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BRE Client Report

BRE Dwelling Level Housing Stock Modelling and Database for Uttlesford District Council

Prepared for: **Marcus Watts, Principal Environmental Health Officer**

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Executive summary

- Uttlesford District Council commissioned BRE to undertake a series of modelling exercises on their housing stock. This report describes the modelling work and provides details of the results obtained from the dwelling level model and database. The database is also provided to the council to enable them to obtain specific information whenever required.
- The council also commissioned BRE to produce a Health Impact Assessment, the results of which are provided in a separate report.
- The detailed housing stock information provided in this report will facilitate the delivery of Uttlesford's housing strategy and enable a targeted intervention approach to improving housing. In addition to this there are also several relevant government policies – the Housing Act 2004, Housing Strategy Policy, Local Authority Housing Statistics (LAHS) and the Green Deal/ECO.
- The main aims of this work were to provide estimates of:
    - The percentage of dwellings meeting each of the key indicators[1] for Uttlesford overall and broken down by tenure and then mapped by COA (private sector stock only)
    - Information relating to LAHS reporting for the private sector stock - category 1 hazards and Houses in Multiple Occupation (HMOs) as well as information on EPC ratings
    - Basic Green Deal and Energy Company Obligation (ECO) variables
- BRE Housing Stock Models were used to provide such estimates at dwelling level with a focus on private sector housing. The key indicators provide Uttlesford with detailed information on the likely condition of the stock and the geographical distribution of properties of interest.
- A stock modelling approach has been developed and used by BRE for many years and the most recent 2014 models have been updated to make use of the results of the 2011 English Housing Survey (EHS)[2] and additionally now incorporate a technique known as geomodelling[3] which makes use of Ordnance Survey (OS) data. These dwelling level models are used to estimate the likelihood of a particular dwelling meeting the criteria for each of the key indicators. These outputs can then be mapped to provide the authority with a geographical distribution of each of the key indicators which can then be used to target resources for improving the housing stock.
- The headline results are as follows:

[1] Presence of a HHSRS category 1 hazard, presence of a category 1 hazard for excess cold, presence of a category 1 hazard for falls, dwellings in disrepair, fuel poverty (10% and Low Income High Cost definitions), dwelling occupied by a low income household and SimpleSAP rating.

[2] 2011 is the latest available data. Prior to the 2014 models EHS 2009 data was used.

[3] The OS data has been used to update a number of the model inputs – the main value of the OS data is the ability to determine the dwelling type with much greater confidence – see Appendix B for more information.

Headline results for Uttlesford

6,314 dwellings in the private sector have category 1 Housing Health and Safety Rating System (HHSRS) hazards. This equates to 22% of all private properties, compared with 19% regionally and 17% nationally. *See full results*

1,186 dwellings in the private rented sector have category 1 hazards. This equates to 27% of properties in the private rented sector. *See full results*

Excess cold is the most common category 1 hazard, found in 18% of owner occupied stock and 22% of private rented dwellings. *See full results*

The highest concentrations of fuel poverty in the private sector are found in the wards of The Sampfords, Littlebury and Wenden Lofts. For excess cold, the highest concentrations are in the wards of The Sampfords, Wenden Lofts and The Rodings. *See full results*

The highest concentrations of all HHSRS hazards in the private sector are found in the wards of The Sampfords, Wenden Lofts and The Rodings. *See full results*

The average SimpleSAP ratings for all private sector dwellings in Uttlesford is 50, which is worse than both England (55) and East of England (55). For the owner occupied stock in Uttlesford the figure is 50 and for the private rented sector it is 48. *See full results*

Maps by COA have been provided for the above key indicators. *See maps*

The total cost of mitigating category 1 hazards in Uttlesford's private sector stock is estimated to be £22.4 million. *See full results*

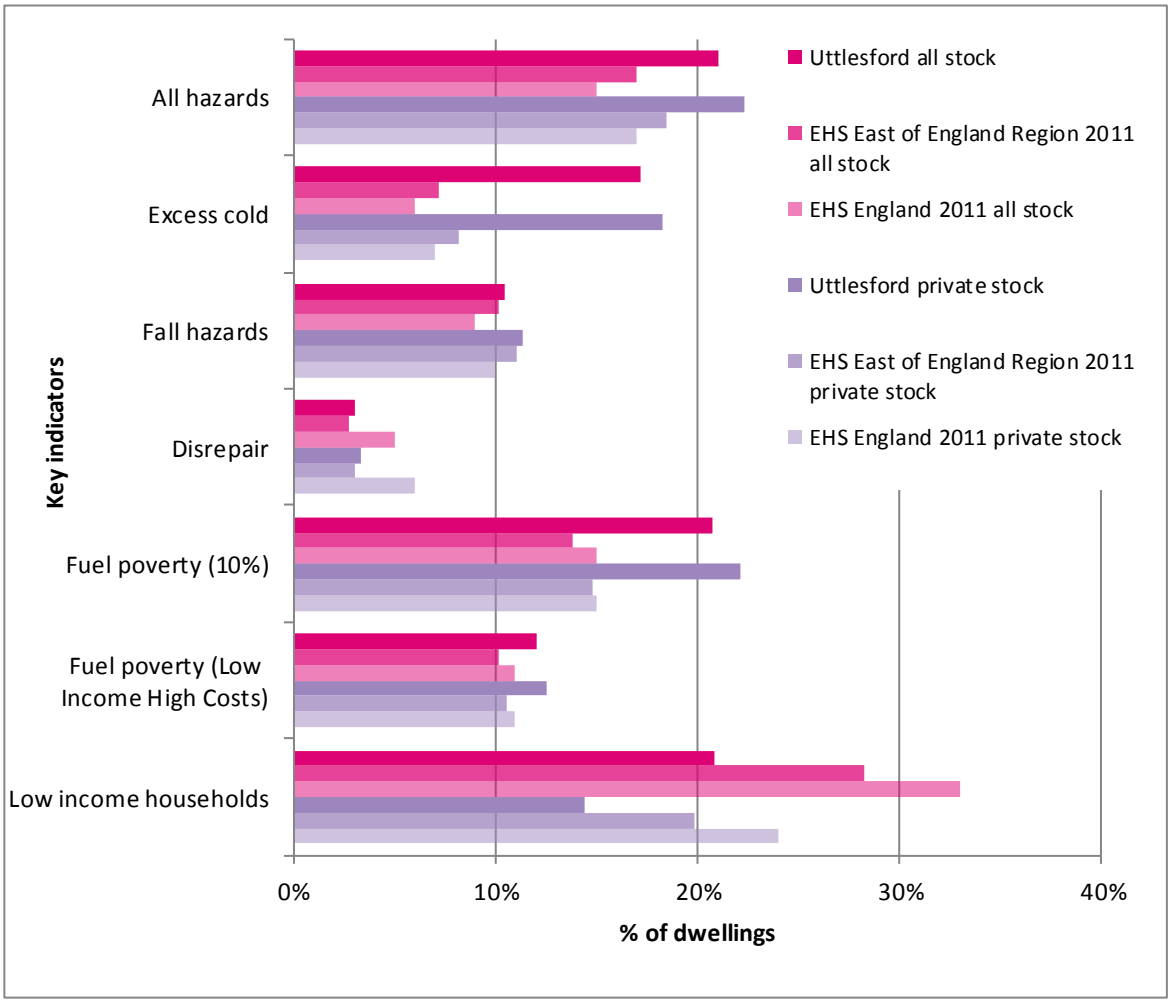
There is an estimated total of 183 HMOs in Uttlesford, of which approximately 19 come under the mandatory licensing scheme. *See full results*

24.3% (6,882) of *private sector* dwellings and 28.8% (1,273) of *private rented* dwellings in Uttlesford are estimated to have an EPC rating below band E. *See full results*

Key illustrations of headline results

- The table below shows the results for 7 of the key indicators in Uttlesford compared to East of England and England (EHS 2011) and split into all stock and private sector stock. Compared to the East of England, Uttlesford generally performs worse for all household indicators except for disrepair and low income households. The data shows that private stock in Uttlesford contains considerably higher rates of excess cold and, despite lower rates of low income households, the poor energy efficiency of the stock contributes to high levels of fuel poverty.

Estimates of the percentage of dwellings meeting the key indicator criteria assessed by the housing stock models and database for all stock and private sector stock – Uttlesford compared to East of England and England (EHS 2011)



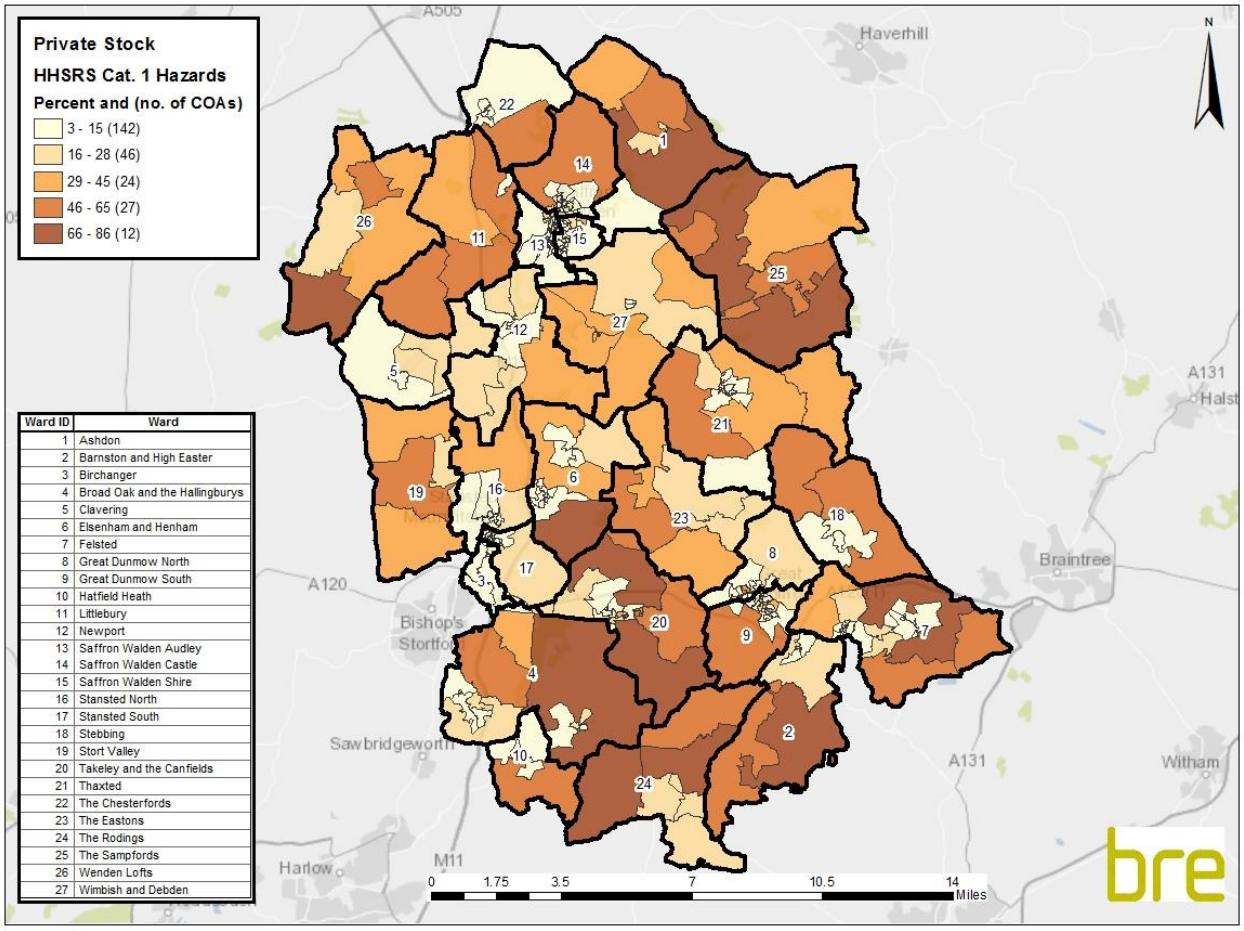
- The table overleaf shows the number and percentage of Uttlesford's private rented stock falling into each of the EPC ratings bands (based on SimpleSAP). This shows that the majority of properties in the private rented sector fall in the bands C to F.

Number and percentage of Uttlesford's private rented stock falling into each of the EPC ratings bands (based on SimpleSAP)

	Count	Percent
(92-100) A	0	0.0%
(81-91) B	11	0.2%
(69-80) C	654	14.8%
(55-68) D	1,343	30.3%
(39-54) E	1,145	25.9%
(21-38) F	821	18.5%
(1-20) G	452	10.2%

- The map below shows the distribution of category 1 hazards, as defined by the Housing Health and Safety Rating System (HHSRS), across the local authority area. The map shows that there are concentrations of high levels of hazards in The Sampfords, Wenden Lofts and The Rodings wards.

Percentage of private sector dwellings in Uttlesford with the presence of a HHSRS category 1 hazard



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1 Introduction

Uttlesford District Council commissioned BRE to undertake a series of modelling exercises on their housing stock. This report describes the modelling work and provides details of the results obtained from the dwelling level model and database. The database is also provided to the council to enable them to obtain specific information whenever required.

The council also commissioned BRE to produce a Health Impact Assessment, the results of which are provided in a separate report.

The stock models and database provide the council with dwelling level information on various key housing indicators, focussing on private sector housing. The key indicators provide Uttlesford with detailed information on the likely condition of the stock and the geographical distribution of properties of interest. These properties are likely to be suitable targets for energy efficiency improvements or other forms of intervention, such as mitigating Housing Health and Safety Rating System (HHSRS) hazards. The key indicators are split into indicators related to house condition, energy efficiency and household vulnerability as shown in **Table 1** (see **Appendix A** for full definitions):

Table 1: Key indicators split into categories

Indicator	House condition indicators	Energy efficiency indicators	Household vulnerability indicators
Presence of HHSRS cat 1 hazard	✓		
Presence of cat 1 hazard for excess cold	✓	✓	
Presence of cat 1 hazard for falls	✓		
Dwellings in disrepair	✓		
Fuel Poverty (10% and Low income, High cost definitions)			✓
Dwellings occupied by low income households			✓
SimpleSAP rating		✓	

N.B. Presence of category 1 hazard for falls does NOT include the hazard of falling between levels

The single indicators shown in **Table 1** can also be combined within the database to provide powerful information on the housing stock, for example dwellings suffering from excess cold and also occupied by households on a low income. The true potential of the database lies in its ability to produce combined indicators such as this, as it allows council officers to explore the stock and to assess the likely scope of any programmes they might wish to implement.

It is also possible to extract other information from the database which is of use to local authorities. This information includes estimates relating to the Department for Communities and Local Government's

(DCLG) Local Authority Housing Statistics (LAHS) reporting of Energy Performance Certificate (EPC) ratings, costs of mitigating hazards, and numbers of Houses in Multiple Occupation (HMOs) as well as the basic Green Deal and Energy Company Obligation (ECO) variables relating to levels of insulation and wall type.

The key indicators and other information are derived from the Housing Stock Database which is made up of a series of Dwelling Level Stock Models. The BRE dwelling level stock models have been used for many years to provide key housing indicators to local authorities The most recent 2014 models have been updated to make use of the results of the 2011 English Housing Survey (EHS)[4] and additionally now incorporate a technique known as geomodelling[5] which makes use of Ordnance Survey (OS) data. The models also make significant use of the Experian UK Consumer Dynamics Database of dwelling and household indicators as inputs to the models.

The information in the database can be used to ensure the council meets various policy and reporting requirements. For example, local housing authorities are required to review housing conditions in their districts in accordance with the Housing Act 2004[6].

Furthermore, having this information available will also help to facilitate the delivery of Uttlesford's housing strategy. It will enable a targeted intervention approach to improving housing; therefore allowing the council to concentrate their resources on housing in the poorest condition or with the greatest health impact.

1.1 Project aims

The main aim of this project was to provide data on key private sector housing indicators for Uttlesford. Furthermore, Uttlesford also requested estimates for several other housing-related elements. The main aims of this work were therefore to provide estimates of:

- The percentage of dwellings meeting each of the key indicators for Uttlesford overall and broken down by tenure and then mapped by COA (private sector stock only)
- Information relating to LAHS reporting for the private sector stock - category 1 hazards and HMOs, plus information on EPC ratings
- Basic Green Deal and Energy Company Obligation (ECO) variables

This report looks firstly at the policy background and why such information is important for local authorities. Secondly, it provides a brief description of the overall stock modelling approach. Finally, this report provides the modelling results for Uttlesford covering each of the main aims above.

[4] 2011 is the latest available data. Prior to the 2014 models EHS 2009 data was used.

[5] The OS data has been used to update a number of the model inputs – the main value of the OS data is the ability to determine the dwelling type with much greater confidence – see Appendix B for more information.

[6] http://www.legislation.gov.uk/ukpga/2004/34/contents

2 Policy background

The detailed housing stock information provided in this report will facilitate the delivery of Uttlesford's housing strategy and enable a targeted intervention approach to improving housing. This strategy needs to be set in the context of relevant government policy and legislative requirements. These polices either require reporting of housing-related data by local authorities, or the use of such data to assist in meeting policy requirements. The main policies and legislative requirements are summarised in the following sub-sections.

2.1 Housing Act 2004

The Housing Act 2004[6] requires local housing authorities to review housing statistics in their district. The requirements of the Act are wide-ranging and also refer to other legislation which between them covers the following:

- Dwellings that fail to meet the minimum standard for housings (i.e. dwellings with HHSRS category 1 hazards)
- Houses in Multiple Occupation (HMOs)
- Selective licensing of other houses
- Demolition and slum clearance
- The need for provision of assistance with housing renewal
- The need to assistance with adaptation of dwellings for disabled persons

2.2 Key housing strategy policy areas and legislation

2.2.1 Private rented sector

In the report "Laying the Foundations: A Housing Strategy for England"[7] Chapters 4 and 5 focus on the private rented sector and empty homes.

There has been significant growth in the private rented sector in recent years and new measures are being developed to deal with rogue landlords and to encourage local authorities to make full use of enforcement powers for tackling dangerous and poorly maintained dwellings. The report encourages approaches which work closely with landlords whilst still operating a robust enforcement regime (e.g. Landlord Forums and Panels across the country).

2.2.2 Health inequalities

The government's white paper "Choosing Health"[8] states that the key to success in health inequalities will be effective local partnerships led by local government and the NHS working to a common purpose and reflecting local needs. Housing is a key determinant of health, and poor housing conditions continue to cause preventable deaths and contribute to health inequalities[9]. An example in this area is the work

[7] Laying the Foundations: A Housing Strategy for England, CLG, 2011

[8] Choosing Health: Making healthy choices easier, Department of Health, 2004

[9] The health impacts of poor private sector housing, LACORS, 2010

carried out by Liverpool City Council in partnership with Liverpool Primary Care Trust – the "Healthy Homes Programme". This has identified over 3,800 hazards and led to an estimated £4.8 million investment by landlords, delivering sustainable health improvements and enhancing community wellbeing.

2.2.3 Integrated care

It has been recognised by central government that to fully address the health needs of the population, services need to become more integrated and there needs to be better communication between different providers. Housing is a key aspect of this:

"Many people with mental and physical disabilities, complex needs, long-term conditions and terminal illness also need to access different health care, social care, housing and other services, such as education, and often simultaneously"[10].

It is therefore essential that departments providing or regulating housing work with other council departments and health organisations to provide services that are integrated and take full account of the needs of the individual.

2.2.4 Public Health Outcomes Framework

The Public Health Outcomes Framework "Healthy lives, healthy people: Improving outcomes and supporting transparency"[11] sets out desired outcomes for public health and how they will be measured. Many of the measurements have links to housing, some of the more relevant being:

- Falls and injuries in over 65's
- Fuel poverty
- Excess winter deaths

2.2.5 Joint Strategic Needs Assessment (JSNA) and Joint Health and Wellbeing Strategies

The JSNA and joint health and wellbeing strategy allow health and wellbeing boards to analyse the health needs of their local population and to decide how to make best use of collective resources to achieve the priorities that are formed from these. The Department of Health document "Joint Strategic Needs Assessment and joint health and wellbeing strategies explained - Commissioning for populations" says "This will ensure better integration between public health and services such as housing and education that have considerable impact on the wider determinants of health"[12].

2.2.6 Energy Act 2011

The Energy Act 2011 requires that from 2016 reasonable requests by tenants for energy efficiency improvements will not be able to be refused. Furthermore, from 2018 it will be unlawful for landlords to rent out properties that do not reach a minimum standard of energy efficiency (likely to be set at Energy

[10] Integrated Care: Our Shared Commitment, Department of Health, 2013

[11] Healthy lives, healthy people: Improving outcomes and supporting transparency, Department of Health, 2013

[12] Joint Strategic Needs Assessment and joint health and wellbeing strategies explained: Commissioning for populations, Department of Health, 2011

Performance Certificate rating E[13]). While there will be various caveats to these powers, they will provide a new minimum standard for rented accommodation. Part of this current project for Uttlesford includes provision of a private rented sector variable that should assist in identifying such dwellings.

2.2.7 Empty homes

Empty homes brought back into use will qualify for the New Homes Bonus where, for the following 6 years, the government will match fund the Council Tax on long term empty properties brought back into use. In addition, from 2012-15, £100million of capital funding from within the Affordable Homes Programme will be available to tackle problematic[14] empty homes. Whilst the data provided by this project cannot necessarily assist with the actual identification of empty homes, the database provided would be the logical place for such information to be stored should it be gathered from other sources.

2.3 Other policy areas

The following policy areas, whilst not directly relating to environmental health services, will have an effect on demand and local authorities will need to be aware of the possible impact in their area.

2.3.1 Welfare Reform Act 2012

The key parts of this act for environmental health services are the sections relating to the under occupation of social housing, and the benefit cap. Whilst this will mainly affect tenants in the social rented sector it will undoubtedly have an impact on private sector services. Social tenants may find themselves being displaced into the private sector, increasing demand in this area, and the tenants of Registered Providers (RP's) and some private landlords may have greater trouble affording rent payments. If tenants are in arrears on their rental payments then authorities may be met with reluctance from landlords when requiring improvements to properties.

2.3.2 Localism Act 2011

The Localism Act allows social housing providers to offer fixed term, rather than secure lifetime, tenancies. As with the Welfare Reform Act, this has a greater direct impact on the social rented sector, however, there is some concern this may lead to greater turnover of tenancies meaning such that some traditional social tenants may find themselves in the private rented sector.

Both of these policy changes above may increase the number of vulnerable persons in private sector properties. If this occurs any properties in this sector in poor condition are likely to have a far greater negative impact on the health of those occupiers.

2.3.3 Potential increase in private rented sector properties

Policies such as the Build to Rent and the New Homes Bonus are aimed at increasing the supply of properties. As the private rented sector is already growing, it is reasonable to assume that many of the new properties being built will be rented to private tenants. Local authorities will need to be aware of the potential impact on the demand for their services and how their perception of their local area may have to change if large numbers of properties are built.

[13] https://www.gov.uk/getting-a-green-deal-information-for-householders-and-landlords

[14] Properties that are likely to remain empty without direct financial support from government.

2.4 Local Authority Housing Statistics (LAHS)[15] and EPC ratings

The purpose of these statistics is twofold – firstly to provide central government with data with which to inform and monitor government strategies, policies and objectives as well as contributing to national statistics on housing, secondly, to the local authorities themselves to help manage their housing stock. Local authorities are required to complete an annual return which covers a wide range of housing-related issues. Of particular relevance to this current project is "Section F: Condition of dwelling stock" which, amongst other things, requests the following information:

- Total number of dwellings and number of private sector dwellings with category 1 HHSRS hazards and the estimated costs of mitigating these
- Estimates of the number of HMOs and the number of mandatory licensable HMOs

Whilst the LAHS no longer requires reporting of average EPC ratings of the private sector stock and the proportion below a certain rating, this information remains pertinent due to the Energy Act 2011. Under this act new rules mean that from 2018 landlords must ensure that their properties meet a minimum energy efficiency standard. Subject to Parliamentary approval, this minimum standard has been set at band E by 1 April 2018[16, 17]. Furthermore, from 1 April 2016, tenants in F and G rated dwellings may legally request an upgrade to the dwelling to a minimum of a band E.

Results relating to LAHS statistics and EPC ratings can be found in **Section 4.2**.

2.5 The Green Deal and Energy Company Obligation (ECO)

The Green Deal is a finance framework which provides the upfront capital to make energy efficiency improvements to dwellings from autumn 2012. The framework is designed so that householders make the repayments through their energy bill by attaching a Green Deal charge to the electricity meter. The "Golden Rule" of the Green Deal is that the expected savings from the energy efficiency measures must be greater than the charge attached to the meter.

The role of a Green Deal provider is to provide the finance and to organise the improvement works – either themselves or through sub-contractors. The provider can be a commercial company, social enterprise or a local authority and they may act alone or in partnership.

In cases where additional financial support is required for householders, the Energy Companies Obligation (ECO)[18] has been designed to sit alongside the Green Deal. The ECO requires energy companies to assist in the installation of energy efficiency measures in Great Britain to low income and vulnerable households or those living in hard-to-treat (HTT)[19] properties[20]. Under the ECO, energy

[15] https://www.gov.uk/government/publications/completing-local-authority-housing-statistics-2012-to-2013-guidance-notes

[16] https://www.gov.uk/government/consultations/private-rented-sector-energy-efficiency-regulations-domestic

[17] Although landlords will still be able to rent out F and G rated properties after this date they will not be able to renew or sign a new contract.

[18] The Electricity and Gas (Energy Companies Obligation) Order 2012, Statutory Instrument No. 3018, 4 December 2012 (http://www.legislation.gov.uk/uksi/2012/3018/part/4/made)

[19] Where standard cost effective energy efficient fabric measures are not possible (e.g. dwellings with solid walls).

companies are obliged to meet targets expressed as carbon or costs saved (from 1 January 2013 - 31 March 2015 and recently extended to March 2017[21]). The 3 different ECO obligations are:

- Carbon Emissions Reduction Obligation (CERO)
- Carbon Saving Community Obligation (CSCO)
- Home Heating Cost Reduction Obligation (HHCRO) or Affordable Warmth

An understanding of the ECO criteria is pivotal to building a local authority's strategy for levering in finance to improve the energy efficiency of the stock. Of particular interest are properties with HTT cavities and their role in the CERO. Despite the recent changes, this obligation has by far the greatest savings target attached to it and, whilst easy to treat cavities are now allowable under ECO, HTT cavities are likely to remain a particular focus of energy company interest due to their relatively low cost to install improvements compared to solid wall insulation which is another key criterion for CERO eligibility.

[20] Note that recent proposed changes to the ECO mean that easy-to-treat cavity wall and loft insulation may also be allowed to count towards the targets.

[21] Although energy companies have been able to count measures delivered since October 2012 against their targets.

3 Overview of the BRE Dwelling Level Housing Stock Modelling approach

3.1 Overview

This section provides a simplified overview of the BRE dwelling level housing stock modelling approach. More detail on the methodology is provided in **Appendix B**.

A stock modelling approach has been developed and used by BRE for many years and dwelling level models are used to estimate the likelihood of a particular dwelling meeting the criteria for each of the key indicators (and other outputs of interest). These outputs can then be mapped to provide the council with a geographical distribution of each of the key indicators which can then be used to target resources for improving the housing stock. The process itself is actually made up of a variety of data sources, calculations and models.

The models are principally informed by the Department for Communities and Local Government's (DCLG) English Housing Survey (EHS)[22]. The survey is not used to supply data for the database, but rather it allows the identification of patterns in the housing stock, so that this knowledge can be applied, in the form of mathematical algorithms, to impute key indicators and energy characteristics from other data available at the national level. The particular approach for Uttlesford, however, makes significant use of the Experian UK Consumer Dynamics Database of dwelling and household indicators as inputs to the models. One example is the BRE SimpleCO_2 Model which is based on dwelling level inputs from Experian and expands on these using imputation techniques to provide sufficient information to calculate the likely energy efficiency of each dwelling in the stock. Some of the key housing indicators, such as HHSRS excess cold category 1 hazards and BRE's SimpleSAP[23], can be directly inferred from this data.

Figure 1 shows a simplified flow diagram of the overall BRE housing stock modelling approach. The process is made up of a series of data sources and models which, combined with various imputation and regression techniques and the application of other formulae, make up the final database. The database is essentially the main output of the modelling and provides information on the key indicators and other data requirements (e.g. energy efficiency variables). More detailed information on the data sources and models is provided in **Appendix B**, but to summarise:

The data sources are:
EHS, Experian, Ordnance Survey (OS) MasterMap.

The Models are:
SimpleSAP, Fuel Poverty, HHSRS (all hazards, falls hazards and excess cold), Disrepair and Low Income Households.

The data sources and models are linked as shown in the flow diagram and the modelling process itself can be divided into "energy inputs" and "other inputs", which are summarised as follows:

[22] The most recent survey used in the housing stock models is 2011.

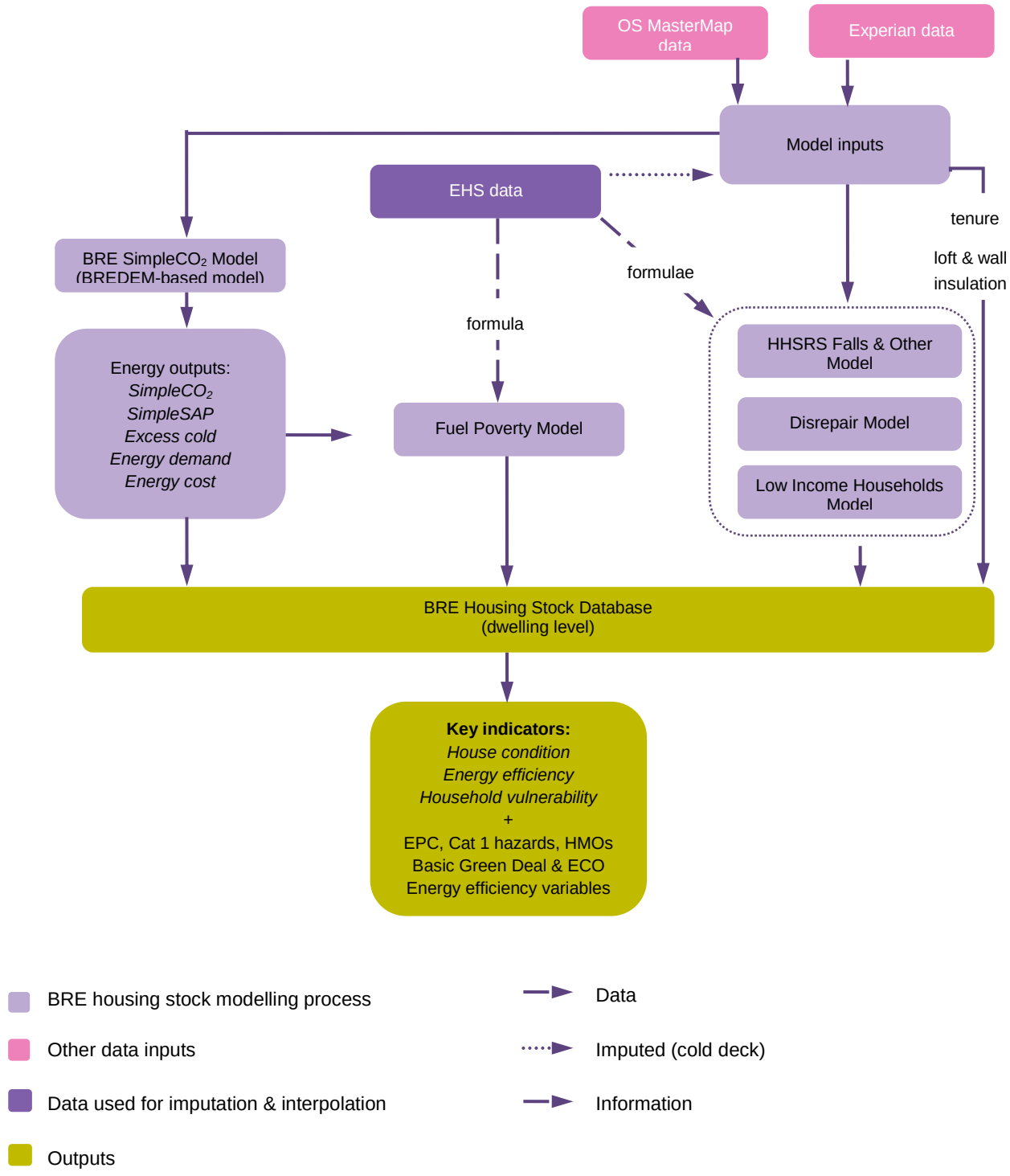
[23] A Simplified version of the SAP model that produces an output broadly comparable to SAP. The SimpleSAP model is distinct from both full SAP and RD SAP in that uses a smaller, simplified set of inputs.

Energy inputs - are developed from Experian. The EHS data is used to impute (using cold deck imputation[24]) and interpolate where there are gaps in the data. The “energy inputs” are then fed into the SimpleCO_2 Model to produce the “energy outputs” for the database plus information on excess cold for the HHSRS Model and information on energy costs for the Fuel Poverty Model.

Other inputs – are developed from Experian, OS MasterMap and other local data sources. The EHS data is used to impute (using cold deck imputation[24]) and interpolate where there are gaps in the data. The “other inputs” are then fed into the HHSRS, Disrepair, and Low Income Models (note that tenure data is fed directly into the database). Information from the EHS also feeds into the Fuel Poverty, HHSRS, Disrepair and Low Income Models.

[24] Cold deck imputation is a process of assigning values in accordance with their known proportions in the stock.

Figure 1: Simplified flow diagram of overall BRE housing stock modelling approach (N.B. the EHS data is only used to inform the mathematical algorithms of the model – it does not provide data)



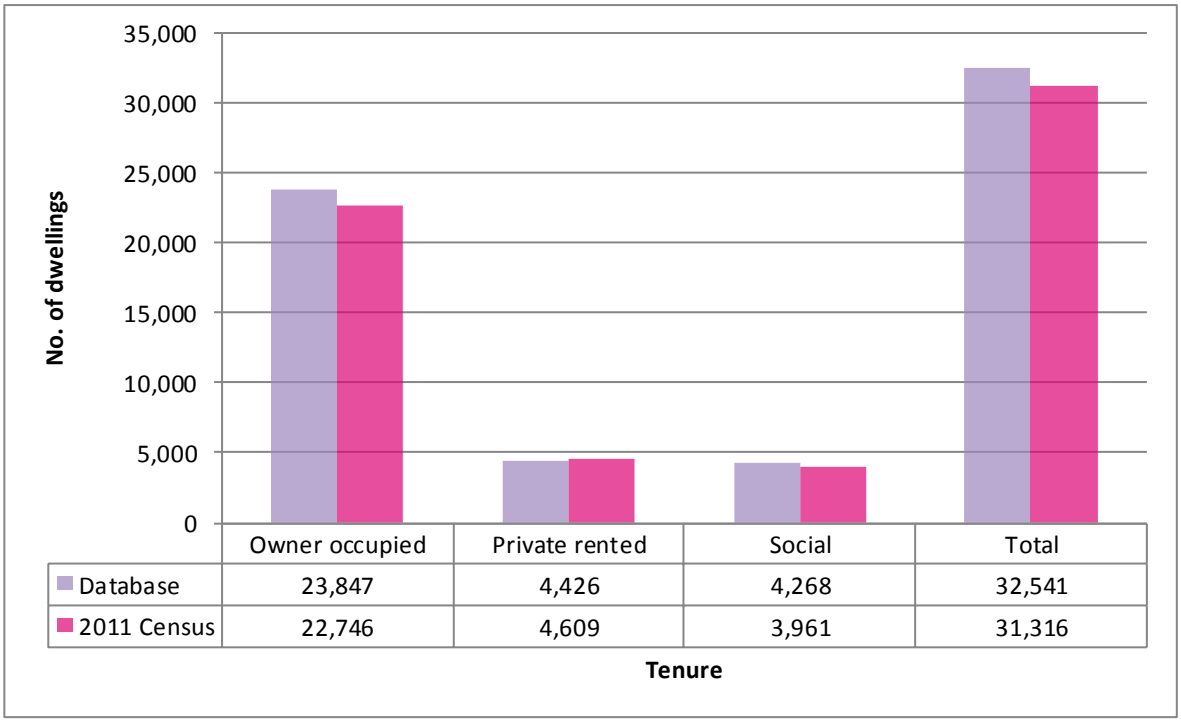
3.2 Breakdown of the housing stock by tenure - validation

Providing the results split by tenure is useful since it can have an effect on how resources and improvement policies are targeted. This report is particularly focussed on private sector stock which is made up of owner occupied and private rented dwellings. The remainder of the housing stock consists of social housing.

The total number of dwellings in Uttlesford from the BRE database uses the tenure split derived from the purchased Experian tenure variable.

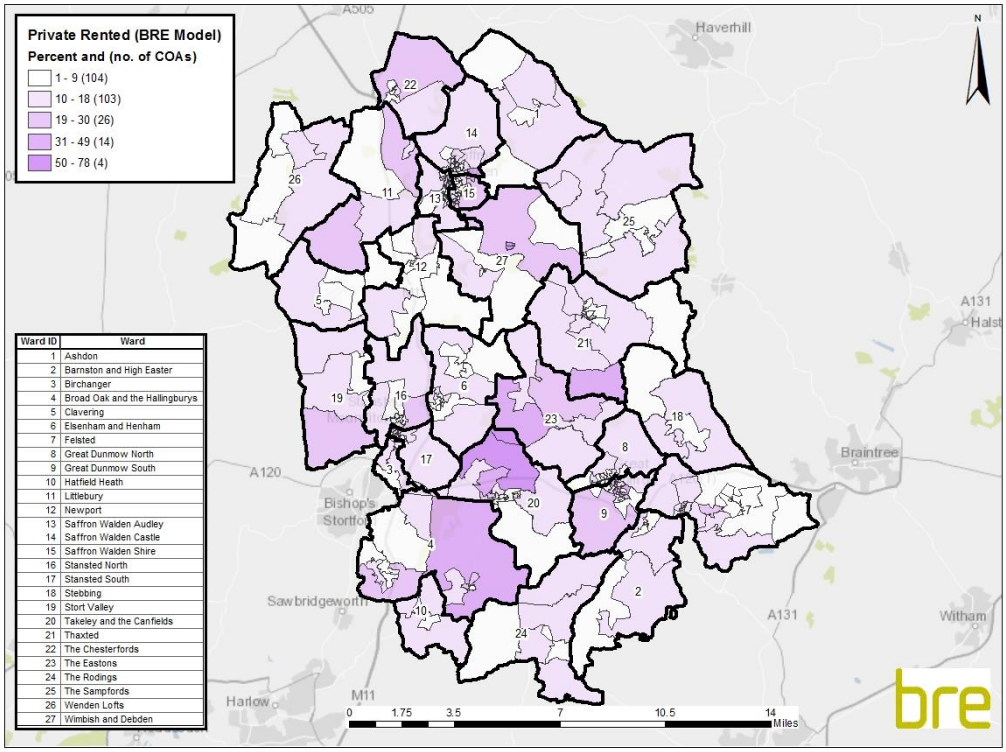
Since it is possible for private rented dwellings to become owner occupied and vice versa relatively easily, it is difficult to accurately predict the actual tenure split at any given point in time. A validation process was undertaken to compare the tenure split from the database to the 2011 Census figures[25]. The results of the validation exercise show that the differences between the tenure split from the database compared to the Census figures are relatively small (see **Figure 2**), suggesting that the database should provide a good overview of the housing stock in Uttlesford. Furthermore, **Map 1** and **Map 2** show that the geographical distributions look very similar, again giving confidence that the database provides a good overview of Uttlesford's housing stock.

Figure 2: Tenure split – comparison of BRE Housing Stock Database outputs with 2011 Census figures for Uttlesford



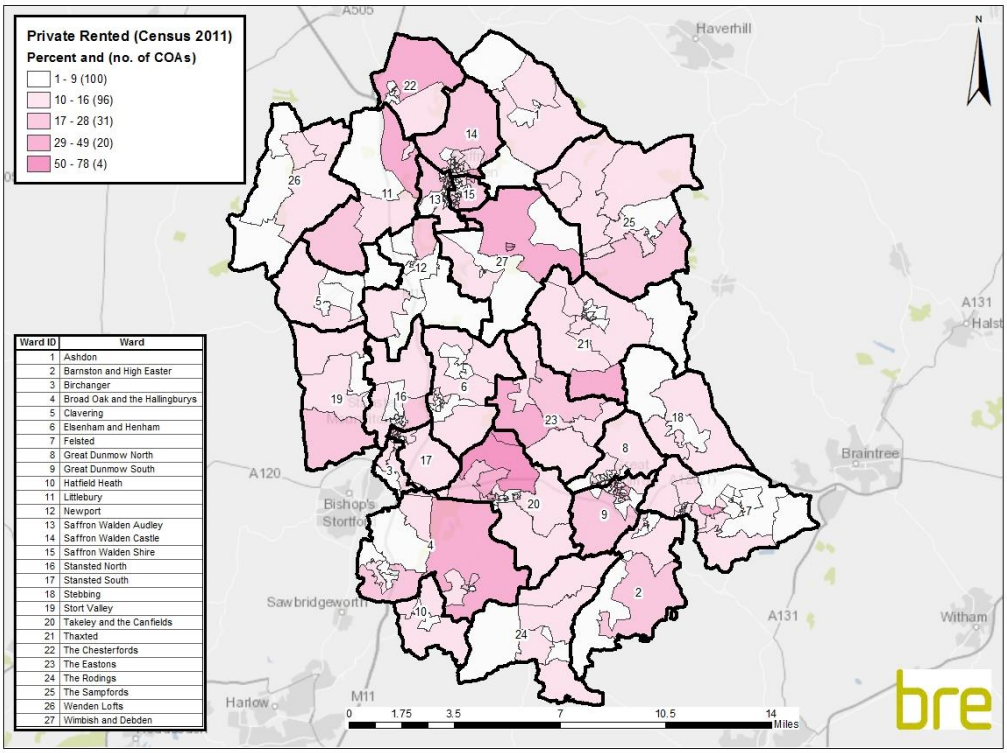
[25] http://www.ons.gov.uk/ons/datasets-and-tables/index.html

Map 1: Distribution of estimated percentage of private rented dwellings in Uttlesford – based on database



Ward ID	Ward
1	Ashdon
2	Barnston and High Easter
3	Birchanger
4	Broad Oak and the Hallingburys
5	Clavering
6	Elsenham and Henham
7	Felsted
8	Great Dunmow North
9	Great Dunmow South
10	Hatfield Heath
11	Littlebury
12	Newport
13	Saffron Walden Audley
14	Saffron Walden Castle
15	Saffron Walden Shire
16	Stansted North
17	Stansted South
18	Stebbing
19	Stort Valley
20	Takeley and the Canfields
21	Thaxted
22	The Chesterfords
23	The Eastons
24	The Rodings
25	The Sampfords
26	Wenden Lofts
27	Wimbish and Debden

Map 2: Distribution of estimated percentage of private rented dwellings in Uttlesford – based on 2011 Census Data (Neighbourhood Statistics)



Ward ID	Ward
1	Ashdon
2	Barnston and High Easter
3	Birchanger
4	Broad Oak and the Hallingburys
5	Clavering
6	Elsenham and Henham
7	Felsted
8	Great Dunmow North
9	Great Dunmow South
10	Hatfield Heath
11	Littlebury
12	Newport
13	Saffron Walden Audley
14	Saffron Walden Castle
15	Saffron Walden Shire
16	Stansted North
17	Stansted South
18	Stebbing
19	Stort Valley
20	Takeley and the Canfields
21	Thaxted
22	The Chesterfords
23	The Eastons
24	The Rodings
25	The Sampfords
26	Wenden Lofts
27	Wimbish and Debden

4 Results from the BRE Dwelling Level Housing Stock Models and Database

As described in the previous section, the housing stock modelling process consists of a series of different stock models with the main output being the database. The results in this section have been obtained from interrogating the database at the level of the local authority as a whole to give a useful overview for Uttlesford. Information at ward level, however, is provided in the maps, in **Section 4.2.4** and can also be obtained from the database which has been supplied as part of this project (see **Appendix C** for instructions). The database can be interrogated at local authority, ward, medium super output area (MSOA), lower super output area (LSOA), census output area (COA), postcode or dwelling level.

The first sub-section below provides a map of the wards in Uttlesford. The results are then displayed in the following sub-sections:

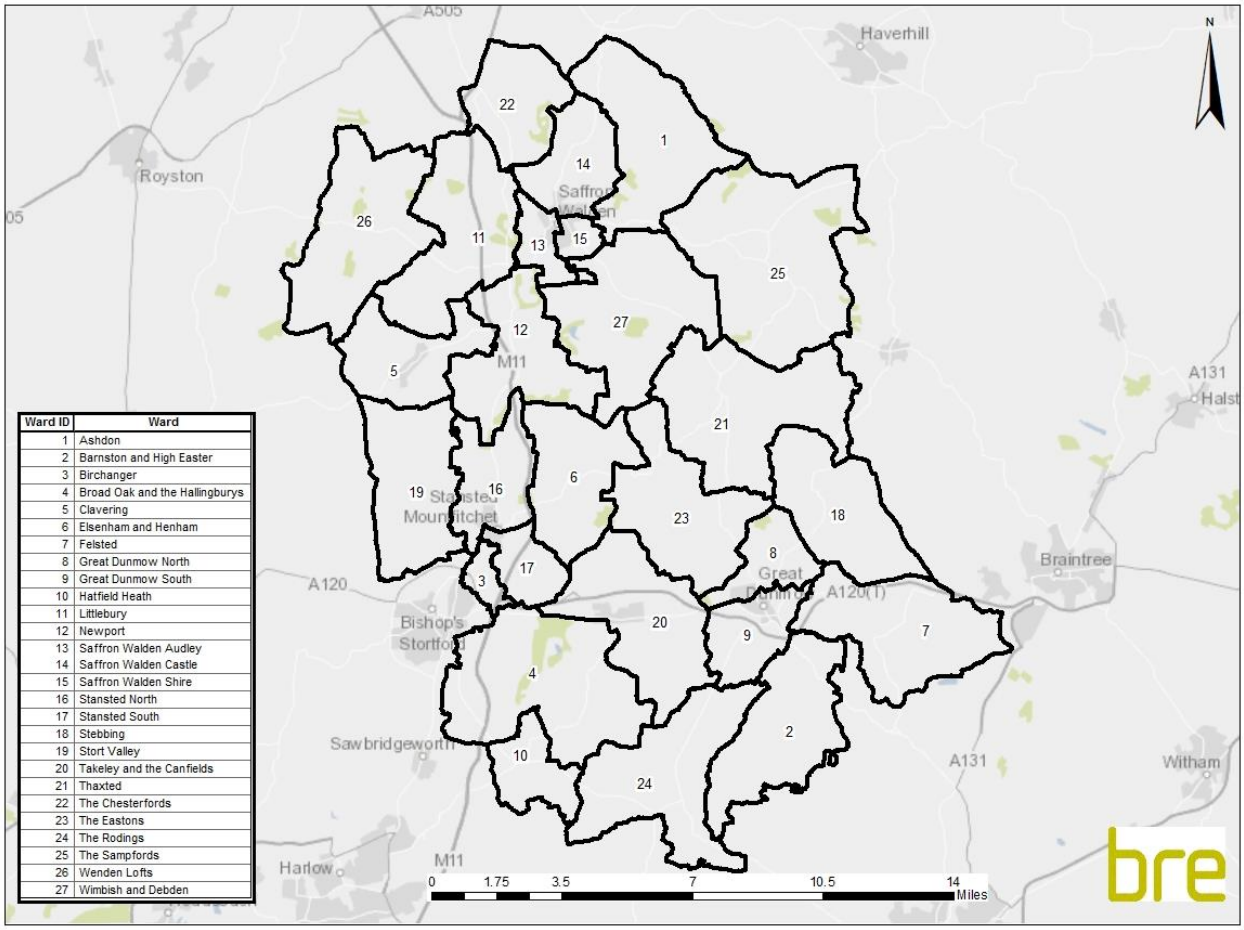
- Key indicators:
  - Uttlesford – regional and national comparisons
  - Key indicators by tenure for Uttlesford
  - Key indicators mapped by COA for Uttlesford private sector stock
  - Ward level results for the key indicators

- Information relating to LAHS reporting and EPC ratings:
  - Category 1 hazards
  - HMOs
  - EPC ratings
  - Basic Green Deal / ECO variables

4.1 Overview of Uttlesford

Map 3 below shows the 27 wards in Uttlesford. The data in the report is separated into wards and then further divided into Census Output Areas (COAs). These typically comprise around 125 households and usually include whole postcodes, which have populations that are largely similar. Where the COAs are smaller in size on the map this typically represents a more densely populated area since each COA represents a similar number of dwellings.

Map 3: The wards in Uttlesford



Ward ID	Ward
1	Ashdon
2	Barnston and High Easter
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4	Broad Oak and the Hallingburys
5	Clavering
6	Elsenham and Henham
7	Felsted
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14	Saffron Walden Castle
15	Saffron Walden Shire
16	Stansted North
17	Stansted South
18	Stebbing
19	Stort Valley
20	Takeley and the Canfields
21	Thaxted
22	The Chesterfords
23	The Eastons
24	The Rodings
25	The Sampfords
26	Wenden Lofts
27	Wimbish and Debden

4.2 Key indicators

4.2.1 Uttlesford – regional and national comparisons

Table 2 and **Figure 3** show the results for each of the key indicators in Uttlesford compared to East of England and England (EHS 2011) and split into all stock and private sector stock. **Figure 4** shows the results of the SimpleSAP ratings.

For all stock, Uttlesford performs better than the EHS average for the following indicators: disrepair (3% compared to 5%) and low income households (21% compared to 33%). Uttlesford performs slightly worse for the falls and fuel poverty (both definitions) indicators. It is noteworthy that the levels of excess cold are considerably higher in Uttlesford compared to the EHS average.

For the private sector stock, Uttlesford performs better than the EHS average for disrepair (3% compared to 6% and low income households (14% compared to 24%). Uttlesford performs worse for the fuel poverty (10% definition) against the EHS average (22% compared to 15%).

Compared to the regional figures for EHS East of England, Uttlesford performs similarly for the falls and disrepair indicators but much worse for fuel poverty (10% definition) (21% compared to 14%) and excess cold (17% compared with 7%) for all stock. The private stock for Uttlesford performs worse for excess cold and all hazards compared to the regional average.

The average SimpleSAP ratings in Uttlesford (**Figure 4**) are lower at 51 than those for the England average for all stock at 57 and regional average of 56. Uttlesford private sector stock has an estimated average SimpleSAP of 50 compared with a regional and national average of 55.

Table 2: Estimates of the numbers and percentage of dwellings meeting the key indicator criteria assessed by the Housing Stock Models and Database for all stock and private sector stock – Uttlesford compared to East of England and England (EHS 2011)

Indicator		All stock				Private sector stock			
		Uttlesford (no.)	Uttlesford (%)	2011 EHS Regional (%)	2011 EHS England (%)	Uttlesford (no.)	Uttlesford (%)	2011 EHS Regional (%)	2011 EHS England (%)
No. of dwellings		32,541	-		-	28,273	-		-
HHSRS category 1 hazards	All hazards	6,850	21%	17%	15%	6,314	22%	19%	17%
	Excess cold	5,577	17%	7%	6%	5,164	18%	8%	7%
	Fall hazards	3,409	10%	10%	9%	3,217	11%	11%	10%
Disrepair		981	3%	3%	5%	948	3%	3%	6%
Fuel poverty (10%)		6,754	21%	14%	15%	6,267	22%	15%	15%
Fuel poverty (Low Income High Costs)		3,920	12%	10%	11%	3,536	13%	11%	11%
Low income households		6,784	21%	28%	33%	4,067	14%	20%	24%

N.B. the information on hazards refers to the number of dwellings with a hazard of the stated type. Because of this there is likely to be some overlap – for example, some dwellings are likely to have excess cold and fall hazards but this dwelling would only be represented once under 'all hazards'. The number of dwellings under 'all hazards' can therefore be less than the sum of the excess cold plus fall hazards.

Figure 3: Estimates of the percentage of dwellings meeting the key indicator criteria assessed by the Housing Stock Models and Database for all stock and private sector stock – Uttlesford compared to East of England and England (EHS 2011)

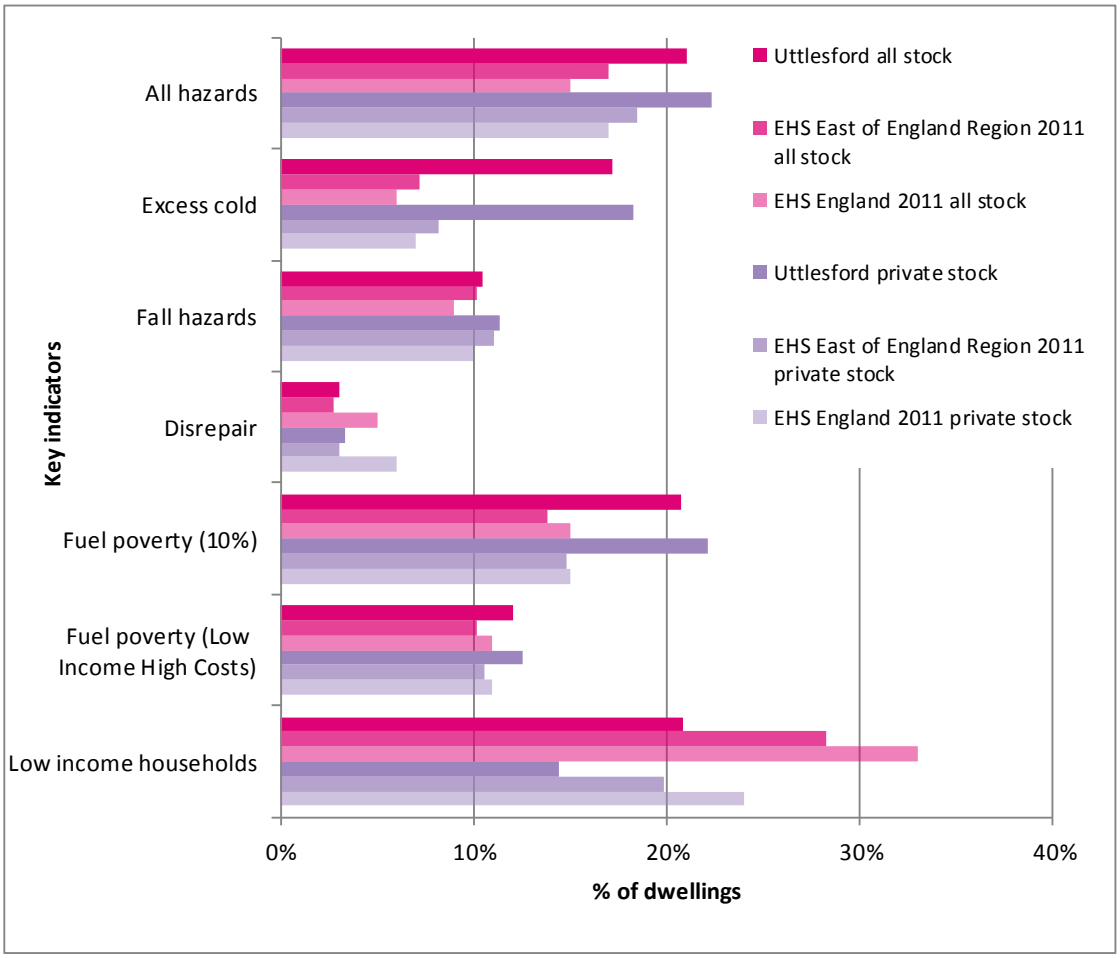
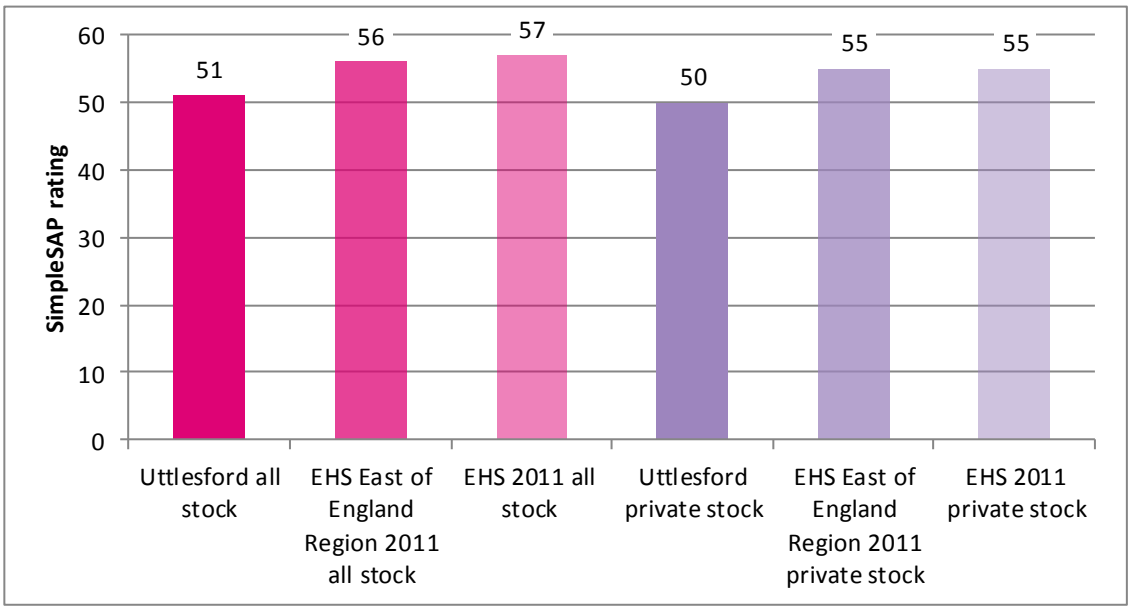


Figure 4: Average SimpleSAP ratings for all stock and private sector stock – Uttlesford compared to East of England and England (EHS 2011)



4.2.2 Key indicators by tenure – Uttlesford

The private sector stock can be further split by tenure – owner occupied and private rented - with the difference between total private sector stock and total housing stock being the social housing stock. **Table 3** and **Figure 5** below show the results for each of the key indicators split by tenure and **Figure 6** shows the SimpleSAP ratings by tenure.

The social stock is generally better than the private sector stock for the indicators relating to hazards, disrepair and energy efficiency (SimpleSAP). Social stock tends be more thermally efficient than the private stock partly due to the prevalence of flats, and partly due to being better insulated owing to the requirements placed on social housing providers, for example through the Decent Homes Programme. As would be expected, the social stock is generally worse than the private sector stock for the low income households indicator. For fuel poverty however, there are lower levels in the social stock than the private sector. In the social stock this would imply that the lower levels of income are being balanced out by the superior energy performance of the stock. Using the low income high cost definition of fuel poverty, private rented stock contains considerably higher rates than that of owner occupied or social stock.

The social data should be treated with some caution as the social rented stock, particularly when largely comprising stock owned by a single landlord, is more difficult to model than the private sector. This is because the decisions of an individual property owner usually only affect a single dwelling out of the thousands of private sector stock whereas the policies and decisions of a single landlord can have a very great effect on a large proportion of the social stock. The social rented results are therefore best considered as a benchmark which takes account of the age, type, size and tenure against which the landlord's own data could be compared.

Focussing on the tenures within the private sector stock, the private rented stock is generally worse than the owner occupied stock for the indicators relating to hazards, disrepair, fuel poverty 10% definition and energy efficiency (SimpleSAP). The private rented stock is considerably worse than the owner occupied stock for the indicator of low income households and for the low income high cost definition of fuel poverty.

Table 3: Estimates of the numbers and percentage of dwellings meeting the key indicator criteria assessed by the Housing Stock Models and Database by tenure for Uttlesford

Indicator		Private sector stock				Social stock	
		Owner occupied		Private rented			
		No.	%	No.	%	No.	%
No. of dwellings		23,847	-	4,426	-	4,268	-
HHSRS category 1 hazards	All hazards	5,128	22%	1,186	27%	536	13%
	Excess cold	4,190	18%	974	22%	413	10%
	Fall hazards	2,581	11%	636	14%	192	4%
Disrepair		708	3%	240	5%	33	1%
Fuel poverty (10%)		5,040	21%	1,227	28%	487	11%
Fuel poverty (Low Income High Costs)		2,477	10%	1,059	24%	384	9%
Low income households		2,876	12%	1,191	27%	2,717	64%

N.B. the information on hazards refers to the number of dwellings with a hazard of the stated type. Because of this there is likely to be some overlap – for example, some dwellings are likely to have excess cold and fall hazards but this dwelling would only be represented once under 'all hazards'. The number of dwellings under 'all hazards' can therefore be less than the sum of the excess cold plus fall hazards.

Figure 5: Estimates of the percentage of dwellings meeting the key indicator criteria assessed by the Housing Stock Models and Database by tenure for Uttlesford

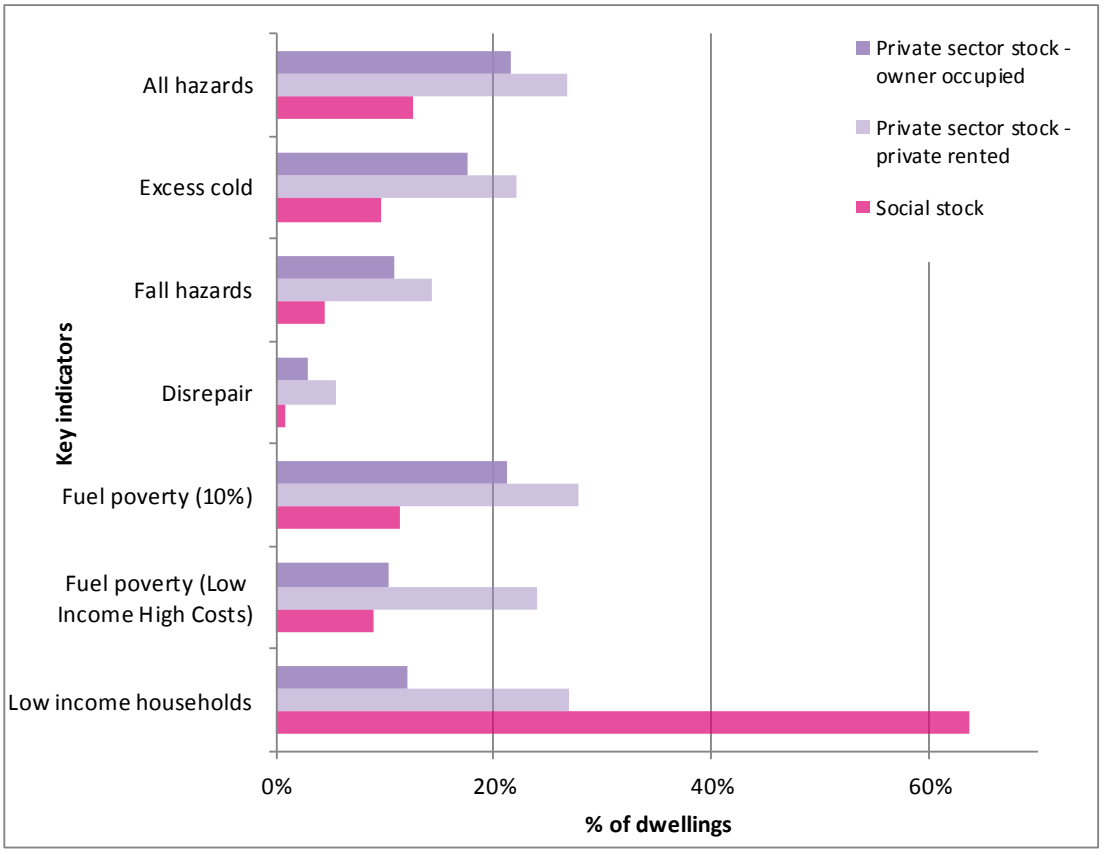
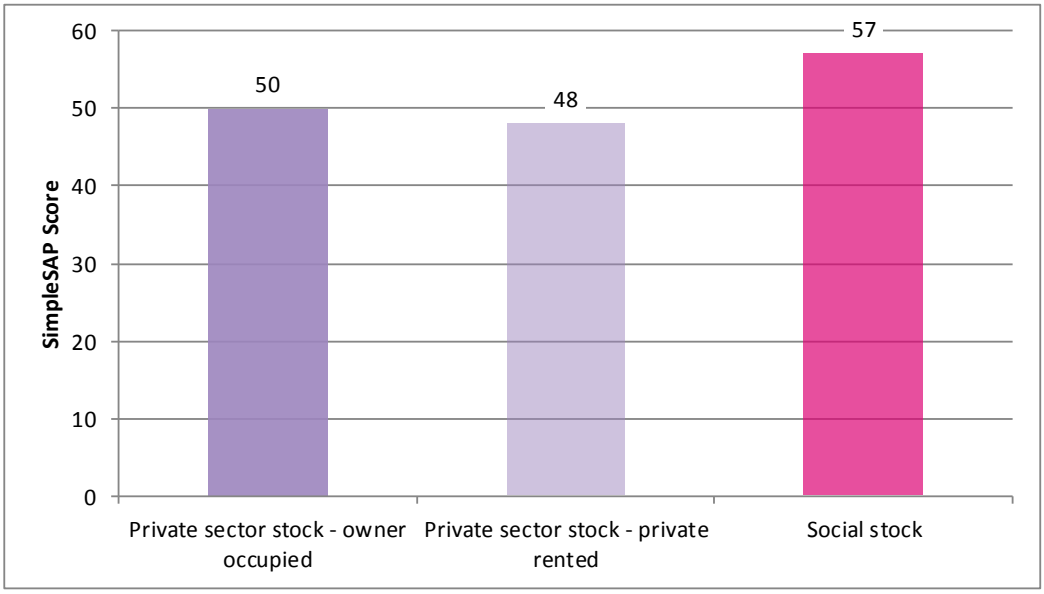


Figure 6: Average SimpleSAP ratings by tenure for Uttlesford



4.2.3 Key indicators mapped by Census Output Area (COA) – Uttlesford private sector stock

Some of the key indicators are also provided in map form below along with a brief description of each indicator[26], thus enabling quick observation of the geographical distribution of properties of interest. The maps show the percentages of private sector dwellings in each Census Output Area (COA) that are estimated to have each of the key indicators.

The ranges shown in the map keys are defined based on the Jenks' Natural Breaks algorithm of the COA statistics[27]. The outputs in the lightest and darkest colours on the maps show the extreme ends of the range, highlighting the best and the worst areas.

Maps at COA level are provided for the following key indicators in **Map 4** to **Map 11** below, and maps focussing in on the more urban areas (Saffron Waldon, Stansted Mountfitchet and Great Dunmow) are provided in **Appendix D**:

- The presence of a category 1 HHSRS hazard
- The presence of a category 1 hazard for excess cold
- Levels of fuel poverty
- Dwellings occupied by low income households
- Dwellings with a category 1 excess cold hazard that are occupied by a low income household
- The average SimpleSAP[28] rating

[26] See Appendix A for full definitions.

[27] The natural breaks classification method is a data clustering method determining the best arrangement of values into different classes. It is achieved through minimising each class's average deviation from the class mean while maximising each class's deviation from the means of the other groups. The method seeks to reduce the variance within classes and maximise variance between classes thus ensuring groups are distinctive.

These maps are extremely useful in showing the geographical distribution for single key indicators. Maps can also be produced for a combination of indicators, such as dwellings with an excess cold hazard which are also occupied by low income households, as shown in **Map 10**.

The maps are produced at COA level, which is typically made up of 125 households, usually including whole postcodes and having similar sized populations. Using the first map below (**Map 4**) as an example, it can be seen that each ward is split into several COAs and, in this instance, there are 12 COAs that have 66 - 86% of private sector dwellings estimated to have the presence of a category 1 hazard.

The maps also highlight the differences between areas, showing that the results for some areas are much worse than for others and these are the specific areas which might warrant attention. The maps also show that even within wards there can be large differences between the results at COA level.

4.2.3.1 HHSRS

The Housing Health and Safety Rating System (HHSRS) is a risk-based evaluation tool to help local authorities identify and protect against potential risks and hazards to health and safety from any deficiencies identified in dwellings. It was introduced under the Housing Act 2004[6] and applies to residential properties in England and Wales.

The HHSRS assesses 29 categories of housing hazard. Each hazard has a weighting which will help determine whether the property is rated as being category 1 (serious) or category 2 (other)[29].

The HHSRS map (**Map 4**) shows that there are concentrations of high levels of hazards in The Sampfords, Wenden Lofts and The Rodings wards. It is reasonable to expect that areas with greater numbers of older properties will record higher levels of excess cold and falls hazards.

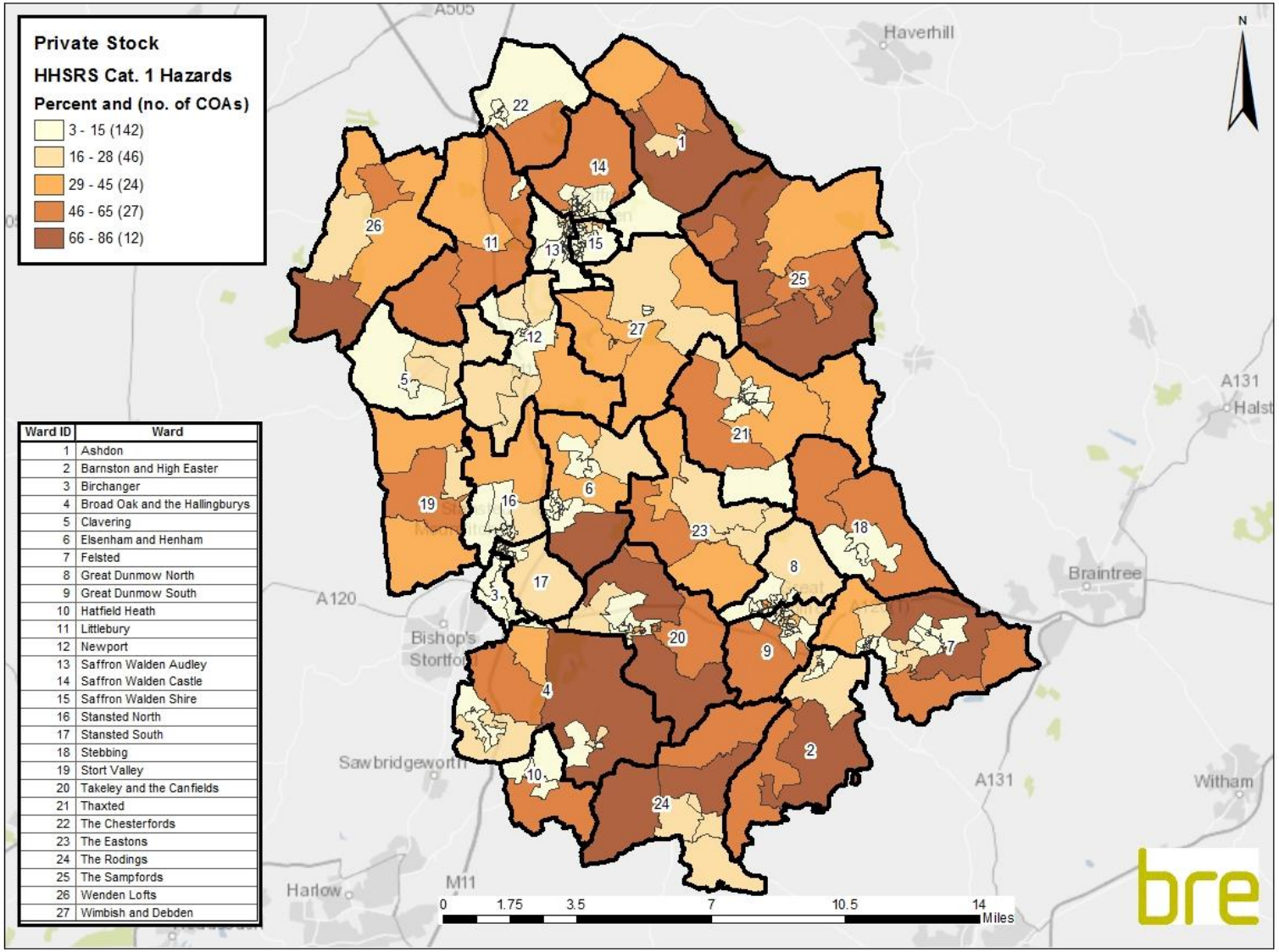
There are relatively high levels of excess cold hazards in Uttlesford, 12 COAs have between 66 – 86% of households with excess cold. There are again high concentrations in The Sampfords, Wenden Lofts and The Rodings wards– see **Map 5**.

Map 6 shows that there is estimated to be a concentration of higher levels of falls hazards scattered across Uttlesford. In particular the north eastern wards of The Sampfords, Ashdon and The Eastons.

[28] Important note: Whilst it is possible to provide “SimpleSAP” ratings from the “SimpleCO_2” software, under no circumstances must these be referred to as “SAP” as the input data is insufficient to produce an estimate of SAP or even RdSAP for an individual dwelling that meets the standards required by these methodologies.

[29] Housing Health and Safety Rating System Operating Guidance, ODPM, 2006

Map 4: Percentage of private sector dwellings in Uttlesford with the presence of a HHSRS category 1 hazard



Ward ID	Ward
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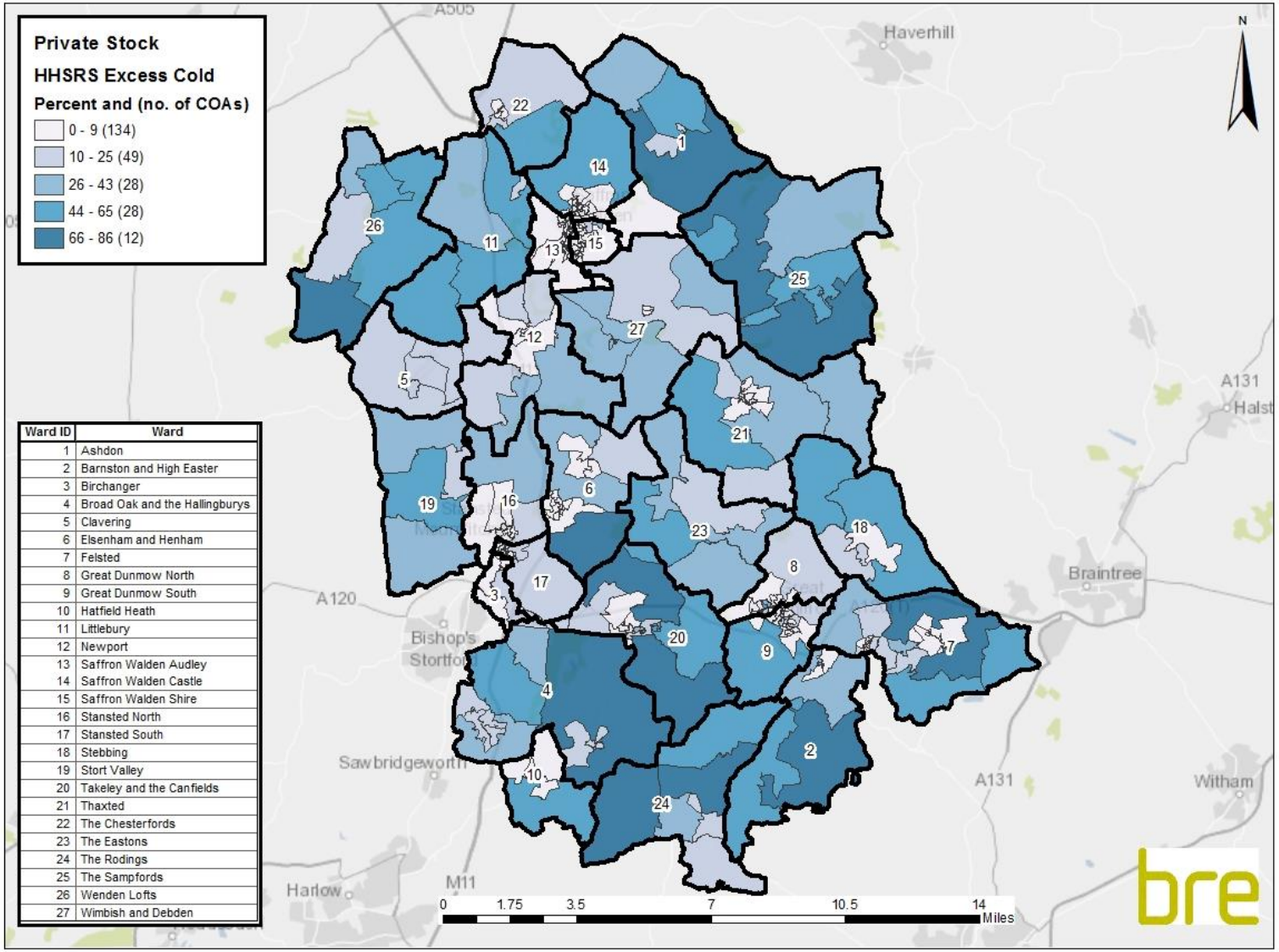
25	The Sampfords
26	Wenden Lofts
27	Wimbish and Debden

Map 5: Percentage of private sector dwellings in Uttlesford with the presence of a HHSRS category 1 hazard for excess cold



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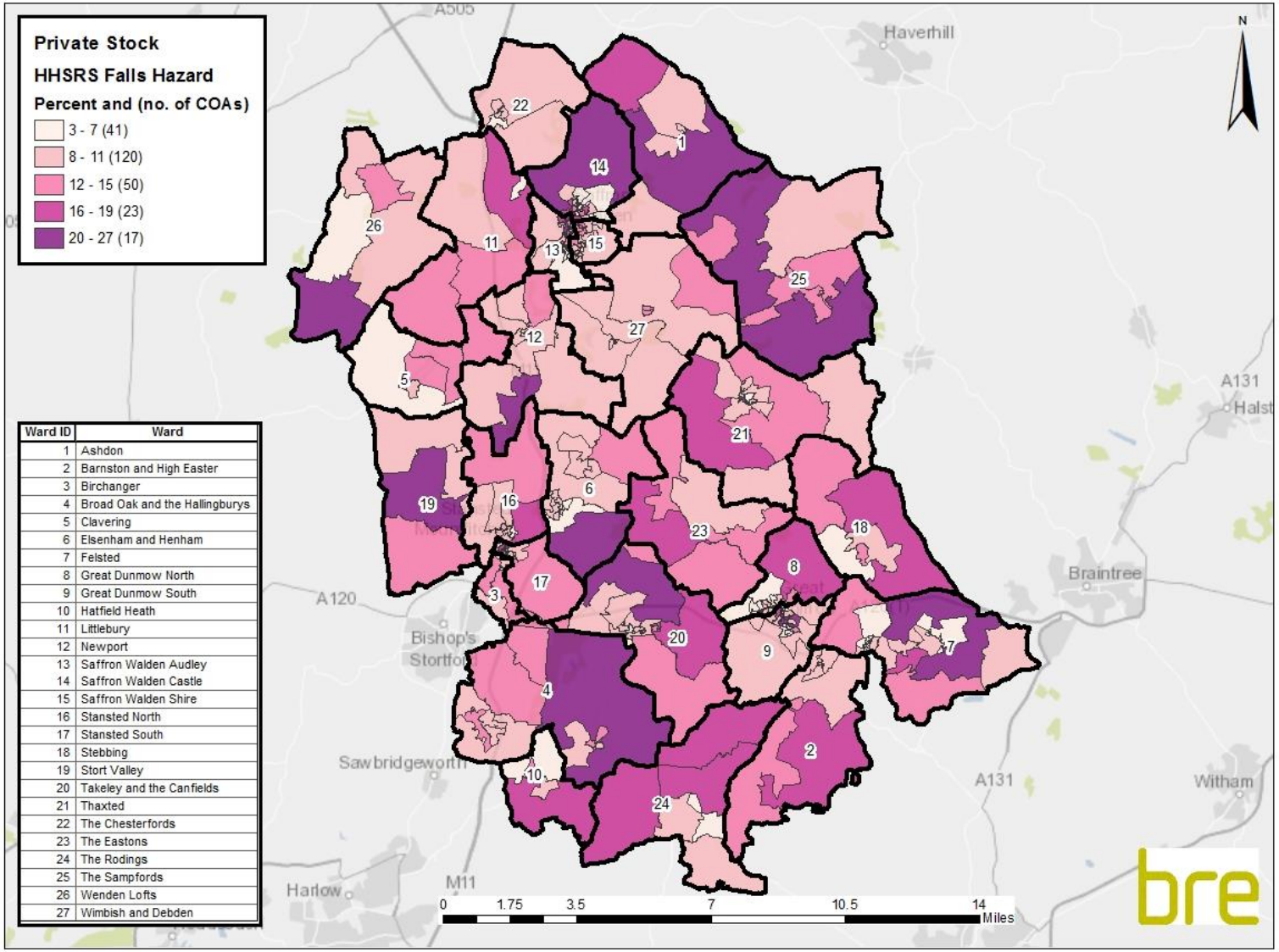
25	The Sampfords
26	Wenden Lofts
27	Wimbish and Debden

Map 6: Percentage of private sector dwellings in Uttlesford with the presence of a HHSRS category 1 hazard for falls



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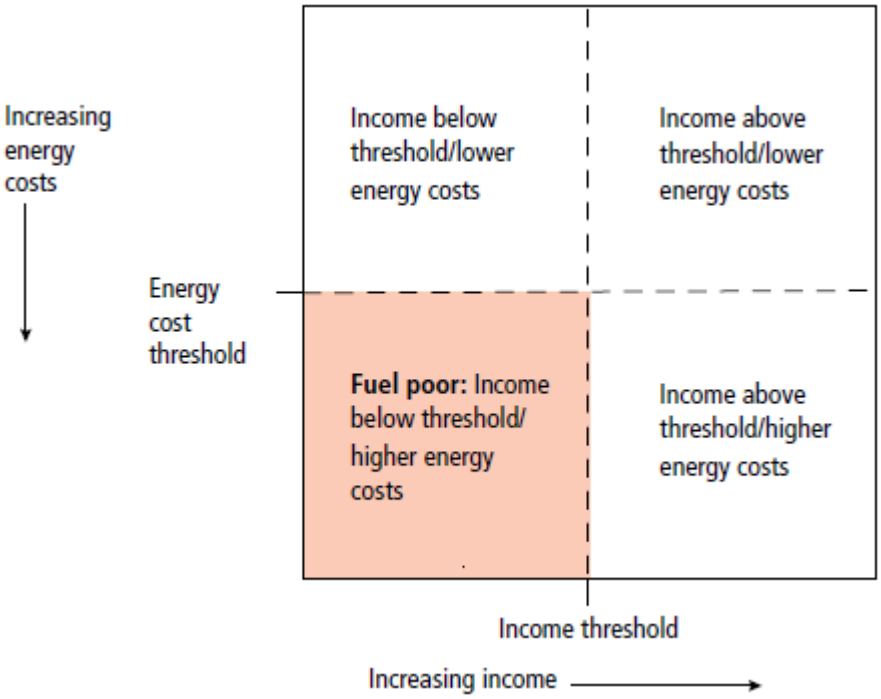
4.2.3.2 Fuel poverty

This report covers both the original definition and the new definition of fuel poverty which is currently being rolled out by government.

The original definition states that a household is said to be in fuel poverty if it spends more than 10% of its income on fuel to maintain an adequate level of warmth (defined as 21°C for the main living area, and 18°C for other occupied rooms in the 2012 Hills Fuel Poverty Review)[30]. For the purposes of this report this is termed "fuel poverty (10%)".

Under the new definition, a household is said to be in fuel poverty if they have required fuel costs that are above average (the national median level) and were they to spend that amount they would be left with a residual income below the official poverty line (see the shaded area in **Figure 7** below). For the purposes of this report this is termed "fuel poverty (Low Income High Costs)".

Figure 7: A representation of the Low Income High Costs definition of fuel poverty[30]



A report produced by DECC[31] states that under the 10% fuel poverty indicator, increasing household income potentially removes households from fuel poverty as they will be spending a smaller proportion of their income on fuel. Reducing income has the opposite effect potentially pushing households into fuel poverty. Decreasing fuel prices and/or improvements made to the energy efficiency of the home can remove households from fuel poverty, while rising prices will have the opposite effect.

[30] Hills, J. Getting the measure of fuel poverty - Final Report of the Fuel Poverty Review, London: LSE., 2012

[31] Fuel Poverty Report – Updated August 2013, Department of Energy and Climate Change, 2013

As the low income high cost indicator is a relative measure, it provides a much steadier trend in the number of fuel poor households over time than the 10% indicator. Whereas an increase in income is likely to reduce the extent of fuel poverty under the 10% definition, under the low income high cost indicator, a change in income will only have an impact on fuel poverty if households with low incomes and high costs see relatively larger income changes (increases or decreases) than the overall average change in income.

The 10% indicator tends to be very responsive to changes in prices, such that these usually dominate the indicator, outweighing other factors such as income and energy efficiency.

Map 7 shows that, based on the fuel poverty 10% definition, the highest concentrations are in the The Sampfords, Littlebury and Wenden Lofts wards.

For comparison, **Map 8** shows the results based on the fuel poverty Low Income High Costs definition, whilst the overall pattern is similar the highest concentrations are in the The Sampfords, Littlebury and Wenden Lofts wards.

4.2.3.2.1 What type of property is in fuel poverty under the Low Income High Costs Definition?

The Hills Fuel Poverty Review[30] provides useful figures that show the likely composition of a fuel poor household under this definition:

- 76% of fuel poor households have an EPC rating of E to G
- 20% of fuel poor households are rural
- 82% of fuel poor households live in houses as opposed to flats or bungalows
- A third of fuel poor households are found in a fifth of the most deprived households
- Fuel poverty is spread fairly evenly between regions, including London
- 34% of fuel poor households contain a person with a long term illness or disability
- 10% of fuel poor households contain a person over the age of 75
- 20% of fuel poor households contain a person under the age of 5

These figures should be considered when analysing the map showing the percentage of private sector dwellings in Uttlesford occupied by households in fuel poverty under the Low Income High Costs definition.

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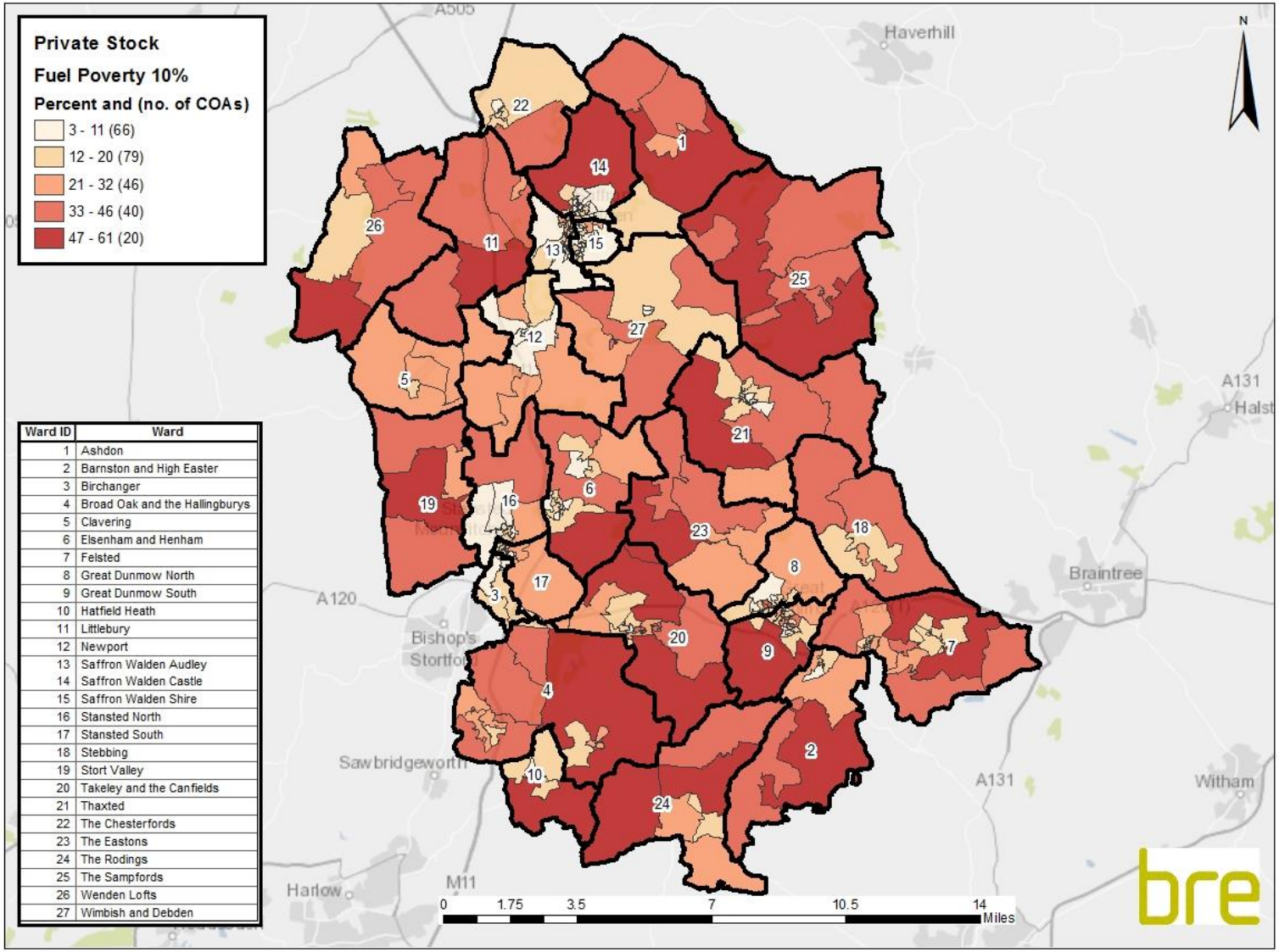
Map 7: Percentage of private sector dwellings in Uttlesford occupied by households in fuel poverty - 10% definition



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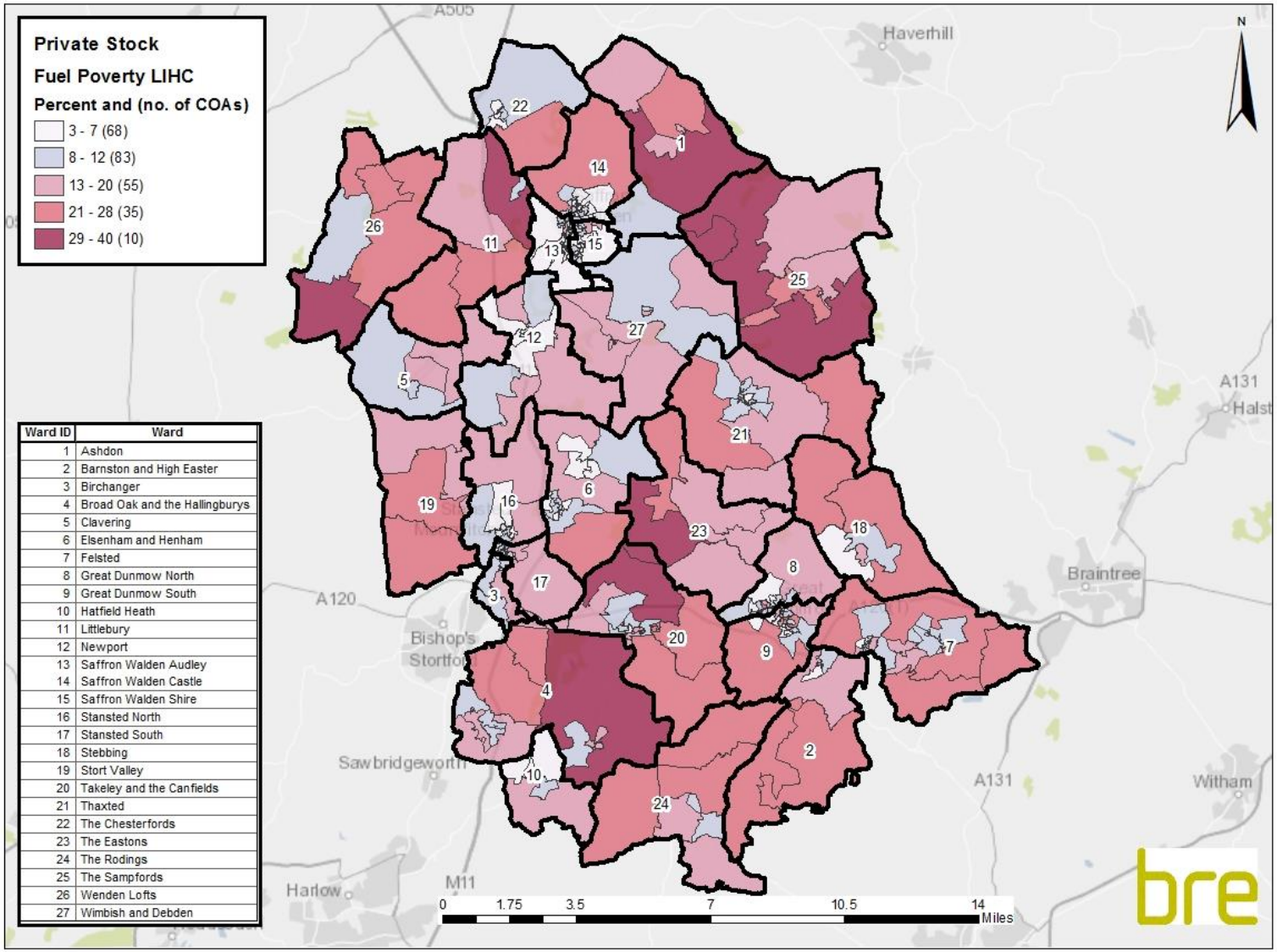
Map 8: Percentage of private sector dwellings in Uttlesford occupied by households in fuel poverty – Low Income High Costs definition



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4.2.3.3 Low income households

A low income household is defined as a household in receipt of:

- Income support
- Housing benefit
- Attendance allowance
- Disability living allowance
- Industrial injuries disablement benefit
- War disablement pension
- Pension credit
- Child tax credit
- Working credit

For child tax credit and working tax credit, the household is only considered a low income household if it has a relevant income of less than £15,050.

The definition also includes households in receipt of Council Tax benefit and income based Job Seekers Allowance.

Map 9 shows that concentrations of low income households are relatively low throughout Uttlesford. There is some tendency for higher levels in the urban areas. No particular ward dominates in terms of low income households, although the Great Dunmow wards have slightly higher levels compared to other wards.

Map 10 provides an additional layer of information, with the data for low income households being combined with HHSRS excess cold data. This provides a vital picture of where vulnerable people are likely to be living in poor housing. The map indicates that the distribution shows higher levels being seen in rural areas.

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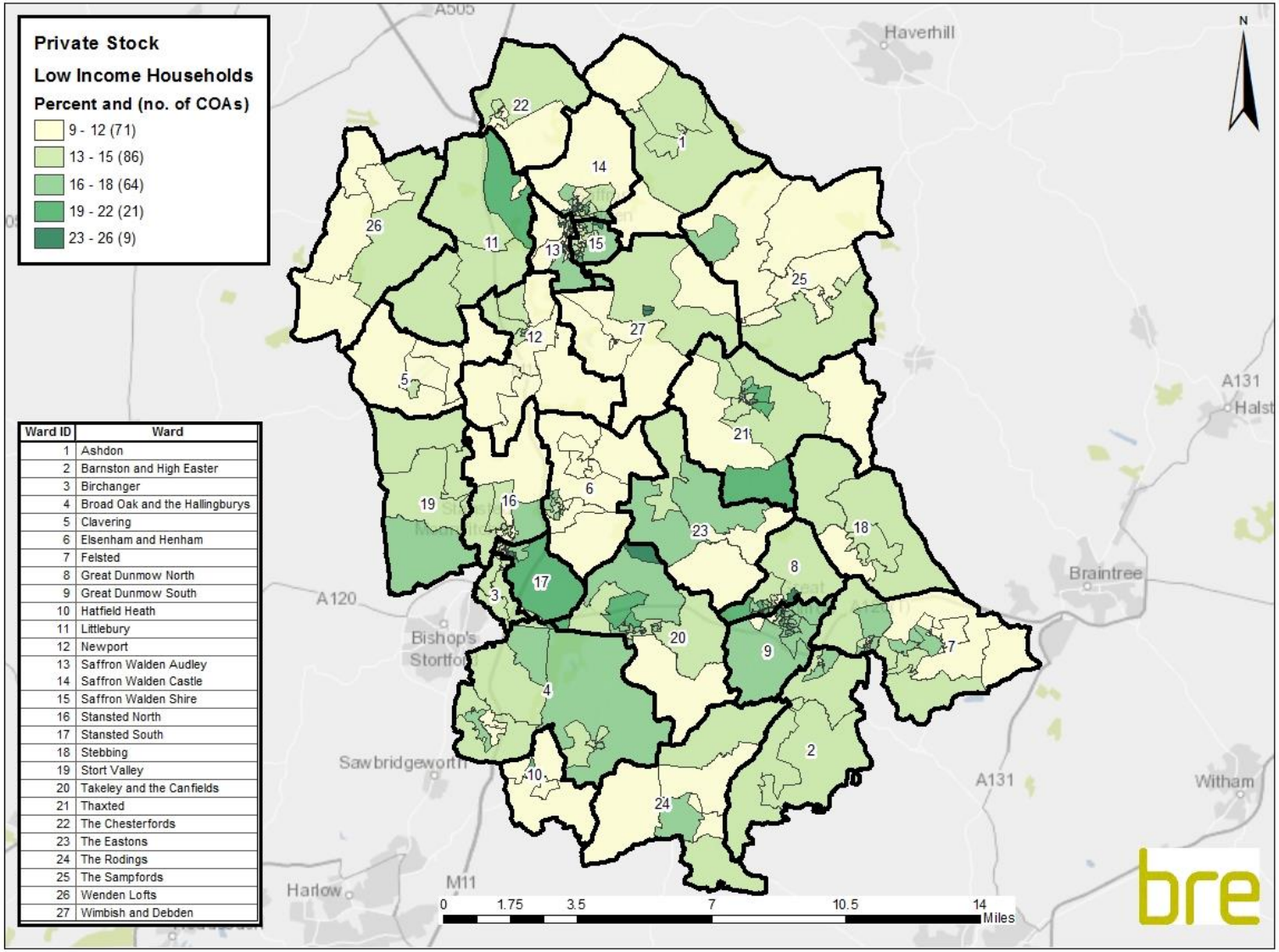
Map 9: Percentage of private sector dwellings in Uttlesford occupied by low income households



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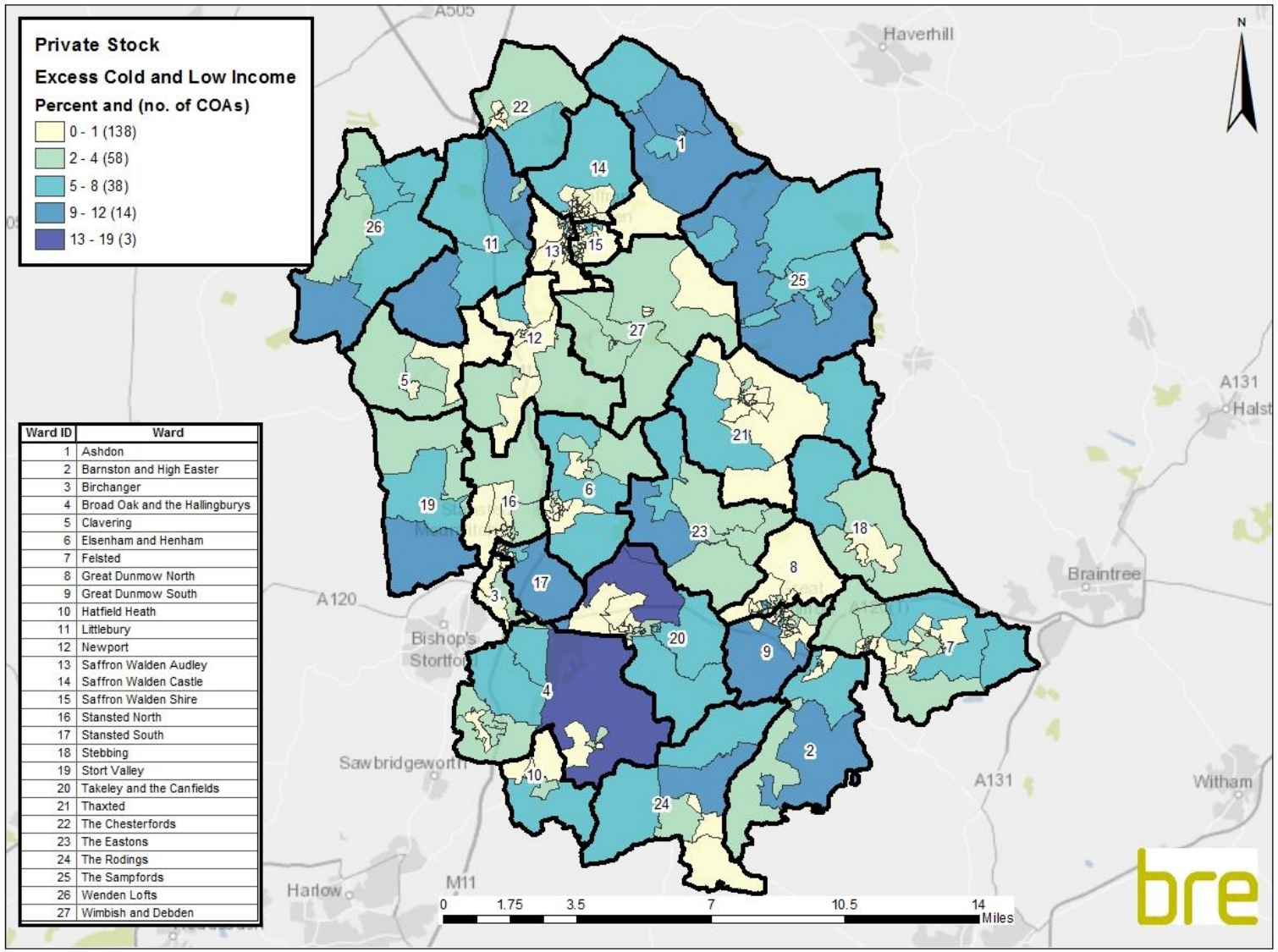
Map 10: Percentage of private sector dwellings in Uttlesford with both the presence of a HHSRS category 1 hazard for excess cold and occupied by low income households



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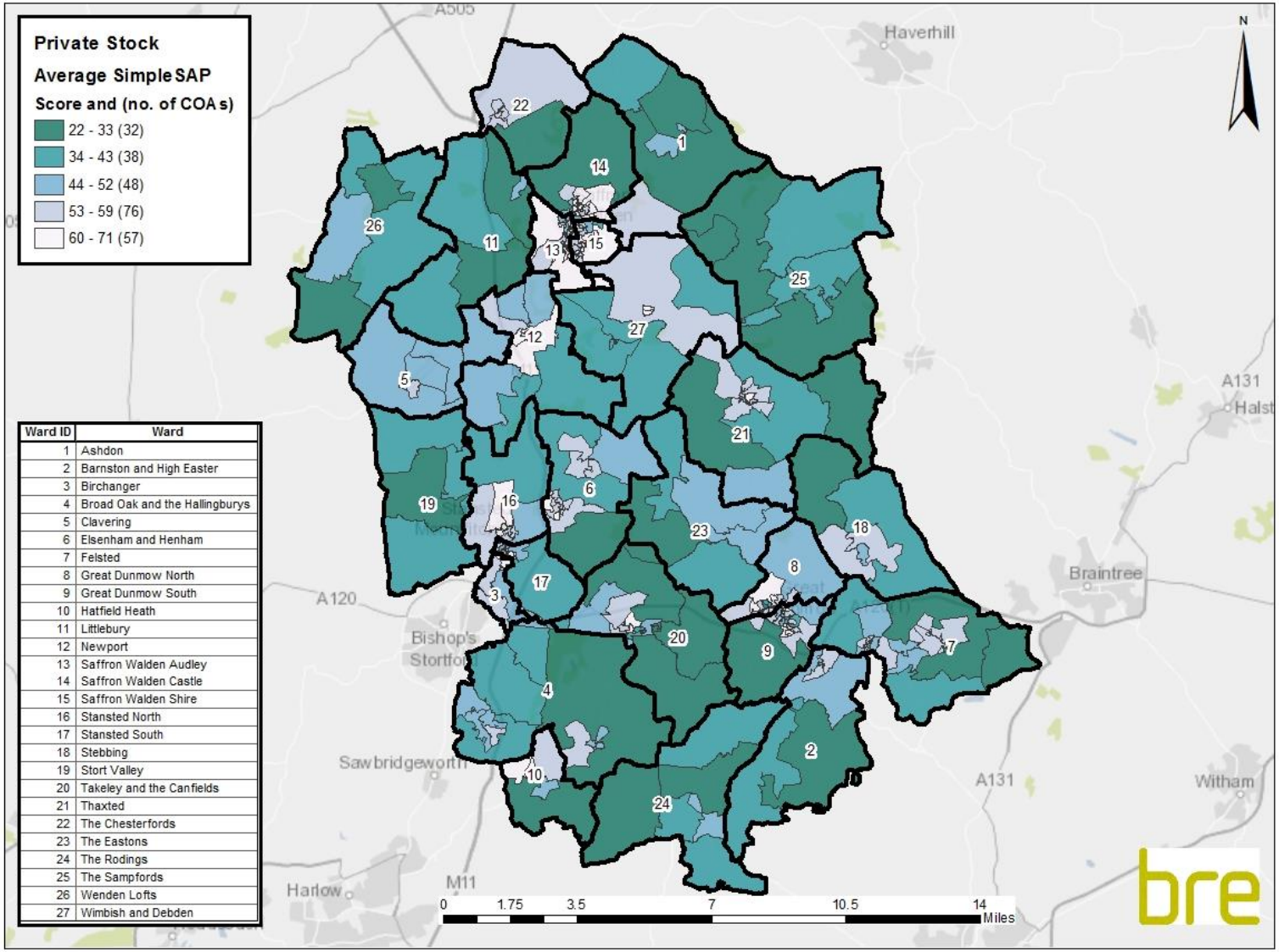
4.2.3.4 SimpleSAP

The average SimpleSAP map (**Map 11**) shows no particular pattern marking certain areas as having lower average SimpleSAP ratings. There are however, higher concentrations in The Sampfords, Wenden Lofts and Littlebury wards. In addition, there appears to be an urban/rural divide with urban dwellings performing better than rural households. Average SimpleSAP ratings can be lower if an area includes larger, older homes where little work has been done by the occupiers to improve energy performance. The size of the home itself is not a factor in SimpleSAP, but these homes are more likely to be semi-detached or detached, and therefore have larger heat loss areas.

Map 11: Average SimpleSAP ratings per dwelling in Uttlesford private sector stock



Ward ID	Ward
1	Ashdon
2	Barnston and High Easter
3	Birchanger
4	Broad Oak and the Hallingburys
5	Clavering
6	Elsenham and Henham
7	Felsted
8	Great Dunmow North
9	Great Dunmow South
10	Hatfield Heath
11	Littlebury
12	Newport
13	Saffron Walden Audley
14	Saffron Walden Castle
15	Saffron Walden Shire
16	Stansted North
17	Stansted South
18	Stebbing
19	Stort Valley
20	Takeley and the Canfields
21	Thaxted
22	The Chesterfords
23	The Eastons
24	The Rodings
25	The Sampfords
26	Wenden Lofts
27	Wimbish and Debden

4.2.4 Ward level results for the key indicators – total stock and private sector stock

The previous maps have provided a visual representation of the key indicators at Census Output Area (COA) level. The following tables provide the complete set of figures at ward level for the key indicators; firstly, for the total stock (**Table 4**) and secondly, for the private sector stock (**Table 5**). This allows a direct comparison between the wards in Uttlesford.

Table 4: *Total stock* – number and percentage of dwellings failing each of the key indicators, and average SimpleSAP ratings by ward

Ward	Dwellings	HHSRS category 1 hazards			Disrepair	Fuel poverty		Low income households	Average SimpleSAP
		All hazards	Excess cold	Fall hazards		10%	LIHC		
Ashdon	676	249 (37%)	244 (36%)	85 (13%)	31 (5%)	214 (32%)	120 (18%)	126 (19%)	41
Barnston and High Easter	642	222 (35%)	210 (33%)	74 (12%)	16 (2%)	195 (30%)	110 (17%)	129 (20%)	43
Birchanger	669	67 (10%)	21 (3%)	64 (10%)	14 (2%)	67 (10%)	52 (8%)	142 (21%)	59
Broad Oak and the Hallingburys	1,358	367 (27%)	345 (25%)	159 (12%)	47 (3%)	390 (29%)	217 (16%)	260 (19%)	45
Clavering	585	90 (15%)	84 (14%)	60 (10%)	18 (3%)	141 (24%)	65 (11%)	97 (17%)	50
Elsenham and Henham	1,480	226 (15%)	174 (12%)	137 (9%)	34 (2%)	260 (18%)	132 (9%)	253 (17%)	54
Felsted	1,997	444 (22%)	421 (21%)	180 (9%)	48 (2%)	506 (25%)	283 (14%)	394 (20%)	47
Great Dunmow North	1,592	234 (15%)	189 (12%)	121 (8%)	38 (2%)	250 (16%)	155 (10%)	433 (27%)	54
Great Dunmow South	2,347	313 (13%)	193 (8%)	233 (10%)	59 (3%)	372 (16%)	240 (10%)	572 (24%)	57
Hatfield Heath	749	103 (14%)	71 (9%)	66 (9%)	19 (3%)	122 (16%)	56 (7%)	155 (21%)	56
Littlebury	673	293 (44%)	292 (43%)	75 (11%)	28 (4%)	276 (41%)	144 (21%)	130 (19%)	36
Newport	1,415	228 (16%)	171 (12%)	149 (11%)	38 (3%)	230 (16%)	135 (10%)	282 (20%)	53
Saffron Walden Audley	2,326	288 (12%)	102 (4%)	263 (11%)	83 (4%)	312 (13%)	184 (8%)	517 (22%)	58
Saffron Walden Castle	2,020	238 (12%)	88 (4%)	182 (9%)	47 (2%)	208 (10%)	135 (7%)	508 (25%)	61
Saffron Walden Shire	2,342	276 (12%)	90 (4%)	240 (10%)	69 (3%)	258 (11%)	174 (7%)	493 (21%)	57
Stansted North	1,361	194 (14%)	115 (8%)	151 (11%)	41 (3%)	208 (15%)	118 (9%)	200 (15%)	55
Stansted South	1,411	197 (14%)	105 (7%)	161 (11%)	49 (3%)	203 (14%)	147 (10%)	364 (26%)	55
Stebbing	645	186 (29%)	179 (28%)	75 (12%)	16 (2%)	175 (27%)	92 (14%)	115 (18%)	47

Table 4 cont.: *Total stock* – number and percentage of dwellings failing each of the key indicators, and average SimpleSAP ratings by ward

Ward	Dwellings	HHSRS category 1 hazards			Disrepair	Fuel poverty		Low income households	Average SimpleSAP
		All hazards	Excess cold	Fall hazards		10%	LIHC		
Stort Valley	614	230 (37%)	229 (37%)	75 (12%)	26 (4%)	226 (37%)	121 (20%)	121 (20%)	39
Takeley and the Canfields	1,894	543 (29%)	498 (26%)	202 (11%)	70 (4%)	511 (27%)	320 (17%)	400 (21%)	46
Thaxted	1,476	298 (20%)	234 (16%)	165 (11%)	46 (3%)	321 (22%)	187 (13%)	341 (23%)	52
The Chesterfords	697	102 (15%)	88 (13%)	58 (8%)	12 (2%)	106 (15%)	61 (9%)	112 (16%)	54
The Eastons	641	228 (36%)	228 (36%)	84 (13%)	30 (5%)	218 (34%)	125 (20%)	111 (17%)	41
The Rodings	758	339 (45%)	337 (44%)	93 (12%)	33 (4%)	263 (35%)	149 (20%)	142 (19%)	37
The Sampfords	730	391 (54%)	390 (53%)	98 (13%)	26 (4%)	312 (43%)	167 (23%)	130 (18%)	33
Wenden Lofts	608	290 (48%)	289 (48%)	71 (12%)	17 (3%)	231 (38%)	126 (21%)	103 (17%)	36
Wimbish and Debden	835	214 (26%)	190 (23%)	88 (11%)	26 (3%)	179 (21%)	105 (13%)	154 (18%)	48

N.B. the information on hazards refers to the number of dwellings with a hazard of the stated type. Because of this there is likely to be some overlap – for example, some dwellings are likely to have excess cold and fall hazards but this dwelling would only be represented once under 'all hazards'. The number of dwellings under 'all hazards' can therefore be less than the sum of the excess cold plus fall hazards.

Table 5: *Private sector stock* – number and percentage of dwellings for each of the key indicators, and average SimpleSAP ratings by ward

Ward	Dwellings	HHSRS category 1 hazards			Disrepair	Fuel poverty		Low income households	Average SimpleSAP
		All hazards	Excess cold	Fall hazards		10%	LIHC		
Ashdon	591	223 (38%)	219 (37%)	81 (14%)	29 (5%)	198 (34%)	107 (18%)	76 (13%)	40
Barnston and High Easter	578	211 (37%)	202 (35%)	71 (12%)	16 (3%)	186 (32%)	102 (18%)	85 (15%)	42
Birchanger	564	62 (11%)	20 (4%)	59 (10%)	14 (2%)	61 (11%)	46 (8%)	80 (14%)	58
Broad Oak and the Hallingburys	1,240	350 (28%)	335 (27%)	152 (12%)	46 (4%)	377 (30%)	204 (16%)	180 (15%)	45
Clavering	520	84 (16%)	79 (15%)	57 (11%)	18 (3%)	133 (26%)	60 (12%)	57 (11%)	49
Elsenham and Henham	1,355	220 (16%)	171 (13%)	133 (10%)	34 (3%)	253 (19%)	126 (9%)	175 (13%)	53
Felsted	1,788	414 (23%)	396 (22%)	172 (10%)	48 (3%)	476 (27%)	258 (14%)	260 (15%)	47
Great Dunmow North	1,258	186 (15%)	151 (12%)	104 (8%)	32 (3%)	205 (16%)	122 (10%)	203 (16%)	54
Great Dunmow South	1,998	290 (15%)	175 (9%)	220 (11%)	57 (3%)	335 (17%)	213 (11%)	351 (18%)	56
Hatfield Heath	619	92 (15%)	67 (11%)	61 (10%)	18 (3%)	112 (18%)	50 (8%)	71 (11%)	55
Littlebury	605	258 (43%)	257 (42%)	71 (12%)	27 (4%)	258 (43%)	129 (21%)	86 (14%)	36
Newport	1,215	211 (17%)	160 (13%)	140 (12%)	37 (3%)	211 (17%)	120 (10%)	153 (13%)	52
Saffron Walden Audley	1,929	253 (13%)	81 (4%)	244 (13%)	79 (4%)	275 (14%)	156 (8%)	271 (14%)	57
Saffron Walden Castle	1,625	212 (13%)	80 (5%)	164 (10%)	44 (3%)	182 (11%)	113 (7%)	247 (15%)	60
Saffron Walden Shire	2,048	255 (12%)	75 (4%)	228 (11%)	66 (3%)	228 (11%)	152 (7%)	315 (15%)	57
Stansted North	1,307	187 (14%)	108 (8%)	149 (11%)	41 (3%)	201 (15%)	114 (9%)	170 (13%)	55
Stansted South	1,160	180 (16%)	98 (8%)	151 (13%)	47 (4%)	184 (16%)	130 (11%)	189 (16%)	54
Stebbing	589	175 (30%)	170 (29%)	72 (12%)	16 (3%)	168 (29%)	86 (15%)	80 (14%)	46

Table 5 cont.: *Private sector stock* – number and percentage of dwellings for each of the key indicators, and average SimpleSAP ratings by ward

Ward	Dwellings	HHSRS category 1 hazards			Disrepair	Fuel poverty		Low income households	Average SimpleSAP
		All hazards	Excess cold	Fall hazards		10%	LIHC		
Stort Valley	544	213 (39%)	212 (39%)	73 (13%)	26 (5%)	213 (39%)	110 (20%)	75 (14%)	38
Takeley and the Canfields	1,678	502 (30%)	461 (27%)	191 (11%)	68 (4%)	477 (28%)	297 (18%)	269 (16%)	45
Thaxted	1,243	274 (22%)	220 (18%)	153 (12%)	44 (4%)	297 (24%)	166 (13%)	188 (15%)	50
The Chesterfords	632	95 (15%)	84 (13%)	56 (9%)	12 (2%)	100 (16%)	57 (9%)	73 (12%)	53
The Eastons	575	205 (36%)	205 (36%)	81 (14%)	29 (5%)	203 (35%)	114 (20%)	76 (13%)	40
The Rodings	667	310 (46%)	309 (46%)	88 (13%)	32 (5%)	243 (36%)	135 (20%)	85 (13%)	36
The Sampfords	649	374 (58%)	374 (58%)	95 (15%)	26 (4%)	299 (46%)	155 (24%)	81 (12%)	31
Wenden Lofts	543	272 (50%)	271 (50%)	67 (12%)	17 (3%)	219 (40%)	115 (21%)	65 (12%)	35
Wimbish and Debden	753	206 (27%)	184 (24%)	84 (11%)	25 (3%)	173 (23%)	99 (13%)	106 (14%)	47

N.B. the information on hazards refers to the number of dwellings with a hazard of the stated type. Because of this there is likely to be some overlap – for example, some dwellings are likely to have excess cold and fall hazards but this dwelling would only be represented once under 'all hazards'. The number of dwellings under 'all hazards' can therefore be less than the sum of the excess cold plus fall hazards.

4.3 Information relating to LAHS reporting and EPC ratings

4.3.1 Cost of mitigating category 1 hazards in the Uttlesford private sector stock

Table 6 shows the total number of dwellings with HHSRS category 1 hazards in Uttlesford's private sector stock, the average cost of mitigating hazards per dwelling and the total cost for mitigating all hazards within those dwellings. The costs are based on the average cost of mitigating category 1 hazards for East of England using EHS 2011 data[32]. The EHS costs are determined following a surveyor's assessment of the hazard. For each hazard the surveyor is given a range of common treatments that they can specify in order to treat the hazard. Where quantities are required the surveyor may specify them. The treatment recommended by the surveyor is then costed using a standard set of prices.

Table 6: Total number of dwellings with category 1 hazards in private sector stock and cost of mitigation

HHSRS cat 1 hazards	Total no. in the authority	Average cost per dwelling (£)	Total cost (£)
	6,314	3,548	22,403,295

4.3.2 Houses in Multiple Occupation (HMOs) in the Uttlesford private sector stock

The Housing Act 2004 introduced a new set of definitions for HMOs in England from 6 April 2006[33]. The definition is a complex one and the bullet points below, which are adapted from web pages provided by the National HMO Network[34], provide a summary:

- An entire house or flat which is let to 3 or more tenants who form 2 or more households and who share a kitchen, bathroom or toilet
- A house which has been converted entirely into bedsits or other non-self-contained accommodation and which is let to 3 or more tenants who form two or more households and who share kitchen, bathroom or toilet facilities
- A converted house which contains one or more flats which are not wholly self-contained (i.e. the flat does not contain within it a kitchen, bathroom and toilet) and which is occupied by 3 or more tenants who form two or more households
- A building which is converted entirely into self-contained flats if the conversion did not meet the standards of the 1991 Building Regulations and more than one-third of the flats are let on short-term tenancies

To be classified as an HMO the property must be used as the tenants' only or main residence and it should be used solely or mainly to house tenants. Properties let to students and migrant workers will be treated as their only or main residence and the same will apply to properties which are used as domestic refuges.

[32] Note that these costs are estimated based on standardised cost assumptions intended for comparison purposes. If available, local data on costs – such as grant or loan aided works – could be used; however, this type of data is usually biased. The estimates here are therefore considered as a useful starting point.

[33] See Sections 254-258 of the Housing Act (http://www.legislation.gov.uk/ukpga/2004/34/contents)

[34] National HMO Network http://www.nationalhmonetwork.com/definition.php

The LAHS requires estimates of the number of HMOs and the number of mandatory licensable HMOs.

- Number of private sector HMOs
    - Modelled using specific criteria from a number of Experian data sources and information derived from the SimpleCO_2 model. The criteria include privately rented dwellings with 3 or more bedrooms occupied by male/female/mixed home sharers, mixed occupancy dwellings or classified as students and other transient singles in multi-let houses. In the event that a household is classified as students or other transient singles, but the tenure is owner occupied or social rented, the tenure will be considered to be private rented for the purposes of determining HMO status.
- Number of mandatory licensing scheme HMOs
    - This has been modelled using the above criteria for HMOs plus the dwelling must be occupied by 5 or more persons and have 3 or more storeys.

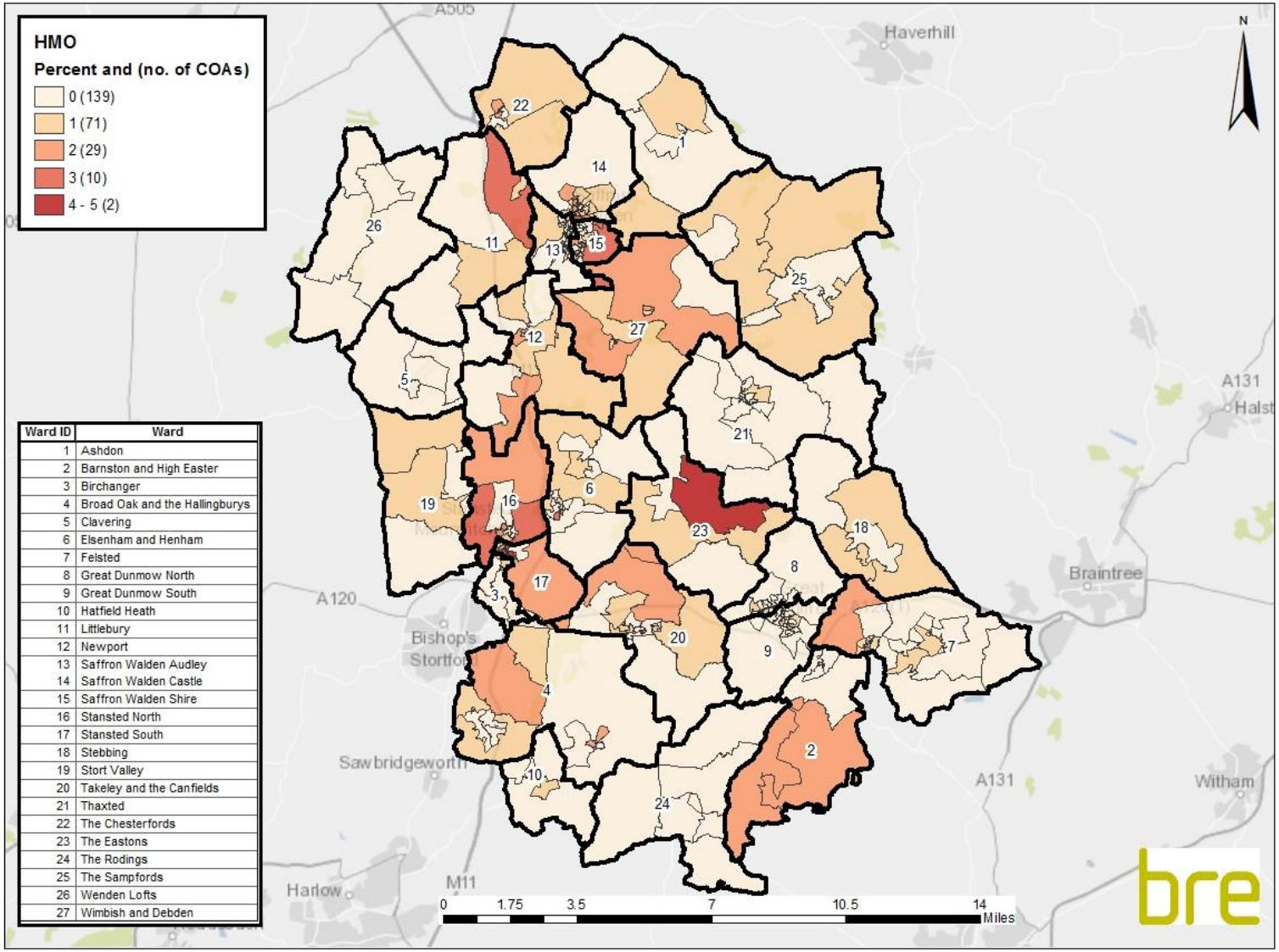
Table 7 summarises the results for the private sector stock in Uttlesford, while **Map 12** shows the geographic distribution of HMOs. As previously mentioned, ward level data on HMOs is available in the accompanying database and **Appendix C** provides guidance on how to use the database.

Table 7: Summary of HMOs within the Uttlesford private sector stock

Uttlesford	No. of private sector dwellings	HMOs	Mandatory Licensing Scheme HMOs
	28,273	183	19

The maps show that there are concentrations of HMOs in the Saffron Waldon and Stansted Mountfitchet areas wards as well as one particular COA in The Eastons ward.

Map 12: Percentage of HMOs based on all dwellings



Ward ID	Ward
1	Ashdon
2	Barnston and High Easter
3	Birchanger
4	Broad Oak and the Hallingburys
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6	Elsenham and Henham
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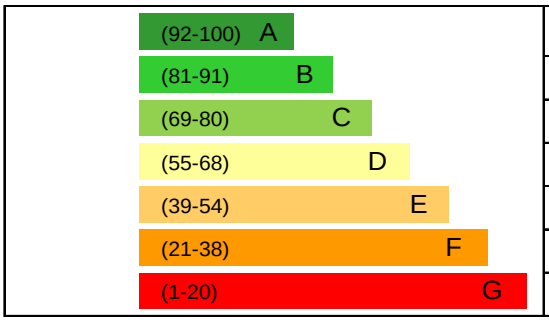
9	Great Dunmow South
10	Hatfield Heath
11	Littlebury
12	Newport
13	Saffron Walden Audley
14	Saffron Walden Castle
15	Saffron Walden Shire
16	Stansted North
17	Stansted South
18	Stebbing
19	Stort Valley
20	Takeley and the Canfields
21	Thaxted
22	The Chesterfords
23	The Eastons
24	The Rodings
25	The Sampfords
26	Wenden Lofts
27	Wimbish and Debden

4.3.3 EPC ratings in the Uttlesford private sector stock

Figure 8 below shows the bands A – G and corresponding SAP ratings in brackets. The columns show the number and percentage of Uttlesford's private sector stock falling into each of the EPC ratings bands.

The estimated average SimpleSAP for the private sector stock in Uttlesford is 50 which corresponds to an EPC rating of E. The number of private sector dwellings with an EPC rating below band E is estimated to be 6,882 (24.3%).

Figure 8: Number and percentage of Uttlesford's *private sector stock* falling into each of the EPC ratings bands (based on SimpleSAP)

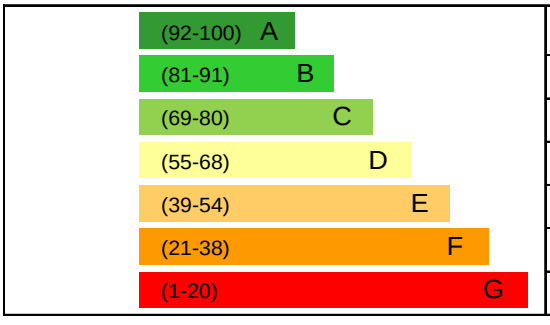


	Count	Percent
(92-100) A	0	0.0%
(81-91) B	28	0.1%
(69-80) C	3,841	13.6%
(55-68) D	10,082	35.7%
(39-54) E	7,440	26.3%
(21-38) F	4,849	17.2%
(1-20) G	2,033	7.2%

Under the Energy Act 2011, new rules mean that from 2018 landlords must ensure that their properties meet a minimum energy efficiency standard. Subject to Parliamentary approval, this minimum standard has been set at band E by 1 April 2018[35, 36]. **Map 13** shows the distribution of dwellings with an F or G EPC rating in the private rented stock.

Figure 9 below shows the breakdown of SimpleSAP results into the A – G bands for the private rented stock only. The number of private rented dwellings in Uttlesford with a rating below band E (i.e. bands F and G), is estimated to be 1,273 (28.8%).

Figure 9: Number and percentage of Uttlesford's *private rented stock* falling into each of the EPC ratings bands (based on SimpleSAP)

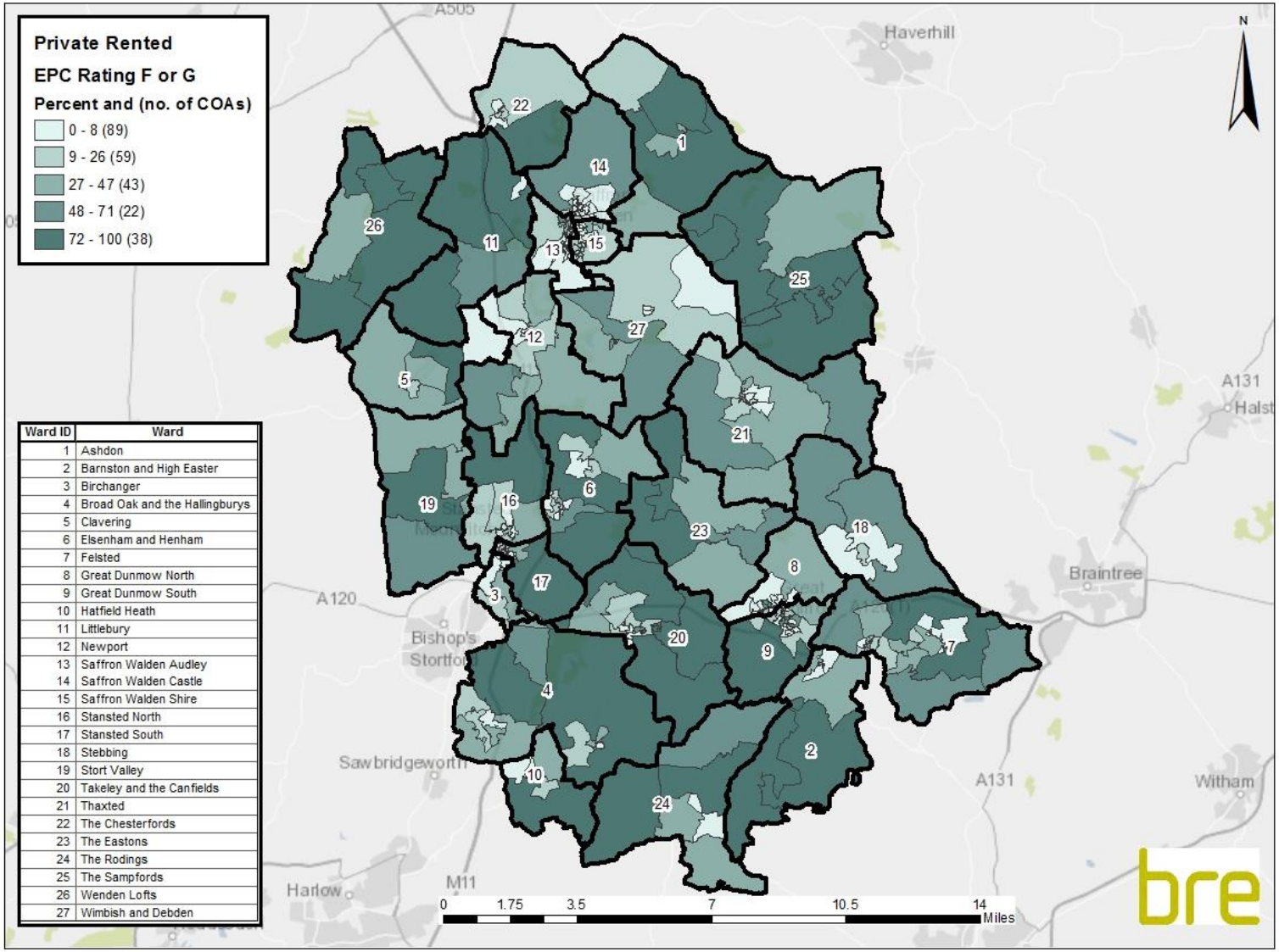


	Count	Percent
(92-100) A	0	0.0%
(81-91) B	11	0.2%
(69-80) C	654	14.8%
(55-68) D	1,343	30.3%
(39-54) E	1,145	25.9%
(21-38) F	821	18.5%
(1-20) G	452	10.2%

[35] https://www.gov.uk/government/consultations/private-rented-sector-energy-efficiency-regulations-domestic

[36] Although landlords will still be able to rent out F and G rated properties after this date they will not be able to renew or sign a new contract.

Map 13: Distribution of dwellings with F or G EPC ratings in the private rented stock



Ward ID	Ward
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9	Great Dunmow South
10	Hatfield Heath
11	Littlebury
12	Newport
13	Saffron Walden Audley
14	Saffron Walden Castle
15	Saffron Walden Shire
16	Stansted North
17	Stansted South
18	Stebbing
19	Stort Valley
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21	Thaxted
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25	The Sampfords
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27	Wimbish and Debden

4.4 Basic Green Deal and Energy Company Obligation (ECO) variables

Section 2.5 provides an overview of the Green Deal and ECO policies – two of the main energy efficiency improvements that fall under these policies are insulation of cavity walls and lofts. To support the development of strategies to take full advantage of the Energy Company Obligation (ECO) and the Green Deal, modelled data are provided for the following:

- Wall type (cavity or solid)
- Presence of cavity wall insulation
- Presence of a hard to treat (HTT) un-insulated cavity – 3 stories or disrepair/narrow cavity
- Presence of loft insulation
- Loft insulation thickness

Table 8 shows the modelled results in terms of the numbers and percentages of dwellings in Uttlesford's private sector stock as well as the percentage figures for the region and for England as a whole to enable comparison. More details and a selection of maps are provided in the following sections.

Table 8: Estimates of the numbers and percentage of dwellings for each of the variables assessed for the private sector stock

Variable		Private stock		2011 EHS Regional (private stock)	2011 EHS England (private stock)
		No.	%	%	%
No. of private sector dwellings		28,273	-	-	-
Wall type	Solid	7,462	26%	30%	33%
	Insulated cavity	12,744	45%	38%	32%
	Un-insulated cavity	8,067	29%	33%	35%
HTT uninsulated cavities	Narrow cavities	436	2%	1%	4%
	3 or more storeys	735	3%	4%	6%
	In disrepair	202	1%	0%	1%
Level of loft insulation	No loft	1,285	5%	8%	8%
	No insulation	1,116	4%	4%	3%
	50mm	2,938	10%	3%	11%
	100mm	8,829	31%	17%	37%
	150mm	4,662	16%	25%	17%
	200mm	3,827	14%	11%	13%
	250+mm	5,616	20%	32%	11%

Wall type

The model estimates that around 74% of the private sector housing stock in Uttlesford has cavity walls and that around 29% of these have not yet been insulated. There are, therefore, still opportunities for implementing energy efficiency measures in Uttlesford under the Green Deal/ECO schemes. These types of dwellings are likely to be of particular interest to Green Deal providers and the distribution of these dwellings is shown in **Map 14** which shows that the prevalence of un-insulated cavities is fairly evenly distributed across the area. **Map 15** shows that there are pockets of areas with solid walls distributed throughout the district, in particular in Ashdon, Saffron Walden (**Map D. 31**) and Stansted South (**Map D. 32**).

The proportion of dwellings with solid walls and un-insulated cavity walls is lower in Uttlesford than in England overall, whilst the proportions of insulated cavity walls are notably higher.

Hard to treat cavity walls

It is important to note that the data and analysis on hard to treat cavity walls is experimental and based on the best information available for use at the current time. It should, therefore, be treated with a level of caution.

For hard to treat (HTT) cavity walls, the Electricity and Gas (ECO) Order 2012 puts forward the requirements and definitions for the ECO. The primary measures which qualify for CERO are hard-to-treat (HTT) cavity wall insulation and solid wall insulation.

In addition, DECC have recently announced proposals to allow the installation of easy-to-treat cavity wall and loft insulation to count towards targets and allowing connection to a district heating system to be a primary measure. Despite the recently announced changes to the CERO, this obligation still has by far the greatest savings target attached to it (see Table 2) and HTT cavities are likely to remain a focus of energy company interest due to their relatively low cost to install compared to solid wall insulation which is one of the other key criterion for CERO eligibility.

Under the ECO Order 2012, HTT cavities are defined as being:

(a) a cavity wall -

i. in a building with 3 or more storeys where each storey has cavity walls,
ii. which a chartered surveyor has reported is not suitable to insulate with standard insulation material or techniques; or
iii. which a chartered surveyor has reported is not suitable to insulate without substantial remedial works to the building;

(b) a cavity within a cavity wall which is less than 50mm wide

(c) a cavity found in homes of prefabricated concrete construction or with metal frame cavity walls; or

(d) an uneven cavity formed in walls constructed of natural stone or from natural stone outer leaf and block or brick inner leaf

Currently, there is no available published statistical breakdown of the installations which fit the HTT cavity wall criteria. Anecdotal evidence suggests the industry in general i.e. energy companies, Green Deal Providers and their suppliers initially focussed on narrow cavities but found them hard to identify and are now shifting to the more easily identifiable 3 or more storey cavity constructed dwellings.

The following provides more detailed methodology for the identification of various types of HTT cavities – narrow cavities, buildings with 3 or more stories and buildings in disrepair.

Dwellings with narrow cavities

The estimated number of dwellings with un-insulated cavities was focussed down further to estimate dwellings with both un-insulated and narrow cavities. Information on narrow cavities is not collected in the EHS. Definitions and distributions of narrow cavities taken from a DECC report were therefore used to estimate the number of narrow cavities in Uttlesford. This is based solely on the dwelling ages of dwellings with cavity walls. **Table 8** indicates that around 2% of dwellings in Uttlesford have un-insulated narrow cavities. **Map 16** shows that there are pockets of COAs with higher proportions of dwellings with un-insulated narrow cavities spread across the borough.

Buildings with 3 or more storeys

The estimated number of dwellings with un-insulated cavities was focussed down further to estimate dwellings with un-insulated cavities that were at least 3 storeys tall. The number of storeys is estimated using experimental Ordnance Survey (OS) data on dwelling heights. The height of the dwelling is divided

by the estimated ceiling height (based on the dwellings age), allowing an additional 0.3m for space between floors. **Table 8** shows that around 3% of dwellings are in buildings with un-insulated cavities and with 3 or more storeys and **Map 17** indicates that these dwellings are generally concentrated in the areas around Great Dunmow – see **Map D. 39** for more detail on this area.

Dwellings in disrepair

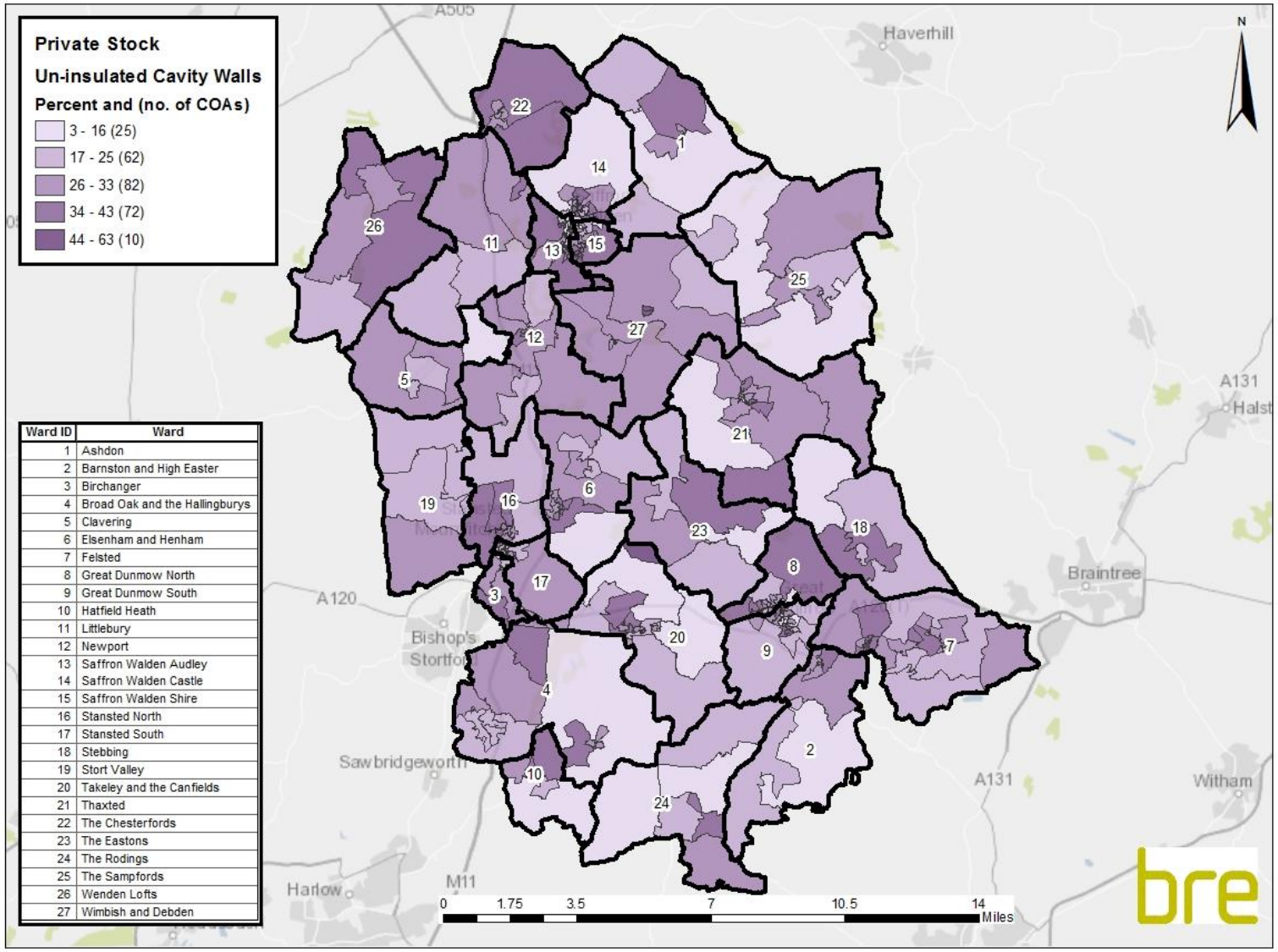
The estimated number of dwellings with un-insulated cavities was focussed down further to estimate dwellings that have un-insulated cavities and that are in disrepair. The Housing Stock Model includes a Disrepair Model; however, this requires a different modelling technique to that used for the SimpleCO_2 inputs. For this, and other housing standards indicators, a top down methodology was adopted. This method uses data from the EHS and Experian to establish relationships between the housing standards and various dwelling and social characteristics using logistic forms of regression analysis. Once these relationships were established, they were used to create a regression model which calculates the likelihood of a dwelling failing a given standard – in this case the disrepair standard for decent homes. **Table 8** shows that around 1% of dwellings are in buildings with un-insulated cavities and in disrepair and **Map 18** indicates that these dwellings are again spread out across Uttlesford with no particular pattern across the area, although Littlebury contains a COA estimated to have the greatest proportion of these.

Loft insulation

The Housing Stock Model was used to provide estimates on the presence and level of loft insulation across Uttlesford.

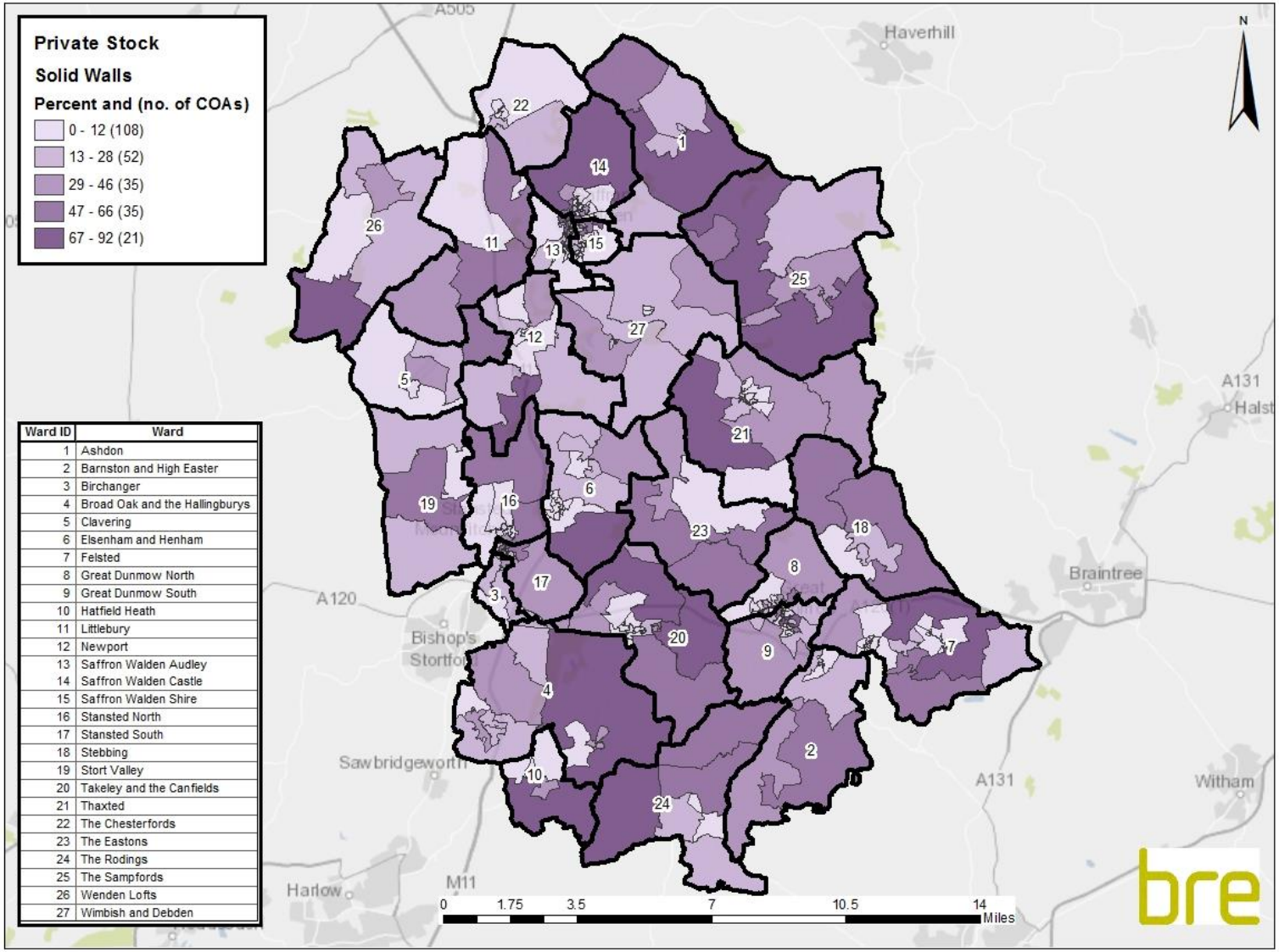
Table 8 shows that there are an estimated 12,883 dwellings (50%) of Uttlesford's private sector stock which have 100mm or less of loft insulation with 1,116 (4%) having no loft insulation at all. These types of dwellings are likely to be of particular interest to Green Deal providers and the likely geographical distribution of these dwellings is shown in **Map 19**.

Map 14: Percentage of private sector dwellings in Uttlesford with un-insulated cavity walls



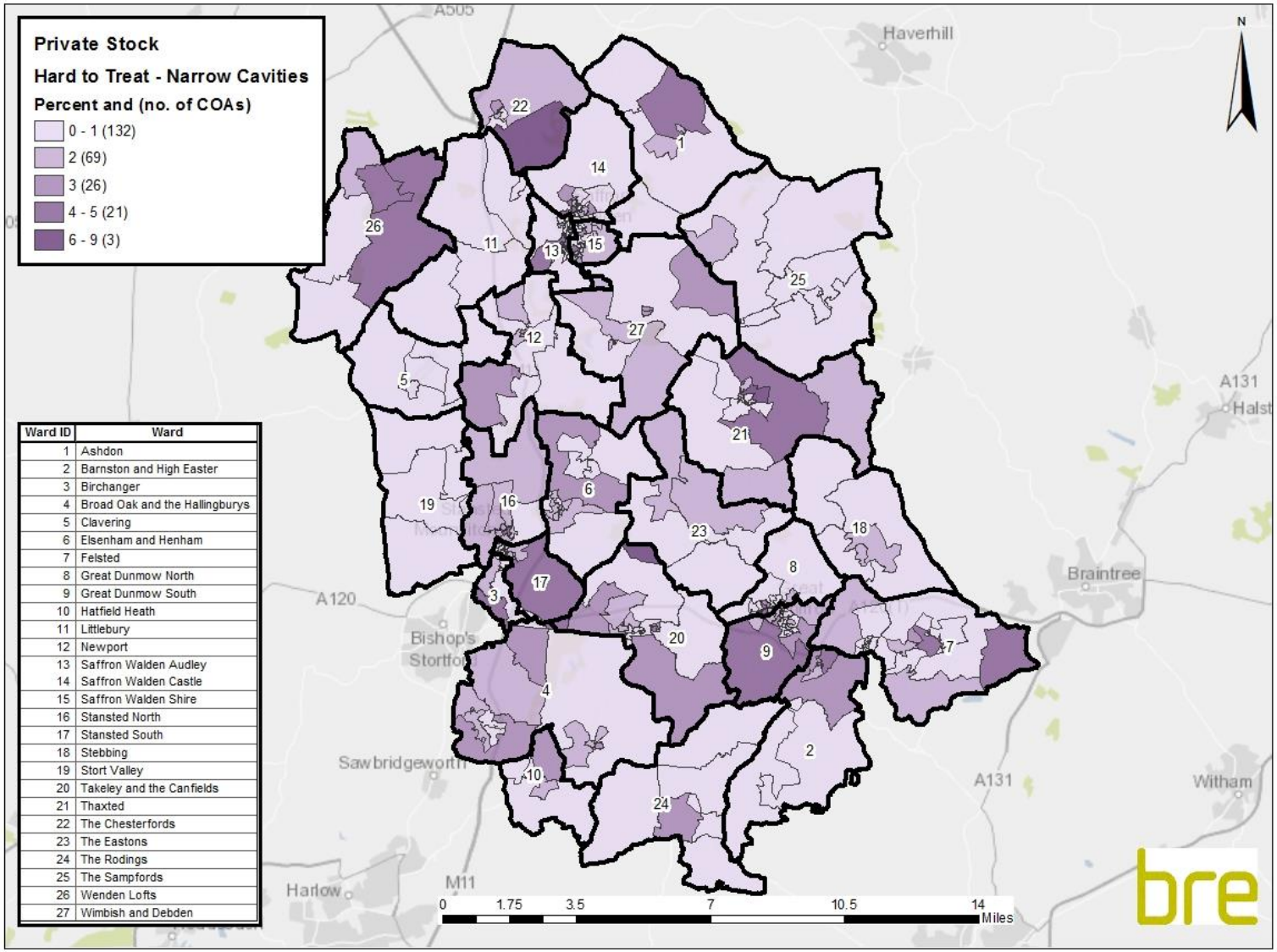
Ward ID	Ward
1	Ashdon
2	Barnston and High Easter
3	Birchanger
4	Broad Oak and the Hallingburys
5	Clavering
6	Elsenham and Henham
7	Felsted
8	Great Dunmow North
9	Great Dunmow South
10	Hatfield Heath
11	Littlebury
12	Newport
13	Saffron Walden Audley
14	Saffron Walden Castle
15	Saffron Walden Shire
16	Stansted North
17	Stansted South
18	Stebbing
19	Stort Valley
20	Takeley and the Canfields
21	Thaxted
22	The Chesterfords
23	The Eastons
24	The Rodings
25	The Sampfords
26	Wenden Lofts
27	Wimbish and Debden

Map 15: Percentage of private sector dwellings in Uttlesford with solid walls



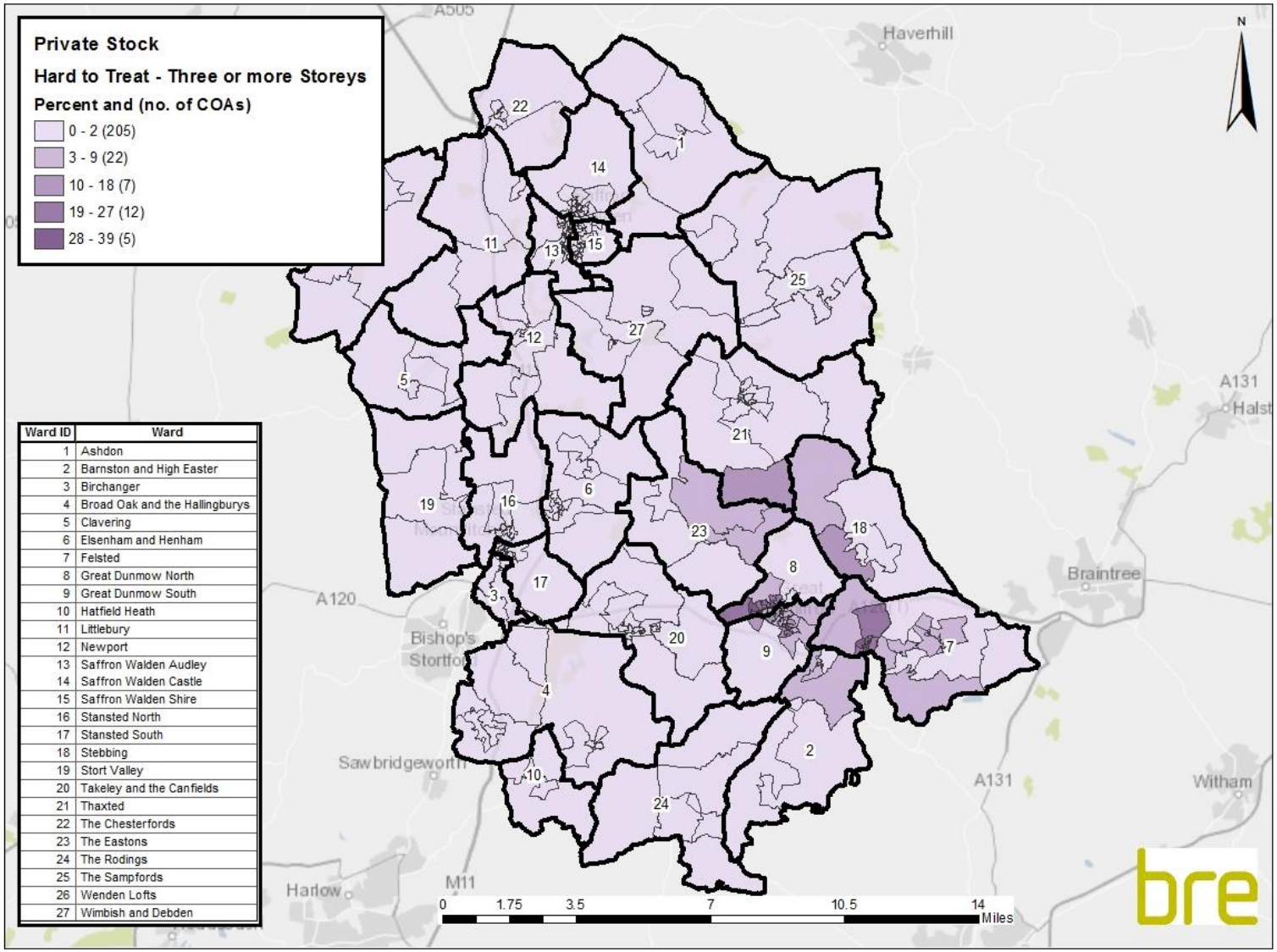
Ward ID	Ward
1	Ashdon
2	Barnston and High Easter
3	Birchanger
4	Broad Oak and the Hallingburys
5	Clavering
6	Elsenham and Henham
7	Felsted
8	Great Dunmow North
9	Great Dunmow South
10	Hatfield Heath
11	Littlebury
12	Newport
13	Saffron Walden Audley
14	Saffron Walden Castle
15	Saffron Walden Shire
16	Stansted North
17	Stansted South
18	Stebbing
19	Stort Valley
20	Takeley and the Canfields
21	Thaxted
22	The Chesterfords
23	The Eastons
24	The Rodings
25	The Sampfords
26	Wenden Lofts
27	Wimbish and Debden

Map 16: Percentage of private sector dwellings in Uttlesford with un-insulated narrow cavity walls



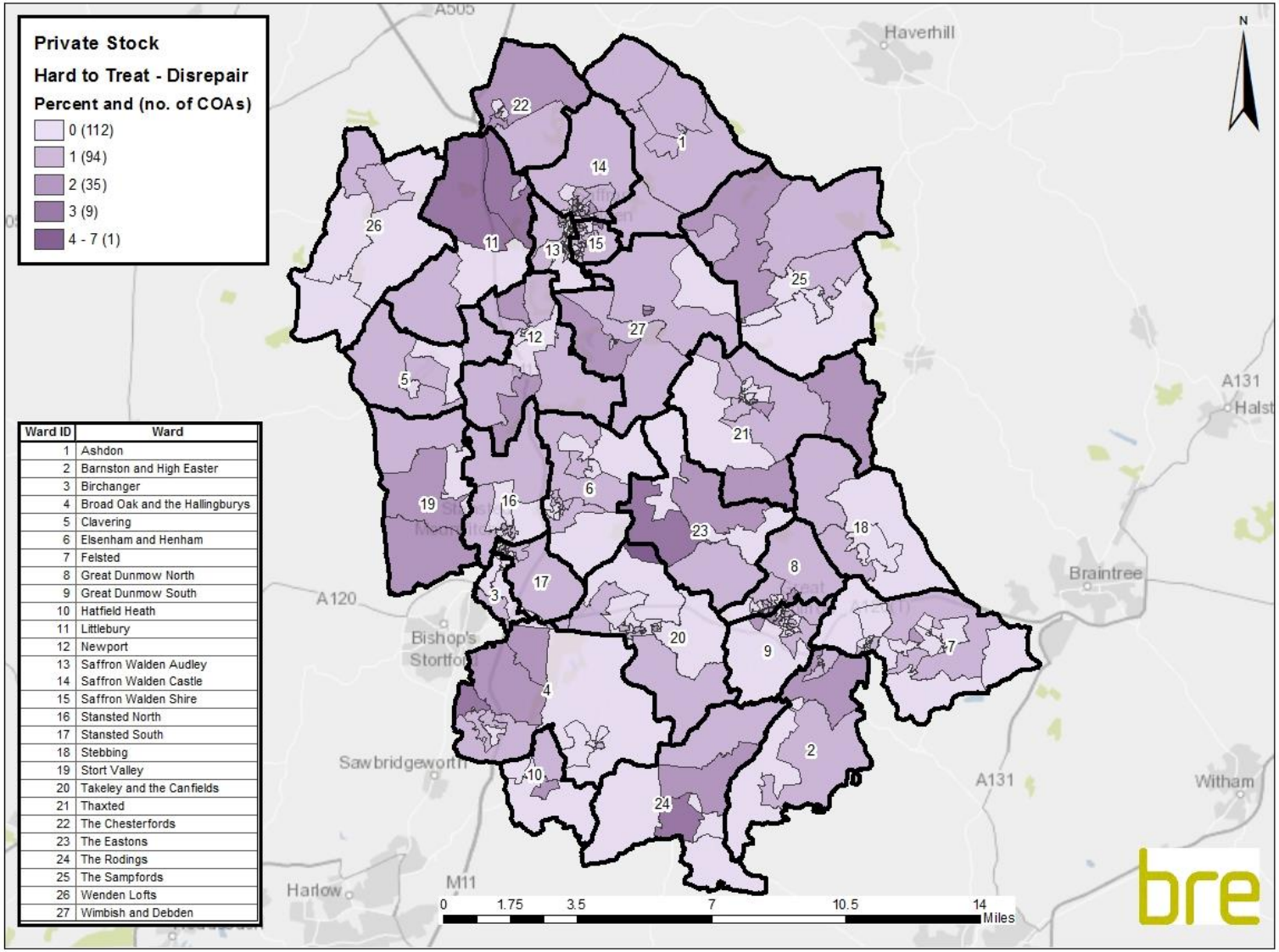
Ward ID	Ward
1	Ashdon
2	Barnston and High Easter
3	Birchanger
4	Broad Oak and the Hallingburys
5	Clavering
6	Elsenham and Henham
7	Felsted
8	Great Dunmow North
9	Great Dunmow South
10	Hatfield Heath
11	Littlebury
12	Newport
13	Saffron Walden Audley
14	Saffron Walden Castle
15	Saffron Walden Shire
16	Stansted North
17	Stansted South
18	Stebbing
19	Stort Valley
20	Takeley and the Canfields
21	Thaxted
22	The Chesterfords
23	The Eastons
24	The Rodings
25	The Sampfords
26	Wenden Lofts
27	Wimbish and Debden

Map 17: Percentage of private sector dwellings or flats in Uttlesford within buildings of 3 or more storeys with un-insulated cavity walls



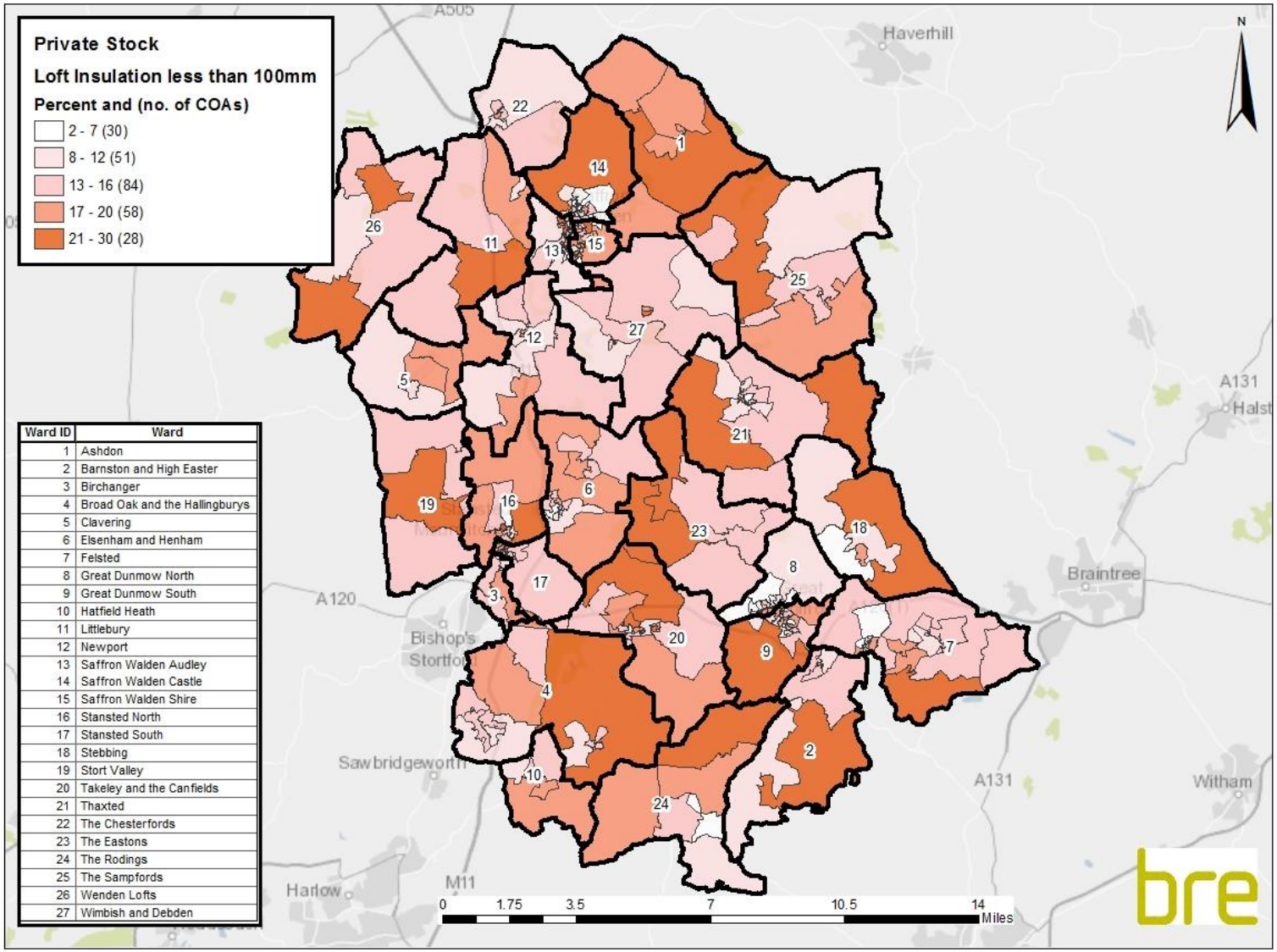
Ward ID	Ward
1	Ashdon
2	Barnston and High Easter
3	Birchanger
4	Broad Oak and the Hallingburys
5	Clavering
6	Elsenham and Henham
7	Felsted
8	Great Dunmow North
9	Great Dunmow South
10	Hatfield Heath
11	Littlebury
12	Newport
13	Saffron Walden Audley
14	Saffron Walden Castle
15	Saffron Walden Shire
16	Stansted North
17	Stansted South
18	Stebbing
19	Stort Valley
20	Takeley and the Canfields
21	Thaxted
22	The Chesterfords
23	The Eastons
24	The Rodings
25	The Sampfords
26	Wenden Lofts
27	Wimbish and Debden

Map 18: Percentage of private sector dwellings in Uttlesford in disrepair with un-insulated cavity walls



Ward ID	Ward
1	Ashdon
2	Barnston and High Easter
3	Birchanger
4	Broad Oak and the Hallingburys
5	Clavering
6	Elsenham and Henham
7	Felsted
8	Great Dunmow North
9	Great Dunmow South
10	Hatfield Heath
11	Littlebury
12	Newport
13	Saffron Walden Audley
14	Saffron Walden Castle
15	Saffron Walden Shire
16	Stansted North
17	Stansted South
18	Stebbing
19	Stort Valley
20	Takeley and the Canfields
21	Thaxted
22	The Chesterfords
23	The Eastons
24	The Rodings
25	The Sampfords
26	Wenden Lofts
27	Wimbish and Debden

Map 19: Percentage of private sector dwellings in Uttlesford with 100mm or less, or no loft insulation



Ward ID	Ward
1	Ashdon
2	Barnston and High Easter
3	Birchanger
4	Broad Oak and the Hallingburys
5	Clavering
6	Elsenham and Henham
7	Felsted
8	Great Dunmow North
9	Great Dunmow South
10	Hatfield Heath
11	Littlebury
12	Newport
13	Saffron Walden Audley
14	Saffron Walden Castle
15	Saffron Walden Shire
16	Stansted North
17	Stansted South
18	Stebbing
19	Stort Valley
20	Takeley and the Canfields
21	Thaxted
22	The Chesterfords
23	The Eastons
24	The Rodings
25	The Sampfords
26	Wenden Lofts
27	Wimbish and Debden

5 Conclusion and recommendations

5.1 Conclusion

Uttlesford District Council commissioned BRE to undertake a series of modelling exercises on their housing stock. This report describes the modelling work and provides details of the results obtained from the dwelling level model and database. The database is also provided to the council to enable them to obtain specific information whenever required.

The stock models and database provide the council with dwelling level information, focussing on private sector housing, for the following:

- The percentage of dwellings meeting each of the key indicators for Uttlesford overall and broken down by tenure and then mapped by COA (private sector stock only)
- Information relating to LAHS reporting for the private sector stock - category 1 hazards and HMOs as well as information on EPC ratings

Such information will facilitate the decision making process for targeting resources to improve the condition of housing and to prevent ill health resulting from poor housing conditions. Furthermore, the results of this project provide Uttlesford with information which will assist in housing policy and strategy development whether these are inspired locally, arise from obligations under the Housing Act 2004 or as responses to government initiatives such as DCLG's Housing Strategy Policy, Green Deal and ECO.

Generally, the BRE models estimate that private sector housing conditions in Uttlesford are not as good as the national or region averages, with higher rates of dwellings containing category 1 hazards, and in particular high levels of excess cold hazards. The level of disrepair is actually lower then national average and equal to regional averages. Despite Uttlesford having lower rates of dwellings occupied by low income households, as the energy efficiency of the housing stock is lower than the regional and national average, fuel poverty rates, particularly under the 10% definition are higher. The worst housing conditions, highest rates of low income households and fuel poverty are found in the private rented sector.

5.2 Recommendations

Programmes designed to improve energy efficiency could be considered with a focus on areas containing greatest numbers of cold hazards such as The Sampfords and Wenden Lofts where 50% or more of private homes are estimated to contain cold hazards and which also contain a high proportion of households in fuel poverty. As the worst housing is also found in the private rented sector containing a high proportion of low income households, consideration should also be given to enforcement interventions where property owners can be compelled to mitigate hazardous housing.

The current database could be enhanced to include the addition of various other sources of data (if they are available to the council). If such data were available BRE are able[37] to integrate these local data sources into the current database.

[37] Dependent on a successful feasibility assessment of the data.

Examples of such data are:

- **Energy Performance Certificate (EPC) data**

EPCs contain data on key dwelling energy characteristics (e.g. energy demand, excess cold, SimpleSAP) and where these are available they can be used in preference to the modelled data (it should be noted that to comply with bulk EPC data licencing requirements the EPC data is only used to inform the energy efficiency aspects of the model).

- **Local Land and Property Gazetteer (LLPG) data**

The Unique Property Reference Number (UPRN) from the LLPG can be used to uniquely identify all properties, while the address details from the LLPG can be used to merge the BRE models and EPC data using address matching.

- **Households on benefits**

Data regarding any households in receipt of either Council Tax Support or Housing Allowance could be used to enhance the low income model, making the targeting of individual low income households more accurate.

- **Local repair schemes**

Data from any local repair schemes, including the use of repair grants, could be used to enhance the Disrepair Model.

- **Local energy improvement schemes**

Any local schemes to improve the energy efficiency of dwellings, including national schemes for which local data has been made available to Uttlesford, could be used to further enhance the energy models (SimpleSAP, excess cold, fuel poverty).

The council have also requested an analysis of the condition of the housing stock and its health impact, through a Health Impact Assessment. The HIA report is provided separately and also provides a cost benefit analysis of mitigating Housing Health and Safety hazards within the stock.

Further assistance can be provided in the form of a Healthy Homes Advisory Service. This involves assisting the local authority in using the data from stock modelling and the health impact assessment to proactively assist vulnerable residents living in the poorest quality housing in the local authority area. The toolkit will allow Uttlesford to target the poorest quality housing and maximise the joint working opportunities with health and community groups in the area.

bre

Appendix A Definitions of the key indicators

1. House condition indicators

a. The presence of a category 1 hazard under the Housing Health and Safety Rating System (HHSRS) – reflecting both condition and thermal efficiency

Homes posing a category 1 hazard under the HHSRS – the system includes 29 hazards in the home categorised into category 1 (serious) or category 2 (other) based on a weighted evaluation tool. Note that this includes the hazard of excess cold which is also included as one of the energy efficiency indicators.

The 29 hazards are:

1 Damp and mould growth	16 Food safety
2 Excess cold	17 Personal hygiene, Sanitation and Drainage
3 Excess heat	18 Water supply
4 Asbestos	19 Falls associated with baths etc.
5 Biocides	20 Falling on level surfaces etc.
6 Carbon Monoxide and fuel combustion products	21 Falling on stairs etc.
7 Lead	22 Falling between levels
8 Radiation	23 Electrical hazards
9 Uncombusted fuel gas	24 Fire
10 Volatile Organic Compounds	25 Flames, hot surfaces etc.
11 Crowding and space	26 Collision and entrapment
12 Entry by intruders	27 Explosions
13 Lighting	28 Position and operability of amenities etc.
14 Noise	29 Structural collapse and falling elements
15 Domestic hygiene, Pests and Refuse	

b. The presence of a category 1 hazard for falls (includes “falls associated with baths”, “falling on the level” and “falling on stairs”)

The HHSRS Falls Model includes the 3 different falls hazards where the vulnerable person is over 60 as listed above.

c. Dwellings in disrepair (based on the former Decent Homes Standard criteria for Disrepair)

The previous Decent Homes Standard states that a dwelling fails this criterion if it is not found to be in a reasonable state of repair. This is assessed by looking at the age of the dwelling and the condition of a range of building components including walls, roofs, windows, doors, electrics and heating systems).

2. **Energy efficiency indicators:**
    a. **The presence of a category 1 hazard for excess cold (using SAP ratings as a proxy measure in the same manner as the English House Condition Survey)**
    This hazard looks at households where there is a threat to health arising from sub-optimal indoor temperatures. The HHSRS assessment is based on the most low income group for this hazard – persons aged 65 years or over (note that the assessment requires the hazard to be present and potentially affect a person in the low income age group should they occupy that dwelling. The assessment does not take account of the age of the person actually occupying that dwelling at that particular point in time).

    The English Housing Survey (EHS) does not measure the actual temperatures achieved in each dwelling and therefore the presence of this hazard is measured by using the SAP rating as a proxy. Dwellings with a SAP rating of less than 31.5 (SAP 2005 methodology) are considered to be suffering from a category 1 excess cold hazard.

    b. **An estimate of the SAP rating which, to emphasise its origin from a reduced set of input variables, is referred to as "SimpleSAP"**
    The Standard Assessment Procedure (SAP) is the UK Government's standard methodology for home energy cost ratings. SAP ratings allow comparisons of energy efficiency to be made, and can show the likely improvements to a dwelling in terms of energy use. The Building Regulations require a SAP assessment to be carried out for all new dwellings and conversions. Local authorities, housing associations, and other landlords also use SAP ratings to estimate the energy efficiency of existing housing. The version on which the Average SAP rating model is based is SAP 2005.

    The SAP ratings give a measure of the annual unit energy cost of space and water heating for the dwelling under a standard regime, assuming specific heating patterns and room temperatures. The fuel prices used are averaged over the previous 3 years across all regions in the UK. The SAP takes into account a range of factors that contribute to energy efficiency, which include:

    Thermal insulation of the building fabric
    The shape and exposed surfaces of the dwelling
    Efficiency and control of the heating system
    The fuel used for space and water heating
    Ventilation and solar gain characteristics of the dwelling

3. **Household vulnerability indicators:**
    a. **Fuel poverty - 10% definition**
    This definition states that a household is said to be in fuel poverty if it spends more than 10% of its income on fuel to maintain an adequate level of warmth (usually defined as 21^{o}C for the main living area, and 18^{o}C for other occupied rooms). This broad definition of fuel costs also includes modelled spending on water heating, lights, appliances and cooking.

    The fuel poverty ratio is defined as:

    $$\textit{Fuel poverty ratio} = \frac{\textit{Fuel costs (usage * price)}}{\textit{Full income}}$$

If this ratio is greater than 0.1 then the household is in fuel poverty.

The definition of full income is the official headline figure and in addition to the basic income measure, it includes income related directly to housing (i.e. Housing Benefit, Income Support for Mortgage Interest (ISMI), Mortgage Payment Protection Insurance (MPPI), Council Tax Benefit (CTB)).

Fuel costs are modelled, rather than based on actual spending. They are calculated by combining the fuel requirements of the household with the corresponding fuel prices. The key goal in the modelling is to ensure that the household achieves the adequate level of warmth set out in the definition of fuel poverty whilst also meeting their other domestic fuel requirements.

b. Fuel poverty - Low Income High Costs definition

The government has recently set out a new definition of fuel poverty which it intends to adopt under the Low Income High Costs (LIHC) framework[38]. Under the new definition, a household is said to be in fuel poverty if:

- They have required fuel costs that are above average (the national median level)
- Were they to spend that amount they would be left with a residual income below the official poverty line

c. Dwellings occupied by a low income household

A household in receipt of:

- Income support
- Housing benefit
- Attendance allowance
- Disability living allowance
- Industrial injuries disablement benefit
- War disablement pension
- Pension credit
- Child tax credit
- Working credit

For child tax credit and working tax credit, the household is only considered a low income household if it has a relevant income of less than £15,050.

The definition also includes households in receipt of Council Tax benefit and income based Job Seekers Allowance.

[38] https://www.gov.uk/government/collections/fuel-poverty-statistics

Appendix B Methodology for the BRE Dwelling Level Housing Stock Modelling approach

This Appendix provides a more detailed description of the models which make up the overall housing stock modelling approach and feed into the database. The process is made up of a series of data sources and Models which, combined with various imputation and regression techniques and the application of other formulae, make up the final database. The database is essentially the main output of the modelling and provides information on the key indicators and other data requirements (e.g. energy efficiency variables). An overview of the approach and a simplified flow diagram are provided in **Section 3** of this report.

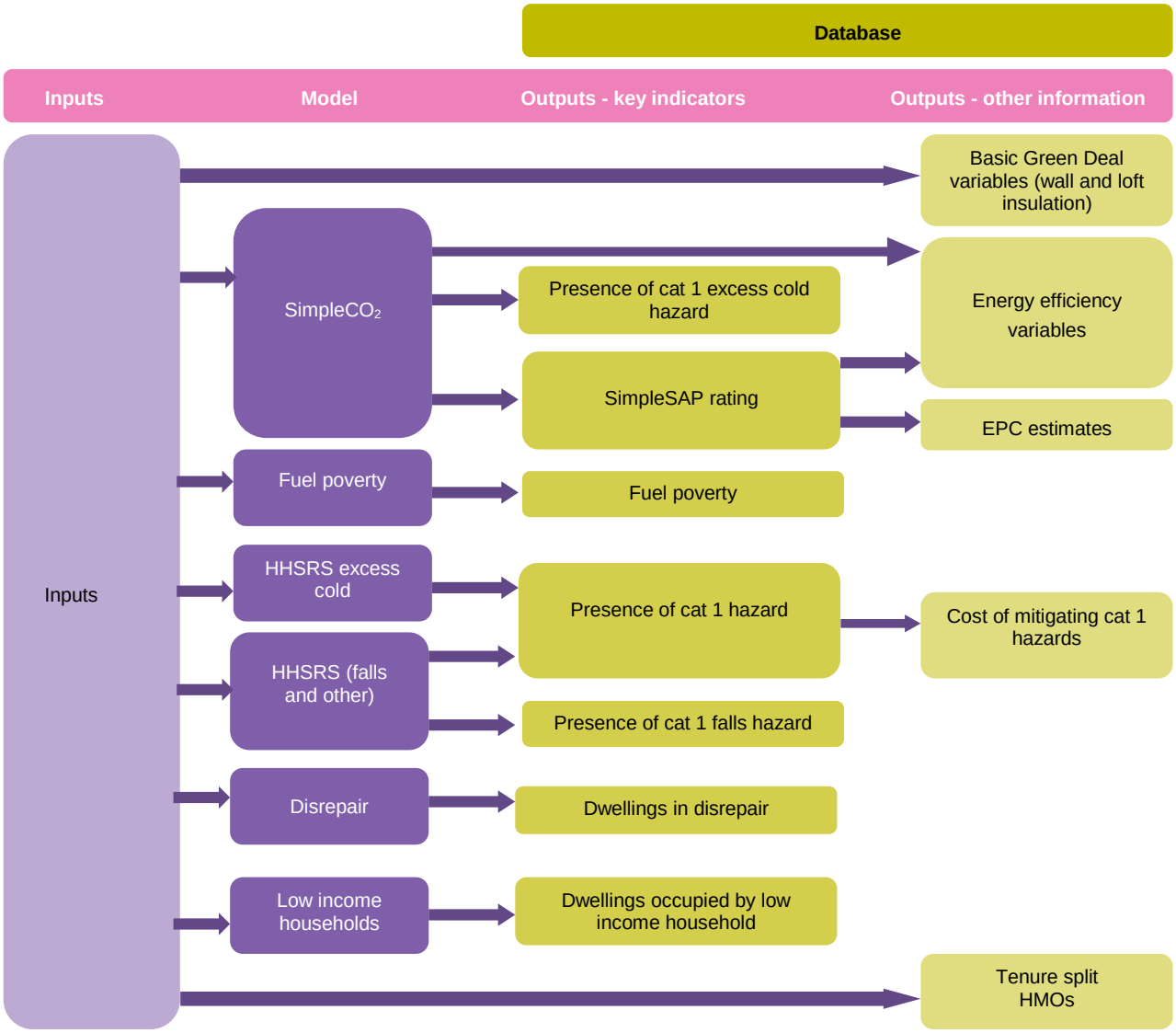
The models making up the overall housing stock modelling approach are:

- SimpleCO2 Model
- Fuel Poverty Model
- HHSRS (all hazards, falls hazards and excess cold) Models
- Disrepair Model
- Low Income Households Model

Figure B. 1 shows the data flows for the stock modelling approach, showing which models each of the outputs in the database (split into the key indicators and other information) come from. The exception is the Green Deal variables (if used) which come directly from the energy inputs, and the tenure and HMO data (if used) which come directly from the other inputs.

Section B.1 describes the SimpleCO_2 Model in more detail, **Section B.2** provides more information on the other four models and **Section B.3** gives details of the OS MasterMap/geomodelling approach.

Figure B. 1: Simplified data flow for the housing stock modelling approach



B.1 BRE SimpleCO_2 Model

BRE have developed a variant of the BREDEM[39] software, named "SimpleCO_2", that can calculate outputs from a reduced set of input variables. These outputs are indicative of the full BREDEM outputs and the minimum set of variables the software accepts is information on:

- Dwelling type
- Dwelling age
- Number of bedrooms
- Heating fuel
- Heating system
- Tenure

The Experian UK Consumer Dynamics Database is used as a source of these variables and they are converted into a suitable format for the SimpleCO_2 software. However, these variables alone are insufficient for the software to calculate the "SimpleSAP" rating or carbon emissions estimate (one of the outputs of the SimpleCO_2 Model). Additional variables are required and as these values cannot be precisely inferred then a technique known as cold deck imputation is undertaken. This is a process of assigning values in accordance with their known proportions in the stock. For example, this technique is used for predicting heating fuels as the Experian data only confirms whether a dwelling is on the gas network or not. Fuel used by dwellings not on the gas network is unknown, so in most cases this information will be assigned using probabilistic methods. The process is actually far more complex e.g. dwellings with particular characteristics such as larger dwellings are more likely to be assigned with oil as a fuel than smaller dwellings.

The reason for taking this approach is to ensure that the national proportions in the data source are the same as those found in the stock nationally (as predicted by the EHS or other national survey). Whilst there is the possibility that some values assigned will be incorrect for a particular dwelling (as part of the assignment process has to be random) they ensure that examples of some of the more unusual types of dwelling that will be present in the stock are included.

Whilst this approach is an entirely sensible and commonly adopted approach to dealing with missing data in databases intended for strategic use, it raises issues where one of the intended uses is planning implementation measures. It must therefore be kept in mind at all times that the data provided represents the most likely status of the dwelling, but that the actual status may be quite different. That said, where EPC data has been used, the energy models (which use EPC data) are likely to be more accurate.

It is important to note that some variables have been entirely assigned using cold decking imputation techniques. These include presence of cavity wall insulation and thickness of loft insulation as there is no reliable database with national coverage for these variables.

[39] Building Research Establishment Domestic Energy Model, BRE are the original developers of this model which calculates the energy costs of a dwelling based on measures of building characteristics (assuming a standard heating and living regime). The model has a number of outputs including an estimate of the SAP rating and carbon emissions.

The "SimpleCO_2" software takes the combination of Experian and imputed data and calculates the "SimpleSAP" rating for each dwelling in the national database. The calculated "SimpleSAP" ratings are the basis of the estimates of SAP and excess cold. How the other key variables are derived is discussed later in this Appendix.

Because the estimates of "SimpleSAP" etc. are calculated from modelled data it is not possible to guarantee the figures. They do, however, provide the best estimates that we are aware can be achieved from a data source with national coverage and ready availability. The input data could, however, be improved in its:

- accuracy for example through correcting erroneous values,
- depth of coverage, for example by providing more detailed information on age of dwellings,
- breadth by providing additional input variables such as insulation.

Improving any of these would enhance the accuracy of the output variables and for this reason it is always worth considering utilising additional information sources where they are available. Using EPC data will go some way towards meeting these improvements by providing more accurate data.

B.2 Housing Condition and Low Income Household Models

This section provides further information on the remaining four models – fuel poverty, HHSRS, disrepair and low income households. These models are discussed together since the approach used for each one is broadly the same.

These models are not based solely on the thermal characteristics of the dwelling, and in some cases are not based on these characteristics at all. A top down methodology has been employed for these models, using data from the EHS and statistical techniques, such as logistic regression, to determine the combination of variables which are most strongly associated with failure of each standard. Formulae have been developed by BRE to predict the likelihood of failure based on certain inputs. The formulae are then applied to the variables in the national Experian dataset to provide a likelihood of failure for each dwelling. Each individual case is then assigned a failure/compliance indicator based on its likelihood of failure and on the expected number of dwellings that will fail the standard within a given geographic area. Thus if the aggregate values for a census output area are that 60% of the dwellings in the area fail a particular standard then 60% of the dwellings with the highest failure probabilities will be assigned as failures and the remaining 40% as passes.

The presence of a category 1 hazard failure is the only exception to this as it is found by combining excess cold, fall hazards and other hazards such that failure of any one of these hazards leads to failure of the standard.

B.3 Geomodelling - OS MasterMap information

The OS data has been used to update a number of the SimpleCO_2 model inputs. The most valuable use of the OS data is the ability to determine the dwelling type with much greater confidence.

The existing dwelling type is replaced with a new dwelling type derived from OS data. By looking at the number of residential address points it can be inferred whether the building is a house or block of flats (houses have one residential address point and blocks of flats have two or more).

Houses - where the dwelling is a house the number of other buildings it is attached to can be observed and the following assumptions made:

- If there are no other dwellings attached, the house is detached.
- If two dwellings are joined to one another, but not to any other dwellings, they are semi-detached.
- If they are attached to two or more other dwellings, they are mid terraced.
- If they are attached to only one dwelling, but that dwelling is a mid-terrace, they are an end-terrace.

Flats - if the building is a block of flats, its exact nature is determined by its age and the number of flats in the block and the following assumptions made:

- If there are between two and four flats in the block (inclusive) and the dwelling was built before 1980 then it is a conversion.
- Otherwise it is purpose built.

This information can also be used to reconcile discrepancies within blocks of flats, terraced and semi-detached houses. These discrepancies occur in variables such as dwelling age, location of flat in block, number of storeys, loft insulation, wall insulation, wall type and floor area.

Looking at dwelling age, although the OS data does not itself provide any information on age, it does allow reconciliation of age data within semi-detached, terraces and blocks of flats.

Where a group of buildings are all attached in some way, such as a terrace, it is logical to assume that they were built at the same time. Therefore the age of each building is replaced with the most common age among those present. Where the most common age occurs in equal numbers, this is resolved by looking at the average age of houses in the same postcode.

If one dwelling has an age that is notably newer than its neighbours, then the age is not changed, as it is assumed that the original dwelling was destroyed and rebuilt.

Figure B. 2 and **Figure B. 3** below show how the initial base data is adjusted using the OS data to produce more consistent and reliable results.

Considering the number of storeys and the location of a flat in its block, if the OS data reveals that the dwelling type is significantly different from the original value – specifically if a house becomes a flat, or vice versa then the variables are adjusted. If this is the case a new location for the flat within the block or the number of storeys will be imputed using the same method as before, but taking into account the revised dwelling type.

Similarly with floor area, loft insulation and wall type - if the dwelling type or location of a flat within a block changes as a result of OS data then the variables are calculated using the same method of imputation as the original models, but taking into account the new data.

Figure B. 2: Dwelling level map showing the base data, prior to using the OS data

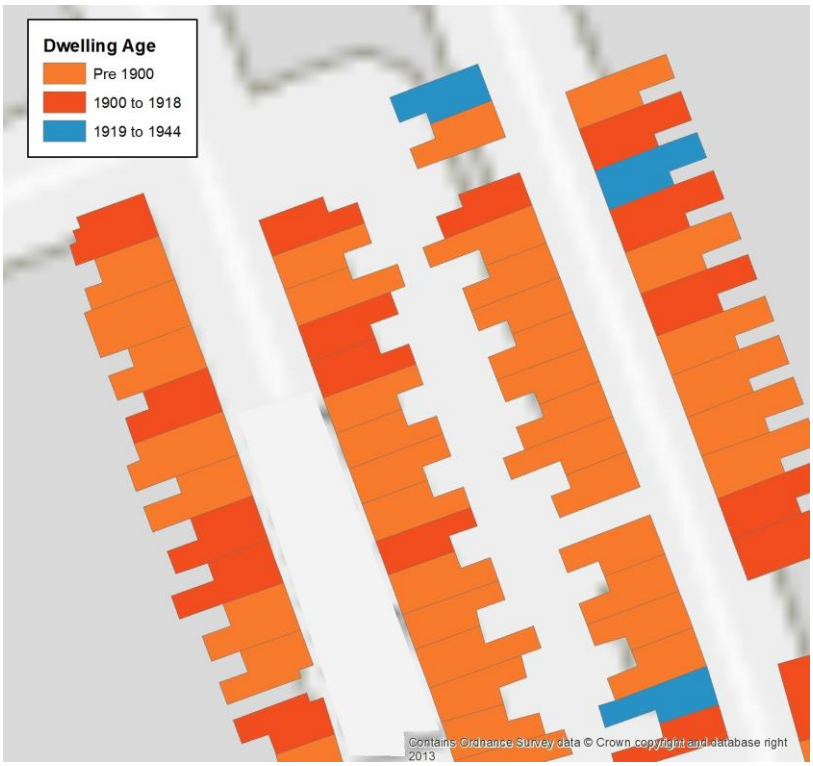
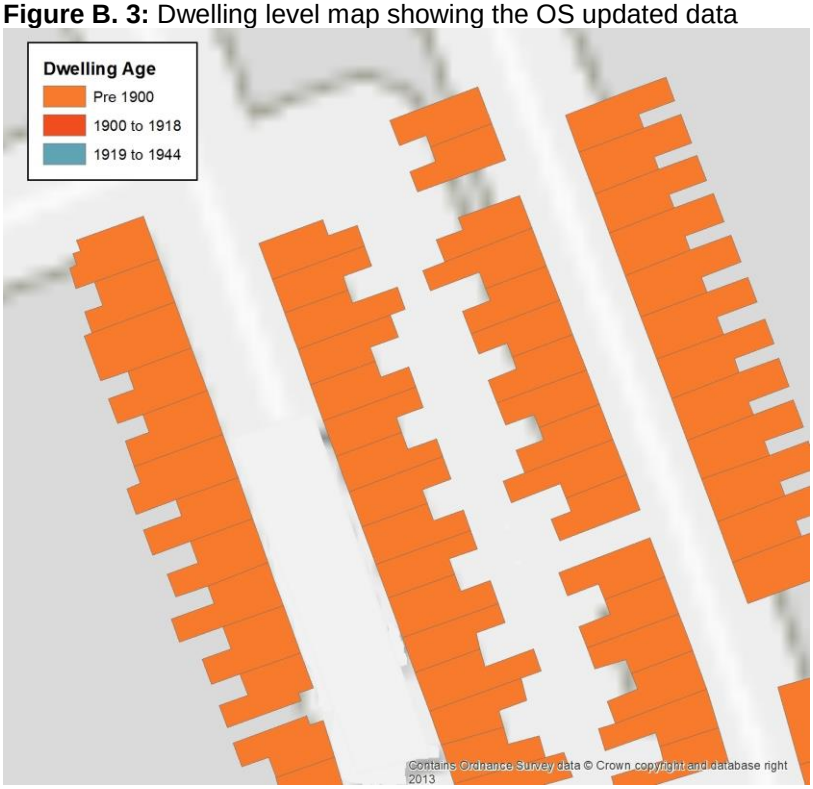


Figure B. 3: Dwelling level map showing the OS updated data



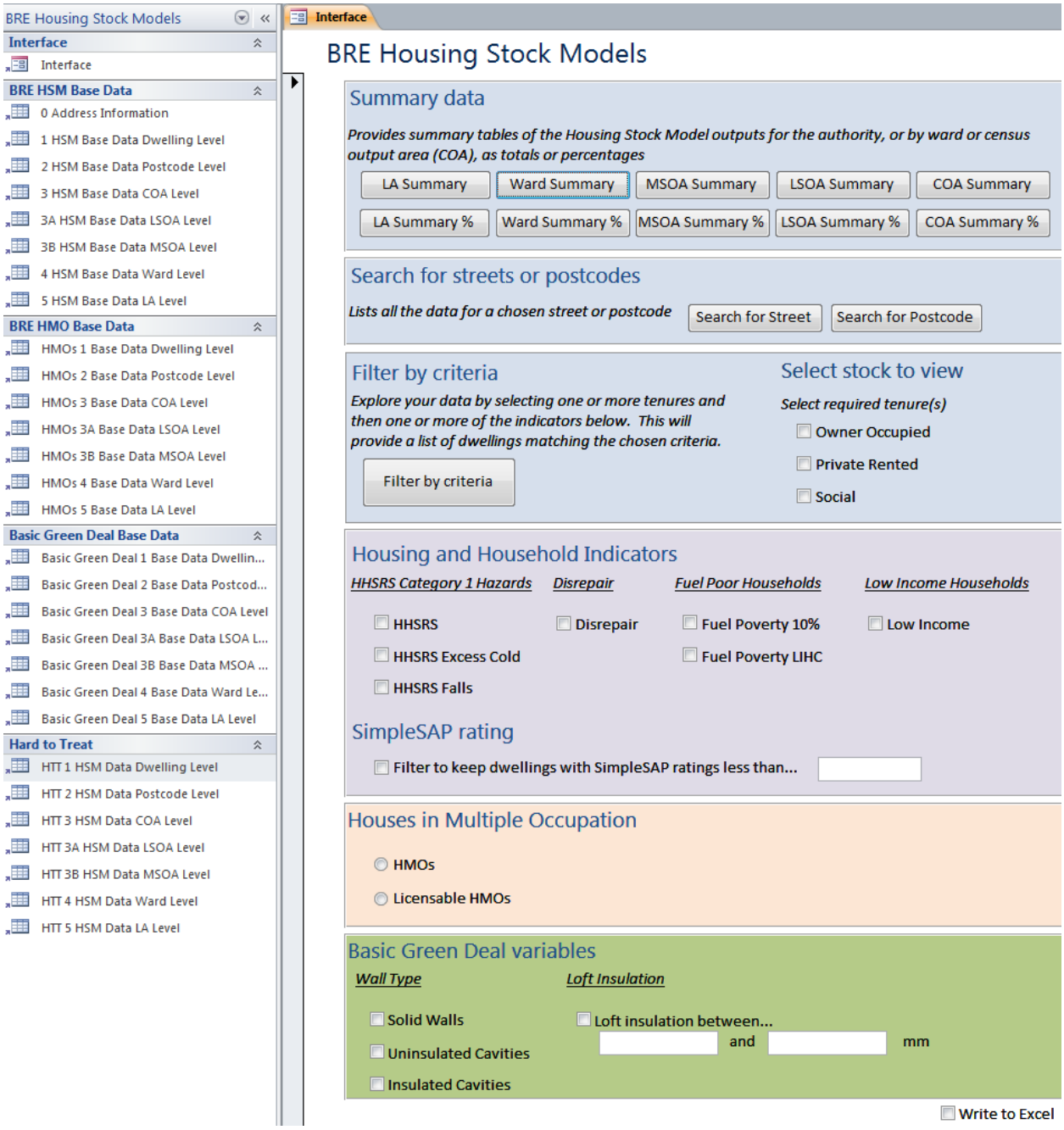
Appendix C Using the BRE Dwelling Level Housing Stock Database

The BRE Dwelling Level Housing Stock Database is the final output of the overall stock modelling approach described in **Section 3** and **Appendix B**. The database has been designed to provide local authorities with a number of different options for summarising or investigating their data and generating lists of properties of interest. This Appendix provides details of how to use the database.

C.1 Overview

The database will automatically open on the interface screen as shown in **Figure C. 1** overleaf.

Figure C. 1: BRE dwelling level housing sock database – opening interface screen



On the left hand side of the database is a vertical column known as the “navigational pane”. Under the heading “BRE HSM Base Data” there are 8 tables which hold the BRE housing stock model data. The tables are as follows:

Table C. 1: Summary of information provided in each table in the database

Table Name	Description
0 Address Information	Address details (building names, house numbers, postcodes), COA and Ward for each address
1 HSM Base Data Dwelling Level	Dwelling level housing stock model data and Experian tenure variable[40]. SimpleSAP results: score out of 100 All other indicators: 0 = pass the standard, 1 = fail
2 HSM Base Data Postcode Level	Summary information and statistics for each of the aggregated levels specified. 5 “stock levels” are provided – all, private, owner occupied, private rented, social
3 HSM Base Data COA Level	
3A HSM Base Data LSOA Level	
3B HSM Base Data MSOA Level	
4 HSM Base Data Ward Level	
5 HSM Base Data LA Level	

[40] If the Experian tenure variable has been purchased.

Under the heading “BRE HMO Base Data” there are 7 tables which hold the HMO and Licensable HMO data. The tables are as follows:

Table C. 2: Summary of information provided in each table in the database

Table Name	Description
HMOs 1 Base Data Dwelling Level	Dwelling level HMO data 0 = Non HMO, 1 = HMO
HMOs 2 Base Data Postcode Level	Summary information and statistics for each of the aggregated levels specified. 5 “stock levels” are provided – all, private, owner occupied, private rented, social
HMOs 3 Base Data COA Level	
HMOs 3A Base Data LSOA Level	
HMOs 3B Base Data MSOA Level	
HMOs 4 Base Data Ward Level	
HMOs 5 Base Data LA Level	

Under the heading “BRE Green Deal Base Data” there are 7 tables which hold the Green Deal data. The tables are as follows:

Table C. 3: Summary of information provided in each table in the database

Table Name	Description
Green deal 1 Base Data Dwelling Level	Dwelling level Green Deal data Wall type & insulation level 0 = not indicated type, 1 = indicated type Loft insulation = description of insulation level
Green deal 2 Base Data Postcode Level	Summary information and statistics for each of the aggregated levels specified in the form of the total number of dwellings with the specified wall type & insulation level, or the number of dwellings with the specified level of insulation 5 “stock levels” are provided – all, private, owner occupied, private rented, social
Green deal 3 Base Data COA Level	
Green deal 3A Base Data LSOA Level	
Green deal 3B Base Data MSOA Level	
Green deal 4 Base Data Ward Level	
Green deal 5 Base Data LA Level	

Under the heading “BRE Hard to Treat (HTT) Base Data” there are 7 tables which hold the Hard to Treat data. The tables are as follows:

Table C. 4: Summary of information provided in each table in the database

Table Name	Description
HTT 1 HSM Data Dwelling Level	Dwelling level HTT data 0 = not indicated type, 1 = indicated type
HTT 2 HSM Base Data Postcode Level	Summary information and statistics for each of the aggregated levels specified. 5 “stock levels” are provided – all, private, owner occupied, private rented, social
HTT 3 HSM Base Data COA Level	
HTT 3A HSM Base Data LSOA Level	
HTT 3B HSM Base Data MSOA Level	
HTT 4 HSM Base Data Ward Level	
HTT 5 HSM Base Data LA Level	

C.2 Using the database

The rest of the screen is the main interface which has been developed with a number of standard queries that will present the user with information likely to be of use when reviewing data in order to design a housing stock strategy. There are 3 main sections to the interface: “Summary data”, “Search for street or postcode” and “Filter by criteria”. These sections are described in more detail below.

C2.1 “Summary data”

These options allow the user to generate summaries of their data at different levels of aggregation. The different levels of aggregation are;

- Local authority
- Ward
- MSOA
- LSOA
- COA

There are two types of summaries available at each level - totals and percentages:

- Totals give the user the total number of dwellings that fail a particular standard, for example, the total number of dwellings that have a HHSRS category 1 hazard in the authority.
- Percentages tell the user the percentage of dwellings that fail a criterion, for example, the percentage of dwellings suffering from HHSRS category 1 excess cold hazards.

C2.2 “Search for streets or postcodes”

These options allow the user to search for particular areas, either by street name or postcode. By clicking on a search button the user will be asked to type in either a street or postcode. A table will then be shown which provides a list of all dwellings in the street or postcode requested.

If the full name of the street is not known, wildcard characters can be used to search for close matches. A wildcard character is one that can stand in for any other letter or group of letters. Access uses an asterisk (*) as the wildcard character. For example entering “Abbey*” will return any street name starting with “Abbey”, for example, “Abbey Road”, “Abbey Close”, “Abbeyfield” etc. Wildcard characters can be used at both the beginning and the end of the search text. For example, by entering “*Abbey*” would find “Abbey Road”, “Old Abbey Road” etc.

The street names used are those provided in the Local Land and Property Gazetteer. It can sometimes be the case that a street name can be written differently across databases (e.g. “Rose Wood Close” or “Rosewood Close”). If a road name does not appear to be present, try using wildcard characters to check for alternatives.

The postcode search facility works in a similar manner. Entering “BN15 0AD” will find all dwellings in that exact post code, but entering “BN15*” will find all dwellings whose postcode begins with BN15.

Note: always close the results of an existing search before starting a new one. Clicking the button when the results of an existing search are still open will simply return to the results of that search. A search, or any other table, can be closed by clicking the “x” in the top right corner of the table window.

C2.3 “Filter by criteria”

This section allows the user to select dwellings based on one or more criteria / key indicators of interest.

First, the user needs to select which tenure(s)[41] they are interested in by using the “Select stock to view” on the right hand side of the box.

The default setting is that no tenures are selected, so the user will need to select at least one in order to get any results. Multiple tenures can be selected, so for the results for all the private stock select both owner occupied and private rented.

Once one or more of the tenures has been selected, choose one or more of the indicators of interest either by selecting an indicator e.g. HHSRS Cat.1 hazards will return dwelling with fail HHSRS, or for SimpleSAP enter a rating to select dwellings on and below the rating.

Once a tenure(s) and indicator(s) have been selected clicking the ‘Filter by criteria’ button will return the addresses matching the chosen criteria.

As with the searches, close the results of an existing selection before starting a new one.

C.3 Creating Excel files

Whilst it is possible to copy the data from any of the queries accessed from the interface screen, an option has been added to make this process easier. To output results to Excel click the “Write to Excel” check box at the bottom right of the screen. As long as this box is checked, clicking any of the summary data, search or criteria selection buttons will cause the resulting data to be written to Excel instead of being displayed.

[41] If the Experian tenure variable has not been purchased this section is locked and only private sector stock is shown.

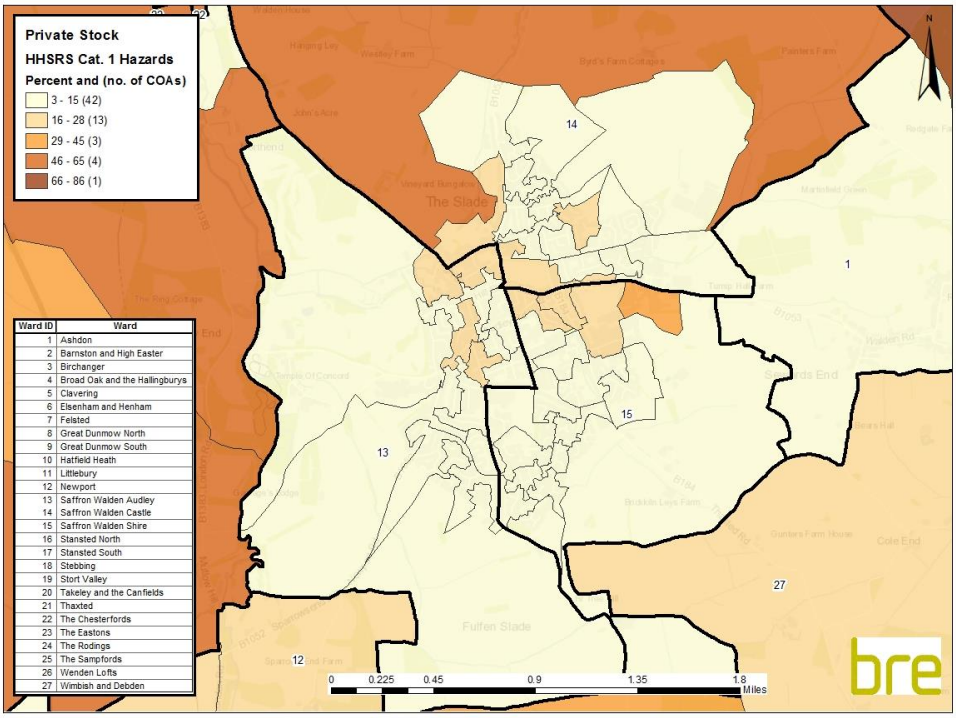
If this option is selected when any button is clicked the database requests a format for the output data. Once the appropriate file format is selected, click “OK” and choose a file name and location and click “OK” to save the file.

This function means it is possible to rapidly export summary tables for inclusion in reports, or lists of dwellings which can be used to target improvement programmes.

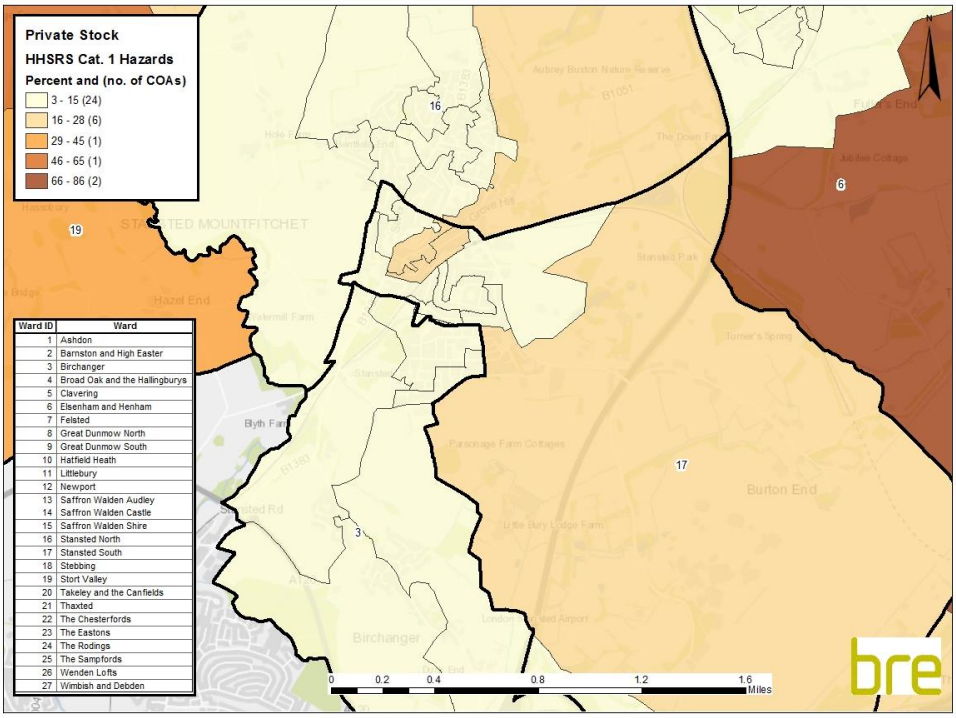
Appendix D Additional maps

This Appendix provides close up maps of some of the more urban area of Uttlesford. These maps show the clear urban – rural divide in many of the housing indicators. The larger maps included above in the report do not always allow for the appreciation that smaller and denser COAs in urban areas are very different in their hazards to the surrounding rural COAs which are larger and are immediately more eye-catching. For each of the full maps in the report three maps are shown here which zoom in on the more urban areas of the authority. The first focusses on the urban areas of Saffron Waldon, the second looks at the Stansted Mountfitchet area and the third focusses on the Great Dunmow area.

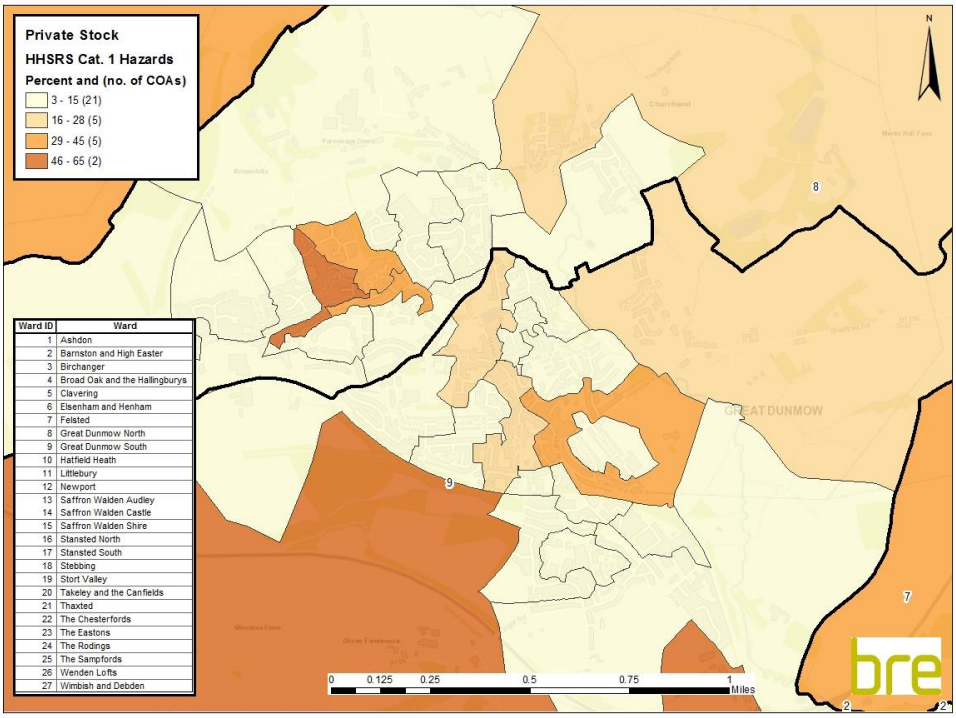
Map D. 1: Saffron Waldon area category 1 hazards – private stock



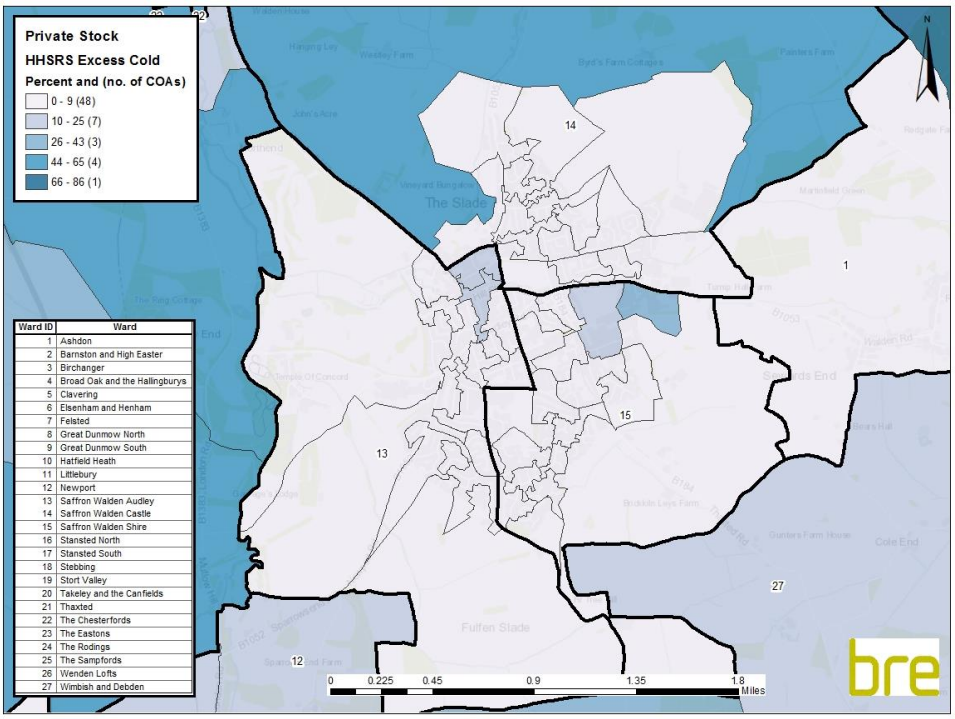
Map D. 2: Stansted Mountfitchet area category 1 hazards – private stock



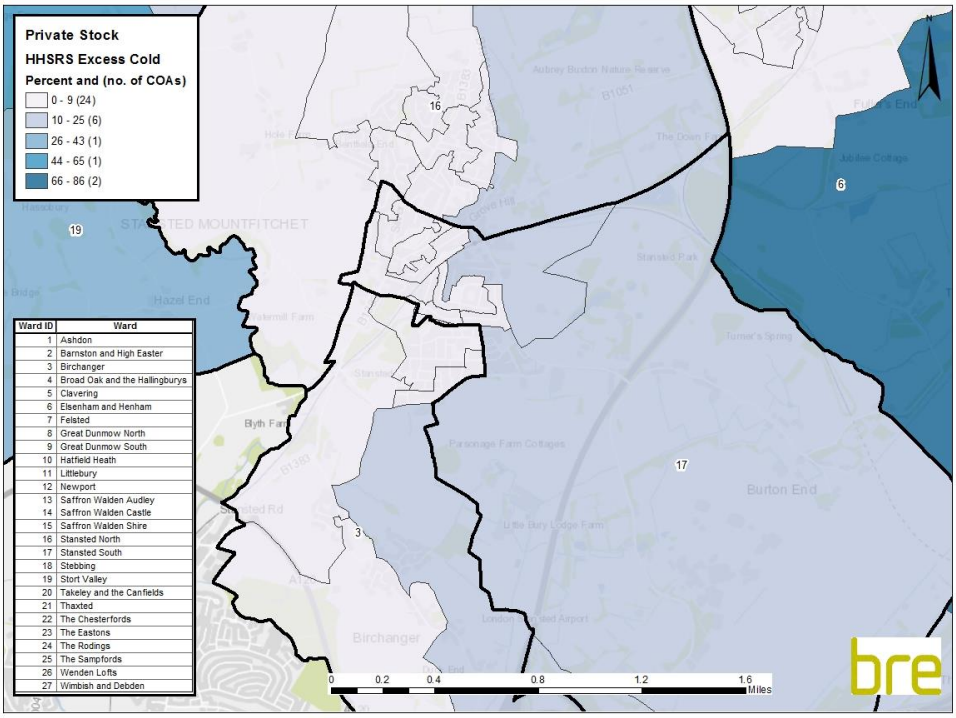
Map D. 3: Great Dunmow area category 1 hazards – private stock



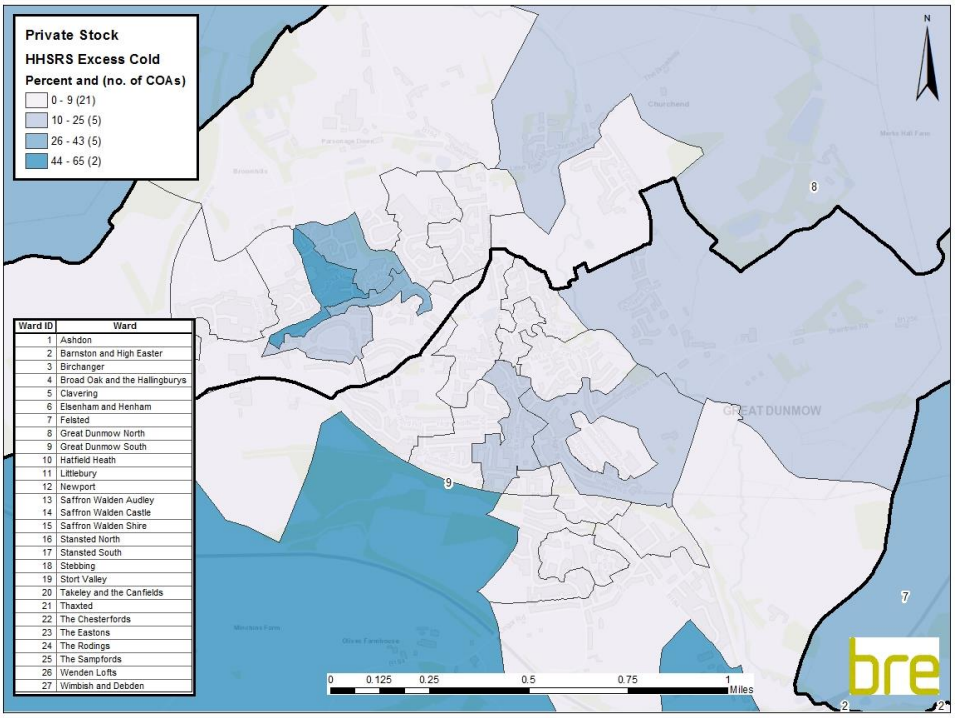
Map D. 4: Saffron Waldon area households with excess cold – private stock



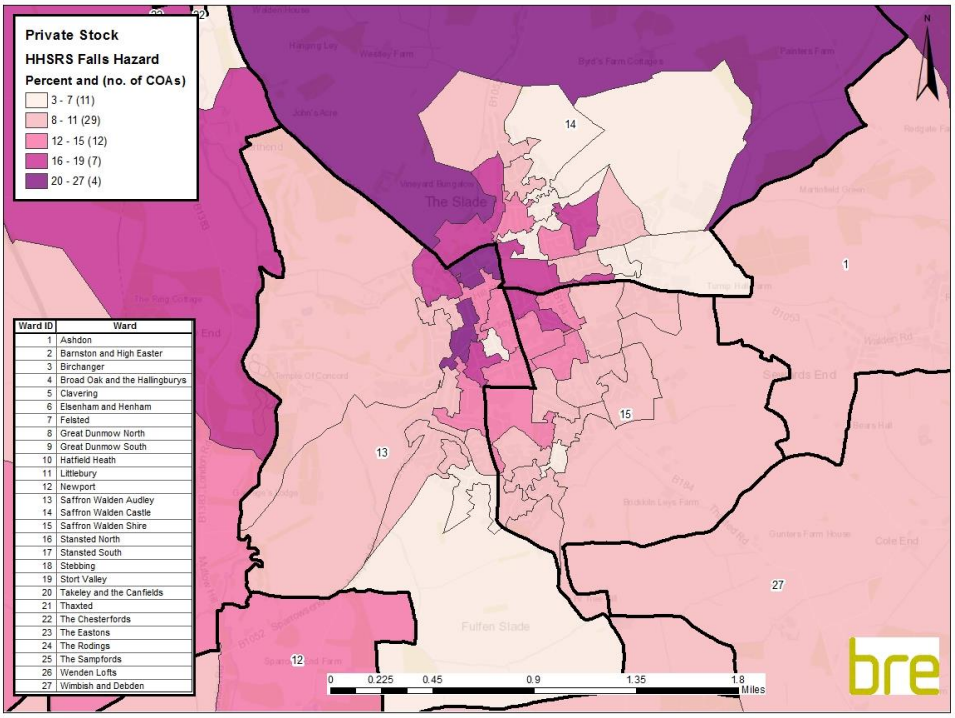
Map D. 5: Stansted Mountfitchet area households with excess cold – private stock



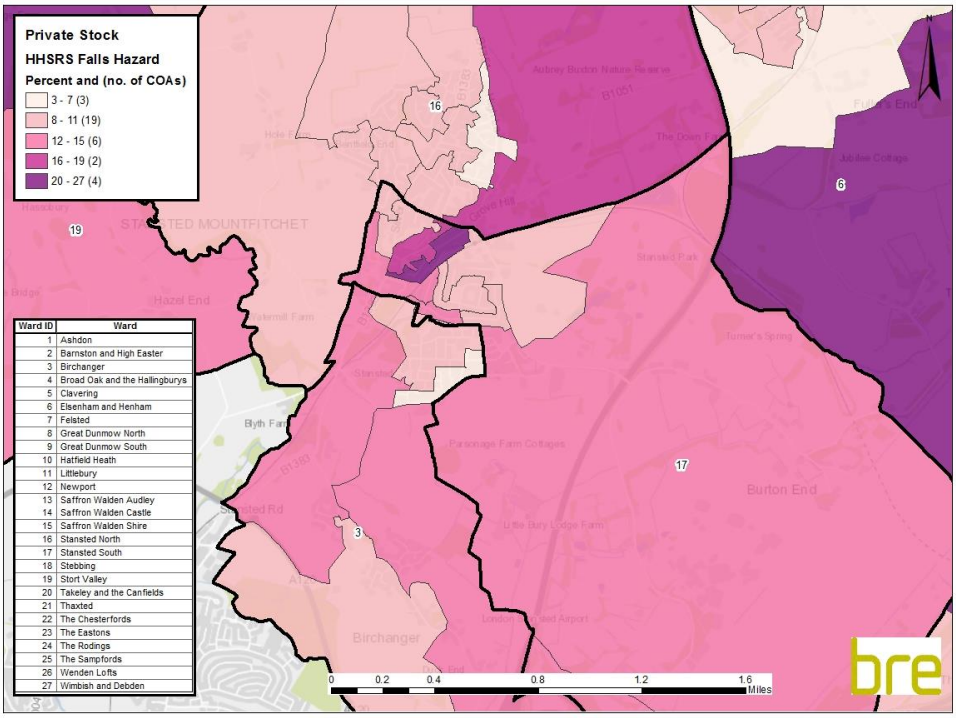
Map D. 6: Great Dunmow area households with excess cold – private stock



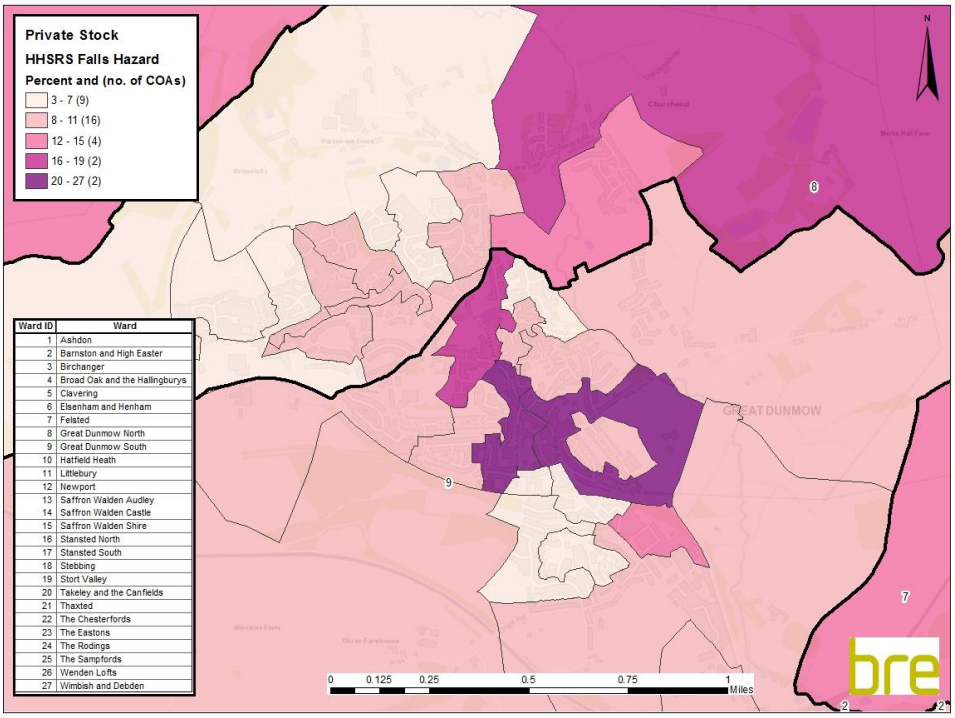
Map D. 7: Saffron Waldon area households with falls hazards – private stock



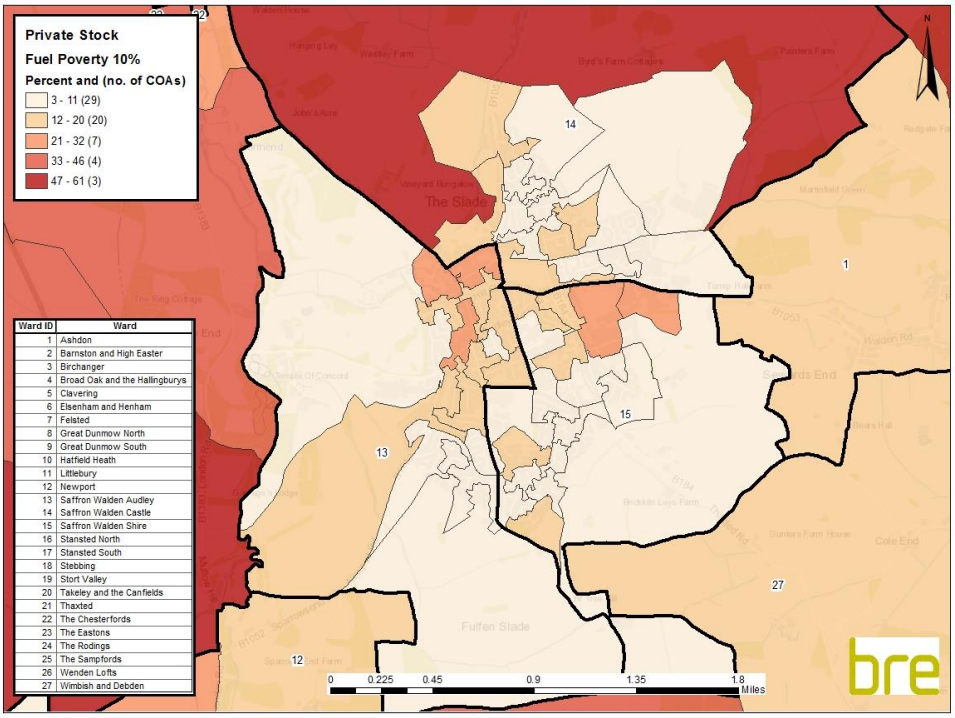
Map D. 8: Stansted Mountfitchet area households with falls hazards – private stock



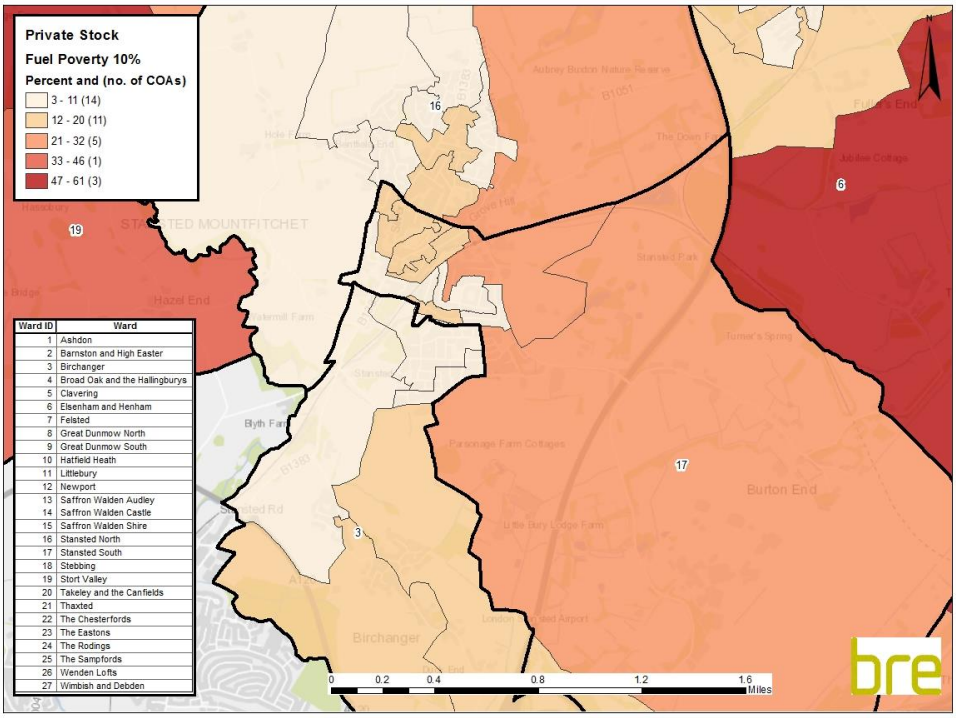
Map D. 9: Great Dunmow area households with falls hazards – private stock



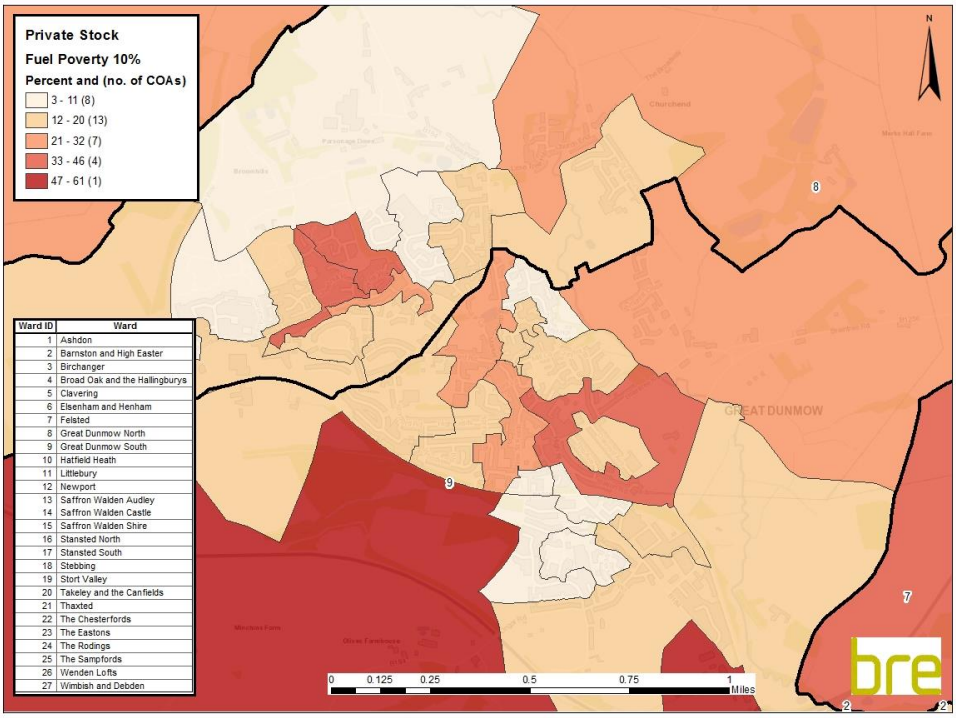
Map D. 10: Saffron Waldon area fuel poverty (10% definition) – private stock



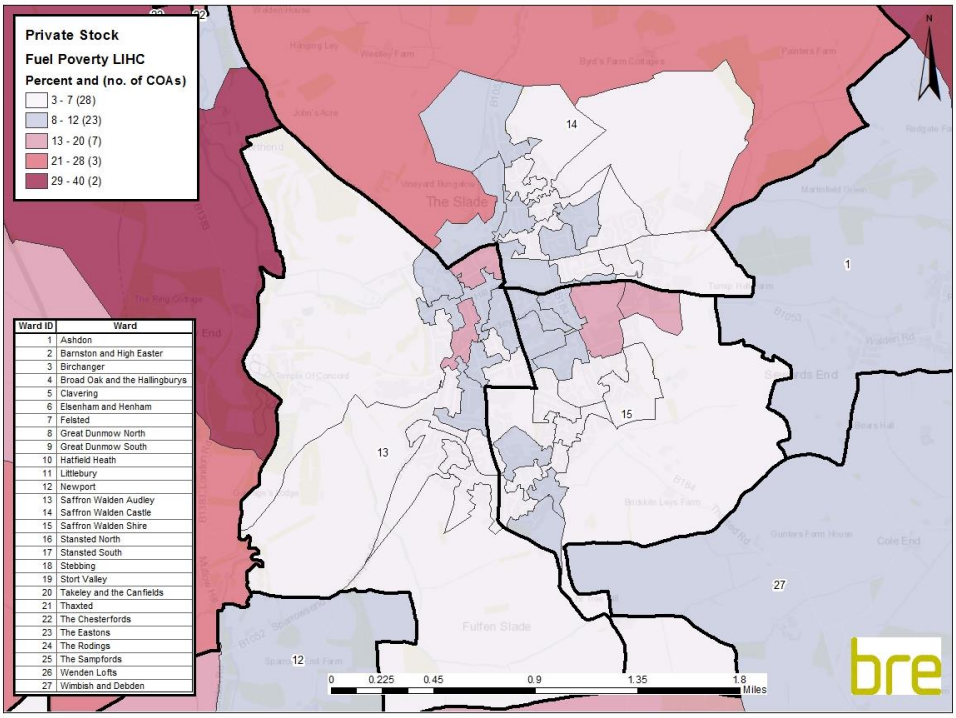
Map D. 11: Stansted Mountfitchet area fuel poverty (10% definition) – private stock



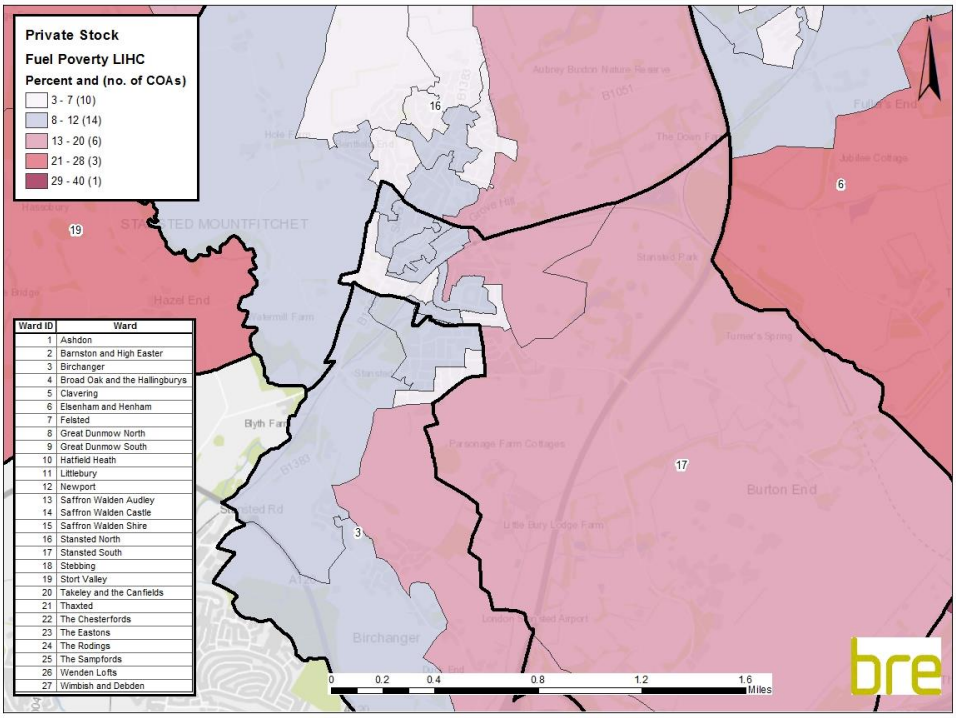
Map D. 12: Great Dunmow area fuel poverty (10% definition) – private stock



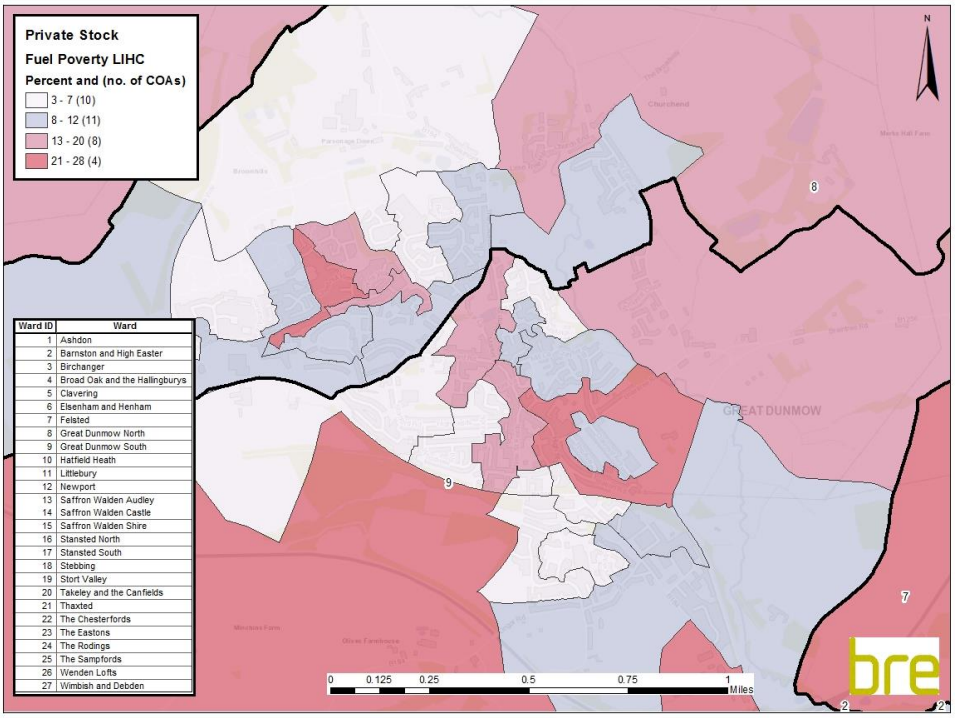
Map D. 13: Saffron Waldon area fuel poverty (LIHC definition) – private stock



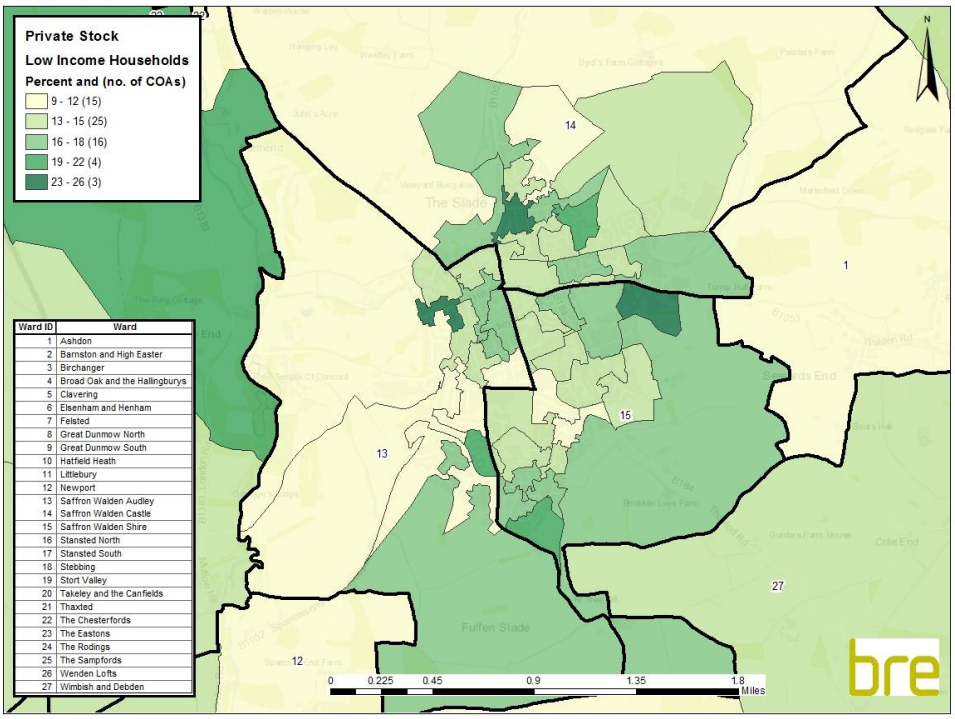
Map D. 14: Stansted Mountfitchet area fuel poverty (LIHC definition) – private stock



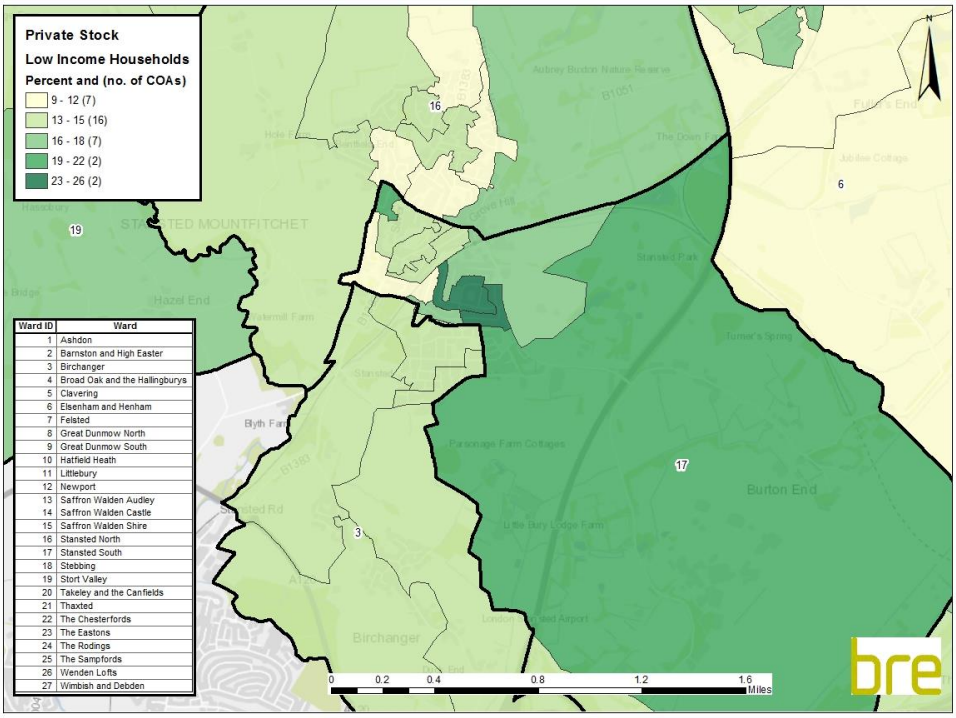
Map D. 15: Great Dunmow area fuel poverty (LIHC definition) – private stock



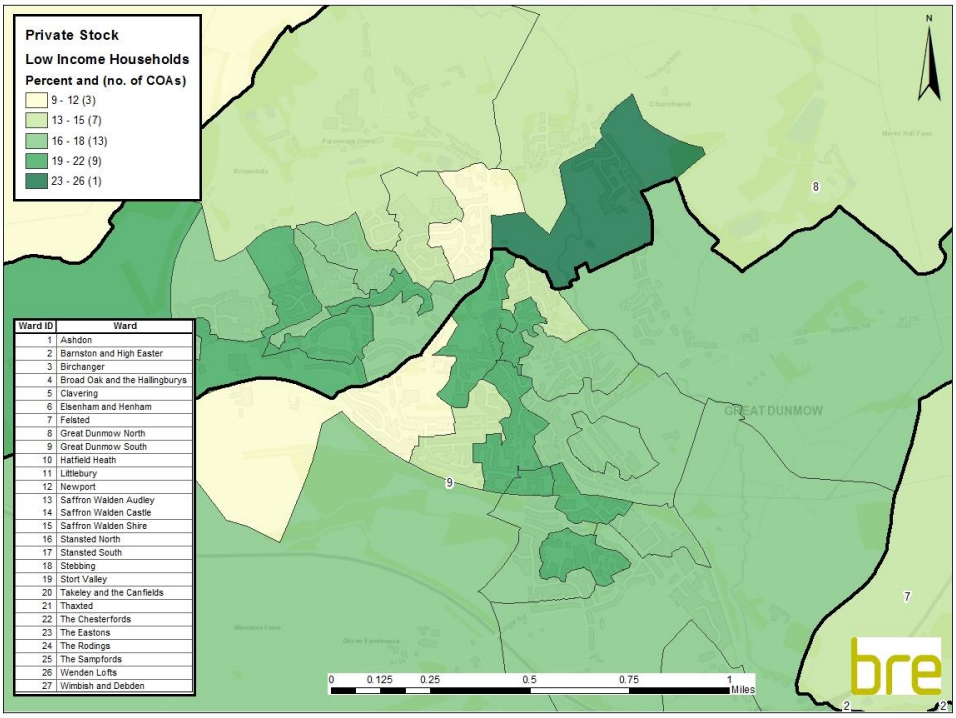
Map D. 16: Saffron Waldon area households in low income – private stock



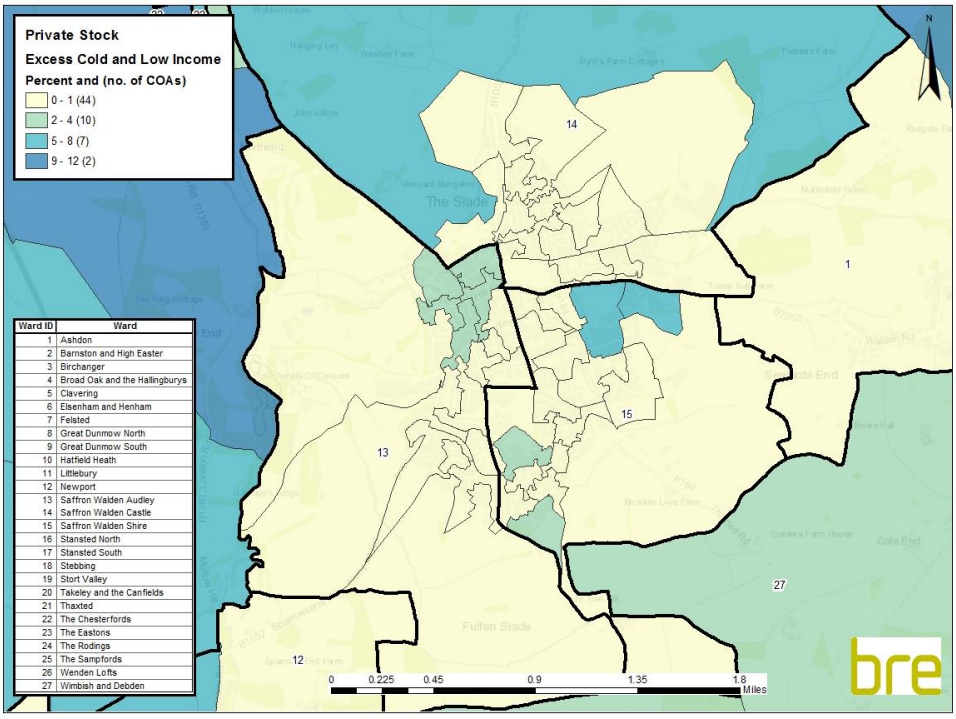
Map D. 17: Stansted Mountfitchet area households in low income – private stock



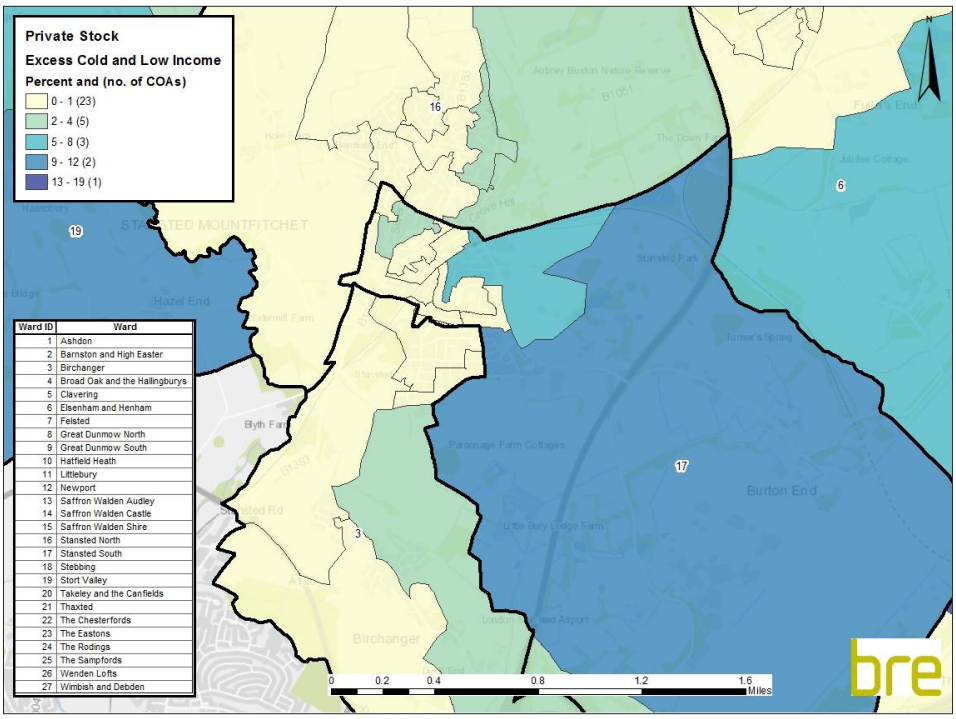
Map D. 18: Great Dunmow area households in low income – private stock



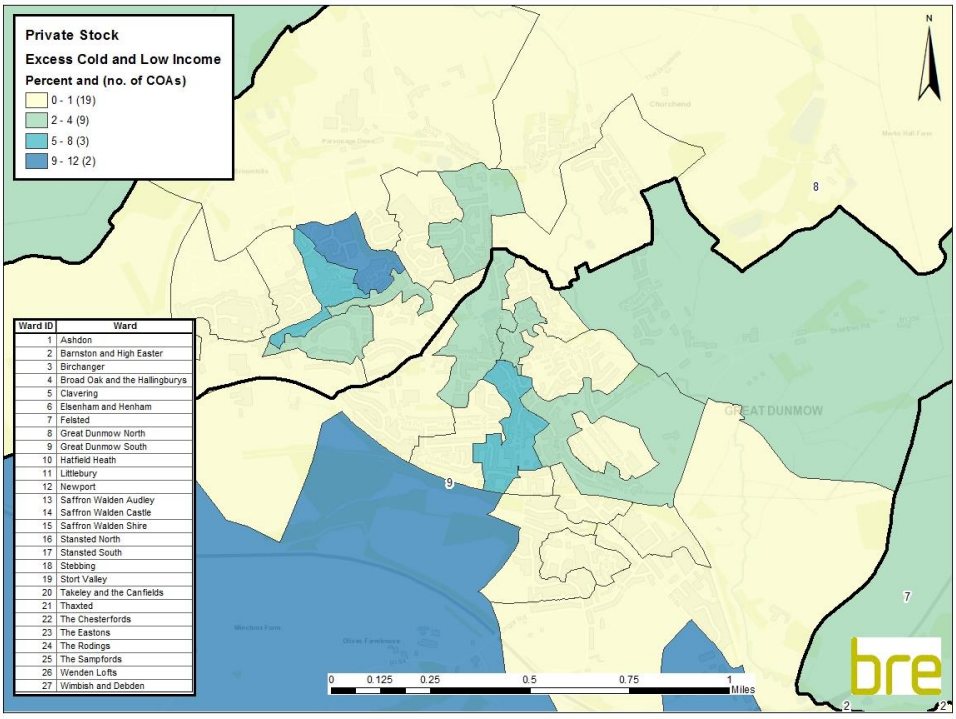
Map D. 19: Saffron Waldon households with excess cold and low income – private stock



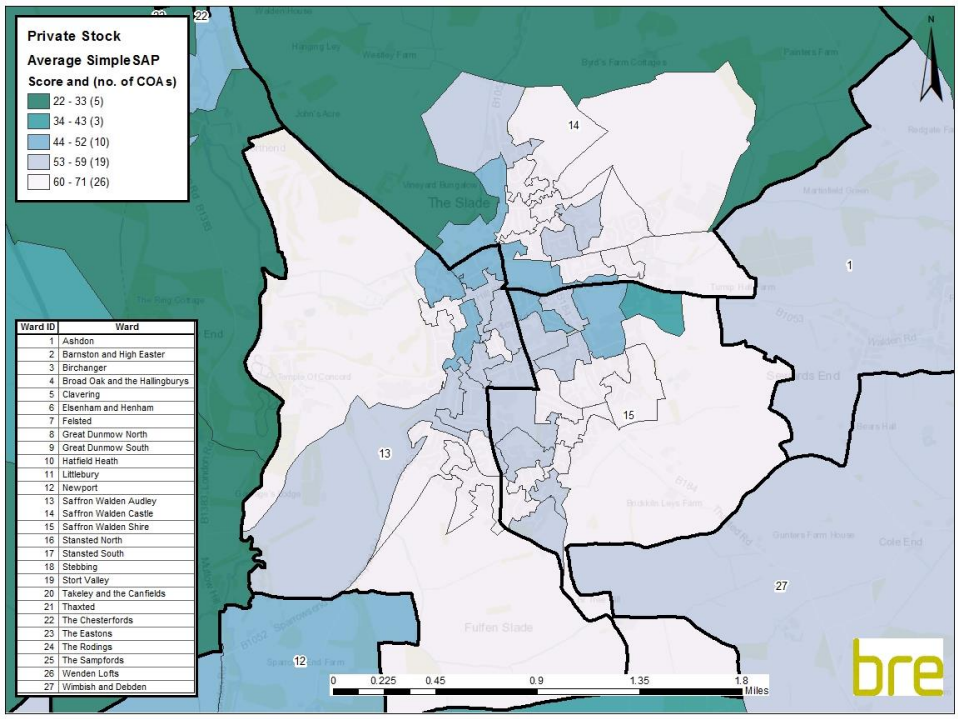
Map D. 20; Stansted Mountfitchet households with excess cold and low income – private stock



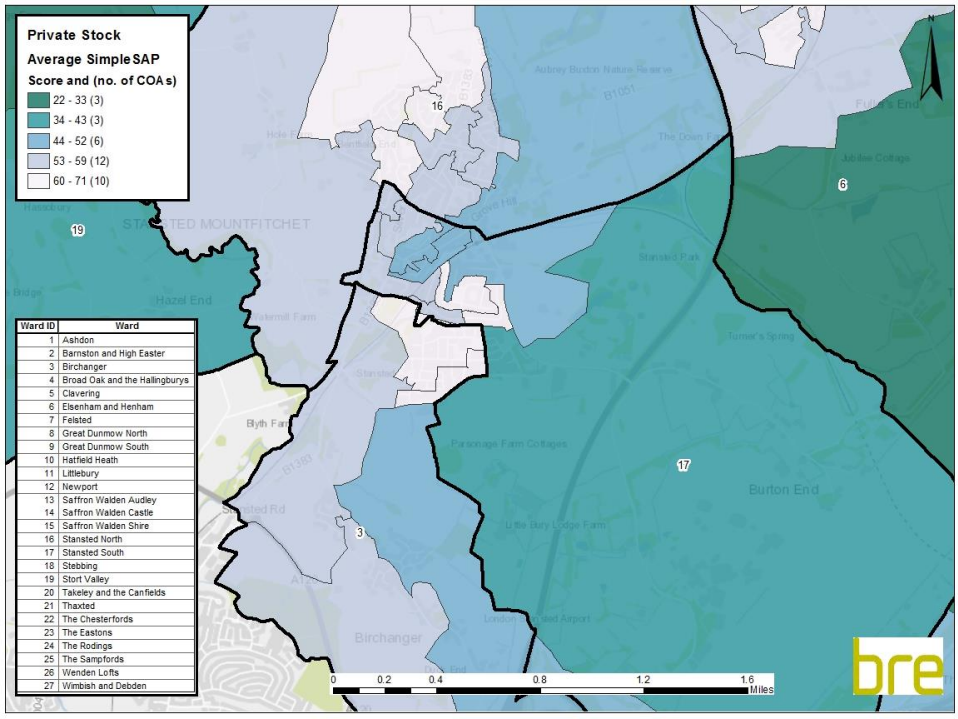
Map D. 21: Great Dunmow households with excess cold and low income – private stock



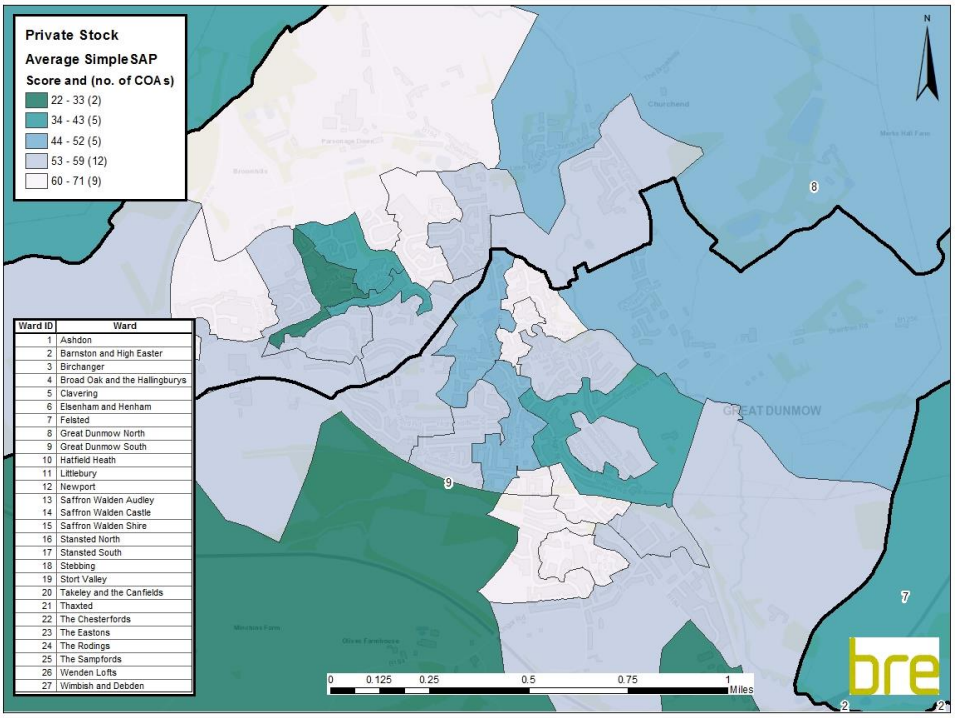
Map D. 22: Saffron Waldon area average SimpleSAP – private stock



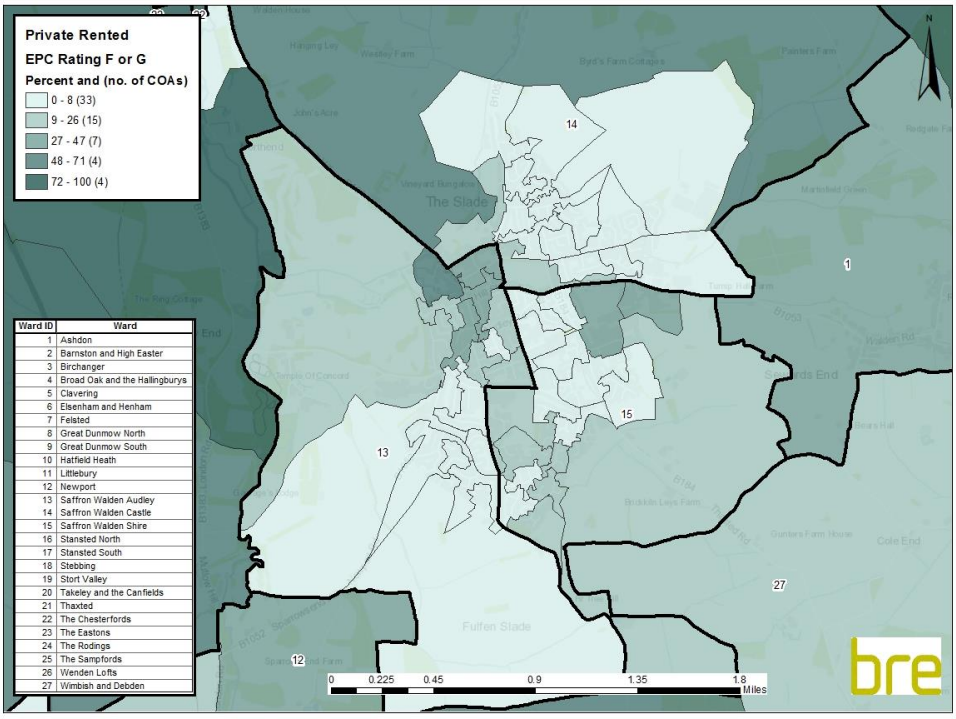
Map D. 23: Stansted Mountfitchet area average SimpleSAP – private stock



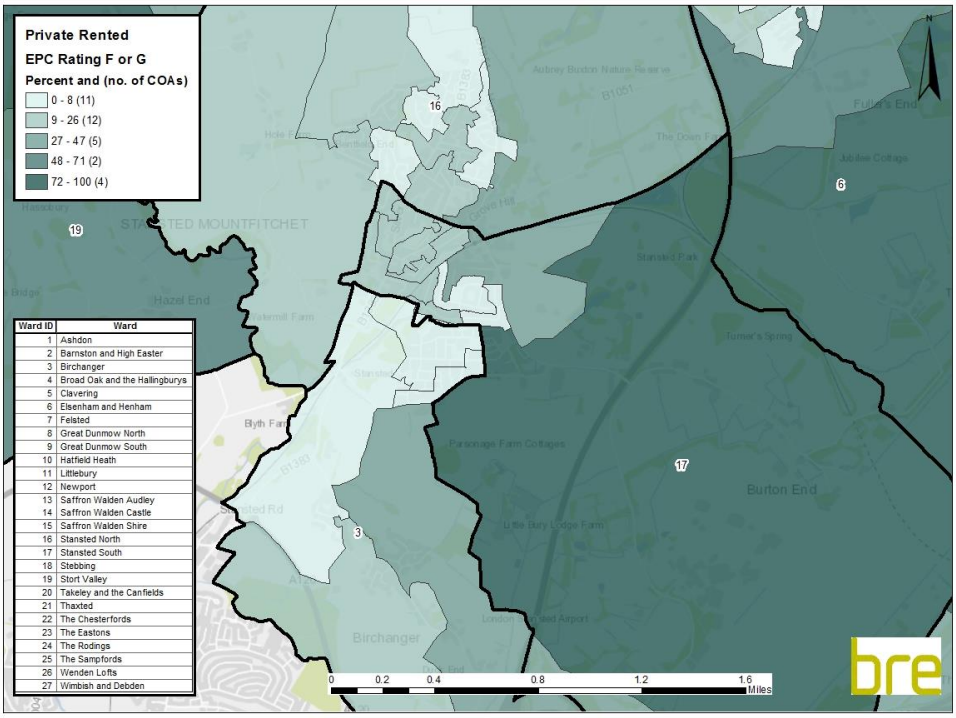
Map D. 24: Great Dunmow area average SimpleSAP – private stock



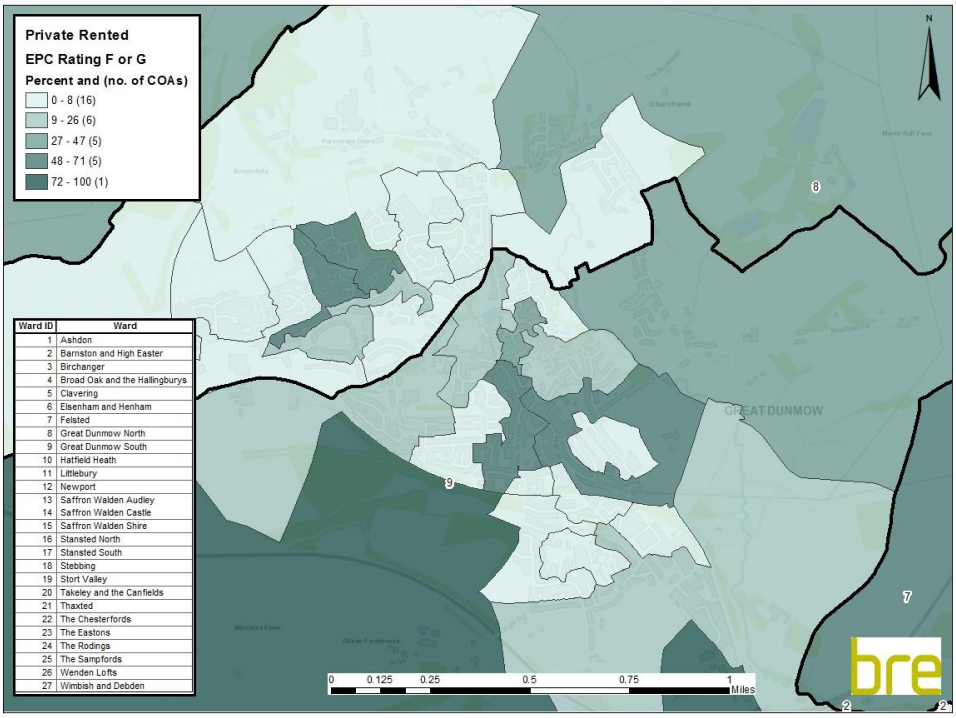
Map D. 25: Saffron Waldon area households with EPC Ratings F or G – private rented stock



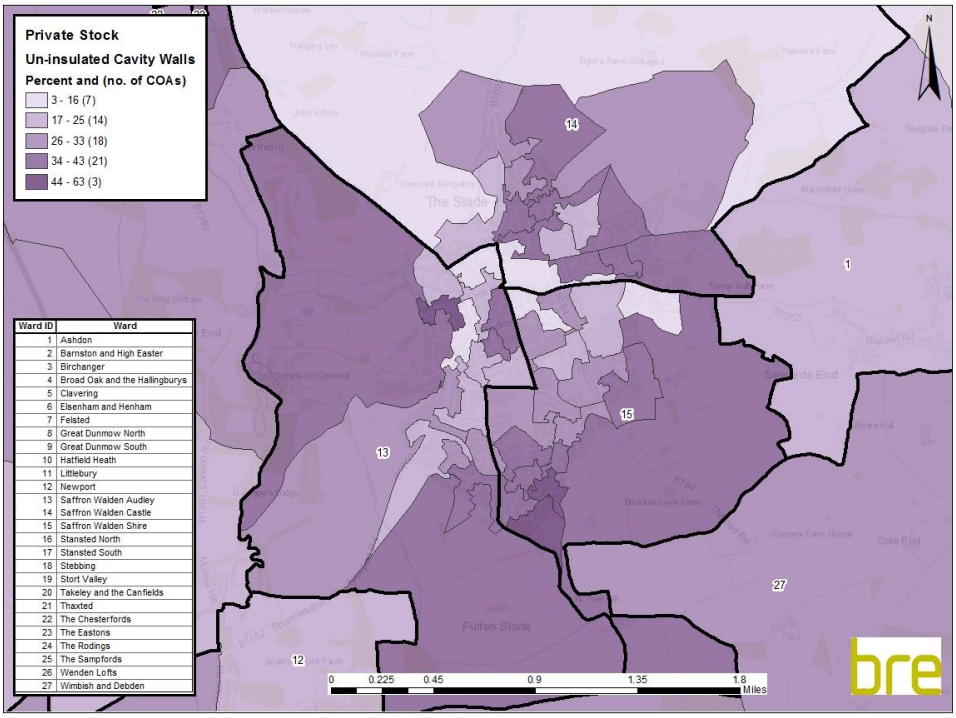
Map D. 26: Stansted Mountfitchet households with EPC Ratings F or G – private rented stock



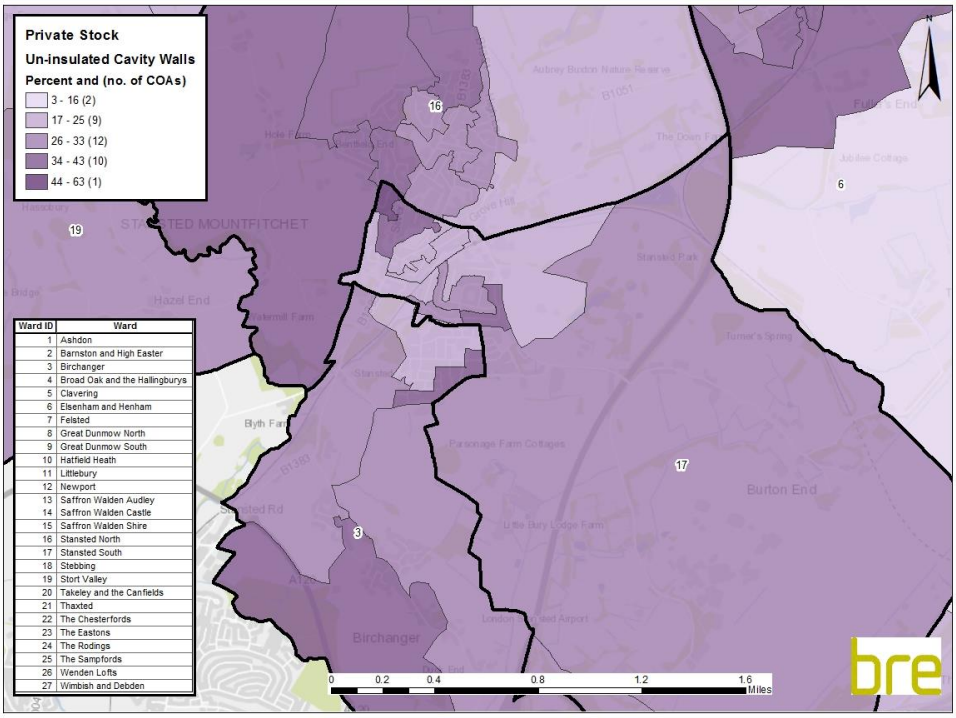
Map D. 27: Great Dunmow area households with EPC Ratings F or G – private rented stock



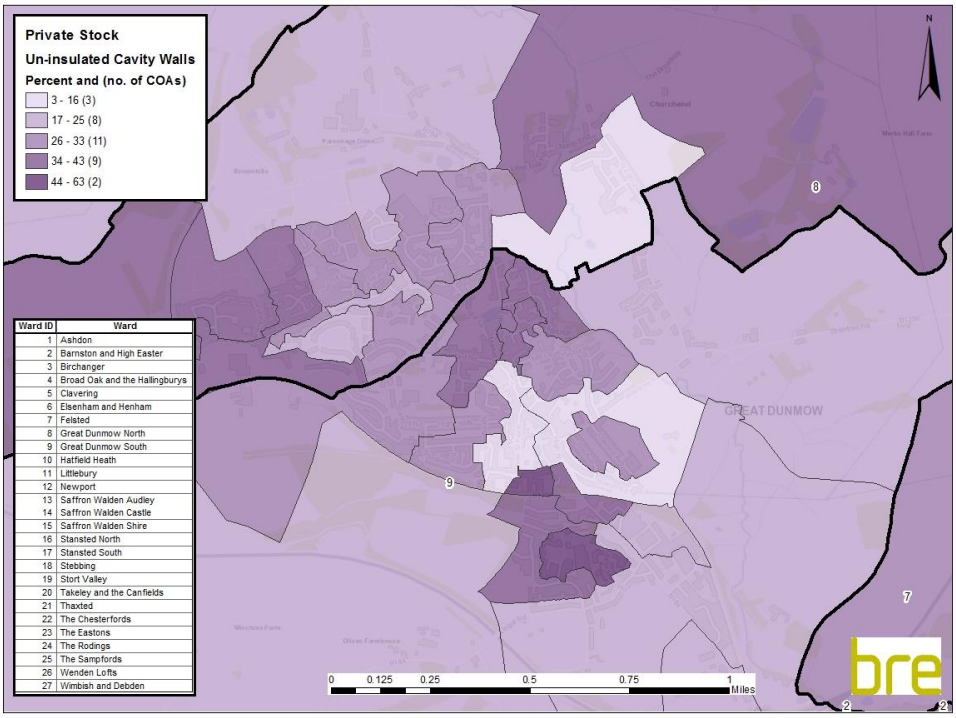
Map D. 28: Saffron Waldon area households with un-insulated cavity walls



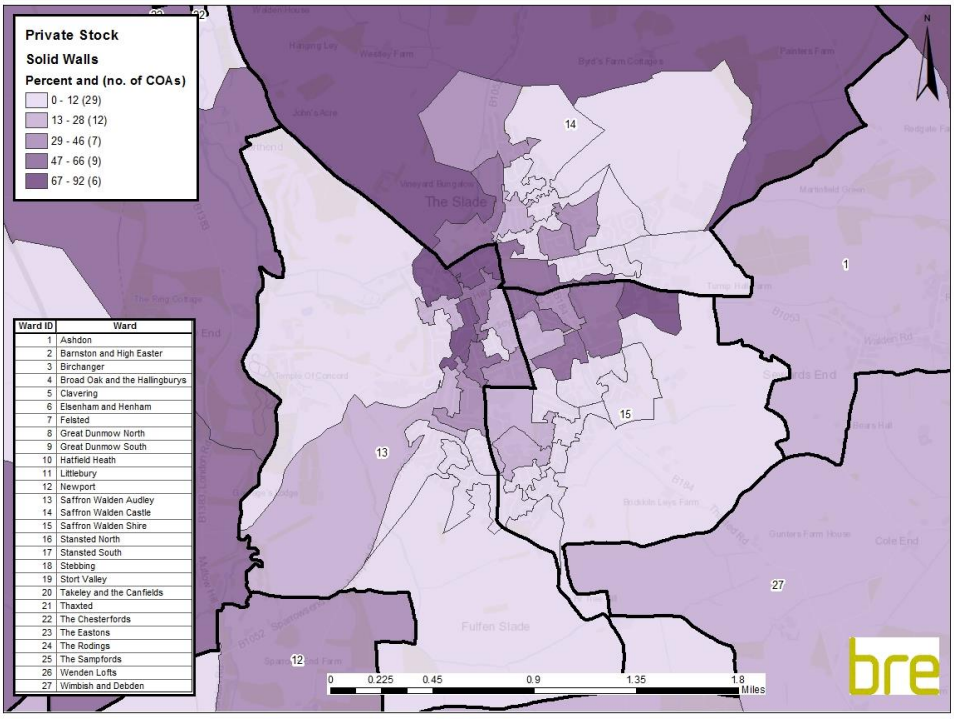
Map D. 29: Stansted Mountfitchet area households with un-insulated cavity walls



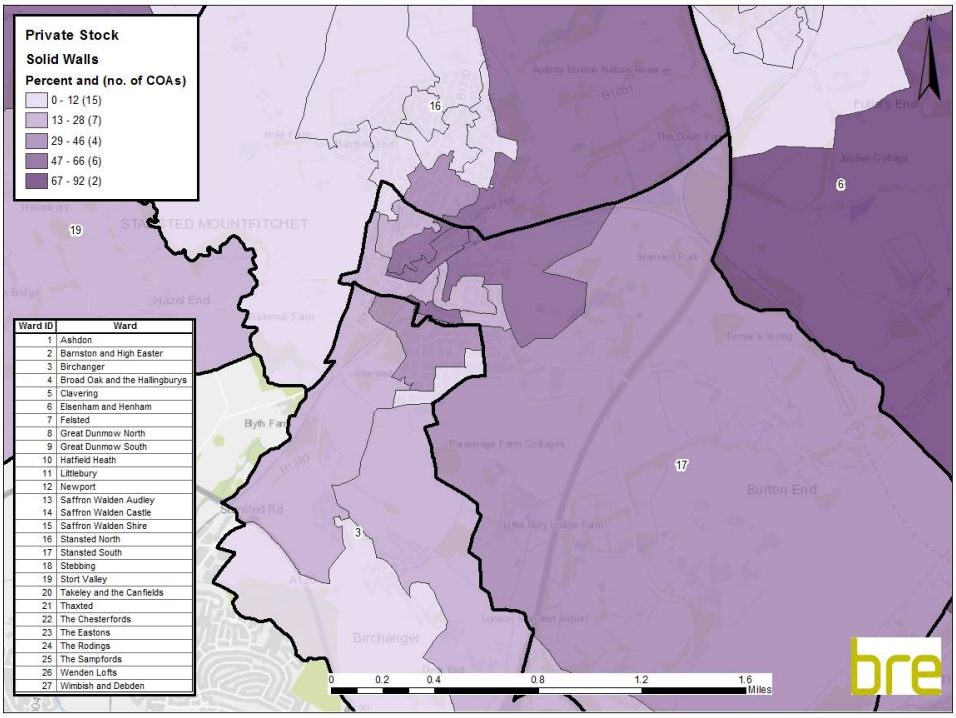
Map D. 30: Great Dunmow area households with un-insulated cavity walls



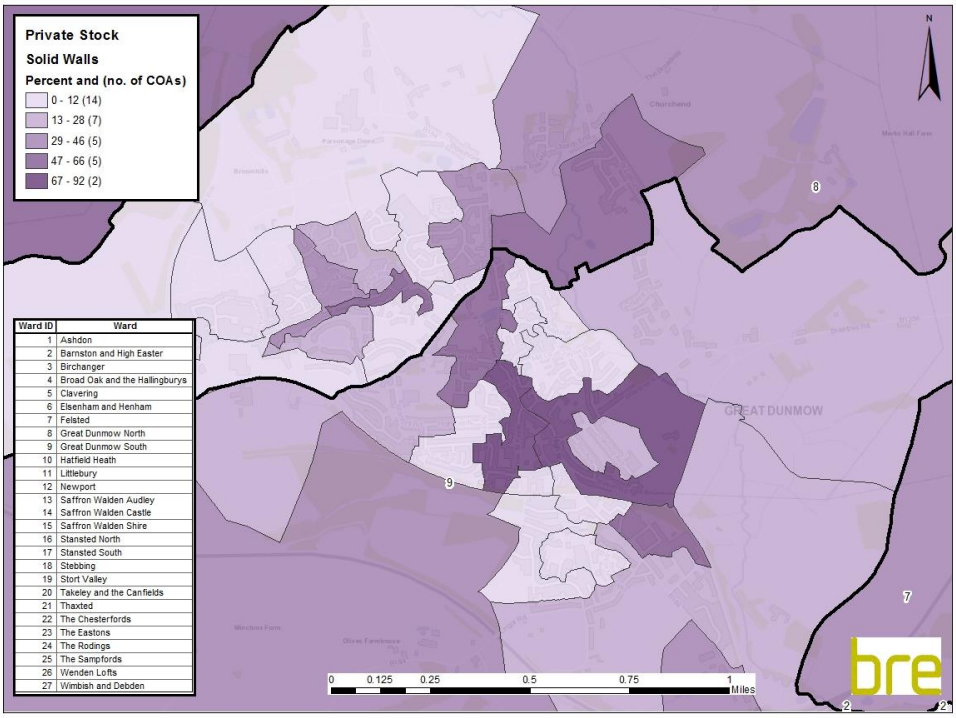
Map D. 31: Saffron Waldon area households with solid walls



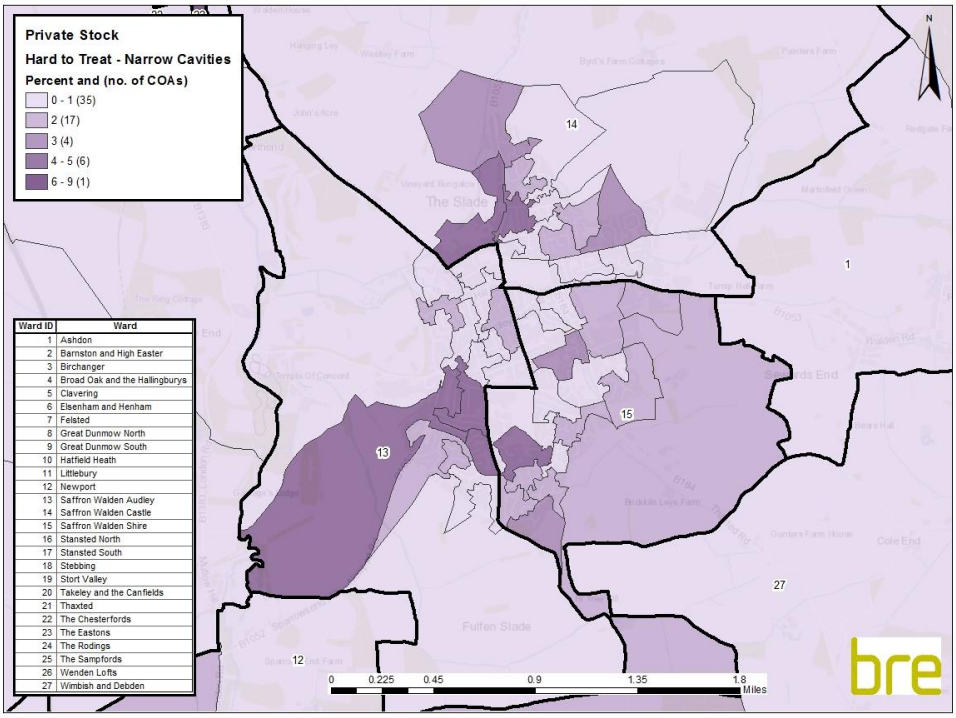
Map D. 32: Stansted Mountfitchet area households with solid walls



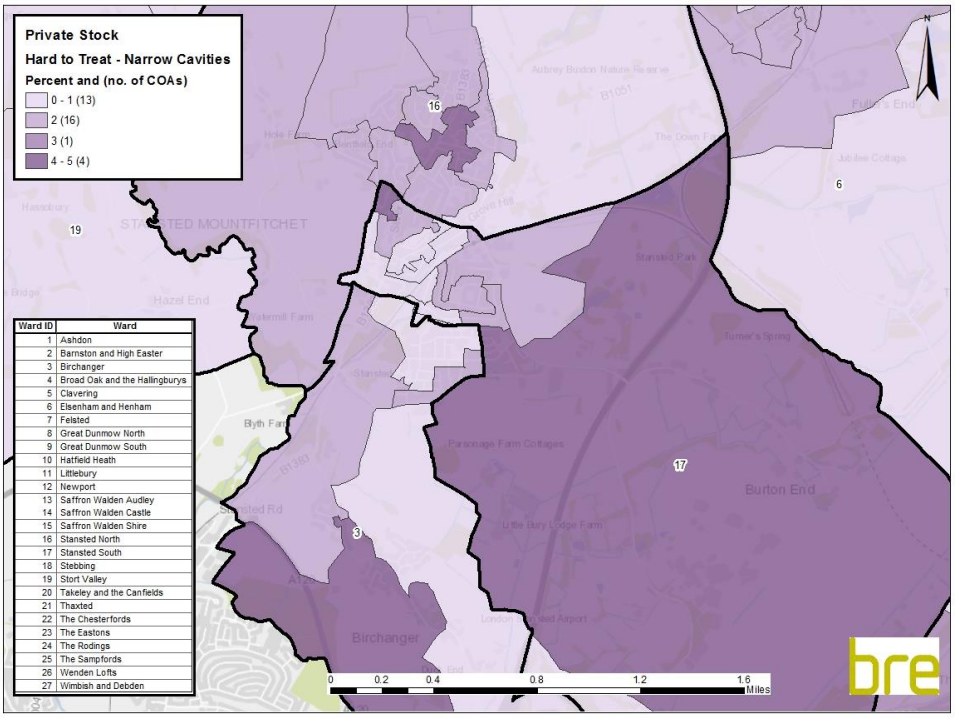
Map D. 33: Great Dunmow area households with solid walls



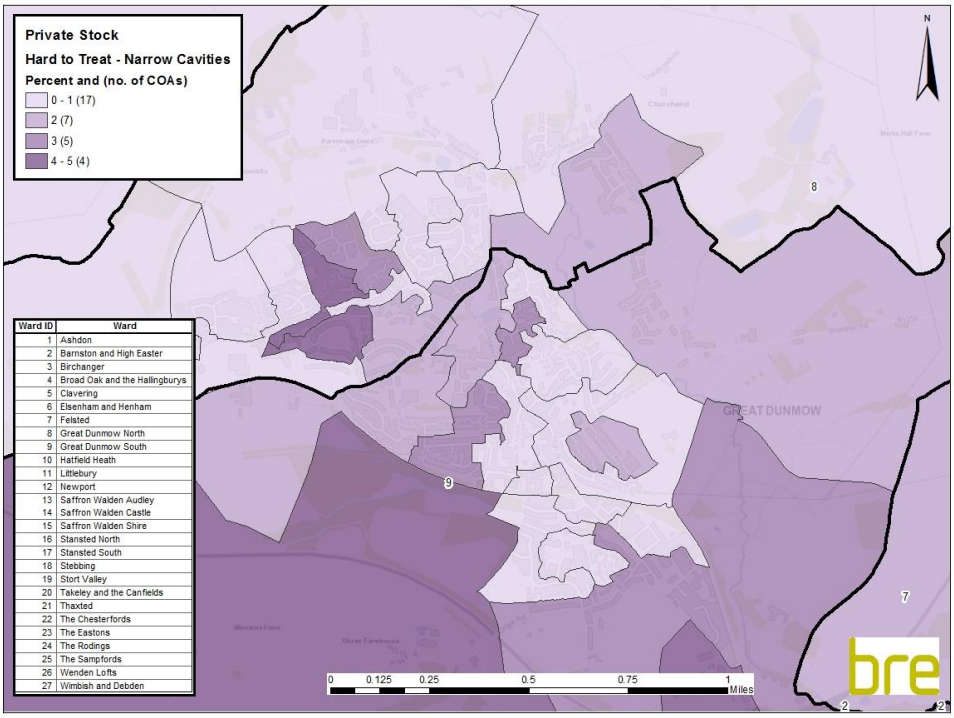
Map D. 34: Saffron Waldon area households with un-insulated narrow cavity walls



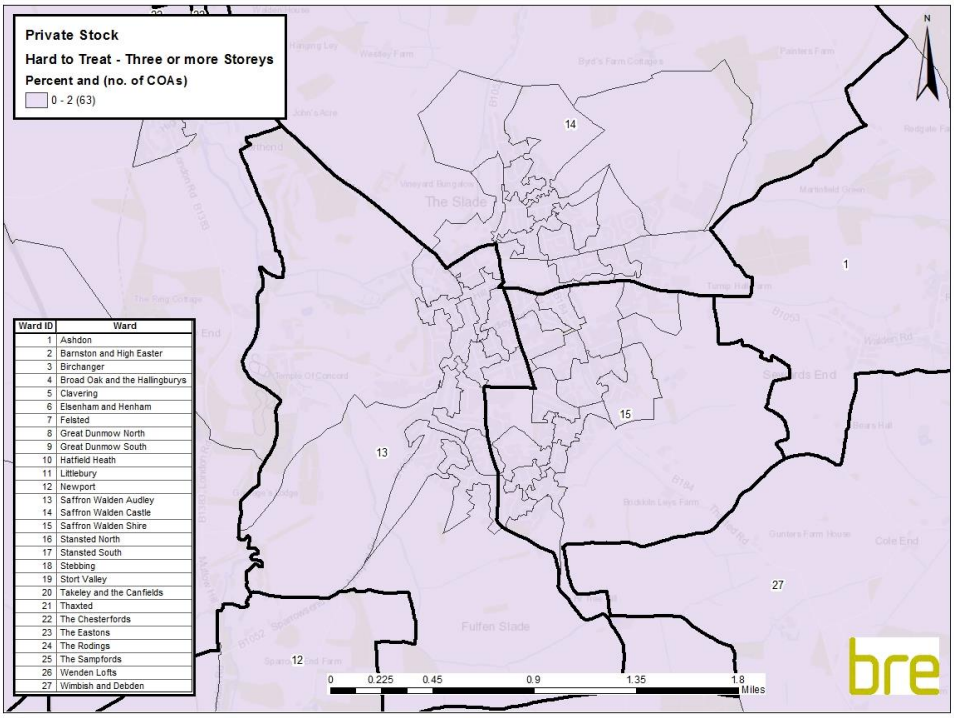
Map D. 35: Stansted Mountfitchet area households with un-insulated narrow cavity walls



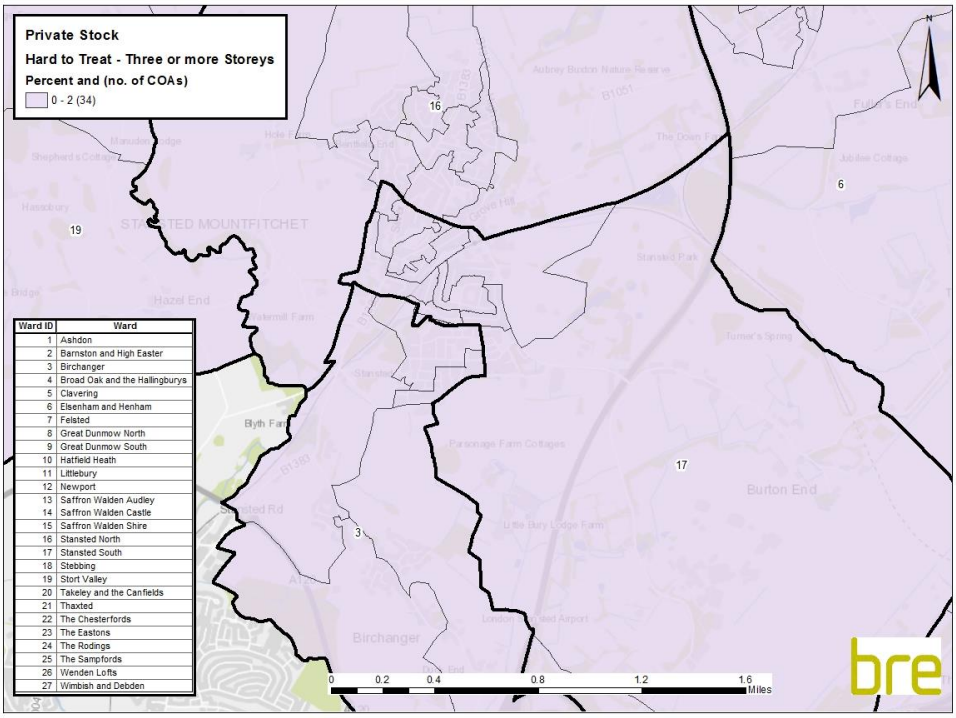
Map D. 36: Great Dunmow area households with un-insulated narrow cavity walls



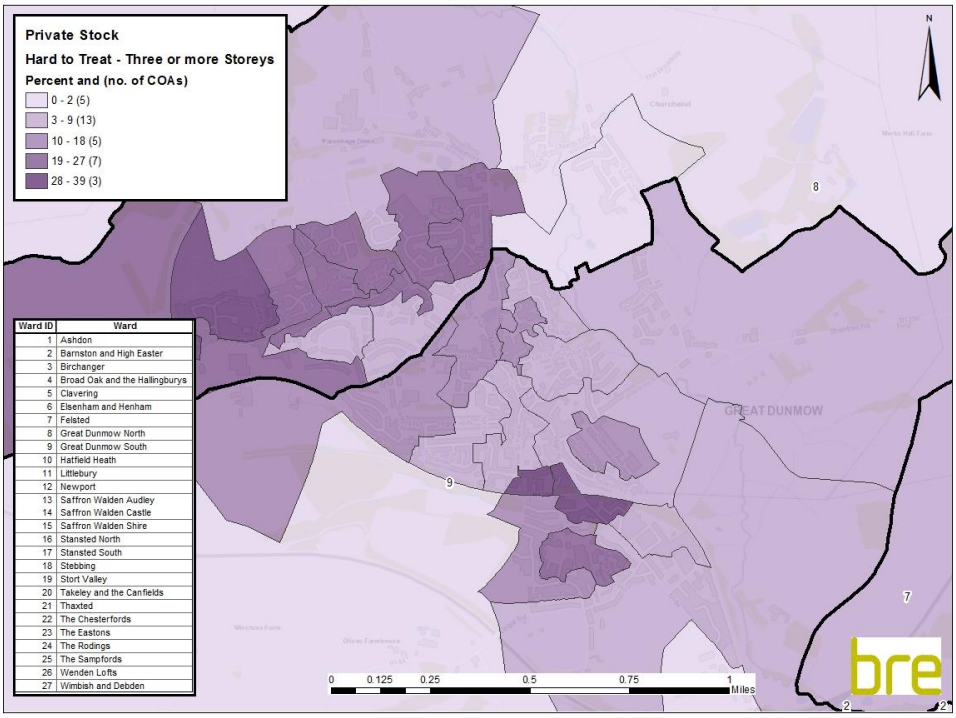
Map D. 37: Saffron Waldon area households with 3 or more storeys and un-insulated cavity walls



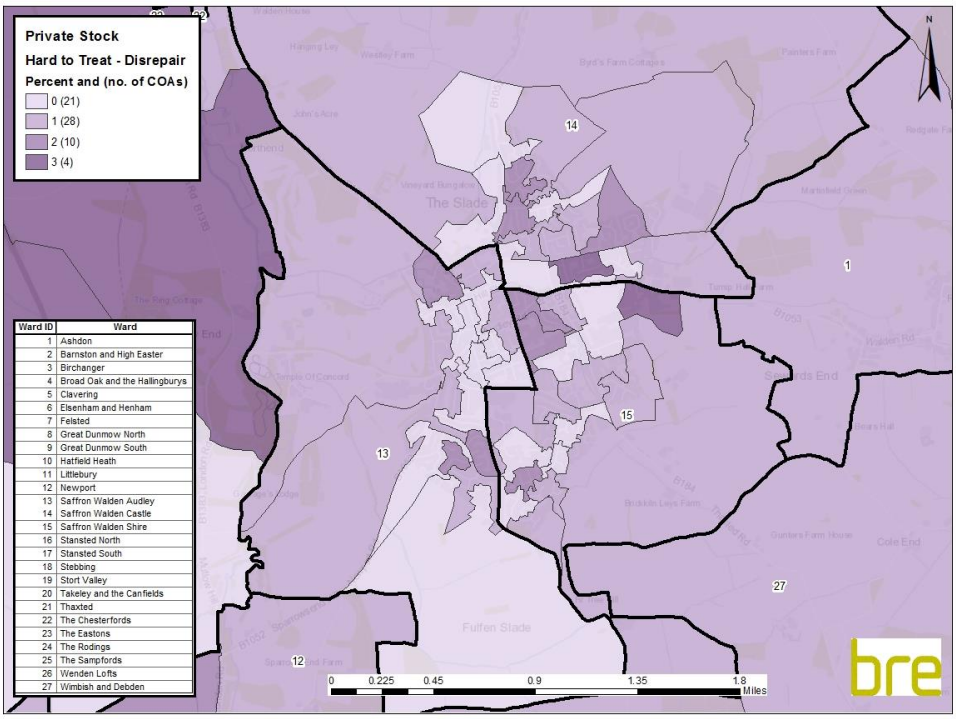
Map D. 38: Stansted Mountfitchet area households with 3 or more storeys and un-insulated cavity walls



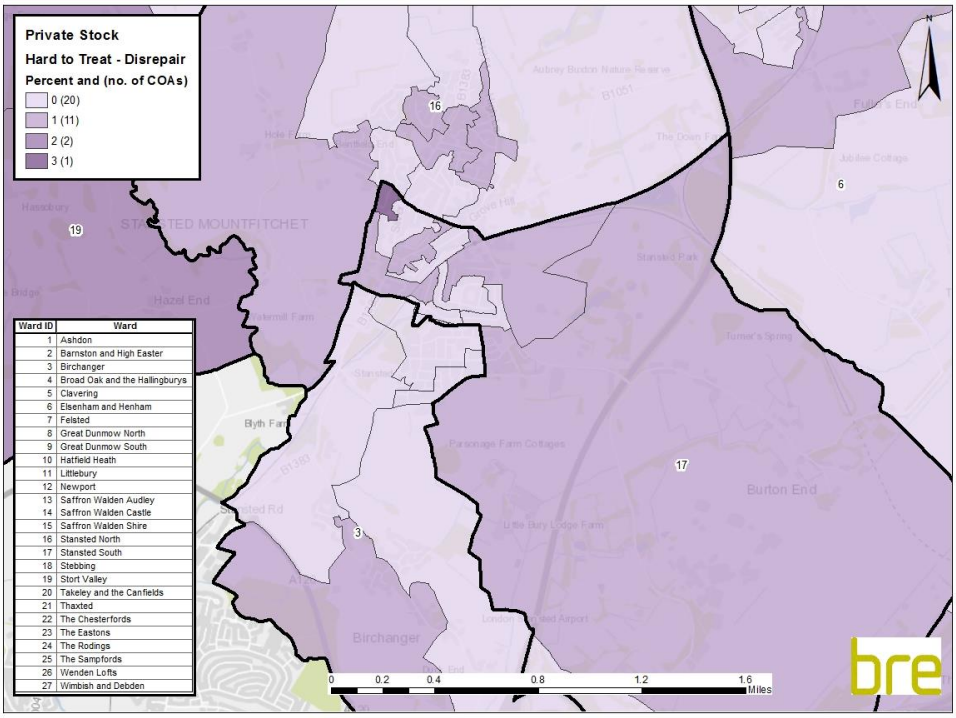
Map D. 39: Great Dunmow area households with 3 or more storeys and un-insulated cavity walls



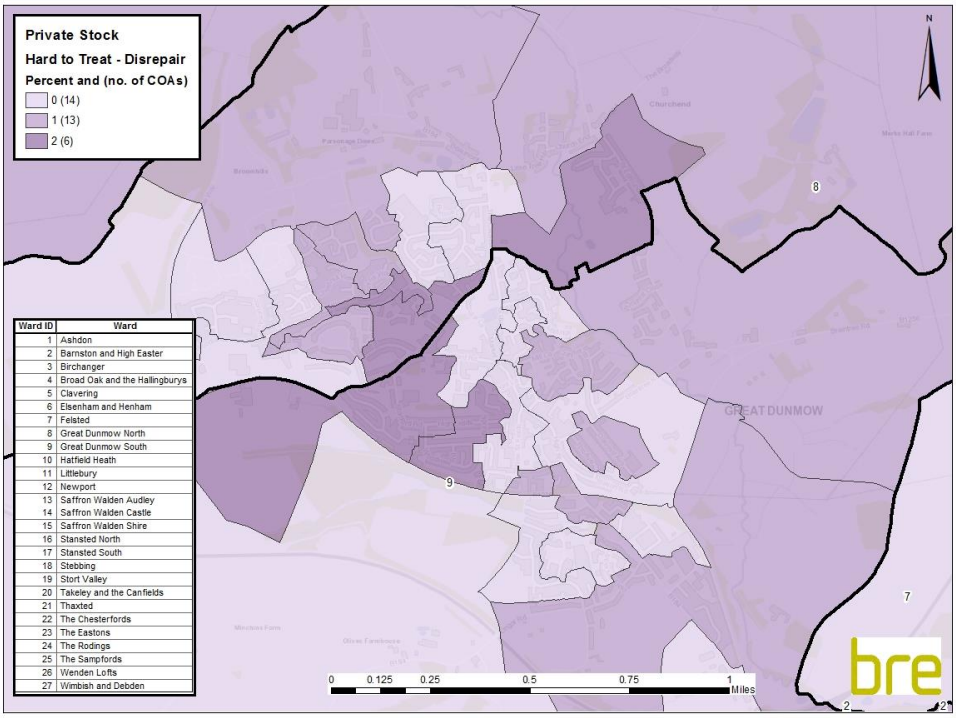
Map D. 40: Saffron Waldon area households in disrepair with un-insulated cavity walls



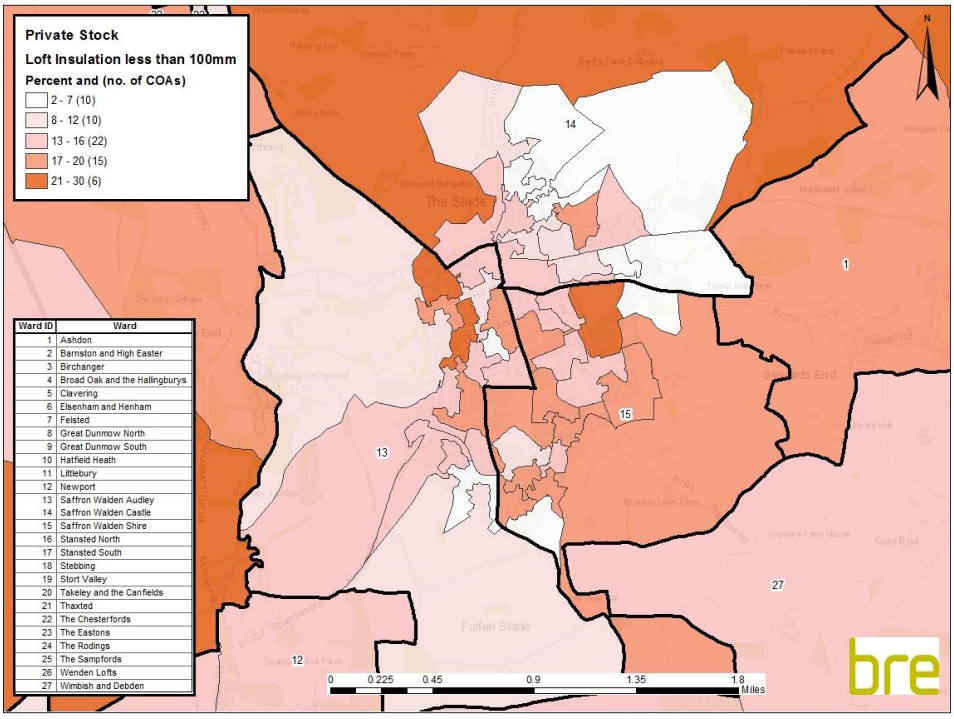
Map D. 41: Stansted Mountfitchet area households in disrepair with un-insulated cavity walls



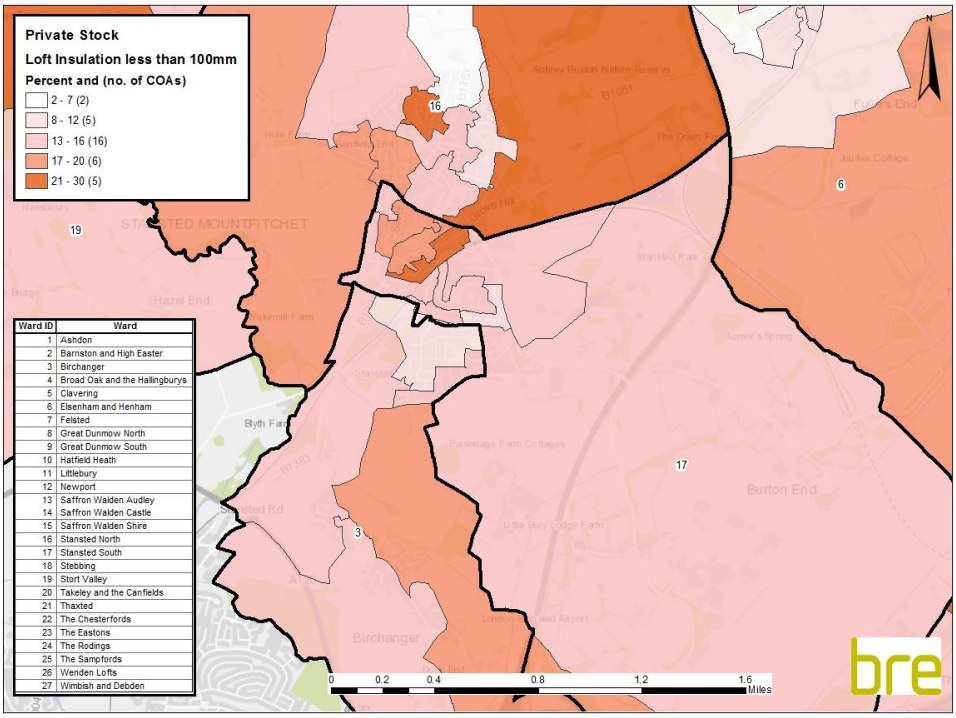
Map D. 42: Great Dunmow area households in disrepair with un-insulated cavity walls



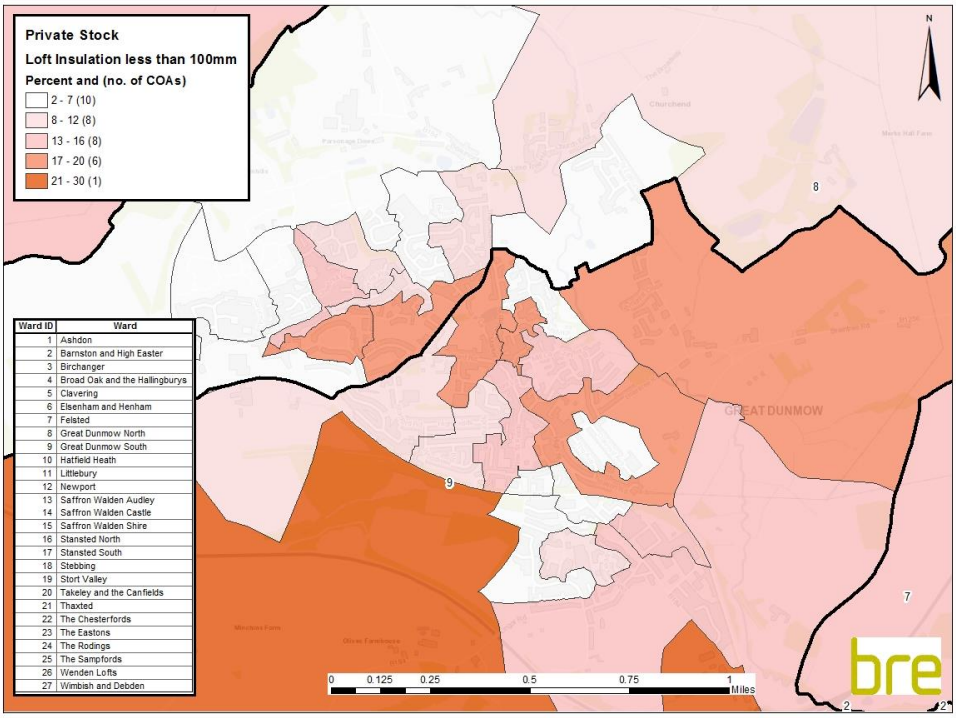
Map D. 43: Saffron Waldon area households with <100mm, or no loft insulation



Map D. 44: Stansted Mountfitchet area households with <100mm, or no loft insulation



Map D. 45: Great Dunmow area households with <100mm, or no loft insulation



Glossary of terms

BREDEM	BRE Domestic Energy Model
Category 1 hazard	Hazards with a HHSRS score of > 1,000. A dwelling with a category 1 hazard is considered to fail the minimum statutory standard for housing
CLG	Department for Communities and Local Government
COA	Census Output Area
	Designed for statistical purposes, built from postcode units, approximately 125 households
DCLG	Department for Communities and Local Government
ECO	Energy Companies Obligation
	Places legal obligations on the larger energy suppliers to deliver energy efficiency measures to domestic energy users
EHS	English Housing Survey
	A continuous national survey commissioned by the Department for Communities and Local Government (DCLG). It collects information about people's housing circumstances and the condition and energy efficiency of housing in England
EPC	Energy Performance Certificate
	Present the energy efficiency of domestic properties on a scale of A (most efficient) to G (least efficient)
Fuel poverty	The original definition of fuel poverty states that a household is in fuel poverty if it needs to spend more than 10% of their income on fuel to maintain an adequate level of warmth (10% definition). The new definition now adopted by government is that a household is said to be in fuel poverty if they have fuel costs that are above average and were they to spend that amount they would be left with a residual income below the official poverty line (Low Income High Costs definition)
GIS	Geographic Information System
	A system designed to capture, store, manipulate, analyse, manage and present spatial or geographical data
HHSRS	Housing Health and Safety Rating System
	A risk assessment tool to help local authorities identify and protect against potential risks and hazards to health and safety related deficiencies in dwellings, covering 29 categories of hazards

HIA	Health Impact Assessment A formal method of assessing the impact of a project, procedure or strategy on the health of a population
HMO	Houses in Multiple Occupation An entire house or flat which is let to 3 or more tenants who form 2 or more households and who share a kitchen, bathroom or toilet A house which has been converted entirely into bedsits or other non-self-contained accommodation and which is let to 3 or more tenants who form two or more households and who share kitchen, bathroom or toilet facilities A converted house which contains one or more flats which are not wholly self-contained (i.e. the flat does not contain within it a kitchen, bathroom and toilet) and which is occupied by 3 or more tenants who form two or more households A building which is converted entirely into self-contained flats if the conversion did not meet the standards of the 1991 Building Regulations and more than one-third of the flats are let on short-term tenancies In order to be an HMO the property must be used as the tenants' only or main residence and it should be used solely or mainly to house tenants. Properties let to students and migrant workers will be treated as their only or main residence and the same will apply to properties which are used as domestic refuges
HSM	Housing Stock Model Desktop based modelling used to determine the condition of the housing stock
Jenks' Natural Breaks	The natural breaks classification method is a data clustering method determining the best arrangement of values into different classes. It is achieved through minimising each class's average deviation from the class mean while maximising each class's deviation from the means of the other groups. The method seeks to reduce the variance within classes and maximise variance between classes thus ensuring groups are distinctive
JSNA	Joint Strategic Needs Assessment An assessment of the current and future health and social care needs of the local community
LACORs	Local Authority Coordinators of Regulatory Services – now renamed Local Government Regulation
LAHS	Local Authority Housing Statistics National statistics on housing owned and managed by local authorities

LIHC	Low Income High Cost
	Measure of fuel poverty, considers a household to be in fuel poverty if required fuel costs are above average, or if they were to spend that amount they would be left with a residual income below the official poverty line
LLPG	Local Land and Property Gazetteer
	An address database maintained by local authorities
LSOA	Lower Super Output Area
	Designed for statistical purposes, built from census output areas, approximately 400 households
MSOA	Medium Super Output Area
	Designed for statistical purposes, built from lower super output areas, approximately 2,000 households
NHS	National Health Service
Older people	People over 65 for the excess cold hazard, people over 60 for the fire and fall hazards (excl. falling between levels)
OS	Ordnance Survey
Poor housing	Dwellings where a category 1 hazard is present
Private sector housing	Housing not owned by the local authority or a housing association
SAP	Standard Assessment Procedure
	Method system for measurement of energy rating of residential buildings.
SimpleSAP	An estimate of a residential dwelling's likely SAP score, it is not based on the full required range of data for a SAP calculation or a reduced data SAP calculation (RDSAP), it should only ever be considered an estimate of the SAP score, and used as a guide
UPRN	Unique Property Reference Number
	A unique 12 digit number assigned to every unit of land and property recorded by local authorities as part of their LLPG
Vulnerable persons	Persons who are more likely to be affected by the particular hazard as defined by the HHSRS Operating Guidance

Report Ends