BUILDING CONTROL INFORMATION SHEET

ISLE of WIGHT COUNCIL
Raising standards, creating opportunities

BUILDING REGULATIONS
(Conservation of Fuel & Power)
& HISTORIC BUILDINGS

Building Regulations and Existing Buildings
Building Regulations seek to improve the energy performance of all buildings, including existing ones, when renovated, altered, extended or subjected to a change of use.

The Approved Documents acknowledge that special considerations apply if the building has special historic or architectural merit and compliance with energy efficiency requirements would unacceptably alter the character or appearance of a historic building. Instead, the aim should be to improve energy efficiency where and to the extent that it is practically possible.

Particular issues that warrant sympathetic treatment include:

a) restoring the historic character of a building that has been subject to previous inappropriate alteration
b) rebuilding a former building
c) making provisions enabling the fabric of historic buildings to breathe.

When deciding whether to repair or replace, it is essential to consider the implications of destroying existing fabric against the potential benefits. For example, it would be neither sustainable nor cost-effective to replace a 200 year old window that is capable of repair and upgrading with a double-glazed alternative, and even less so if the new window were to have an anticipated life of only 20-30 years, as some do. However, depending on circumstances, a good case might be made for well-designed and carefully-installed draughtproofing or secondary glazing.

Balancing Conservation Interests and Sustainability
English Heritage and other building conservation bodies support the aim of conserving fuel and power provided that it does not compromise the special interest, character and appearance of historic buildings. The right balance is needed between reducing energy use and greenhouse gas emissions, and conserving the national and local heritage. Retaining existing elements of construction in old buildings and seeking to enhance their thermal performance in benign ways, rather than replacing them, is a heritage conservation principle in line with this concept of sustainability. Certainly *some* historic buildings should not be altered at all e.g. those where any change would inevitably damage their character or special interest. However, the majority can accommodate some improvements, even though the modern standards and techniques suggested in Part L might not be appropriate. Special care and a flexible approach are needed so that the interests of historic buildings can be preserved.

Where proposed alterations, renovations or replacements could trigger the Part L requirement to upgrade the existing fabric, care must be exercised in deciding whether or not such work will affect the building's character; of course, if the building is listed, Listed Building Consent may also be required and alterations should be discussed with the Conservation Officer. In some instances a historic building may be in an almost totally original state, and like-for-like replacement will be the only appropriate solution. In many cases, however, some thermal upgrading will be practicable. For example, though wall insulation will often be inappropriate, it may be feasible to add insulation in roofs and under suspended floors.

In many historic buildings there are unheated rooms, void structural gaps and other spaces in which condensation risks could increase if other parts of the building were upgraded and / or air infiltration rates were reduced too far.

Understanding how the Building works

Many historic buildings include soft, weak or permeable materials e.g. mortars, plasters, renders or paints. These cause the fabric to respond in fundamentally different ways to air, moisture and structural movement from the hard, strong, impervious materials and membranes widely used in modern construction. As a result of retaining more moisture:

- historic structures tend to be wetter as there is often some rising and penetrating damp
- porous, breathable construction allows moisture to evaporate internally
- more ventilation is needed to remove transpired moisture
- in addition, better heating may cause internal moisture levels and dewpoints to rise, because of faster evaporation from permanently damp fabric. This can be a particular problem in intermittently-heated damp buildings, which self-humidify as they warm up.

Changes to the fabric of a building in order to reduce heat loss can alter its moisture transfer mechanisms, including the ability of the fabric to 'breathe'. Before any work is carried out, it is therefore important that a building's system of construction and the way in which this might have changed over time is understood – and that alterations are compatible with this system.

Ventilation Requirements

Owing to the factors discussed above, historic buildings usually need more ventilation than modern ones. In the past, they were often more ventilated than strictly necessary because of loose fitting doors, windows and other openings. In addition, open fires created generous rates of exhaust ventilations through chimneys at times when condensation risk might otherwise have been high. However, if ventilation of a historic building is reduced too much, condensation, mould and fungal growth may occur, leading to deterioration of the fabric and contents, and possible health problems for occupants. Great care is therefore required in selecting an appropriate ventilation rate for a historic building.

The Importance of Retaining Historic Windows

The Secretary of State has dismissed over 90% of appeals against the refusal of Listed Building Consent for replacing traditional single glazed sash windows with double glazed PVCu windows because the replacements proposed would detrimentally affect the special character and appearance of the building.

Old glass is of interest and is becoming increasingly rare. It is of value not just for its age, but because it has more richness and sparkle than today's flat sheets with their uniform reflections. Where it survives, it must be retained and alternative means of thermal improvement considered.

Improving Window Insulation

No historic window can reach the U-values recommended in Part L. So-called 'facsimile' replacements have been developed with double-glazed sealed units and low emissivity glass, but in most cases these fail to provide an adequate visual alternative owing to frame thickness required to accommodated the glazing cavity. It is impossible to replicate original glazing bars in double glazing.

Draughtproofing and weather stripping of windows can be very effective in reducing not just heating bills by limiting the number of air changes per hour, but also reducing levels of noise and dust too. Indeed, draughtproofing a single glazed window has roughly the same effect as fitting an additional sheet of glass.

Doors

Most external doors on historic buildings were made of timber, many in hardwood frames. Depending on their age and design they were usually morticed and tenoned together, either in a flat pane, or with panels fitted between stiles, and muntins and rails. Doors which are original or of historical interest must be kept. Solid doors often have reasonable insulating properties.

Most of the heat loss usually occurs by infiltration around the perimeter of the door where gaps have developed around panels, at the junction with the door closer, through locks, etc. Repairs and draughtproofing may be helpful.

Walls

Where walls need to transpire, new materials – which are designed to form barriers to unwanted moisture or water vapour – can impede the very processes which helped a historic wall to endure. Examples are commonplace including:

- Hard external rendering, intended to keep the rain out, which also stops moisture evaporating and causes the wall to become damper. When cracked, it also traps rainwater, making things even worse.
- Modern impervious paints which cause previously sound plaster to break down, because rising and penetrating damp can no longer evaporate.

It is important to ensure that internal walls are always investigated with care in advance of any changes, in case ancient or interesting features – such as early plaster and paint schemes – are hidden in the plaster or behind panelling or other coverings. Timber panelling, plaster mouldings or enriched decorations are all-important and need to be preserved.

Where complete internal re-plastering is required – particularly where it has been done before and when little or nothing of historic interest survives – there may be opportunities to incorporate internal insulation. However:

- The dimensional changes may be unacceptable at window and door openings and where original surface details such as dados, cornices etc. Space may also be unacceptable.
- Moisture may be trapped and interstitial condensations may occur.

Floors

The appearance of a floor can be a highly distinctive feature of a historic building. Generally floors should not be lifted because of the damage that is inevitably caused: a worn, uneven appearance is also often valued and cannot be completely re-created. However, if floors have to be lifted or replaced, there may be opportunities to improve insulation.

Roofs

For traditional roofs with 'cold' roofspaces ventilated by outside air, it will often be possible to lay insulation over the ceilings or between floor joists in the conventional manner. Air infiltration from the building into the roofspace should be reduced, in particular by closing up holes around pipe, duct and cable routes, especially from high humidity areas.

When upgrading utilitarian attic spaces, it may be possible to adopt modern details.

Physical Insulation of Services

Fitting and replacement of services installations must be done carefully, avoiding unnecessary damage to the historic fabric by short-lived services elements and observing the principles of reversibility and minimum intervention. This relates not only to holes, chases, and fixings, but also to the direct and indirect damage to historic objects by the proximity of services, for example by:

- Covering up or interrupting the view of important features and details
- Passing too close to important surfaces (e.g. of plaster or panelling) which might be consequently damaged in the course of the work or in use afterwards (e.g. from dirt traps and / or from cleaning behind pipe lagging run close to surface)
- Staining by patterns of heat and air movement
- Disturbance of the heat and moisture balance leading, for example, to crystallisation of salts in walls and damage to details and surface finishes.

Constraints of this kind may affect the choice of options and consequently their energy efficiency levels. For example, it might not be possible to replace a conventionally-flued heater with a more efficient balanced-flue version because of the destruction caused by the hole, the visual appearance of the outdoor terminal, or the technical risks of disturbing a rubble-filled wall.

Heating and lighting

Historic buildings have tended not to be heated to the high temperatures typical in modern buildings. For some of today's uses (e.g. residential and commercial), occupiers will expect modern standards. Building owners should always consider if air conditioning is really necessary – sometimes simpler control of the environment is possible, for example to control pollutions. If air conditioning is specified, care is required not only to minimize the physical damage caused by installation but also to consider the potential deleterious effect of the air-conditioned environment on the building fabric. The use of more energy-efficient and long-life lamps should be investigated, as this reduces replacements costs as well as energy consumption.

The General Approach

The following broad principles should be observed when energy efficiency is being improved in a historic building;

- do not undertake unnecessary changes
- do not cause the physical or visual loss of important features
- avoid changes increasing the risk of damage elsewhere in the structure (advice may well be required from technical specialists and the conservation officer).
- A holistic evaluation should be undertaken of the building's energy efficiency.

Further advice can be obtained from:

Building Control Section or Conservation & Design, Seaclose Offices, Fairlee Road, Newport, Isle of Wight, PO30 2QS

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