Shipbourne and Plaxtol Home Energy Upgrade Guide

Introduction and Contents

In 2025, Climate Action Shipbourne and Plaxtol secured a grant from the Great British Energy Community Fund to understand the home energy improvement needs of local housing, and how the group can support and enable the community to undertake upgrades.

The project was delivered by three consultants in partnership with CASP:

- **The Centre for Energy Equality**
- **Communities for Renewables**
- **Community Energy Pathways**

The 'Home Energy Project' revealed a wealth of information about the benefits associated with upgrading home energy performance – both for individuals and for our community – as well as the challenges people face when doing so.

This guide aims to equip homeowners in Shipbourne and Plaxtol with locally relevant guidance and resources to give you the confidence to begin your journey to achieving a warmer, more economical, and environmentally friendly home.

This section describes how the Centre for Energy and Equality assessed key characteristics of Shipbourne and Plaxtol's housing stock, and how we derived six housing archetypes - each of which received a free whole house energy survey by Ecofurb.

This section sets out the six housing archetypes we derived to characterise our housing, then describes each archetype in detail before recommending a staged approach to upgrades for each, informed by assessments undertaken by Ecofurb. Recommendations made during the surveys are presented as case studies to present an idea of the costs and benefits arising from each stage of upgrades. Case studies may not always be representative and readers are encouraged to use the guidance in section 3 to form an upgrade plan for their home and understand the likely benefits of various upgrades.

This section supports the planning of home energy upgrade work, summarising the free tools and services that can help you design an upgrade plan relevant to your home and needs. We set out options for services that support you in finding a competent installer offering good value, as well as paid services that can support you from design through to coordinated delivery. For those who wish to source installers themselves, we've listed installers we've identified through the study that we're aware offer services locally, listing some of the certifications you may wish to look for.

This section summarises guidance we received from six local home energy surveys according to each of the measures recommended. Based on these assessments we've provided indicative figures for cost and energy bill reductions along with guidance on associated benefits as well as recommendations for timing works and certifications to look for.

Many properties in Shipbourne and Plaxtol are within conservation areas or are listed buildings. This section provides guidance to help ensure your home energy upgrades are compliant with planning and heritage requirements.

This section summarises and presents a range of existing and forthcoming finance options for home energy upgrades, with the aim of addressing one of the main barriers to action: upfront cost.

Key Findings and Recommendations

What's stopping us?

Shipbourne and Plaxtol has an older, larger, and largely oil-heated housing stock, which represents a significant opportunity to reduce energy costs and carbon emissions while improving home comfort. Our September 2025 round table event, and more recent Eco Fair highlighted that many here are motivated to undertake improvements, but often struggle to overcome one or more barriers.

Upfront cost was the most frequently cited barrier to action, followed by access to trusted installers. Many residents felt unsure where to turn, having experienced or heard reports of poor-quality work driven by the poorly designed government incentive schemes of recent years. The volume of available information, much of it generic and of limited relevance to older rural housing, compounds the difficulty of identifying an appropriate course of action. For owners of listed buildings or properties within conservation areas, planning requirements present an additional and often poorly understood barrier to upgrading home energy performance.

To address these barriers, through our home energy project we have produced two resources for local residents:

Home Energy Upgrade Guide
Based on six surveys of local homes across our six housing archetypes, this guide sets out indicative costs, savings and practical advice tailored to the housing stock of Shipbourne and Plaxtol. It includes dedicated guidance for listed buildings and conservation areas, and signposts the grants and finance options available to local households.

CASP Hub — casphub.org
A central online resource providing a local installer register, FAQs on solar PV and heat pumps, guidance on choosing the right contractor, and details of upcoming events

Our Three C's of home energy improvement

Reducing Cost

With less than 6% of our homes on mains gas, most households rely on heating oil or LPG, fossil fuels that are expensive and subject to global energy market volatility. The £9,000 Boiler Upgrade Scheme grant makes now a good time to act, and green finance options can help spread remaining costs. If half of local homes upgraded, our communities combined energy spend would fall by half a million pounds per year.

Measure	Typical cost	Annual bill saving	Payback
Small measures (LED, TRVs, draught-proofing)	£100–£1,000	£70–£270	2–8 years
Solar PV	£3,700–£15,600	£180–£1,300	12–20+ years
Air source heat pump (after £9,000 BUS grant)	£5,500–£11,000 net	£300–£900	10–20 years
Loft insulation top-up	£1,000–£1,800	Best fabric ROI	20–80 years

Cutting Carbon

Local emissions run around 50% above the UK average, driven by older homes and near-total reliance on fossil fuel heating. Our study found that an air source heat pump combined with solar PV can drastically reduce a home's carbon emissions. We also saw that retrofit advisors don't always advise that disruptive, deeper fabric improvements are undertaken before installing a heat pump, often recommending more pragmatic lower cost 'heat-pump readiness' measures instead.

The archetype summaries in Section 2 set out indicative savings by property type, and the tools in section three can help you build an improvement for your home. If half of local homes upgraded, CO_2 emissions would fall by an estimated 1,750 tonnes per year.

Measure	Greatest impact for	Indicative annual CO_2 reduction
Air source heat pump + solar PV	All archetypes	Up to 4 tonnes
Solar PV alone	Pitched roof homes	0.3–1.0 tonnes depending on system size
Wall insulation (solid walls)	Pre-1930 detached	Up to 5.8 tonnes for larger homes
Small measures (lighting, controls)	All archetypes	0.1–0.5 tonnes

Improving Comfort

Shipbourne and Plaxtol's older housing stock means cold rooms, condensation and draughts are a daily reality for many households. The right sequence of measures — starting with draught-proofing and ventilation, and progressing to insulation and low-carbon heating — can transform a home's liveability. Ventilation is particularly important in older properties: sealing draughts without adequate airflow can lead to damp and mould.

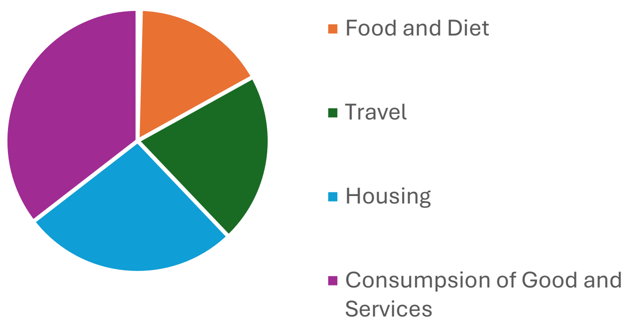
1. Understanding Our Housing Stock

Background: Shipbourne's Climate Change Strategy and Action Plan

Shipbourne Parish Council's Climate Change Strategy and Action Plan (2022) provides a high-level overview of the parish's carbon footprint and key drivers of emissions.

The plan found that local emissions are around 50% higher than the UK average and are driven largely by housing. This reflects a high proportion of older, larger homes and the fact that the majority of properties are off the gas grid, relying on oil, LPG or electricity. Transport is also a major contributor due to car dependency.

The strategy identified housing as the most actionable category of local CO2 emissions – underpinning the ultimate aim of our home energy project to support and enable local homeowners to improve the energy performance of their homes and transition from fossil fuel heating to more efficient electrical heating systems.



Insights from Fairer Warmth

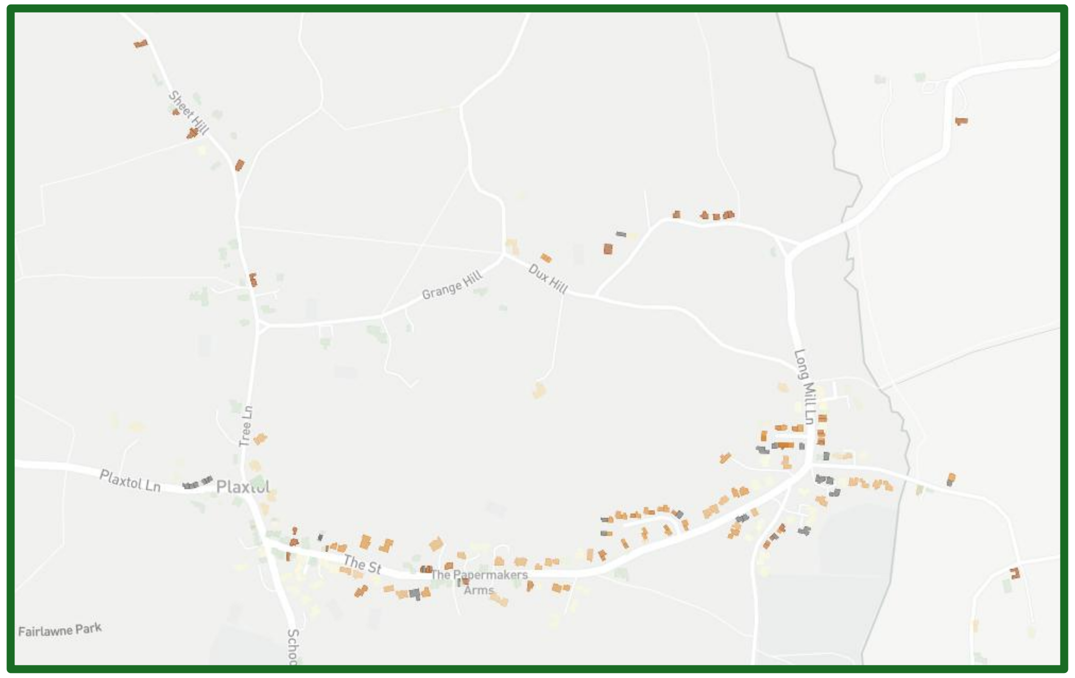
We used the Centre for Energy Equality (CEE) housing database Fairer Warmth to analyse our housing stock. Fairer Warmth combines EPC and housing type data to identify key characteristics such as building age, type, wall construction and heating.

The below maps illustrate the recorded construction age band for properties in Shipbourne and Plaxtol – though 19th Century properties do not appear. Through our Home Energy Project, we sought to understand the specific needs of our aging yet varied housing stock.

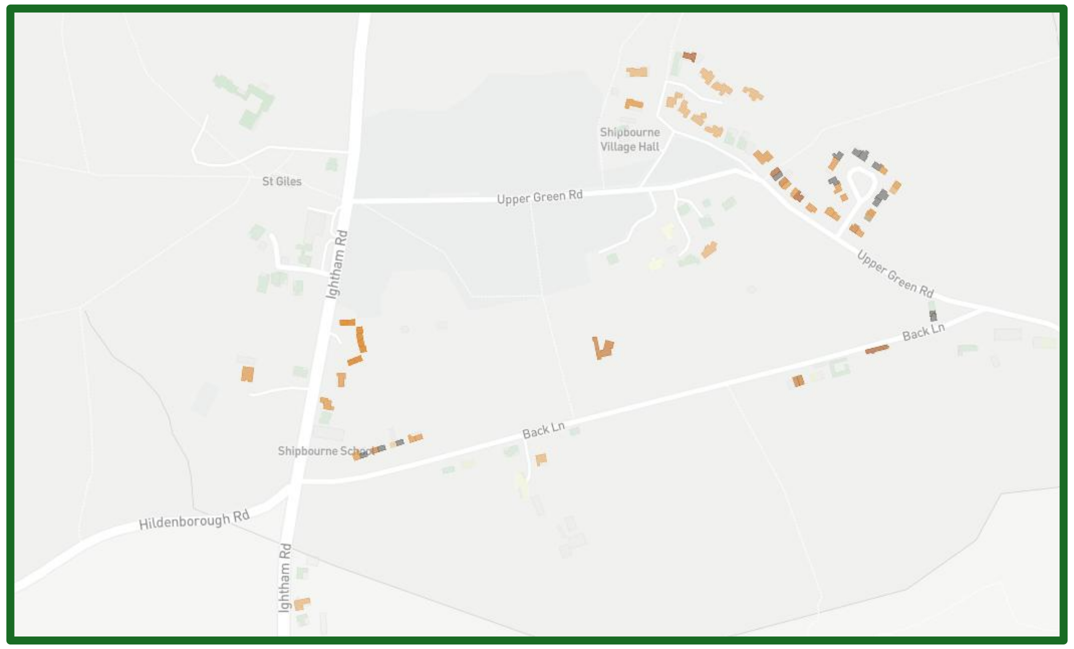
Can't find your home?

Not all properties have recorded construction age and therefore may not appear in these maps. If you're not sure of your property's age, it's likely to be similar to surrounding properties. Use our archetype guide to determine which house type is most similar to yours and which home energy upgrade measures you may wish to consider.

Construction Age Band						
	1900-1929	1930-1949	1950-1966	1967-1975	1976-1982	1983-1990
	1991-1995	1996-2002	2003-200	2007-2011	2012	Post-2013



Map showing the age distribution of properties across Plaxtol

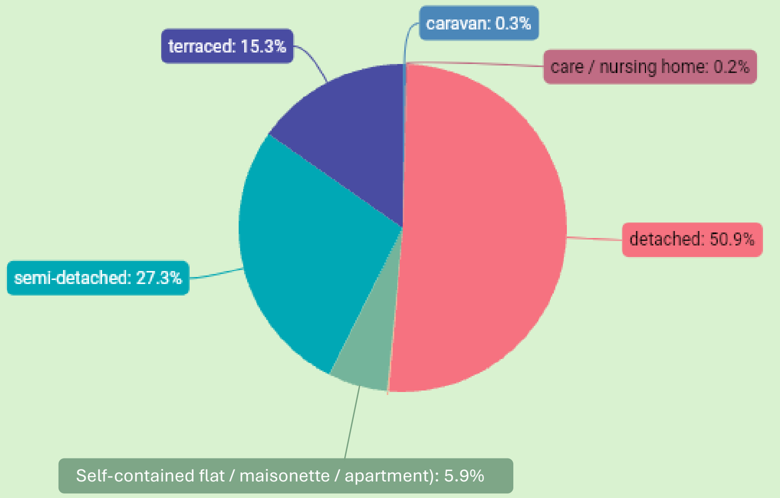


Map showing the age distribution of properties across Shipbourne

1. Understanding Our Housing Stock

Housing Type

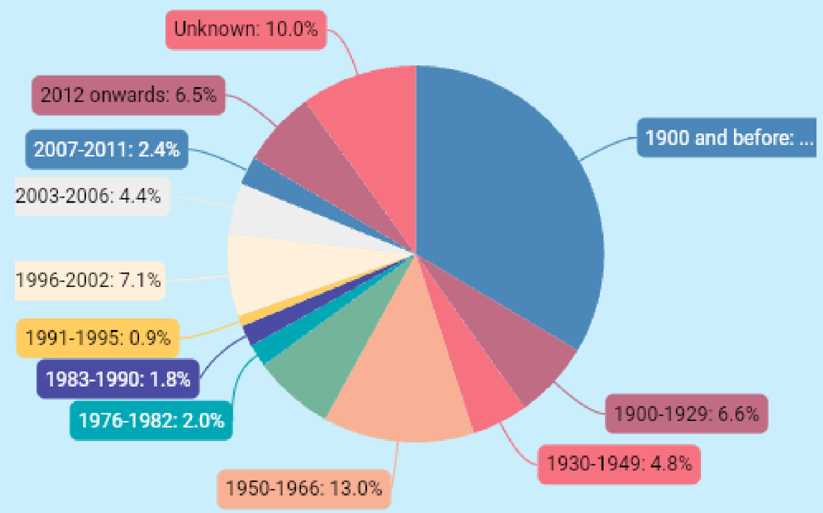
Classification of the property's structure, such as detached, semi-detached, or terraced.



Half of our housing is detached – meaning walls and roofs are often a significant source of heat loss

Construction Age Band

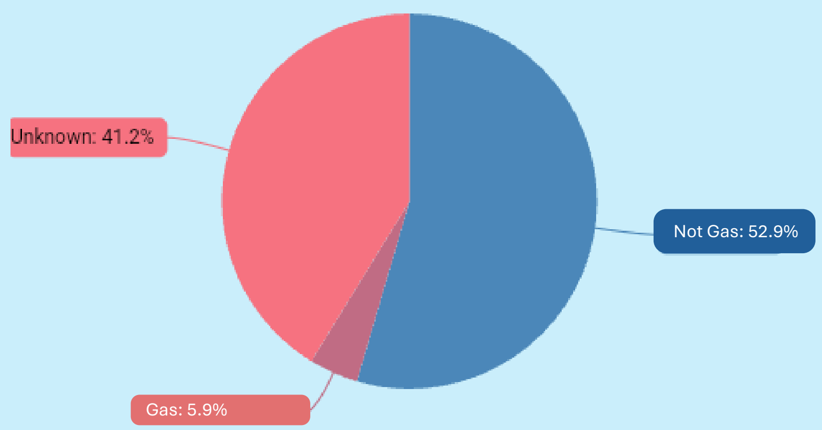
Range of years during which the building was constructed.



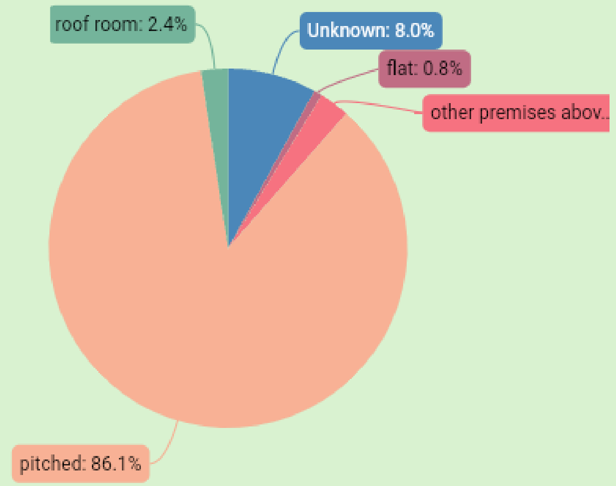
We have an ageing housing stock – meaning the opportunities and benefits of energy improvements are significant

Mains Gas

Indication of properties on mains gas or not.



Most properties have pitched roofs – suggesting great potential for solar PV for generating electricity



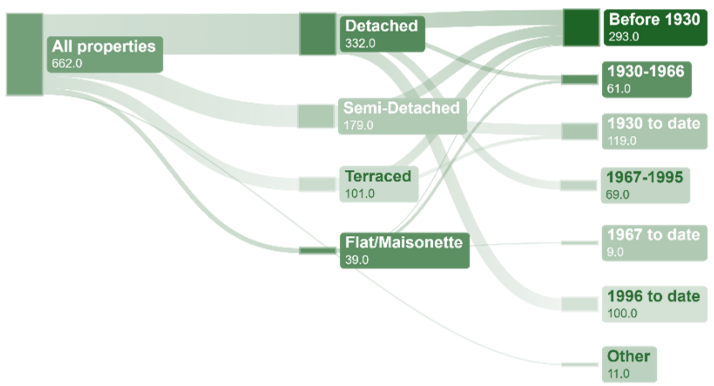
Oil Powered – Only 5.9% of our housing stock is recorded as being supplied by mains gas

1. Understanding Our Housing Stock

We used the Centre for Energy Equality (CEE) housing database Fairer Warmth to analyse our housing. Fairer Warmth combines EPC and housing data to identify key characteristics such as age, type, wall construction and heating.

As expected, the dataset showed that housing in Shipbourne and Plaxtol is dominated by older properties, with 45% built before 1930. The diagram below shows that post 1930, property age is varied, highlighting the need for guidance specific to varying construction types.

The data showed that approximately half of our housing is detached, typically leading to higher energy demands and carbon emissions due to higher building footprints and heat loss due to the absence of shared walls.



By undertaking whole house surveys on the properties which represent the majority of our building form and age groupings, we hoped to gain a better understanding of the costs and benefits that home energy improvements could deliver homeowners in Shipbourne and Plaxtol, as well as the benefits resulting in terms of reductions in energy costs and carbon emissions, as well as wider benefits such as improved comfort and air quality.

Surveys were undertaken by Ecofurb, a PAS 2035 qualified retrofit assessor that considers how energy performance can be improved across the whole building, generally starting with smaller, lower-cost improvements such as lightbulbs and radiator valves, and working up to heat pumps, solar and deeper, more intrusive fabric upgrades such as solid wall insulation.

*Scaling factors applied to estimate relative performance by property type: detached (1.0), semi-detached (0.8), terraced (0.65), and flats (0.5), reflecting differences in exposed building fabric and heat loss.

For building types not surveyed, we estimated the costs and benefits using heat loss scaling factors for buildings of a similar age. For example, semi-detached buildings typically loose around 20% less heat, therefore a factor of 80% was used to calculate the likely benefits in relation to those of a detached home.*

While the buildings surveys differed in terms of upgrades already delivered, homeowner motivations, and energy usage requirements, results broadly confirmed that:

1. **Carbon and energy saving potential increases with age** Pre-1930 properties, particularly detached, have higher heat loss due to solid walls, poor insulation and air leakage, meaning the potential for energy and carbon emissions reductions are much greater than more modern homes
2. **detached buildings stand to benefit greatly**– Across all age groups, detached homes show the highest carbon and energy reductions, due to building size, exposed fabric and typical energy demand.
3. **All archetypes present meaningful opportunities** – While outcomes vary, every building type can achieve significant reductions in energy use, costs and emissions through targeted and staged retrofit.

Energy cost and CO2 reductions if all recommended works are undertaken (some based on case studies and others estimated) – are presented below.

Building age/ typology	Number	Total CO2 Reduction	Total Bill Reduction
		tonnes	£
Pre 1930 Detached	126	5.8	£1,400
Pre 1930 Semi-detached	88	0.6	£2,800
Pre 1930 Terraced	73	2.1	£1,900
Pre 1930 Flat/ Maisonette	6	1.3	£1,200
1930 - 1966 detached	37	2.9	£2,600
Post 1930 Semi-detached	91	2.3	£2,100
Post 1930 Terraced	28	1.9	£1,700
1930-1966 Flat/ Maisonette	24	1.5	£1,300
1967 - 1995 detached	69	4.5	£3,000
Post 1967 Flat/ Maisonette	9	2.3	£1,500
Post 1996 detached	100	0.6	£7,100

By extrapolating the results of the surveys for each building type across Shipbourne and Plaxtol's housing distribution, we are able to approximate the environmental and economic benefits of supporting home energy upgrades locally. If **half** of the properties Shipbourne and Plaxtol undertook all energy upgrades recommended in surveys, we estimate that:

- **Our regional CO_2 emissions would fall by 1,750 tonnes per year,** equivalent to around 7 million petrol car miles, or the annual carbon footprint of roughly 175 average UK residents.
- **Combined energy costs would reduce by just under £550,000 per year**. As around 90% of our energy spend typically leaves the local economy reducing energy spend makes income available for other use in the local economy.
- **The cost of the works would be c.£24 million**, representing a significant opportunity for local green job creation.

  Assuming the industry benchmark of 1 job per £100k of retrofit investment, there is potential to support 240 - 510 local installer jobs.*

Aside from environmental and economic benefits, there are significant wider benefits to improving our housing:

- **Improved health and comfort:** Better insulation and low-carbon heating reduce cold, damp conditions linked to illness; the UK Health Security Agency identifies cold homes as a contributor to thousands of excess winter deaths annually in England.
- **Cleaner air and reduced emissions:** Moving away from oil-based heating cuts local air pollutants and improves indoor air quality.
- **Energy Security:** With many homes reliant on heating oil, households are exposed to volatile global markets highlighted by price spikes during recent conflicts. Our study showed that by reducing demand and electrifying their heating, large energy users can entirely offset their demand through the installation of a solar PV and battery storage system.

*Based on the industry benchmark of 10 to 21 jobs per £1m of retrofit investment, there is potential to support 240 - 510 local installer jobs: Royal Institution of Chartered Surveyors (RICS)

2. Shipbourne and Plaxtol Housing Archetypes

Informed by an analysis of our local housing stock, we grouped local homes into representative "archetypes" that reflect the most common housing types in our area

We developed the Centre of Energy Equality's property analysis into six core housing archetypes following best practice guidance from the National Retrofit Hub.

Our intention is to provide applicable guidance to homeowners based on broad property types and illustrate benefits through case studies, though it is important to note that every home is unique in performance, and the savings indicated in the case studies are highly building specific, also depending on the order in which measures are installed.

For example, two homes in archetype 1 were recommended very different approaches, due to both homeowner motivation and property differences.

We hope this serves as an informative first step, and encourage you to visit our retrofit journey planner (see page 19) for guidance on how to progress your own personal retrofit journey.

1

19th or early 20th Century Semi-Detached & Terraced Solid Wall Homes

Semi-detached and terraced homes built before 1930 with solid brick or stone walls, suspended timber floors and pitched roofs.

2

19th or early 20th Century Detached Solid Wall Homes

Detached homes built before 1930 with solid brick or stone walls, suspended timber floors and pitched roofs.

3

Mid-20th Century Cavity Wall Houses

Homes built between the 1930s and mid-1960s often featuring early cavity brick walls, suspended floors and limited insulation.

4

Late 20th Century Cavity Wall Houses

Homes with cavity wall construction, often with pitched roofs and a mix of solid and suspended floors. These properties typically feature moderate levels of insulation but require upgrades to reach presently recommended levels.

5

Modern (21st Century) Detached Houses

Detached homes built to improved insulation standards, typically with larger floor areas and more modern heating systems.

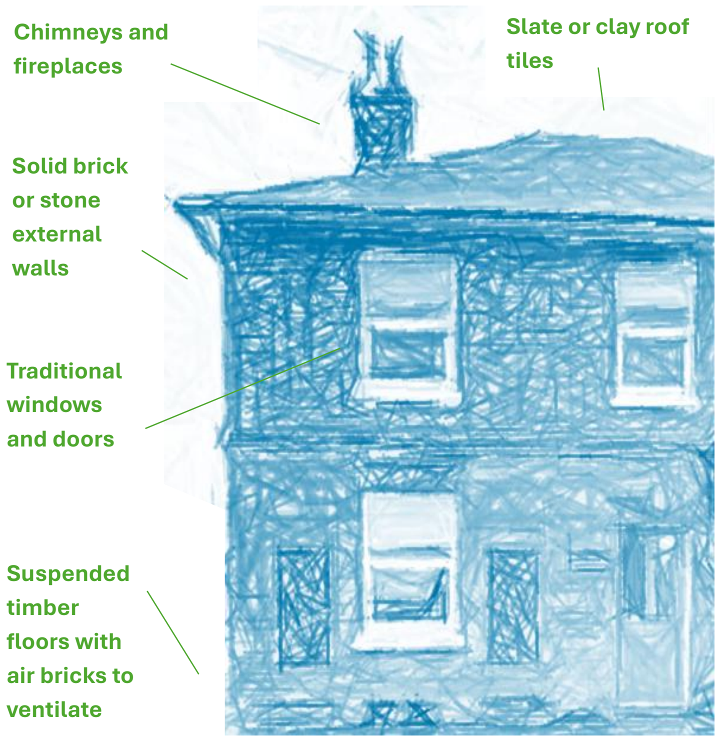
6

Flats and Maisonettes

Purpose-built or converted flats and maisonettes sharing walls, floors and roofs with other dwellings.

1 Archetype: 19th or early 20th Century Semi-Detached & Terraced Solid Wall Homes

Characterised by solid brick or stone walls, suspended timber floors and pitched roofs, this housing group often features mixed construction due to subsequent extensions or the use of hung tiles on exterior walls.



Archetype Overview

- Solid brick or stone external walls;
- Suspended timber ground floors with underfloor ventilation;
- Pitched roofs with loft spaces;
- Timber or single-glazed windows and original doors;
- Presence of chimneys contributing to ventilation and heat loss;
- Reliance on natural ventilation through gaps in the building fabric;
- Breathable construction using lime mortars and traditional materials;
- Frequent mix of construction types due to later extensions

'Insulate tight, ventilate right'

Because older homes rely on natural or 'uncontrolled' ventilation, improvements that make the home more airtight (such as insulation or new windows) can lead to condensation or mould.

Ready to retrofit?

Critically for older buildings, owners should prioritise necessary repairs in advance of energy related improvements which can otherwise cause wider issues. Issues typical of this archetype include:

- Deteriorating pointing or render;
- Ageing roofs or flashing;
- blocked or damaged air bricks ventilating suspended floors;
- chimney maintenance;
- These homes may also contain materials added during later renovations that require careful management, such as asbestos-containing materials.

Heritage Considerations

Many homes of this period in Shipbourne and Plaxtol may fall within a conservation area, and some may be listed. Measures such as external wall insulation, window replacement, solar panels on prominent roof slopes may be restricted or require sensitive design. See our guidance on this in section 5.

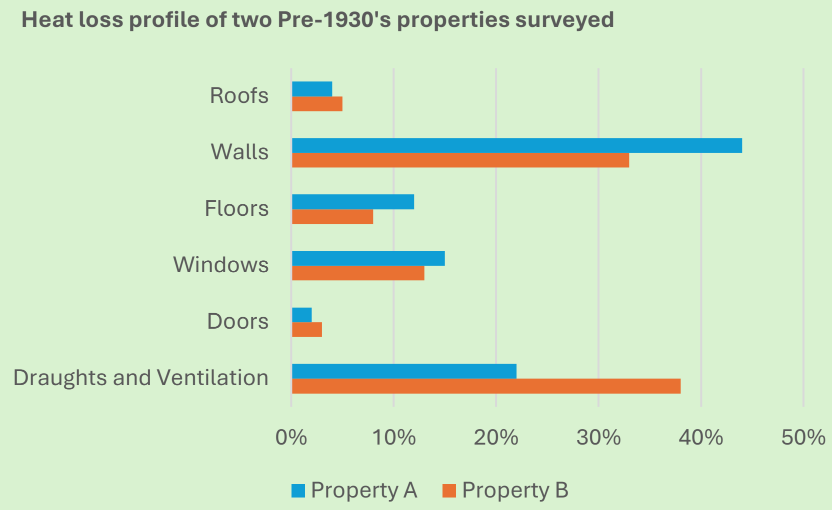
Extensions and Alterations

Many pre-1930 homes have been extended or altered over time, often resulting in a mix of construction types, such as solid walls alongside later cavity wall extensions. Such variations necessitate a whole-house approach to ensure measures work effectively across the entire building.

Home Energy Project Case Study

Property A: A pre-1930 semi-detached cottage with solid brick walls and suspended timber floors, typical of traditional rural housing with relatively high heat loss and reliance on natural ventilation.

Property B: A c.1900 mid-terrace house with mixed wall construction (solid masonry at ground floor and tile-hung timber frame above), characteristic of Kentish terrace typologies with varying thermal performance across the building fabric.



Property A loses a larger proportion of heat through the walls (44%), reflecting the influence of solid wall construction.
Property B experiences significantly higher heat loss through draughts and ventilation (38%), suggesting greater air leakage and reliance on natural ventilation.

	Fuel Type	Energy Use (kWh)	Carbon Emissions (tCO_2)	Energy Bills (£)
Property A	Electricity	9,694	1.17	£2,739
	Wood Logs	1,134	0.03	£77
	Total	**10,828**	**1.2**	**£2,816**
Property B	Oil	14,289	4.26	£1,122
	Electricity	2,282	0.06	£815
	Total	**16,571**	**4.3**	**£1,936**

Property A has lower emissions but higher electricity costs due to reliance on electric heating.

Property B has significantly higher energy demand and emissions due to oil heating and higher overall energy use.

Proposed Improvements: 19th or early 20th Century Semi-Detached & Terraced Solid Wall Homes

1. Your energy improvement journey depends on your building and goals. Our survey showed two approaches: Property B was focused on cost effectiveness, and was recommended heating controls and draught reduction measures as a first step, while Property A was open to a more comprehensive approach to heat pump readiness, with ventilation and fabric measures being recommended, involving higher costs and greater disruption.

2. Targeted building improvements such as upgraded windows, doors and loft insulation were recommended in both properties surveyed. It is recommended that these measures are implemented before a heating system upgrade to maximise heat pump efficiency. If budgets don't allow or you wish to retain older windows and doors, consider installing secondary glazing and draft proofing measures to minimise heat loss and reduce draughts.

3. Ventilation is especially important for this type of home, as improvements to insulation and airtightness can increase the risk of moisture build-up, leading to condensation, mould and potential fabric deterioration. Suitable ventilation strategies should therefore be considered alongside fabric upgrades – see our ventilation guidance below.

4. Air Source Heat Pumps were suggested for both properties of this type resulting in the greatest emissions reductions. Heat pumps are generally suitable for this archetype provided heat demand can be minimised through insulation and draught reduction, and so long as there is space for an external unit and suitable radiator upgrades.

5. Solar PV and battery storage can further reduce reliance on grid electricity and lower running costs, though there may be structural limitations or upgrades necessary for buildings of this age. Batteries aren't always economical – read our guidance in on this below.

6. Deeper Fabric Upgrades can significantly improve comfort and building performance but can be costly and yield limited financial returns. Costs can be managed by timing such works with wider renovations, or by targeting your most frequently used rooms.

The Three C's

Cost — Small measures proposed for Property B were predicted to cut annual bills by £225 and cost less than £900. Adding a heat pump and solar PV were expected to reduce bills by nearly £800 and pay off in 23 years.

Carbon — Air Source Heat Pump and solar PV systems were expected to reduce Property B's CO_2 from 4.3 to 0.25 tonnes: a 94% reduction without any fabric works.

Comfort — Full fabric upgrades for Property A including window and door replacements, combined with mechanical ventilation eliminate the cold, draughts and damp risk typical of pre-1930s solid wall homes.

Home Energy Project Case Study: **Property A**

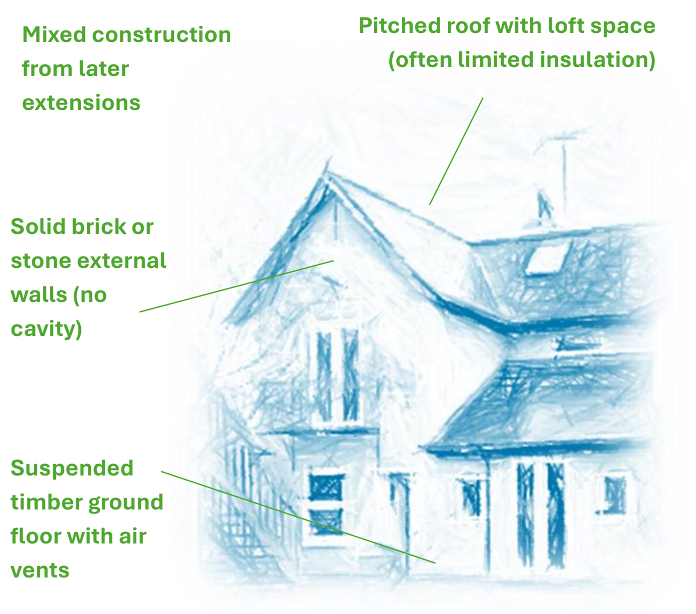
	Measures Proposed	CO_2 (t)	Energy Used (kWh)	Energy Bill (£)	Estimated Cost (£)	Payback (years)
Baseline – Current Home Performance	Current building performance prior to retrofit improvements	1.2	10,828	£2,816	—	—
Stage 1 – Heat Pump Readiness (Building Work and Ventilation)	• Top up loft insulation to 300 mm • Install A++ triple glazed windows • Upgrade front door to insulated door • Install decentralised mechanical extract ventilation	1.21	10,864	£2,828	£15,600	-
Stage 2 - Heating Decarbonisation	• Install air source heat pump (ASHP) with new radiator central heating system	0.44	4,829	£1,539	£5,500	4
Stage 3 - Renewable Energy System	• Install 2.2 kWp solar PV on south-facing roof with 15 kWh battery storage	0.31	3,838	£1,359	£9,000	50
Stage 4 - Deeper Fabric Upgrades	• Internal insulation to solid walls (150 mm or 75 mm high-performance) and cavity wall insulation improvements	-0.08	3,838	£709	£33,064	51
Total Package	Combined impact of all measures	-0.08	3,838	£709	£63,164	30

Home Energy Project Case Study: **Property B**

	Upgrade Overview	CO_2 (t)	Energy Used (kWh)	Energy Bill (£)	Estimated Cost (£)	Payback (years)
Baseline – Current Home Performance	Current building performance prior to retrofit improvements	4.32	16,571	£1,936	—	—
Stage 1 – Heat Pump Readiness (Low Cost Measures)	• Programmable thermostatic radiator valves • Block open chimney with chimney balloon • Upgrade remaining lighting to LED fittings	3.52	13,863	£1,711	£890	4
Stage 2 – Low Carbon Heating and Solar PV	• Install air source heat pump with radiators, 2.4 kWp solar PV system on the front roof and 15 kWh battery storage	0.25	3,201	£1,154	£13,000	23
Stage 3 – Comfort and Fabric Improvements	• Install mechanical extract ventilation • Upgrade sash windows to double glazing • Install two insulated external doors and top up loft insulation	0.23	3,095	£1,120	£20,500	603
Stage 4 – Deeper Fabric Retrofit (Optional)	• Upgrade first-floor tile-hung walls • Install internal insulation to ground floor solid walls • Insulate suspended timber floors and insulate solid floor	0.04	1,853	£802	£37,000	116
Total Package	Combined impact of all measures	0.04	1,853	£802	£71,390	63

2 Archetype: 19th or early 20th Century Detached Solid Wall Homes

Characterised by solid brick or stone walls, suspended timber floors and pitched roofs, this housing group often features mixed construction due to subsequent extensions or the use of hung tiles on exterior walls.



Archetype Overview

- Solid brick or stone external walls;
- Suspended timber ground floors with underfloor ventilation;
- Pitched roofs with loft spaces;
- Timber or single-glazed windows and original doors common;
- Presence of chimneys contributing to ventilation and heat loss;
- Reliance on natural ventilation through gaps in the building fabric;
- Breathable construction using lime mortars and traditional materials;
- Frequent mix of construction types due to later extensions;

'Insulate tight, ventilate right'

These homes were built with solid brick or stone walls and breathable construction, relying on natural ventilation through the building fabric. Improvements that increase airtightness such as insulation, new windows or draught reduction can change how moisture behaves. Ventilation should therefore be maintained or improved to manage moisture and indoor air quality.

Ready to retrofit?

Before retrofit works, owners should ensure the building is in good condition. Common issues may include:

- condition of solid walls, including damp, cracked render or pointing;
- blocked or damaged air bricks ventilating suspended timber floors;
- chimney condition, including unused flues;
- ageing roof coverings, flashing or gutters that could introduce moisture;

Heritage Considerations

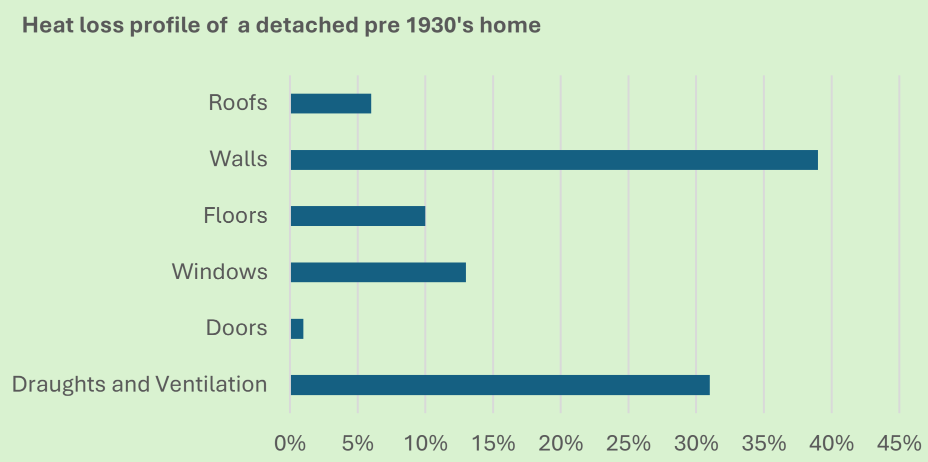
Many homes of this period in Shipbourne may fall within the conservation area, and some may be listed. Measures such as external wall insulation, window replacement, solar panels on prominent roof slopes or changes to traditional materials may be restricted or require sensitive design. See our guidance on this in section 5.

Extensions and Alterations

Many pre-1930 homes have been extended or altered over time, often resulting in a mix of construction types, such as solid walls alongside later cavity wall extensions. Such variations necessitate a whole-house approach to ensure measures work effectively across the entire building.

Home Energy Project Case Study

A pre-1900 detached home was surveyed during CASP's Home Energy Project, broadly representative of older rural properties in the area. The property has solid brick walls, suspended timber floors and a pitched roof, typical of this period, with a mix of construction due to later extensions. The home currently uses oil-fired heating and includes some loft insulation and solar PV, but retains largely uninsulated solid walls.



The absence of insulation to the solid walls means the building fabric performs less efficiently than many newer homes. Walls remain the dominant source of heat loss, with additional significant losses from draughts and ventilation. This indicates clear opportunities to improve airtightness and insulation, while carefully maintaining ventilation to manage moisture.

Fuel Type	Energy Use (kWh)	Carbon Emissions (tCO_2)	Energy Bills (£)
Oil	42,036	12.53	£3,300
Dual Fuel: Mineral and Wood	5,014	0.44	£408
Electricity	254	0.18	£482
PV used in the home	-2,708	-0.39	£0
PV exported to the grid	-1,168	-0.17	£0
Total (pre-solar)	**39,328**	**12.14**	**£4,190**

Energy use is dominated by oil heating, reflecting the high heat demand typical of pre-1930 solid wall homes, and accounts for the vast majority of carbon emissions and costs, which are significant in this case due to the size of the building. Electricity demand is relatively modest and partly offset by an existing solar PV system. Use of wood fuel is limited and contributes only a small share of overall energy use and emissions.

2 Proposed Improvements: 19th or early 20th Century Detached Solid Wall Homes

Your energy improvement journey will depend on your priorities – whether they are reducing costs, lowering emissions or improving comfort. This case study is an example of a traditional 'fabric first' approach involving deeper building fabric improvements which aim to minimise heating demand before installing an air source heat pump.

Targeted building improvements are beneficial in most cases. For older solid wall homes, this typically includes loft insulation, draught reduction and window upgrades, which help reduce heat demand and improve comfort. These measures are typically lower disruption and can deliver meaningful improvements in performance.

Ventilation upgrades are particularly important for this type of home. In this case our surveyor identified the need for mechanical extract ventilation to manage moisture and maintain indoor air quality.

An **Air source heat pump** was identified as a strong alternative to oil, delivering substantial emissions reductions. In this case it was recommended that the property installed larger radiators which can be necessary as heat pump systems operate at lower temperatures than traditional heating systems.

Solar PV can further reduce running costs by offsetting electricity demand, particularly when paired with a heat pump, though this was already present on the property surveyed.

Deeper fabric upgrades such as external wall insulation, floor insulation and high-performance glazing can significantly improve comfort and reduce heat loss in solid wall homes, but are typically more disruptive and costly.

Fabric First?

Due to the costs and disruption associated with 'deeper' fabric upgrades, in many cases retrofit assessors recommend lower-cost measures to ensure a house is 'heat pump ready'. However if budgets allow and other renovations are planned – it's ideal if deeper work can be done earlier.

Home Energy Project Case Study: Results

Stage	Measures	CO_2 (t)	Energy Used (kWh)	Energy Bill (£)	Estimated Cost (£)	Payback (years)
Baseline – Current Home Performance	Current building performance prior to improvements	12.58	47,234	£4,190	—	—
Stage 1 – Major Fabric & Heating Upgrades	External wall insulation; A+ double glazing; air source heat pump with new radiators; decentralised mechanical extract ventilation	1	9,243	£2,897	£59,000	46
Stage 2 – Additional Fabric Improvements	Loft insulation top-up; room-in-roof insulation; cavity wall insulation to extensions	0.96	8,991	£2,825	£7,500	104
Stage 3 – Low-Cost Efficiency & Ventilation Measures	LED lighting upgrades; installation of trickle vents	0.92	8,713	£2,757	£890	13
Total Package	Combined impact of all measures	0.92	8,713	£2,757	£67,390	47

The Three C's

Cost — As a significant consumer of oil, the installation of a heat pump represents the most economical improvement for this home type. This property wished to combine installation with deeper fabric measures, reducing the effective payback, though alone, heat pump installations can be expected to return the initial investment in under 20 years.

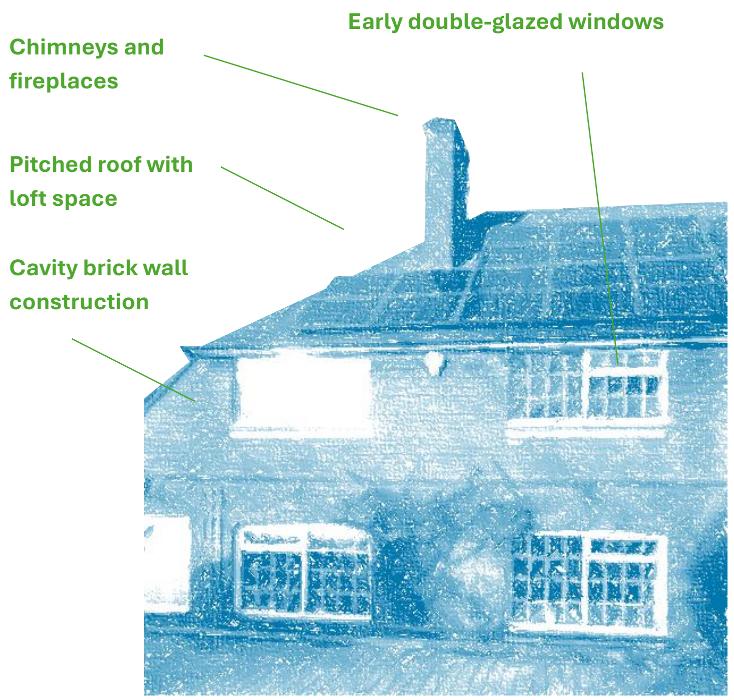
Carbon — The installation of an air source heat pump, coupled with fabric upgrades, reduced CO_2 by over 11 tonnes — an impressive 92% reduction.

Comfort — External wall insulation, A+ double glazing were proposed to minimise heat loss for this home while mechanical ventilation guaranteed good air quality.

3

Archetype: Mid Century Cavity Wall Houses

Built between the 1930s and mid-1960s, these homes typically feature early cavity brick walls, suspended floors and limited insulation.



'Insulate tight, ventilate right'

These homes were typically built with cavity brick walls, which can often be insulated to reduce heat loss. As insulation and airtightness improvements are introduced ventilation should still be maintained to manage moisture and indoor air quality.

Ready to retrofit?

Before retrofit works, owners should ensure the building is in good condition. Common issues may include:

- Check for existing cavity insulation using EPC records or a borescope survey before assuming performance.
- Inspect for thermal bridging using a thermal imaging camera to identify cold spots.
- Identify draughts at floors, windows, loft hatches and vents indicating uncontrolled air leakage.
- Check roof coverings, flashing and gutters for defects causing moisture ingress.

Heritage Considerations

Homes of this period are less commonly listed than earlier buildings but may still fall within the conservation area. Changes affecting the external appearance such as new windows, external insulation or solar panels may require planning permission or sensitive design. See our guidance on this below.

Extensions and Alterations

Many homes built between 1930 and 1966 have been extended or altered over time, often resulting in a mix of construction types, insulation levels and heating systems within the same building. Later extensions may have different wall constructions, floor types or insulation standards, which can affect heat loss patterns and the suitability of retrofit measures. A whole-house approach is therefore important to ensure improvements work effectively across both the original and more modern parts of the building.

Future Comfort

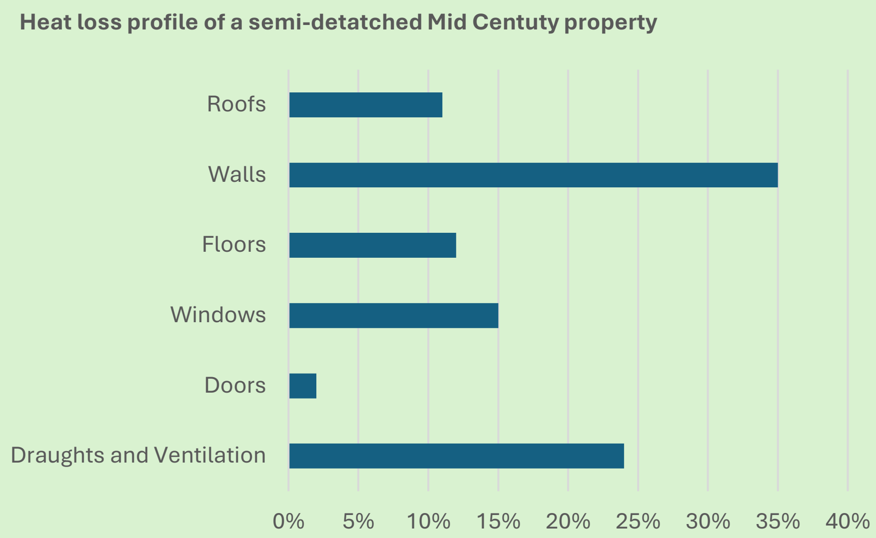
Many homes of this period have larger windows and lighter construction than earlier buildings, which can increase overheating risk as summers become warmer. Improvements such as shading, ventilation and insulation can help maintain comfort while reducing energy use.

Archetype Overview

- Typically include suspended timber floors and pitched roofs
- Usually have little or no original insulation
- Ventilation mainly via natural air leakage (windows, floors, roof spaces, chimneys), sometimes with air bricks or extract fans
- Often retain original construction, influencing heat loss and retrofit options
- Timber-framed windows and doors are common and can be a source of draughts
- Uninsulated loft spaces and suspended floors contribute to heat loss and overall building performance

Home Energy Project Case Study

We surveyed a mid-twentieth-century home with cavity brick walls, suspended timber floors and a pitched roof. The property has moderate insulation levels, including cavity wall insulation and loft insulation, and already benefits from solar PV. Heating is provided by an oil central heating system.



Despite some insulation improvements, walls remain a significant source of heat loss, suggesting cavity insulation may be partial or underperforming. Losses from draughts and ventilation are also notable, alongside windows and floors, indicating opportunities to improve airtightness and glazing while maintaining appropriate ventilation.

Fuel Type	Energy Use (kWh)	Carbon Emissions (tCO_2)	Energy Bills (£)
Oil	15,507	4.62	£1,217
Wood Logs	2,117	0.06	£145
Electricity	-2,826	0.23	£1,265
Total	**14,798**	**4.91**	**£2,627**

Energy use is dominated by oil consumption, which drives the majority of carbon emissions and a large share of costs. Electricity demand is partly offset by on-site solar PV, while wood fuel contributes only a small proportion of overall energy use and emissions.

3 Proposed Improvements: Mid Century Cavity Wall Houses

1. Your energy improvement journey will depend on your priorities, whether focused on reducing costs, lowering emissions, or improving comfort. Our case study followed a staged approach aimed at installing an air source heat pump system supported by PV, considering deeper upgrades at a later stage.

2. Targeted building improvements should be considered in all cases to improve thermal performance. Measures such as additional loft insulation (as proposed in this case) are typically low cost and can materially reduce heating demand, often justifying their expense within a decade. Upgrades to dated windows and doors can also deliver meaningful improvements at moderate cost and with limited disruption. Our case study was recommended thermostatic radiator valves to improve control and avoid wasted heat.

3. Ventilation upgrades are important for this type home, and should be considered following any airtightness improvements or if existing issues are known. In this case the survey identified the need for mechanical extract ventilation to manage moisture and maintain good indoor air quality.

4. **Air Source Heat Pumps** present a strong alternative to oil and result in significant emissions reductions, though heat demand should be minimised in advance through insulation and draught reduction, and radiator upgrades should be considered where necessary.

5. Solar PV and battery storage can further reduce reliance on grid electricity and lower running costs, offsetting the additional electricity demand introduced by an air source heat pump unit.

6. Deeper fabric upgrades can significantly improve comfort and building performance but can be costly and yield limited financial returns. Costs can be managed by timing such works with wider renovations, or by targeting most frequently used rooms.

In the case below measures such as external wall insulation, insulated floors and triple glazed window replacements were identified as options to further reduce heat loss and improve comfort. While these upgrades support more efficient heat pump operation, they are disruptive and often best timed with wider refurbishment work.

Home Energy Project Case Study: Results

	Upgrade Overview	CO_2 (t)	Energy Used (kWh)	Energy Bill (£)	Estimated Cost (£)	Payback (years)
Baseline – Current Home Performance	• Current building performance prior to retrofit improvements	4.4	17,419	£2,107	—	—
Stage 1 – Heat Pump Readiness (Controls, Ventilation and Loft Insulation)	• Cease woodburner use. • Install programmable thermostatic radiator valves • Decentralised mechanical extract ventilation and top up loft insulation to 300 mm	4.29	15,721	£2,193	£4,150	N/A
Stage 2 – Renewable Energy System	• Install 3.5 kWp solar PV system with 15 kWh battery storage	3.84	12,805	£1,581	£7,378	12
Stage 3 – Heating Decarbonisation	• Install air source heat pump with modified existing radiator system	-0.11	919	£986	£5,000	8
Stage 4 – External Wall Insulation	• Install external insulation to all external walls	-0.21	218	£811	£42,000	240
Stage 5 – Further Building Upgrades	• Insulated solid ground floors and A++ triple glazing	-0.27	-125	£724	£31,500	362
Total Package	Combined impact of all measures	-0.27	-125	£724	£82,650	60

The Three C's

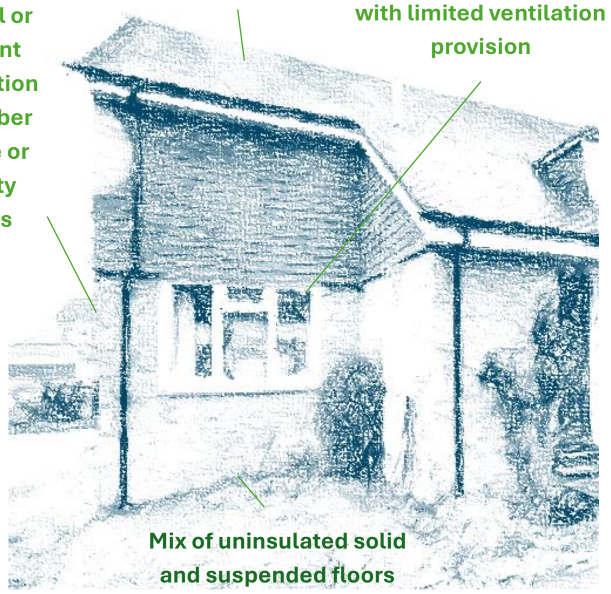
Cost — Solar PV in this case reduced energy bills by over £500, with the investment paying off in 12 years. Adding a heat pump for £5,000 was projected to reduce bills by a further £600, paying back in just 8 years.

Carbon — Solar PV and a heat pump together reduce CO_2 by 4.4 tonnes, and was recommended in this case in advance of any major fabric works.

Comfort — Mechanical ventilation, loft insulation top-up and external wall insulation progressively address heat loss and damp risk, delivering measurable improvements to warmth and air quality.

4 Archetype: Late 20th Century Cavity Wall Houses

Homes with cavity wall construction, often with pitched roofs and a mix of solid and suspended floors. These properties typically feature moderate levels of insulation but require upgrades to reach presently recommended levels.



Archetype Overview

- Typically cavity wall construction with pitched roofs and a mix of solid and suspended floors;
- Generally include cavity wall and loft insulation, though often below current standards or inconsistently installed;
- Ventilation typically via natural infiltration, with limited dedicated extract or background ventilation;
- Early double glazing is common in this archetype, often with poor airtightness and limited or no trickle ventilation;

'Insulate tight, ventilate right'

Improvements to insulation and airtightness can increase the risk of condensation if ventilation is not addressed. Homes of this type often lack dedicated ventilation systems, particularly where windows have been upgraded without trickle vents. Addressing ventilation alongside fabric upgrades is essential to maintaining good indoor air quality and avoid moisture-related issues.

Ready to retrofit?

Before undertaking retrofit works, it is important to ensure the building is in good condition. This includes checking for roof defects, poorly performing windows, and any issues with damp or timber elements in floors or frame construction. Resolving these issues first helps ensure that insulation and airtightness measures perform as intended and do not introduce unintended issues.

Heritage Considerations

Homes of this type are unlikely to be listed, and planning constraints are generally limited. However, some properties may be located within a conservation area, where changes to external appearance (such as external wall insulation or window replacements) may require consent. See our guidance on this in section 5.

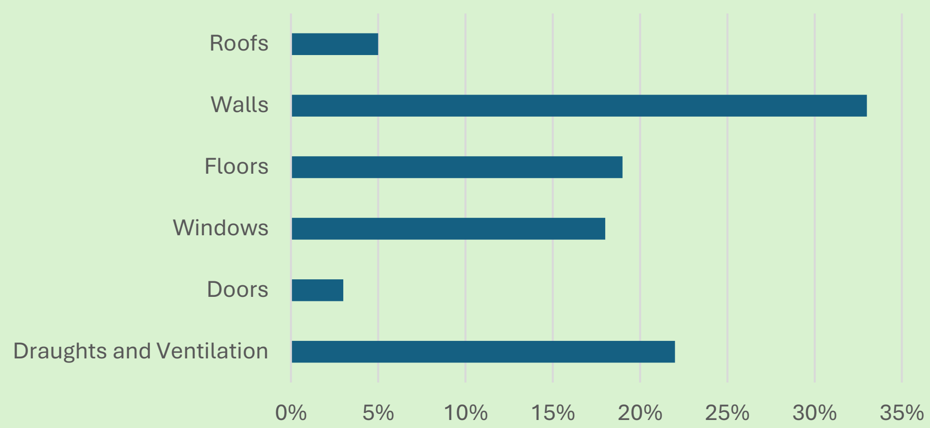
Hidden construction complexity

While these homes appear more modern, construction can vary significantly. This can make performance less predictable and means that surveys and careful detailing are important. Later alterations, such as garage conversions or extensions, may also introduce inconsistencies in insulation and airtightness that should be addressed as part of a whole-house approach.

Home Energy Project Case Study

A late twentieth-century semi-detached home was surveyed during CASP's Home Energy Project, broadly representative of houses built between the late 1960s and mid-1990s. The property is of timber frame construction with limited original insulation, a pitched roof and a mix of floor types, typical of this period. The home currently uses oil-fired heating. The property has already installed solar PV, but insulation levels in the loft, walls and sloping ceilings remain below modern standards.

Heat loss profile of 1967–1995 – Late Cavity / Timber Frame Home property



Walls account for the largest proportion of heat loss, indicating that the building fabric, particularly wall construction, remains a key driver of energy demand. Roof losses are comparatively low due to the presence of existing insulation.

Usage	Energy use (kWh)	Tonnes CO_2	Energy Bills (£)
Oil	24,903	7.42	£1,955.00
Electricity	2,239	0.13	£165.00
Savings			
PV used in the home	-1,159	-0.17	-£379.00
PV exported to grid	-1,654	-0.25	-£96.00
Total	**22,594**	**7.13**	**£1,645.00**

Energy use is dominated by oil heating, which accounts for the vast majority of both energy consumption and carbon emissions, and the majority of energy costs. Electricity demand is relatively low overall, with net consumption reduced by on-site solar PV generation. The PV system provides a meaningful offset to both emissions and energy bills through a combination of consumption by the property use and export to the grid.

Potential Improvements: Late 20th Century Cavity Wall Houses

Your energy improvement journey will depend on your priorities, whether focused on reducing costs, lowering emissions, or improving comfort. Our case study followed a staged approach aimed at installing an air source heat pump system supported by PV, with deeper upgrades considered at a later stage.

Targeted building improvements should be considered in all cases. Measures such as additional loft insulation are typically low cost and can materially reduce heating demand, often justifying their expense within a decade. In the case study, insulation to a suspended floor over the garage was proposed. Upgrades to dated windows and doors can also deliver meaningful improvements at moderate cost and disruption, though in this case the replacement of existing double glazed windows to triple glazing was recommended at a later stage.

Ventilation remains an important consideration for this property type. As airtightness improves through retrofit measures, the survey identified the need for mechanical extract ventilation to manage moisture and maintain indoor air quality.

Air Source Heat Pumps present a strong alternative to oil and result in significant emissions reductions, though heat demand should be minimised in advance through insulation and draught reduction, and radiator upgrades should be considered where necessary.

Solar PV helps reduce reliance on grid electricity and can offer relatively predictable savings where a good proportion of generation is used. Battery storage can increase the use of on-site generation, but payback is more uncertain and depends on tariffs and usage patterns, and systems may require replacement within the lifetime of the solar system.

Deeper Fabric Upgrades can significantly improve comfort and building performance but can be costly and yield limited financial returns. Costs can be managed by timing such works with wider renovations, or by targeting most frequently used rooms. In this case the property owner wished to consider fabric upgrades in advance of installing a heat pump.

Home Energy Project Case Study: Results

Current energy performance	Measures	Tonnes of CO_2	Energy Used (kWh)	Energy Bill (£)	Estimated Cost (£)	Payback (years)
Baseline – Current Home Performance	Current building performance prior to retrofit improvements	7.13	26,078	£2,377		
Stage 1 - Heat Pump Readiness & Early Stage Ventilation	• 300mm loft insulation with loft legs and boarding • Insulated suspended floor over garage • Mechanical Extract Ventilation	7.17	26,280	£2,416	£4,250	-109
Stage 2 - Early Stage Fabric Upgrades	• Internal insulation to timber frame walls • Sloping ceiling insulation to stairs and bathroom	6.33	23,464	£2,195	£20,000	90
Stage 3 - Heat Pump	• Air source heat pump	0.56	6,825	£1,994	£18,000	90
Stage 4a - Renewable Energy System	• Solar PV	0.56	3,341	£1,262	£6,324	5
Stage 4b - Renewable Energy System	• 10kWh battery storage	0.50	2,968	£987	£6,000	22
Stage 5 - Further Building Upgrades	• A++ triple glazed windows	0.50	2,968	£882	£20,000	190
Total cost and savings		0.50	2,968	£882	£66,000	44

The Three C's

Cost — For an initial investment of £6,300, solar PV was expected to reduce bills by £1,115/yr returning the initial investment in just 9 years. Adding battery storage this this case did not represent sufficient value when considering the likely need to replace a battery after around 15 years.

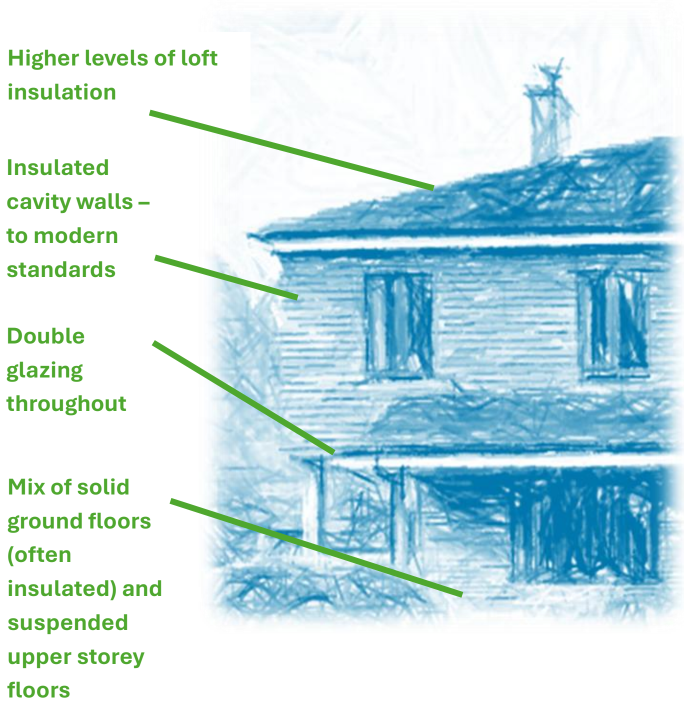
Carbon — A heat pump alone reduced CO_2 for this previously oil heated home by over 90%.

Comfort — Internal insulation to timber frame walls, sloping ceiling insulation, loft insulation and mechanical ventilation were proposed to address the heat loss and condensation risks for this construction type

5

Archetype: Modern (21st Century) Detached Houses

Detached homes built to improved insulation and construction standards, typically featuring modern heating systems and more consistent thermal performance.



Archetype Overview

- Typically include cavity wall construction with pitched roofs and predominantly solid (often insulated) ground floors;
- Built to improved insulation standards, with consistent levels of insulation in walls and roofs;
- Ventilation provided through background systems such as window trickle vents and intermittent extract fans;
- More airtight than older homes, though still largely reliant on passive, uncontrolled methods of ventilation;
- Double glazed windows and doors are standard, generally performing well but variable depending on age and condition

Built to perform – optimise before upgrading

These homes were built to improved insulation and airtightness standards, so overall heat loss is lower than earlier properties. As a result, the priority is often on optimising existing systems before considering major fabric upgrades.

Ready to retrofit?

Before undertaking retrofit works, owners should ensure the building is in good condition. Common issues may include:

- Poorly installed or degraded insulation, particularly in lofts or cavity walls
- Gaps in insulation at junctions or around openings
- Ageing double glazing with reduced performance or failed seals
- Inefficient or ageing heating systems and controls

Thermal imagery is a great way of identifying existing issues before proceeding with upgrades.

Planning and constraints

Homes of this period are unlikely to be listed, and planning constraints are generally limited. However, properties in conservation areas may still require consent for changes affecting external appearance, such as window replacements, solar panels or external wall insulation. See our guidance on this in section 5.

Modern Heating Systems

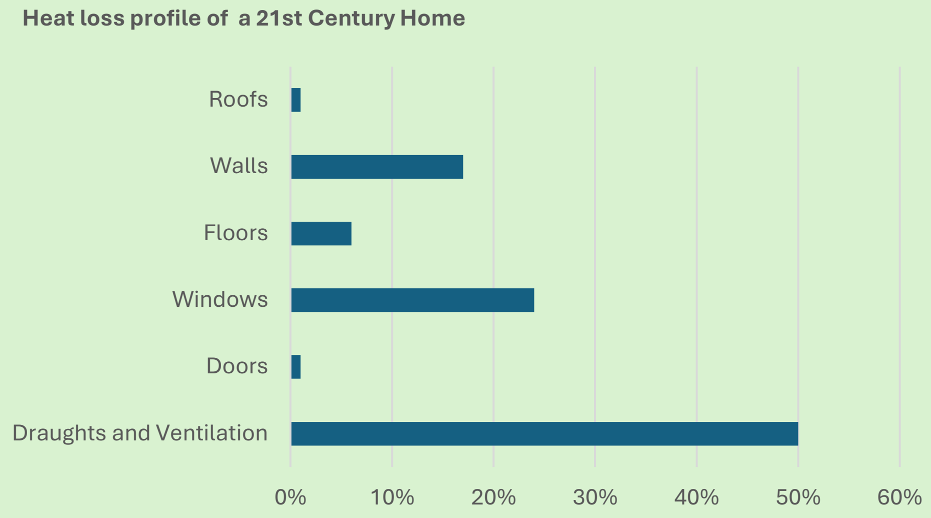
Modern heating systems in off-gas 21st century homes are typically electric. Air and ground source heat pumps are increasingly common, often paired with underfloor heating or larger radiators, while some homes still use direct electric systems such as panel heaters. Switching from direct electric heating to a heat pump can significantly reduce running costs and carbon emissions, as heat pumps deliver multiple units of heat for each unit of electricity used.

Future comfort

Improved airtightness and larger glazed areas can increase the risk of overheating in warmer months. Measures such as introducing shading, glazing upgrades and careful control of solar gain can help maintain comfort while reducing cooling demand.

Home Energy Project Case Study

A modern detached home was surveyed during CASP's Home Energy Project. The property has well-insulated cavity walls, a pitched roof and solid ground floors, typical of this period. The home uses a ground source heat pump for heating. The property benefits from relatively high levels of insulation and overall building performance compared to earlier housing types.



Draughts and ventilation account for the largest proportion of heat loss in this property, reflecting the relative importance of air leakage and controlled ventilation in otherwise well-insulated homes. Windows are also a notable contributor, while walls and floors represent a smaller share of losses compared to earlier housing types, consistent with improved insulation standards. Heat loss through roofs and doors is minimal, indicating these elements are performing well.

Usage	Energy use (kWh)	Tonnes CO_2	Energy Bills (£)
Electricity	23,043	2.3	£7,097

Energy use is entirely electricity-based due to the use of a ground source heat pump and the absence of any fossil fuel heating system. While overall electricity consumption is relatively high, associated carbon emissions are lower than fossil fuel alternatives due to the lower carbon intensity of electricity. Demand is driven by heating and general household use, with the high level of consumption being driven primarily by electric vehicle charging.

5 Potential Improvements: 21st Century Modern Homes

Your energy improvement journey will depend on your priorities, whether focused on reducing costs, lowering emissions, or improving comfort. The case study followed a staged approach, beginning with low-cost efficiency measures, progressing to a renewable energy system. For this archetype, the building fabric is typically already well insulated, so opportunities for improvement are more limited than in older homes.

Targeted upgrades such as lighting, controls and addressing minor draughts can still reduce energy use in modern buildings at relatively low cost. Window replacements may offer incremental improvements, though benefits should be weighed against costs.

Ventilation in this archetype is typically provided through trickle vents and intermittent extractor fans, which are often sufficient where airtightness remains moderate. As no significant airtightness improvements were proposed in the case study, additional systems such as MEV were not recommended. However, ventilation should be reviewed if future upgrades reduce air leakage or if moisture issues arise.

Heating systems are often already low carbon, with many homes of this type using air source heat pumps. In these cases, the focus is on optimising system performance through controls, flow temperatures and user behaviour rather than major system change. Where homes rely on direct electric heating (panel heaters), switching to an air source heat pump can significantly reduce running costs and emissions, as heat pumps deliver multiple units of heat per unit of electricity.

Solar PV represents a key opportunity, particularly where it is not already installed. It can significantly reduce reliance on grid electricity and deliver strong financial returns. Battery storage can further improve the use of on-site generation, though the financial case is more uncertain and dependent on usage patterns and tariffs.

Deeper fabric upgrades can improve comfort and reduce heat demand further but are typically high cost and deliver limited financial returns in well-insulated homes. These measures are often best considered alongside wider refurbishment works.

Home Energy Project Case Study: Results

Current energy performance	Measures	Tonnes of CO_2	Energy Used (kWh)	Energy Bill (£)	Estimated Cost (£)	Payback (years)
Baseline – Current Home Performance		2.3	23,043	£7,097		
Stage 1 – Energy Efficiency (Low Cost Measures)	LED lighting from incandescent Draughtproof one non-draughtproofed door	2.16	22,112	£6,804	£400	1
Stage 2 – Renewable Energy System	Install 8kWp PV system 50kWh battery alongside PV	1.17	14,583	£4,610	£30,000	14
Stage 3 – Further Building Upgrades	A+ double glazed windows	1.11	14,206	£4,492	£40,000	339
Total Package	Combined impact of all measures	1.11	14,206	£4,492	£70,400	27

The Three C's

Cost — Simple low-cost measures — LED lighting and draught-proofing — were projected to cut bills by £293/yr for just £400, paying back within a year. Solar PV and battery storage promised a further £2,194/yr saving, paying back in 14 years.

Carbon — Low-cost measures alone were expected to reduce emissions by 140kg per year. The Solar PV and battery storage system was projected to reduce emissions by a further tonne — a combined 52% reduction in the household's annual carbon emissions.

Comfort — Draught-proofing and A+ double glazing address the cold spots and heat loss typical of this property type, with immediate improvements to warmth and noise reduction.

6 Archetype: Flats & Maisonettes

Purpose-built or converted flats and maisonettes sharing walls, floors and roofs with other dwellings.

Shared fabric (walls, floors, ceilings) – reduced heat loss but limits individual retrofit control

Limited external wall area constrains insulation opportunities and reduces the impact of fabric upgrades

May also limit suitable locations for air source heat pump installation

Archetype Overview

- Typically include shared walls, floors and ceilings, reducing exposed external fabric and overall heat loss
- Construction varies by age and type, including solid masonry, cavity walls or framed systems, with flat or pitched roofs
- Generally have lower heat demand per dwelling due to compact layouts and adjoining heated spaces
- Ventilation typically via background systems such as trickle vents and intermittent extract fans

Shared building fabric – coordinated approach needed

Flats and maisonettes benefit from shared walls, floors and ceilings, which reduce heat loss but also mean performance depends on the wider building. Improvements may need to be coordinated at a block or building level, particularly for insulation, ventilation and heating systems.

Ready to retrofit?

Before undertaking retrofit works, owners should ensure the building is in good condition. Common issues may include:

- Ageing or poorly performing windows and doors;
- Gaps or inconsistencies in insulation, particularly in roof spaces or external walls;
- Limited or ineffective ventilation in kitchens and bathrooms;
- Constraints related to access, ownership or shared services within the building;

Planning and constraints

Flats and maisonettes are often subject to additional constraints beyond planning, including leasehold arrangements, freeholder permissions and building management requirements. Properties in conservation areas may still require consent for external changes such as windows or solar panels. Building-wide measures may require agreement from multiple residents or owners. See section 5 for guidance on upgrades on listed buildings or in conservation areas.

Heating systems

Heating is typically electric, including direct electric panel heaters, storage heaters or individual heat pumps. In some cases, flats may be connected to communal heating systems. Switching from direct electric heating to a heat pump can reduce running costs and emissions, though this may be constrained by space, layout or building configuration.

System optimisation and upgrades

Given generally lower heat demand, priority is often on system optimisation, including heating controls, hot water efficiency and appliance use. Solar PV (where feasible), battery storage and heating upgrades can reduce costs and emissions without major fabric disruption.

Potential Improvements

A flat or maisonette was not directly surveyed as part of the Home Energy Project. The guidance below is therefore informed by other case study findings and wider evidence, applied to this archetype to indicate likely opportunities and constraints.

Your energy improvement journey will depend on your priorities, whether focused on reducing costs, lowering emissions or improving comfort. For flats and maisonettes, the approach typically focuses on practical, low-disruption measures, reflecting constraints around shared fabric and services.

Building fabric improvements are often more limited than in houses, as many elements are shared or outside individual control. However, findings from other case studies suggested that targeted upgrades such as lighting, heating controls, secondary glazing or window replacement, and addressing minor draughts can still deliver modest energy savings and improved comfort.

Ventilation is usually provided through trickle vents and intermittent extract fans, which are often adequate where airtightness upgrades have not been undertaken. Survey recommendations from other homes indicated that more advanced systems (e.g. MEV) are typically only beneficial where airtightness increases or moisture issues arise.

Heating is typically electric, including panel or storage heaters. Other home surveys recommended that switching from direct electric heating to a heat pump, where feasible, can significantly reduce running costs and emissions.

Solar PV may be viable in some cases, particularly for top-floor flats, though benefits depend on building-level feasibility and ownership arrangements. Plug in solar arrays are an emerging option but require a suitable south facing balcony with little or no shade.

3. Planning Home Energy Upgrades

Whether you're interested in specific measures or looking at your house as a whole, there are a range of free and paid services we think it is worth considering to form your home energy upgrade plan.

If you're feeling equipped to plan and progress with upgrade works yourself – see our list of installers below

Free services to get started!

Centralised planning and self-delivery support

Thermly Estimate

Solar PV, Batteries, Heat Pumps

A tool that helps you design solar PV and heat pump systems for your home based on your inputs, with estimated costs, savings and carbon reductions

Snugg online planner

Whole House Retrofit Planner

Select your address to generate a whole home improvement plan with costs, savings, grants and installer options based on your home, budget and goals

Route to co-ordinated home energy upgrade delivery – free early stage advice services

Ecofurb free online planner

Whole House Retrofit Planner

Select your address to generate a whole home improvement plan with costs, savings, grants and installer options based on your home, budget and goals

Furbnow consultation

Free consultation

Furbnow offer a free 15-minute consultation to discuss your home, priorities and next steps before committing to a paid plan

Installer procurement platforms

Manage quotes yourself for each measure in one place

Thermly

Thermly

- A platform linking users with local installers, using property inputs to generate initial pre-survey estimates.
- A comparison interface for reviewing installer approaches, pricing and proposed systems.
- An early-stage matching and filtering tool prior to detailed surveys or technical design
- Quotes are typically refined following site surveys and technical validation

www.thermly.co.uk

Snugg

Snugg

- A platform linking users with installers, using home energy data to inform initial proposals
- A single interface to request and compare quotes for recommended retrofit measures
- Integration of assessment outputs with procurement, linking plans to installer engagement
- Quotes are typically refined following site surveys and technical validation

www.snugg.com

PAS 2035 Retrofit Assessment & Coordination

Home survey to Installer Coordination and Project Delivery

Ecofurb

ECOFURB The Low Carbon Home Service

- Costed by property size, starting at around £500
- A survey and plan including a home visit and detailed whole-house retrofit plan with staged measures, savings and indicative costs
- Access to vetted, accredited installers with quotes checked for quality
- Delivery including free coordination of any works progressed, with technical support and independent sign-off of works

www.ecofurb.com

Furbnow

furbnow

- Costed by property size, starting at around £500
- A survey and plan including an in-home or remote assessment with a tailored retrofit plan including measures, sequencing and indicative costs
- Access to vetted, accredited installers with quotes checked for quality
- Delivery (optional) including end-to-end coordination, supplier management and quality assurance

www.furbnow.com

Architect-Led Retrofit

RVIAD

- Cost: From £800 depending on property and scope
- Survey & plan: Architect-led, whole-house assessment with a tailored retrofit plan according to homeowner motivations
- Includes a property specific 3D digital twin and live logbook recording condition and upgrade pathway
- Design support: Outputs suitable for specification, energy modelling and contractor engagement
- Delivery: Can extend to design development and project coordination

www.rviad.com

ECOFURB
The Low Carbon Home Service

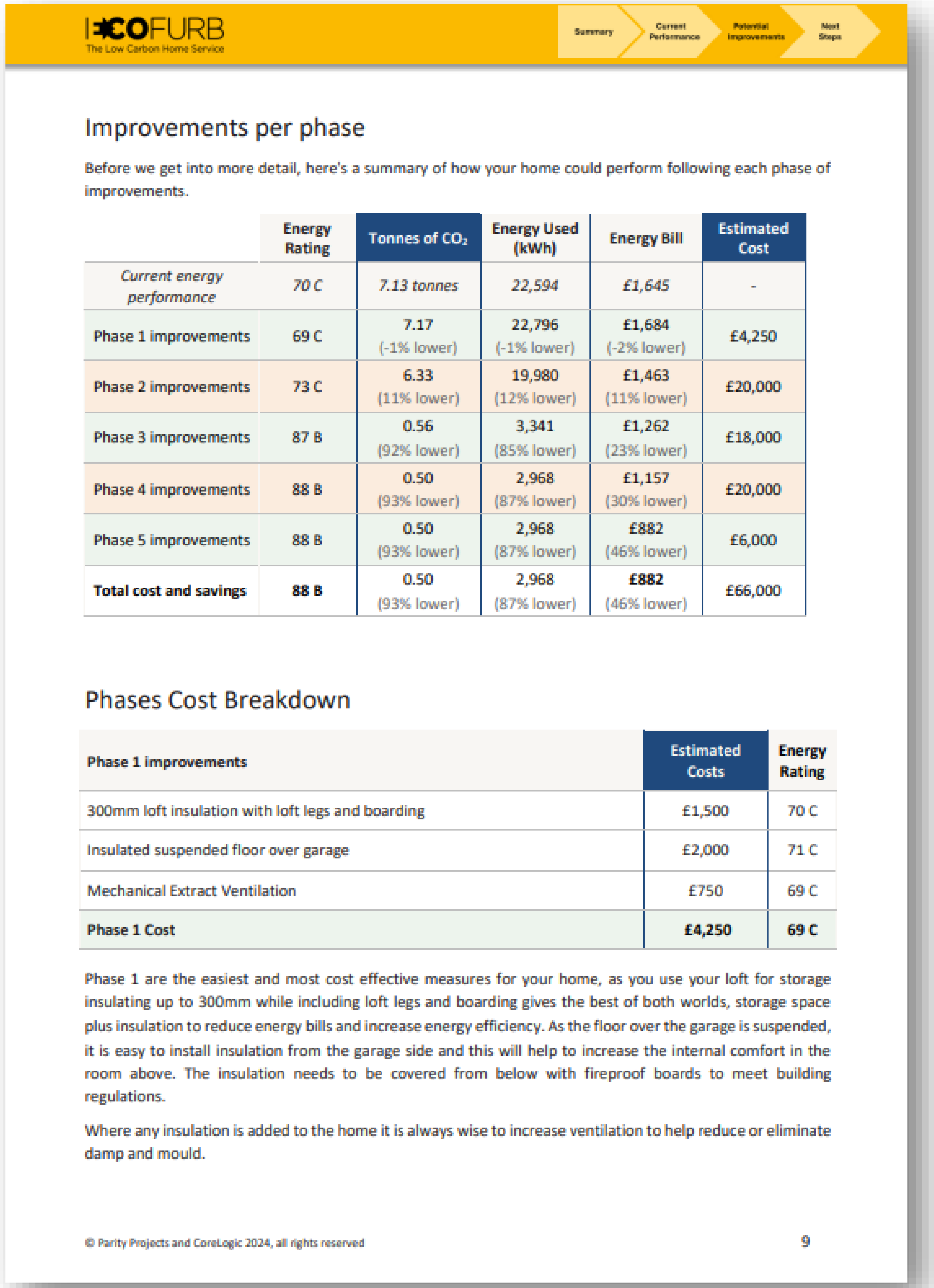
Ecofurb is a nationally operating retrofit advisory service who undertook surveys on six homes as part of our Home Energy Project, and founder Russell Smith kindly opened his home to members of CASP to discuss key aspects of home energy performance and the benefits he's seen following his own improvements

Ecofurb offer a free online Home Energy Planner, accessible via their website, which allows any homeowner to input details about their property and receive indicative recommendations on suitable measures, estimated costs and potential savings. This provides a useful and accessible starting point for households who want to understand their options before committing to a full assessment.

For those ready to go further, Ecofurb offers a full home survey carried out by a qualified Retrofit Coordinator. The resulting Whole House Plan provides a detailed, property-specific picture of current energy performance, recommended measures, indicative costs and phased improvement options tailored to the household's priorities and budget. Reports include thermal modelling, analysis of heat loss, and clear projections of carbon and bill savings at each stage.

However Ecofurb's service does not end with the plan. Households who wish to proceed with any of the works recommended can access a free Retrofit Coordination service, through which Ecofurb oversees the quality of installation works carried out by their network of vetted contractors. This end-to-end support — from initial assessment through to quality-assured delivery — addresses two of the most frequently cited barriers identified through local engagement: lack of trusted advice and uncertainty about installer quality.

Ecofurb can be reached at ecofurb.com.


ECOFURB
The Low Carbon Home Service

Summary | Current Performance | Potential Improvements | Next Steps

Improvements per phase

Before we get into more detail, here's a summary of how your home could perform following each phase of improvements.

	Energy Rating	Tonnes of CO_2	Energy Used (kWh)	Energy Bill	Estimated Cost
Current energy performance	*70 C*	*7.13 tonnes*	*22,594*	*£1,645*	-
Phase 1 improvements	69 C	7.17 (-1% lower)	22,796 (-1% lower)	£1,684 (-2% lower)	£4,250
Phase 2 improvements	73 C	6.33 (11% lower)	19,980 (12% lower)	£1,463 (11% lower)	£20,000
Phase 3 improvements	87 B	0.56 (92% lower)	3,341 (85% lower)	£1,262 (23% lower)	£18,000
Phase 4 improvements	88 B	0.50 (93% lower)	2,968 (87% lower)	£1,157 (30% lower)	£20,000
Phase 5 improvements	88 B	0.50 (93% lower)	2,968 (87% lower)	£882 (46% lower)	£6,000
Total cost and savings	**88 B**	0.50 (93% lower)	2,968 (87% lower)	**£882** (46% lower)	£66,000

Phases Cost Breakdown

Phase 1 improvements	Estimated Costs	Energy Rating
300mm loft insulation with loft legs and boarding	£1,500	70 C
Insulated suspended floor over garage	£2,000	71 C
Mechanical Extract Ventilation	£750	69 C
Phase 1 Cost	**£4,250**	**69 C**

Phase 1 are the easiest and most cost effective measures for your home, as you use your loft for storage insulating up to 300mm while including loft legs and boarding gives the best of both worlds, storage space plus insulation to reduce energy bills and increase energy efficiency. As the floor over the garage is suspended, it is easy to install insulation from the garage side and this will help to increase the internal comfort in the room above. The insulation needs to be covered from below with fireproof boards to meet building regulations.

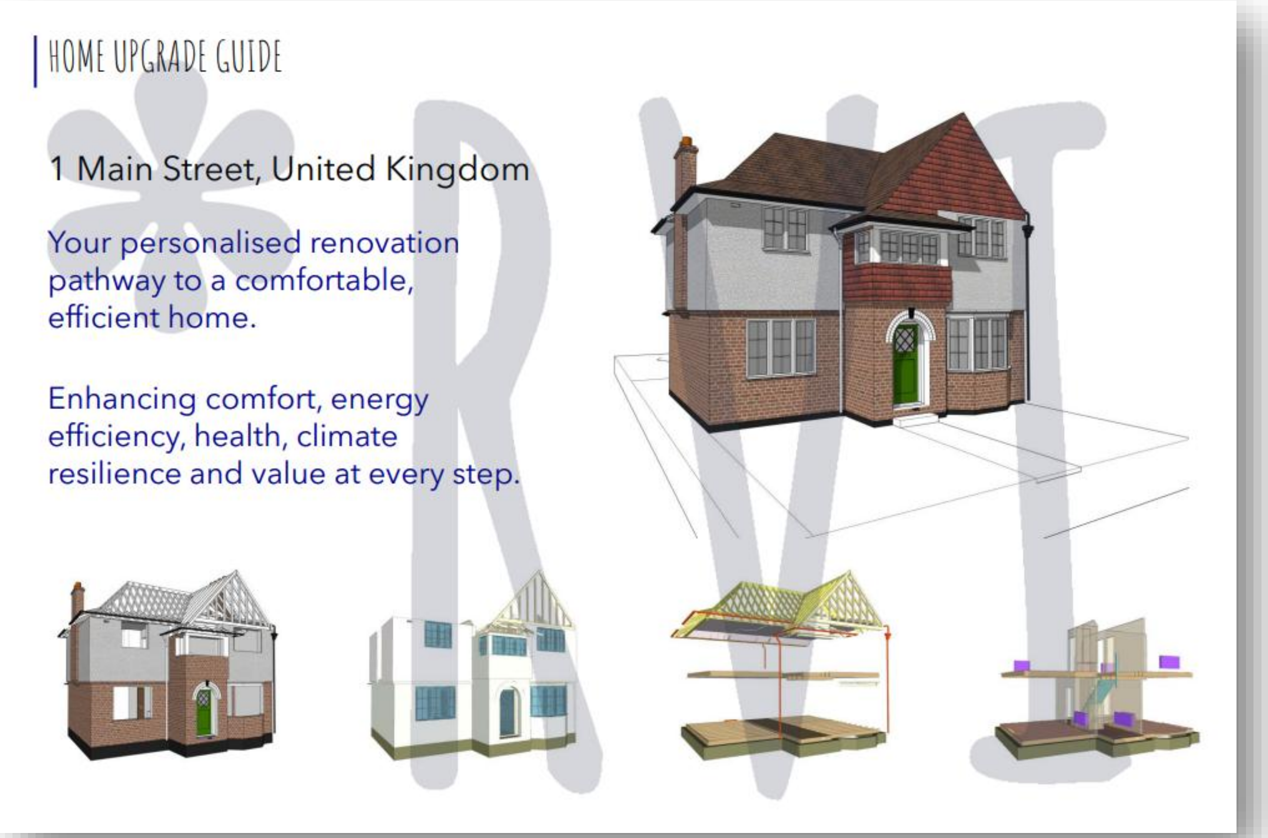
Where any insulation is added to the home it is always wise to increase ventilation to help reduce or eliminate damp and mould.

 9

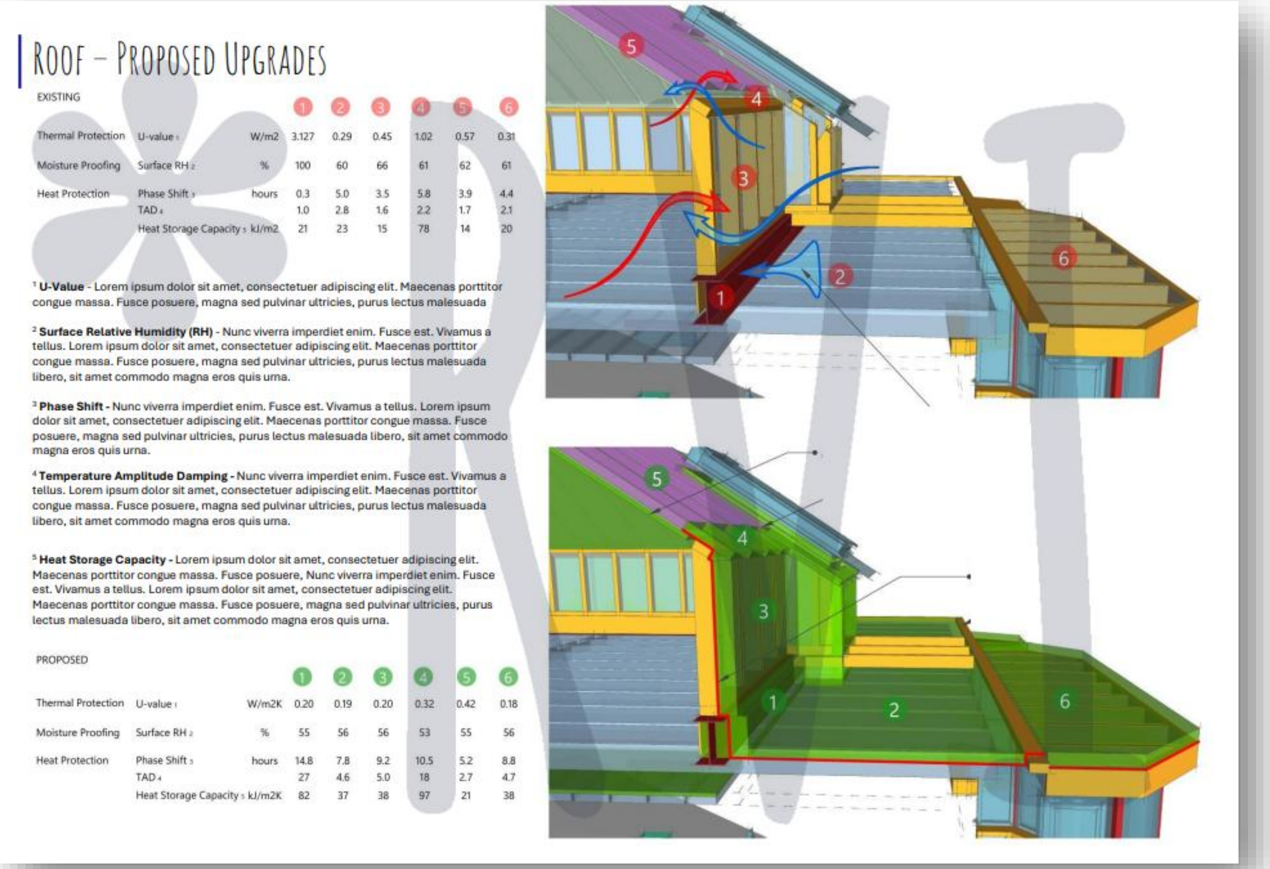
*RVI

RVI Architectural Design, founded by Matthew Goldschmied, offers a bespoke home retrofit assessment and design service called the Home Upgrade Guide (HUG). Matthew attended CASP's Eco Fair and is keen to continue working with the community on home and neighbourhood-scale retrofit.

The HUG is a personalised renovation pathway designed around the people who live in a home, not just the building itself. Rather than treating retrofit as a simple cost-benefit calculation, Matthew's approach starts with the lived experience of the occupants: their comfort, health, finances, and how their needs may change over time. The result is a phased, whole-house improvement plan tailored to each household's priorities, budget and timescales.



The service includes a site survey, SAP energy performance modelling, and a 3D digital twin of the property that is updated as works are completed, forming part of a Home Logbook that passes to future owners when the property changes hands.



With expertise in conservation, Mathew is well positioned to help find solutions to planning constraints. For homeowners in conservation areas or with listed buildings, where standard retrofit measures may not be straightforward, Matthew can advise on approaches that satisfy both energy performance objectives and planning requirements — something purely energy-focused advisory services may not provide.

For households ready to explore their options, Matthew offers an initial conversation before committing to a full assessment.

Matthew can be reached via rviad.com.

If you feel equipped to manage your home energy upgrade project yourself, we've provided a register of local and national firms offering the main home energy upgrades that our project identified*

*CASP has no affiliation with the firms listed and encourages individuals to assess providers independently, obtain multiple quotes and check relevant accreditations, experience and guarantees before proceeding with any installation work.

Accreditations and quality assurance

For most retrofit measures, particularly solar PV and heat pumps, the key accreditation to look for is the **Microgeneration Certification Scheme (MCS)**. MCS certifies both the products and the installer, ensuring systems are designed, installed and commissioned to recognised quality and safety standards. It is typically required to access government incentives such as the Boiler Upgrade Scheme and Smart Export Guarantee, and provides assurance on performance and consumer protection.

For other measures, for certainty on contractor quality, look for the UK Government's **TrustMark** guarantee. TrustMark provides an additional layer of consumer protection by ensuring installers are vetted, monitored, and committed to good customer service and compliant practices.

For further comfort check Kent County Council's **"Trading Standards Checked"** register to confirm whether contractors have been approved at a county level. This involves yet another comprehensive audit covering areas such as financial history, insurance, legal compliance and complaint records, with ongoing monitoring of trader performance.

Small Measures

Many small measures can be purchased from hardware or building suppliers and installed with little difficulty.

Visit our website for links to guidance from trusted national energy advisors the Centre for Sustainable Energy and the Energy Saving Trust's guidance on low-cost ways of improving your building's energy performance.

Targeted Building Upgrades

Windows, Doors, Loft Insulation

Local and Regional Installers

Windows and Door Replacements

Tunbridge Wells Double Glazing https://www.twdg.ltd
Based in Tunbridge Wells
Family-run installer of windows, doors and bifold systems with experience across Kent

Thermaframe https://www.thermaframe.co.uk
Based in Sevenoaks
Double glazing installer covering Tonbridge, Sevenoaks and wider Kent

Cavity Wall and Loft insulation

Viridian
https://viridian.co.uk/
Ashford Based

Puffin Insulation
https://www.puffininsulation.co.uk
Based in Tunbridge Wells

Deeper Fabric Upgrades

Local and Regional Installers

External and Internal Wall Insulation

Kent Rendering Company
https://kentrenderingcompany.co.uk/
Based in Kent
External wall insulation and rendering contractor delivering EWI systems across the county

Internal Wall Insulation

RDL Render and Wall Insulation https://www.rdlrender.uk/
Based in Aylesford
Specialists in external wall insulation

National Installers

Warmdwell
https://warmdwell.co.uk
National Specialist in suspended timber floor insulation

Solar and Battery Storage

Local and Regional Installers

Unclouded Solar - https://www.uncloudedsolar.com
Based in Sevenoaks
Solar PV and battery storage installer serving domestic properties in the South East

PV Solar Installers https://pvsolarinstallers.co.uk
Based in Plaxtol
Local family-run installers specialising in solar PV, battery storage and EV charging.

Aspen Renewables - https://www.aspenhvac.co.uk/services
Based in Hailsham
HVAC and renewable energy installation services, including heat pumps.

Hazell Electric – https://www.hazellelectric.co.uk
Based in Hildenborough, Tonbridge
Domestic electrical specialists including accredited solar PV installations.

Evolve Renewables – https://www.evolverenewables.co.uk
Based in Kent, serving the South East
Renewable energy installations including solar PV and battery storage.

Cahill Renewables - https://www.cahillrenewables.co.uk
Based in Essex and Kent
Renewable energy installer providing solar PV, battery storage and air source heat pumps across the South East

Eastbourne Energy - https://eastbourne.energy/
Based in Eastbourne
Solar, battery and heat pump installations

TPS Eco - https://tpseco.co.uk
Based in Maidstone
Solar, battery, heat pump and underfloor heating installations

Switch Together Kent Bulk Buying Scheme

https://switchtogether.co.uk/energy/kent/home

Switch Together Kent is a county-led group buying scheme for solar PV and battery storage, connecting households with pre-selected regional installers through a competitive tender process. Typical savings are often quoted at around 15–30% versus market rates. Registrations are not currently live for 2026. Kent County Council facilitates the scheme but does not provide installer guarantees, with warranties sitting with installers and manufacturers.

Energy Suppliers

Energy suppliers increasingly offer solar PV and air source heat pump packages, combining design, installation and financing options. These may include fixed monthly payments, export tariffs and maintenance support. Offers are typically delivered via partner installers, with varying pricing and performance guarantees, so comparing options and checking accreditations is important.

Air Source Heat Pumps

Local and Regional Installers

Clairglow Heating
https://www.clairglow.co.uk
Based in Borough Green
MCS-accredited installer of air source heat pumps and solar thermal systems.

Aspen Renewables - https://www.aspenhvac.co.uk/services
Based in Hailsham
HVAC and renewable energy installation services, including heat pumps.

Berkeley Heating Services Ltd – https://www.berkeleyheating.co.uk
Based in Sevenoaks
Heating system installers operating across South London and North Kent.

Evolve Renewables – https://www.evolverenewables.co.uk
Based in Kent, serving the South East

Cahill Renewables - https://www.cahillrenewables.co.uk
Based in Essex and Kent
Renewable energy installer providing solar PV, battery storage and air source heat pumps across the South East

Eastbourne Energy - https://eastbourne.energy/
Based in Eastbourne
Solar, battery and heat pump installations

TPS Eco - https://tpseco.co.uk
Based in Maidstone
Solar, battery, heat pump and underfloor heating installations

National Installers

Heat Geek - https://www.heatgeek.com/

Offers a national heat pump service combining expert design with regional installers. They provide a free instant quote for your home, followed by a detailed £200-£300 consultation with room-by-room system design. Installations are delivered by trained engineers and backed by a performance guarantee, helping ensure efficient operation, comfort and lower running costs.

Switch Together Kent Bulk Buying Scheme

https://switchtogether.co.uk/energy/kent/home

As of early 2026, district councils are considering whether to extend the Switch Together Bulk Buying Programme to include Air Source Heat Pumps.

Energy Suppliers

Energy suppliers increasingly offer solar PV and air source heat pump packages, combining design, installation and financing options. These may include fixed monthly payments, export tariffs and maintenance support. Offers are typically delivered via partner installers, with varying pricing and performance guarantees, so comparing options and checking accreditations is important.

Ventilation

Local and Regional Installers

The Fuel Effect
https://www.thefueleffect.co.uk
Based in Tonbridge, Kent
Specialists in MVHR, ventilation and low-carbon systems across the South East

Evolve Renewables
https://www.evolverenewables.co.uk
Based in Kent, serving the South East
Renewable installer offering MVHR, heat pumps and solar systems

RB Central Systems
https://www.rbcentralsystems.co.uk
Based in Kent (near Maidstone)
Specialists in MVHR and ventilation system design and install

4. Home Energy Upgrade Measures

We’ve summarised the findings from the six home energy surveys in terms of indicative costs and bill savings, with guidance on benefits, suitability and relevant certifications for each measure.

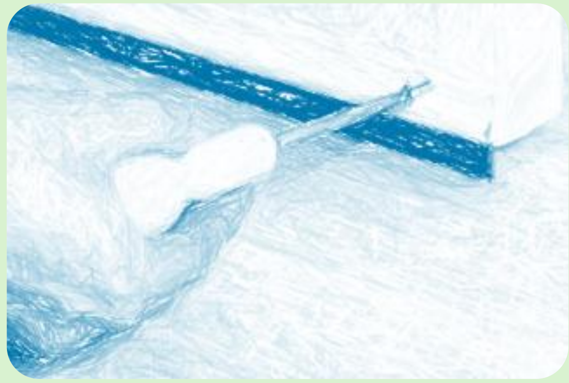
Small Measures

Small measures identified in the study offer energy bill reductions at a lower cost , typically costing £100–£1,000 and delivering £70–£270 per year, paying off costs within 2–8 years.

Typical measures include:

- LED lighting upgrades
- Thermostatic Radiator Valves,
- Chimney balloons
- Secondary Glazing on windows
- Draught-proofing around doors and windows

Many of these can be implemented yourself, particularly lighting, draught-proofing and chimney measures. Heating controls and system changes should be installed by qualified professionals. Where using installers, look for TrustMark registration and consider using Kent Council’s trading standards checker.



Targeted building upgrades

Targeted building upgrades typically deliver modest bill savings but meaningful improvements in comfort, draught reduction, and usability of spaces. Their value is highest when addressing obvious weaknesses or when timed with planned replacements. Typical measures include:

- Loft insulation (top-up to 300mm) - Costs ranged from £1,000–£1,800, with paybacks between 20 and 80 years. Can be done yourself where access is safe.
- Replacement windows (double/triple glazing) – Costs ranged from £10,000–£50,000. Returns on investment via bill savings are poor. Main benefits are improved comfort and airtightness. Professional installation is recommended.
- Insulated external doors – Costs ranged from £1,500–£2,500, Returns on investment via bill savings are poor. Main benefits are improved comfort and airtightness. Professional installation is recommended.

Of the measures proposed loft insulation consistently delivered the strongest financial returns, while windows and doors are best timed with planned replacements.

Using TrustMark-registered installers ensures compliance, quality, and access to protections or funding schemes, and working with a Retrofit Coordinator (PAS 2035) can help ensure measures are properly sequenced, specified, and installed to avoid performance gaps or unintended issues such as damp or poor ventilation.

Deep Fabric Upgrades

Deep fabric retrofit measures involve more significant intervention and higher upfront costs but achieve significant reductions in heat loss, improved thermal comfort, and more stable indoor temperatures. They are particularly effective in older or poorly insulated homes and if done early can improve heat pump performance. Typical measures include:

- Internal wall insulation (IWI) – Costs ranged from £7,000–£17,000+ with savings between £90–£650/year. Returns on investment via bill savings are poor.
- External wall insulation (EWI) – Costs ranged from £11,000–£16,000+, moderate savings estimated at around £120 per year. Returns on investment via bill savings are poor.
- Floor insulation (suspended/solid) – Costs ranged from £5,000–£9,000+, savings varied widely and returns on investment were poor. Best when combined with other works.

Wall insulation measures typically offer the greatest impact, particularly in solid wall properties, while floor insulation is best undertaken alongside renovation. All measures require professional design and installation. Using TrustMark-registered installers and working with a Retrofit Coordinator (PAS 2035) is strongly recommended to manage moisture risk, ventilation, and sequencing.

4. Home Energy Upgrade Measures

We've summarised the findings from the six home energy surveys in terms of indicative costs and bill savings, with guidance on benefits, suitability and relevant certifications for each measure.

Solar PV

Solar PV systems identified in the study show moderate upfront costs with strong long-term savings, with typical installations ranging from ~£3,700 to £15,600 and annual savings of ~£180 to £1,300, depending on system size and usage.

Payback periods vary widely (~12–20+ years) and are highly dependent on:

- Roof orientation and shading
- Household electricity demand
- Smart tariff participation

PV offers the greatest value where households can use a high proportion of generated electricity or combine with technologies such as battery storage or heat pumps.

Installation must be carried out by an MCS-certified installer to access export tariffs (e.g. Smart Export Guarantee), and TrustMark registration provides additional consumer protection.

Plug-in solar

We are aware that retailers are currently working with government to permit the use of plug in solar systems in the UK. Plug-in solar has the potential to offer a simple, low-cost renewable energy system, but the proposed systems are limited in terms of size (under 1KW) which therefore limits the potential to offset electrical consumption from the grid.

Safety is generally not an issue if compliant products are used correctly, but consideration should be given to the quality and suitability of existing electrical circuits.

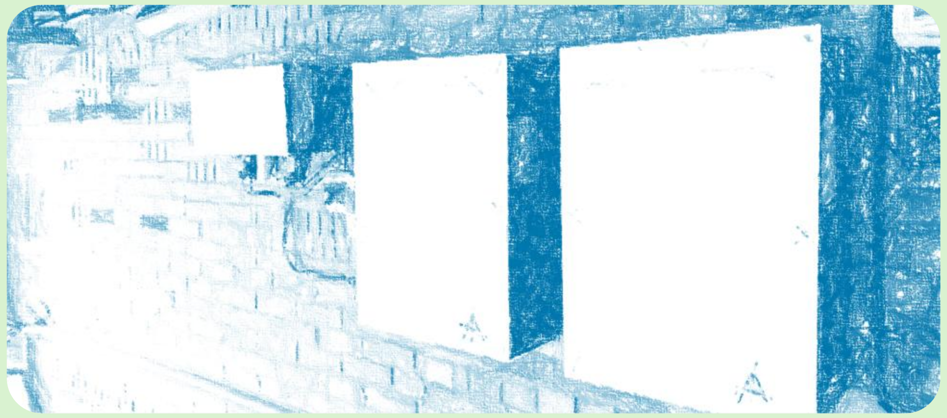
Battery Storage

Battery storage systems involve moderate to high upfront costs (~£3,000–£10,000), with annual savings typically in the range of ~£100–£600 depending on system size, usage patterns, and tariff structure. Payback periods are variable (~8–18+ years) and highly sensitive to access to smart/time-of-use tariffs, levels of solar self-consumption, and household electricity demand.

Batteries offer the greatest value when paired with solar PV, allowing excess daytime generation to be stored for evening use and reducing grid imports. Additional value can be achieved through tariff optimisation (e.g. off-peak charging), though this introduces reliance on changing tariff structures and more active user engagement.

The financial case is often marginal and sensitive to assumptions, with real-world savings sometimes lower than modelled. Battery performance also degrades over time, with replacement typically required within 10–15 years, impacting whole-life costs.

As such, battery storage is best considered after reducing overall energy demand and understanding usage patterns, rather than as an early-stage measure. Installation should be carried out by qualified, MCS-certified and TrustMark-registered installers to ensure safety and performance.



4. Home Energy Upgrade Measures

We've summarised the findings from the six home energy surveys in terms of indicative costs and bill savings, with guidance on benefits, suitability and relevant certifications for each measure.

Air Source Heat Pumps

Air Source Heat Pumps (ASHPs) identified in the study show higher upfront costs but deliver strong carbon savings and moderate long-term bill reductions, with typical installations ranging from ~£7,000 to £13,000 (after £7,500 Boiler Upgrade Scheme grant) and annual savings of ~£300 to £900.

Payback periods vary (~10–20 years) and are highly dependent on:

- Property insulation levels and heat demand;
- System design (flow temperature, radiator sizing);
- Electricity tariffs (e.g. time-of-use or heat pump tariffs);

ASHPs offer the greatest value in well-insulated homes and where systems are designed to run efficiently at low temperatures. They can be further optimised when paired with solar PV or smart controls to reduce running costs.

Installation must be carried out by an MCS-certified installer to access the Boiler Upgrade Scheme, and TrustMark-registered installers provide additional consumer protection.

Air source vs Ground Source Heat Pumps

Air Source Heat Pumps (ASHPs) are the most common option due to lower upfront cost and simpler installation. There are two main types:

Air-to-water systems distribute heat via radiators or underfloor heating and are suitable for whole-home heating and hot water. Installed costs are typically £8,000–£14,000 (before grants) and they are supported by the Boiler Upgrade Scheme (BUS), which offers a £7,500 grant (currently increased to £9,000 for oil heated properties). Radiators may need to be upgraded or resized where existing systems are not suitable for lower flow temperatures.

Air-to-air systems provide warm air via indoor units and are typically lower cost and less disruptive to install, making them well suited to flats, smaller homes or where a full central heating upgrade is not viable. They do not provide hot water, but can provide cooling. Under the Warm Homes Plan, £2,500 grant has been introduced for air-to-air systems, likely from around April 2026, though final rollout timing is still subject to confirmation.

Ground Source Heat Pumps (GSHPs) extract heat from the ground via trenches or boreholes and offer more stable performance and higher efficiencies, particularly in colder weather. However, installation is more complex and costly (£15,000–£30,000+). They are also eligible for the £7,500 BUS grant but require sufficient land or drilling access, which can limit suitability.

Innovative Design to minimise disruption

Heat Geek Zero Disrupt is a design-led approach to reducing the cost and disruption of heat pump retrofits through data-led modelling and accurate system sizing.

It aims to retain existing radiators and pipework where possible, only upgrading components when necessary. This can reduce installation time, cost and disruption compared to full system replacements, in some cases approaching boiler replacement costs with grants.

The approach is supported by the Heat Geek performance guarantee, aiming to ensure systems achieve expected efficiency in operation.

We've summarised the findings from the six home energy surveys in terms of indicative costs and bill savings, with guidance on benefits, suitability and relevant certifications for each measure.

Ventilation

Ventilation measures identified in the study are typically low to moderate cost and play a critical role in managing moisture, indoor air quality and overall comfort—particularly in older or more airtight homes. Common systems include upgraded extract fans (~£150–£500 per room), Positive Input Ventilation (PIV) systems (~£300–£1,200), and Mechanical Extract Ventilation (MEV) systems (~£1,500–£3,000).

Decentralised systems can be installed on a room-by-room basis and are typically less disruptive, making them well suited to retrofit. Whole-house systems may require ductwork and more extensive installation but can provide more consistent and controlled ventilation throughout the property.

Running costs are generally low, with a small increase in electricity use (~£20–£80/year), often offset where homes adopt efficient heating systems such as heat pumps.

Payback is rarely assessed purely in financial terms but instead through avoided issues and improved living conditions, including:

- Reduced risk of damp, mould, and fabric damage
- Improved indoor air quality and health outcomes
- Better performance of insulation and heating systems

Installation should be carried out by a qualified professional. For whole-house systems, installers should follow relevant guidance such as Building Regulations Part F, and using competent or TrustMark-registered professionals helps ensure appropriate system design, airflow balance, and long-term performance.

5. Planning Guidance for Home Energy Upgrades in Shipbourne and Plaxtol

As shown on the maps overleaf, many properties in Shipbourne and Plaxtol are within conservation areas or are listed. We've provided guidance below to help ensure your home energy upgrades are compliant with planning and heritage requirements.

Work that can be done without planning permission

For buildings that are not listed, the following work does not need planning permission:

- Loft insulation
- Advanced secondary glazing
- Draught proofing
- Internally insulating walls (IWI)
- Central ventilation systems (extract or balanced ventilation with heat recovery can be installed but you may need permission for new grilles in the walls)
- Floor insulation

All other retrofit measures will require you to submit a planning permission

Work that can be done 'Permitted Development' (houses only)

If you own and occupy a whole house that is not listed, the following can be done without formally applying for planning permission:

- Changing windows for ones that look identical to the old ones.
- Air source heat pumps if the location complies with a number of rules – you need to check the details with the Council that what you intend to do is allowed.
- Solar PV panels on the roof, if they are not visible from the public highway and they do not protrude above the roof ridge line.

If you live in a flat, unfortunately there are currently no 'Permitted Development' (PD) rights, so the above work would require a planning application to be made*.

You should check with the Council that what you want to do does comply with the rules for Permitted Development:

TMBC Housing Team:

Telephone: 01732 844522

Email: housing.services@tmbc.gov.uk

Permitted development and Certificates of Lawfulness (CoLs).

If you intend to carry out work that is allowed by Permitted Development rights, it is sometimes wise to obtain a Certificate of Lawfulness (CoL). The route for obtaining a CoL is very similar to planning permission, and if you make the application, the planning officers will review whether in their view the work that you want to do meets the rules for it to be considered to be 'permitted'. Having a CoL guards against misunderstandings on what is permitted and what is not. It is also useful to have on file when coming to sell the house, as it avoids uncertainties over whether home improvements have been carried out legally.

If your building is listed

Any works which affect the special architectural and historic interest of the building are likely to require listed building consent. These would include changes to the external appearance, and internally changes to layout, historic fabric or surviving feature such as joinery or decorative plasterwork. The work will also require planning permission if it affects the exterior of the building. A listed building application has to include an assessment of the historical significance of the house, and the impact on that significance that the proposals will have.

The application process for planning permission, listed building consent or a Certificate of Lawfulness

It is important to accompany proposals with drawings of what you want to do and a clear supporting statement. This statement might include:

- A description of how the building works now (before the work is done).
- Calculations showing the carbon savings the work will achieve.
- A plan showing that the work will be done thoughtfully in relation to your neighbours and the Conservation Area
- Images of the products you intend to use.

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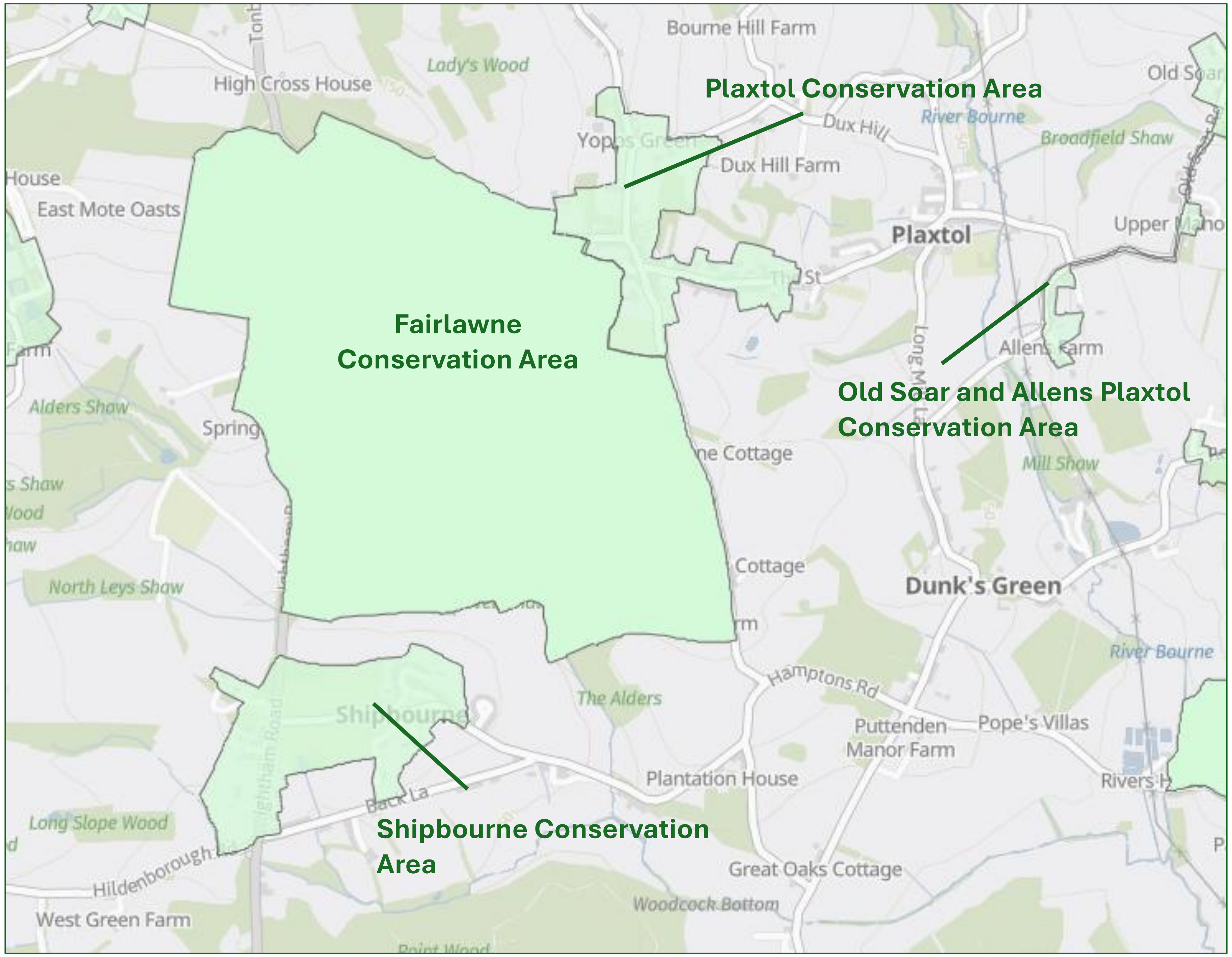
* An exception to this are solar panels in some instances. If an external change makes no material impact on the appearance of the building, then it does not constitute development. It is recommended to check this with the council.

Conservation areas in Shipbourne and Plaxtol



Listed buildings in Plaxtol

Listed buildings in Shipbourne

6. Financing Home Energy Improvements

Households in Kent who are **struggling with energy bills** can access free, practical support from:

Social Enterprise Kent (Energy Advice Programme): Provides personalised one-to-one advice through phone, online or in-home support, as well as community workshops. Advisors help you understand and reduce your energy use, switch tariffs, and resolve billing issues. They carry out benefits checks to ensure you're receiving all entitled income, support applications for grants and emergency funding, and offer guidance on managing energy debt, taking a whole-household approach to improving affordability.

Green Doctors: Offers in-home or remote consultations focused on immediate bill savings and comfort. During visits, they may install simple measures such as LED bulbs, draught proofing and heating controls at no cost. Advisors provide tailored, practical advice on heating use, ventilation and energy habits, helping households reduce consumption straight away while identifying further support or funding routes where appropriate.

Grants

In the Tonbridge and Malling Borough Council area, there is currently no access to the Warm Homes: Local Grant (WHLG), as the scheme is only delivered by selected local authorities. This means households locally cannot access fully funded, whole-house retrofit support. With ECO, ECO Flex and GBIS also ending, there are no equivalent large-scale grant schemes available for insulation or solar. Support is therefore limited, with most households needing to self-fund improvements or seek advice-led support.

Boiler Upgrade Scheme (BUS):

The Boiler Upgrade Scheme offers grants of £2,500–£7,500 towards replacing fossil fuel heating with a low-carbon alternative, rising to £9,000 for off-grid properties until March 2027. Available to homeowners and landlords regardless of income. An MCS-certified installer applies on your behalf and deducts the grant from the installation cost.

Green Finance

Green finance refers to a growing range of products offered by banks and lenders to support energy-efficient homes and retrofit improvements. These include green mortgages, additional borrowing, and retrofit loans, often with features such as lower interest rates, cashback, or enhanced borrowing limits. Some products are only available to existing mortgage customers, while others are offered to new borrowers. Products may reward efficient homes or provide finance to fund improvements such as insulation or low-carbon heating.

These products may influence decisions around upgrading ahead of sale. Homes with better energy performance can, in some cases, access improved mortgage terms. As lenders increasingly link borrowing to EPC ratings, improving a home's efficiency may support resale value and broaden the pool of potential buyers.

This section provides some examples of available green finance products rather than a recommendation. Households should seek independent financial advice and consider their circumstances before borrowing. The Green Finance Register summarises available green mortgage products, with examples overleaf for illustration.

Impact on Property Value

There is a growing body of evidence showing that home energy upgrades can increase property value, although the scale varies by property type and location. Research consistently identifies a "green premium" associated with higher Energy Performance Certificate (EPC) ratings, with large European studies suggesting each improvement in EPC band can increase sale price by around 1–3%.[1]

UK-specific evidence supports this trend. Analysis indicates buyers are typically willing to pay around 3–4% more for highly efficient homes (EPC A–B compared to D), while less efficient properties (EPC F–G) can attract discounts of several percent.[2] In practical terms, moving from a D to C rating may add around £9,000 (≈3%) to a property's value, with more substantial upgrades (e.g. F to C) potentially delivering significantly higher uplifts, in some cases reported at 10% or more depending on the property and market conditions.

Overall, the evidence suggests that home energy upgrades can both protect and enhance property value, particularly as energy costs rise and buyers increasingly consider running costs and future upgrade requirements when making purchasing decisions.[2]

This analysis assumes an indicative **~3% increase in property value per EPC band improvement**, with a reduced uplift of **~2–2.5% per band** applied at higher EPC levels (C–A) to reflect diminishing returns.

Overall, deeper home energy upgrades deliver the strongest value uplift, while improvements to already efficient homes provide more modest financial returns but still support comfort and future saleability.

Property surveyed	Indicative Property Value	Total Cost of Upgrades	Original EPC	Improved EPC	% Increase	£ Increase in Property Value
Pre-1930's detached	£550,000	£67,500	44 E	79 C	~6%	£33,000
Pre-1930's semi-detached	£400,000	£30,100	40 E	79 C	~6%	£24,000
Pre-1930's terraced	£350,000	£71,500	48 E	94 A	~12%	£42,000
Mid century semi-detached	£375,000	£82,650	89 B	107 A	~2.5%	£9,375
Late century semi-detached	£400,000	£66,000	70 C	88 B	~2.5%	£10,000
21st Century detached	£600,000	£70,500	80 C	90 B	~2.5%	£15,000

1 European Commission / academic literature review:
Fuerst, F., McAllister, P., Nanda, A. & Wyatt, P. (2025) *Energy performance ratings and house prices: a review of the evidence*. Energy and Buildings.
2 UK empirical studies:
Department of Energy & Climate Change (2013) *An investigation of the effect of EPC ratings on house prices*.
McConnell, B. (2017) *The impact of energy performance certificates on house prices*.

Example: Nationwide Green Additional Borrowing

Nationwide's "green additional borrowing" allows existing mortgage customers to borrow funds for eligible improvements (e.g. insulation, solar PV, heat pumps, glazing) at 0% interest for an initial period (2 or 5 years), after which the borrowing reverts to a standard mortgage rate. The product is subject to standard lending criteria, including affordability and available equity, and is only accessible to existing customers.

This type of finance helps spread the cost of energy efficiency upgrades. This offer in particular represents very good value when compared with other sources of finance. Households should consider both repayment costs and expected energy savings when considering such an offer.

Home Energy Project Example: Installing an Air Source Heat Pump and Solar PV system on a pre-1930's terraced home

Loan Required	£13,000
Annual energy bill savings	£557
Loan term	10 years
0% period	5 years

Period	Interest rate	Annual repayment	Annual savings	Net cost
Years 0–5	0%	~£1,300	£557	**£743/year**
Years 5–10	5%	~£1,470	£557	**£913/year**

In this example, energy bill savings do not fully offset loan repayments, meaning the measures result in a net cost over the loan term. Households should weigh this cost against wider benefits such as improved comfort, reduced exposure to future energy price rises, and potential uplift in property value.

For lower-cost, higher-impact measures (e.g. loft insulation, heating controls, draught-proofing, LED lighting), 0% finance may be more compelling, as savings can broadly offset – or exceed – repayments during the interest-free period.

More broadly, low or zero-interest finance can support retrofit by spreading costs over time. Households should consider affordability, expected savings, and how long they plan to remain in the property, particularly when re-mortgaging or engaging with an existing lender.

Example: NatWest Green Mortgage

Green mortgage products, such as those offered by NatWest Group, reward homes with higher EPC ratings (typically A–B) through slightly lower interest rates at remortgage or product switch, often in the range of around 0.02% to 0.06%. This means upgrades completed before refinancing can reduce borrowing costs. While these products do not fund works directly, they can improve the financial case by lowering ongoing mortgage costs.

When considering upgrades, the additional reduction in finance costs shortens the effective payback period. Instead of relying on energy bill savings alone, households also benefit from lower mortgage interest payments as shown in the example below.

Home Energy Project Example: Pre-1930s terraced (stage 1: heat pump readiness + PV/battery)

Cost of upgrades to take property from EPC D to B - Homeowner funded	£13,890
Annual bill saving	£782
Simple payback	18 years

Energy bill saving	£782/year
Mortgage rate reduction	0.04%
Mortgage saving	£100/year
Total annual benefit	£882/year
Payback (energy savings only)	18 years
Payback (incl. mortgage reduction)	16 years

While energy savings alone suggest a long payback (18 years), combining these with a modest green mortgage rate discount can improve returns, reducing effective payback to 16 years. Payback should be considered alongside wider benefits such as comfort and resilience, and households should consider timing works ahead of remortgaging to access available green mortgage products.

Homes with higher EPC ratings may also be more attractive to future buyers, as they can access preferential mortgage rates. This can support resale value and broaden the pool of potential purchasers.

Supplier Financed Technology: Octopus Energy heat pump offer

The Octopus Energy heat pump offer provides a fully integrated package covering design, installation, grant application, finance and ongoing energy supply. Installations are delivered end-to-end, including system sizing, radiators, hot water cylinder and controls, with warranties typically included. The £7,500 Boiler Upgrade Scheme grant is applied upfront, reducing the capital cost before any customer payment.

To improve affordability, Octopus offers flexible finance options (typically 3–15 years), allowing households to tailor repayments to their budget. These are generally provided through third-party lenders at fixed interest rates, with longer terms reducing monthly costs but increasing total repayment. In some cases, promotional or subsidised offers may be available, but most finance products are offered at standard market rates.

This is combined with the Cosy Octopus tariff, which provides discounted electricity during key heating periods, helping reduce running costs and improve the financial case for switching from gas or direct electric heating.

Indicative example

Typical installed cost	£11,500	Previous annual heating cost (oil)	~£1,800
BUS grant	-£7,500	New annual heating cost (heat pump + smart tariff)	~£1,000
Loan amount after grant	£4,000	Annual finance repayment	~£550/year
Interest rate	6.9%	Annual energy bill saving	~£800/year
Loan term	10 years	Net annual saving after finance	~£250/year
Total interest	£1,496.99		
Total amount payable	£5,496.99		

In this example, annual energy bill savings of ~£800 exceed finance repayments (~£550), resulting in a positive cashflow of ~£250/year from year one. Based on a total amount repayable of ~£5,500, this equates to a cashflow payback of around 22 years, reflecting the impact of finance costs. However, this structure enables households to install a heat pump with no upfront cost while still benefiting from immediate bill savings, improved comfort and reduced exposure to volatile oil prices. In comparison to other offers – the cost of finance is relatively high. Other suppliers may offer similar deals.

Low-interest loans

Low-interest loan finance is becoming an increasingly important route for funding home energy upgrades, particularly for households who are not eligible for grants but cannot afford upfront costs. Models such as Lendology CIC demonstrate how council-backed lending can provide fixed-rate, affordable loans (typically ~3–5%) with a focus on accessibility and enabling delivery. Such loans differ from green mortgage products as they are unsecured, meaning the lender does not take a charge against the property and lending is based primarily on affordability rather than equity. Unfortunately Lendology are not currently active in Kent.

A similar approach is expected to scale nationally through the Government's Warm Homes Plan, which announced the development of low-interest, government-backed loans. It is anticipated that products will be made nationally available from 2027 and delivered through high street lenders, supported by government backing to enable more affordable rates.

Home Energy Project example: Pre-1930s terraced (Stage 3: comfort and fabric improvements)

Measures	Ventilation, triple glazed windows, doors, loft insulation top-up
Loan value	£20,500
Loan Terms	10 years, 4%
Annual energy bill saving	£603

Loan amount	£20,500
Approx annual repayment	£2,500/year
Annual energy saving	£603/year
Net annual position	£1,900/year

This highlights that for fabric-led upgrades, energy savings alone are unlikely to offset finance costs, even where low-interest finance is available. However, these measures deliver wider benefits, including improved comfort, reduced draughts, better indoor air quality and preparation for low-carbon heating.

Version 2

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