LISTED HERITAGE

Interiors

Internal and emergency lighting of Historic Buildings

Grade II St Albans Church in Swaythling, Southampton built in 1933 - these are the original light fittings and have no shades (image Geraldine O'Farrell).

This article covers the issues to be considered when designing and installing internal and emergency lighting into a historic building.

Historic England's advice covers the issues to be considered when refurbishing extant historic internal lighting or designing and installing a new layout. Information is given on light fittings, types of lamps and their suitability, installation, control and maintenance. Detailed advice can be found on Historic England's website at:

https://historicengland.org.uk/advice/technical-advice/building-services-engineering/internal-lighting-in-historic-buildings/designing-installing-and-maintaining-internal-lighting/

https://historicengland.org.uk/advice/technical-advice/building-services-engineering/internal-lighting-in-historic-buildings/

https://historicengland.org.uk/advice/technical-advice/building-services-engineering/internal-lighting-in-historic-buildings/internal-external-and-emergency-lighting/

The design of new lighting also needs to consider the internal layout and any historic interior decoration.

Before embarking upon a new internal lighting scheme, due consideration should be given to the following:

- What is the design of the room / building?
- What activities are going to take place?
- Are there any existing light fittings of historic interest?
- Is the interior highly decorated or finished with decorative, delicate, light sensitive fabrics such as silk wallpaper?
- Are there pictures to be illuminated?
- Is dimming required?
- Will integral emergency lighting be needed?
- Will 6 Amp sockets be required?
- Are daylight controls and occupancy sensors to be incorporated?
- Can wireless switching be used to avoid permanent damage to the historic fabric?

GENERAL CONSIDERATIONS

Electric lighting is a relatively recent addition to the services found within buildings. It was not until the 1930s that new houses were routinely supplied with electric light. Before that it was predominately gas that lit most homes, and before that it would have been oil lamps and candles.

Initially, very little was done in the way of producing specific designs for electric light fittings. At first the usual approach was to adapt gas light fitting designs. The poor light output from early incandescent lamps meant that luminaires were deliberately designed without shades to maximise the light output plus the novelty of having electric lighting meant that people liked to show off their lamps.

The design and installation of an internal lighting scheme should be carried out by a professional lighting designer, or in a domestic situation by an interior designer with appropriate lighting knowledge.

It should be remembered that lighting a space requires not only good technical skills but artistic skills as well, to achieve a technically well-balanced and aesthetically pleasing result.

DESIGN CONCEPT

With any internal lighting scheme, it is important that a clear and detailed brief is drawn up of what is desired of the new lighting including the light levels it should achieve. The brief will help the building owner or custodian fix their lighting requirements, limit potential for project creep and assist in keeping costs under control. It might also be advisable to consider lighting trials before committing to a final design rather than relying solely on light level calculations or computer simulations.

With any new design it is essential, now more than ever, that any design scheme is

not only suitable for the interior, but is energy efficient. This can be achieved by using LED lamps which are now available as direct replacements for most other lamp varieties.

HM Government's Department of Environment, Food and Rural Affairs (DEFRA) recently issued their list of lamp types that after 1st February 2024 will no longer be placed on the market and after stocks are exhausted will not be available.

An additional method of achieving a good lighting scheme is the use of appropriate lighting controls. These can be wireless, dimming or occupancy controlled, and they will help in ensuring the correct amount of light is where it is needed to allow the occupants to use the room appropriately.

HISTORIC FURNISHINGS

Some listed buildings may be fortunate enough to have original surface finishes such murals, wallpapers, silks, wood panelling and carpets along with period light fittings.

Some of these will be susceptible to excessive heat and light which can cause fading and embrittlement from UV radiation given out by some light sources as well as sunlight. LEDs only create a small amount of UV because of the phosphors used that convert UV light into white light.

The appropriate choice of light colour is also an important aspect that can impact the result and the accuracy of the colours in the room as rendered to the eye. For example, a warm light (2700 – 3500 K) will enhance colours at the red end of the colour spectrum while cooler lamps (4000+ K) will make blue colours stand out. Lamp colour will also impact the "feel" of a room with the warmer colours being more reminiscent of incandescent lamps.

Lighting refurbishment at The Grand Hotel, Birmingham (image Fritz Fryer).

Lantern restoration at Cliffe Castle, Keighley, West Yorkshire (image Fritz Fryer).

NEW LIGHT FITTINGS AND FIXINGS

As with all new work within historic buildings Historic England's approach is that new luminaires should be well designed and harmonise with the room furnishings. This neither precludes nor implies traditional, replica or contemporary design.

Attention must however be paid to achieving a good standard of installation with minimal intervention into the historic fabric. This can be achieved by carefully locating fixings into sacrificial material such as mortar joints. Any pre-existing holes and openings should always be used first before creating any new ones, and any recessed light fittings should only be used where original ceilings have already been replaced.

Also, chases to switch drops should only be considered where walls have been re-plastered. Where this has not happened then the use of readily available wireless switches should be considered.

LIGHTING CONTROLS

Room lighting can be controlled in several ways:

- A simple on/off switch
- A suitable dimmer (note that dimmers used for incandescent lamps will not work for LEDs)
- A multiple bank of on/off or dimmer switches
- A remote-controlled installation via a phone or tablet application
- A daylight-controlled system which switches out all or part of an installation when daylight sensors reach a predetermined light level
- An occupancy-controlled system which switches off all or part of the lighting when no movement is detected in the space for a set period
- For larger buildings via a Building Management System (BMS)

A good lighting scheme will always have good flexible controls which do not have to be in any way complicated, just appropriate for the lighting scheme and achieves what is required.

With greater flexibility comes greater control and therefore more opportunity to make energy savings.

EMERGENCY LIGHTING

Emergency lighting is not a normal feature of a domestic lighting installation, however where the historic building is regularly open to the public it is a Health and Safety requirement.

There should be appropriate illumination, in the case of a mains electricity failure, that enables visitors who are unfamiliar with the internal room layout to exit the building safely.

This can take the form of integral conversion packs within existing fittings; stand-alone emergency fittings or green running man exit signs above the doors leading to the outside.

More guidance on this is available from the Historic England website - https://historicengland.org.uk/advice/technical-advice/building-services-engineering/internal-lighting-in-historic-buildings/internal-external-and-emergency-lighting/

MAINTENANCE

As with all building services the maintenance of lighting is important and if regular cleaning is not carried out there will be a gradual loss of light output.

All fittings should be regularly checked, cleaned and any faults rectified by a suitably qualified and registered electrician who is a member of either the ECA (Electrical Contractors Association) or NICEIC (National Inspection Council for Electrical Installation Contracting).

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