

Cambridge Centre
for Housing &
Planning Research

Private sector housing in North Herts: a secondary data analysis

Final Report to NHDC

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**UNIVERSITY OF
CAMBRIDGE**

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Introduction

The Cambridge Centre for Housing and Planning Research (CCHPR), a research centre in the Department of Land Economy at the University of Cambridge, was commissioned by the Housing Department of North Hertfordshire District Council to prepare a report, using existing secondary data, on the environmental performance of private sector housing, both owner occupied and rented, in the district.

This report is based upon a number of sources of data about the housing stock, and about fuel poverty and Housing Benefit among householders.

The sources of the data were:

- Energy Performance Certificate (EPC) data for over 25,000 sales and lettings between 2008 and 2014
- Home Energy Efficiency Database (HEED), produced by Home Analytics for the Energy Saving Trust
- A listing of all UK postcodes which do not contain a gas connection, produced by Xoserve, the national agent for gas transporters
- Data on the incidence of fuel poverty, produced by the Department for Energy and Climate Change (DECC)
- Data on Housing Benefit claims in the private rented sector, produced by NHDC

The data sources all have a different basis: some are based on individual records of properties (EPCs) or of people (Housing Benefit); others are drawn from administrative records (gas connection data); while others are modelled from a variety of administrative and survey data (HEED and fuel poverty).

The data sources employ a number of different, and not necessarily compatible, geographies. EPCs and Housing Benefit data are at the individual address level, and can therefore be mapped at the postcode level. The 'off gas grid' data is at postcode level, but not at the address level. HEED data is available at the Lower Super Output Area (LSOA) level (LSOAs are the smallest area reported in most official statistics, including the Census; they contain between 400 and 1,200 households; there are 83 LSOAs in North Herts.) Fuel poverty is modelled at the LSOA level.

The different geographies are not necessarily compatible: postcodes do not necessarily align with either LSOA, Ward or local authority boundaries, while LSOAs do not necessarily align with Ward boundaries but do align with local authority boundaries.

RECOMMENDATIONS

The range of data analysed in this report suggests a number of recommendations as a focus for future action. These are:

1. The mapped data suggests that while there are obviously no large concentrations of poorly performing dwellings in North Herts, there are nevertheless small concentrations that give a geographic focus for future work: the current analysis needs to be supplemented by local, 'on the ground' sources of knowledge.
2. The data sources need regular updating. Some 7,000 EPCs are issued every year, giving an important source of information about stock turnover and environmental performance.
3. While the available data gives a reasonably accurate picture at the small area level, the actual characteristics of individual properties should be checked, either by onsite inspection or from local knowledge.
4. The extent of the gains in energy performance, and the potential for reduced heating costs, suggests that attention should be focussed on trying to improve the 'worst first'.
5. The extent of potential savings in heating costs, particularly for properties in the lowest three EPC Bands, suggests that the Green Deal principle that improvements should be substantially self funding may offer a practicable solution in many cases.
6. Given the extent of areas within North Herts that are 'off gas grid', and therefore likely to have the highest heating costs, attention should be focussed on a combination of improving insulation and improving heating system efficiency together with cheaper fuel sources, offering a possible opportunity for using the Renewable Heat Incentive, particularly for biomass (probably wood log or chip) boilers.
7. One approach to focussing available resources would be to monitor the lodging of EPC certificates, in order to approach the purchasers or tenants of property in the lowest three EPC Bands with details of potential improvements and funding packages, at a time when new occupiers' attention is likely to be most receptive.
8. Further work is required on the properties occupied by tenants in receipt of Housing Benefit, in order to ensure that the poorest tenants are not also those paying excessive amounts for heating and hot water.
9. New HB claims should be monitored and checked against the EPC for the property in order to identify potential new problems of affordability.

SECTION 1

THE STANDARD ASSESSMENT PROCEDURE (SAP) RATING SYSTEM

The Standard Assessment Procedure (SAP) is the Government's standard method for producing an energy cost rating (the SAP rating), which forms the basis for the A-G rating system used in Energy Performance Certificates (EPCs).

The SAP rating is based on the energy costs associated with space heating, water heating, ventilation and lighting, less cost savings from energy generation technologies. It is adjusted for floor area so that it is essentially independent of dwelling size for a given built form.

The calculation is based on the energy balance taking into account a range of factors that contribute to energy efficiency:

- materials used for construction of the dwelling
- thermal insulation of the building fabric
- air leakage ventilation characteristics of the dwelling, and ventilation equipment
- efficiency and control of the heating system(s)
- solar gains through openings in the dwelling
- the fuel used to provide space and water heating, ventilation and lighting
- energy for space cooling, if applicable
- renewable energy technologies

The calculation is independent of factors related to the individual characteristics of the household occupying the dwelling when the rating is calculated, for example:

- household size and composition;
- ownership and efficiency of particular domestic electrical appliances;
- individual heating patterns and temperatures.

(The calculation does allow for heat gains from lights, appliances and cooking, and also from the metabolic gains from the inhabitants. These are all estimated from the floor area of the dwelling, and therefore reflect the activity of a standardised set of occupants of the home.)

For SAP calculations, dwellings have a standard occupancy and usage pattern which are typical values of quantities that in practice vary substantially between dwellings of similar size and type.

For example, the standard internal temperature during heating hours is assumed to be 21C, and the heating hours are assumed to be 0700-0900 and 1600-2300 on weekdays and 0700-2300 at weekends.

The actual costs of heating for a particular dwelling are therefore dependent upon the pattern of life of the occupants: for pensioners, lone parents with small children, and the chronically sick or disabled, there may be a need to heat the main living area to higher temperatures (23 degrees C is usually assumed), and for longer periods (sixteen hours per day for seven days per week is usually assumed).

Compared to a couple with children, a pensioner living alone in a three bedroom house would both be putting less heat into the dwelling from cooking, appliances, lighting and metabolic energy, but might also need to heat the main living space to a higher temperature, while maintaining a sufficient temperature in the unoccupied rooms to prevent condensation and mould growth.

The SAP rating is expressed on a scale of 1 to 100: the higher the number the lower the running costs. The SAP rating scale has been set so that SAP 100 is achieved at zero-Energy Cost Factor (ECF). It can rise above 100 if the dwelling is a net exporter of energy.

The SAP rating system and EPC Bands		
EPC Band	SAP Rating points	No. of points in Band
A	92-100 SAP points	9
B	81-91 SAP points	11
C	69-80 SAP points	12
D	55-68 SAP points	14
E	39-54 SAP points	16
F	21-38 SAP points	18
G	1-20 SAP points	20

It should be noted that the number of SAP points in each band is different. Band G (the lowest performance) covers a range of 20 points, while Band A (the highest performance) covers a range of only 9 points.

The SAP rating system was developed at the Building Research Establishment, which had suggested a popular characterisation of the meaning of the rating, in the graphic below:

0-10 Ugh!	10-20 Appalling	20-30 Very poor	30-40 Poor	40-50 Needs improving	50-60 Not bad	60-70 Good older	70-80 Typical new home	80-90 Excellent	90-100 Super warm
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Source: Unpublished leaflet drafted by Building Research Establishment, 2000.

The graphic is now fifteen years old, and the standards prescribed in the Building Regulations have risen significantly: 'typical new' would now be Band B (81-91 SAP points), with lower SAP ratings correspondingly more inadequate.

The SAP rating is designed to be sensitive to the quantity of heat required to maintain the dwelling at the standard temperature, to the efficiency with which fuel is converted into useful heat by the heating system and controls, and to the cost of the fuel itself.

Variations in the relative cost of different fuels are one of the most significant elements in the calculation. Dwellings of identical construction and insulation standards will therefore have very different SAP ratings depending upon the choice of fuel. The relative prices of fuel vary considerably over time, and the SAP rating calculation uses a three year average to dampen these effects. The extent of the variation in fuel costs currently used in the rating system (SAP 2012) is shown in the Table below:

SAP 2012: Selected fuel prices		
fuel	standing charge £	Unit price p/kWh
gas		
mains gas	120	3.48
bottled LPG		10.3
Oil		
heating oil		5.44
biodiesel		7.64
Solid fuel		
house coal		3.67
wood logs		4.23
electricity		
standard tariff	54	13.19
7 hour high rate	24	15.29
7 hour low rate		5.5

Source: SAP 2012, page 225

There is a group of fuels, mains gas, heating oil, wood and house coal, which are significantly cheaper than either LPG or the cheapest off-peak electricity tariffs. On-peak electricity is by far the most expensive fuel, nearly four times as expensive as mains gas. The extra cost of electricity is to some extent offset by the fact that 100% of electricity consumed in space or water heating is useful: with all other fuel types there are losses of energy through the exhaust of combustion gases, however efficient the boiler or other heat source.

An example of how improvements might be carried out to a basic, unmodernised house type illustrates the effects of successive improvements on the SAP rating.

A typical council house built during the inter-war period, and into the 1950s, might be a semi-detached house of 75m², originally constructed with solid 9 inch brick walls plastered internally, metal windows, a slate roof, and heated by open coal fires.

Such a house, with no subsequent modernisation or improvement, would have a SAP rating of 9 and an EPC band of G.

The importance of the role played by an efficient heat source, and a cheap fuel, in determining SAP ratings can be seen by the addition of a modern mains gas central heating system, with a condensing boiler, to the basic property, with no further modernization: no loft insulation, no draught stripping, no double glazing. The SAP rating would immediately increase to 43, or an EPC band of E.

A number of typical improvements to properties are shown in the Table below, together with the estimated improvements in the SAP rating, and the potential annual saving in energy costs.

The table emphasises the importance of a cheap fuel source burned efficiently: installing a condensing boiler will improve the SAP rating by 10 points more than all the other typical measures put together.

Typical improvements and their potential impact on SAP ratings and savings in energy costs		
Improvement	Rating can be improved by	Estimated Savings
Condensing Boiler	47 SAP points	£225+ per year
Cavity Insulation	13 SAP points	£100-£125 per year
Roof Insulation	10 SAP points	£100-£125 per year
Cylinder Stat & Insulation	8 SAP points	£100-£125 per year
Double Glazing	4 SAP points	£10-£15 per year
Low Energy Lighting	2 SAP points	£10-£15 per year

Source: <http://www.energykey.co.uk>

SECTION 2

Energy Performance Certificates (EPCs)

Energy Performance Certificates have been required since 2008 for any property that is sold or rented, and for a variety of other purposes such as applications for Feed in Tariffs (FITs) or the Green Deal. Once issued, an EPC is valid for ten years.

Between Q1 2008 and Q3 2014, over 10.5 million EPCs have been registered in England, and over 25,000 in North Herts. These give an exceptionally large source of data on the current and potential environmental performance of the housing stock. EPCs are available on a publically accessible register.

The EPC register holds a wide range of data on the current and potential energy rating, environmental impact and energy consumption; the calculated costs of heating, hot water and lighting and their potential costs; and on selected characteristics of the property, including its floor area, the dwelling type (flat/house/bungalow), the built form (detached/semi-detached, end terrace, mid terrace), the number of habitable and heated rooms, and whether the property has a conservatory, the glazing type (double or single).

The quality of individual EPCs is clearly variable, with obvious 'clerical' errors in some cases, such as flats (from the evidence of the address) classified as houses (for example, 16 flats in Archers Court, Elmside Walk, SG5 1HB, all apparently surveyed on 30 August 2009, have all been entered as 'house' under 'property type'), implausibly low SAP ratings in some cases (a SAP rating of 1 being little better than the performance of a tent), and widely varying results where a property has been surveyed twice. Nevertheless, the sheer number of EPCs is likely to produce reasonably reliable figures at the average level, even within small areas. However, cases of individual properties should always be checked onsite or from local knowledge.

The table below shows the reason for the issue of EPCs in North Herts between 2008 and 2014, divided between the three broad house types of bungalow, flat and house.

EPCs by property type and reason for survey				
Transaction type	Number of EPCs	Bungalow	Flat	House
Marketed sale	10169	646	1856	7667
New dwelling	1851	34	937	878
Rental (social)	8338	831	3099	4408
Rental (private)	4176	112	2012	2052
Subtotal	24534	1623	7904	15005
Assessment for green deal	255	9	98	148
FIT application	119	22	0	97
Following green deal	14	1	0	13
Subtotal	388	32	98	258
Non marketed sale	175	11	67	98
None of the above	418	25	145	248
Not recorded	12	1	3	8
Rental (unspecified)	22	1	6	15
Unknown	9	0	1	8
Subtotal	636	38	222	377
Total	25558	1693	8224	15640

Almost half (47.8%) of all the 53,426 homes in North Herts (at the 2011 Census) therefore have an EPC. This varies by tenure, with 34% of owner occupied and 60% of private rented homes having EPCs, reflecting the different turnover rate between the two tenures. In the social rented sector, 81% of homes have an EPC, probably reflecting the extent to which the social rented stock has more detailed data from house condition surveys.

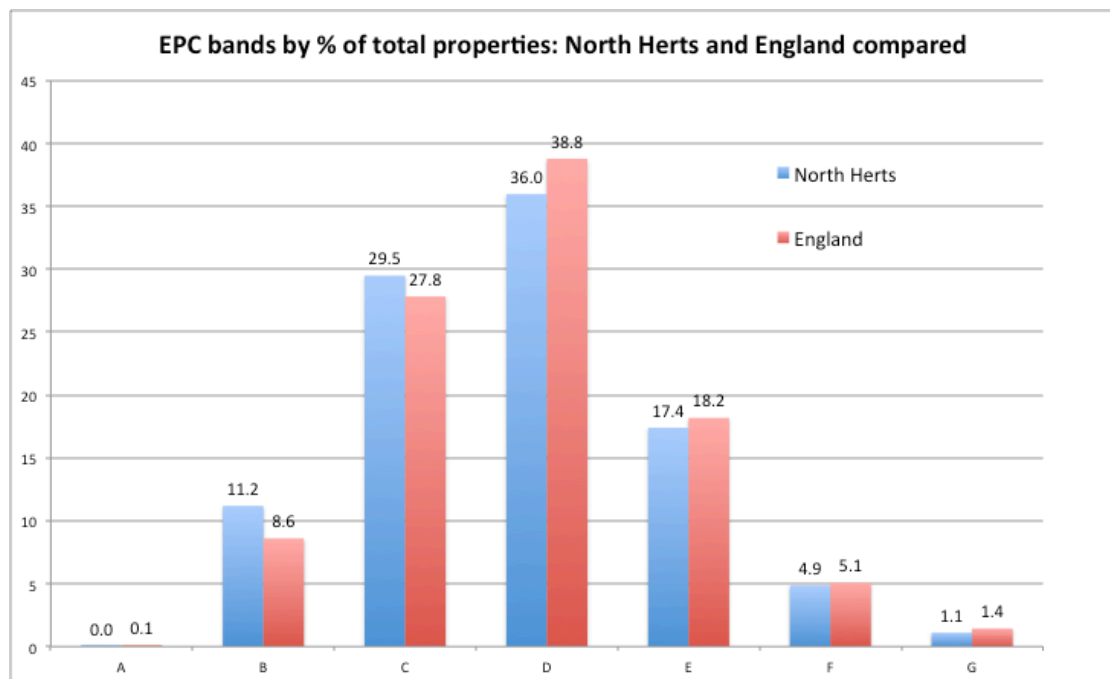
EPCs are issued on the sale or letting of already existing properties, identified in the three tenure groups of 'market sale', 'rental (social)', and 'rental (private)'. EPCs are also issued on the completion of new dwellings, without differentiating whether the dwelling is for market sale for owner occupation, or

market sale to an investor for private letting, or for ownership by a social landlord, whether purpose built or provided through a Section 106 agreement.

Since all 'new dwellings' receive an EPC, but less than half of the already existing stock (and only a third of the owner occupied stock) has an EPC, the average EPC rating of housing in North Herts will be artificially raised by the high proportion of 'new dwellings', built to current standards, that are included in the overall numbers of EPCs.

The 'average' EPC for homes in North Herts is therefore probably closer to the average of existing homes, omitting the EPC ratings of recently completed new dwellings, although over time the addition of new homes built to higher standards will ultimately raise the overall average EPC across North Herts.

The EPC banding of the housing stock in North Herts (strictly, that proportion of the stock that has been sold or let or for which an EPC has been required for other reasons) is compared to the overall pattern for England in the graphic below.



The chart shows that North Herts has a rather higher proportion of properties in Bands B and C, and a correspondingly lower proportion of properties in Bands D and E than the England average. The proportions in Band F are similar, but lower in the bottom band, Band G.

These differences probably reflect a higher proportion of the housing stock in North Herts being built post 1900, combined with a rather more affluent population than the England average.

The table below shows the number of EPCs issued on market sales, private rented sector lettings, and the social housing stock as a whole, divided into the two main categories of flats and houses.

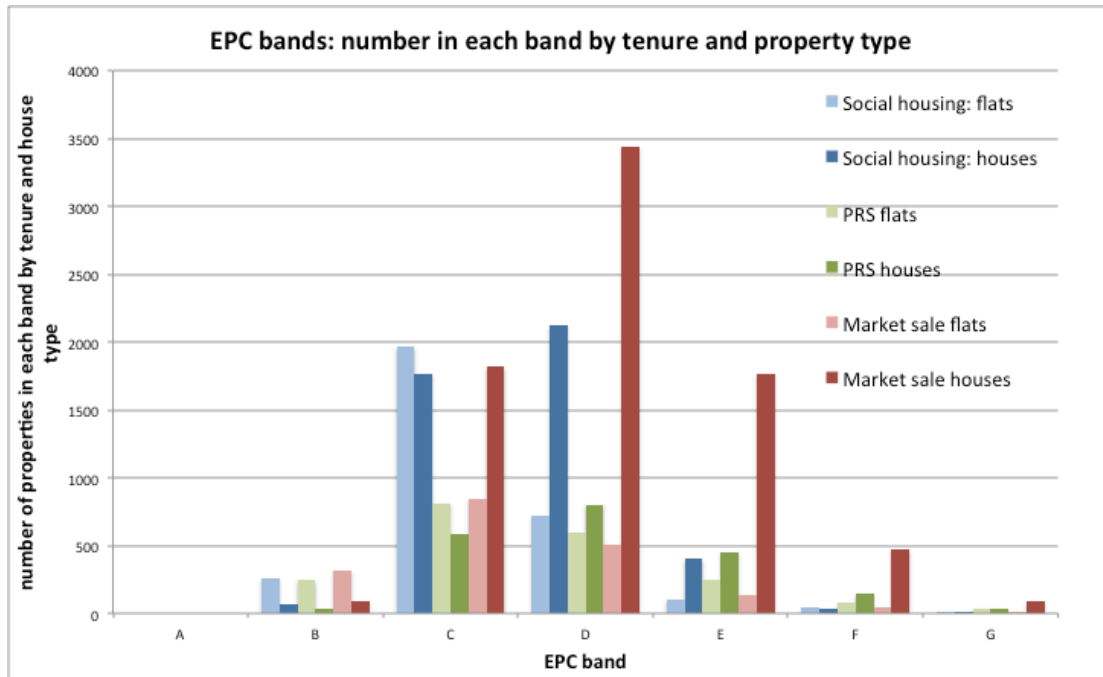
Table: EPCs by sector and by flat or house

EPCs 2008-2014 by sector and by flat or house: numbers							
	Social housing		Private rented sector		Market sale		Total
	flats	houses	flats	houses	flats	houses	
A							0
B	264	64	243	32	313	89	1005
C	1966	1769	812	588	844	1818	7797
D	717	2123	595	802	510	3435	8182
E	102	401	244	454	132	1768	3101
F	41	38	83	145	43	468	818
G	9	13	35	31	14	89	191
Total	3099	4408	2012	2052	1856	7667	21094

Note: table omits newbuild properties

The smaller number of bungalows is shown separately below: bungalows tend to have lower EPC ratings than the other three building types, partly because of their larger roof area.

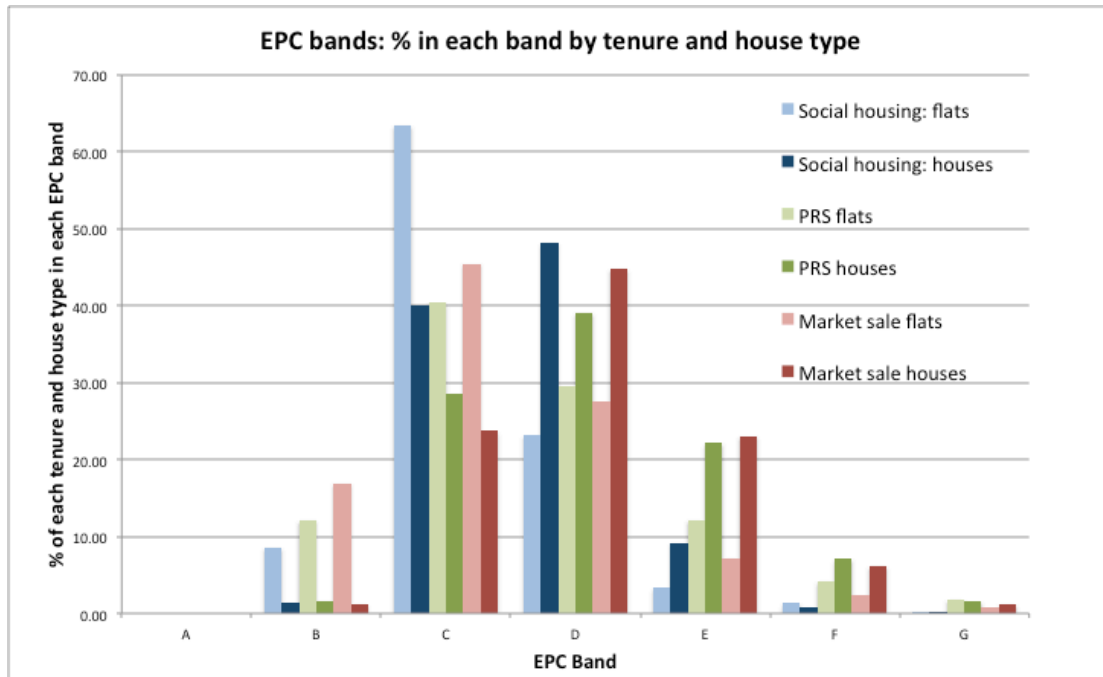
EPCs 2008-2014 bungalows by sector: numbers			
	Social housing	Private rented sector	Market sale
A	-	-	-
B	38	-	4
C	243	23	95
D	477	45	325
E	63	31	162
F	8	11	50
G	2	2	10
Total	831	112	646



The table below shows the same data as percentages within each of the two house types by sector.

	Social housing		Private rented sector		Market sale		Total
	flats	houses	flats	houses	flats	houses	
A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B	8.52	1.45	12.08	1.56	16.87	1.16	4.76
C	63.44	40.13	40.36	28.65	45.50	23.71	36.96
D	23.14	48.16	29.57	39.08	27.49	44.80	38.79
E	3.29	9.10	12.13	22.12	7.12	23.06	14.70
F	1.32	0.86	4.13	7.07	2.32	6.10	3.88
G	0.29	0.29	1.74	1.51	0.70	1.16	0.90
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Note: table omits newbuild properties



The table below shows the numbers of newbuild properties by house type and EPC band. (The EPC data does not distinguish the ultimate tenure of newbuild properties, since many properties built by developers may be acquired by housing associations, for example through S106 agreements, while other properties might be sold either to owner occupiers or to buy-to-let landlords.)

EPCs 2008-2014 newbuild properties: numbers				
	Bungalows	Houses	Flats	Total
A	0	3	0	3
B	19	609	500	1128
C	15	228	353	596
D	1	33	79	113
E	0	3	5	8
F	0	2	0	2
G	0	0	0	0
Total	35	875	937	1847

The table below shows the percentages of newbuild properties by house type and EPC band.

EPCs 2008-2014 newbuild properties: percentages				
	Bungalows	Houses	Flats	Total
A	0	0.34	0	0.16
B	54.29	69.60	53.36	61.07
C	42.86	26.06	37.67	32.27
D	2.86	3.77	8.43	6.12
E	0	0.34	0.53	0.43
F	0	0.23	0	0.11
G	0	0	0	0
Total	100	100	100	100

SECTION 3

EPCs and dwelling type by tenure: the overall picture

The table and the chart both show that flats have better EPC ratings than houses. This is partly the result of the fact that flats do not, on average, have as much exposed wall or roof surface transmitting heat as houses, and partly the result of the high proportion of flats that have been built over the recent past, when Building Regulations standards have been higher.

The chart shows that overall the social housing stock has better EPC ratings than either the private rented or market sale stock. In particular, the social housing stock has a smaller 'tail' of poorly rated stock (50 or less EPC rating, roughly equivalent to Bands E, F and G, which cover the range from 1 to 54). This is probably due to a combination of relatively good standards of original construction and the effects of the Decent Homes programme in repairs and modernisation.

However, both the private rented and market sale sectors have a higher proportion of flatted stock at the highest rating bands of 80 or more (roughly Bands B and A, which cover the range from 81 to 100 points), which reflects the relative lack of social housing built in more recent years when the environmental standards of construction required by the Building Regulations have been higher, compared to the output of the private house building sector.

The fact that nearly half of the private rented sector flats let during the period have an EPC rating of 70 or higher, in Bands C and B (covering the range from 69 to 91 points), suggests that the majority of private rented sector lettings in the period came from new or recently built flats bought by 'buy to let' landlords.

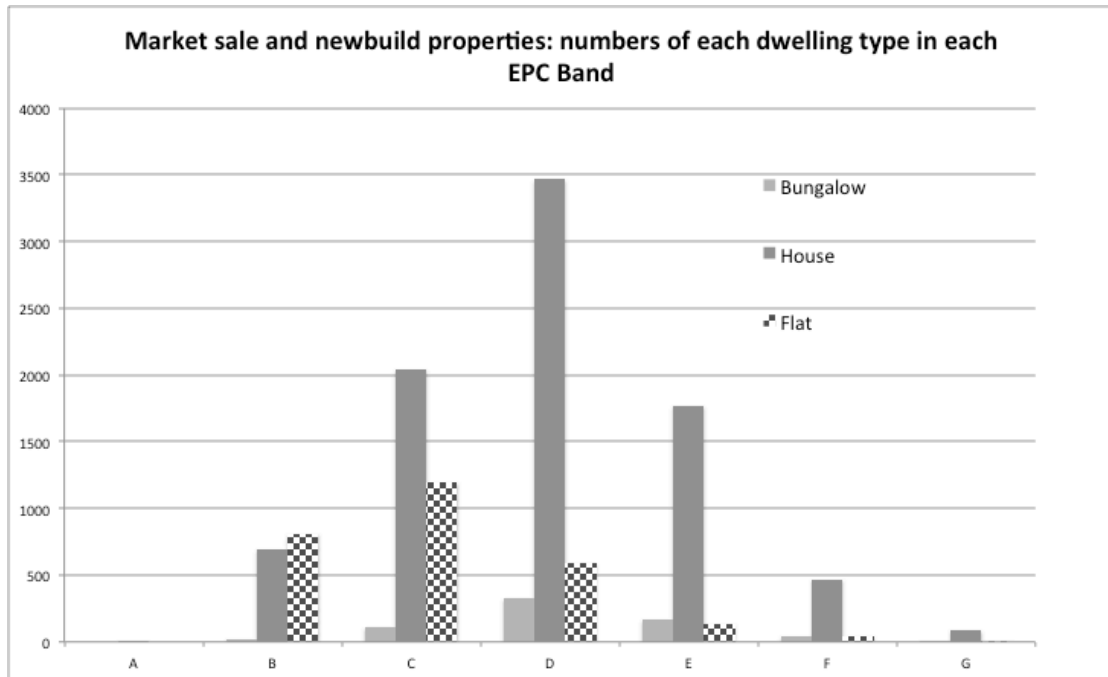
Only 13% of private rented flats have an EPC rating of 50 or less, (roughly equivalent to Bands E, F and G, which cover the range from 1 to 54), suggesting that there is little concentration of private renting in the poorest stock, although this is almost double the percentage of market sale flats with an EPC rating of 50 or less, (roughly equivalent to Bands E, F and G, which cover the range from 1 to 54) (7.3%).

Privately rented flats do, however comprise just over half (54%) of all flats let during the period that had an EPC rating of 50 or less, (roughly equivalent to Bands E, F and G, which cover the range from 1 to 54).

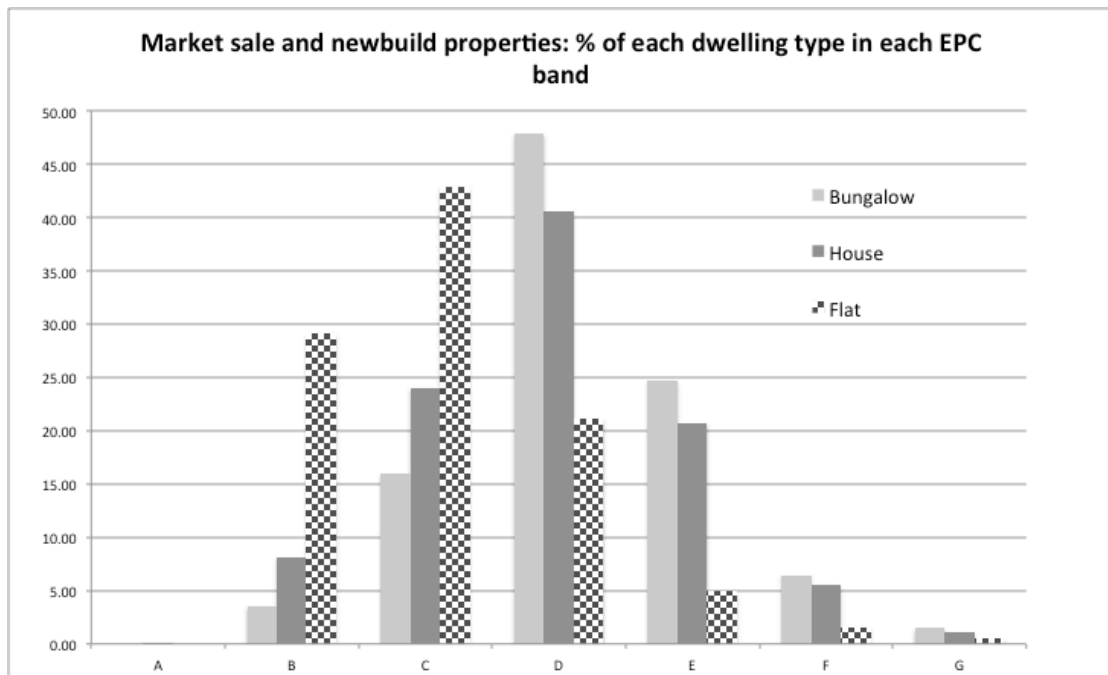
SECTION 4

Private sector properties: numbers and proportions by EPC Band

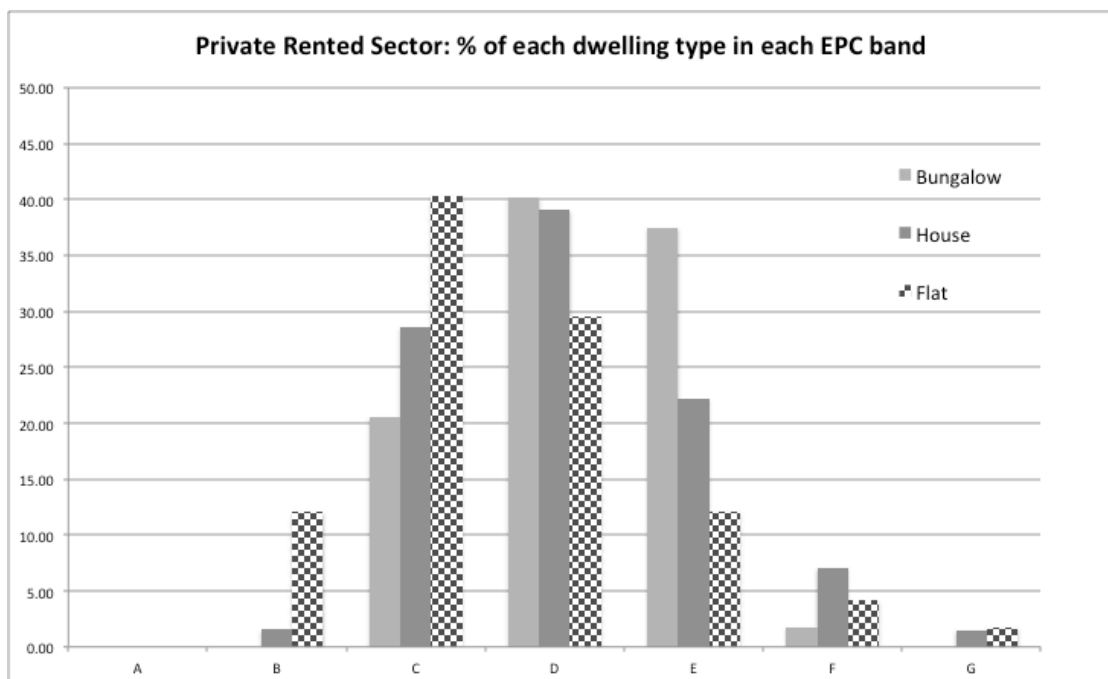
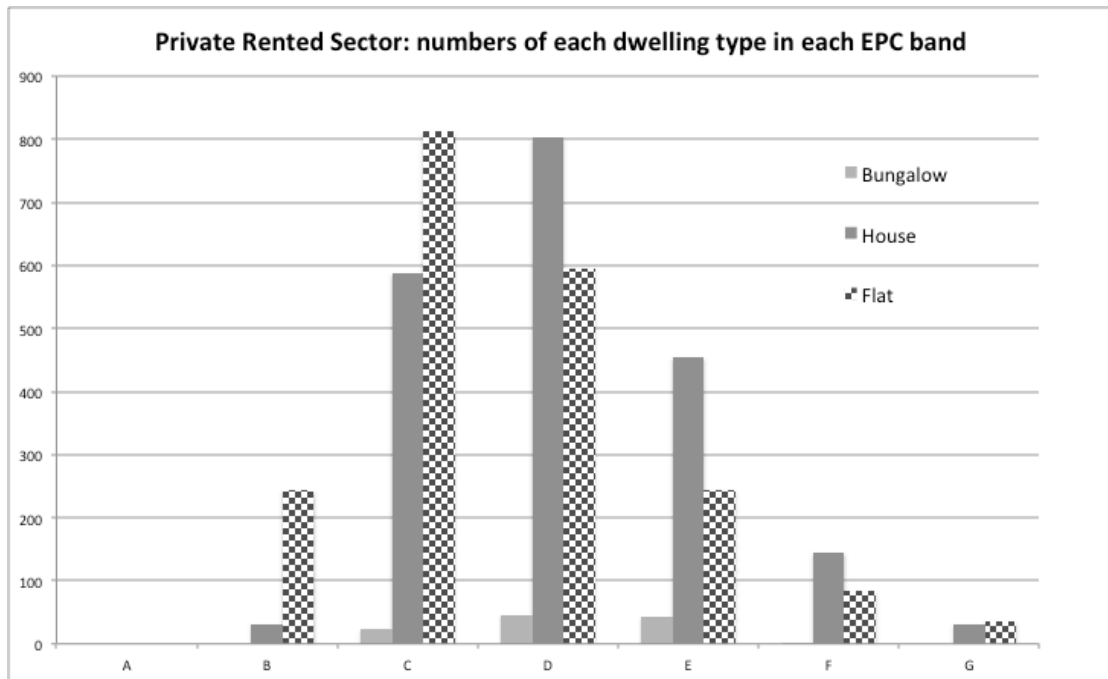
The charts below show the numbers of each of the three property types (bungalows, houses and flats) in the market sale/newbuild and private rented sectors, by EPC Band. (Note that new dwellings are all attributed to the private sector in these tables, although an unknown proportion of these will in fact be social rented.)



Note: table includes newbuild properties



The charts show that market sale/newbuild flats are heavily skewed towards the higher EPC Bands, with over 70% of flats in Bands B and C, reflecting both the proportion of flats in recent new house building and the lower proportion of exposed wall and roof area in flats, leading to reduced heat losses. Conversely, there are very few (193) flats in Bands E, F and G, or only 6.5% of all flats, compared to 2,330 houses in the three lowest Bands, or 27% of all houses.



In the case of the private rented sector, just over half of all flats (1,055) are in Bands B and C, but 18% of all flats (362), and 31% of all houses (630) are in Bands E, F and G.

SECTION 5

The potential for increasing SAP ratings

EPC certificates give both the current rating of the property, and the surveyor's (calculated) estimate of the potential SAP rating that could be achieved at reasonable expense.

The charts below show the average increase in ratings that could be achieved for each of the three main dwelling types (bungalow, house and flat) in both the market sale/newbuild and private rented sectors.

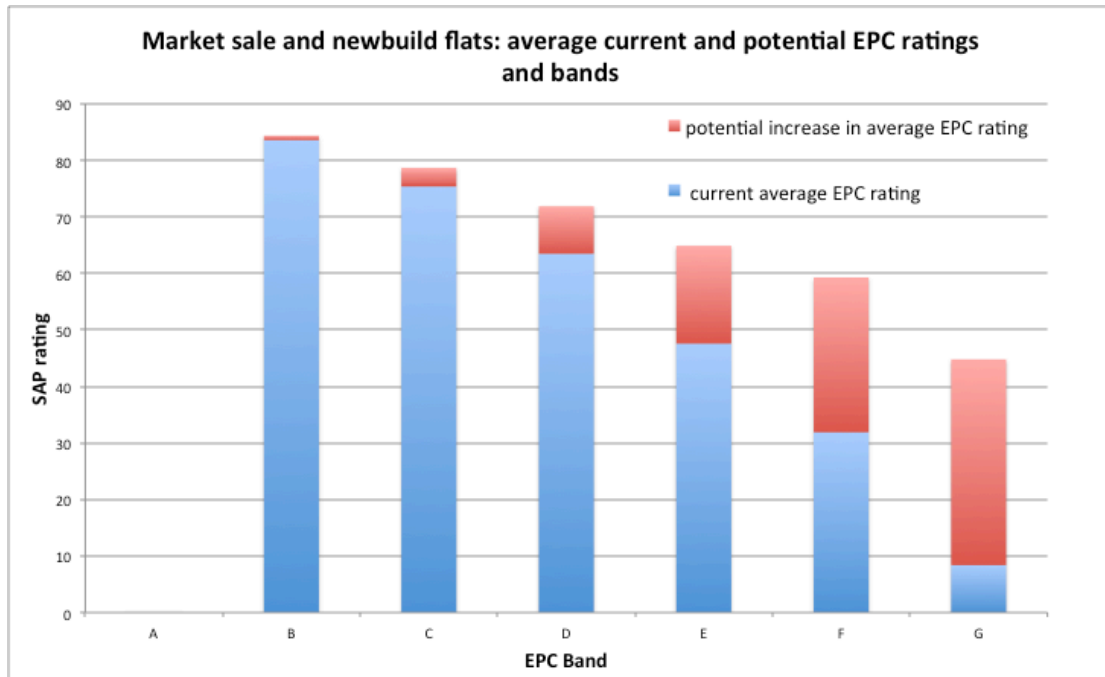
The charts show clearly that there are diminishing returns from improvements as the current SAP rating improves, and these are set out, for market sale/newbuild properties, in the Table below.

Market sale and newbuild: potential for increasing SAP ratings and EPC Bands									
	Bungalows			Houses			Flats		
Current Band	current average EPC rating	potential increase in average EPC rating	Potential Band	current average EPC rating	potential increase in average EPC rating	Potential Band	current average EPC rating	potential increase in average EPC rating	Potential Band
A	-	-	n/a	95	-	A	-	-	n/a
B	82.9	1.1	B	83.7	0.8	B	83.6	0.8	B
C	72.1	7.4	C	73.3	6	C	75.4	3.3	C
D	61.5	12.7	C	62	12.2	C	63.5	8.4	C
E	47.8	17.6	D	47.9	17.5	D	47.6	17.3	D
F	31.8	26	D	32.3	20	E	31.9	27.4	D
G	10.1	33.7	E	11	21.2	F	8.4	36.4	E
Average	57.9 (D)	71.7	C	61.4 (D)	72.8	C	73 (C)	77.8	C

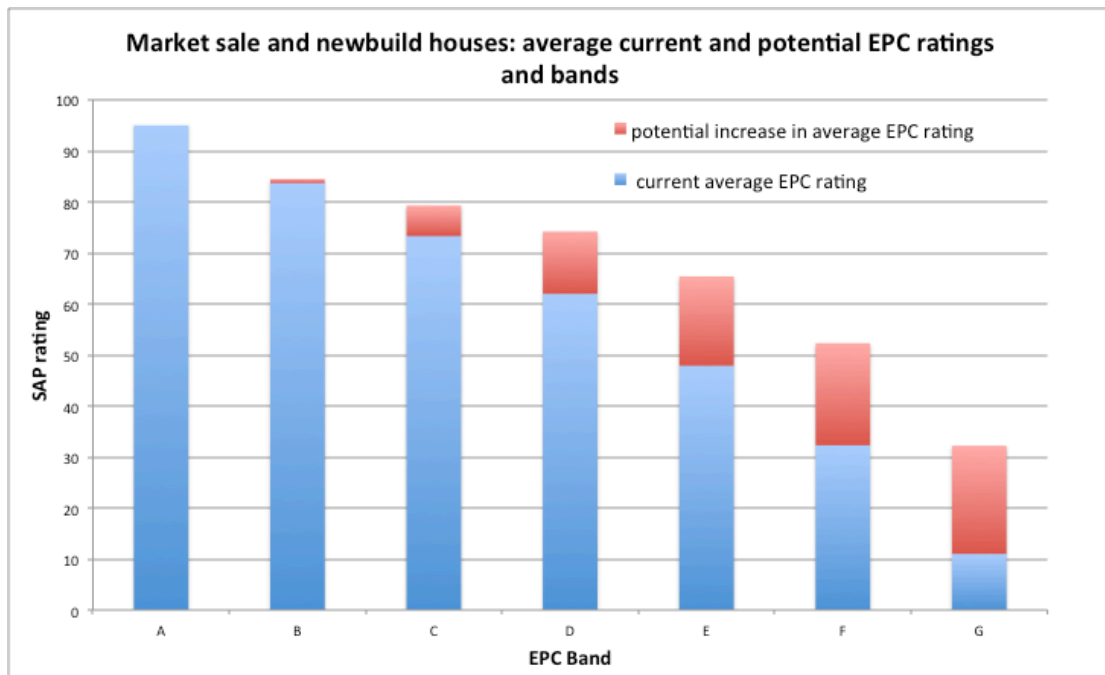
Note: table includes newbuild properties

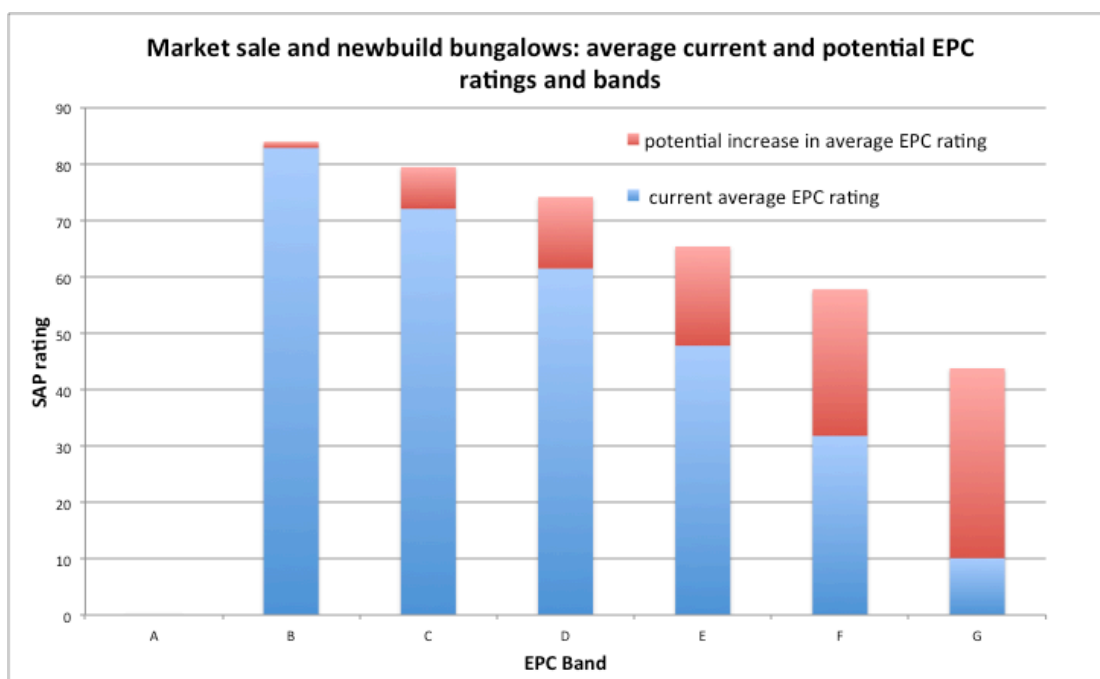
In general, the Table shows that for EPC Bands B and C, there would be no change in the average Band as a consequence of potential improvements to the SAP rating; for EPC Bands D and E there would be the potential to increase by one EPC Band, to C and D respectively, while for the bottom two Bands, F and G, there would be a potential increase by two EPC Bands, to D and E respectively, except for houses, where only an increase of one Band appears to be predicted.

However, for properties in the lower EPC Bands, the potential increases in SAP ratings are proportionately very substantial, even if the property would only move up by one Band: for the 89 houses in Band G, with a current average SAP rating of 11, an increase of over 21 points in the SAP rating would result in a predicted £798 per annum saving in heating costs.



Note: table includes newbuild properties





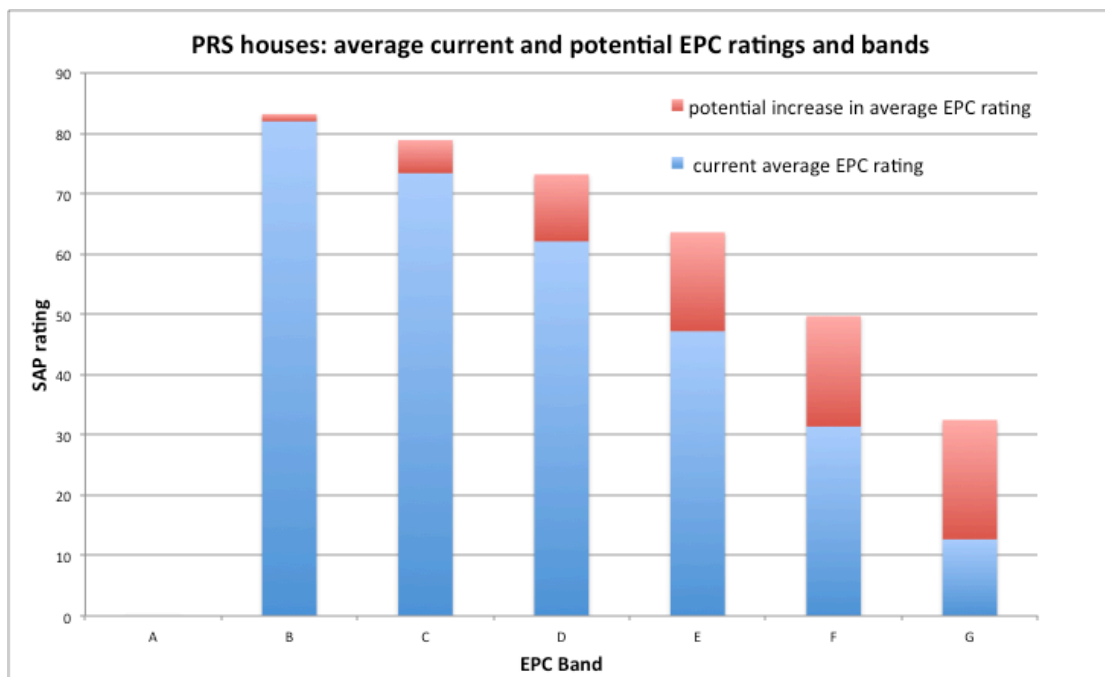
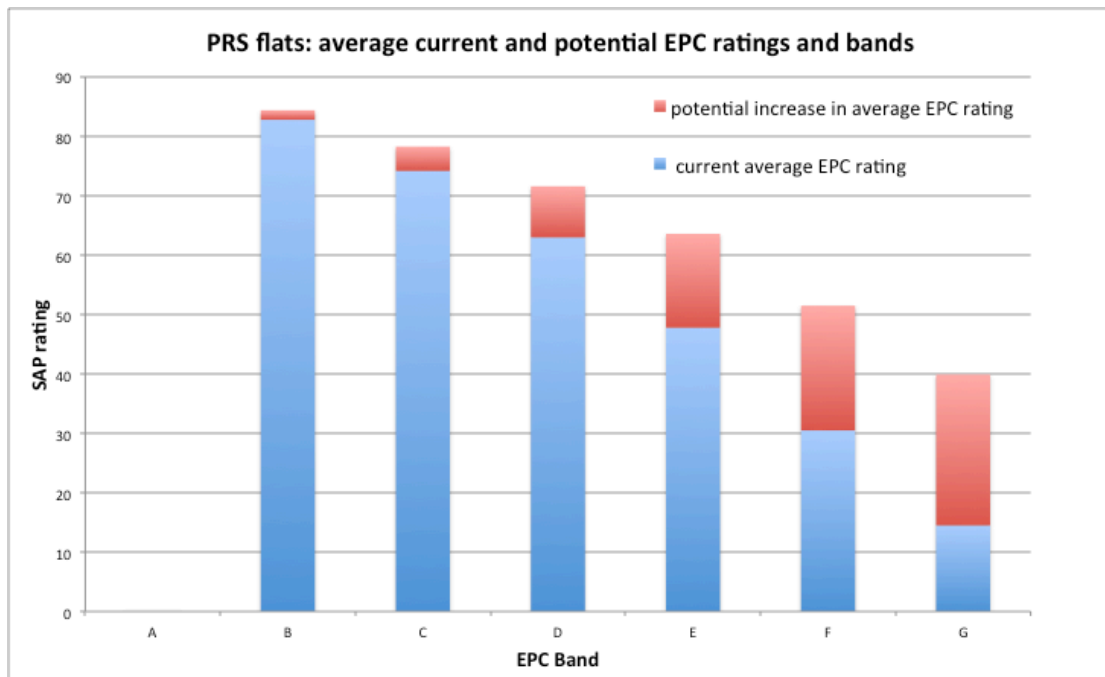
The three charts of market sale and newbuild housing show that the largest proportionate gains in SAP ratings would come from improvements in the 56 flats and 54 bungalows in Bands F and G, although these are outnumbered by the 559 houses in Bands F and G.

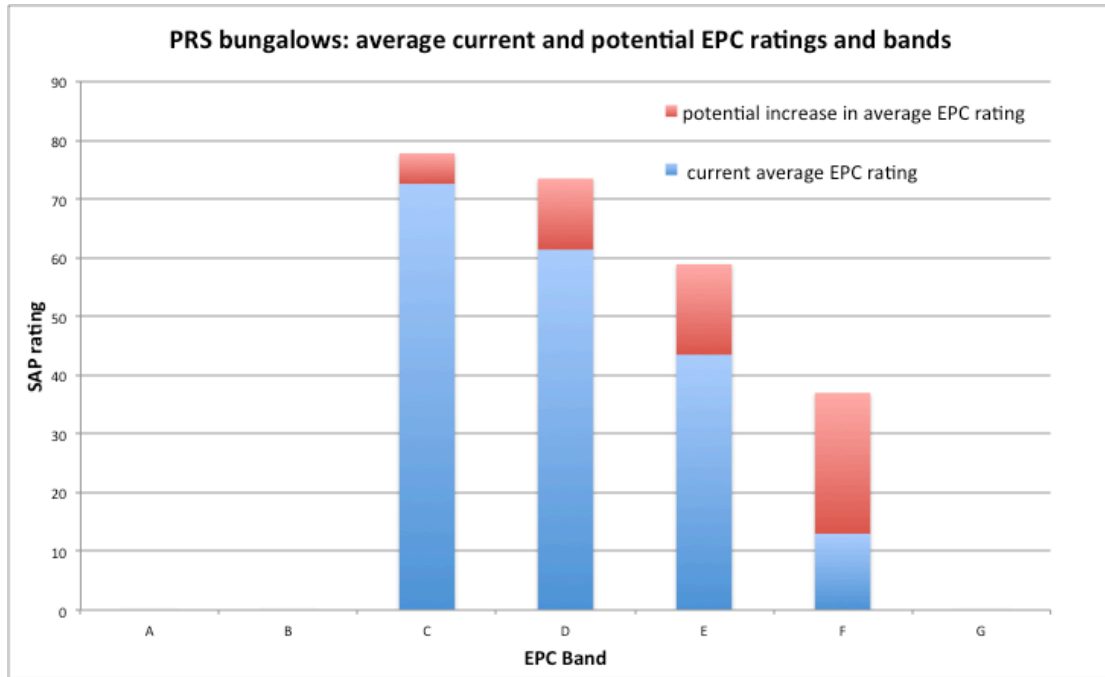
Private Rented Sector: potential for increasing SAP ratings and EPC Bands									
Current Band	Bungalows			Houses			Flats		
	current average EPC rating	potential increase in average EPC rating	Potential Band	current average EPC rating	potential increase in average EPC rating	Potential Band	current average EPC rating	potential increase in average EPC rating	Potential Band
A	-	-	n/a	-	-	n/a	-	-	n/a
B	-	-	n/a	82	1.2	B	82.8	1.6	B
C	72.6	5.2	C	73.4	5.5	C	74.2	4.1	C
D	61.4	12.1	C	62.1	11.1	C	63	8.6	C
E	43.5	15.4	D	47.2	16.4	C	47.8	15.8	D
F	13	24	F	31.4	18.3	E	30.5	21	E
G	-	-	n/a	12.7	19.8	F	14.5	25.4	E
Average	56.1 (D)	68.2	D	59.4 (D)	70.6	C	65.9 (D)	73.5	C

The Table shows that for EPC Bands B and C, there would be no change in the average Band as a consequence of potential improvements to the SAP rating; for EPC Bands D and E there would be the potential to increase by one EPC Band, to C and D respectively (although houses in Band E would have the potential for a two Band increase, to Band C); while for the bottom two

Bands, F and G, there would be a potential increase by one EPC Band, to E and F respectively, except for flats in Band G, where an increase of two Bands, to Band E, appears to be predicted.

Again, in the lower Bands, the predicted savings in heating costs are substantial: the 31 houses in Band G would save an average of £506 per annum in heating costs, while the 35 flats in Band G would save a predicted £459 per annum.



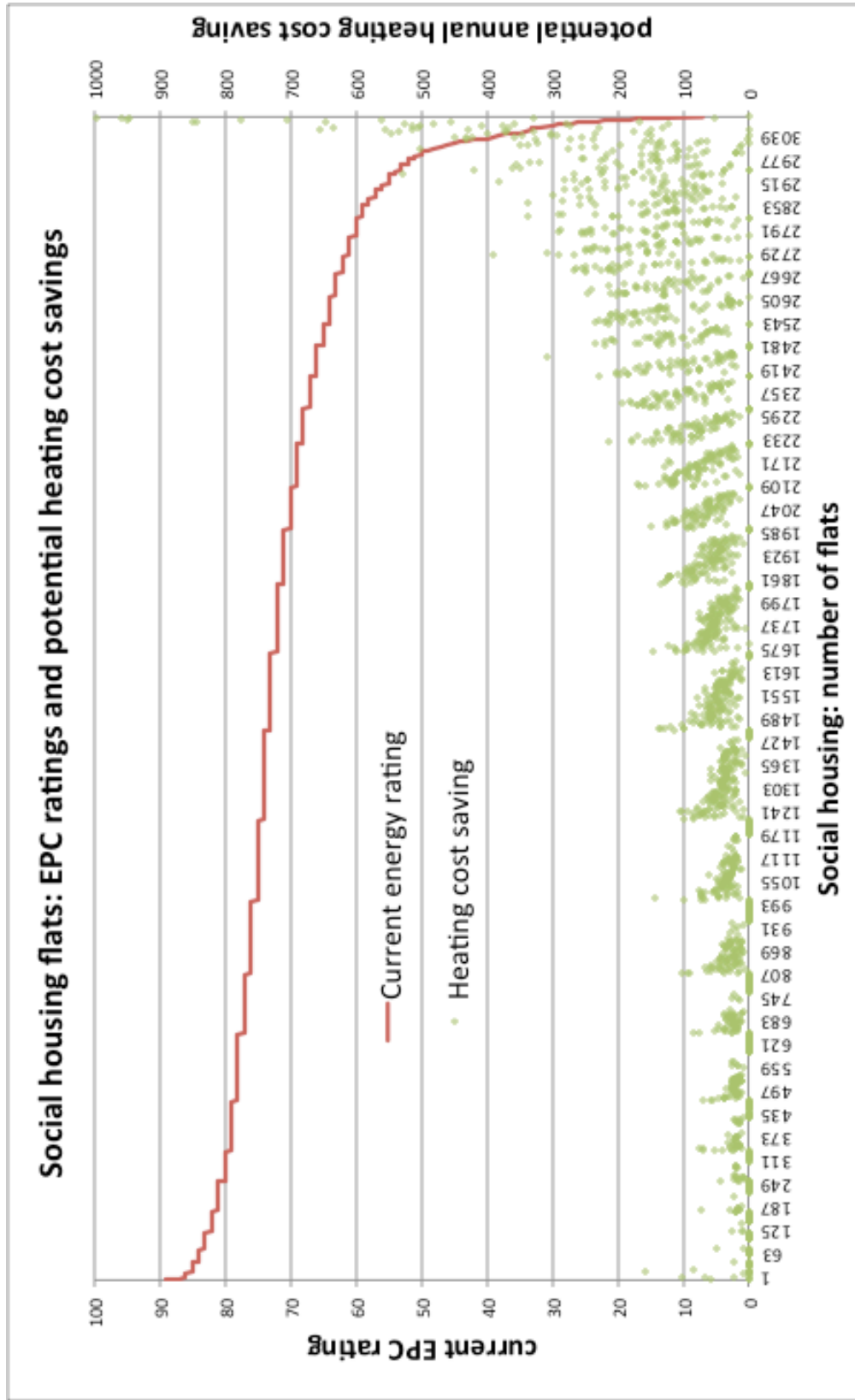


The three charts of private rented sector housing also show that the largest proportionate gains in SAP ratings would come from improvements in the 118 flats and 2 bungalows in Bands F and G, although these are fewer than the 176 houses in Bands F and G.

SECTION 6

EPC ratings and the potential for savings in heating costs

The following charts present the EPC ratings for flats and houses within each sector, correlated with the estimated potential for achieving savings in annual heating costs for occupiers that would result from increasing the EPC rating of properties.



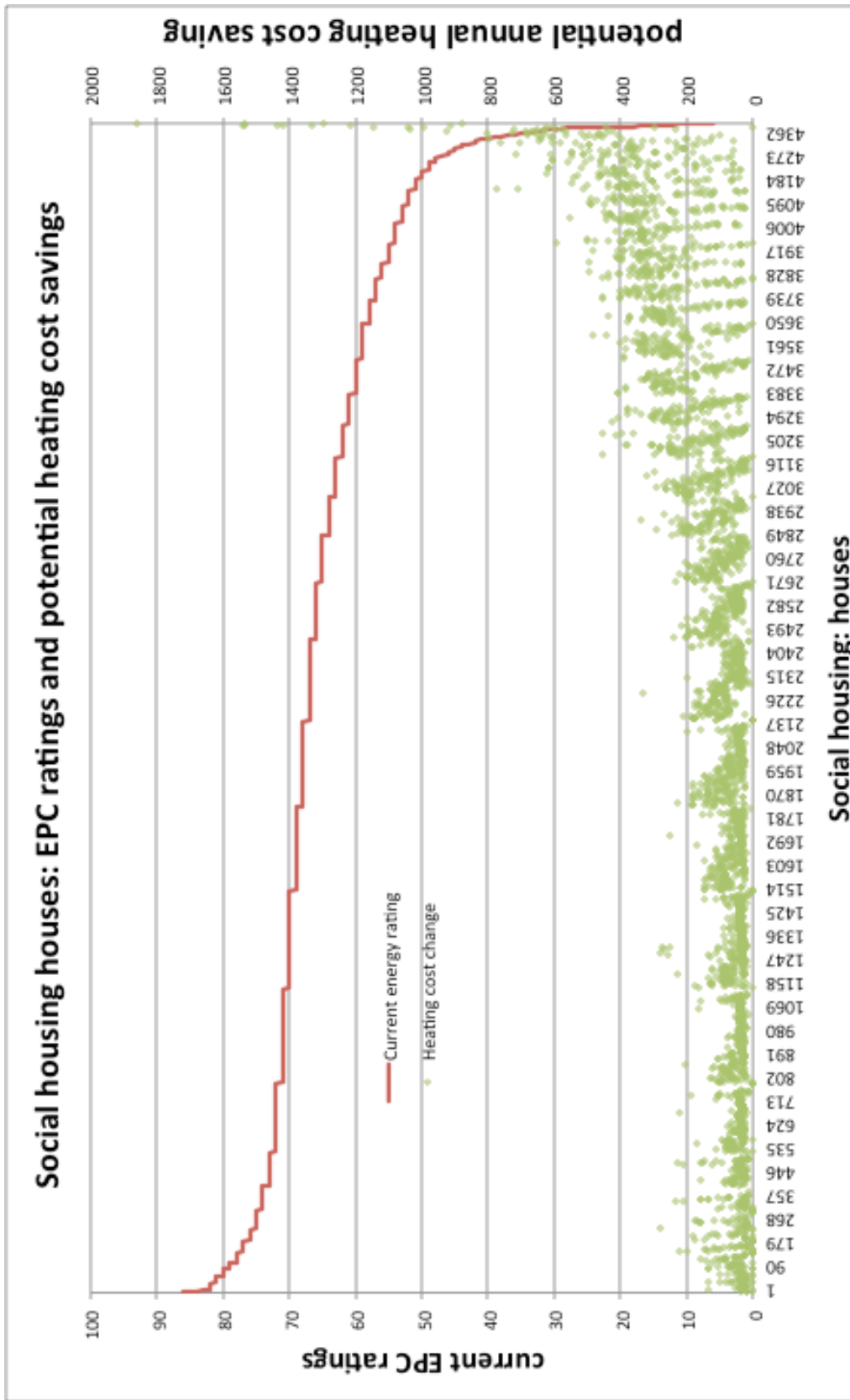
Social housing: flats

EPC data are available for 3,099 flats in the social housing sector.

Only 90 of these have an EPC rating of less than 50 (i.e. Bands G, F and part of E), or just under 3% of the total, while two thirds (68%) have a rating above 70 (roughly equivalent to Band C and above).

However, 159 flats are also estimated to have a potential saving of more than £4 per week, or £208 per annum, in heating costs.

In general, the potential savings are associated with flats with an EPC rating below 60, although there are a number of apparent anomalies in flats with higher ratings.

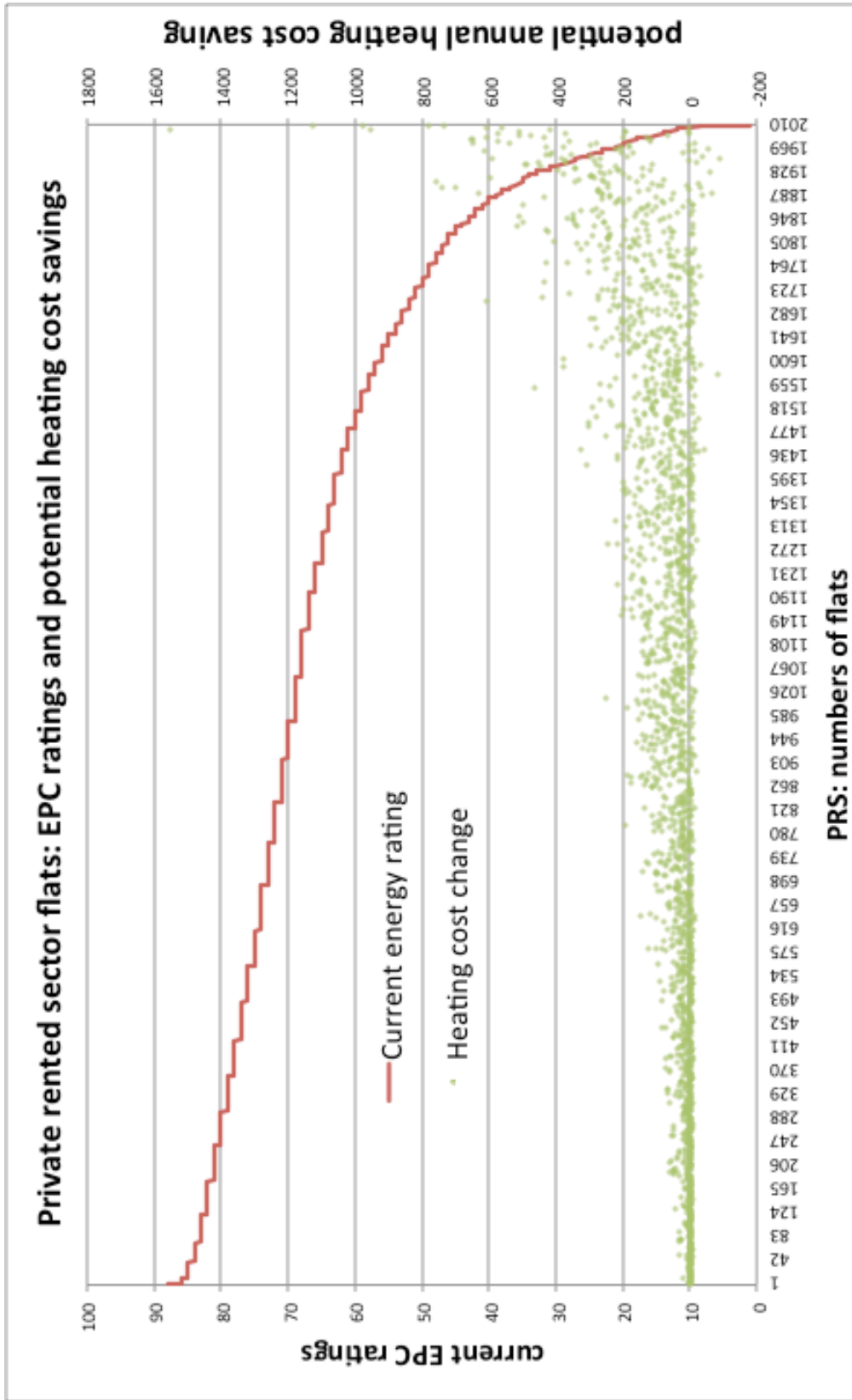


Social housing: houses

EPC data are available for 4,408 houses in the social housing sector.

Only 204 of these have an EPC rating of less than 50 (i.e. Bands G, F and part of E), or 4.6% of the total, while only a third (34%) have a rating above 70 (roughly equivalent to Band C and above).

However, 837 houses are also estimated to have a potential saving of more than £4 per week, or £208 per annum, in heating costs; 627 are estimated to have a potential saving of more than £5 per week, or £260 per annum; and 65 are estimated to have a potential saving of more than £10 per week, or £520 per annum.

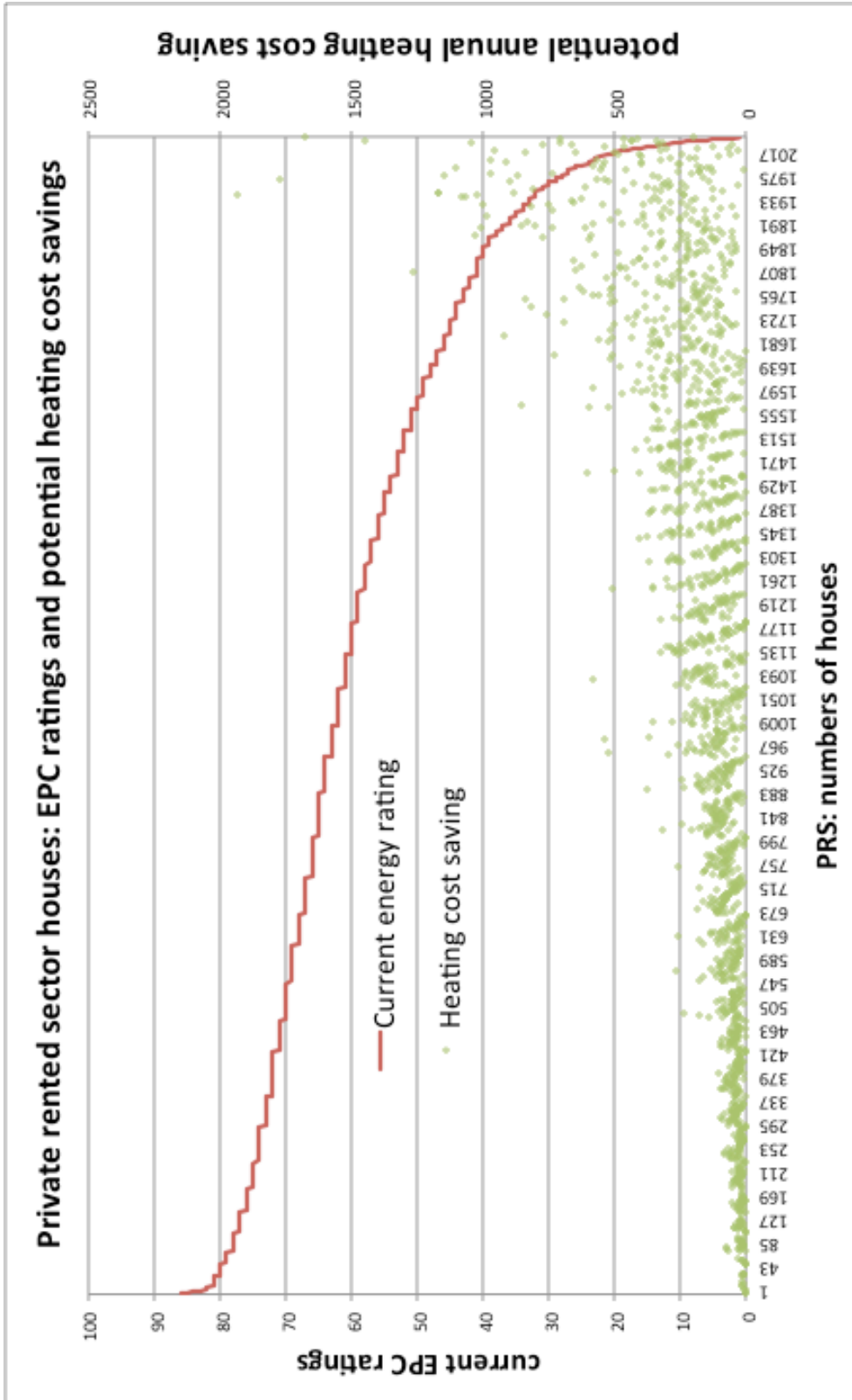


Private rented sector: flats

EPC data are available for 2,015 flats in the private rented sector.

Only 266 of these have an EPC rating of less than 50 (i.e. Bands G, F and part of E), or 13.2% of the total, while nearly half (49%) have a rating above 70 (roughly equivalent to Band C and above), and 301 (15%) have a rating above 80 (roughly equivalent to Band B and above).

However, 177 flats are also estimated to have a potential saving of more than £4 per week, or £208 per annum, in heating costs; 120 are estimated to have a potential saving of more than £5 per week, or £260 per annum; and 24 are estimated to have a potential saving of more than £10 per week, or £520 per annum.

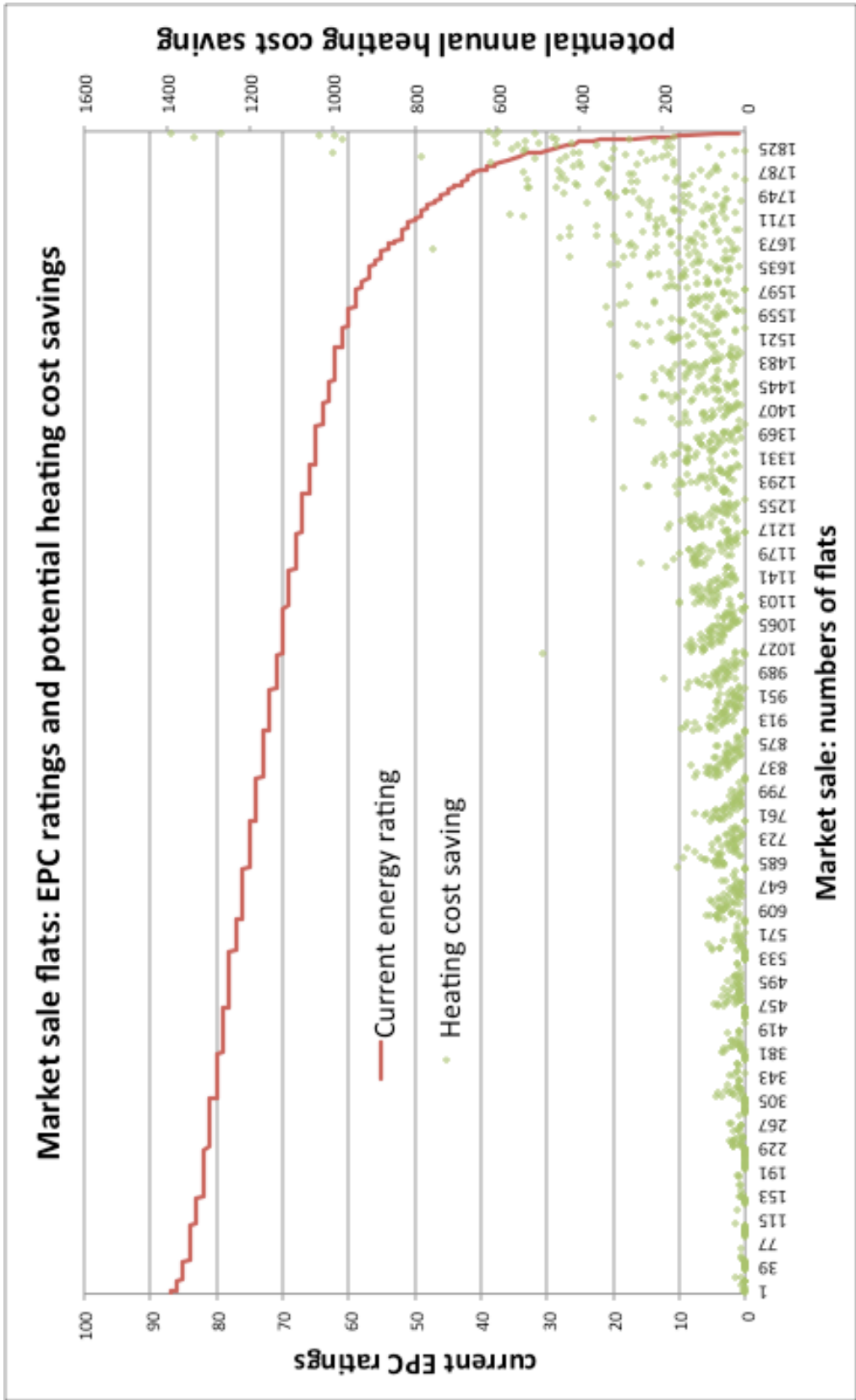


Private rented sector: houses

EPC data are available for 2,053 houses in the private rented sector.

458 of these have an EPC rating of less than 50 (i.e. Bands G, F and part of E), or 22% of the total, while just over a quarter (27%) have a rating above 70 (roughly equivalent to Band C and above), and 56 (2.7%) have a rating above 80 (roughly equivalent to Band B and above).

However, 433 houses are also estimated to have a potential saving of more than £4 per week, or £208 per annum, in heating costs; 303 are estimated to have a potential saving of more than £5 per week, or £260 per annum; 83 are estimated to have a potential saving of more than £10 per week, or £520 per annum; and 14 have a potential saving of between £1,000 and £2,000 per annum.

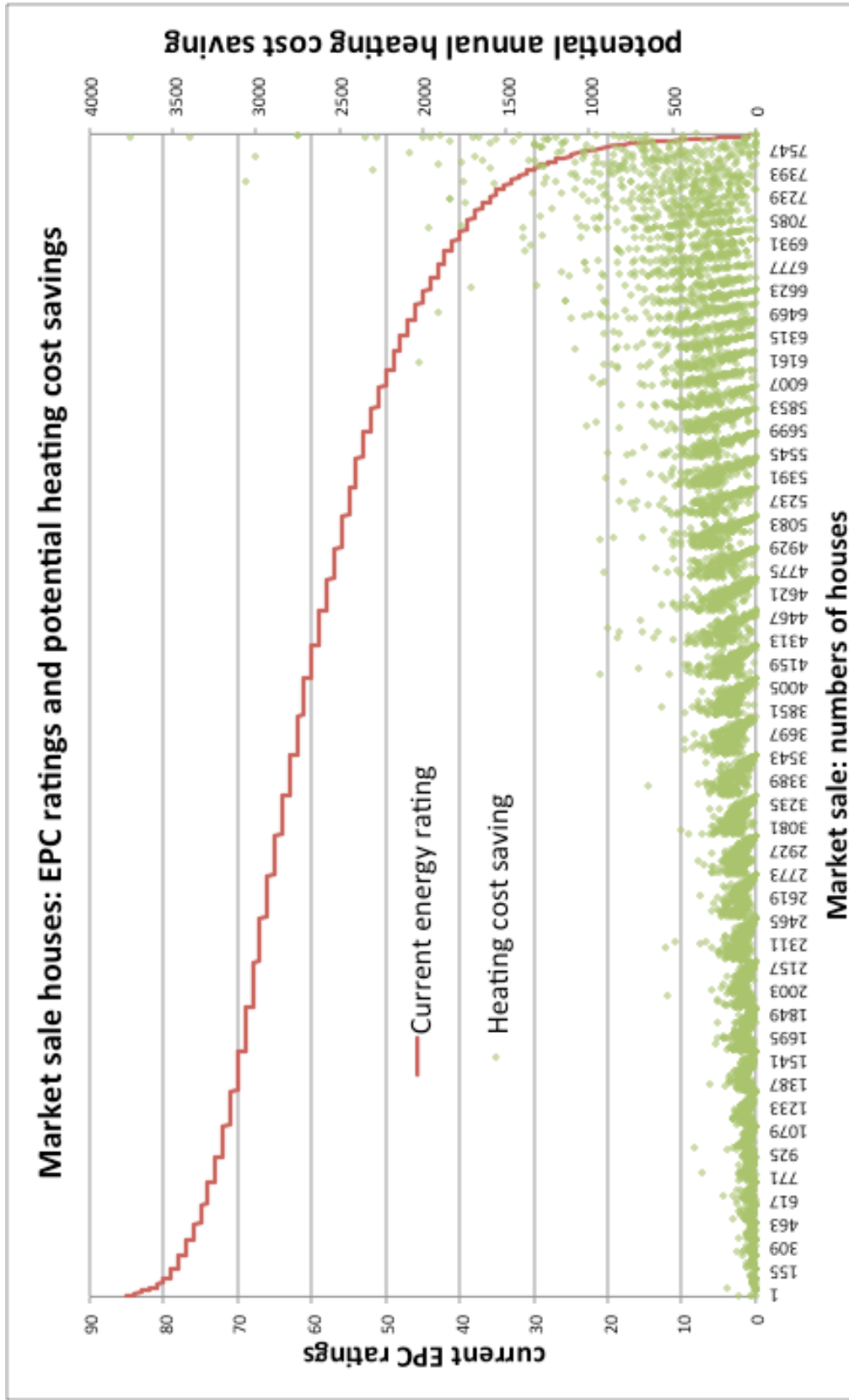


Market sale: flats

EPC data are available for 1,855 flats in the market sale sector. (Market sale does not include newbuilds.)

Only 135 of these have an EPC rating of less than 50 (i.e. Bands G, F and part of E), or 7% of the total, while two out of three (59%) have a rating above 70 (roughly equivalent to Band C and above), and 384 (21%) have a rating above 80 (roughly equivalent to Band B and above).

However, 135 flats are also estimated to have a potential saving of more than £4 per week, or £208 per annum, in heating costs; 98 are estimated to have a potential saving of more than £5 per week, or £260 per annum; and 24 are estimated to have a potential saving of more than £10 per week, or £520 per annum.



Market sale: houses

EPC data are available for 7,667 houses in the market sale sector. (Market sale does not include newbuilds.)

1,552 of these have an EPC rating of less than 50 (i.e. Bands G, F and part of E), or 20% of the total, while one in five (21%) have a rating above 70 (roughly equivalent to Band C and above), and only 120 (1.6%) have a rating above 80 (roughly equivalent to Band B and above).

However, 2,141 houses are also estimated to have a potential saving of more than £4 per week, or £208 per annum, in heating costs; 1,602 are estimated to have a potential saving of more than £5 per week, or £260 per annum; 437 are estimated to have a potential saving of more than £10 per week, or £520 per annum; 96 to have a potential saving of more than £1,000 per annum; and 10 to have a potential saving of between £2,023 and £3,757 per annum.

SECTION 7

Mapping of EPC ratings

The series of maps below show the location of properties in the private rented sector that are in EPC bands F and G.

The first group of six maps shows the location, at postcode level, of flats, while the second group of five maps shows the location, at postcode level, of houses.

There were only 176 houses and 118 flats let in the private rented sector between 2008 and 2014 which were in EPC bands F and G. The number of flats and houses in any one postcode is likely to be small, and only a handful of postcodes have 3 or more properties in EPC bands F and G.

Among houses, there are only two postcodes containing 3 properties, and these both appear to be in contiguous groups:

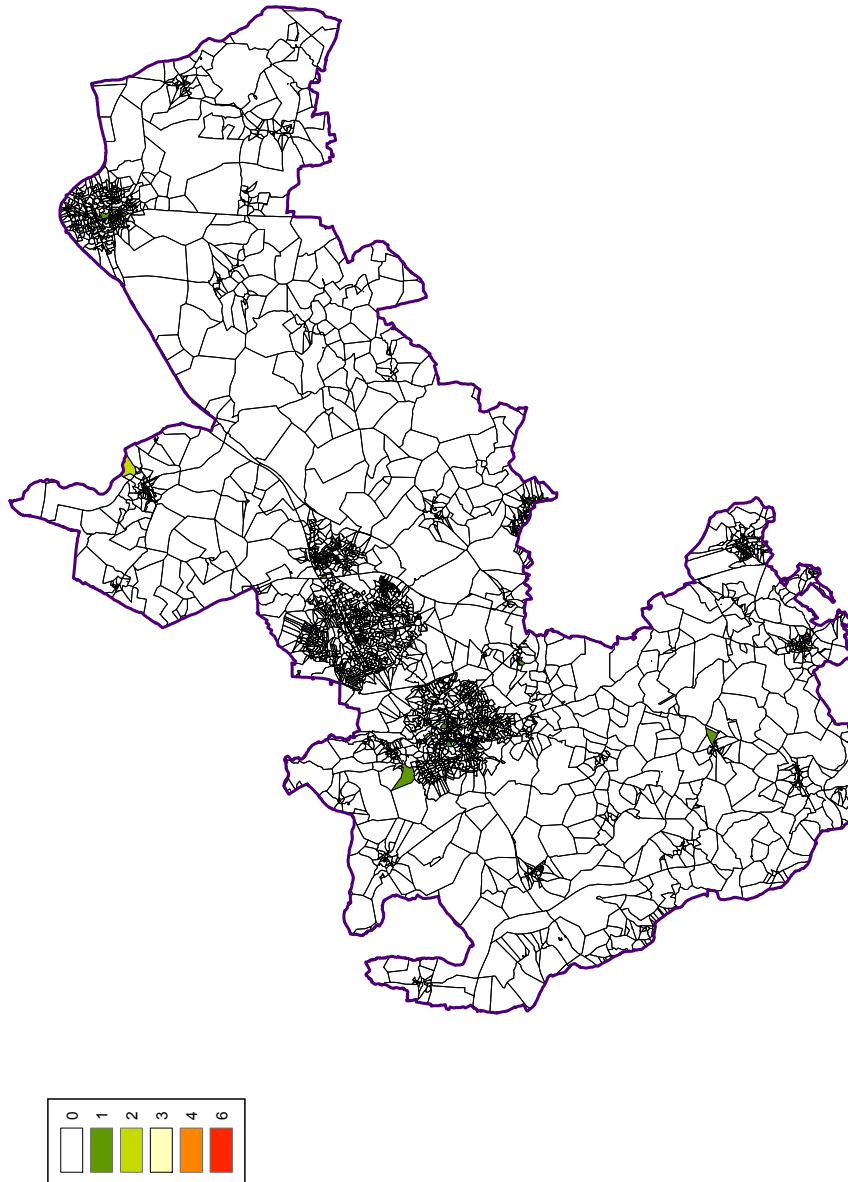
3 houses at Burloes Farm House and Burloes Farm Cottages, SG8 9NE
3 houses in Benslow Lane, SG4 9R

Among flats, the groupings with 3 or more properties were:

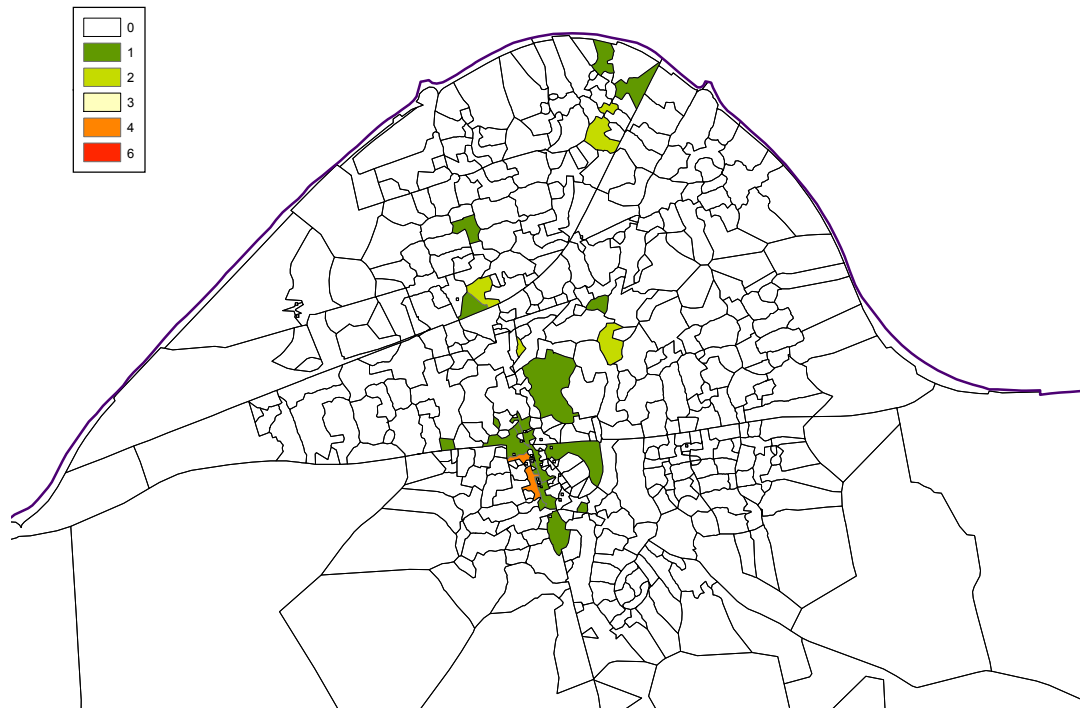
Flats in Eastcheap, SG6 3DA
Leys Avenue, SG6 3ED
Upper King Street, SG8 9AZ
Station Road, SG3 6AP
Cadwell Court, SG4 0AQ
Dacre Road, SG5 1QL

Private rented sector: flats

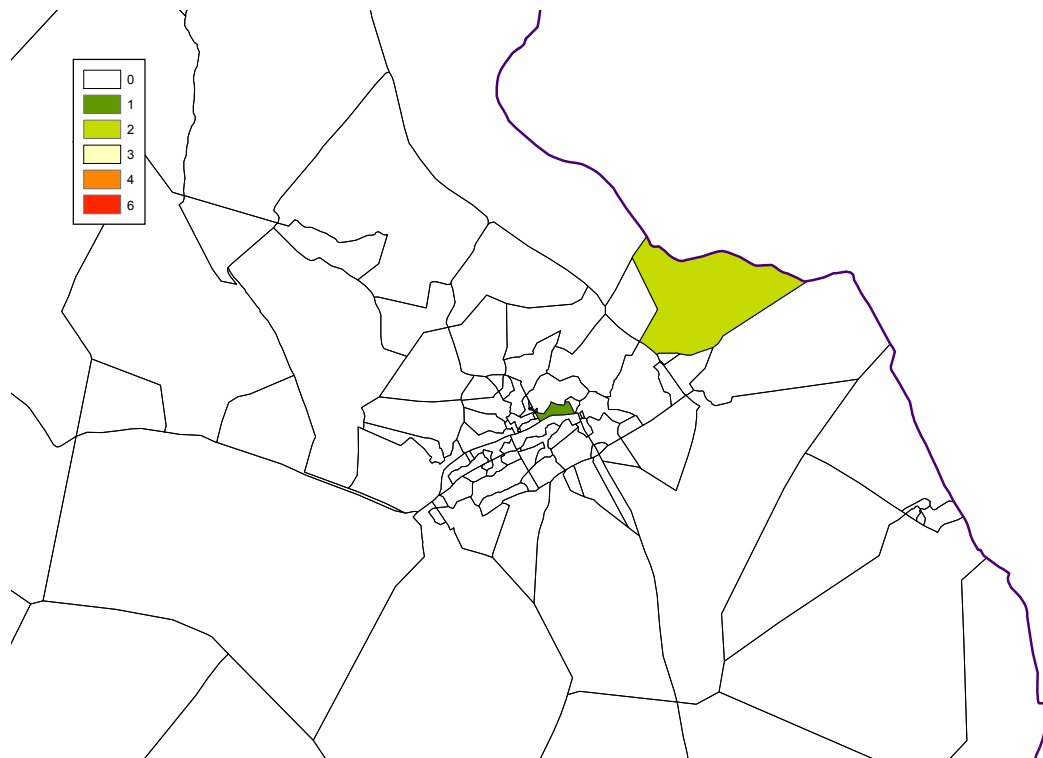
Map 1: Overall distribution of flats in EPC bands F and G or less in North Herts:



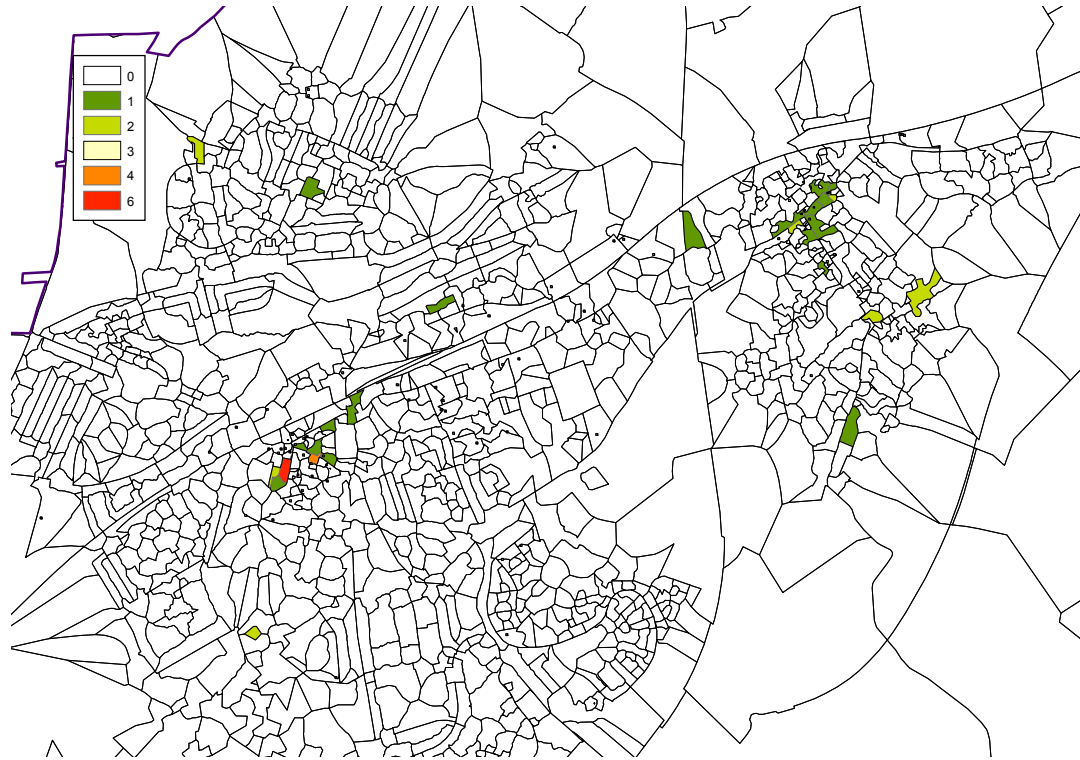
Map 2: Distribution of flats in EPC bands F and G in Royston area



Map 3: Distribution of flats in EPC bands F and G in Ashwell area



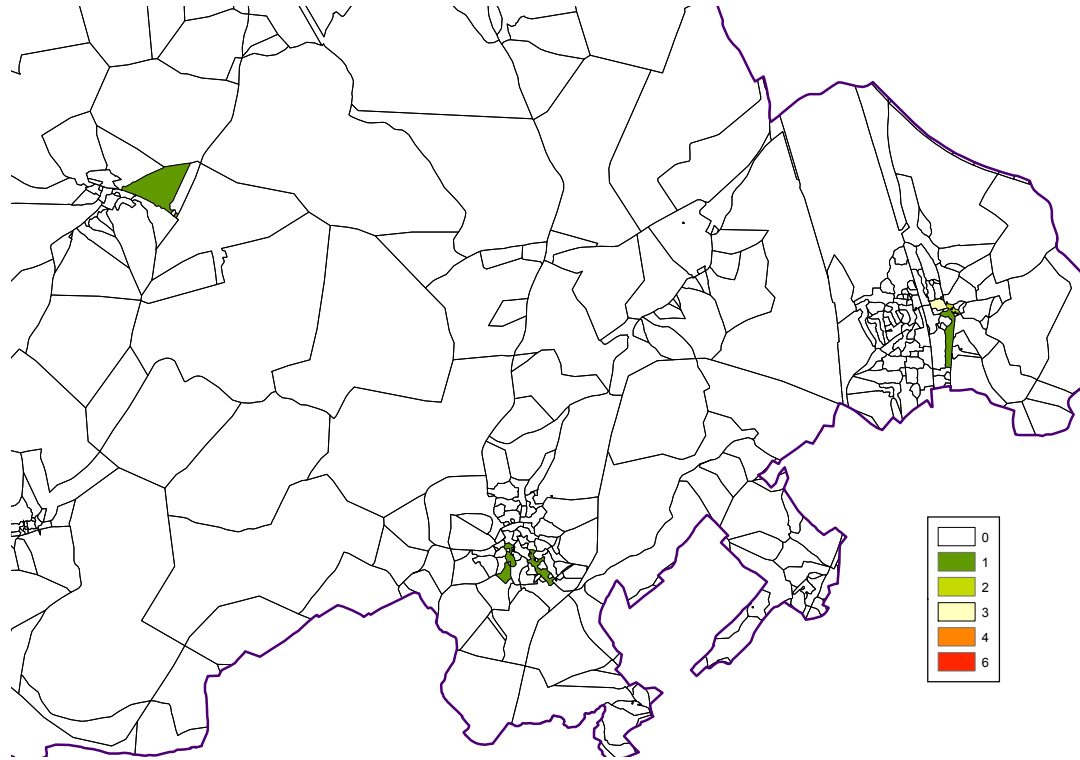
Map 4: Distribution of flats in EPC bands F and G in Letchworth area



Map 5: Distribution of flats in EPC bands F and G in Hitchin area

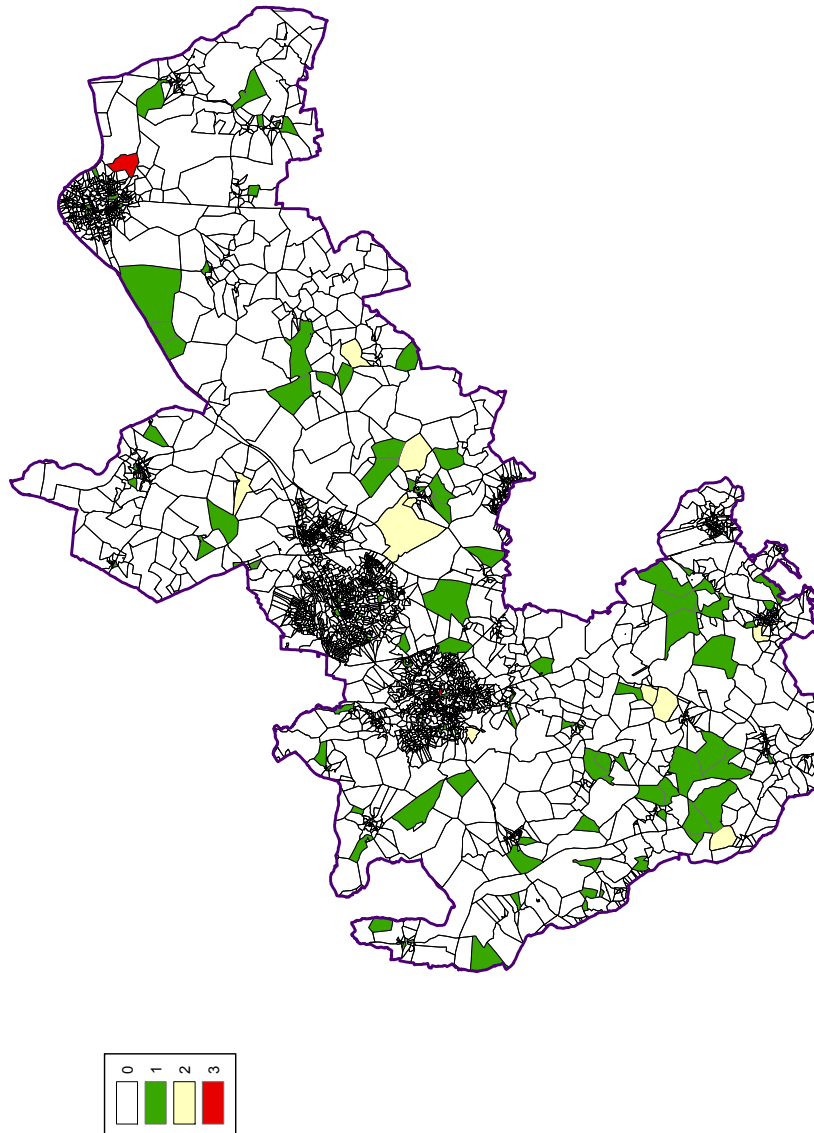


Map 6: Distribution of flats in EPC bands F and G in Codicote area

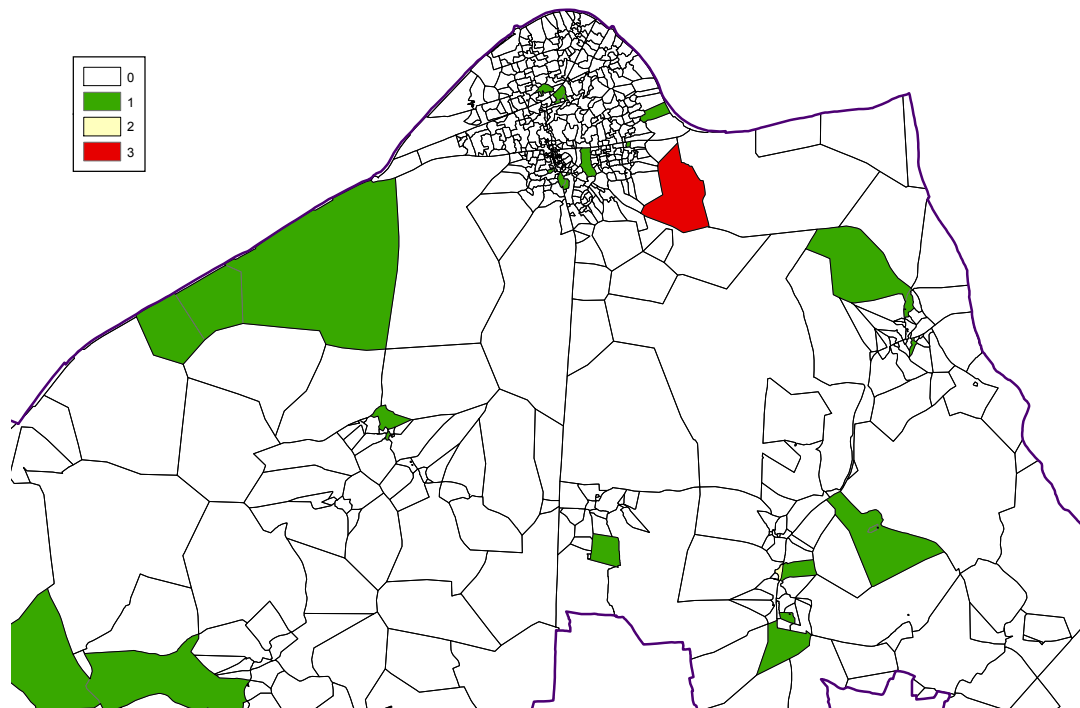


Private rented sector: houses

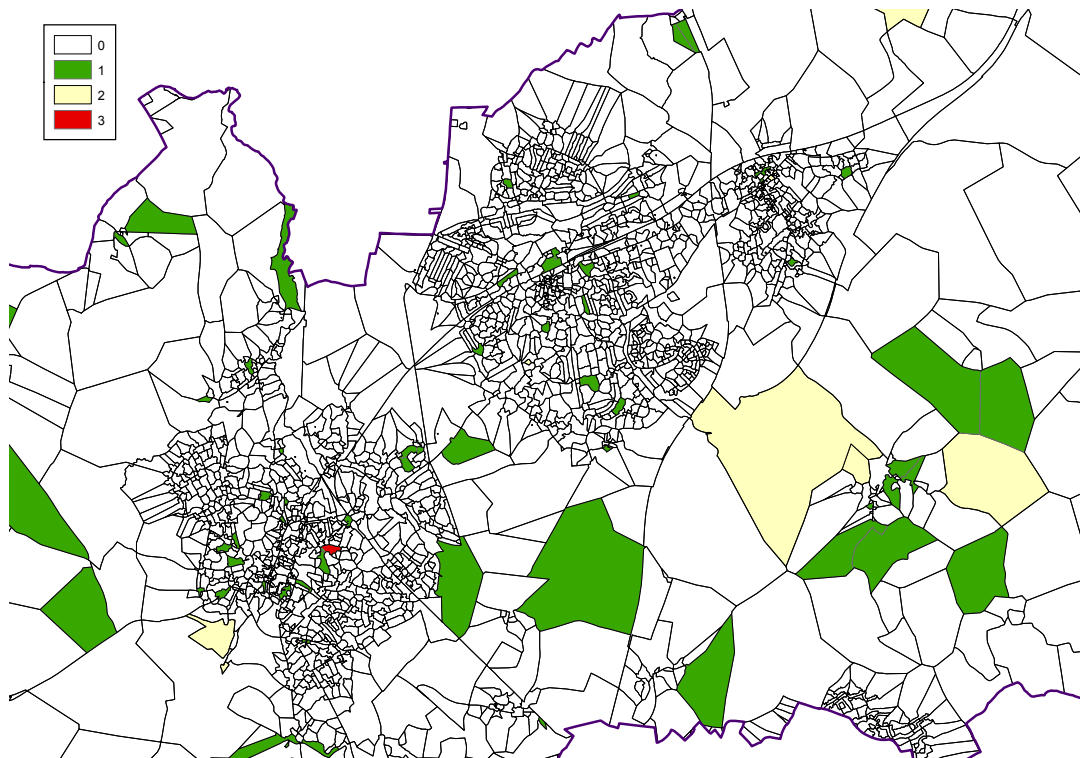
Map 1: Overall distribution of houses in EPC bands F and G in North Herts:



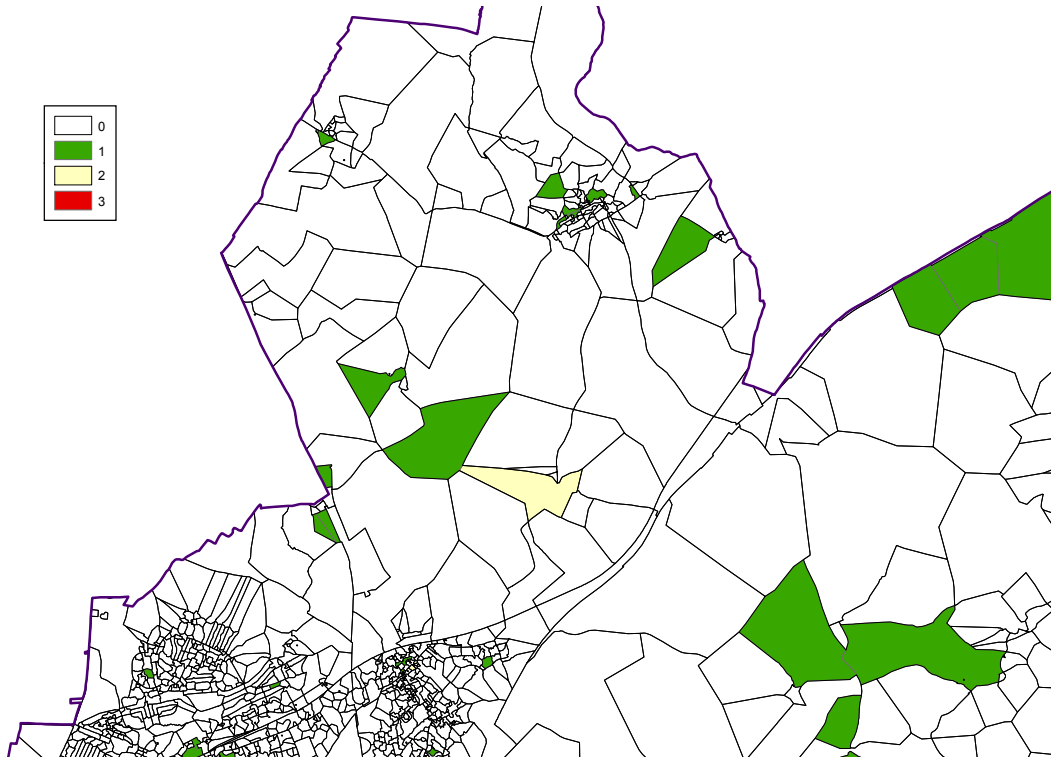
Map 2: Overall distribution of houses in EPC bands F and G in Royston area:



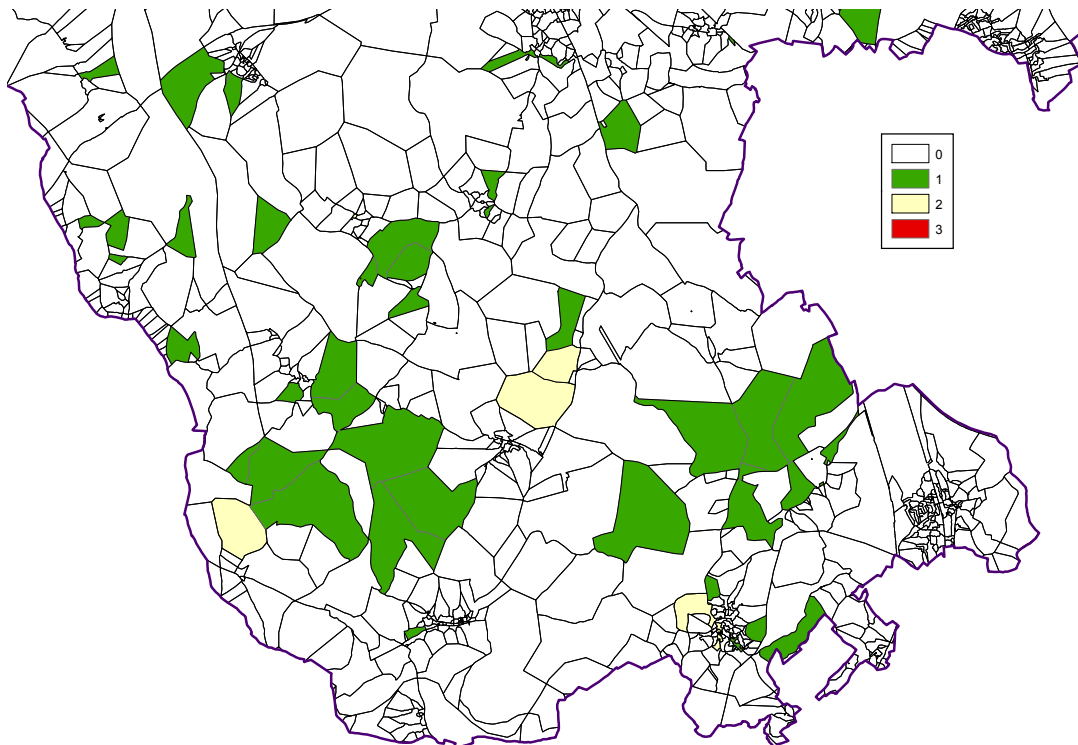
Map 3: Overall distribution of houses in EPC bands F and G in Letchworth and Hitchin area:



Map 4: Overall distribution of houses in EPC bands F and G in Ashwell area:



Map 5: Overall distribution of houses in EPC bands F and G in southern North Herts area:



SECTION 8

Modelled data on the housing stock

Home Analytics is an address level database containing information on the property characteristics and energy efficiency of every dwelling in Great Britain. The dataset is produced by the Energy Saving Trust (EST).

The modelled data is produced from a variety of survey sources, both national and local, and combines these to produce predictions of the characteristics of every single dwelling. The modelled characteristics are therefore a combination of any known characteristics of the dwelling plus characteristics derived from probability modelling of other dwellings with similar characteristics.

The model contains information in the following categories:

- Property type (detached/terraced/etc)
- property tenure (owner occupied/private rented/housing association)
- property age (pre 1900, 1900-29, 1930-49, 1950-66, 1967-82, 1983-95, post 1995)
- number of bedrooms
- main fuel type (gas, oil, electric, LPG, solid)
- boiler type (condensing, standard, none)
- wall construction and insulation (cavity or solid and insulated or not)
- loft insulation (no loft, <50mm, 51-150mm, >151mm)
- glazing (single or double)

Home Analytics data is modelled, and there is therefore a degree of uncertainty and inaccuracy in the predicted data. EST statistical tests give probabilities for the accuracy of each data category.

For example, the data for property tenure will predict owner occupied with 97% accuracy, but privately rented with 81%; the data for fuel type will predict gas with 96% accuracy, but LPG with 56%, oil with 68% and solid fuel with 47% (therefore, the predictions for fuel type for properties not on the gas grid will be significantly inaccurate); the data for wall construction and insulation will predict cavity wall with 97% accuracy, but uninsulated cavity with only 69% accuracy.

Overall, at the national level, the data is a good fit with the results of national surveys such as the English Housing Survey or the Census. As the geographic scale becomes smaller, it is likely that the degree of inaccuracy in prediction will become greater (or more idiosyncratic), and results at the LSOA level probably need to be treated with caution and checked against local knowledge.

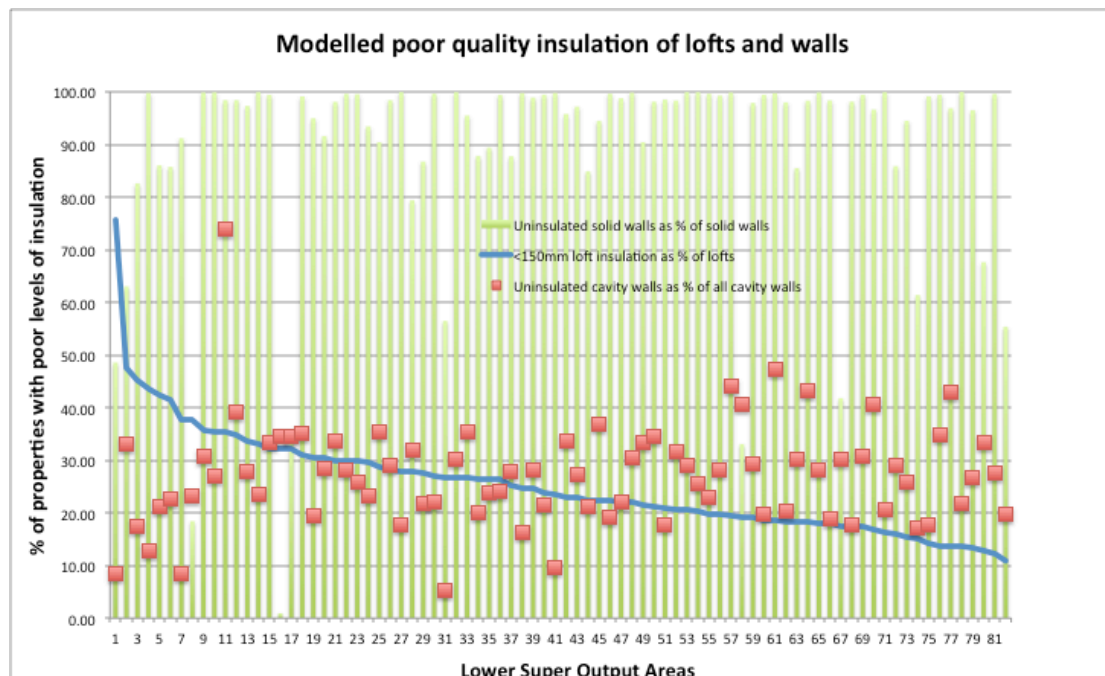
Nevertheless the dataset offers a useful starting point for structuring and prioritising further work at the local level.

In the context of the environmental performance of private sector housing in North Herts, the most useful data are probably those concerned with uninsulated cavity and solid walls, and with inadequate levels of loft insulation (for properties that have a loft).

The chart below shows, for each of the 83 LSOAs in North Herts, the percentage of properties without adequate insulation in three categories:

- Properties with lofts, but less than 150mm of loft insulation
- Properties with cavity walls, but without cavity wall insulation
- Properties with solid walls, but without solid wall insulation.

(therefore, the higher the percentage, the poorer the standard of insulation)



The data is sorted by the percentage of properties with less than 150mm of loft insulation (the blue line), as the most commonly provided form of insulation. (Flats would generally not be included in this category, except for top floor flats in blocks with pitched roofs and lofts.)

The chart shows a general, but not strong, correlation between higher proportions of inadequate loft insulation (between 25% and 75% of properties with less than 150mm) and lower proportions of cavity walls without cavity insulation. It is not clear why the correlation should be this way round: it might be expected that properties with higher levels of loft insulation would also have higher levels of cavity insulation, either because the owners were more conscious of the benefits, or because the properties were built more recently to higher Building Regulation standards.

The chart also shows that the modelling estimates that very few solid walls have any added insulation: the proportion of uninsulated solid walls is above 90% in the vast majority of LSOAs.

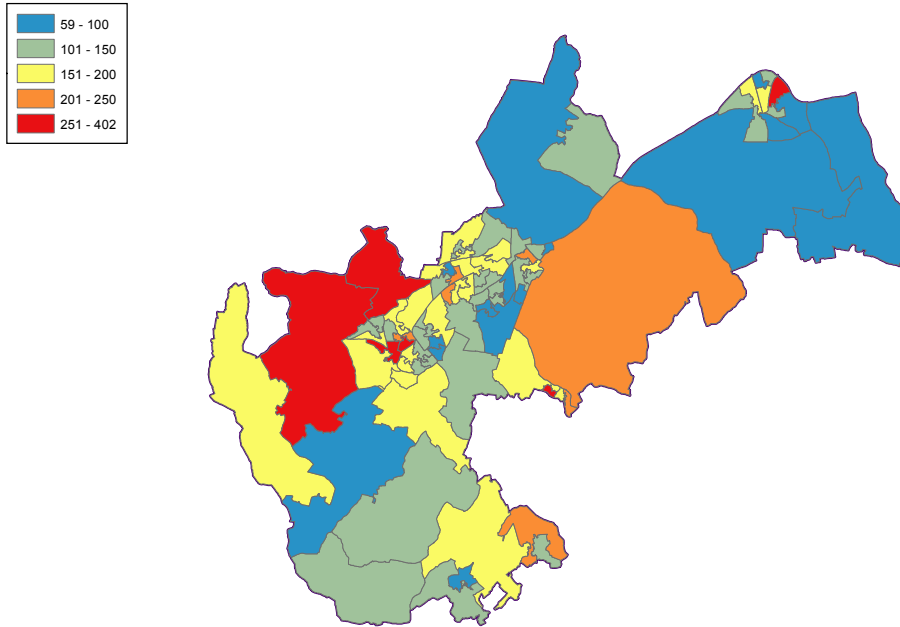
In four cases, the HEED data suggests that very low proportions of solid walls remain uninsulated: LSOAs 005I (1%), 010E (18%), 001C (33%) and 013E (35%), but it is not possible to tell from the data whether these are abnormalities produced by the modelling algorithm, or actual data derived from external data sources.

A high proportion of insulated solid walls might suggest either social housing, or privately owned leasehold blocks or estates, where a single landlord might undertake improvement programmes. In these instances, local knowledge should be able to identify whether particular blocks or estates of leasehold property have been externally renovated and insulated.

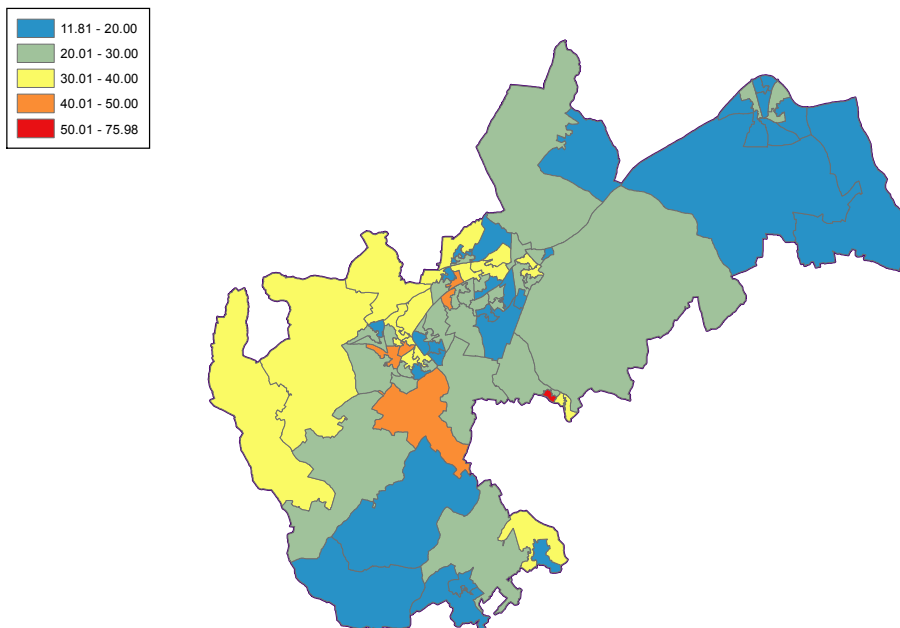
The maps below show the distribution of three key measures of environmental performance modelled in the HEED dataset: the number, and percentage (as a percentage of all properties with lofts), of properties in each LSOA with lofts that have less than 150mm of loft insulation; the number, and percentage (as a percentage of all properties with cavity walls), of properties that have cavity walls that are uninsulated; and the number, and percentage (as a percentage of all properties with solid walls) of properties that have solid walls that are uninsulated.

Number of LSOAs by extent of insulation					
Properties with lofts but <150mm of insulation		Properties with uninsulated cavity walls		Properties with uninsulated solid walls	
>75%	1	>50%	1	>90%	61
50%-74%	-	25%-49%	47	80%-89%	9
25%-49%	38	10%-24%	31	50%-79%	5
<25%	43	<10%	3	<50%	7

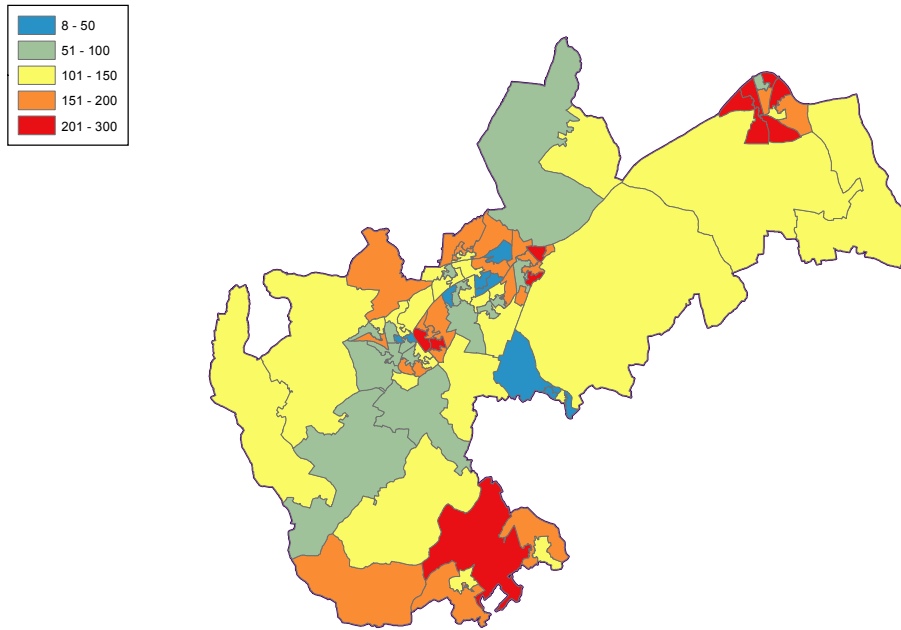
Map 1: Number of properties with lofts that have less than 150mm of loft insulation:



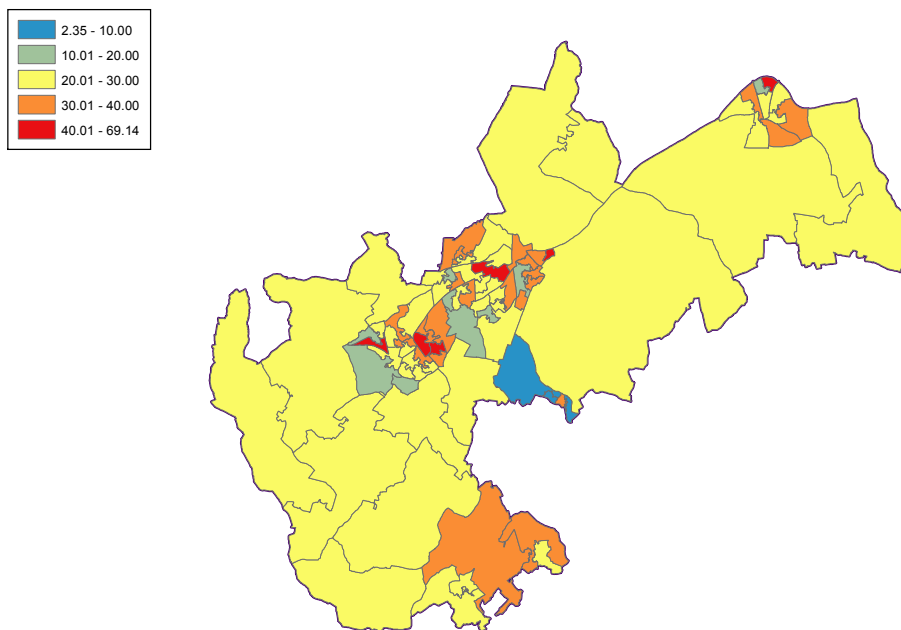
Map 2: Percentage of properties with lofts that have less than 150mm of loft insulation:



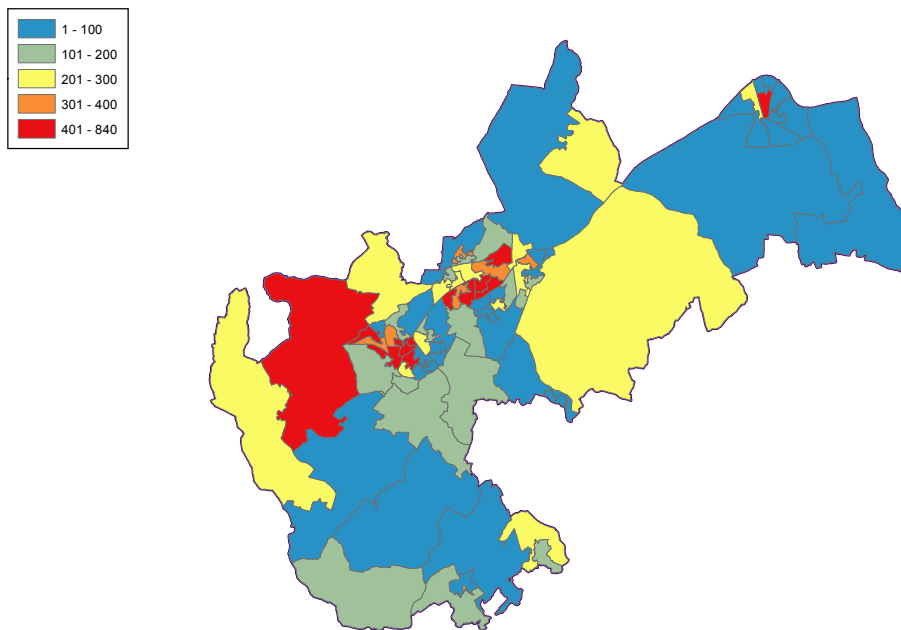
Map 3: Number of properties with cavity walls that are uninsulated:



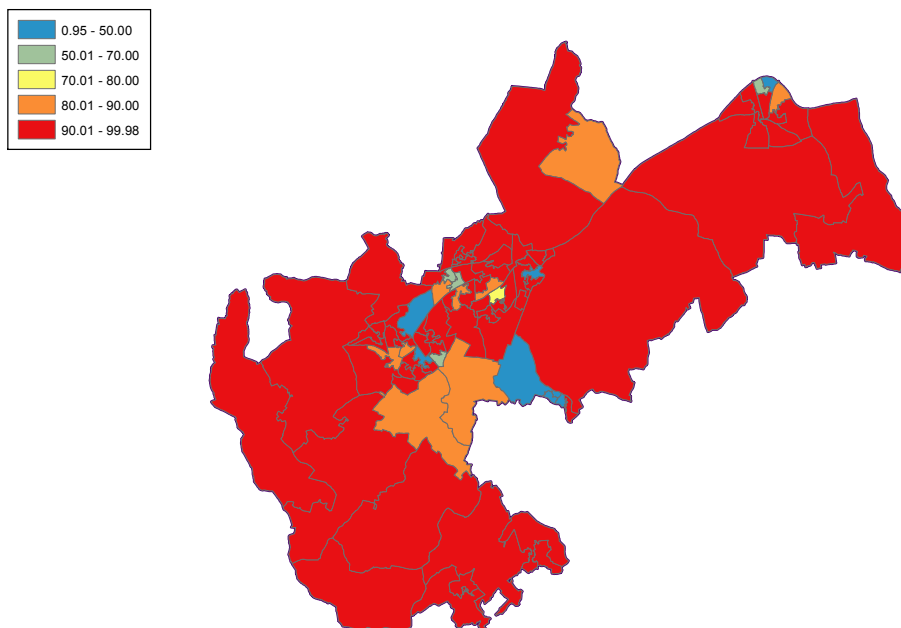
Map 4: Percentage of properties with cavity walls that are uninsulated:



Map 5: Number of properties with solid walls that are uninsulated:



Map 6: Percentage of properties with solid walls that are uninsulated:



SECTION 9

Estimating fuel poverty

In 2012, the Department of Energy and Climate Change (DECC) published estimates of the extent of fuel poverty in England¹. The estimates were produced by BRE², and modelled from a variety of sources, including the English Housing Survey and the 2001 Census.

The national figures estimate the percentage of households that fall into each of 21 bands of households estimated to be in fuel poverty, ranging from 0% of households to 50% of households. The table below shows the percentage of households in N. Herts in each Census Lower Super Output Area that fall into each of the 21 bands, compared to England as a whole.

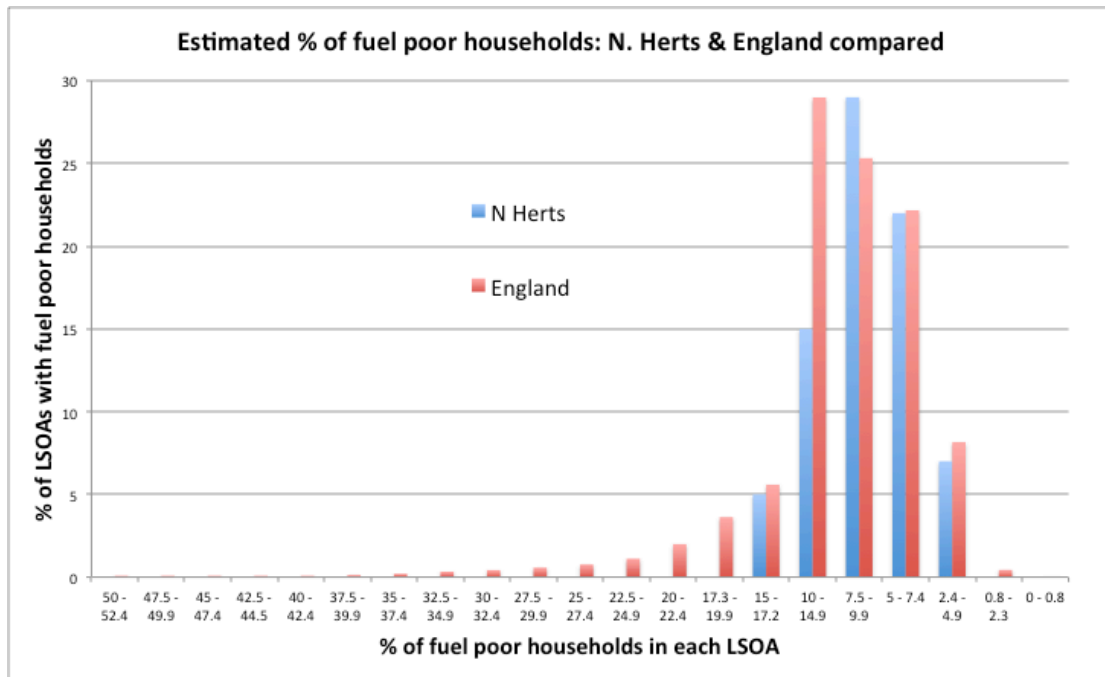
Estimated % of fuel poor households	N Herts	England
50 - 52.4		0.009
47.5 - 49.9		0.012
45 - 47.4		0.015
42.5 - 44.5		0.04
40 - 42.4		0.05
37.5 - 39.9		0.13
35 - 37.4		0.21
32.5 - 34.9		0.33
30 - 32.4		0.43
27.5 - 29.9		0.58
25 - 27.4		0.77
22.5 - 24.9		1.12
20 - 22.4		2
17.3 - 19.9		3.63
15 - 17.2	6.41	5.59
10 - 14.9	19.23	28.99
7.5 - 9.9	37.18	25.32
5 - 7.4	28.21	22.17
2.4 - 4.9	8.97	8.16
0.8 - 2.3		0.44
0 - 0.8		0

The table shows that households in N. Herts are estimated to have relatively low levels of fuel poverty, with no LSOA having in excess of 17.2% of households in fuel poverty.

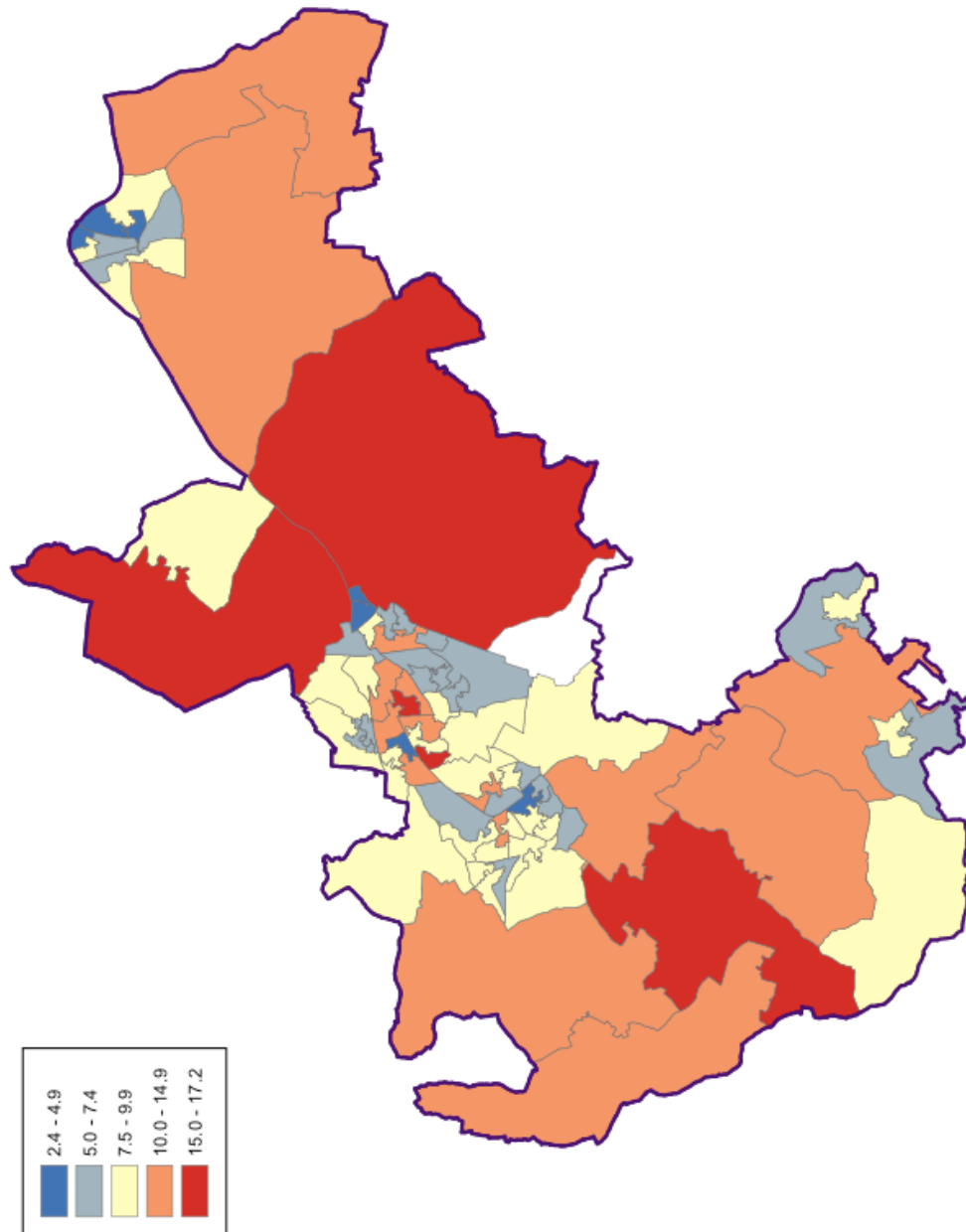
¹ Sub-regional Fuel Poverty England 2012: Low Income High Costs (LIHC definition, DECC

² 2009 Sub-regional fuel poverty methodology and documentation, BRE 2011

The chart below shows the same data graphically, and it is clear that N. Herts has a more favourable pattern of fuel poverty than the England average, with the 'peak' of households living in LSOAs in which between 7.5% to 9.9% of households are estimated to be in fuel poverty, compared to the England 'peak' at between 10% and 14.99% of households estimated to be in fuel poverty.



Fuel poor households (modelled) showing % of households in fuel poverty by LSOA



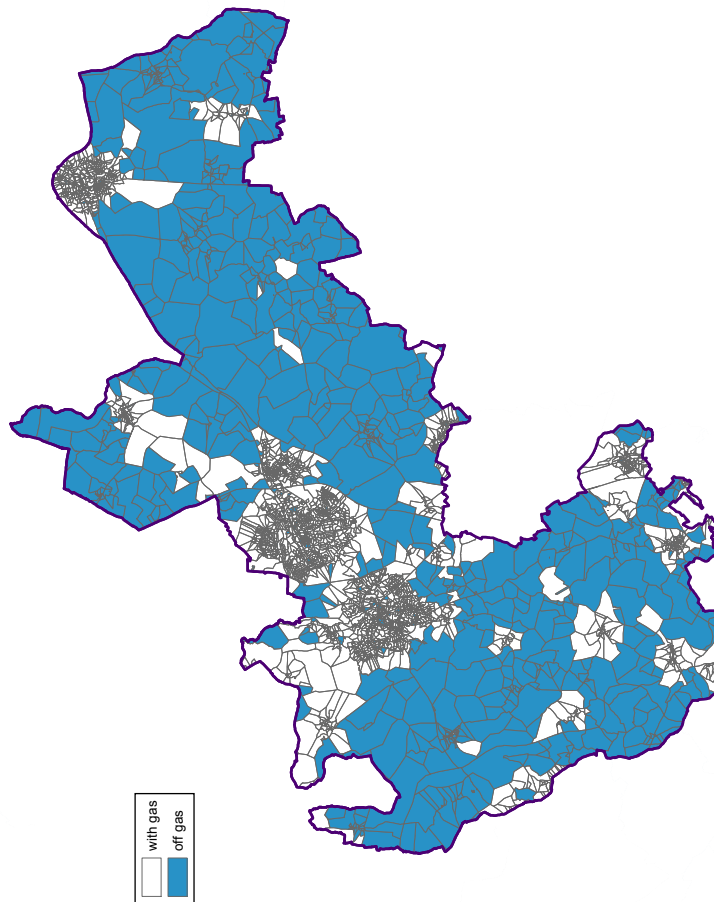
SECTION 10

Access to gas for heating and 'off gas grid' properties

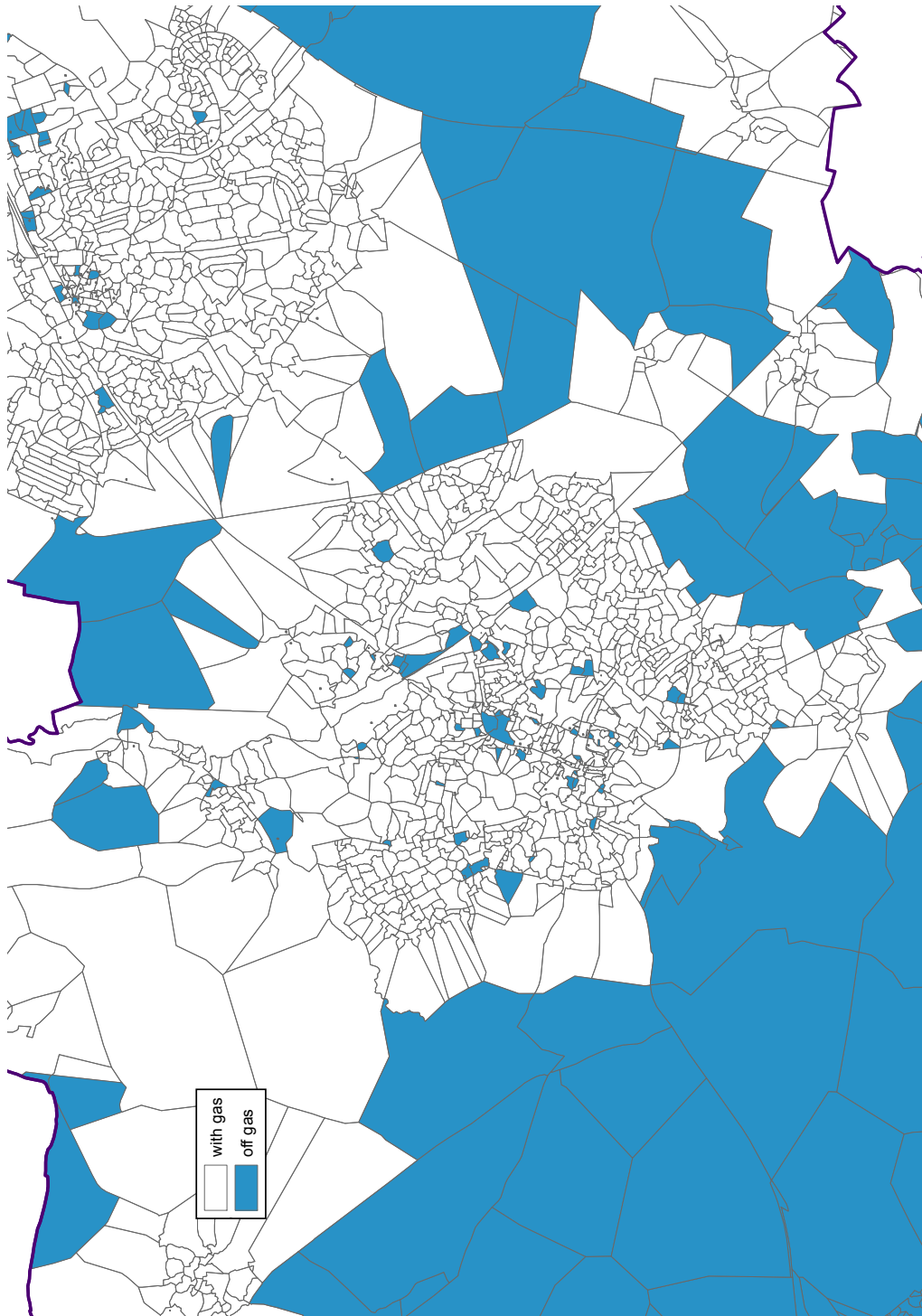
Mains gas remains the most economical of the widely available means of heating a home, and the heating costs for households living in areas that are off the gas grid are likely to be significantly higher than those on the gas grid.

The maps below show the relationship between the distribution of estimated fuel poverty, and the distribution of postcodes which are off the gas grid. (This is defined as postcodes which do not contain a gas connection, whether domestic or non domestic: the data is supplied by Xoserve, which is the agent for the gas transport grid.) There are approximately 3,800 active postcodes in North Herts (postcode boundaries do not coincide with council boundaries). Only 109 of these do not contain a gas connection, but because these are predominantly rural areas, they constitute the majority of the land area.

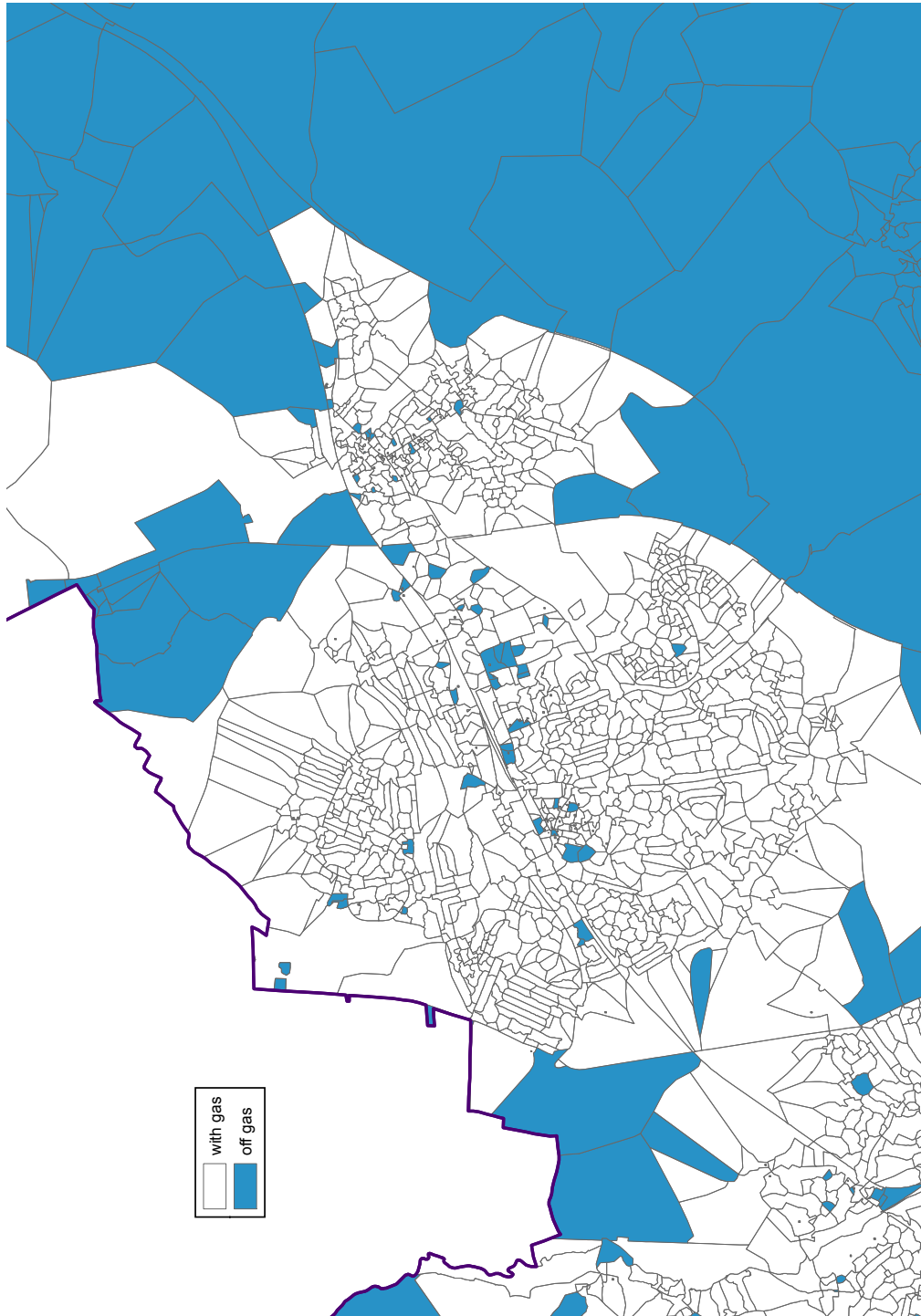
Off gas grid postcodes



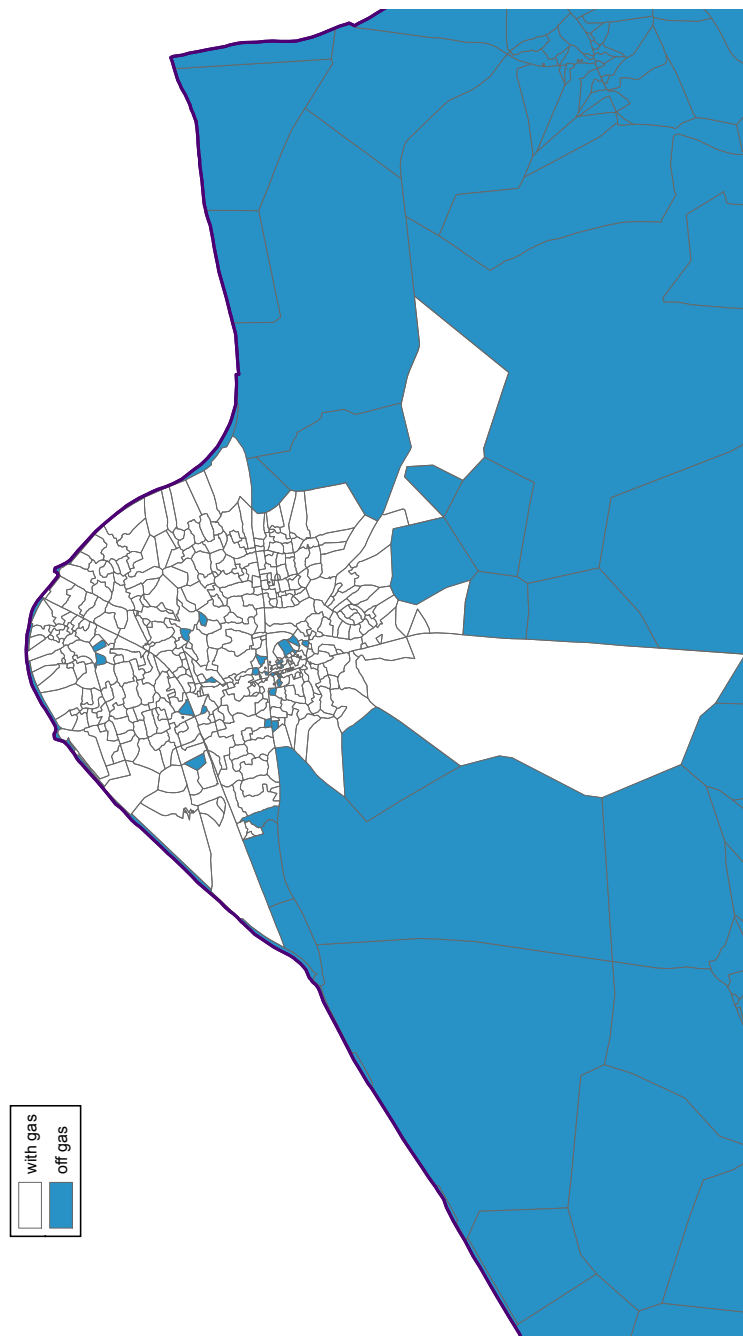
Off gas grid postcodes in Hitchin area



Off gas grid postcodes in Letchworth area



Off gas grid postcodes in Royston area



SECTION 11

Private sector tenants in receipt of Housing Benefit

Any household (strictly, any Benefit Unit) in receipt of any of the following:

- Pension Credit
- Income Support
- Jobseekers Allowance (income based)
- Employment and Support Allowance (income-related)
- Child Tax Credit

is automatically entitled ('passported') to full Housing Benefit (based upon the eligible rent).

Figures supplied by the NHDC Housing Benefits Team show the following split between 'passported' and 'not passported' households receiving Housing Benefit and living in the private rented sector.

Table: Private Rented Sector tenants in receipt of HB by whether or not 'passported'

Private sector tenants in receipt of Housing Benefit			
Number in household	Passported benefit: Yes	Passported benefit: No	Total
1	404	256	660
2	140	232	372
3	50	120	170
4	23	79	102
5	11	28	39
6		13	13
7		3	3
8			0
9	1		1
Total	629	731	1360

The table shows that just over half (54%) of all private rented sector tenants are not in receipt of any of the 'passporting' benefits, and therefore presumably either have a sufficient pension to be ineligible for Pension Credit, or earnings from employment that are insufficient to enable them to pay their rent without assistance. (Tenants who are on JSA might also be in work, but working for less than 16 hours per week.)

Nearly half (48.5%) of all households in the Private Rented Sector who receive HB are single people: the majority of these (61.2%) are 'passported', whereas for households with two people or more, the majority are not receiving any of the 'passporting' benefits.

It is not possible to identify, from the available HB data, how many of the single person households are also pensioners: in the social housing sector, the vast majority of passported single person households are likely to be pensioners, but it is improbable that virtually one third (29.7%) of the PRS HB cases would be pensioners. It is more likely that many of this group are single people of working age.

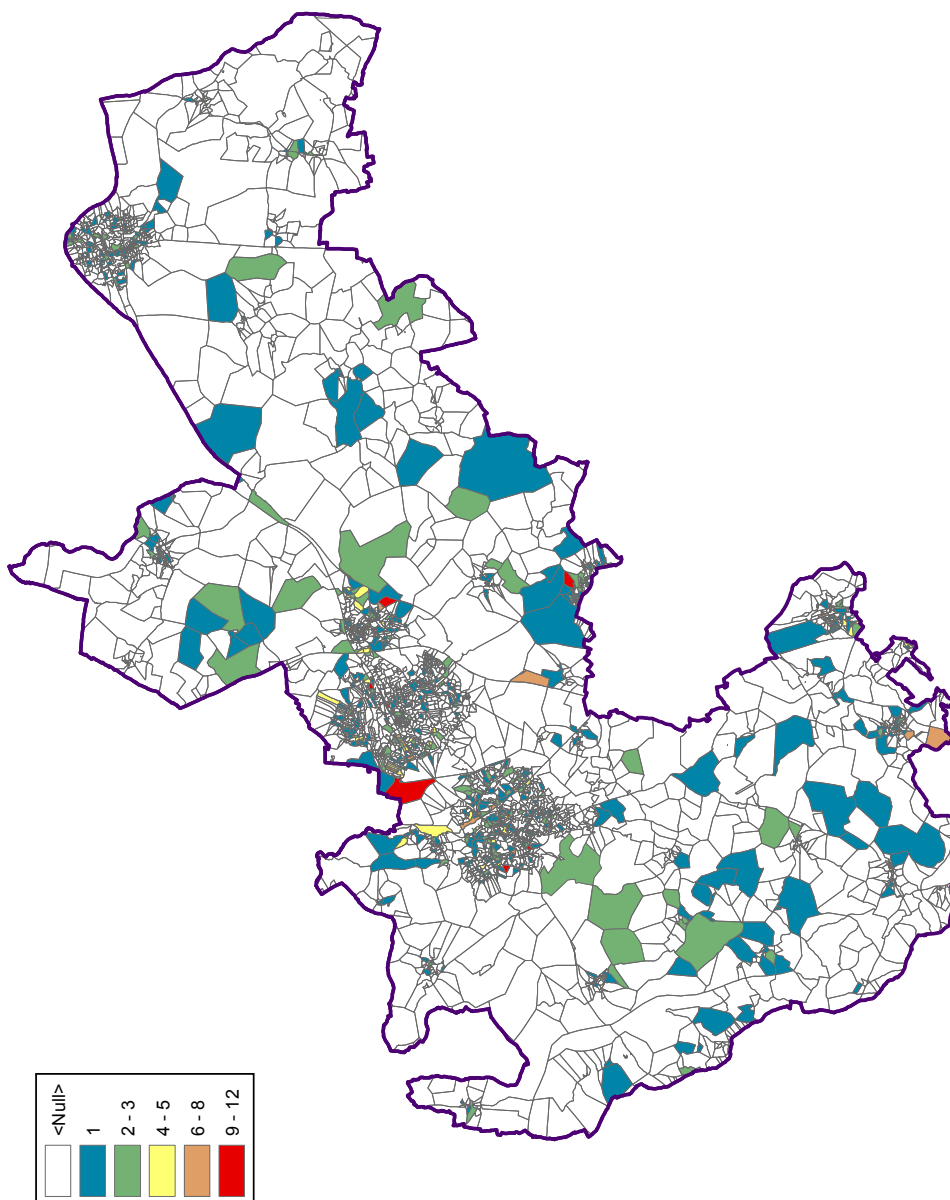
Are HB cases in the Private Rented Sector spatially concentrated?

The maps below show the number of HB cases in the Private Rented Sector in each postcode within N. Herts.

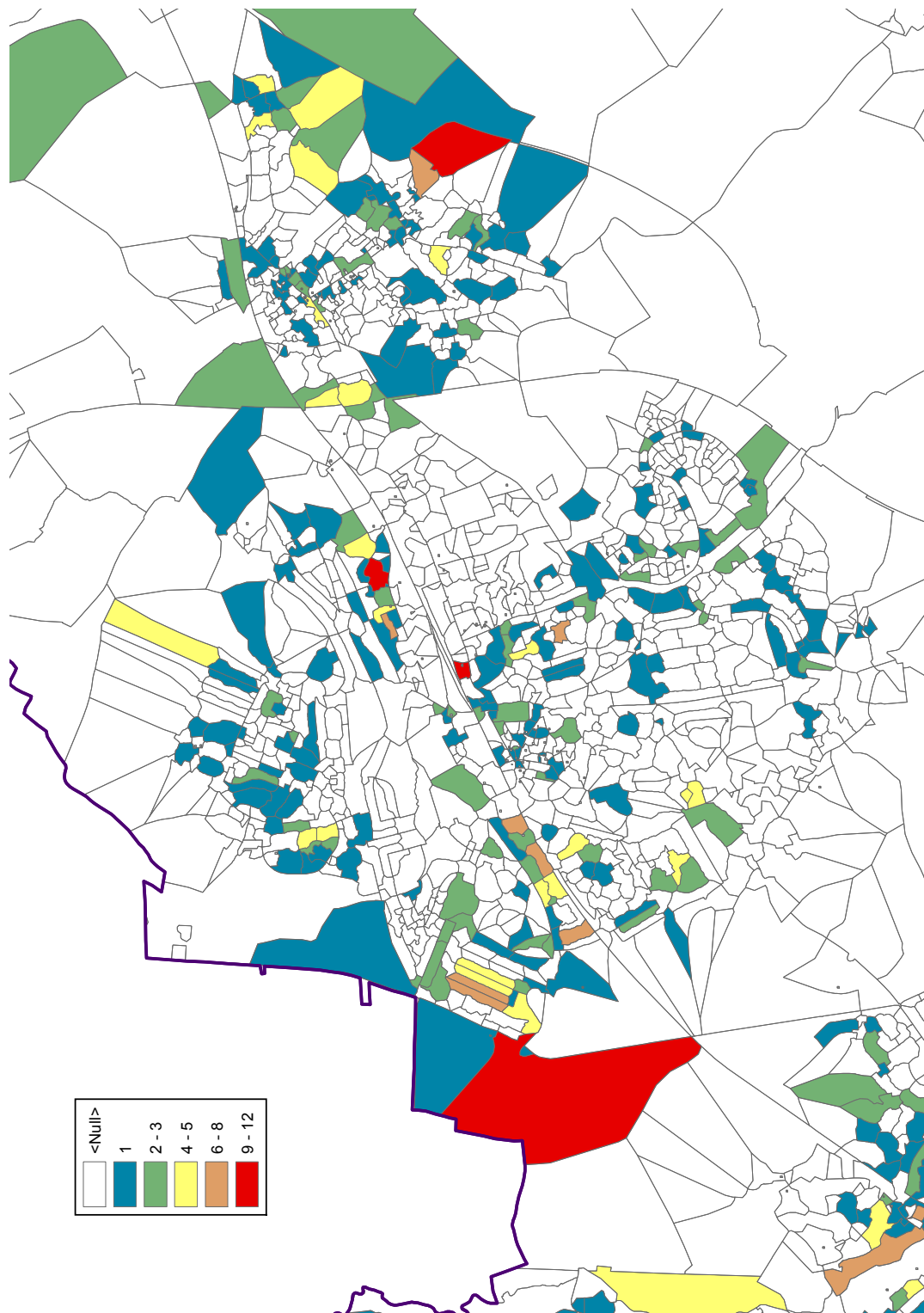
The mapping suggests that while there is no excessive concentration of households dependent upon Housing Benefit in particular areas within the district, there are some areas which appear to contain more cases than others.

Identifying the possible reasons for these concentrations would require a detailed knowledge of the property and social characteristics of each postcode.

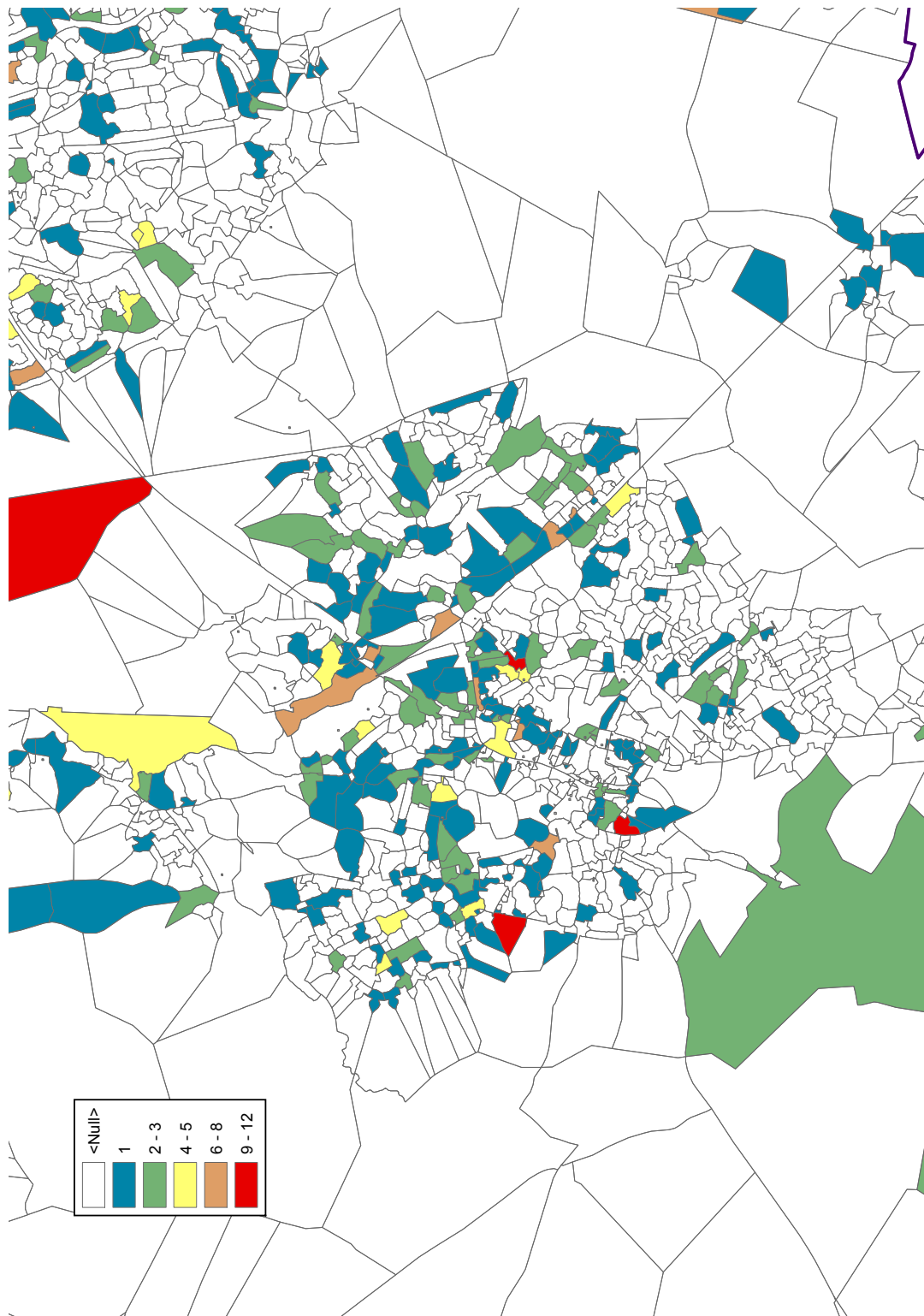
Map 1: Housing Benefit cases by postcode in North Herts



Map 2: Housing Benefit cases in Letchworth area



Map 3: Housing Benefit cases in Hitchin area



Map 4: Housing Benefit cases in Royston area

