat, Figure 7.6.

**Figure 7.6: Barriers to installing solid wall insulation in the 'potential' group by tenure, 2010**



**Base: all dwellings with theoretical potential to install solid wall insulation**

**Note: underlying data are presented in Annex Table 7.14**

**Source: English Housing Survey, dwelling sample**

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# Appendix A: Sampling and grossing

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## General Description

The survey consists of three main elements: an initial interview survey of around 17,000 households with a follow up physical inspection of a sub-sample of about 8,000 dwellings, including vacant dwellings. The EHS previously conducted a desk based market valuation of these sub-sampled properties however this exercise was cancelled in 2010/11 as part of a cost review of the survey. Further information on this review is available at:

[www.communities.gov.uk/publications/housing/ehsreviewresponse](http://www.communities.gov.uk/publications/housing/ehsreviewresponse)

The interview survey samples for 2008-09, 2009-10 and 2010-11 forms part of ONS's Integrated Household Survey (IHS), and the core questions from the IHS form part of the EHS questionnaire. More information about the IHS is available from its webpage:

[www.ons.gov.uk/ons/guide-method/surveys/respondents/business/a-z-of-business-surveys/integrated-household-survey/index.html](http://www.ons.gov.uk/ons/guide-method/surveys/respondents/business/a-z-of-business-surveys/integrated-household-survey/index.html)

The EHS interview content covers the key topics included under the former SEH and EHCS. The content of the physical survey remains very largely unchanged from the former EHCS.

## Sampling

### 2010-11 Sample

1. The initial sample for 2010-11 consisted of 32,100 addresses drawn as a systematic random sample from the Postcode Address File (small users). Interviews were attempted at all of these addresses over the course of the survey year from April 2010 to March 2011. A proportion of addresses were found not to be valid residential properties (e.g. demolished properties, second / holiday homes, small businesses, and properties not yet built).
2. Of the 17,556 addresses where interviews were achieved (the 'full household sample'), all social rented properties and a sub-sample of private properties were regarded as eligible for the physical survey and the



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respondent's consent was sought. A proportion of vacant properties was also sub-sampled. Physical surveys were completed in 8,492 cases, and these cases form the 'dwelling sub-sample'.

3. Findings based on data from the full household sample are mostly presented in the 2010-11 EHS Households report. Findings based on the dwelling sub-sample are mostly presented in the 2010 EHS Homes Report<sup>1</sup>. Where this is not the case the source has been indicated.
4. The principal differences in sampling methodology between the EHS and its predecessors the SEH and EHCS are that:
  - The EHS uses an unclustered sample. This enables a smaller sample to be used with no loss of precision, ie without sampling errors being increased. The more scattered sample does, however, have some implications for fieldwork organisation.
  - The SEH was an interview survey with no subsequent physical survey element. It typically had an initial, clustered sample of 30,000 cases and 18,000 achieved interviews. The slightly smaller, unclustered sample achieved in the EHS will give more robust estimates for many measures from the household sample.
  - The SEH aimed to interview all households at multi-household addresses. In privately renting households with more than one tenancy group, the SEH also attempted to conduct interviews with each tenancy group. In contrast, the EHS selects one dwelling per address and one household per dwelling, and interviews only the household reference person (HRP) of that household or their partner.
  - The EHCS issued sample (also clustered) was smaller, and designed to deliver around 8,000 paired cases (interview/vacant with physical survey); cases with interviews but no physical survey were not reported separately. Survey errors associated with measures from the EHS physical survey remain largely the same as for the EHCS.

## Grossing methodology

5. The grossing methodology reverses the sampling and sub-sampling, and adjusts for any identifiable non-response bias at each stage of the survey. Household results are then weighted to population totals by age, sex and region, and to the tenure distribution of the Labour Force Survey (LFS). This method is very similar to that used by the Survey of English Housing,

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<sup>1</sup> Previously known as the EHS Housing Stock Report

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the main difference being that much more detailed bias adjustment is carried out in the English Housing Survey.

6. As part of data validation prior to the grossing, tenure corrections are made where cases are reported as local authority tenancies but where the local authority is known to have transferred all its stock to a housing association under a Large Scale Voluntary Transfer (LSVT). Similarly, where a local authority's stock is known to be managed by an Arm's Length Management Organisation (ALMO), cases where an ALMO is reported as the landlord are coded as local authority tenancies. This results in a more robust split between the local authority and housing association stock, and is consistent with past practice in the English House Condition Survey but not that of the Survey of English Housing.

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# Appendix B: Sampling errors

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## Sources of error in surveys

1. Like all estimates based on samples, the results of the EHS are subject to various possible sources of error. The total error in a survey estimate is the difference between the estimate derived from the data collected and the (unknown) true value for the population. The total error can be divided into two main types: systematic error and random error.
2. Systematic error, or bias, covers those sources of error which will not average to zero over repeats of the survey. Bias may occur, for example, if certain sections of the population are omitted from the sampling frame, if non-respondents to the survey have different characteristics to respondents, or if interviewers systematically influence responses in one way or another. When carrying out a survey, substantial efforts are put into the avoidance of systematic errors but it is possible that some may still occur.
3. The most important component of random error is sampling error, which is the error that arises because the estimate is based on a sample survey rather than a full census of the population. The results obtained for any single sample may, by chance, differ from the true values for the population but the difference would be expected to average to zero over a number of repeats of the survey. The amount of variation depends on the size of the sample and the sample design and weighting method.
4. A measure of the impact of the variation introduced by the sample design and the weighting is the design factor (deft). This is evaluated relative to the error that would have been produced had the survey been carried out using a simple random sample<sup>1</sup>. A deft greater than one shows that the design and weighting have increased the variability of the estimate and increased the measure of the standard error relative to the reference. Since the 2009 EHS effectively is a simple random sample the deft arises solely from the weighting adjustments.
5. Random error may also arise from other sources, such as variation in the informant's interpretation of the questions, or interviewer variation. Efforts are made to minimise these effects through interviewer training and through pilot work.

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<sup>1</sup> Technically, the deft is the estimate of the standard error produced under the complex design divided by the standard error under an equally weighted simple random sample.

## Confidence intervals

6. Although the estimate produced from a sample survey will rarely be identical to the population value, statistical theory allows us to measure the accuracy of any survey result. The standard error can be estimated from the values obtained for the sample and this allows calculation of confidence intervals which give an indication of the range in which the true population value is likely to fall.
7. Tables A1 to A2 provide standard errors and 95% confidence intervals around selected key survey estimates.

**Table B1: Sampling errors using weighted data: percentages, 2010**

| characteristic                | unweighted base | percentage | standard error (percentage) | design factor (deft) | 95% confidence interval (including impact of deft) |       |
|-------------------------------|-----------------|------------|-----------------------------|----------------------|--|-------|
|                               |                 |            |                             |                      | lower  | upper |
| <b>tenure</b>                 | 16,670          |            |                             |                      |  |       |
| owner occupied                |                 | 66.38      | 0.39                        | 1.01                 | 65.62  | 67.14 |
| private rented                |                 | 16.56      | 0.28                        | 0.94                 | 16.00  | 17.11 |
| social rented                 |                 |            |                             |                      |  |       |
| local authority               |                 | 8.05       | 0.20                        | 0.74                 | 7.66   | 8.43  |
| housing association           |                 | 9.01       | 0.21                        | 0.74                 | 8.61   | 9.42  |
| all social rented             |                 | 17.06      | 0.30                        | 0.84                 | 16.48  | 17.64 |
| <b>dwelling type</b>          | 16,670          |            |                             |                      |  |       |
| end terrace                   |                 | 10.06      | 0.26                        | 1.12                 | 9.54   | 10.57 |
| mid terrace                   |                 | 18.34      | 0.34                        | 1.12                 | 17.68  | 19.00 |
| semi detached                 |                 | 26.18      | 0.38                        | 1.15                 | 25.42  | 26.93 |
| detached                      |                 | 16.96      | 0.32                        | 1.15                 | 16.34  | 17.58 |
| bungalow                      |                 | 8.92       | 0.23                        | 0.99                 | 8.48   | 9.36  |
| converted flat                |                 | 4.24       | 0.19                        | 1.35                 | 3.86   | 4.62  |
| purpose built flat, low rise  |                 | 13.58      | 0.29                        | 1.01                 | 13.02  | 14.13 |
| purpose built flat, high rise |                 | 1.74       | 0.11                        | 1.02                 | 1.52   | 1.96  |
| <b>dwelling age</b>           | 16,670          |            |                             |                      |  |       |
| pre 1919                      |                 | 21.73      | 0.37                        | 1.20                 | 21.01  | 22.45 |
| 1919-44                       |                 | 16.76      | 0.33                        | 1.15                 | 16.12  | 17.40 |
| 1945-64                       |                 | 19.64      | 0.34                        | 1.06                 | 18.98  | 20.30 |
| 1965-80                       |                 | 20.56      | 0.35                        | 1.09                 | 19.88  | 21.24 |
| 1981-90                       |                 | 8.40       | 0.24                        | 1.11                 | 7.93   | 8.87  |
| post 1990                     |                 | 12.92      | 0.29                        | 1.14                 | 12.34  | 13.49 |

*continued*

| characteristic                                 | unweighted base | percentage | standard error (percentage) | design factor (def) | 95% confidence interval (including impact of def) |       |
|--|-----------------|------------|-----------------------------|---------------------|---|-------|
|  |                 |            |                             |                     | lower   | upper |
| <b>decent Homes- HHSRS 15 model</b>            |                 |            |                             |                     |   |       |
| <i>owner occupied</i>                          | 8,791           |            |                             |                     |   |       |
| decent   |                 | 74.60      | 0.51                        | 1.10                | 73.61   | 75.60 |
| non-decent                                     |                 | 25.40      | 0.51                        | 1.10                | 24.40   | 26.39 |
| <i>private rented</i>                          | 3,096           |            |                             |                     |   |       |
| decent   |                 | 62.60      | 0.99                        | 1.14                | 60.67   | 64.53 |
| non-decent                                     |                 | 37.40      | 0.99                        | 1.14                | 35.47   | 39.33 |
| <i>social rented</i>                           |                 |            |                             |                     |   |       |
| <i>local authority</i>                         | 2,276           |            |                             |                     |   |       |
| decent   |                 | 78.03      | 1.01                        | 1.17                | 76.05   | 80.02 |
| non-decent                                     |                 | 21.97      | 1.01                        | 1.17                | 19.98   | 23.95 |
| <i>housing association</i>                     | 2,507           |            |                             |                     |   |       |
| decent   |                 | 81.77      | 0.88                        | 1.15                | 80.05   | 83.49 |
| non-decent                                     |                 | 18.23      | 0.88                        | 1.15                | 16.51   | 19.95 |
| <i>all social rented</i>                       | 4,783           |            |                             |                     |   |       |
| decent   |                 | 80.01      | 0.67                        | 1.16                | 78.70   | 81.31 |
| non-decent                                     |                 | 19.99      | 0.67                        | 1.16                | 18.69   | 21.30 |
| <i>all tenures</i>                             | 16,670          |            |                             |                     |   |       |
| decent   |                 | 73.54      | 0.39                        | 1.16                | 72.77   | 74.30 |
| non-decent                                     |                 | 26.46      | 0.39                        | 1.16                | 25.70   | 27.23 |
| <b>energy efficiency rating band (SAP2009)</b> |                 |            |                             |                     |   |       |
| <i>owner occupied</i>                          | 8,791           |            |                             |                     |   |       |
| A to C   |                 | 7.67       | 0.31                        | 1.13                | 7.05  | 8.29  |
| D and E  |                 | 81.94      | 0.45                        | 1.12                | 81.05   | 82.82 |
| F and G  |                 | 10.39      | 0.36                        | 1.12                | 9.69  | 11.09 |
| <i>private rented</i>                          | 3,096           |            |                             |                     |   |       |
| A to C   |                 | 14.96      | 0.74                        | 1.19                | 13.50   | 16.42 |
| D and E  |                 | 71.57      | 0.92                        | 1.14                | 69.77   | 73.37 |
| F and G  |                 | 13.47      | 0.68                        | 1.10                | 12.14   | 14.80 |
| <i>social rented</i>                           |                 |            |                             |                     |   |       |
| <i>local authority</i>                         | 2,276           |            |                             |                     |   |       |
| A to C   |                 | 20.22      | 0.98                        | 1.18                | 18.29   | 22.15 |
| D and E  |                 | 75.53      | 1.07                        | 1.20                | 73.43   | 77.62 |
| F and G  |                 | 4.25       | 0.54                        | 1.35                | 3.19  | 5.31  |
| <i>housing association</i>                     | 2,507           |            |                             |                     |   |       |
| A to C   |                 | 28.69      | 1.02                        | 1.13                | 26.70   | 30.69 |
| D and E  |                 | 68.89      | 1.04                        | 1.13                | 66.85   | 70.93 |
| F and G  |                 | 2.41       | 0.35                        | 1.17                | 1.72  | 3.11  |

*continued*

| characteristic             | unweighted base | percentage | standard error (percentage) | design factor (deft) | 95% confidence interval (including impact of deft) |       |
|----------------------------|-----------------|------------|-----------------------------|----------------------|--|-------|
|                            |                 |            |                             |                      | lower  | upper |
| <i>all social rented</i>   | 4,783           |            |                             |                      |  |       |
| A to C                     |                 | 24.70      | 0.71                        | 1.15                 | 23.30  | 26.10 |
| D and E                    |                 | 72.02      | 0.75                        | 1.16                 | 70.56  | 73.49 |
| F and G                    |                 | 3.28       | 0.32                        | 1.27                 | 2.66   | 3.90  |
| <i>all tenures</i>         | 16,670          |            |                             |                      |  |       |
| A to C                     |                 | 11.78      | 0.27                        | 1.04                 | 11.25  | 12.32 |
| D and E                    |                 | 78.53      | 0.36                        | 1.12                 | 77.82  | 79.23 |
| F and G                    |                 | 9.69       | 0.27                        | 1.23                 | 9.16   | 10.21 |
| <b>floor area</b>          |                 |            |                             |                      |  |       |
| <i>owner occupied</i>      | 8,791           |            |                             |                      |  |       |
| Less than 50 sqm           |                 | 4.48       | 0.26                        | 1.29                 | 3.96   | 4.99  |
| 50 to 69 sqm               |                 | 18.88      | 0.46                        | 1.13                 | 17.97  | 19.78 |
| 70 to 89 sqm               |                 | 29.22      | 0.53                        | 1.09                 | 28.19  | 30.25 |
| 90 to 109 sqm              |                 | 16.86      | 0.43                        | 1.07                 | 16.01  | 17.70 |
| 110 or more sqm            |                 | 30.57      | 0.51                        | 1.02                 | 29.57  | 31.57 |
| <i>private rented</i>      | 3,096           |            |                             |                      |  |       |
| Less than 50 sqm           |                 | 21.36      | 0.87                        | 1.23                 | 19.66  | 23.06 |
| 50 to 69 sqm               |                 | 31.58      | 0.96                        | 1.15                 | 29.70  | 33.46 |
| 70 to 89 sqm               |                 | 25.15      | 0.87                        | 1.09                 | 23.45  | 26.85 |
| 90 to 109 sqm              |                 | 10.08      | 0.57                        | 1.01                 | 8.97   | 11.20 |
| 110 or more sqm            |                 | 11.83      | 0.63                        | 1.05                 | 10.60  | 13.06 |
| <i>social rented</i>       |                 |            |                             |                      |  |       |
| <i>local authority</i>     | 2,276           |            |                             |                      |  |       |
| less than 50 sqm           |                 | 27.52      | 1.11                        | 1.20                 | 25.35  | 29.70 |
| 50 to 69 sqm               |                 | 38.91      | 1.19                        | 1.17                 | 36.57  | 41.25 |
| 70 to 89 sqm               |                 | 26.95      | 1.05                        | 1.11                 | 24.90  | 29.01 |
| 90 to 109 sqm              |                 | 5.36       | 0.50                        | 1.02                 | 4.39   | 6.33  |
| 110 or more sqm            |                 | 1.26       | 0.29                        | 1.30                 | 0.68   | 1.83  |
| <i>housing association</i> | 2,507           |            |                             |                      |  |       |
| less than 50 sqm           |                 | 27.88      | 1.02                        | 1.15                 | 25.87  | 29.89 |
| 50 to 69 sqm               |                 | 35.16      | 1.07                        | 1.13                 | 33.06  | 37.26 |
| 70 to 89 sqm               |                 | 28.84      | 0.99                        | 1.09                 | 26.89  | 30.78 |
| 90 to 109 sqm              |                 | 5.82       | 0.50                        | 1.06                 | 4.85   | 6.80  |
| 110 or more sqm            |                 | 2.30       | 0.33                        | 1.11                 | 1.65   | 2.94  |
| <i>all social rented</i>   | 4,783           |            |                             |                      |  |       |
| less than 50 sqm           |                 | 27.71      | 0.76                        | 1.18                 | 26.23  | 29.20 |
| 50 to 69 sqm               |                 | 36.93      | 0.80                        | 1.15                 | 35.36  | 38.49 |
| 70 to 89 sqm               |                 | 27.95      | 0.72                        | 1.10                 | 26.53  | 29.37 |
| 90 to 109 sqm              |                 | 5.60       | 0.35                        | 1.04                 | 4.91   | 6.30  |
| 110 or more sqm            |                 | 1.81       | 0.22                        | 1.17                 | 1.37   | 2.24  |

*continued*

| Characteristic                 | unweighted<br>base | percentage | standard<br>error<br>(percentage) | design<br>factor<br>(deft) | 95% confidence<br>interval<br>(including<br>impact of deft) |       |
|--------------------------------|--------------------|------------|-----------------------------------|----------------------------|---|-------|
|                                |                    |            |                                   |                            | lower   | upper |
| <i>all tenures</i>             | 16,670             |            |                                   |                            |   |       |
| less than 50 sqm               |                    | 11.24      | 0.27                              | 1.02                       | 10.71   | 11.76 |
| 50 to 69 sqm                   |                    | 24.06      | 0.37                              | 1.10                       | 23.33   | 24.79 |
| 70 to 89 sqm                   |                    | 28.33      | 0.40                              | 1.14                       | 27.55   | 29.11 |
| 90 to 109 sqm                  |                    | 13.82      | 0.31                              | 1.20                       | 13.21   | 14.42 |
| 110 or more sqm                |                    | 22.56      | 0.36                              | 1.16                       | 21.86   | 23.26 |
| <b>whether occupied/vacant</b> |                    |            |                                   |                            |   |       |
| <i>owner occupied</i>          | 8,791              |            |                                   |                            |   |       |
| occupied                       |                    | 97.40      | 0.16                              | 1.05                       | 97.09   | 97.70 |
| vacant                         |                    | 2.60       | 0.16                              | 1.05                       | 2.30  | 2.91  |
| <i>private rented</i>          | 3,096              |            |                                   |                            |   |       |
| occupied                       |                    | 89.36      | 0.53                              | 1.06                       | 88.32   | 90.41 |
| vacant                         |                    | 10.64      | 0.53                              | 1.06                       | 9.59  | 11.68 |
| <i>social rented (cont)</i>    |                    |            |                                   |                            |   |       |
| <i>local authority</i>         | 2,276              |            |                                   |                            |   |       |
| occupied                       |                    | 96.45      | 0.46                              | 1.23                       | 95.54   | 97.37 |
| vacant                         |                    | 3.55       | 0.46                              | 1.23                       | 2.63  | 4.46  |
| <i>housing association</i>     | 2,507              |            |                                   |                            |   |       |
| occupied                       |                    | 95.24      | 0.53                              | 1.33                       | 94.20   | 96.28 |
| vacant                         |                    | 4.76       | 0.53                              | 1.33                       | 3.72  | 5.80  |
| <i>all social rented</i>       | 4,783              |            |                                   |                            |   |       |
| occupied                       |                    | 95.81      | 0.38                              | 1.39                       | 95.06   | 96.57 |
| vacant                         |                    | 4.19       | 0.38                              | 1.39                       | 3.43  | 4.94  |
| <i>all tenures</i>             | 16,670             |            |                                   |                            |   |       |
| occupied                       |                    | 95.80      | 0.00                              | 0.00                       | 95.80   | 95.80 |
| vacant                         |                    | 4.20       | 0.00                              | 0.00                       | 4.20  | 4.20  |
| <b>main heating system</b>     |                    |            |                                   |                            |   |       |
| <i>all tenures</i>             | 16,670             |            |                                   |                            |   |       |
| central heating                |                    | 89.71      | 0.27                              | 1.16                       | 89.17   | 90.24 |
| storage heater                 |                    | 7.16       | 0.23                              | 1.11                       | 6.72  | 7.60  |
| Fixed room heating             |                    | 3.13       | 0.17                              | 1.33                       | 2.80  | 3.46  |
| <i>owner occupied</i>          | 8,791              |            |                                   |                            |   |       |
| central heating                |                    | 92.48      | 0.33                              | 1.21                       | 91.84   | 93.11 |
| storage heater                 |                    | 4.65       | 0.26                              | 1.18                       | 4.15  | 5.15  |
| fixed room heating             |                    | 2.87       | 0.22                              | 1.29                       | 2.45  | 3.29  |
| <i>private rented</i>          | 3,096              |            |                                   |                            |   |       |
| central heating                |                    | 80.49      | 0.83                              | 1.20                       | 78.87   | 82.11 |
| storage heater                 |                    | 13.41      | 0.72                              | 1.22                       | 12.01   | 14.82 |
| fixed room heating             |                    | 6.10       | 0.49                              | 1.18                       | 5.13  | 7.06  |

*continued*

| characteristic             | unweighted base | percentage | standard error (percentage) | design factor (deft) | 95% confidence interval (including impact of deft) |       |
|----------------------------|-----------------|------------|-----------------------------|----------------------|--|-------|
|                            |                 |            |                             |                      | lower  | upper |
| <i>social rented</i>       |                 |            |                             |                      |  |       |
| <i>local authority</i>     |                 |            |                             |                      |  |       |
| central heating            | 2,276           | 89.97      | 0.82                        | 1.40                 | 88.36  | 91.59 |
| storage heater             |                 | 8.68       | 0.78                        | 1.43                 | 7.15   | 10.22 |
| fixed room heating         |                 | 1.35       | 0.29                        | 1.28                 | 0.78   | 1.92  |
| <i>housing association</i> |                 |            |                             |                      |  |       |
| central heating            | 2,507           | 86.02      | 0.78                        | 1.13                 | 84.50  | 87.54 |
| storage heater             |                 | 12.78      | 0.75                        | 1.13                 | 11.31  | 14.25 |
| fixed room heating         |                 | 1.20       | 0.24                        | 1.11                 | 0.73   | 1.66  |
| <i>all social rented</i>   |                 |            |                             |                      |  |       |
| central heating            | 4,783           | 87.89      | 0.57                        | 1.24                 | 86.78  | 89.00 |
| storage heater             |                 | 10.85      | 0.54                        | 1.25                 | 9.78   | 11.91 |
| fixed room heating         |                 | 1.27       | 0.19                        | 1.19                 | 0.90   | 1.63  |
| <i>all tenures</i>         |                 |            |                             |                      |  |       |
| central heating            | 16,670          | 89.71      | 0.27                        | 1.16                 | 89.17  | 90.24 |
| storage heater             |                 | 7.16       | 0.23                        | 1.11                 | 6.72   | 7.60  |
| fixed room heating         |                 | 3.13       | 0.17                        | 1.33                 | 2.80   | 3.46  |

**Table B2: Sampling errors using weighted data: mean SAP, 2010**

| characteristic                          | unweighted base | mean SAP     | standard error (mean) | design factor (deft) | 95% confidence interval (including impact of deft) |              |
|---|-----------------|--------------|-----------------------|----------------------|--|--------------|
|   |                 |              |                       |                      | lower  | upper        |
| <b>energy efficiency rating (SAP09)</b> |                 |              |                       |                      |  |              |
| owner occupied                          | 8,791           | 53.70        | 0.15                  | 1.14                 | 53.41  | 53.99        |
| private rented                          | 3,096           | 53.75        | 0.31                  | 1.16                 | 53.15  | 54.36        |
| <i>social rented</i>                    |                 |              |                       |                      |  |              |
| local authority housing                 | 2,276           | 59.93        | 0.28                  | 1.25                 | 59.39  | 60.47        |
| association                             | 2,507           | 62.63        | 0.23                  | 1.12                 | 62.19  | 63.08        |
| all social rented                       | 4,783           | 61.36        | 0.18                  | 1.19                 | 61.01  | 61.71        |
| <b>all tenures</b>                      | <b>16,670</b>   | <b>55.02</b> | <b>0.12</b>           | <b>1.18</b>          | <b>54.79</b>                                       | <b>55.24</b> |



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# Appendix C:

## Treatment scale for non-decent homes

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This appendix details how the treatment scale for non-decent homes was derived, including the criteria used to develop the scale of cavity wall 'fillability'.

### Derivation of the scale

- Details of the criteria on 'treatability' are set out below.
- In order to determine how easy it would be to make a home decent, a five point scale has been developed:
  - 1. Straightforward to treat:**  
where the required treatment can be readily carried out.
  - 2. Inappropriate to treat:**  
where treatment would be straightforward but measurable performance is already of a good standard even though the property fails the formal Decent Homes criterion.
  - 3. Difficult to treat:**  
where the required work is subject to technical issues/difficulties and/or the cost of the work is high.
  - 4. Uneconomic to treat:**  
where the cost of work, in relation to the value of the property, is high.
  - 5. Not feasible to treat:**  
where the required treatment to make decent is not possible given the design, layout or construction of the property or where the treatment would itself create new problems.

The scale is derived by examining each criterion of Decent Homes individually, and then taking the worst scenario, e.g. if it is inappropriate to treat on thermal comfort but not feasible to treat on HHSRS, then it would be coded as 'not feasible' overall.

It must be emphasised that the most appropriate course of action for any non-decent home is a matter of professional judgement, taking all the facts and circumstances into consideration. The EHCS can not fully replicate such professional judgements as the information it collects is unlikely to be comprehensive, so the assessments

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made will not be sufficiently sensitive to individual cases. A level of simplification is therefore inevitable in using the survey in this way.

Details of how the treatment scale is applied to each of the Decent Homes criteria are set out below:

## Modernisation

No dwellings are defined as 'inappropriate' or 'not feasible'. The following are all classed as **'difficult to treat'**:

- Dwellings failing on kitchen facilities and services where the size of the kitchen is defective and the dwelling is problematic or impossible to extend (a mid-terraced house or a flat not on the ground floor). In many cases, the only way to extend would be to remodel the interior, reducing the size/number of rooms in the dwelling, affecting its lettable value.
- Dwellings failing on bathroom location where the dwelling is problematic or impossible to extend (a mid-terraced house or a flat not on the ground floor). In many cases, the only way to extend would be to remodel the interior, reducing the size/number of rooms in the dwelling, affecting its lettable value.
- Dwellings failing on noise where the installation of sound insulation would make a very small dwelling even smaller. A 'small dwelling' includes all studio and one-bedroom flats and also all other dwellings with a total useable floor area of less than 50m<sup>2</sup>.
- High rise flats failing on size/layout of common areas. Works are likely to be problematic (due to block height and framed construction) and also very expensive.

## HHSRS

No dwellings are defined as 'inappropriate' to treat. The following are all classed as **'not feasible'**:

- Small terraced houses failing on risk of falls on stairs where the work required is complete redesign of the staircase. These dwellings are normally too small to enable the staircase to be redesigned to make it less steep/winding, or work may create other potential hazards e.g. fire safety hazards created when stairs come down into living rooms or kitchens.

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The following are classed as **'difficult' to treat**:

- Dwellings failing on excess cold that cannot be improved using conventional measures (up to and including external insulation to solid walls). Although renewables technology has been developed, and in some cases is not that expensive, it is less mainstream so these situations have been classed as difficult to treat.
- Dwellings failing on risk of falls on stairs where the work required is complete redesign of the staircase, other than small terraced houses (see above). Works are likely to involve substantial remodelling and loss of space in other rooms or whole rooms.
- Dwellings failing on fire safety where the work required is to upgrade the protected route. Works are likely to involve extensive remodelling of landings and halls which will reduce space/number of rooms.
- Dwellings failing on fire safety where the work required is to extend or re-site the kitchen. In many cases this could only be done by taking space from other rooms (eg. the dwelling is a mid-terraced house or a flat not at ground floor level).
- Dwellings failing on noise where the installation of sound insulation would make a very small dwelling even smaller. A 'small dwelling' includes all studio and one-bedroom flats and also all other dwellings with a total useable floor area of less than 50m<sup>2</sup>.
- Dwellings failing on domestic hygiene where the dwelling is problematic or impossible to extend (a mid-terraced house or a flat not on the ground floor). In many cases, the only way to extend would be to remodel the interior, thereby reducing the size/number of rooms in the dwelling, affecting its lettability/value.
- Dwellings failing on personal hygiene where there are problems with the location of bath or WC and the dwelling is problematic or impossible to extend (a mid-terraced house or a flat not on the ground floor). In many cases, the only way to extend would be to remodel the interior reducing the size/number of rooms in the dwelling, affecting its lettability/value.

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## Disrepair

All dwellings failing on this are classed as 'straightforward'.

## Thermal comfort

The following is defined as **'inappropriate' to treat**:

- dwelling fails thermal comfort criterion but with a current energy efficiency (SAP) rating of 65 or more.

The following is classed as **'difficult' to treat**:

- installation of cavity wall insulation required but dwelling falls into one of the 'non-standard fillable' categories (see Cavity wall 'fillability' below).

The following is classed as **'not feasible' to treat**:

- dwelling requires installation of cavity wall insulation but falls into one of the 'unfillable' categories (see Cavity wall 'fillability' below)

## Over-arching categories based on cost

### **'Difficult' to treat:**

- total cost to make decent is more than £20,000.

### **'Uneconomic' to treat:**

- total cost to make decent is more than 50% of the rebuilding cost.

## Cavity wall 'fillability'

The EHCS only classifies cavity walls with masonry construction as 'cavity wall'; therefore cavity walls of other materials e.g. concrete are not included. There are also some general assumptions made about masonry cavity walls:

- the cavity is greater than 50mm wide and could therefore be filled.
- there are no obstructions within the cavity or that it is partly filled.
- all flats are in blocks where there is at least one leasehold owner
- there is no exposure to driving rain.

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The scale of fillability uses four categories which are detailed below.

**1. Standard 'fillable':**

- has 100% cavity walls, **and**
- at least 75% of the external wall finish is masonry pointing, **and**
- does not have a conservatory, **and**
- has less than five storeys, **and**
- is not a flat, **and**
- does not have a timber or metal frame.

**2. Non-standard 'fillable' – less problematic:**

- the dwelling has less than 100 % cavity wall (but has some cavity wall), **and** at least 75% of the external wall finish is masonry pointing, **and** it has less than five storeys, **and** it is not a flat, **and** it does not have a timber or metal frame.

**or**

- the dwelling has 100 % cavity walls, **and** at least 75% of the external wall finish is masonry pointing, **and** it has a conservatory, **and** it has less than five storeys, **and** it is not a flat, **and** it does not have a timber or metal frame.

**3. Non-standard 'fillable' – more problematic:**

- the dwelling has some cavity wall, **and** has more than five or more storeys, **and** has some masonry pointing but less than 75%, **and** it is not a flat **and** it does not have a metal or timber frame.

**or**

- the dwelling has some cavity wall, **and** it is a flat, **and** it has some masonry pointing but less than 75%, **and** it does not have a timber or metal frame.

**or**

- the dwelling has some cavity wall, **and** it has some masonry pointing but less than 75%, **and** it does not have a timber or metal frame.

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#### 4. Unfillable:

- the dwelling has some cavity wall, **and** has a timber or metal frame.

or

- the dwelling has some cavity wall, **and** none of the wall finish consists of masonry pointing.

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# Glossary of key definitions and terms

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## Accessibility features

The four features reported on form the basis of the requirements in part L of the Building Regulations, although the EHS cannot exactly mirror the detailed requirements. The four features are defined as below:

**level access:** there are no steps between the gate/pavement and the front door into the house or block of flats to negotiate.

**flush threshold:** a wheelchair can be wheeled directly into the dwelling from outside the entrance door with no steps to negotiate and no obstruction higher than 15mm. For houses, this usually involves a specified adaptation. Flats on upper or basement levels can have a flush threshold provided that there is a lift and there are no obstructions higher than 15mm on the route from outside the entrance door to the block into the flat itself.

**sufficiently wide doors and circulation space:** the doors and circulation space serving habitable rooms, kitchen, bathroom and WC comply with the requirements of Part M listed in the table below. This means that doorways should be at least 750mm wide and corridors 900mm wide and that these minimum widths are higher where the person has to turn into the room from the corridor than when the corridor leads head on into the room. For more details see the Technical Advice Note on Dwelling and Neighbourhood Conditions.

**WC at entrance level:** there is an inside WC located on the entrance floor to the dwelling. For houses, this is usually the ground floor and for flats it will be the same level as the main entrance door into the flat. The WC does not have to be fully wheelchair accessible to be coded as 'at entry level'.

## Age

This is the date of construction of the oldest part of the building.

## Area Type

**city or other urban centre:** includes:

*city centre:* the area around the core of a large city.

*other urban centre:* the area around towns and small cities, and also older urban areas which have been swallowed up by a metropolis.

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**suburban residential:** the outer area of a town or city; characterised by large planned housing estates.

**rural:** includes:

*rural residential:* a suburban area of a village, often meeting the housing needs of people who work in nearby towns and cities.

*village centre:* the traditional village or the old heart of a village which has been suburbanised.

*rural:* an area which is predominantly rural e.g. mainly agricultural land with isolated dwellings or small hamlets.

### Basic repair costs

Basic repairs include urgent work required in the short term to tackle problems presenting a risk to health, safety, security or further significant deterioration plus any additional work that will become necessary within the next five years. See the Technical Advice Note on Dwelling and neighbourhood conditions for more information about how these are calculated and assumptions made.

### Carbon dioxide (CO<sub>2</sub>) emissions

The total carbon dioxide emissions from space heating, water heating, ventilation and lighting, less the emissions saved by energy generation as derived from SAP calculations and assumptions. These are measured in tonnes/year. Unlike the EIR the CO<sub>2</sub> emissions presented are not adjusted for floor area and represent emissions from the whole dwelling. The highest and lowest emitting performers have also been grouped with cut-off points set at 3 tonnes per year for the low emitters and 10 tonnes per year for the highest. CO<sub>2</sub> emissions for each dwelling are based on a standard occupancy and a standard heating regime.

### Costs to make decent

This is the estimated cost of all works required to ensure that the dwelling meets the minimum laid down in the standard. The costs include sums for any necessary access equipment (usually scaffolding) and preliminaries and site works (e.g. security fencing, chemical toilets, materials storage). They also include regional and tenure factors. For further details, see the English House Condition Survey Technical Report (2005 edition), chapter 6.



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## Costs to remedy HHSRS Category 1 hazards

This is the estimated cost of bringing the dwelling up to a level that would be 'average' for a home of its age and type rather than conforming to some ideal standard or to current Building Regulations. For further details, see the English House Condition Survey Technical Report, 2007, chapter 6.

## Comprehensive repair costs

Comprehensive repairs include urgent work required in the short term to tackle problems presenting a risk to health, safety, security or further significant deterioration, plus any additional work, including replacement of elements, that will become necessary within the next ten years. See the Technical Advice Note on Dwelling and Neighbourhood Conditions for more information about how these are calculated and the assumptions made.

## Damp and mould growth

Damp and mould in dwellings fall into three main categories:

**rising damp:** where the surveyor has noted the presence of rising damp in at least one of the rooms surveyed during the physical survey. Rising damp occurs when water from the ground rises up into the walls or floors because damp proof courses in walls or damp proof membranes in floors are either not present or faulty.

**penetrating damp:** where the surveyor has noted the presence of penetrating damp in at least one of the rooms surveyed during the physical survey. Penetrating damp is caused by leaks from faulty components of the external fabric e.g. roof covering, gutters etc. or leaks from internal plumbing e.g. water pipes, radiators etc.

**condensation or mould:** caused by water vapour generated by activities like cooking and bathing condensing on cold surfaces like windows and walls. Virtually all dwellings have some level of condensation occurring. Only *serious* levels of condensation or mould are considered as a problem in this report.

## Decent Homes

A Decent Home is one that meets **all** of the following four criteria:

- a) meets the **statutory minimum** standard for housing. From April 2006 the Fitness Standard was replaced by the Housing Health and Safety Rating System (HHSRS).
- b) it is in a reasonable state of repair (assessed from the age and condition of a range of building components including walls, roofs, windows, doors, chimneys, electrics and heating systems).

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c) it has reasonably modern facilities and services (assessed according to the age, size and layout/location of the kitchen, bathroom and WC and any common areas for blocks of flats, and to noise insulation).

d) it provides a reasonable degree of thermal comfort (adequate heating and effective thermal insulation).

The detailed definition for each of these criteria is included in A Decent Home: Definition and guidance for implementation, Communities and Local Government, June 2006: <http://www.communities.gov.uk/publications/housing/decenthome>

### Deprived local areas

These are Lower Layer Super Output Areas (LSOAs) scored and ranked by the 2007 Index of Multiple Deprivation (IMD).

LSOAs are a statistical geography providing uniformity of size. There are 32,482 in England and on average each contains around 625 dwellings.

These ranked areas have been placed into ten groups of equal numbers of areas, from the 10% most deprived areas on the Index, to the 10% least deprived.

### Double glazing

This covers factory made sealed window units only. It does not include windows with secondary glazing or external doors with double or secondary glazing (other than double glazed patio doors which are surveyed as representing two windows).

### Dwelling

A dwelling is a self-contained unit of accommodation (normally a house or flat) where all the rooms and amenities (i.e. kitchen, bath/shower room and WC) are for the exclusive use of the household(s) occupying them. In rare cases, amenities may be located outside the front door but provided they are for the exclusive use of the occupants, the accommodation is still classed as a dwelling.

For the most part a dwelling will be occupied by one household. However, it may contain none (vacant dwelling) or may contain more than one (House in Multiple occupation or HMO).

### Dwelling type

Dwellings are classified, on the basis of the surveyors' inspection, into the following categories:

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## ***terraced house***

### a) size

small terraced house: a house with a total floor area of less than 70m<sup>2</sup> forming part of a block where at least one house is attached to two or more other houses.

medium/large terraced house: a house with a total floor area of 70m<sup>2</sup> or more forming part of a block where at least one house is attached to two or more other houses.

### b) attachment

end terraced house: a house attached to one other house only in a block where at least one house is attached to two or more other houses.

mid-terraced house: a house attached to two other houses in a block.

semi-detached house: a house that is attached to just one other in a block of two.

detached house: a house where none of the habitable structure is joined to another building (other than garages, outhouses etc.).

bungalow: a house with all of the habitable accommodation on one floor. This excludes chalet bungalows and bungalows with habitable loft conversions, which are treated as houses.

converted flat: a flat resulting from the conversion of a house or former non-residential building. Includes buildings converted into a flat plus commercial premises (typically corner shops).

purpose built flat, low rise: a flat in a purpose built block less than six storeys high.

Includes cases where there is only one flat with independent access in a building which is also used for non-domestic purposes.

purpose built flat, high rise: a flat in a purpose built block of at least six storeys high.

## **Door viewer**

This includes a 'spyhole' type viewer fitted to the main entrance door and also any glazing in the room containing the door that enables the occupant to see clearly who is at the door.

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## Energy cost

This represents the total energy cost from space heating, water heating, ventilation and lighting, less the costs saved by energy generation as derived from SAP calculations and assumptions. This is measured in £/year using constant prices based on average fuel prices for 2009 (which input into the 2009 Standard Assessment Procedure) and do *not* reflect subsequent changes in fuel prices. Energy costs for each dwelling are based on a standard occupancy and a standard heating regime.

## Energy Performance Certificate

The Energy Performance Certificate (EPC) provides a range of indicators based on current performance, whether the property would benefit in terms of improved performance from a range of low cost and higher cost measures, and the likely performance arising from the application of those measures. The EPC assessment is based on a simplified form of the energy efficiency Standard Assessment Procedure (SAP) known as Reduced Data SAP (RDSAP).

The EHCS currently provides the following EPC based indicators but using the survey's own approach to SAP:

### ***current performance:***

- energy efficiency rating (EER) and bands
- environmental impact rating (EIR) and bands
- primary energy use (kWh/m<sup>2</sup>/year)
- energy cost (£/year), but unlike the EPC these are based on 2005 constant Prices
- CO<sub>2</sub> (carbon dioxide) emissions (tonnes/year).

***improvement measures:*** as part of the EPC, certain improvement measures are suggested, which would improve the energy efficiency of the dwelling. These include improvements to both heating and insulation measures.

### a) *higher cost measures* (more than £500):

- upgrade to **central heating controls**, for boiler driven systems, typically to a stage where a room thermostat, a central programmer and thermostatic radiator valves (TRV's) have been installed (although the range of upgraded controls can vary depending on the heating system);
- upgrading to a class A condensing boiler using the same fuel (mains gas, LPG or fuel oil), where a non-communal boiler is in place (this improvement

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measure is most appropriate when the existing central heating boiler needs repair or replacement);

- upgrading existing storage radiators (or other electric heating) to more modern, fan-assisted storage heaters;
- installation of a hot water cylinder thermostat where a storage cylinder is in use but no thermostat exists;
- replacement warm-air unit with a fan-assisted flue, where the original warm-air heating unit is pre-1998;
- installation of a manual feed biomass boiler or wood pellet stove where an independent, non-biomass solid fuel system exists. This measure was assessed to identify the number of dwellings that would benefit from this measure but was not included in the post improvement energy efficiency rating or carbon dioxide emissions (reported in section 4) due a combination of the small amount of dwellings that would benefit and modelling complexity.

b) *lower cost measures* (less than £500):

- installation or upgrade of loft insulation which is less than 250mm, where the dwelling is not a mid- or ground-floor flat and where the loft does not constitute a full conversion to a habitable room;
- installation of cavity wall insulation, where the wall is of cavity construction;
- installation or upgrade of hot water cylinder insulation to a level matching a 160mm jacket. Recommended where the current level is less than 25mm of spray foam or less than a 100mm jacket.

The survey is not able to include the following improvements: draft proofing; and low energy lighting. Other more expensive measures that are not included are: solar water heating; double or secondary glazing; solid wall insulation; complete change of heating system to class A condensing boiler (including fuel switching); solar photovoltaic (PV) panels.

***Cost of energy efficiency improvement measures:*** the cumulative cost of implementing the measures that have been recommended for each dwelling are calculated by applying standard costs on a per unit area basis for loft and cavity wall insulation and a single unit cost for other measures.

## Energy efficiency rating

The measure of energy efficiency used is the energy cost rating as determined by the Government's Standard Assessment Procedure (SAP), used to monitor the energy efficiency of dwellings. This is based on a dwelling's energy costs per m<sup>2</sup> of floor area for standard occupancy of a dwelling and a standard heating regime and

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is calculated from the survey using a simplified form of the SAP. The energy costs take into account the costs of space and water heating, ventilation and lighting, less cost savings from energy generation technologies. They do not take into account variation in geographical location. The rating is expressed on a scale of 1–100 where a dwelling with a rating of 1 has poor energy efficiency (high costs) and a dwelling with a rating of 100 represents zero net energy cost per year.

The detailed methodology for calculating the Government's SAP to monitor the energy efficiency of dwellings was updated in 2009 to reflect developments in the energy efficiency technologies and knowledge of dwelling energy performance. This means that a SAP rating using the 2005 method is not directly comparable to one calculated under the 2009 methodology, and it would be incorrect to do so. All SAP statistics used in reporting from 2010 are based on the SAP 2009 methodology and this includes time series data from 1996 to the current reporting period (i.e. the SAP 2009 methodology has been retrospectively applied to 1996 and subsequent survey data to provide consistent results in the 2010 and following reports).

### Energy Efficiency Rating (EER) Bands

The energy efficiency rating is also presented in an A-G banding system for an Energy Performance Certificate, where Band A rating represents low energy costs (i.e. the most efficient band) and Band G rating represents high energy costs (the least efficient band). The break points in SAP used for the EER Bands are:

- Band A (92–100)
- Band B (81–91)
- Band C (69–80)
- Band D (55–68)
- Band E (39–54)
- Band F (21–38)
- Band G (1–20).

### Environmental Impact Rating (EIR)

Based on the Energy Performance Certificate the EIR is a measure of a dwelling's impact on the environment in terms of CO<sub>2</sub> emissions/m<sup>2</sup> of floor area. The emissions take into account space heating, water heating, ventilation and lighting, less the emissions saved by energy generation technologies. The rating is expressed on a scale of 1–100 where a dwelling with a rating of 1 has high CO<sub>2</sub> emissions and a dwelling with a rating of 100 represents zero net emissions per year.

The EIR rating is also expressed in an A-G banding system for Energy Performance Certificates where an A rating represents low carbon emissions and a G rating represents high carbon emissions. The EER and the EIR use common break points for their Bands (see above).

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## Energy Use (primary)

The energy use relates to the primary energy used. This takes into account distribution losses and energy used to produce fuels along with the energy actually used in the dwelling (as derived from SAP calculations and assumptions). This is measured in kWh/m<sup>2</sup> per year. Energy use for each dwelling is based on a standard occupancy and a standard heating regime.

## Excess cold (HHSRS Category 1 hazard)

Households living in homes with a threat to health arising from sub-optimal indoor temperatures. The assessment is based on the most vulnerable group who, for this hazard, are those aged 65 years or more (the assessment does not require a person of this age to be an occupant). The EHS does not measure achieved temperatures in the home and therefore this hazard is based on dwellings with an energy efficiency rating of less than 35 based on the SAP 2001 methodology. Under the SAP 2009 methodology the comparable threshold was recalculated to be 35.79 and the latter is used in providing statistics for the HHSRS Category 1 hazard.

## Faults (to shared facilities and building elements)

A fault is defined as a defect that is not purely cosmetic in nature and that satisfies at least one of the three criteria below:

- it affects at least 5% of the element in question; or
- regardless of its extent, represents an immediate health or safety hazard; or
- regardless of its extent, it threatens further deterioration to the element any other part of the building/structure.

## Heating system

### a) main space heating type:

**central heating system:** most commonly a system with a gas fired boiler and radiators which distribute heat throughout the dwelling (but also included in this definition are warm air systems, electric ceiling/underfloor and communal heating). It is generally considered to be a cost effective and relatively efficient method of heating a dwelling.

**storage heaters:** predominately used in dwellings that have an off-peak electricity tariff. Storage heaters use off-peak electricity to store heat in clay bricks or a ceramic material, this heat is then released throughout the day. However, storage heating can prove expensive if too much on peak electricity is used during the day.

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**room heaters:** this category includes all other types of heater such as fixed gas, fixed electric or portable electric heaters, this type of heating is generally considered to be the least cost effective of the main systems and produces more carbon dioxide emissions per kWh.

**b) heating fuel:**

**gas:** mains gas is relatively inexpensive and produces lower emissions per unit of energy than most other commonly used fuels. Liquefied Petroleum Gas and bottled gas are still associated with slightly higher costs and emissions.

**electricity:** standard rate electricity has the highest costs and CO<sub>2</sub> emissions associated with main fuels, but is used in dwellings without a viable alternative or a back-up to mains gas. An off-peak tariff such as Economy 7, is cheaper than bottled gas but with the same emissions as standard electricity.

**oil:** in terms of both costs and emissions, oil lies between main gas and electricity.

**solid fuel:** these are similar costs to oil with the exception of processed wood which can be more expensive than off-peak electricity. Fuels included are coal and anthracite, with CO<sub>2</sub> emissions above those of gas and oil; wood, which has the lowest emissions of the main fuels; and smokeless fuel, whose emissions are close to those of electricity. By law, areas (usually towns or cities) are designated as smoke control areas where solid fuels emitting smoke are illegal.

**c) water heating system:**

**combined:** provides heat to supply hot water for the dwelling.

**separate:** dwellings which have electrical space heating systems often use electric immersion heaters to heat water. Other dwellings may be fitted within instantaneous water heaters, such as electric showers.

**d) boiler type:**

**standard:** provides hot water or warm air for space heating with the former also providing hot water via a separate storage cylinder.

**back:** located behind a room heater and feeds hot water to a separate storage cylinder. They are generally less efficient than other boiler types.

**combination:** provides hot water or warm air for space heating and can provide hot water on demand negating the need for a storage cylinder, therefore requiring less room.

**condensing:** standard and combination boilers can also be condensing. A condensing boiler uses a larger, or dual, heat exchanger to obtain more heat



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from burning fuel than an ordinary boiler, and is generally the most efficient boiler type.

## Household

A household is defined as one person living alone or a group of people, who may or may not be related, living in the same dwelling who share at least one living or sitting room and/or have a regular arrangement to share at least one meal a day. Shared houses where the occupants have a joint tenancy or where they came together as a group to rent the house and would themselves fill any vacancies rather than expecting the landlord to do this are also classed as a single household; even though they may not share a sitting room or a meal per day.

## Household reference person (HRP)

This is the person in whose name the dwelling is owned or rented or who is otherwise responsible for the accommodation. In the case of joint owners and tenants, the person with the highest income is taken as the HRP. Where incomes are equal, the older is taken as the HRP. This procedure increases the likelihood that the HRP better characterises the household's social and economic position.

## Household groups

Key household groups include:

***ethnic minorities***: where the respondent defines their ethnicity as something other than white.

***illness or disability***: a household where at least one person in the household has a long-term illness or disability. The respondent assesses this and long-term is defined as anything that has troubled the person, or is likely to affect them, over a period of time.

***in poverty***: a household with income below 60% of the equivalised median household income (calculated before any housing costs are deducted).

***older people 60+***: a household that includes at least one person aged 60 or over.

## Housing Health and Safety Rating System (HHSRS)

The Housing Health and Safety Rating System (HHSRS) is a risk assessment tool used to assess potential risks to the health and safety of occupants, visitors, neighbours and passers by in residential properties in England and Wales. It replaced the Fitness Standard in April 2006.

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The purpose of the HHSRS assessment is not to set a standard but to generate objective information in order to determine and inform enforcement decisions. There are 29 categories of hazard, each of which is separately rated, based on the risk to the potential occupant who is most vulnerable to that hazard. For example, for falls on stairs and falls on the level, the most vulnerable group is persons over 60 years, and for falls between levels it is children under five years old. The individual hazard scores are grouped into 10 bands where the highest bands (A–C representing scores of 1000 or more) are considered to pose Category 1 hazards. Local authorities have a duty to act where Category 1 hazards are present local authorities may take into account the vulnerability of the actual occupant in determining the best course of action. For the purposes of the Decent Homes standard, dwellings posing a Category 1 hazard are non-decent on its criterion that a dwelling must meet the statutory minimum requirements.

The EHS is not able to replicate the HHSRS assessment in full as part of a large scale survey. Its assessment employs a mix of hazards that are directly assessed by surveyors in the field and others that are indirectly assessed from detailed related information collected. For 2006 and 2007, the survey (the then English House Condition Survey) produced estimates based on 15 of the 29 hazards. From 2008, the survey is able to provide a more comprehensive assessment based on 26 of the 29 hazards – see the Technical Advice Note on Dwelling and Neighbourhood Conditions for a list of the hazards covered. Estimates of Decent Homes will continue to be based on 15 hazards to maintain consistency with Decent Homes reporting since 2006 and to avoid a break in the time series.

### **Income/equivalised income**

Household incomes have been ‘equivalised’, that is adjusted (using the modified OECD scale) to reflect the number of people in a household. This allows the comparison of incomes for households with different sizes and compositions. The EHS variables are modelled to produce a Before Housing Cost (BHC) income measure for the purpose of equivalisation. The BHC income variable includes: Household Reference Person and partner’s income from benefits and private sources (including income from savings), income from other household members, housing benefit, winter fuel payment and the deduction of net council tax payment.

### **Local environment**

This is defined as the area around the dwelling of which the dwelling seems to be a part. The surveyor puts an imaginary ‘boundary’ round this area taking into account the character of the surrounding streets. It is likely, but not necessarily, defined in relation to physical boundaries such as roads, railway lines, canals etc.. Surveyors define this environment to be a manageable size so that they can visually inspect the whole area on foot which means that, for very large housing estates, the ‘local environment’ will be just part of the estate.

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## Parking provision

This represents the 'best' parking available to the dwelling i.e. if the home has both a garage and off street parking, parking provision is coded as 'garage'. The parking provision does not have to be located on the plot of the dwelling – the off street parking space or garage may be in a block further down the street or round the corner.

## Regional areas

***northern regions***: includes the following regions: North East; North West; and Yorkshire and the Humber.

***south east regions***: includes the following regions: London; and South East.

***rest of England***: includes the following regions: East Midlands; West Midlands; South West; and East of England.

## SAP

The energy cost rating as determined by Government's Standard Assessment Procedure (SAP) and is used to monitor the energy efficiency of dwellings. It is an index based on calculated annual space and water heating costs for a standard heating regime and is expressed on a scale of 1 (highly inefficient) to 100 (highly efficient with 100 representing zero energy cost).

## Secure windows and doors

The main entrance door to the dwelling and any accessible windows need to be assessed by surveyors as either highly secure or fairly highly secure

### ***main entrance door***

**high**: good quality door that is double glazed or contains no glazing. It should have a strong frame, and auto deadlocking rim lock in the top one-third of the door plus a mortice lock in the lower third of the door.

**fairly high**: as above but with either a standard Yale lock instead of the auto deadlocking rim lock or the locks not set apart.

### ***accessible windows***

**high**: double glazed windows with key locks

**fairly high**: double glazed windows without key locks

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## Secondary amenities

These are additional WCs and baths/showers that are located *inside* the dwelling.

## Serious condensation or mould

See 'damp and mould growth'

## Size

The total usable internal floor area of the dwelling as measured by the surveyor, rounded to the nearest square metre. It excludes integral garages, balconies, stores accessed from the outside only and the area under partition walls. Dwellings are also grouped into the following five categories:

- less than 50m<sup>2</sup>
- 50 to 69m<sup>2</sup>
- 70 to 89m<sup>2</sup>
- 90 to 109m<sup>2</sup>
- 110m<sup>2</sup> or more.

## Storeys

This is the number of storeys *above* ground i.e. it does not include any basements.

## Tenure

Four categories are used for most reporting purposes, and for some analyses these four tenure categories are collapsed into two groups:

**private sector** includes:

*owner-occupied*: includes all households who own their own dwellings outright or buying them with a mortgage/loan; also includes shared-ownership schemes.

*private rented*: includes all households living in privately owned property which they do not own. Includes households living rent free, or in tied dwellings and tenants of housing associations that are not registered.

**social rented** includes:

*local authority*: including Arms Length Management Organisations (ALMOs) and Housing Action Trusts.

*housing association*: mostly Registered Social Landlords (RSLs), Local Housing Companies, co-operatives and charitable trusts.

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## Urgent repair costs

These cover urgent work only which is defined as work required in the short term to tackle problems presenting a risk to health, safety, security or further significant deterioration of the building. See the Technical Advice Note on Dwelling and neighbourhood conditions for more information about how these are calculated and assumptions made.

## Vacant dwellings

The assessment of whether or not a dwelling is vacant is made at the time of the interviewer's visit. Clarification of vacancy is sought from neighbours. Surveyors are required to gain access to vacant dwellings and undertake full inspections.

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