

Lewisham Planning - Energy Efficiency in historic buildings



Advice and options to improve energy efficiency and reduce CO2 emissions

The sustainable retrofit of Lewisham's historic buildings will help us address the climate emergency by reducing heat loss and energy use, and contributing to renewable energy generation. The borough's historic buildings are inherently sustainable, being durable and adaptable and built with materials that can be repaired and maintained to extend the building's life indefinitely. They also contain a large amount of embodied carbon that was expended during their construction. The way energy is used in them, however, can be significantly improved to ensure that they continue being comfortable, healthy and affordable places to dwell in.

There are a wide range of ways that historic buildings can be retrofitted and the Council will support measures that are compatible with traditional building materials and do not harm the building or conservation area's special character.

Inadequately planned solutions and poorly carried out work may not only harm the building fabric and the wellbeing of its occupants, but may also fail to deliver the expected carbon benefits.

When we retrofit buildings the carbon emissions initially increase, due to the carbon emitted through production and transportation of retrofit materials and technologies. The measures selected, the materials used and how they are applied is at least as important as the reductions in emissions which may (or may not) be achieved in the medium term. If we make mistakes, and work has to be undone, then the embodied energy of the work is permanently lost. (STBA (in Heritage Counts))

Because historic building materials perform differently to modern ones - relying on moisture permeability and ventilation rather than impermeable materials and air tightness - some retrofit measures can cause moisture to become trapped. This has the potential to reduce energy efficiency (because wet building fabric takes more energy to heat), decay the building fabric, and risk the health of occupants through mould growth. An understanding of how an individual building has been constructed, its context and how it is used by its occupants will help to minimise these risks. This is called the 'whole building' approach. More information on this can be found in [Historic England's energy efficiency guidance](#) and at the [Sustainable Traditional Buildings Alliance's website](#).

‘Getting the balance right (and avoiding unintended consequences) is best done with a holistic approach that uses an understanding of a building, its context, its significance, and all the factors affecting energy use as the starting point for devising an energy efficiency strategy. This ‘whole building approach’ ensures that energy-efficiency measures are suitable, robust, well integrated, properly coordinated and sustainable’ (Historic England)

There are many effective, cost-efficient, and low risk ways in which the energy efficiency of historic buildings can be improved.

Below are changes you can make to reduce the carbon footprint of historic buildings, with advice on whether planning or listed building consent would be required.

While the advice on planning and listed building consent requirements is targeted at those in Conservation Areas or in Listed Buildings, the range of measures is relevant to any building constructed prior to c1918 with solid wall construction.

More information and guidance:

Historic England’s comprehensive suite of guidance and advice on [Energy Efficiency and Historic Buildings](#) includes guidance notes on planning works, as well as retrofit of building elements including windows, walls, roofs and floors.

Historic England have produced a review of evidence regarding reducing carbon emissions in traditional homes, available [here](#).

[Sustainable Traditional Buildings Alliance](#) provides further guidance and resources including the retrofit wheel tool.

Society for the Protection of Ancient Buildings (SPAB) have detailed research on the thermal performance of walls in traditional construction and the effects of added insulation [here](#).

Small but effective actions – no planning permission or listed building consent needed

No.	Suggested Action	Further information
1.	Carry out regular repairs and maintenance of rainwater gutters, downpipes and drains	Historic brickwork can become saturated if rainwater goods leak or overflow and more energy is needed to heat a wet house than a dry one.
2.	Keep brickwork in good order to allow it to dispel rainwater effectively	<ol style="list-style-type: none"> 1. Repair lost pointing with lime mortar that is softer than the brick itself - never use cement as this can cause the bricks faces to deteriorate. 2. Do not sand blast historic brickwork – this removes the hard ‘fire skin’ which is the brick’s defence against driving rain and leaves it susceptible to becoming saturated. 3. If you want to clean your brickwork use nothing stronger than mains pressure water and a natural bristle brush to prevent damaging it. <p>All these actions will help your brickwork dry out more quickly after rain and reduce energy used to heat your home.</p>
3.	Fit LED light bulbs in place of traditional or first generation energy saving compact fluorescent lamps (CFLs).	If you replace all the bulbs in your home with LED lights (including spotlights), you could reduce your carbon dioxide emissions by up to 40kg a year. (Energy Savings Trust).
4.	Fit reflectors behind radiators on outside walls	These hang from the radiator or its mountings and bounce heat back into the room, reducing the amount that is lost through your outside walls by up to 45% (Future Fit homes).
5.	Insulate hot water tanks and pipes.	<p>Topping up your hot water tank insulation from 25mm to 80mm thick, using a British Standard jacket, will cost you around £20 and could save you around £70 in energy bills (Energy Savings Trust).</p> <p>Insulating pipes ensures the heat is delivered to the rooms you need it and preventing it cooling down on the way in rooms that you are not using or sub-floor voids.</p>
6.	Draught proof doors and windows.	Draught-excluding tape and brush strips can be stuck direct to windows or frames and can reduce draughts, heat loss and fuel bills.
7.	Draught proof gaps between floor boards and skirting boards, and between floorboards.	Use an appropriate flexible sealant.
8.	Refurbish and use original internal wooden shutters after dark.	Although not as effective as secondary or double glazing, they will reduce heat loss to some extent, as will closing the curtains at dusk.
9.	Use a removable chimney balloon or close chimney damper plates.	This stops heat being lost up the chimney. Remove the balloon or open the damper plates in summer to provide ventilation.
10.	Select energy and water efficient appliances.	<p>Choose the most energy efficient kettle you can afford when replacing an old one.</p> <p>Change shower and tap fittings to ones that aerate and reduce water use.</p>

Mid range measures – Permission may be required

No.	Suggested Action	Unlisted building in a Conservation Area	Listed Building
1.	<u>Loft insulation</u> : Around 25% of a house's heat loss occurs through an uninsulated roof, and loft insulation can substantially reduce this. Batts, rolls, slabs or loose fill insulation made of various materials can be used. When inserted between joists it will prevent the circulation of air so an air gap must be provided around the edges of the loft to prevent damp and rot from setting in. Do not use spray insulation as this can trap moisture and cause timber decay.	Planning permission NOT required.	Listed Building Consent NOT required.
2.	<u>Floor void insulation</u> : Around 15% of an average house's heat loss occurs through the floor. The voids between joists can be filled with a slab or loose fill material, but this is disruptive, so you may want to plan this work to coincide with when you've got the floorboards up for other work. Care needs to be taken in listed buildings so as not to damage historic floorboards or skirtings. Floorboards contribute to a structure's rigidity so they must not all be lifted at the same time.	Planning permission NOT required.	Listed Building Consent MAY be required. Please contact the conservation team within the Planning Service .
3.	<u>Secondary glazing</u> is a separate pane (or panes) of glass fitted to the interior side of an existing window. It reduces heat loss and is more effective than double glazing in insulating against sound from outside due to the larger air gap. In listed buildings it should be designed with minimally visible framing and glazing bars, and avoid harm to existing architraves and shutters. (Where historic shutters survive it may not be possible to install secondary glazing and also use the shutters).	Planning permission NOT required.	Listed Building Consent IS required.
4.	<u>Boiler upgrades</u> : The flue should be positioned in a visually discreet location on the rear elevation, re-using existing pipe routes where possible. In Listed Buildings if the boiler is being located in a new position the internal pipe routes and fixings should avoid sensitive historic fabric such as timber panelling or architectural plasterwork.	This will depend on where the flue is placed. Once you know the proposed location please contact Planning via Duty Planning Service for advice on whether planning permission is needed.	Listed Building Consent IS required.
5.	<u>Green Roofs</u> provide thermal insulation, provide wildlife habitats and reduce flood risk by reducing the flow of rainwater onto hard paving or into the sewers. They can be added to existing flat roofs that are structurally adapted to support them, or on flat or gently inclined roofs of new buildings and extensions. They will be encouraged in conservation areas on rear extensions, garden rooms, sheds and on bike/ bin store roofs. On listed buildings there may be opportunities for them on the roofs of new extensions, as well as on garden rooms and other garden structures.	Planning permission MAY be required where an Article 4 Direction is in place. Once you know the location of your green roof please contact Planning via Duty Planning Service for advice on whether planning permission is needed.	Listed Building Consent IS required

High end measures – Permissions may be required

No.	Suggested Action	Unlisted building in a Conservation Area	Listed Building
1.	<p><u>Double glazing</u></p> <p>Replacement of timber single glazed windows with timber double glazed windows on unlisted buildings in conservation areas is almost always acceptable unless the windows and glazing are of very significant historic interest and could not be replicated by double glazed units. The glazing pattern should closely replicate the existing, so as to preserve its appearance and retain group value with its neighbours. Further information can be found on the Planning pages.</p> <p>Replacement of historic windows in listed buildings with double glazing is generally not considered an acceptable alteration, although there may be some instances where it is possible, such as in a later extension or a non-original window opening in a discrete position on the building. Historic window joinery is a valuable part of the significance of listed buildings and is usually of much higher quality and durability than C20th century windows. Regular maintenance is necessary to keep historic windows protected from water ingress – but even where they are deteriorating they can be repaired by a joiner with new wood pieced in to replace rotten elements and resin repairs of smaller areas of decay, as well as upgrading with draughtstripping and secondary glazing.</p>	<p>Planning permission MAY be required where an Article 4 Direction is in place.</p> <p>Please contact Planning via Duty Planning Service for advice on whether planning permission is needed for your specific proposal.</p>	<p>Listed Building Consent IS required.</p>
2.	<p><u>Air source heat pumps (ASHP)</u></p> <p>The siting of the ASHP unit in a visually discreet location to the rear of a building may be acceptable from a conservation perspective, but there will also be noise issues that will need to be considered.</p> <p>In listed buildings the internal pipework should be routed so as to avoid damage to architectural plasterwork and fixings to timber panelling and use existing service risers where possible.</p>	<p>Planning permission NOT required (unless within the curtilage of a Listed Building) subject to your specific proposals meeting the relevant conditions and limitations set out in Schedule 2, Part 14, Class G The Town and Country Planning (General Permitted Development) (England) Order 2015 (as amended).</p> <p>Amongst other things, on land within a Conservation Area the ASHP must not be installed on a wall or roof which fronts a highway or be nearer to any highway which bounds the property than any part of the building. It also should be sited, so far as practicable, so as to minimise its effect on the external appearance of the building and to minimise its effect on the amenity of the area. More information can be found here</p>	<p>Listed Building Consent IS required.</p>

High end measures – Permissions may be required (cont)

3.	<p>Solar PV and Solar Thermal: Solar PV panels convert the sun's energy from into electricity and Solar Thermal panels use the sun's energy to heat water.</p> <p>The orientation of the roof is the critical factor in determining maximum operational efficiency of solar PV panels: they should be as close to south facing as possible, and work best at an angle of 30° to the horizontal. They should not be shaded by trees, neighbouring buildings or chimneys.</p> <p>Both Solar PV and Thermal will generally be acceptable on listed buildings in a discreet location, where they are not visible from surrounding properties (e.g. on an internal valley roof pitch, or a or flat or valley roof behind a parapet.</p> <p>Solar Thermal also requires space internally for a boiler, tank and new pipe routes.</p>	<p>Planning permission NOT required on the roofs of dwellinghouses and flats in conservation areas, subject to it being <i>'sited so as to minimise its effect on the external appearance of the building and the amenity of the area'</i>. In practice this means that where there are alternative options for installation, the location which minimises the visual and amenity impacts must be selected.</p> <p>Planning permission IS required when:</p> <ul style="list-style-type: none"> • it protrudes more than 20cm from the roof slope; • it is higher than the highest part of the roof (excluding chimney). • it is on a wall fronting a highway 	Listed Building Consent IS required.
4.	<p>Solar slates are an alternative to conventional solar PV panels, designed to look like roofing slate. They are much less visually apparent than solar panels so may be a preferable approach in some conservation areas, but they do involve the loss of the existing roofing material so may not be appropriate where the roofing material is of historic value and includes patterns and other details, or on listed buildings.</p>	<p>Planning permission MAY be required where an Article 4 direction is in place.</p> <p>Please contact Planning via Duty Planning Service for advice on whether planning permission is needed for your specific proposals.</p>	Listed Building Consent IS required.
5.	<p>Internal solid wall insulation (IWI): IWI adds a thin layer of insulation on the inner face of external walls. It reduces the dimensions of the rooms slightly, and may impact on decorative mouldings and skirtings. Depending on the materials used, IWI can be permeable or impermeable to moisture. In traditional brick buildings, use of permeable materials which allow the building fabric to absorb and release moisture is recommended. IWI reduces heat transfer from the interior through the external walls, which result in the walls themselves being colder and therefore wetter, during winter months than uninsulated walls. This may make them more vulnerable to frost damage, particularly on north facing walls</p> <p>IWI hides the condition of the wall beneath, so it is wise to consider installing time-of-wetness sensors or other moisture monitoring to reveal problems as they occur. Great care must be taken to eliminate all possible moisture sources from the wall, ensure pointing, brickwork and gutters and downpipes are in good condition, and to allow the wall time to dry out before works begin. Fixings through impermeable internally insulated walls (for shelves, pictures etc) should be planned for at the design stage to avoid nails and screws from compromising waterproof layers.</p> <p>In listed buildings it may be considered acceptable in some locations if steps are taken to address all potential risks. Where there would be harm to internal decorative features it is unlikely to be acceptable; in such cases alternative energy efficiency measures should be introduced first which may prove sufficient.</p>	Planning permission NOT required	Listed Building Consent IS required.

High end measures – Permissions may be required (cont)

6.	<p><u>External solid wall insulation (EWI)</u> is described as ‘like wrapping your house in a blanket’ to keep the heat in and the cold out.</p> <p>Whilst thermally very effective if done well, EWI has downsides including obscuring historic brickwork, requiring changes to roof eaves, gable ends and window and door reveals; and gutters and downpipes must be re-sited. The installation must be meticulously detailed so as to avoid water ingress causing decay of elements embedded in the wall.</p> <p>Because the condition of the wall beneath becomes hidden by the EWI, there is a high risk of risk of the owner being unaware of damp problems should they develop. For this reason the installation of time-of-wetness sensors or other moisture monitoring to reveal problems should they occur is recommended.</p> <p>Great care must be taken to eliminate all possible moisture sources from the wall, ensure pointing, brickwork and gutters and downpipes are in good condition, and to allow the wall time to dry out before works begin.</p> <p>It will be resisted in conservation areas where it is controlled by Article 4 Directions and on listed buildings due to the potential risks to building fabric and harm to the building’s appearance.</p>	<p>Always contact planning via Duty Planner Service for advice on whether your specific proposals require Planning permission.</p> <p>Article 4 Directions MAY also bring this into Planning control.</p>	<p>Listed Building Consent IS required.</p>
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