

# HAMPSTEAD GARDEN SUBURB TRUST

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## SUPPLEMENTARY GUIDANCE ON ENERGY EFFICIENCY AND GENERATION MEASURES FOR SUBURB HOMES



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# Introduction

This supplementary guidance note aims to offer general advice and to **outline the Trust's policy in relation to some energy efficiency and energy generation measures** in conjunction with existing Design Guidance. This guidance distinguishes between two different approaches to reducing a home's non-renewable energy consumption. The first is energy efficiency measures, which attempt to reduce the amount of energy used when running a home, the second is energy generation, which attempts to supplement a principle energy source with *renewable energy*.

The measures covered in this guidance are:

## Energy efficiency measures

- Insulation
  - roofs
  - walls
  - floors
- Windows
  - upgrading
  - replacement
- Doors

## Energy generation measures

- Heat pumps
  - air source heat pumps
  - ground source heat pumps
- Solar panels

This is by no means an exhaustive list of all the things that can be done to improve the energy performance of one's home. However the Trust is principally concerned with measures which would have an impact on the external appearance of a property. The Trust's remit is to protect the character and amenity of the Suburb and it should be noted that **all changes to the external appearance of a property require Trust consent** under either the Scheme of Management or terms of a lease. In some leasehold properties, Trust consent is required for some internal changes.

We are happy to offer advice on what may or may not be acceptable to the Trust in relation to energy efficiency or generation measures not covered in this guidance as well as on specific proposals. The Trust is not in a position to offer technical advice, either on the energy performance of a particular property or on the merits of different technologies. If you are unsure whether something requires Trust consent or for further information and advice please contact a member of the Trust's [Architectural team](#).

# Energy use in traditional buildings: some general considerations

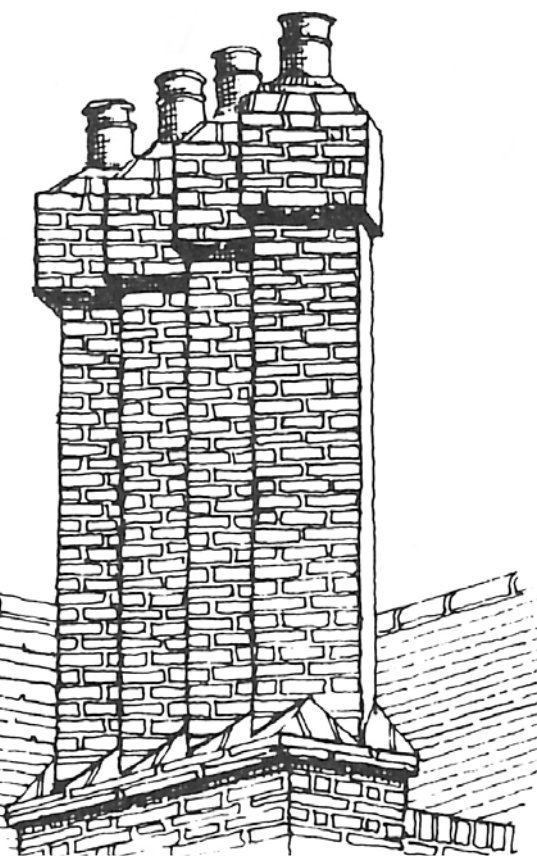
Making old buildings more energy efficient and conserving their historical significance are not necessarily conflicting aims. Historic buildings are often surprisingly durable and adaptable, and there are a number of ways in which the energy performance of an old house can be improved. However, it is important that the specific issues faced when dealing with old buildings and traditional construction methods are understood and addressed, not overlooked, when thinking about implementing energy efficiency or generation measures. Technological advances mean that there is an increasing variety of ways to save and produce energy, some of which will be compatible with the way in which the building functions or with maintaining the historical significance of it and of the surrounding area.

A building's energy performance is a complicated subject and considering energy efficiency or generation measures requires careful and site-specific analysis of the building in question. As such, we strongly recommend that homeowners take the advice of a suitably qualified independent professional when first considering any energy efficiency or generation measures. Advice should not be sought from any party with an invested interest in a particular product or installation. Sources of further information on energy performance in historic buildings can be found at the end of this document.

Many Suburb homes were built in a time when energy supplies were cheaper than today. Many houses were originally heated by burning coal in fireplaces. Some blocks of flats built in the 1930s were built with an integrated gas heating system – innovative for the time. Most homes now use gas or electric heating systems. As gas is phased out, residents will need to consider how they heat their homes. This might mean using alternative fuels or heating systems.

The built fabric of many Suburb homes is not as energy efficient as we might want it to be. However, that does not mean that radical, or even active, intervention is required to improve a building's energy efficiency. A building functions best when all of its elements are kept in good repair, therefore regular maintenance is a key part of maximising a building's energy efficiency.

Of active interventions, many are concerned with altering a building's fabric so that less energy is needed to maintain a comfortable temperature inside. In a climate like the UK's, this often means trying to reduce the amount of heat lost through the roof, walls, floors, doors and windows during the winter. However it can also mean optimising passive ventilation for cooling in the summer. Improving the energy or thermal performance of a building is known as thermal upgrading.



When considering changes you can make, it is important to consider what impact they might have on the house as a whole. If you live in a terrace, semi-detached house or flat, the impact on neighbouring properties should also be taken into account. For instance, installing a heat pump may only be practically and economically viable if the property as a whole achieves a certain level of thermal performance and as such may require investment in insulation. Therefore it is worth not only considering energy efficiency and generation together, but also in relation to all aspects of how a building functions, to include ventilation, airtightness, insulation and heating. This is often referred to as the ‘whole house approach’.

## Energy efficiency measures

Making homes more energy efficient is an evolving and rapidly developing field involving technological and scientific input which the Trust is not able to provide. It is worth noting the following general points about energy efficiency, or thermal upgrading, measures:

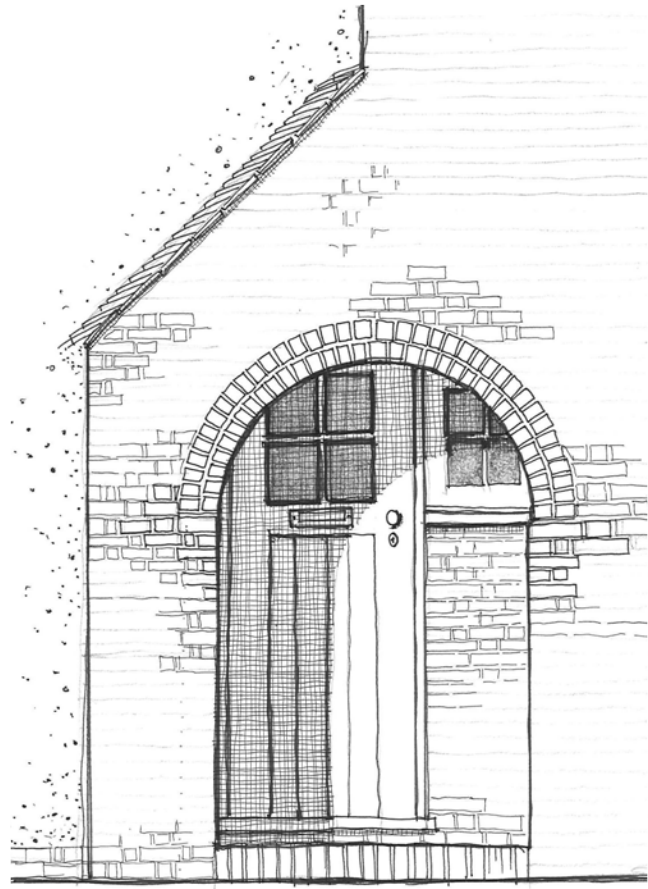
- properties on the Suburb are generally in the bracket of traditional construction. Some modern retrofit technologies, materials and methods can in fact be damaging to traditional structures and to the health of occupants and are therefore often counter-productive,
- when thermally upgrading an older building it is not necessarily realistic to achieve the same energy performance as a new building,
- energy efficiency measures should be considered in relation to a specific house and its particular circumstances,
- the advice of a professional experienced in working with traditional buildings and retrofitting should be sought.

While many energy efficiency measures are internal, **any external manifestation requires the Trust’s consent**. Leaseholders may require the Trust’s consent for internal alterations. It is therefore advisable to consult the Trust at the earliest stage.

## Insulation

In most cases adding **external insulation will not be approved by the Trust**.

Adding external cladding is a major intervention into a building’s fabric with significant technical challenges and can significantly impact the character of a building. For example, rendering or cladding original brickwork or roughcast will totally alter the appearance of a property and important details might no longer be visible.





Furthermore, most houses in the Suburb are part of a group of buildings and wider streetscape which would be affected if a single property were to add external insulation.

Adding suitable internal insulation to walls, floors and roofs can be an effective way of making a home more energy efficient. Freehold properties do not require the consent of the Trust to add internal insulation. In some leasehold properties the consent of the Trust may be required.

For further advice on insulation please contact the Trust's [Architectural team](#).



*The addition of external insulation to half of this building has totally altered its character and the original brickwork detailing has been lost*

## Roofs

Insulating the roof or loft space to enhance energy efficiency can be relatively cheap and one of the simplest steps to take. We recommend consulting or employing an experienced professional to install insulation to prevent common issues such as thermal bridges, too much or too little ventilation or problems with the plumbing or electricity. Converted and unconverted loft spaces will require different approaches to roof insulation and professional advice should be sought.

If insulating a flat roof internally it is important to maintain a 150mm upstand to the parapet and ensure that any plateau rooflights will not protrude above the height of the parapet or roof ridge.

Adding internal insulation to a roof does not itself require the Trust's consent. If your building is listed you may require Listed Building Consent for this.

**If you are converting the loft, adding a dormer or a rooflight, replacing tiles, or altering any part of the external roof Trust consent is required and you must make an [application](#).**

For further advice please contact the Trust's [Architectural team](#).





*Snowfall makes visible the effectiveness of roof insulation. On properties with better roof insulation less heat escapes and the snow takes longer to melt.*

## Walls

If you are planning to insulate your walls internally, take impartial advice from a qualified person specialising in traditional construction. Poorly installed insulation can cause problems such as damp, condensation or thermal bridges.

In leasehold properties adding internal or cavity wall insulation may require the Trust's consent. Please contact a member of the Trust's [Architectural team](#).

Internal wall insulation may not be appropriate in listed buildings with historic plasterwork or joinery. Advice on listed buildings should be sought from the London Borough of Barnet, and Listed Building Consent may be required. Further advice on wall insulation can be found in [our Technical Guide available on our website](#).



*Insulation can be seen here on this new build project in the cavity between the outer and inner walls*

## Floors

If you are planning to insulate your floors, impartial advice from a qualified person specialising in traditional construction should be sought.

Sub-floor insulation to a suspended timber floor can often be a relatively straightforward solution, however it is important to maintain ventilation of the void below the insulation.

In leasehold properties adding internal insulation to a floor may require the Trust's consent. Please contact a member of the Trust's [Architectural team](#). If your building is listed you may require Listed Building Consent for this. For all changes to listed buildings, advice should be sought from the London Borough of Barnet.

## Windows

The Trust is keen to retain authentic architectural detail when considering energy efficiency and energy bill reducing options.

Broadly there are two approaches to making windows more energy efficient: upgrading the existing units or replacing the windows with double glazed units. It is important to take into account the thermal performance of the double glazed unit being considered as they vary significantly. Different options will have different cost implications and benefits in terms of thermal upgrading. It is advisable to consult an independent specialist, such as an architect or building surveyor, to provide advice on various options as well as cost-benefit analysis.

The Trust is happy to offer advice to residents on specific options they may be considering for both repair and replacement of windows, and maintains a list of window manufacturers known to the Trust. This can be obtained by [contacting the Trust office](#).

## Upgrading existing windows

Upgrading an existing window has the benefits of being less expensive than replacement, and of saving the carbon emissions associated with producing new windows.

## Repairs and draught-proofing

Draught-proofing and ensuring that windows are in good repair through regular maintenance will help them perform with maximum efficiency. This is a simple measure that will improve energy efficiency and general comfort. Ensure that any repairs are carried out before draught-proofing. Any work of maintenance and repair that does not alter the external appearance of the windows does not require Trust consent, although you should **inform the Trust of your intention to carry out repairs or draught-proofing**. There are companies that regularly carry out this type of work in the Suburb, details can be supplied on request.





*Above: An example of rebated draught-proofing in a sash window*



*Above: The leaded lights have been temporarily removed in order to repair a rotten timber sub-frame. Being a fairly major intervention into the building's fabric, repairs should be undertaken by a qualified person and the Trust should be informed.*



## Secondary glazing

Upgrading windows by installing secondary glazing is the most effective way of reducing heat loss and reducing draughts through windows. It is advisable not to draught proof the primary (outside) window as ventilation of the interspace between the windows will help reduce the risk of condensation. However any repairs to the primary window should be carried out before installation of secondary glazing. Secondary glazing is also particularly effective in reducing noise from outside. Installation should be carefully considered and designed and it is worth consulting a specialist.

**If you intend to install secondary glazing you should consult the Trust.**

Installations that alter the appearance of the primary (outside) window from the outside are unlikely to be acceptable. If your building is listed, you may require Listed Building Consent for secondary glazing.



*This secondary glazing is unobtrusive from both the inside and out*

## Temporary options

A discreet and low cost technique to reduce draughts and retain heat, while not impacting on the external window features of your property is installing a clear layer of proprietary film to the existing window. This will restrict access to the window, but remove draughts and can be removed and replaced at your discretion. Acrylic plastic sheeting can be temporarily installed to the internal window frame which can be removed.



Such options do not require the consent of the Trust provided the external appearance is not impacted. If your building is listed, such temporary options may not be appropriate and you should consult London Borough of Barnet on whether Listed Building Consent is required.

## Replacing windows



*Double glazed windows can closely match the appearance of the originals*

Replacing windows and glazed doors with double glazed units significantly enhances comfort and energy efficiency. The Trust regularly approves double glazed windows on many properties and both steel and timber windows can be replaced in double glazed units.

In order to retain the character of the property, replacement windows must match the originals exactly. Typically the glazing units approved are made up of 4mm glass, 8mm spacer, 4mm glass. However, what is acceptable may vary depending on the building or windows in question. In some cases, replacing windows with double glazed units may damage the character of a building and may not be acceptable.

## Leaded lights

Leaded lights, due to their construction, cannot be faithfully replicated with double glazing. Double glazed units with applied lead comes have a different appearance to traditional single glazed ones. Consequently the Trust does not generally accept double-

glazed leaded lights on front elevations as this would be detrimental to the character of the house and the area. It may be possible to have double-glazed leaded lights on some side and rear elevations, depending on the product and visibility of the window.



*The individual panes of glass in a leaded light reflect the light in a particular way which gives them their character*

**Replacement of any window requires a [formal application](#) to the Trust for consent.** More information on what is required for a window replacement application can be found on our [FAQ page](#).

For further advice on replacing windows please contact our [Architectural team](#).

## Doors

Doors in Suburb houses were usually designed with the rest of the house and are a key feature which contributes to a house's character. Consequently original doors should be retained and repaired where possible.

Many doors in the Suburb are made of timber which is generally a good insulating material. If a door is in poor repair it will perform worse thermally. This might be due to a lack of - or insufficient - draught-proofing, damp ingress or rot.

Some doors in the Suburb are made of steel, often French doors, which is not as good an insulating material as timber. However steel is very durable and can last for many decades if kept in good repair. This in turn helps reduce the demand for new



doors and the carbon emissions produced by manufacturing them.

French doors have glass panes throughout their length and can be treated in much the same way as windows when it comes to making them more energy efficient.

Regular maintenance, good repair and draught-proofing of doors is essential to maximising a home's energy efficiency and can reduce heat loss by up to a third.<sup>1</sup> **When intending to carry out repairs to a door you should inform the Trust.**

If a door cannot be repaired then it should be replaced. **Replacing a door requires a [formal application](#) for Trust consent.**



*An example of brush draught-proofing that can be installed on a door*

## Energy generation measures

There is an increasing desire amongst homeowners to generate either some or all of their own energy domestically. As mentioned above, energy generation should be considered together with energy efficiency measures as part of a 'whole house approach'. It is also worth considering the source of the primary energy supply. For example one of the most impactful ways to reduce a home's carbon footprint is to switch to a 'green' electricity supplier.

There are many forms of domestic renewable energy generation which have little or no impact on the external appearance of a house. This helps to maintain the character of the property and of the area. Some forms of energy generation or storage may have a significant impact on the interior of a property in terms of space and appearance. If your property is listed you may require Listed Building Consent for such work.

Some forms of energy generation can radically alter the appearance of a property and as such have the potential to permanently alter the character of the Suburb as a whole. It is the view of the Trust that the benefit of some forms of renewable energy generation might be outweighed by the harm they would do to the character of the Suburb.

## Heat pumps

Heat pumps use the natural heat from the ground, air or water to provide hot water or space heating. They typically require a small amount of electricity to run. Typically ground source heat pumps are more efficient than air source heat pumps as the ground stays at a more constant temperature than the air throughout the year. The installation costs of air source heat pumps are considerably less than ground source heat pumps as they do not require groundwork.

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<sup>1</sup> Historic England. Energy Efficiency and Historic Buildings: Draught-proofing Windows and Doors. p.3

## Air source heat pumps

**Air-source heat pumps require an application for Trust consent** as they alter the external appearance of a property.

Air source heat pumps can be installed internally or externally.

If installed internally, an external air intake is required, generally a grille, air-brick or louvre on an outside wall. If the heat pump cannot be accommodated internally then the unit can be located outside.



*An air-source heat pump before the installation of an acoustic enclosure*

Air source heat pumps should be located internally where possible. Intakes should be located in a discreet location and made of a material to match the exterior of the property. If it is proved that a heat pump cannot be accommodated internally, the Trust may consider an external unit. This should be located in a discreet location, with minimal noise impact on neighbours and placed in a timber or acoustic enclosure.

## Ground-source heat pumps

Ground source heat pumps require pipework, known as a ground loop, to be placed underground. The ground loop can be buried in a trench or placed in a vertical borehole. The length of pipework required, and therefore the length of the trench or depth of the borehole, will depend on the particular requirement of the property.

A trench option usually requires a larger surface area so that a sufficient amount of pipe can be buried. Once buried the pipe can be covered with soil and planting. Given the area required this may only be viable in some of the largest gardens in the Suburb. A borehole will require much less space, but may be more expensive.



If you intend to install a ground-source heat pump without altering the landscaping, you should inform the Trust. If alterations to landscaping are proposed at the same time, you must make an application for Trust consent.



*Ground loop of the ground-source heat pump in a trench*

## Solar panels

Solar panels are one of various options for domestic energy generation. They are also one of the more visible where they are fixed to roofs. The ‘luxuriance and variety of roofs’ on the Suburb are an integral part of the Suburb’s character and appeal.<sup>2</sup> The visibility of solar panels on pitched roofs could be very damaging to the appearance and character of individual properties and the Suburb as a whole. Because of this, **solar panels on pitched roof slopes will not normally be acceptable.**

Solar panels may be acceptable on flat roofs or crown roofs where they can be screened by a parapet or ridge. The roof may need additional structural support in order to take the additional weight of the panels and ballast. In some cases it may be acceptable to install solar panels in a garden if discreetly located.

Solar panels constitute a change to the external appearance of the property and **require an application to the Trust** so that the impact of the installation can be assessed. You may also need to apply to the London Borough of Barnet for planning permission.

Enquiries about solar panels should be directed to the Trust’s [Architectural team](#).

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<sup>2</sup> ‘... at Hampstead the luxuriance and variety of roofs is an unending source of interest’. Christopher Hussey writing in *Country Life*, October 1936.





*Above: Solar panels installed on a pitched roof. These have a major, detrimental impact on the appearance of a property.*

*Below: Typical roofs on the Suburb which are so important to its character*







*Above: These solar panels have been installed on a crown roof. As they cannot be seen from the street, their visual impact is considerably reduced.*

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## Further information

If you would like further advice or have further questions about any of the measures above please contact the Trust [Architectural Team](#). If you have questions on any measures not contained in this guidance we will do our best to advise you, but may be unable. We are unable to offer technical advice on energy efficiency or generation measures.

Further information on Trust policy, including [Design Guidance](#) and other supplementary guidance, can be found on [our website](#).

It should also be noted that some changes to your property may also require planning permission from the London Borough of Barnet. If your home is listed you may need to obtain Listed Building Consent from the London Borough of Barnet for internal and external changes to your property. Enquiries about planning permission and Listed Building Consent should be directed to the relevant department at Barnet. It is the responsibility of the homeowner to obtain all necessary consents.

# Glossary

**Building envelope** - The weathertight skin separating the interior of a building from its external environment. It is made up of the roof, walls, windows, doors, floors and foundations.

**Cold bridges / thermal bridges** - A concentrated area of heat loss in a building envelope. This can refer to a weak point in a layer of insulation which allows the heat to escape.

**Draught-proofing** - Treatment of a door, window or building to exclude air and eliminate draughts.

**Non-renewable energy** - Energy derived from a natural resource that cannot be readily replaced by natural means at a pace quick enough to keep up with consumption. Typically non-renewable energy is derived from natural gas, oil or coal, often known as fossil fuels.

**Renewable energy** - Energy from a source that is not depleted when used. Examples include wind or solar power.

**Retrofit** - The introduction of new materials, products and technologies into an existing building to reduce the energy needed to occupy that building.

**Thermal bridges / cold bridges** - A concentrated area of heat loss in a building envelope. This can refer to a weak point in a layer of insulation which allows the heat to escape.

**Thermal performance** - The degree to which a building or building element allows heat to pass through. A good thermal performance means that heat does not pass through easily.

**Thermal upgrading** - Improving the thermal performance of a building or building element.

**Whole house approach** - considering all aspects of how a building functions and how changes to one aspect might impact the others.



# Useful resources

## Historic England

- [Energy Efficiency and Historic Buildings](#)
- [Saving Energy in your home](#)
- [Generating Energy in Older Houses](#)

## Historic Scotland

- [Saving energy in traditional buildings](#)

## Society for the Protection of Ancient Buildings (SPAB)

- [Energy Efficiency and Old Buildings: Principles and Priorities](#)
- [Briefing Note: Energy Efficiency in Old Buildings](#)
- *Old House Eco Handbook* by Marianne Suhr and Roger Hunt. London: White Lion Publishing, 2019.

## Sustainable Traditional Buildings Alliance (STBA)

- [Planning Responsible Retrofit of Traditional Buildings](#)
- [The Responsible Retrofit Knowledge Centre](#)