Aberdeenshire Council EES: ABS Case Study

Energy Saving Trust
23/09/2024

ABERDEENSHIRE COUNCIL
EES:ABS INSTALLATIONS

Legend
- EES:ABS Installation
- Aberdeenshire Council

Road Network
- Motorway
- A- Roads
- B- Roads
- Settlement

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25 km

Overview

The Scottish Government's EES: ABS* team requested 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 full case study and illustration set for Aberdeenshire Council EES: ABS activity to end of financial year 2023/24.**
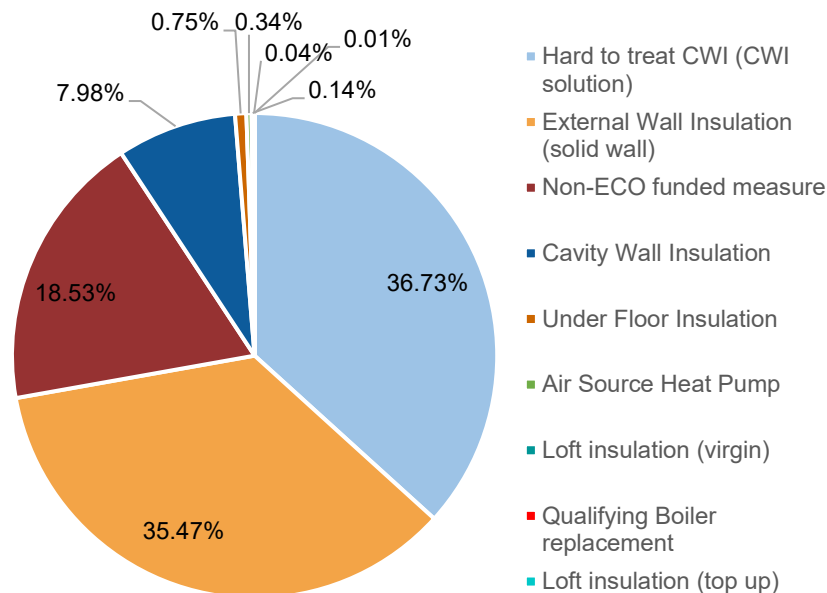
*Note: *Energy Efficient Scotland: Area Based Schemes*
***Some data gaps may exist – to be submitted by the local authority.*

Aberdeenshire EES: ABS dataset

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Financial Year	Number of records*	% of records
2013/14	776	11.40
2014/15	2,373	34.87
2015/16	299	4.39
2016/17	823	12.09
2017/18	363	5.33
2018/19	397	5.83
2019/20	307	4.51
2020/21	448	6.58
2021/22	401	5.89
2022/23	400	5.88
2023/24[1]	218	3.20
Total Installs	**6,805**	**100.00**

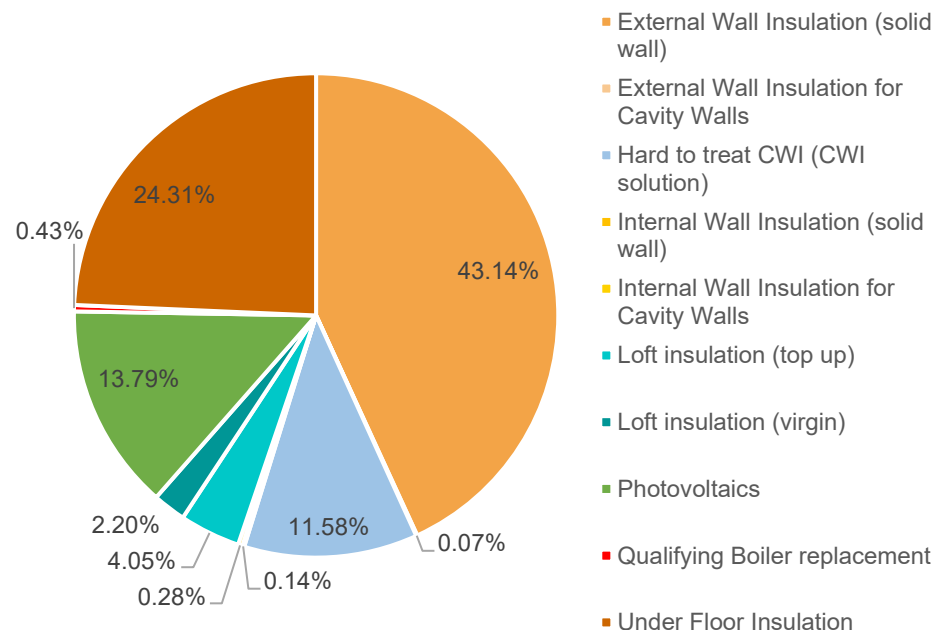| Reference numbers	Number of records[1]	% of records
With pre-installation EPC	5,234	68.93
With post-installation EPC	2,879	37.92
With pre and post-installation EPC	1,118	14.72
With GDAR	0	0.00
With measure reference number	4,993	65.76

The Aberdeenshire Council has contributed 4.70% 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 Aberdeenshire Council.

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Installed Measures I

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Installed EES: ABS measures

- 0.75%
- 0.34%
- 0.04%
- 0.01%
- 0.14%
- 7.98%
- 18.53%
- 36.73%
- 35.47%

Legend:
- Hard to treat CWI (CWI solution)
- External Wall Insulation (solid wall)
- Non-ECO funded measure
- Cavity Wall Insulation
- Under Floor Insulation
- Air Source Heat Pump
- Loft insulation (virgin)
- Qualifying Boiler replacement
- Loft insulation (top up)

Non-Eco Funded Measures

- 24.31%
- 0.43%
- 43.14%
- 13.79%
- 11.58%
- 2.20%
- 4.05%
- 0.28%
- 0.14%
- 0.07%

Legend:
- External Wall Insulation (solid wall)
- External Wall Insulation for Cavity Walls
- Hard to treat CWI (CWI solution)
- Internal Wall Insulation (solid wall)
- Internal Wall Insulation for Cavity Walls
- Loft insulation (top up)
- Loft insulation (virgin)
- Photovoltaics
- Qualifying Boiler replacement
- Under Floor Insulation

A wide variety of measures have been offered throughout the programme. A total of 80.12% of all measures have been for wall insulation including hard to treat cavity wall treatment, external wall insulation for solid wall, standard cavity wall and internal wall insulation for solid wall. Of the non-ECO funded measures, 55.22% were also for wall insulation.

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

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Installed Measures II

Measure Name	Number of records*	% of records
Hard to treat CWI (CWI solution)	2,789	36.73
External Wall Insulation (solid wall)	2,693	35.47
Non-ECO funded measure	1,407	18.53
Cavity Wall Insulation	606	7.98
Under Floor Insulation	57	0.75
Air Source Heat Pump	26	0.34
Loft insulation (virgin)	11	0.14
Qualifying Boiler replacement	3	0.04
Loft insulation (top up)	1	0.01
Total Installs	**7,593**	**100.00**

Non-ECO funded measures	Number of records*	% of records
External Wall Insulation (solid wall)	607	43.14
Under Floor Insulation	342	24.31
Photovoltaics	194	13.79
Hard to treat CWI (CWI solution)	163	11.58
Loft insulation (top up)	57	4.05
Loft insulation (virgin)	31	2.20
Qualifying Boiler replacement	6	0.43
Internal Wall Insulation for Cavity Walls	4	0.28
Internal Wall Insulation (solid wall)	2	0.14
External Wall Insulation for Cavity Walls	1	0.07
Total Installs	**1,407**	**100.00**

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

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Installed Measures by Financial year

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Installed EES: ABS measures by financial year

Legend:
- Hard to treat CWI (CWI solution)
- Air Source Heat Pump
- Photovoltaics
- Qualifying Boiler replacement
- Under Floor Insulation
- Loft Insulation (virgin)
- Loft insulation (top up)
- Cavity Wall Insulation
- Internal Wall Insulation (solid wall)
- External Wall Insulation (solid wall)
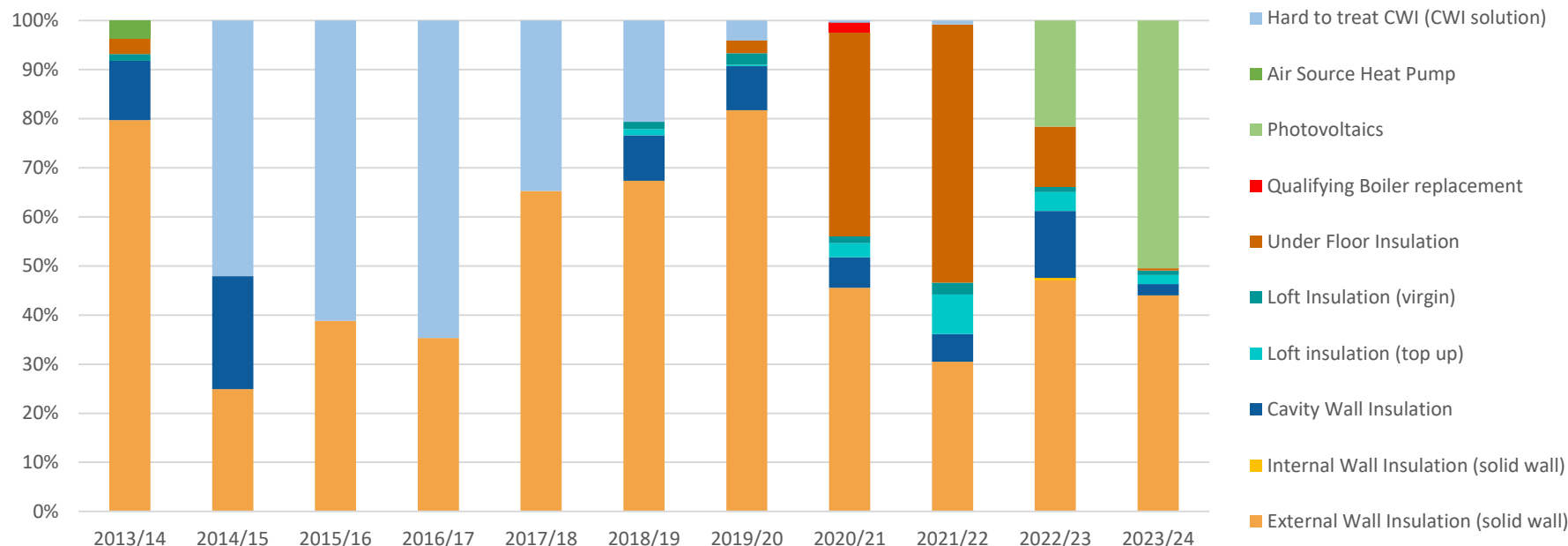
At the very start of the programme in 2013/14, the work was divided between five different measures, while 2014/15 focused solely on hard-to-treat cavity solution (52.10%), external wall (24.90%) and standard cavity wall (23.0%) insulation. In 2022/23, the council introduced the installation of a renewable energy source (photovoltaics), and this accounted for over 50% of all the ABS installation carried out in 2023/24.

Wall Type

Most of the participating properties are cavity construction, system built and solid brick or stone (99.22%). There have also been some timber framed properties treated from 2018/19.

EES: ABS Properties by wall type

- Cavity Construction — 50.66%
- System Built — 17.51%
- Timber Frame — 0.71%
- Solid Brick or Stone — 31.11%
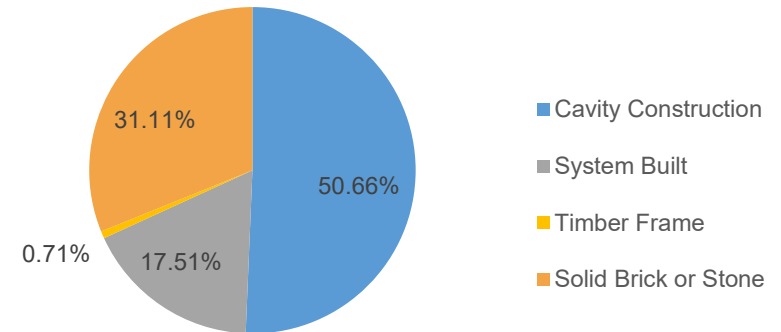
EES: ABS properties and construction type by financial year

- Solid Brick or Stone
- Cavity Construction
- System Built
- Timber Frame

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

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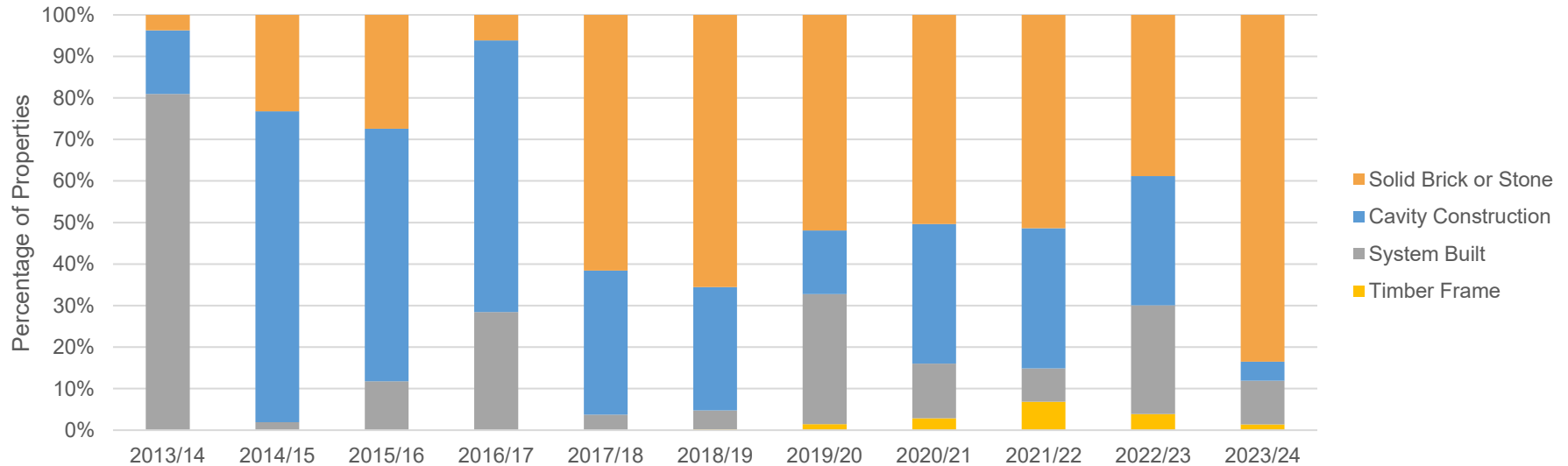
Construction Age

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EES: ABS Properties and Construction Age by Financial Year
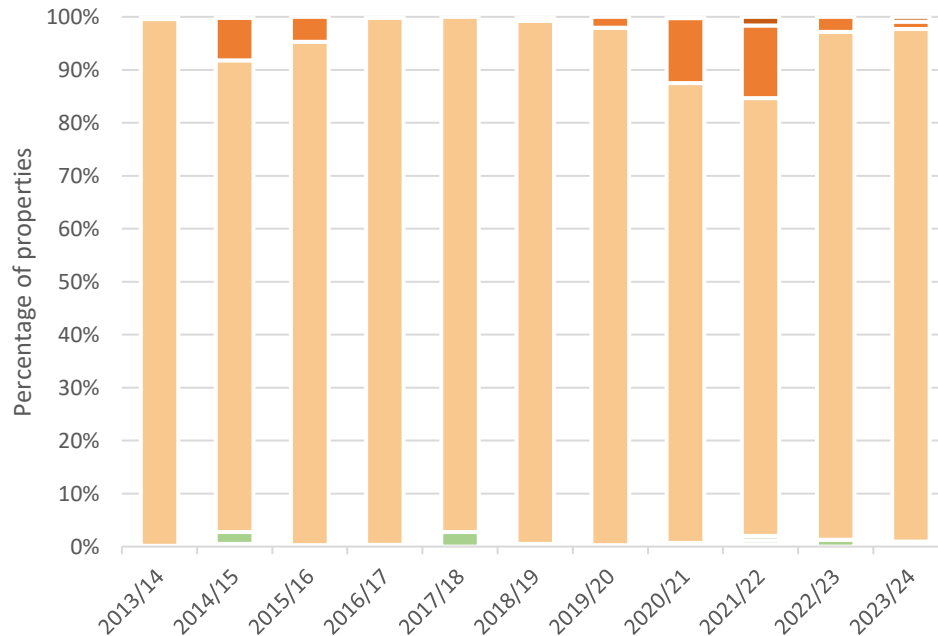
EES: ABS properties by construction age

- Pre-1919
- 1919-1949
- 1950-1983
- 1984-1991
- 1992-2002
- Post-2002
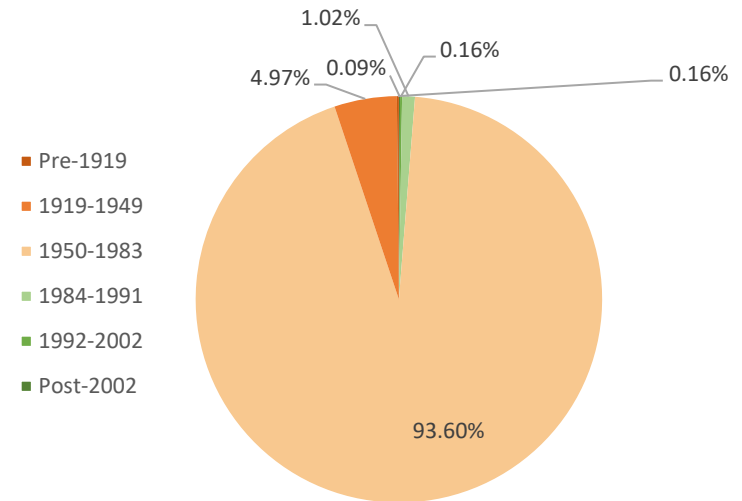
Most participating properties were constructed between 1950 and 1983 (93.60%). 5.13% of all properties were constructed between 1919 and 1949 or pre-1919.

Note: Construction age is taken from EST's Home Analytics dataset.

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Dwelling Type

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EES: ABS properties by dwelling type

Aberdeenshire properties by dwelling type

EES: ABS pie chart values: 2.9%, 36.8%, 20.8%, 26.8%, 1.0%, 1.4%, 0.3%, 10.0%

Legend (EES: ABS):
- Detached house
- Semi-detached house
- End-terraced house
- Mid-terraced house
- Large block of flats

Aberdeenshire pie chart values: 46%, 23%, 7%, 8%, 2%, 3%, 8%, 3%

Legend (Aberdeenshire):
- Detached house
- Semi-detached house
- End-terraced house
- Mid-terraced house
- Large block of flats
- Block of flats
- Small block of flats/dwelling converted in to flats
- Flat in mixed use building

Throughout the programme the most consistent focus has been treating houses (87.4%). Within Aberdeenshire Council, 84.13% of general dwelling types consists of different types of houses. A total of 12.60% of the work treated blocks of flats or flats in mixed use buildings which results in a slight under-representation of flats as these account for 15.30% of the council's dwelling types as a whole.
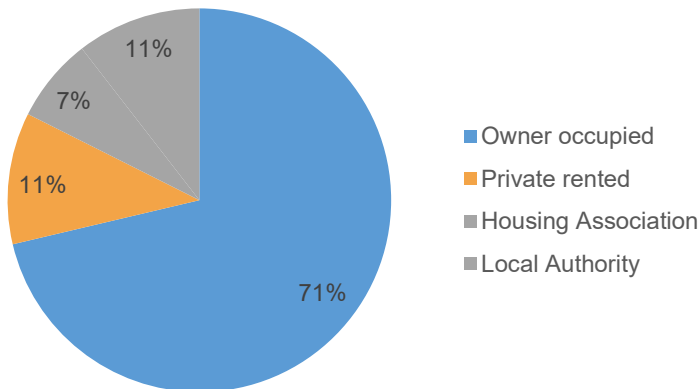
Note: Dwelling type is taken from EST's Home Analytics dataset which is a combination of EPC and modelled data.

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Property Tenure

EES: ABS properties by tenure
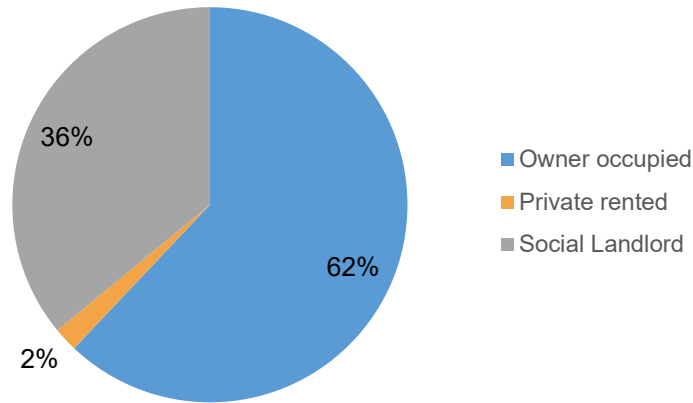
EES: ABS properties by tenure
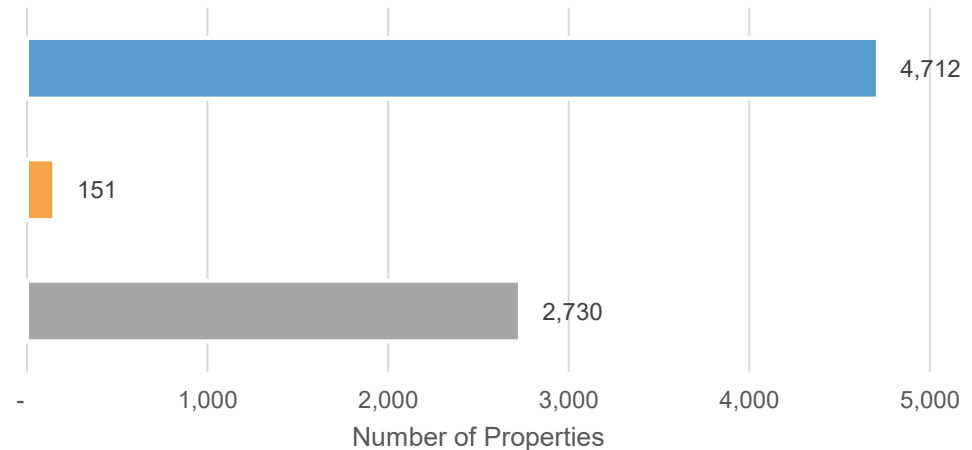
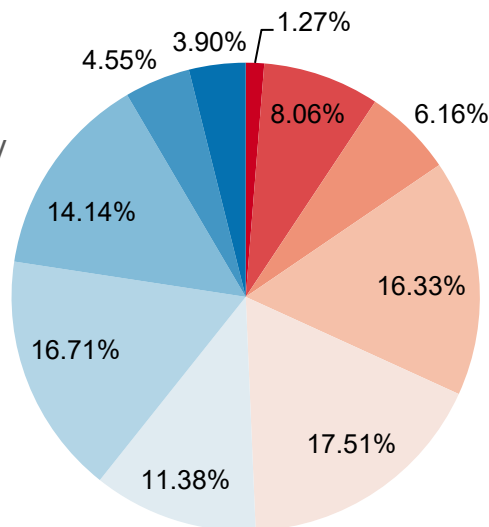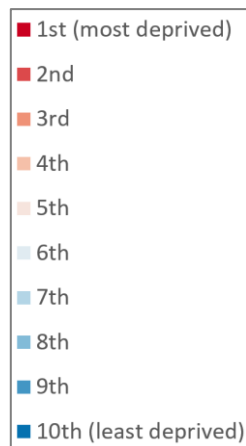
Aberdeenshire properties by tenure

Majority of the treated properties can be found in the owner-occupied sector (62%). 36% of properties are social housing with 2% private rented.
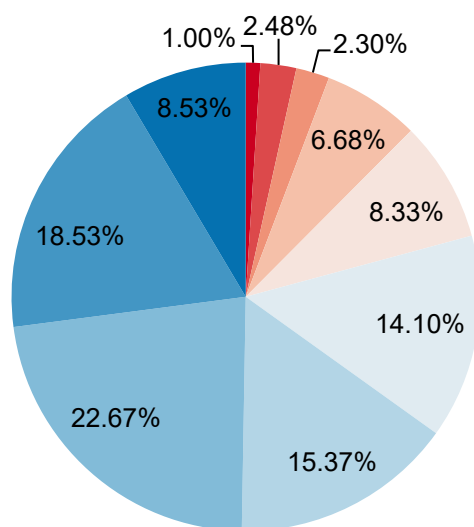
The programme has targeted a significantly higher proportion of social housing than the council's general division of tenures (36% vs 18%*).

*Note: *Tenure data for comparison is taken from EST's Home Analytics dataset, which is a combination of EPC and modelled data.*

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Scottish Index of Multiple Deprivation (SIMD) I

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EES: ABS properties by overall SIMD decile ranking

Legend:
- ■ 1st (most deprived)
- ■ 2nd
- ■ 3rd
- ■ 4th
- ■ 5th
- ■ 6th
- ■ 7th
- ■ 8th
- ■ 9th
- ■ 10th (least deprived)

Top pie chart values: 1.27%, 8.06%, 6.16%, 16.33%, 17.51%, 11.38%, 16.71%, 14.14%, 4.55%, 3.90%

Aberdeenshire properties by overall SIMD decile ranking

Bottom pie chart values: 2.48%, 2.30%, 6.68%, 8.33%, 14.10%, 15.37%, 22.67%, 18.53%, 8.53%, 1.00%

Comparison of these two illustrations shows the correlation between the overall SIMD ranking of Aberdeenshire properties and of those targeted in the EES: ABS programme. A total of 49.32% of all participating properties are in the most deprived areas of the council and can be found within the five lowest SIMD ranks as seen in the top chart.

However, the SIMD can be a slightly problematic indicator for rural settings as each data zone contains between 500 and 1000 properties. Rural populations are very dispersed, so this means that very large catchments are created in order to reach the required range. Larger areas are more likely to group deprived and non-deprived households together and this results in rural SIMD rankings shifting towards the median. Whilst the programme is most likely helping deprived areas, the SIMD ranking can be a slightly inaccurate method to fully test this hypothesis.

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Note: For more information see next slide for the EES: ABS Installs by SIMD map.

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Scottish Index of Multiple Deprivation (SIMD) II
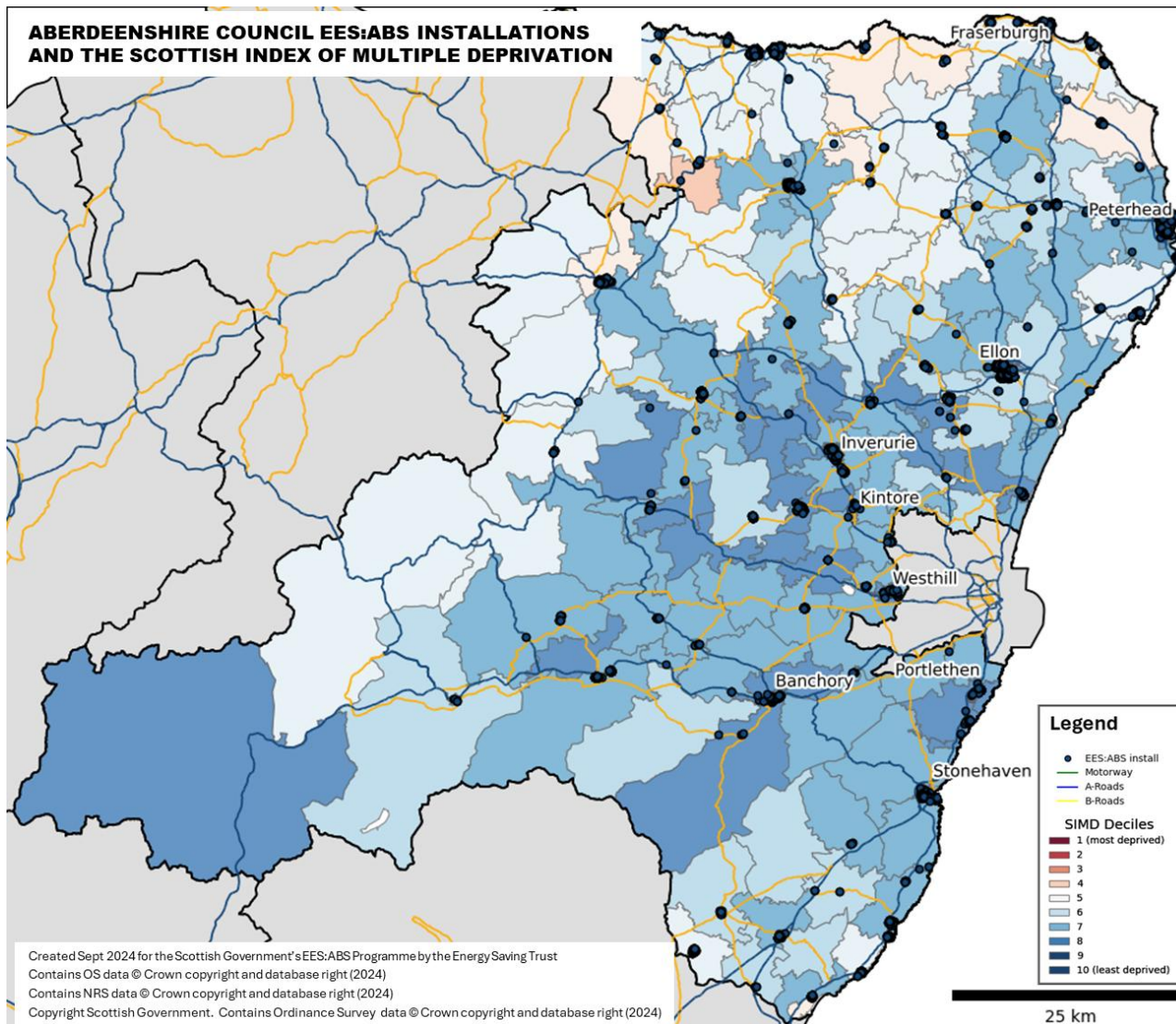
Scottish Index of Multiple Deprivation (SIMD) III

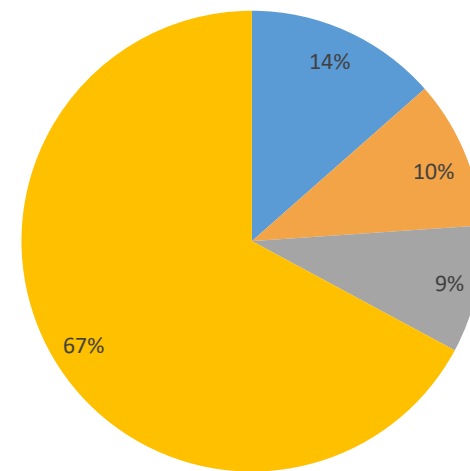# EES: ABS Installs by Council Tax Band

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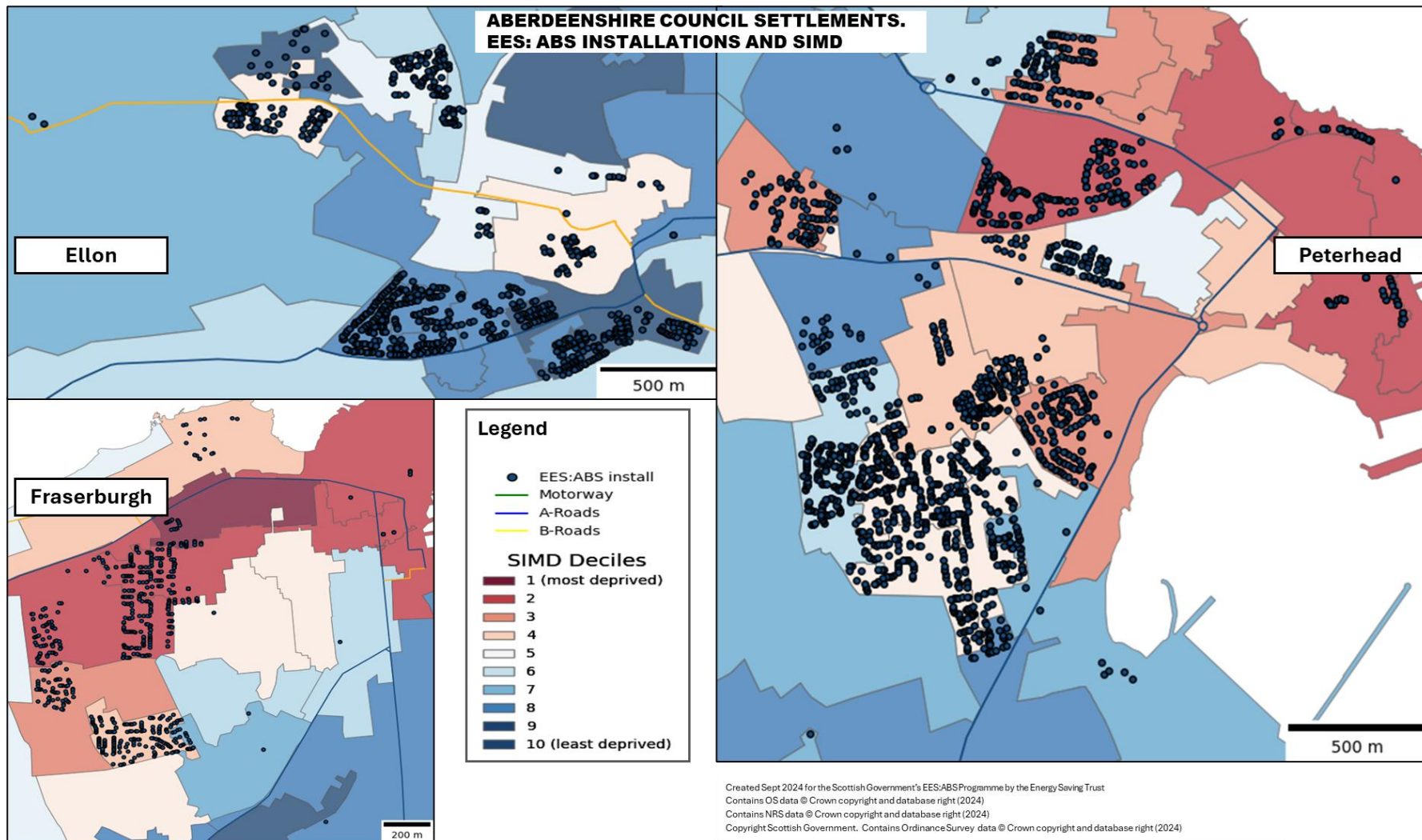
EES: ABS Properties by Council Tax Band
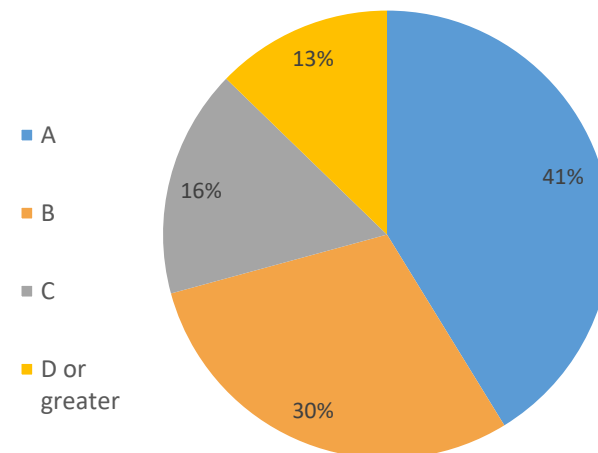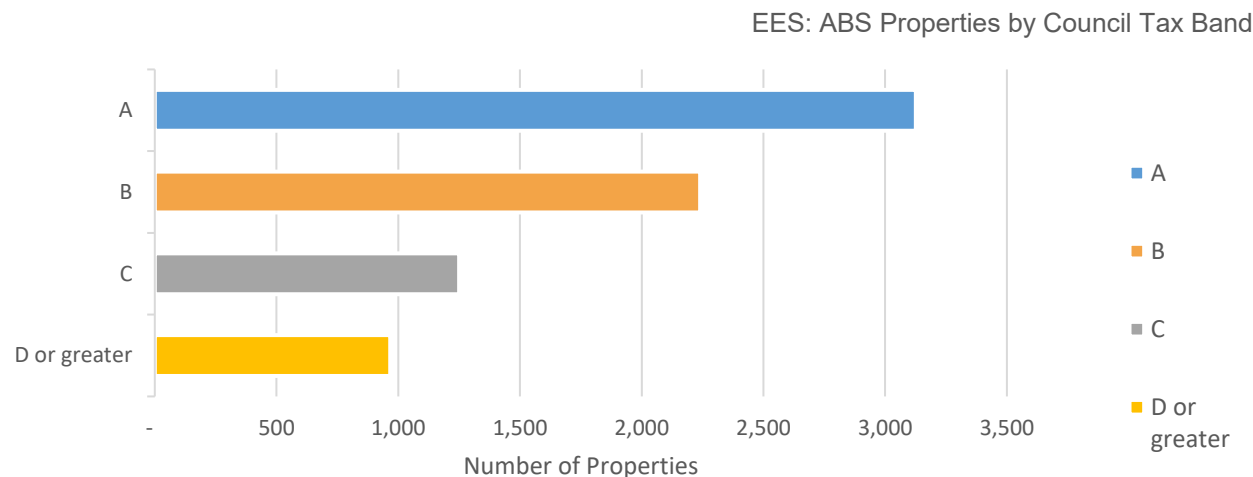
The Aberdeenshire EES: ABS programme specifically targets A, B and C council tax banded properties. The above charts display how 87.2% of the properties in the programme fall into this category. 12.8% of the treated properties are band D or greater.

The below chart presents all properties in the Aberdeenshire based on the council tax band. It is evident that the programme has succeeded in focusing on the lower end of the band within the council's area.
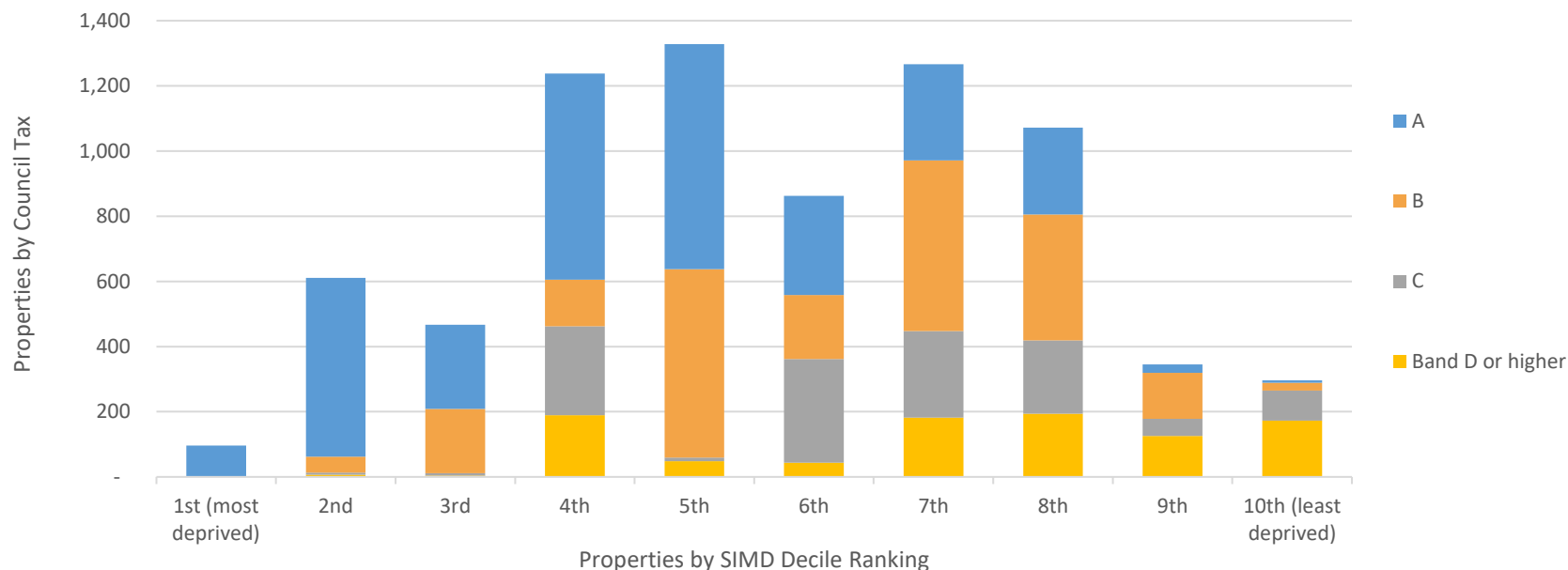
Aberdeenshire properties by council tax band

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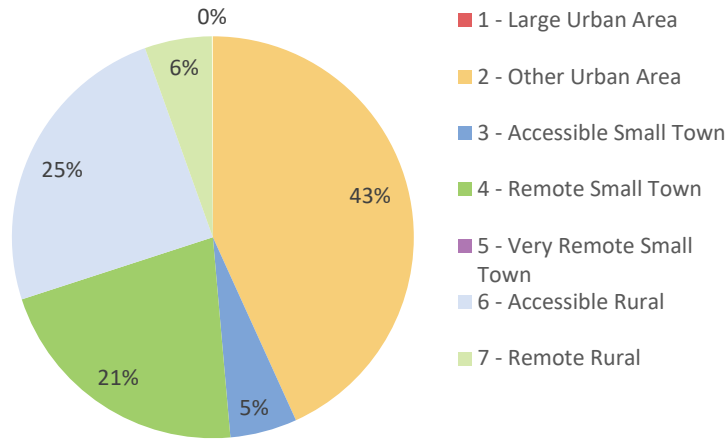# EES: ABS Installs by Council Tax Band and SIMD

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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. 65.16% of the installations treating A, B and C council tax banded properties are located within the six most SIMD deprived areas when ranked by income as seen below.

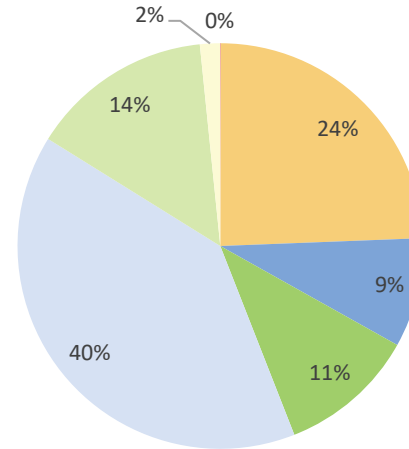EES: ABS properties by council tax and overall SIMD decile ranking

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Urban Rural Classification I

EES: ABS properties by urban rural classification

0%
6%
25%
43%
21%
5%

Legend:
- 1 - Large Urban Area
- 2 - Other Urban Area
- 3 - Accessible Small Town
- 4 - Remote Small Town
- 5 - Very Remote Small Town
- 6 - Accessible Rural
- 7 - Remote Rural

Aberdeenshire properties by urban rural classification
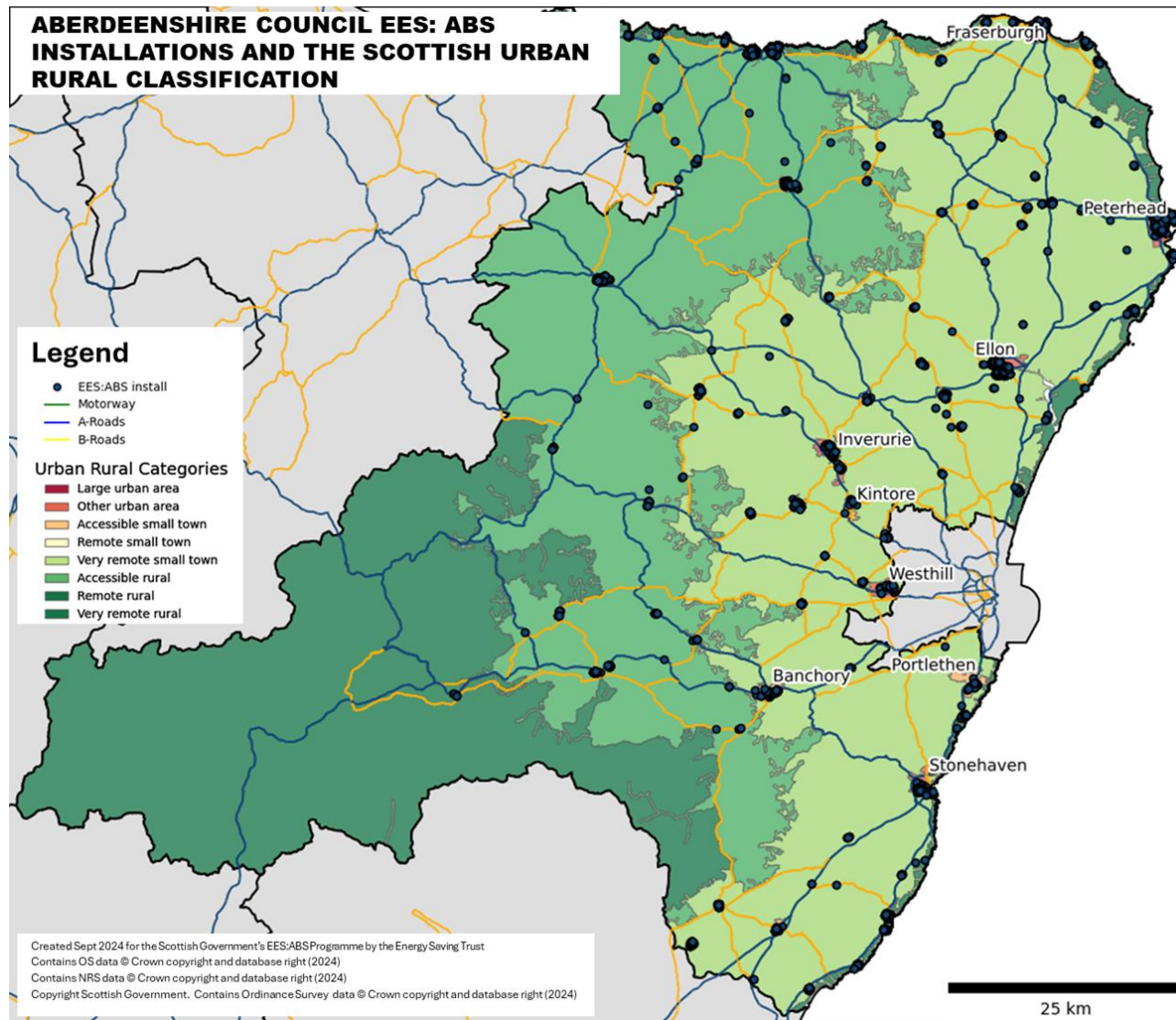

2%
0%
24%
14%
9%
11%
40%

The Aberdeenshire area consists of seven different urban rural classifications. Large and Other Urban areas, Accessible and Remote Small towns, and Accessible, Remote Rural and Very Remote Rural areas are all represented in the programme.
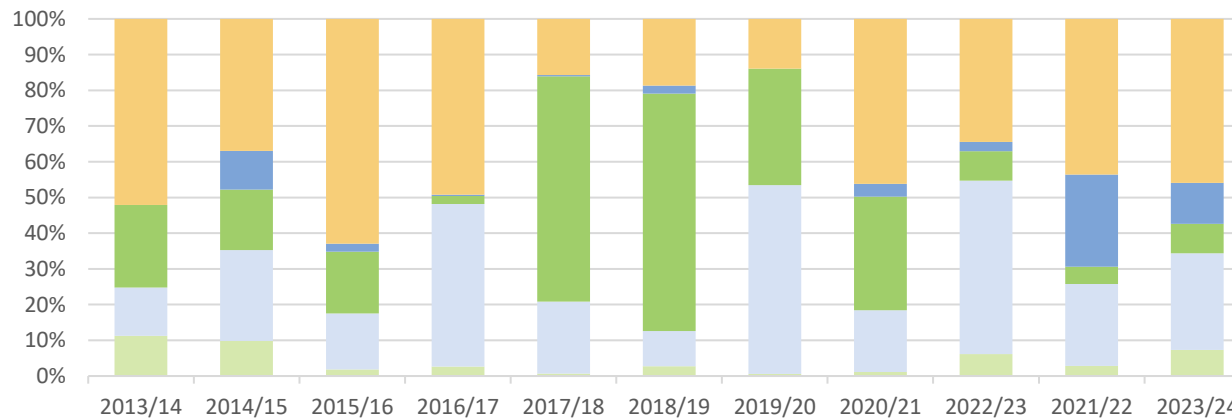
The distribution of work has focused on a higher proportion of Other Urban (43%) and Remote Small Town (21%) areas than the classifications in the Aberdeenshire area as a whole, and less Accessible Rural and other areas.

EES: ABS properties by urban rural classification

2013/14 2014/15 2015/16 2016/17 2017/18 2018/19 2019/20 2020/21 2022/23 2021/22 2023/24

Note: For more information see next slide for the EES: ABS Installs by Urban Rural Classification map.

Urban Rural Classification II

Urban Rural Classification and SIMD

49.32% of the work was completed within the five most deprived SIMD ranks, predominantly within Other Urban and Remote Small Towns. Of the 50.6% of all installs completed within less deprived SIMD ranks (6-10), 57.75% occurred in Other Urban and Accessible Rural areas and 32.42% in Remote Small Towns and Remote Rural areas. According to Aberdeenshire Council, urban rural classification alone is not one of the key features for participating properties, as factors such as SIMD ranking, council tax, income and the condition of the property are considered. Furthermore, it is worth noting that in addition to rural data zones tending to lean towards the average SIMD ranks, not all deprived households can be found within highly deprived areas.

EES: ABS Properties by Urban Rural Classification and SIMD Overall Decile Ranking

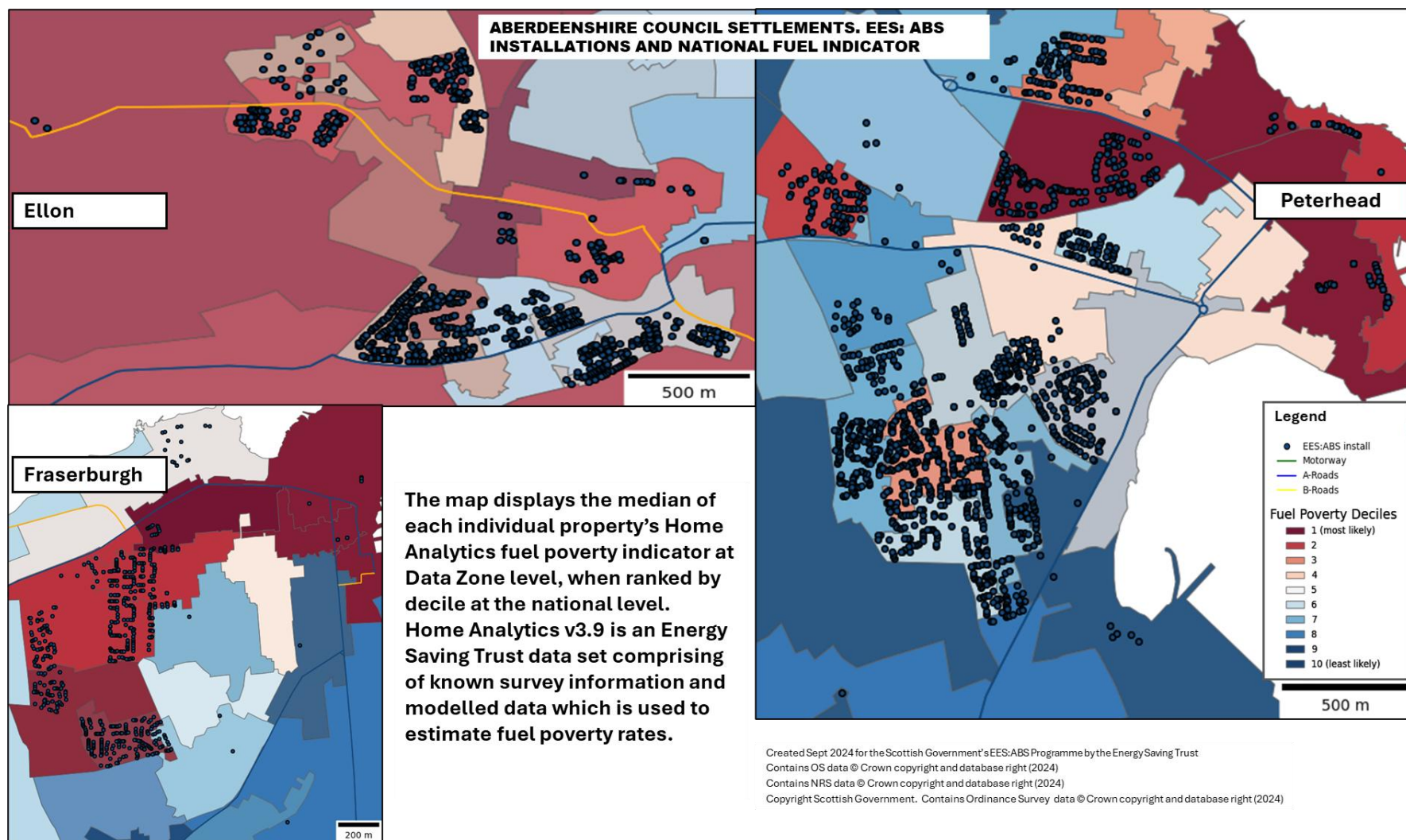# National Scottish Fuel Poverty Indicator I

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ABERDEENSHIRE COUNCIL EES: ABS INSTALLATIONS AND NATIONAL FUEL POVERTY INDICATOR

The map displays the median of each individual property's Home Analytics fuel poverty indicator at Data Zone level, when ranked by decile at the national level. Home Analytics v3.9 is an Energy Saving Trust data set comprising of known survey information and modelled data which is used to estimate fuel poverty rates.

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Legend
- EES:ABS install
- Motorway
- A-Roads
- B-Roads

Fuel Poverty Deciles
- 1 (most likely)
- 2
- 3
- 4
- 5
- 6
- 7
- 8
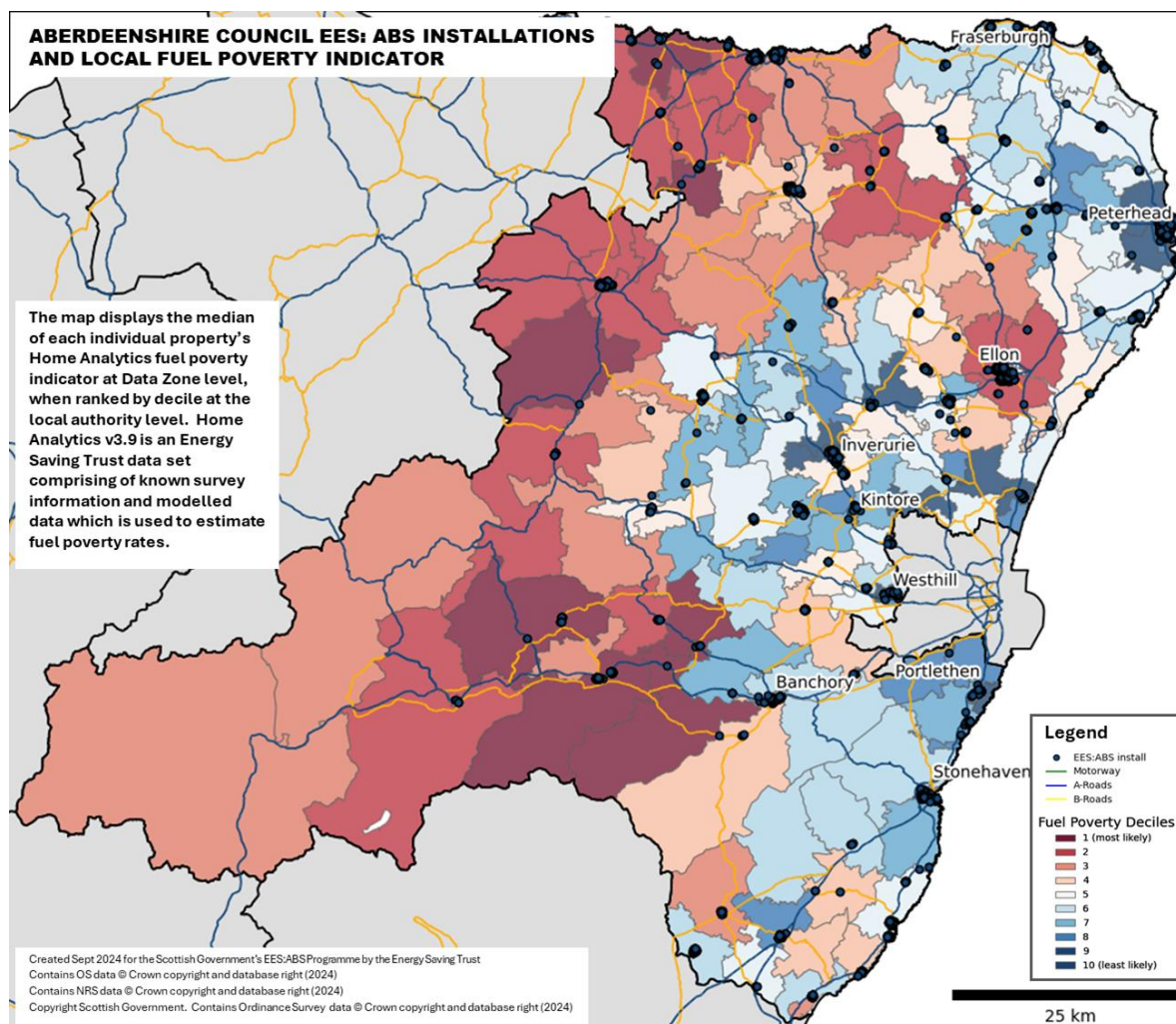- 9
- 10 (least likely)

25 km

Here we can see the state of fuel poverty in Aberdeenshire compared to the rest of Scotland. The blue areas have the lowest fuel poverty rates on a national scale when fuel poverty by data zone is ranked for all local authorities in the country. According to the Scottish Housing Condition Survey (SHCS) the average fuel poverty rate in the Aberdeenshire Council area is around 24% of all homes, which matches the Scottish national average (24%) and places Aberdeenshire as 16th highest of all 32 local authorities in the country. The prevalence of expensive fuels (such as oil) or less efficient heating systems (such as electric heating) contribute to the average or lower SAP score for many of the households in the area.

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National Scottish Fuel Poverty Indicator II

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**ABERDEENSHIRE COUNCIL SETTLEMENTS. EES: ABS
INSTALLATIONS AND NATIONAL FUEL INDICATOR**

Ellon

Peterhead

500 m

Fraserburgh

The map displays the median of
each individual property's Home
Analytics fuel poverty indicator at
Data Zone level, when ranked by
decile at the national level.
Home Analytics v3.9 is an Energy
Saving Trust data set comprising
of known survey information and
modelled data which is used to
estimate fuel poverty rates.

Legend

- EES:ABS install
— Motorway
— A-Roads
— B-Roads

Fuel Poverty Deciles
- 1 (most likely)
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 (least likely)

500 m

200 m

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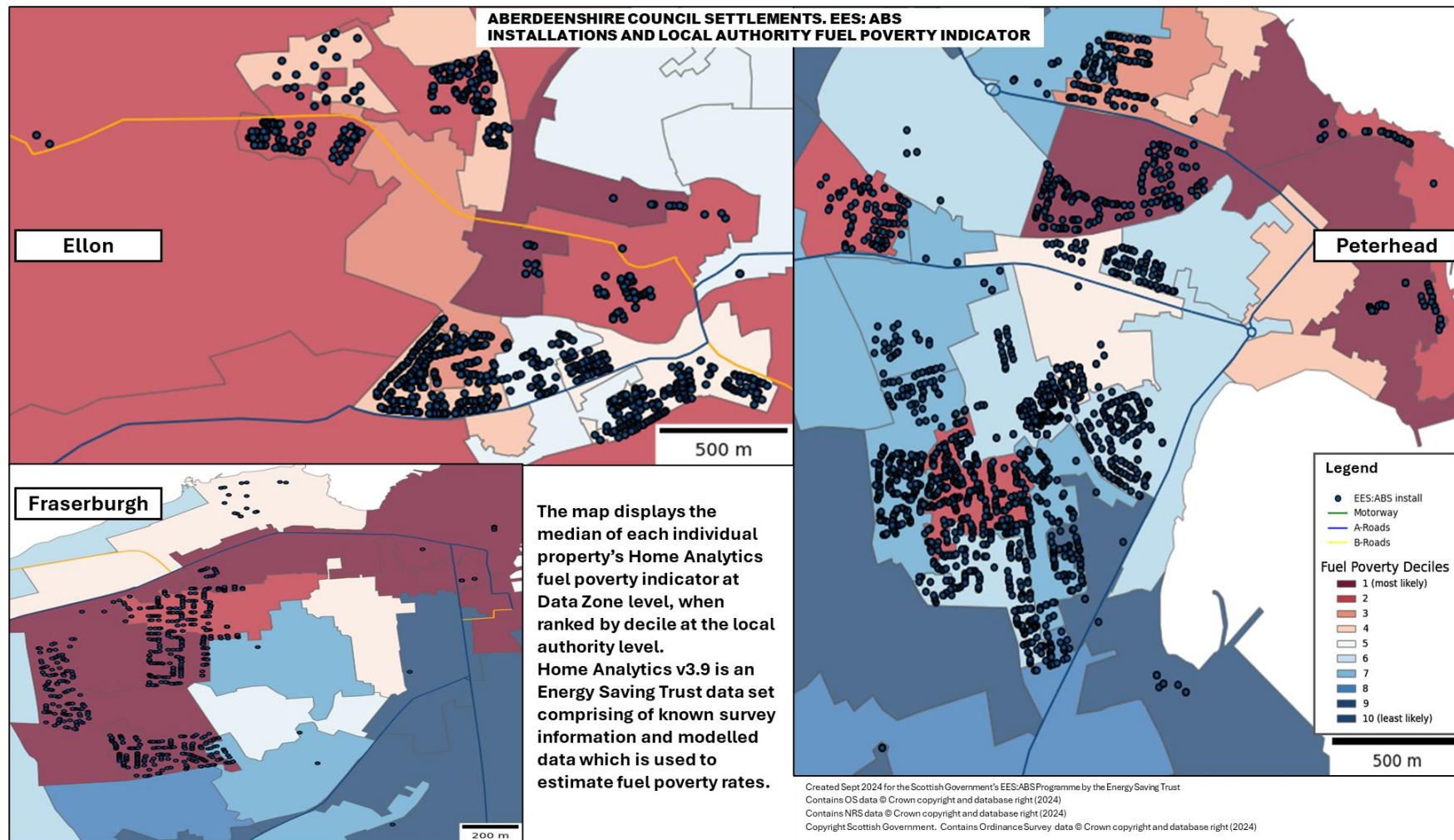
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Aberdeenshire Fuel Poverty Indicator I

This map demonstrates the probability of fuel poverty by data zone ranked on a local authority level for Aberdeenshire Council only. Highest fuel poverty areas within the council are shown here in red colour. It is worth noting that the fuel poverty indicator used here is a snapshot of the situation. Thereby in some cases the past work completed by energy efficiency programmes, such as EES: ABS, will be contributing to the lower fuel poverty rates at present.
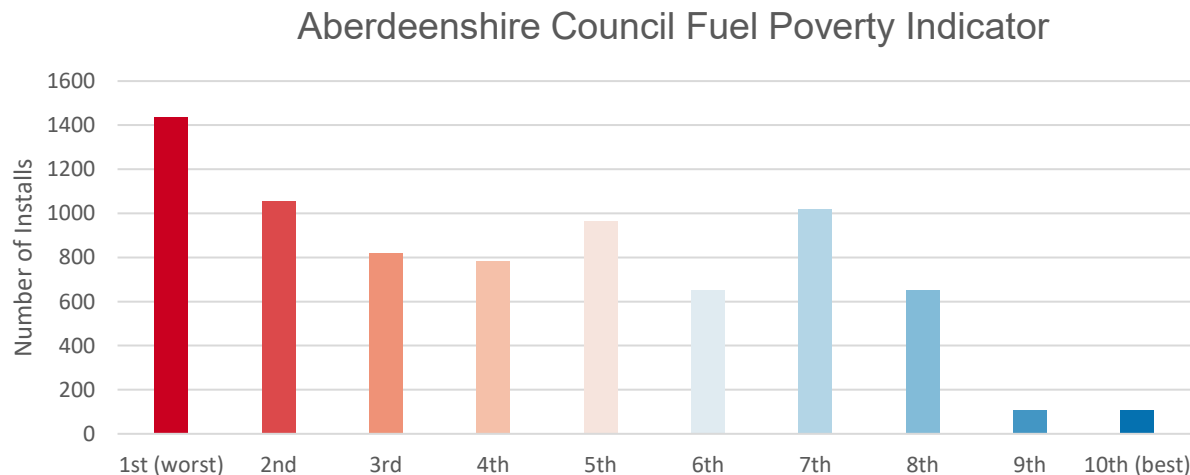
Aberdeenshire Fuel Poverty Indicator II

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ABERDEENSHIRE COUNCIL SETTLEMENTS. EES: ABS
INSTALLATIONS AND LOCAL AUTHORITY FUEL POVERTY INDICATOR

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The map displays the median of each individual property's Home Analytics fuel poverty indicator at Data Zone level, when ranked by decile at the local authority level.

Home Analytics v3.9 is an Energy Saving Trust data set comprising of known survey information and modelled data which is used to estimate fuel poverty rates.

Legend

- EES:ABS install
— Motorway
— A-Roads
— B-Roads

Fuel Poverty Deciles
- 1 (most likely)
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 (least likely)

500 m

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Aberdeenshire Fuel Poverty Indicator III

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66.12% of all EES: ABS installs took place within the 5 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 Aberdeenshire Council.
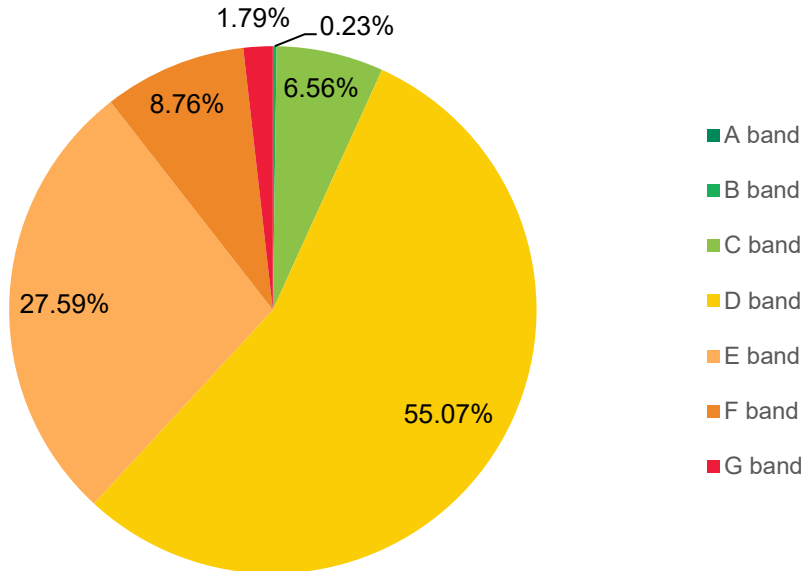
Scotland Fuel Poverty Indicator

Most fuel poor likely ——————————————————→ Least fuel poor likely
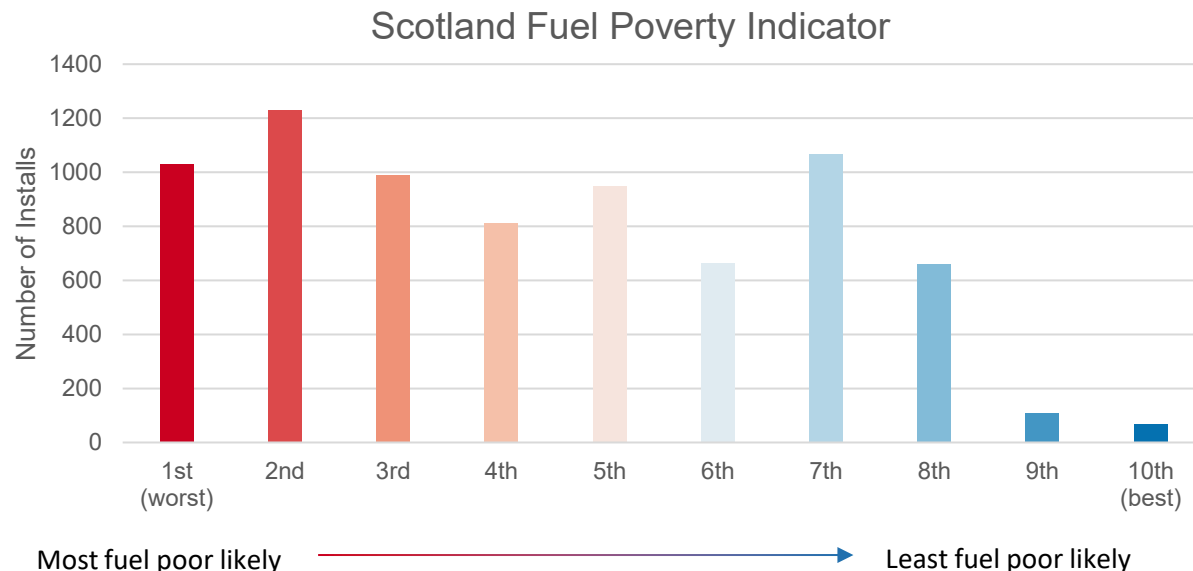
The bottom chart shows the difference when the installs are looked at on a national scale for Scotland. 66.65% of the installs are within the 5 most fuel poor ranks when compared to the national figures.
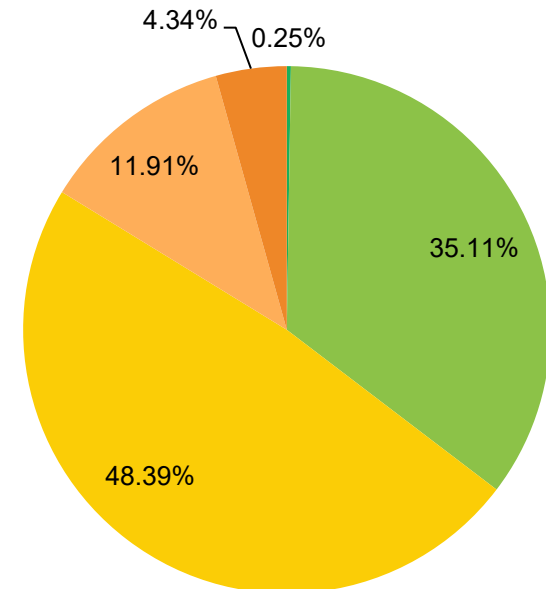
Aberdeenshire Council Fuel Poverty Indicator

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

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EES: ABS SAP Band Analysis I

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EES: ABS properties by pre-installation EPC banding

1.79%   0.23%
6.56%
8.76%
27.59%
55.07%

EES: ABS properties by post-installation EPC banding

4.34%   0.25%
11.91%
35.11%
48.39%

Legend:
- A band
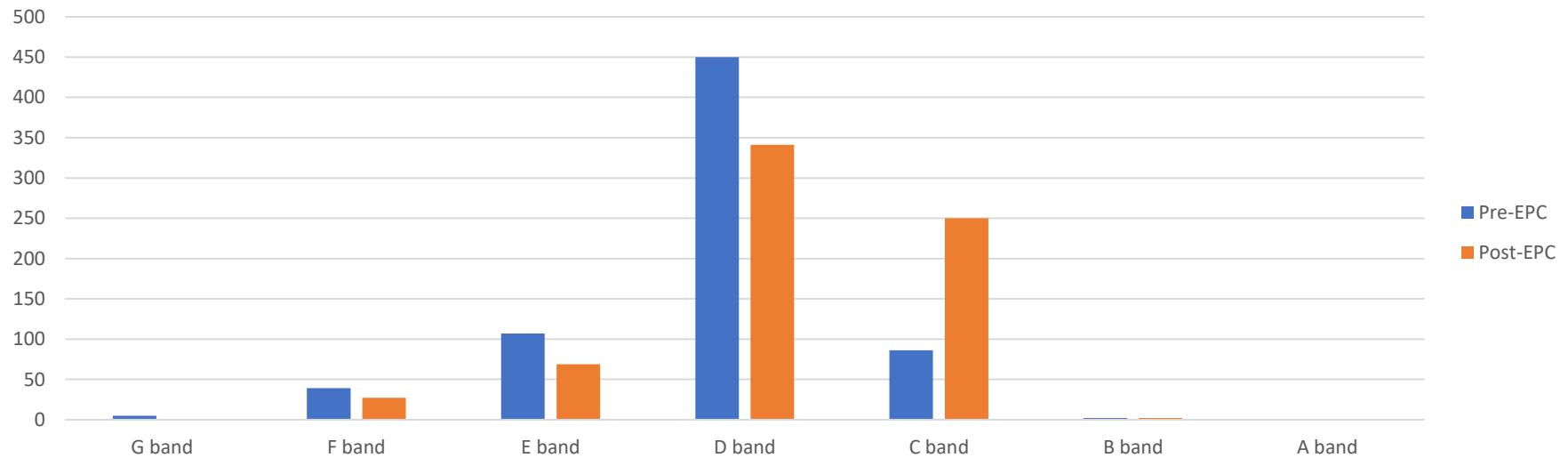- B band
- C band
- D band
- E band
- F band
- G band

A valid pre-installation EPC was provided for 4,694 properties participating in the programme. Most of these, 93.2%, were within the national band D average or lower.

A total of 806 participants had a valid post-installation EPC at the time of this report, regardless of the validity of the pre-EPC. After the completion of the installs, 35.36% of these properties reached band C and 48.39% are in the D band.

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EES: ABS SAP Band Analysis II

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Out of the 4,694 properties with valid pre-EPCs, a total of 689 had valid pre and post-installation EPC numbers, and this sets certain limitations to the EPC analysis. Most of these 689 properties had a starting SAP band of D (65.31%) and the rest were split between band C (12.48%) and bands E, F and G (21.92%). The Post-EPC's show that after the completion of installs, 36.28% of properties have reached band C (an increase of almost a quarter), and 49.49% reached band D. Two properties (0.29%) also moved up to band B. Around 13.93% remain with a post-installation EPC band of E or G, despite the impact of the EES: ABS treatment.
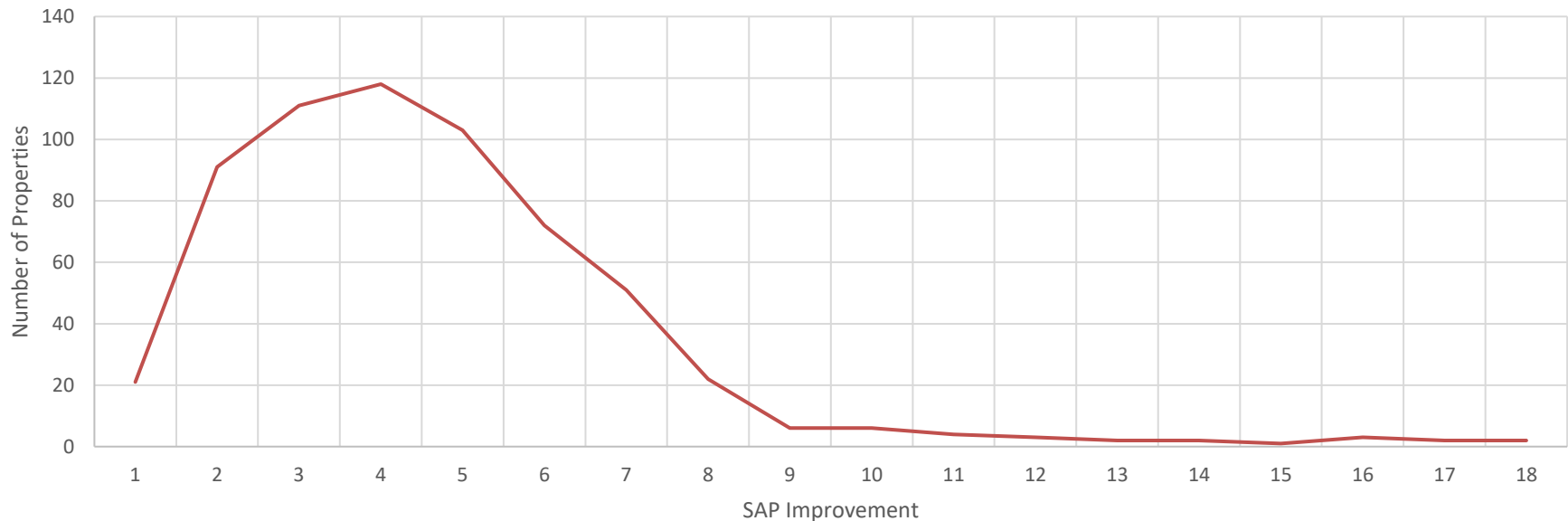
EES: ABS properties by EPC banding

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
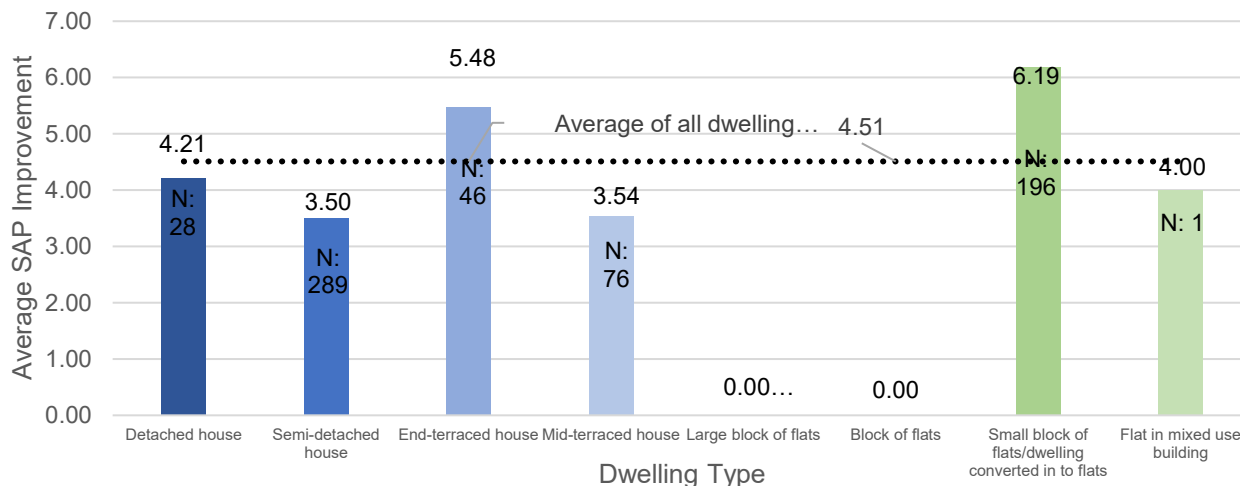
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71.54% of the participating properties in the programme increased in SAP score by around 3 to 7 points. This results in a large number of properties either remaining within their starting EPC band or moving up one EPC band. The larger SAP increases (10 to 18 points) included in this case study were due to installation of ASHPs or a first-time CHS where none existed previously.

EES: ABS Property Count by SAP Improvement

Note: Standard Assessment Procedure version used was RdSAP 2012 v9.93.

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EES: ABS SAP Band Analysis IV

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Average SAP improvement by dwelling type

The average SAP improvement for all dwelling types is 4.51 points. End-terraced houses and small blocks of flats or dwellings converted into flats fared best, both with above average SAP increases.
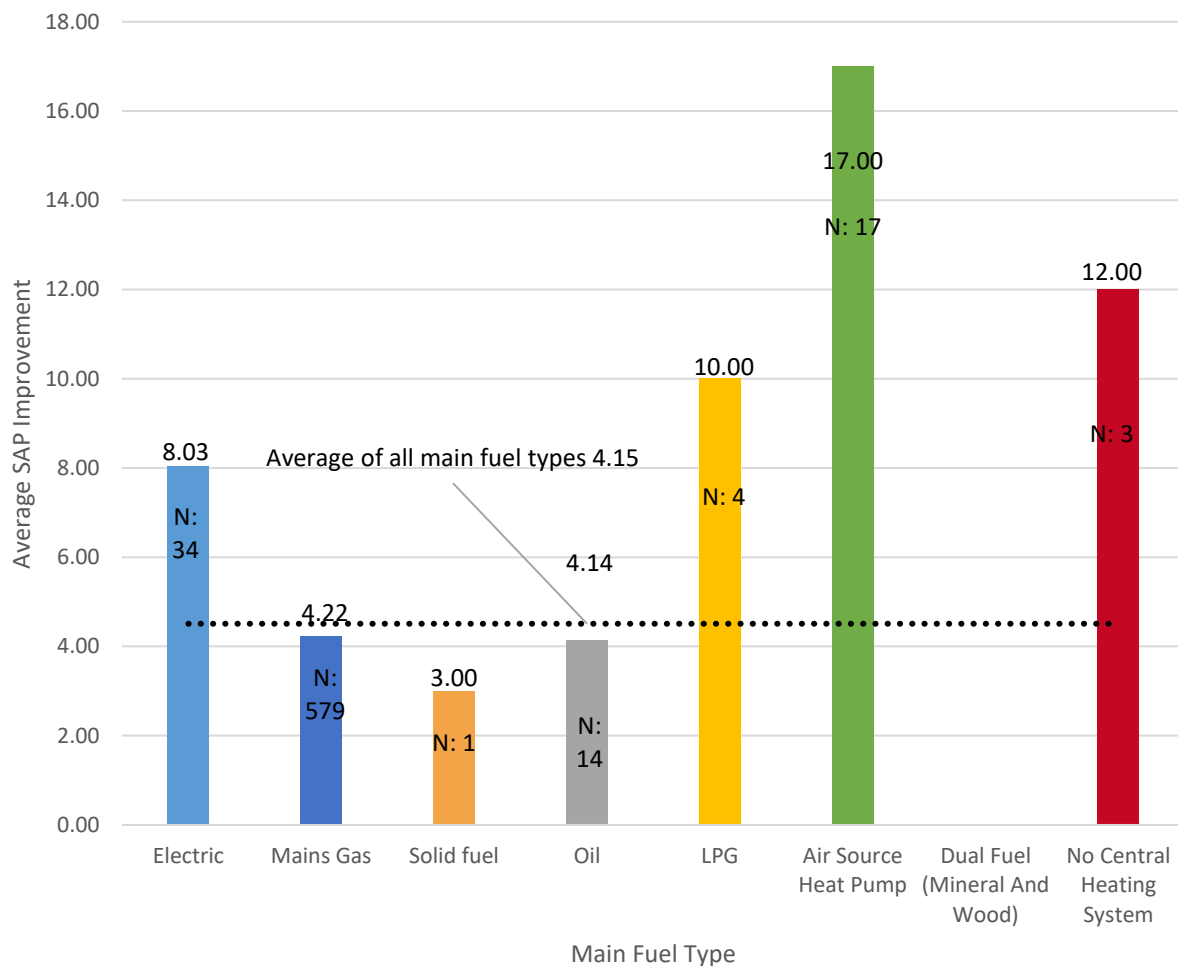
Average SAP improvement by urban rural classification
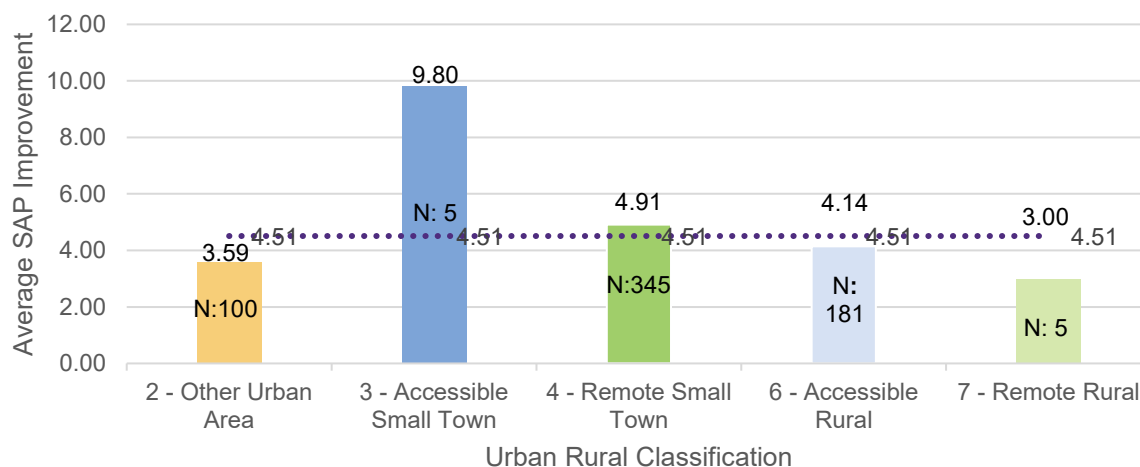
Accessible and Remote Small Towns, both benefited from above average increases when looking at area classifications. However, the Accessible Small Town's sample size is rather small (N: 5).

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

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EES: ABS SAP Band and Main Fuel Type

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Average SAP Improvement by Main Fuel Type

The greatest increase in SAP scores were for ASHP installations (17.00) and in properties with no previous central heating system (12.00). Fuel switching to LPG also resulted in a significant SAP uplift (10.00). Replacing inefficient or expensive fuel types generally result in higher SAP score improvements.

Conclusions and notes

Overall, The Aberdeenshire Council's EES: ABS programme achieves several points:

- A variety of properties were included in the programme. The typical participating property is within the owner-occupied sector and constructed between 1950 and 1983. The main property type was cavity construction or system built, semi-detached or mid-terrace house.

- Almost half of the properties included can be found within the five most deprived SIMD areas.

- Most properties had a starting EPC of band D or lower (93.2%). 35.36% of these properties reached band C or higher and 48.39% were in the D band post-installation.

- The programme had a positive impact on the participating properties as a whole and most increased their SAP score by 3 or more points.

Sources

Variable	Source	Notes
EES: ABS Measure, Address and Tenure	Local Authority	Held on 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 SAP 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 2019 used.
SIMD	Scottish Government	Available online. SIMD 2020 used.
Urban Rural Classification	Scottish Government	Available online. 8-Fold classification (2020) used.

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