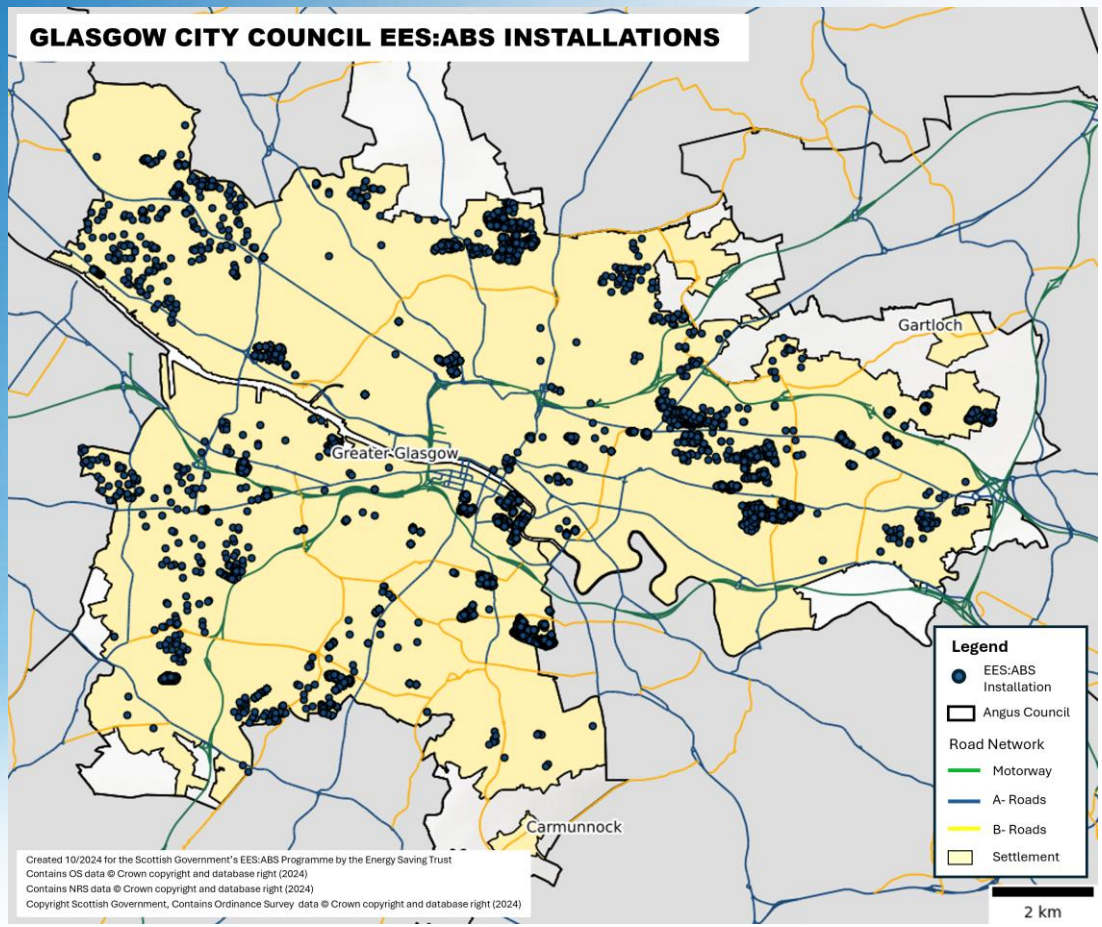
Glasgow City
EES: ABS Case Study

energy saving trust

Energy Saving Trust
September 2024



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Overview

The Scottish Government's EES: ABS* team requested the case studies to compare the available EES: ABS install data, alongside other energy efficiency related characteristics, with three goals in mind:

- To provide a more detailed breakdown of the installed measures data to date.
- To allow greater comparison between the different local authorities as well as across the duration of the EES: ABS programme.
- To provide a series of illustrations that the Scottish Government or local authorities can use to promote the work achieved under the EES: ABS programme.

This presentation contains the case study and illustration set for Glasgow City Council EES: ABS activity reported to date (Sept 2024).**

*Note: *Energy Efficient Scotland: Area Based Schemes*
***Some data gaps may exist – to be submitted by the local authority.*

The Glasgow City EES: ABS dataset

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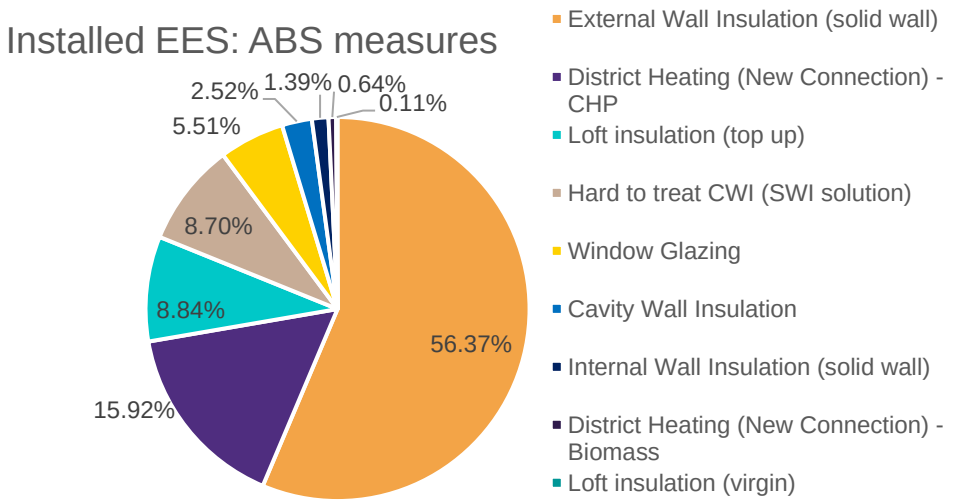
Financial Year	Number of records*	% of records
2013/14	3,324	25.48
2014/15	2,319	17.78
2015/16	1,929	14.79
2016/17	1,170	8.97
2017/18	632	4.85
2018/19	462	3.54
2019/20	238	1.82
2020/21	256	1.96
2021/22	2,494	19.12
2022/23	203	1.56
2023/24[1]	*16*	0.12
Total Installs	**13,043**	**100.00**

Reference numbers	Number of records[1]	% of records
With pre-installation EPC	3,809	39.40
With post-installation EPC	2,130	22.03
With pre and post-installation EPC	1,748	18.08
With GDAR	0	0.00
With measure reference number	0	0.00

Glasgow City council has contributed 10.25% of the total EES: ABS installs across Scotland reported to date (Sept 2024).

**Published at https://www.gov.scot/publications/area-based-schemes-annual-final-measures-reports/.*
[1]Preliminary figure reported to EST by Glasgow City Council.

Installed Measures



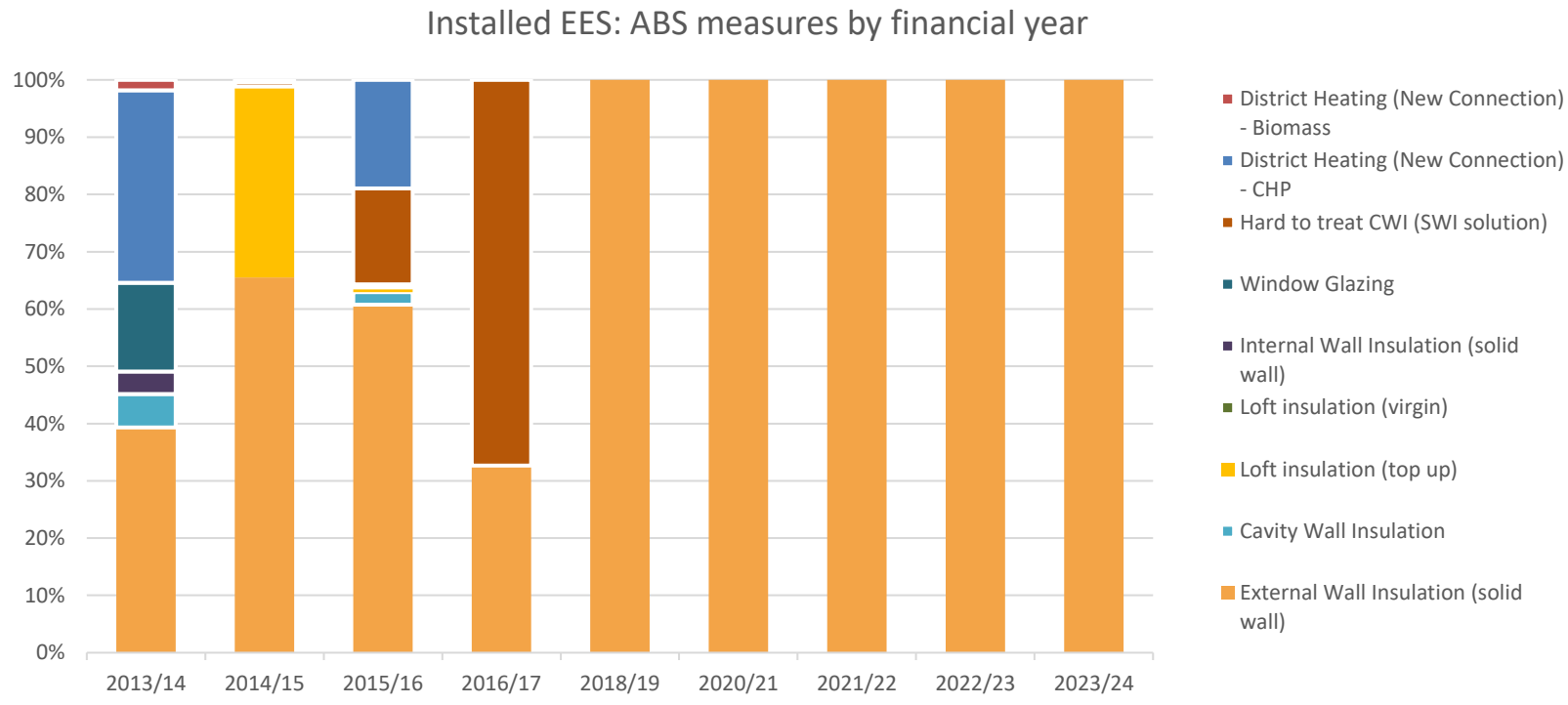
Glasgow City's EES: ABS programme is split between providing External Wall Insulation to solid walled properties and a wider suite of other energy efficiency measures.

Measure Name	Number of records*	% of records
External Wall Insulation (solid wall)	5,099	56.37
District Heating (New Connection) - CHP	1,440	15.92
Loft insulation (top up)	800	8.84
Hard to treat CWI (SWI solution)	787	8.70
Window Glazing	498	5.51
Cavity Wall Insulation	228	2.52
Internal Wall Insulation (solid wall)	126	1.39
District Heating (New Connection) – Biomass	58	0.64
Loft insulation (virgin)	10	0.11
Total Installs	**9,046**	**100.00**

Glasgow City is one of only three local authorities to have used EES: ABS funding to install connections to district heating systems (the other being Aberdeen City and Falkirk).

As reported to Energy Saving Trust. Some data gaps may exist – to be submitted by the local authority.

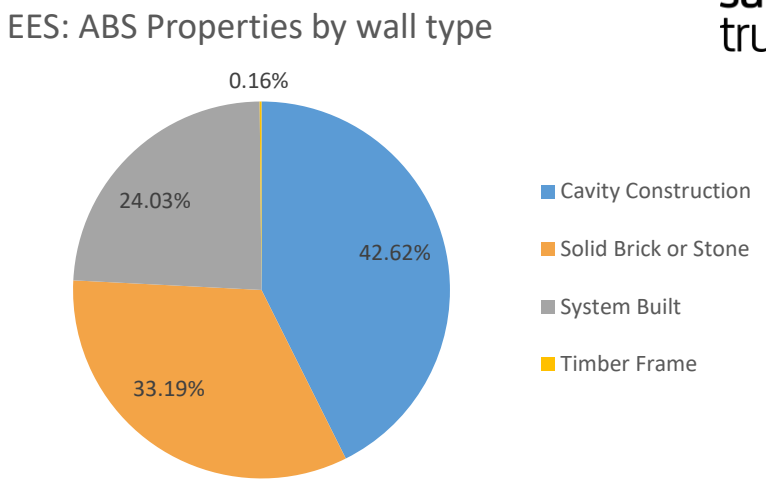
Installed Measures by Financial year

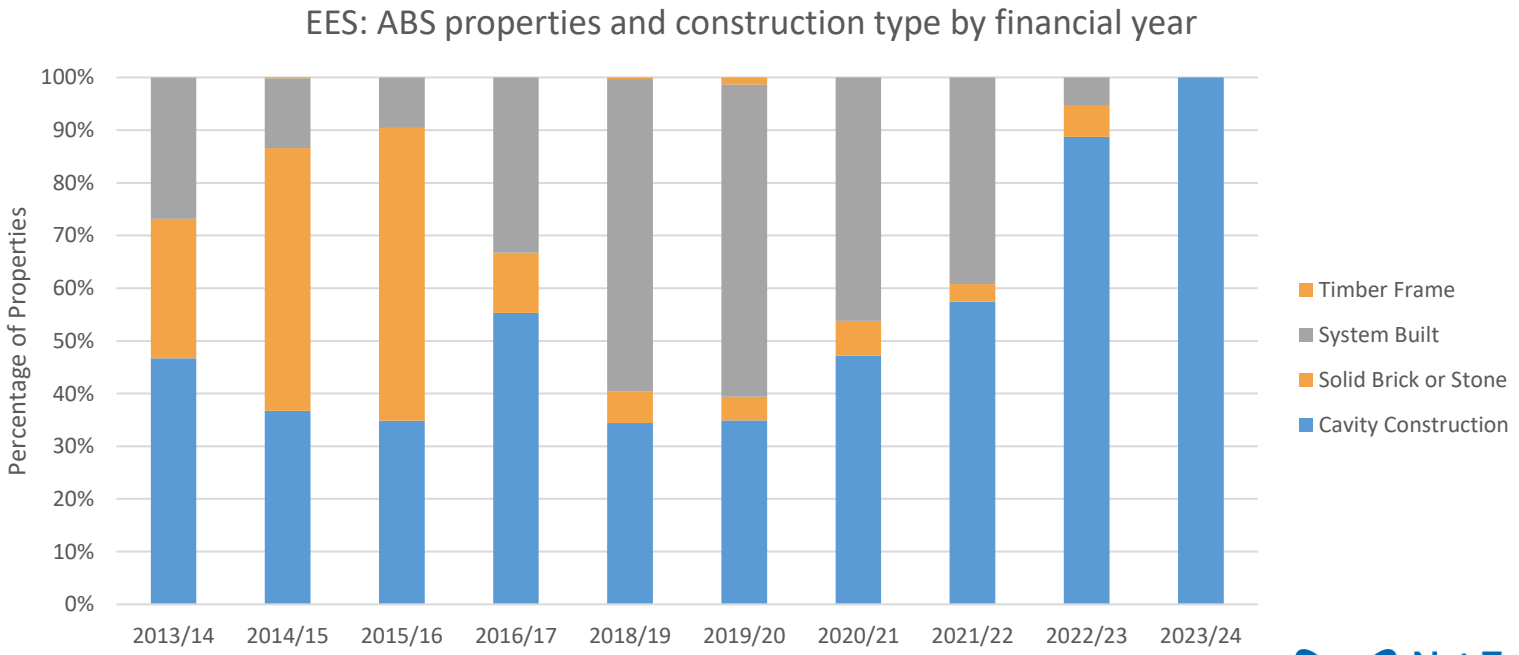


A considerable component of EWI installs remain present throughout every year of Glasgow City's EES: ABS programme. We can also see large phases of district heating work during the 2013/14 and 2015/16 financial years (35% and 19% of those financial year installs respectively).

Wall Type

The chart on the right shows the distribution of different wall types within the programme. Below you can see the division of these wall types throughout the years.

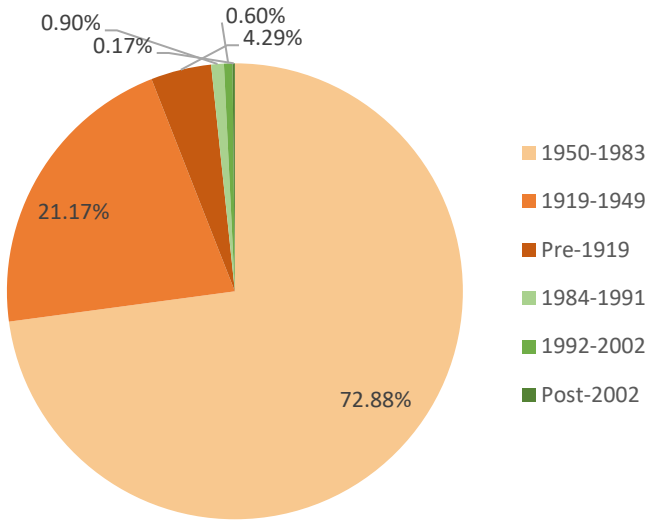




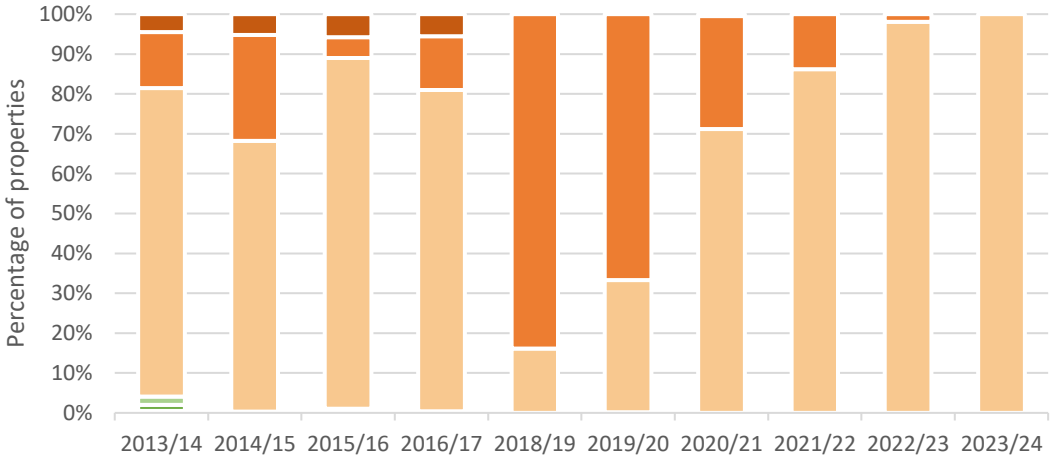
Note: Wall type is taken from EST's Home Analytics dataset.

Construction Age

EES: ABS properties by construction age



EES: ABS Properties and Construction Age by Financial Year



The majority of all participating properties were constructed between 1950 and 1983 (72.88%) and 1919-1949 (21.17%). The activity by year graph shows which construction age groups were included over the lifetime of the programme, and shows a predominance of 1919-1949 dwellings during years five and six. The majority of non-external wall insulation measures, including district heating connections, were installed in blocks of flats of cavity wall construction.

Note: Construction type and age are taken from EST's Home Analytics dataset which is a combination of EPC and modelled data.

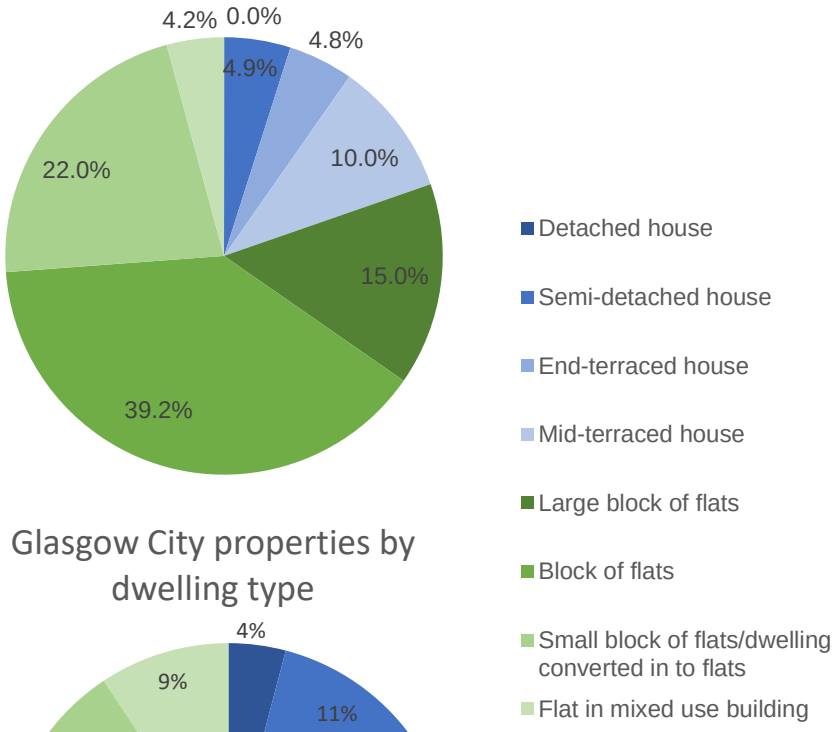
Dwelling Type

Glasgow City's programme has had a very strong focus on improving flats as this property type received 80.32% of the total installs.

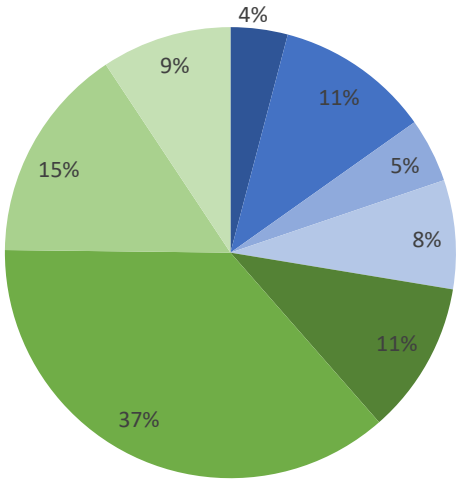
Larger units containing a high number of homes can be seen as the main priority because large blocks of flats (15+ flats per building) are over represented and small blocks of flats (2-5 flats per building) are under-represented compared to the general property type distribution of Glasgow City.

Larger individual homes such as detached and semi-detached houses provide only a small proportion of the total installations.

EES: ABS properties by dwelling type



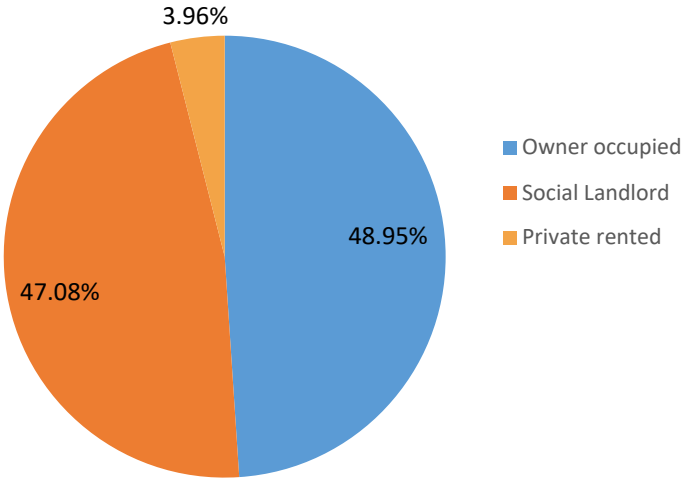
Glasgow City properties by dwelling type



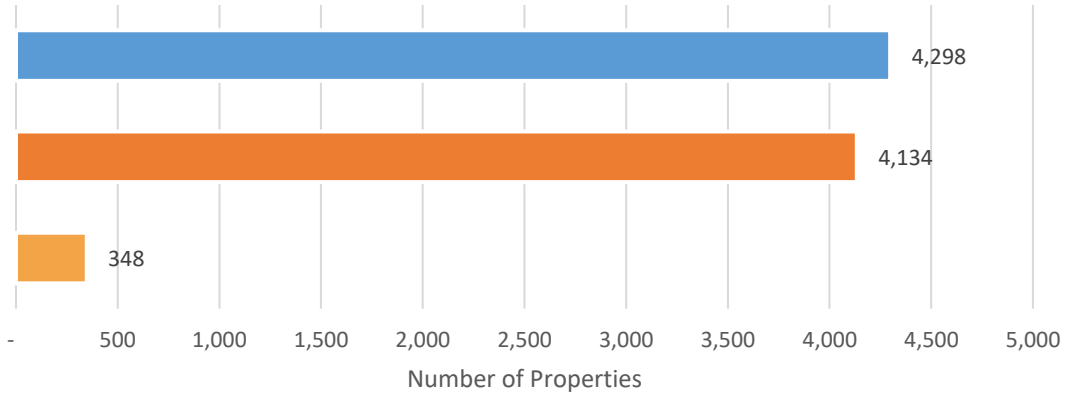
Note: Dwelling type is taken from EST's Home Analytics dataset which is a combination of EPC and modelled data.

Property Tenure

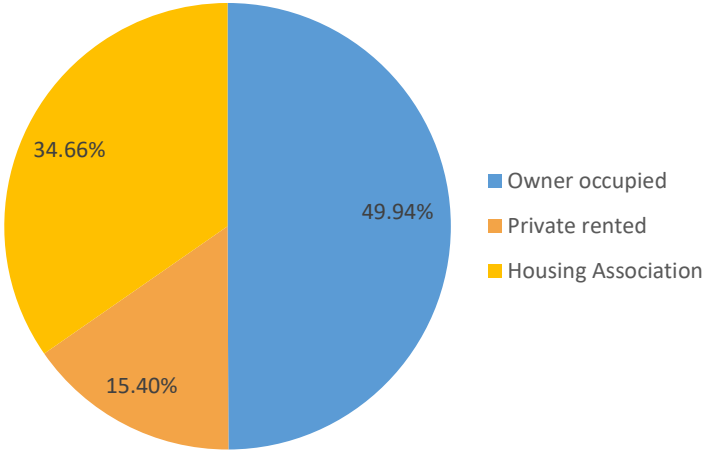
EES: ABS properties by tenure



EES: ABS properties by tenure



Glasgow City properties by tenure

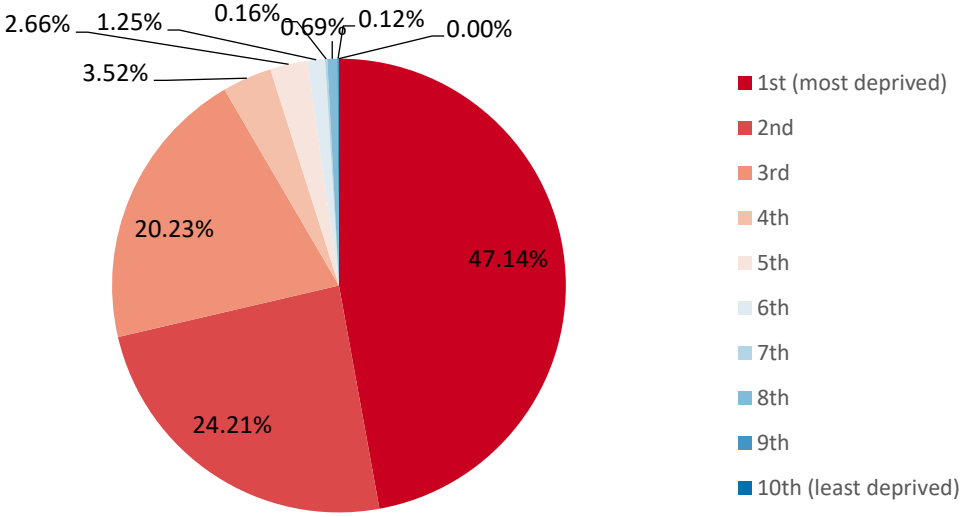


The work completed can be more or less evenly divided between the owner occupied and social landlord sectors with an additional small private rented sector component.

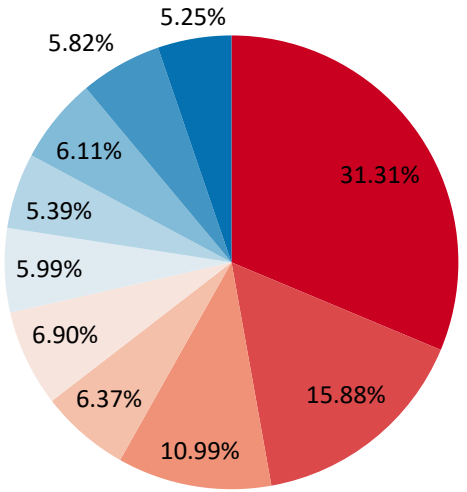
As Glasgow City owns no social housing stock themselves, this highlights the close relationship between the council and housing associations to tackle energy efficiency issues. In combination with the previous slides, it also shows the council's commitment to work in areas which are densely populated, of mixed tenure and can suffer from a high degree of deprivation.

Scottish Index of Multiple Deprivation (SIMD) I

EES: ABS properties by overall SIMD decile ranking

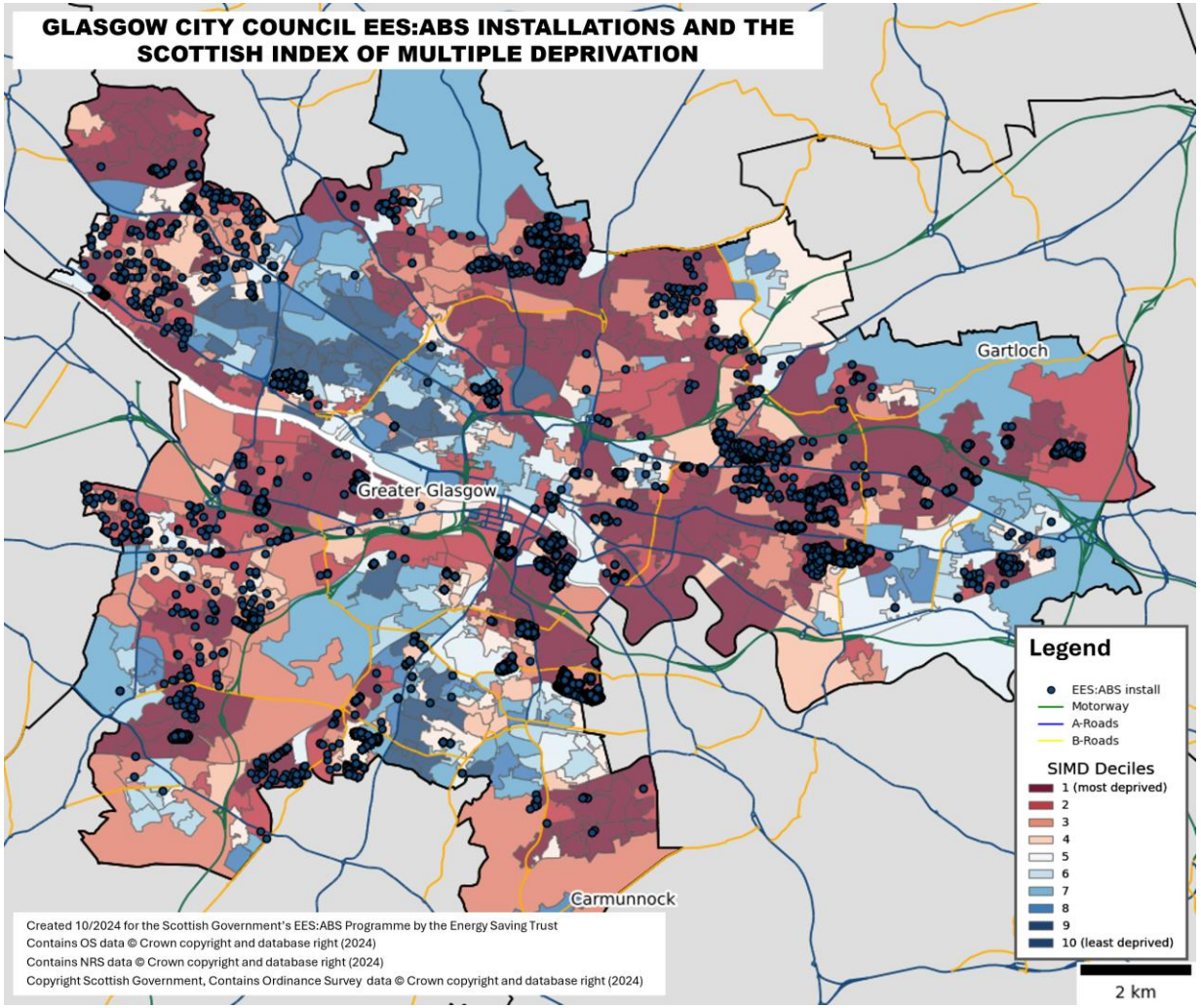


Glasgow City properties by overall SIMD decile ranking



Comparison of these two illustrations shows the correlation between the overall SIMD ranking of Glasgow Council properties (right) and of those targeted in the EES: ABS programme (left). Glasgow City has a higher proportion of more deprived areas compared to the rest of Scotland, with 97.77% of the properties included in the programme being found in the five lowest SIMD ranks. This shows that there is a clear relationship between the targeting of EES: ABS properties and SIMD deprivation.

Scottish Index of Multiple Deprivation (SIMD) II

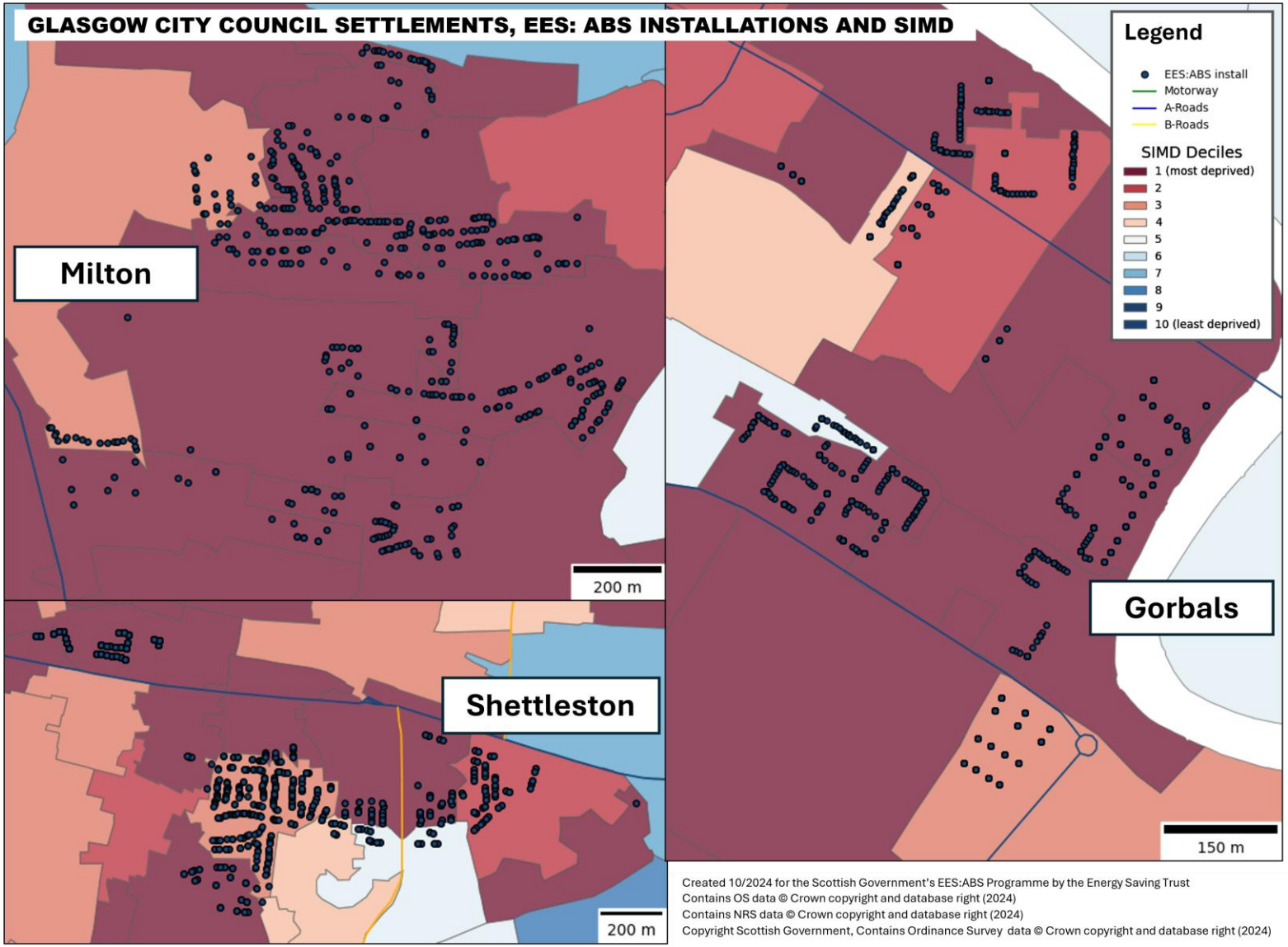


The Gorbals is a prime example of EES: ABS installations in Glasgow City. The area is densely populated and of mixed tenure, and received a combination of EWI, CHP connections, loft insulation top-ups and window glazing.

The area is also extremely deprived with a high concentration of the lowest ranks of overall SIMD as well as for the income and housing domains. The approach taken here also fits well with the goals and aims set out in the council's energy and carbon masterplan* to decentralise energy sources, reduce carbon usage and help those most in fuel poverty.

*For more information on Glasgow City's masterplan see https://www.glasgow.gov.uk/index.aspx?articleid=17181

Scottish Index of Multiple Deprivation (SIMD) III



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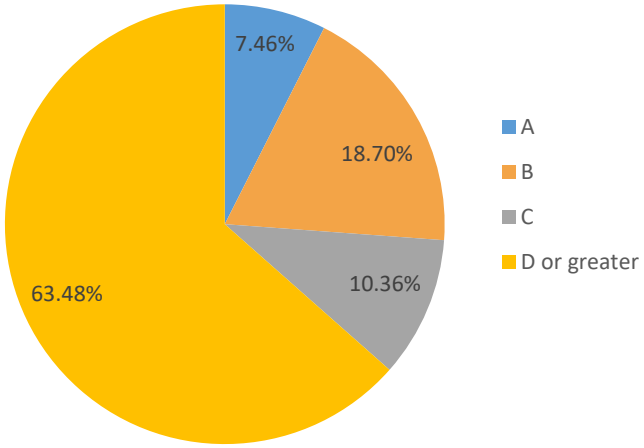
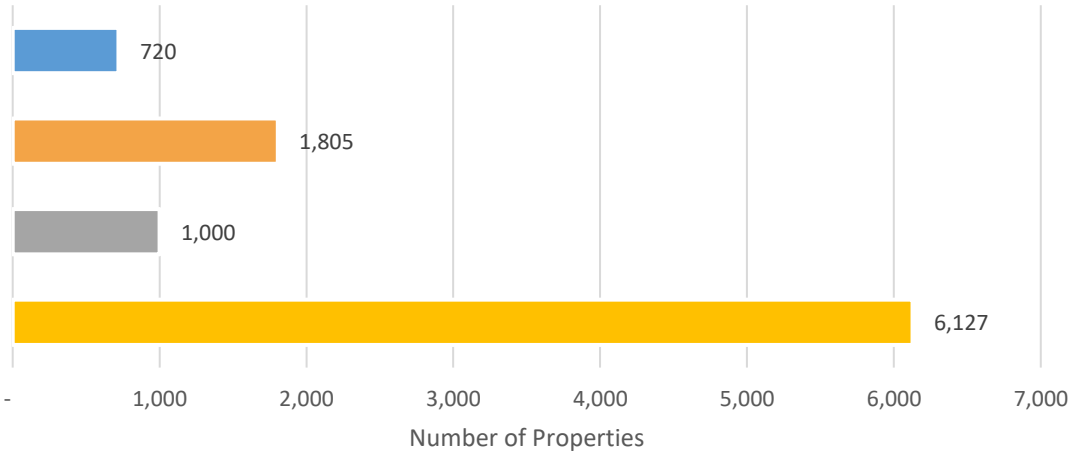
EES: ABS Installs by Council Tax Band

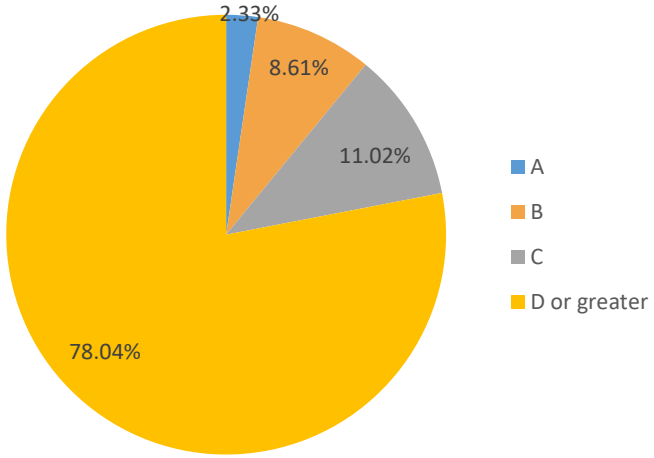
EES: ABS properties by council tax band



EES: ABS properties by council tax band



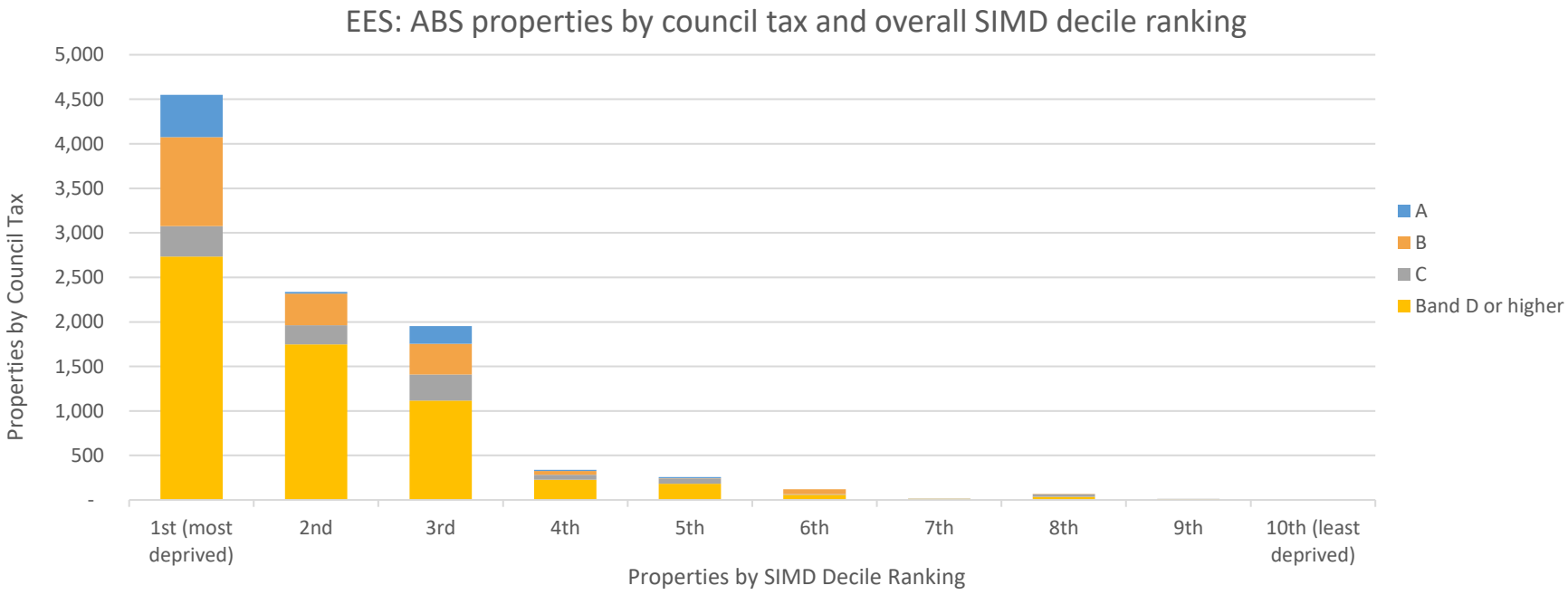
Glasgow City properties by council tax band



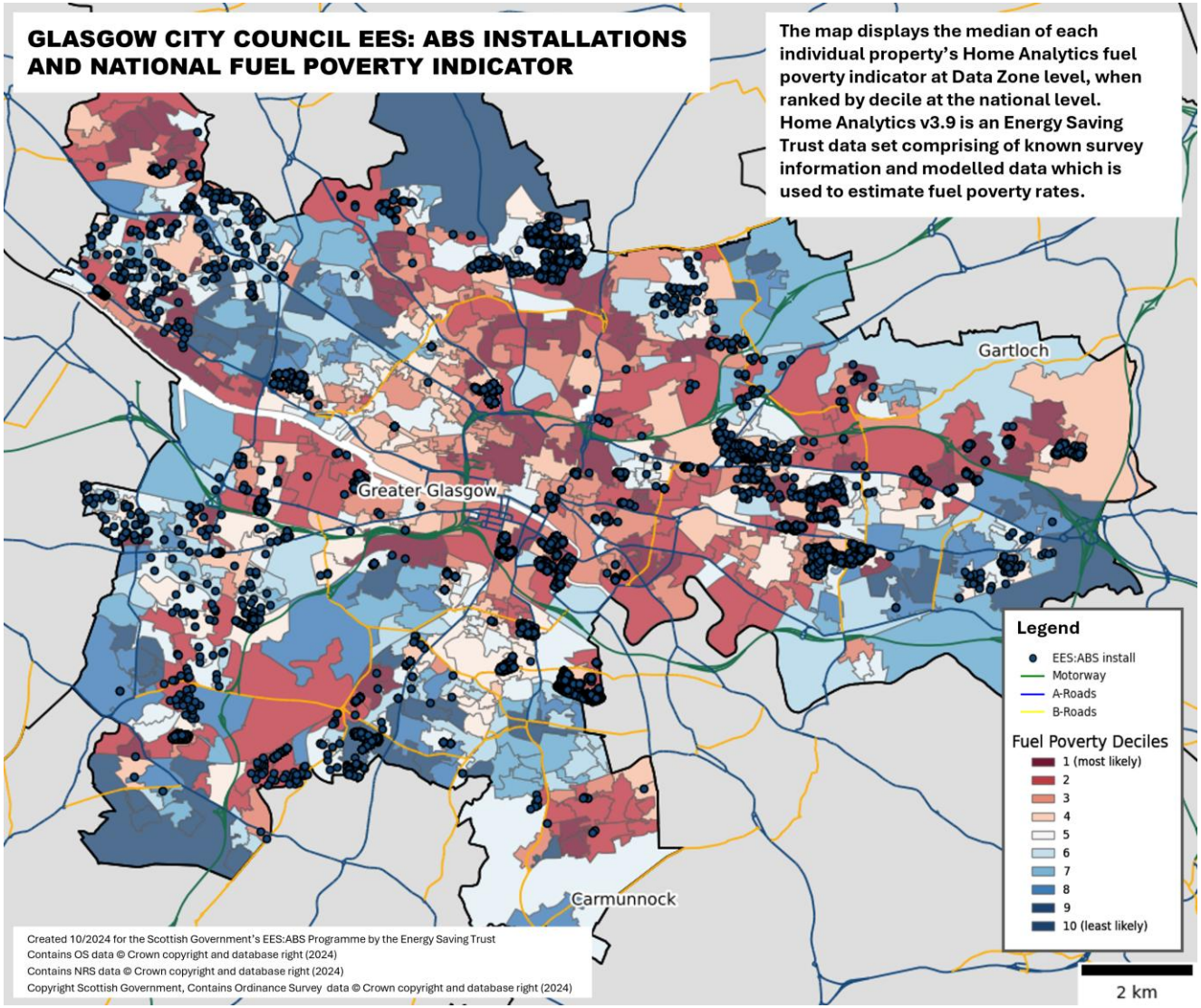
Just over 36.5% of properties receiving measures fall into council tax bands A, B and C, compared to 21.96% for the council area as a whole. Band D dwellings, which make up the bulk of installations, are slightly under represented at 63.48% vs 78.04%).

EES: ABS Installs by Council Tax Band and SIMD

Council tax banding can often be seen as an indicator for income and this illustration examines the property council tax bands against the income SIMD ranking of the areas involved. 36.31% of the installations treating A, B and C council tax banded properties are located within the five most SIMD deprived areas when ranked by income as seen below. This rises to 97.77% with the inclusion of band D dwellings.



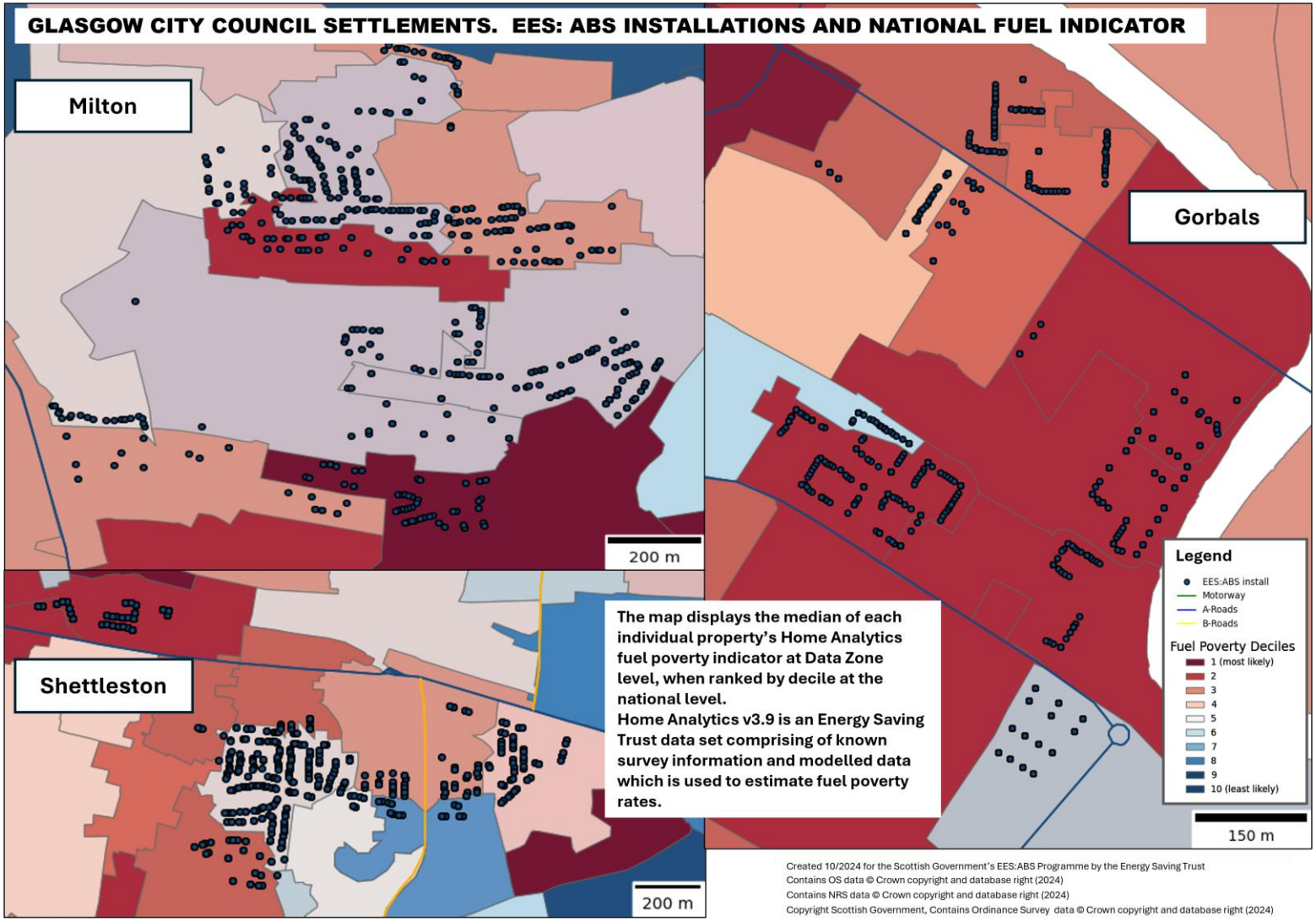
National Scottish Fuel Poverty Indicator I



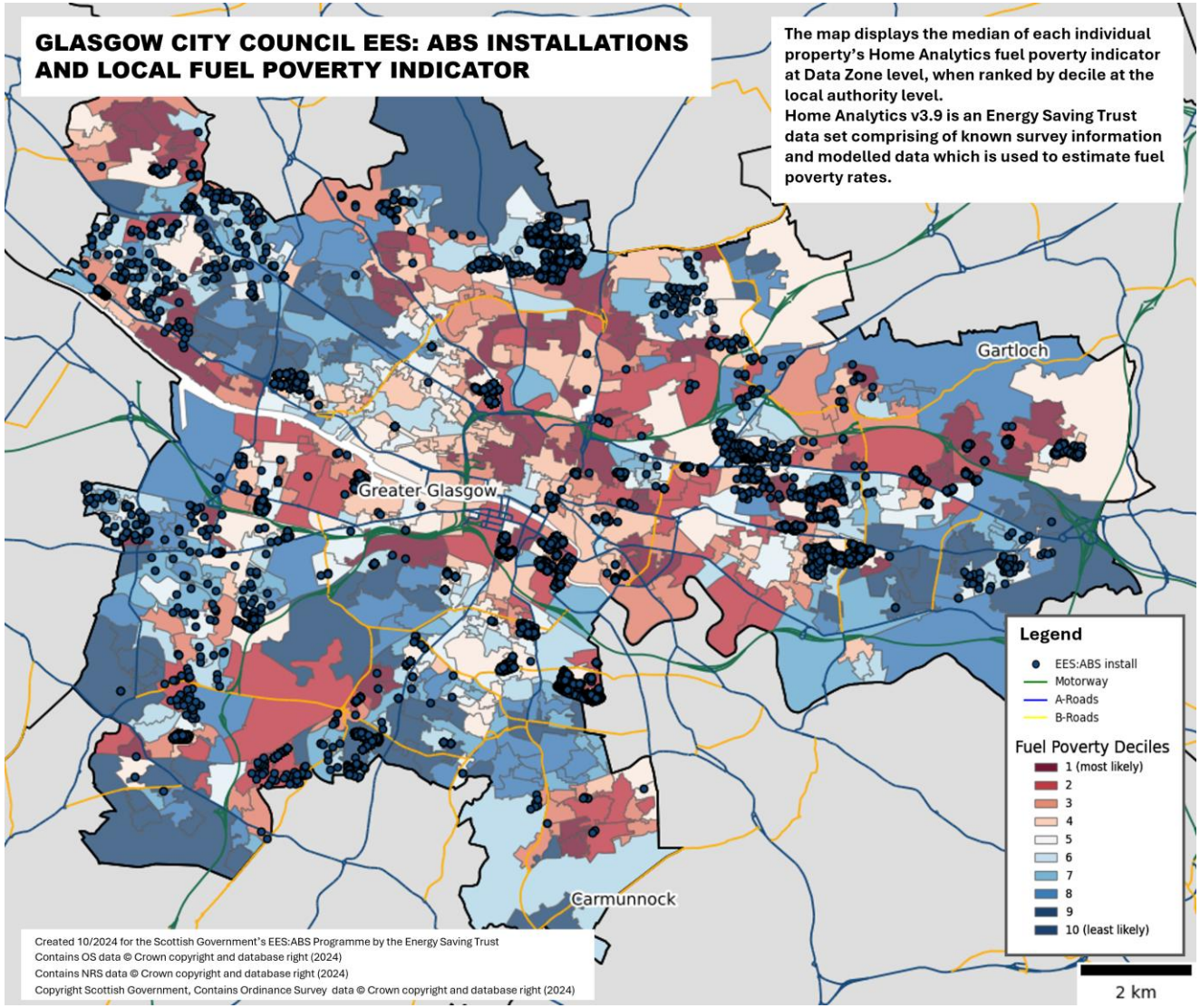
According to the Scottish Housing Condition Survey (SHCS) the average fuel poverty rate in Glasgow City is 25% of homes, which is one percent higher than the national Scottish average of 24%. This fuel poverty rating is likely due to a combination of factors including the high prevalence of mains gas connections in urban areas, and the EPC SAP ratings of many small flat properties, especially newer builds, being average or better.

Both of these will help contribute to lower overall fuel bills.

National Scottish Fuel Poverty Indicator II

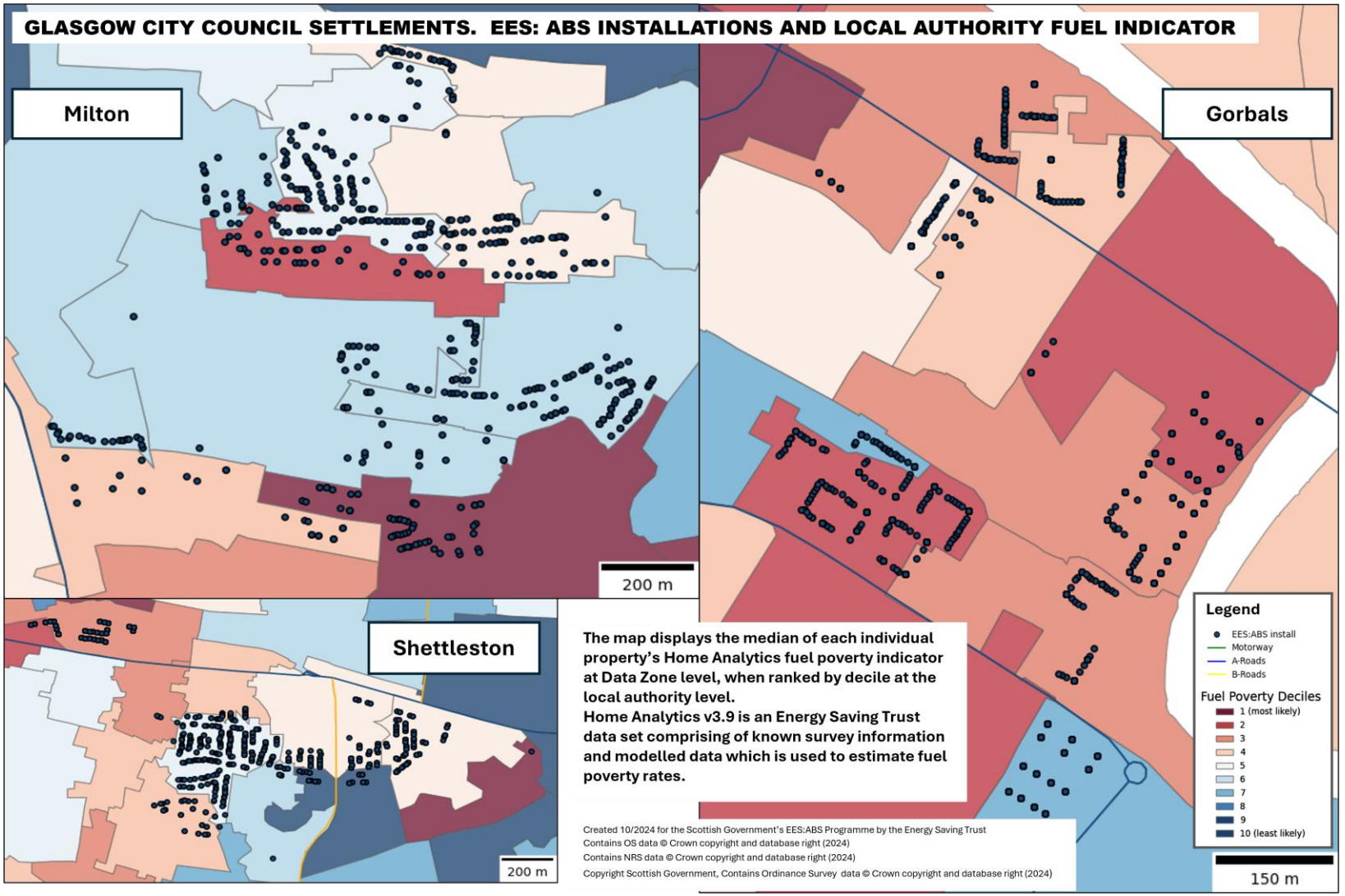


Glasgow City Fuel Poverty Indicator I



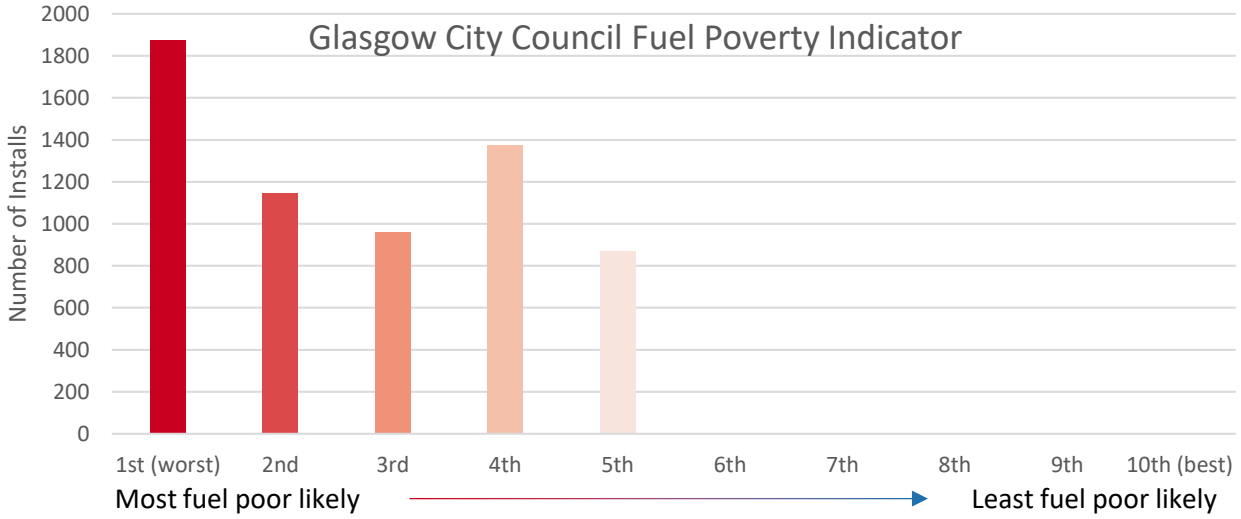
However, the picture of fuel poverty is not consistent across the local authority. This map shows the decile ranking of the probability of fuel poverty by data zone on a scale specific to Glasgow City. The contrast between the East and West ends is now much more pronounced and areas of deprivation are more evident. Note that the fuel poverty indicator used here is an illustrative snapshot of the situation in 2018, and so in some cases the work of energy efficiency programmes including EES: ABS will have already helped lessen the extent and severity of fuel poverty in the area.

Glasgow City Fuel Poverty Indicator II

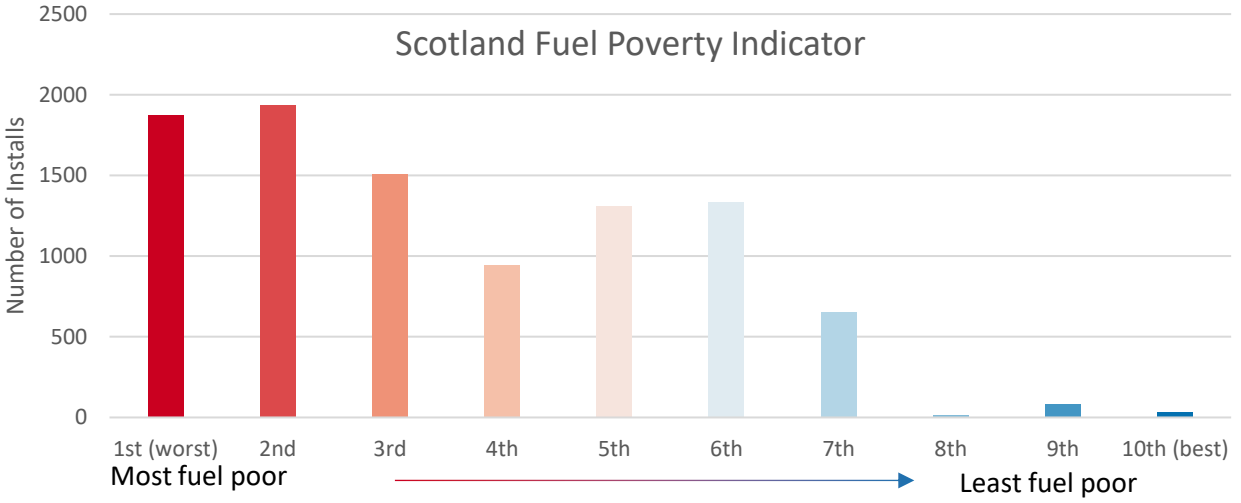


Glasgow City Fuel Poverty Indicator II

All of Glasgow's EES: ABS installs took place within the five most fuel poor ranked data zones as seen in the top illustration. This is looking at the local authority specific fuel poverty indicator for the Glasgow Council.



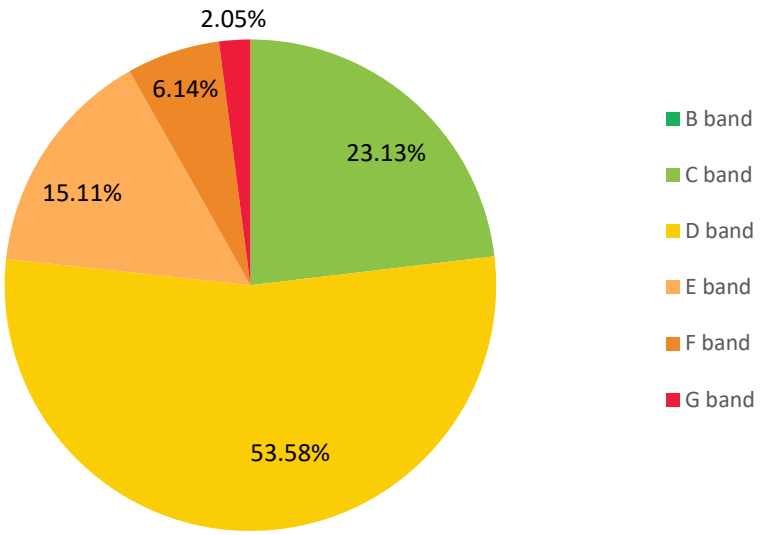
The bottom chart shows the difference when the installs are looked at on a national scale for Scotland. 78.2% of the installs are within the six most fuel poor ranks when compared to the national figures.



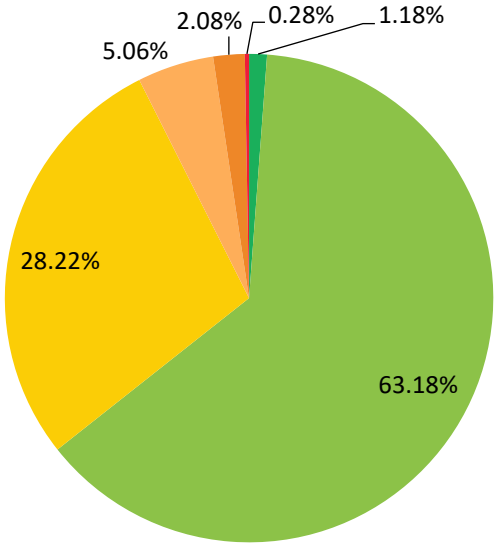
Note: Decile ranked average fuel poverty indicator by data zone for: Glasgow (top) and Scotland (bottom)

EES: ABS SAP Band Analysis I

EES: ABS properties by pre-installation EPC banding



EES: ABS properties by post-installation EPC banding

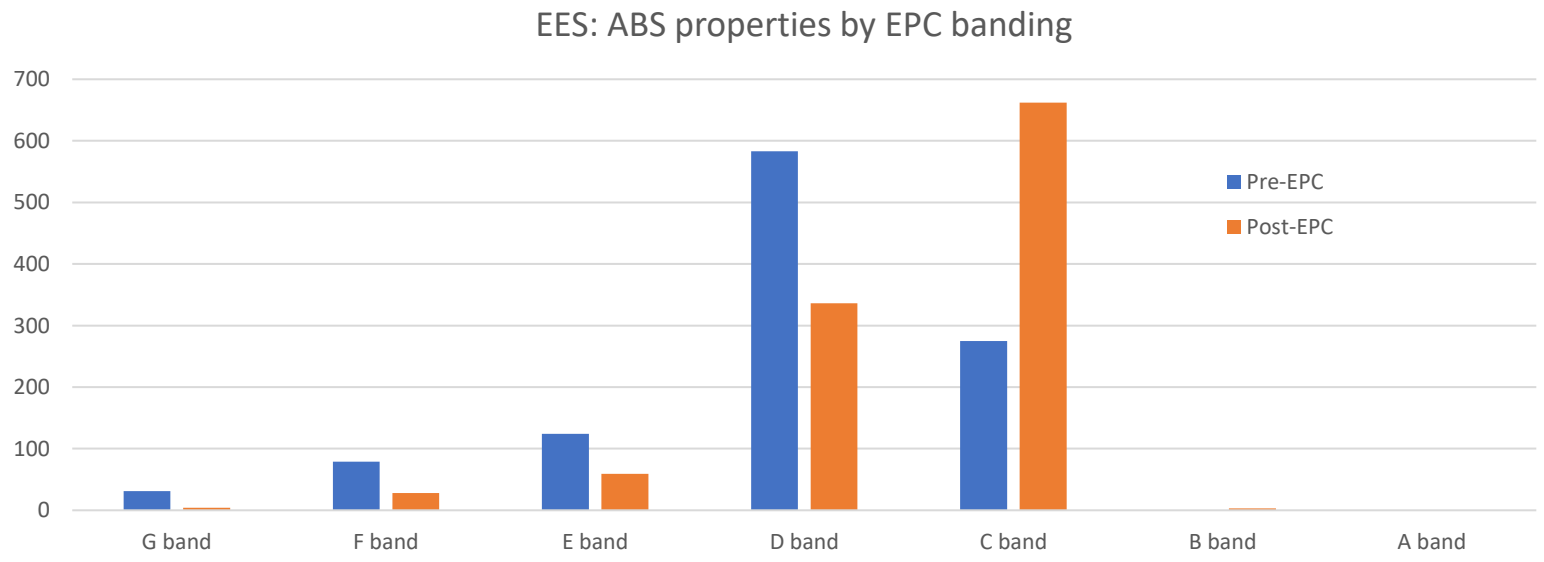


A valid pre-installation EPC was provided for 1,760 properties participating in the programme. 76.88% of these were within the national band D average or lower.

A total of 1,442 participants had a valid post-installation EPC regardless of the validity of the pre-EPC. After the completion of the installs, 64.36% of these properties made it to band C or higher. 28.22% were at a band D, and only 7.42% remained with a lower score of E, F or G.

EES: ABS SAP Band Analysis II

Out of the 1,760 properties with valid pre-EPCs, a total of 1,092 had a valid pre- and post-installation EPC and can be used for further analysis. 74.82% of these 1,092 properties had a starting SAP band of D or lower. The Post-EPC's show that after the completion of installs, 60.62% of the properties reached band C, and 30.77% reached band D. Three properties also moved up to band B. Only 8.33% of the properties remain with a post-installation EPC band of E or F, illustrating the positive the impact of Glasgow's EES: ABS programme.

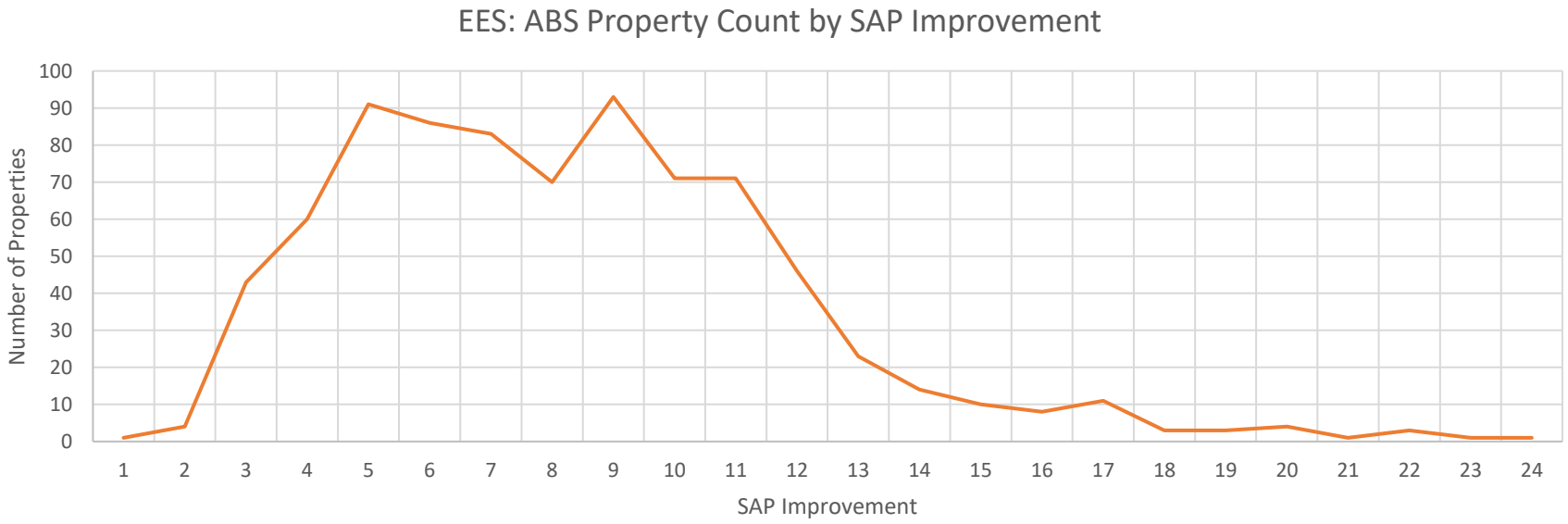


Note: It is possible for the same property to appear in this chart more than once if it received multiple measures across two or more financial years and a distinct pre-installation EPC was carried out before each installation.

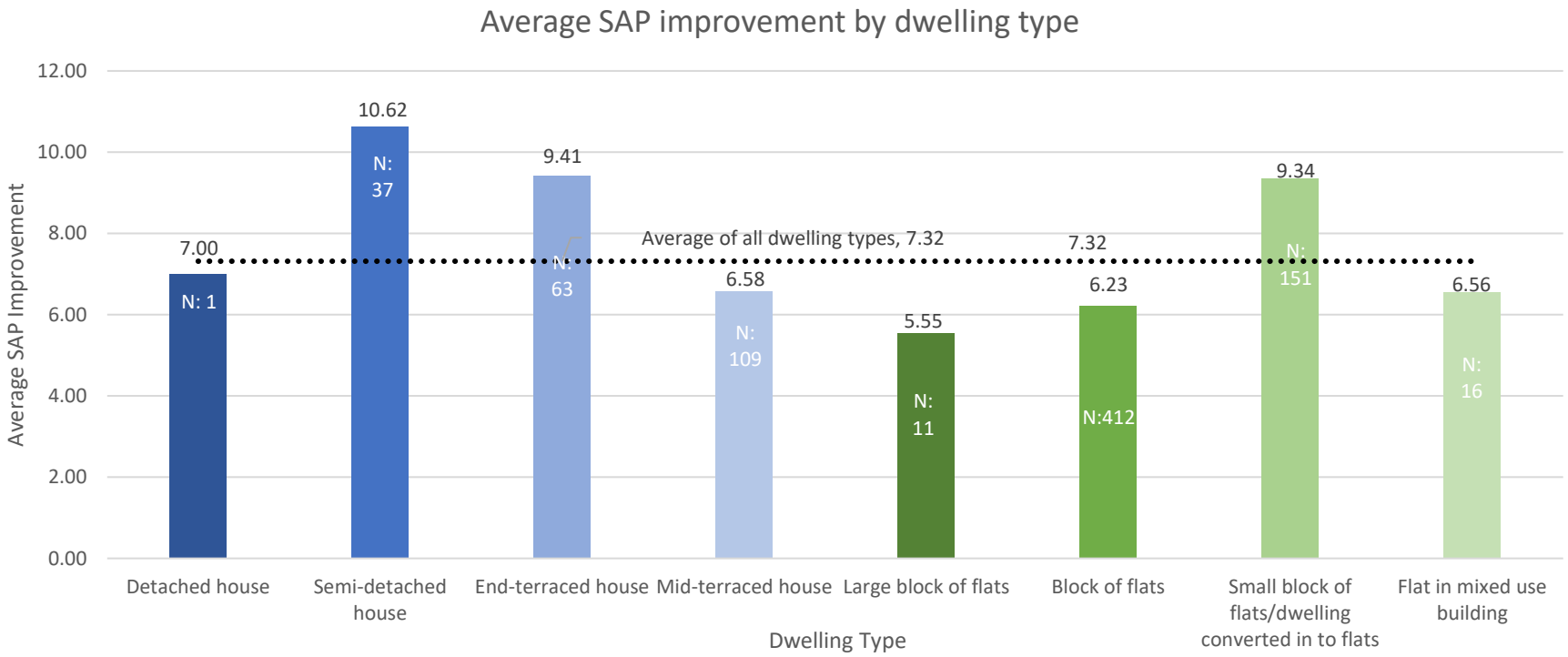
EES: ABS SAP Band Analysis III

The most common outcome of the EES: ABS programme was for a property to increase in SAP score for around 4 to 10 points (70.54% of properties where the EPC's were valid to use for further analysis).

The larger SAP increases (12 to 24 points) included in this case study were due to installation of external wall insulation for solid walls and hard to treat CWI solution within mid and end-terraced houses and flats.



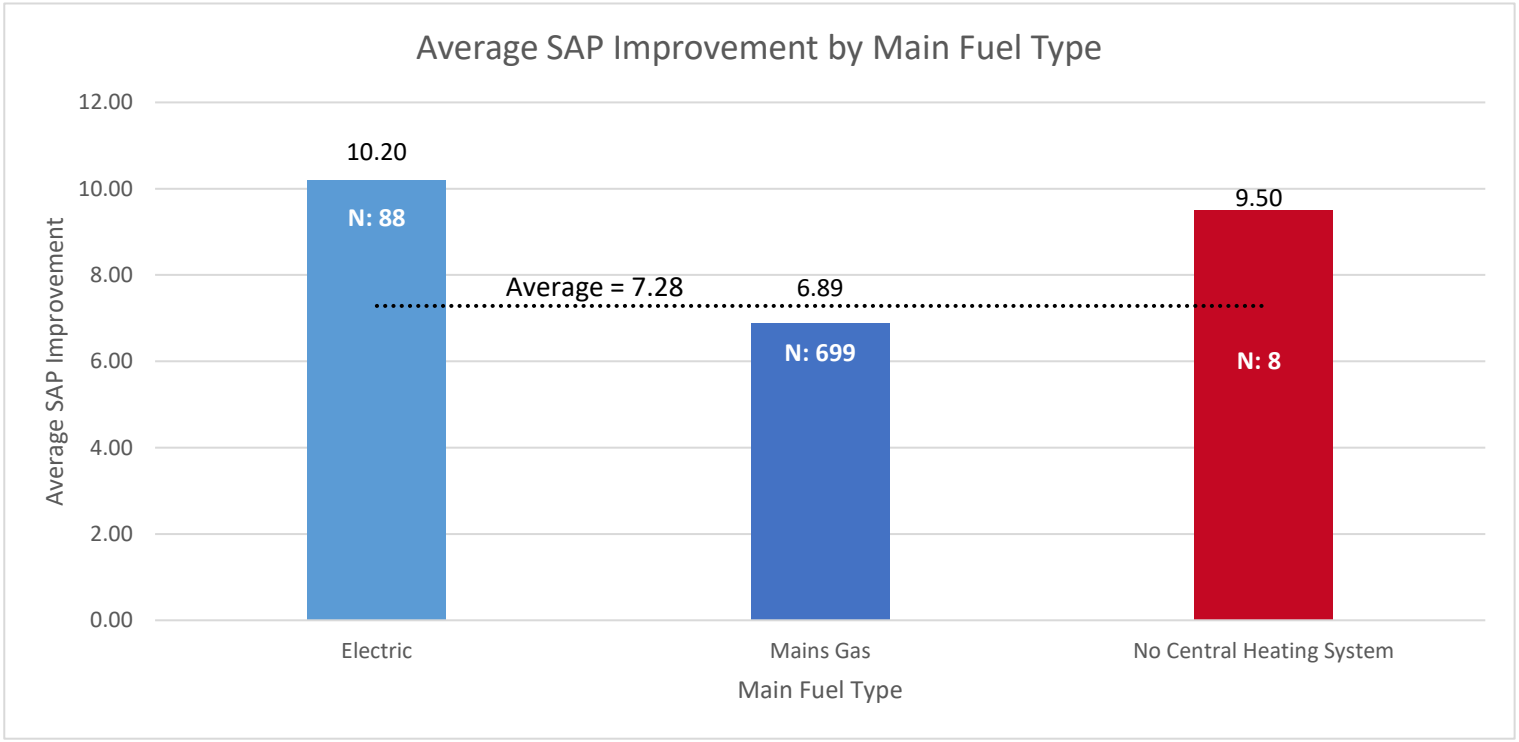
EES: ABS SAP Band Analysis IV



800 of the reported records had consistent pre- and post-EPC data that allowed for more detailed analysis. This showed that the average SAP improvement for all dwelling types is 7.32 points. Semi-detached houses benefitted from the biggest average improvement (10.62), with end-terraced houses next with an average increase of 9.34 points. Small blocks of flats performed well, averaging a 9.34 point uplift.

Note: Dwelling type is taken from Energy Saving Trust's Home Analytics dataset.

EES: ABS SAP Band and Main Fuel Type



The average SAP improvement for all main fuel types was 7.28. The biggest sample size available was for mains gas properties (N=699) where the average improvement was 6.89. Properties with electric heating showed the greatest average improvement by 13.55 points. Those dwellings getting a first-time central heating system increased by 9.50 on average. However, the sample size for this was low at only eight records.

Conclusions and notes

- A variety of measures have been included in the programme since outset and the last five years have focused mainly on wall insulation, with an increasing number of PV systems in the last two.
- The typical participating property is within the owner-occupied or housing association sector and constructed between 1950 and 1983. The main property type was a flat with a system built or hard to treat cavity wall construction.
- 98% of the participating properties can be found within the six most deprived SIMD areas, and 79% of all EES: ABS installs took place within the five most fuel poor ranked data zones.
- Most properties had a starting EPC of band D or lower (77%) and 64% of these properties reached band C or higher.
- The programme had a positive impact on the participating properties as a whole and most properties used for this analysis increased their SAP score between 7 to 12 points.

Sources

Variable	Source	Notes
EES: ABS Measure, Address and Tenure	Local Authority	Held behalf of the Scottish Government's EES: ABS programme by EST.
Dwelling Type, Construction Age, Council Tax Band, Fuel Poverty Probability	Home Analytics	Combination of EPC and modelled data created by EST. Typically not for publication.
Main heating fuel type, EPC SAP scores and bands	Scottish EPC register	Obtained by cross referencing EPC Report Reference Numbers provided by the local authority with Scottish EPC register extracts
Scottish Housing Condition Survey	Scottish Government	Available online. SHCS 2017-19 used.
SIMD	Scottish Government	Available online. SIMD 2020 used.
Urban Rural Classification	Scottish Government	Available online. 8-Fold classification (2020) used.

An extra thanks to Colette Kearney and her colleagues in Glasgow City council who provided the install data and assisted with the completion of the case study.

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