Guidance Note

Lighting

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Lighting a church building is challenging and complex and requires the input of specialist advice, ideally from an independent consultant in order to achieve a successful scheme. This guidance note is intended to give a broad overview of the technology, an idea of what a lighting scheme could seek to achieve and some basic principles to consider regarding the impact on your church building.

Expectations of a good lighting scheme

Lighting within a church can have a positive or negative impact on people's experience of the building. An effective scheme will enable users, amongst other things, to:

- see and move around freely,
- read services sheets / projected words and images,
- see others – celebrant, choir and congregation,
- enhance and appreciate the buildings' spatial qualities, architectural details and points of interest (wall paintings, art work, woodwork, textiles, monuments, sculptural details, architecture),
- enhance liturgy,
- easily avoid hazards around the building (steps, slopes etc).
- contribute to special events, such as concerts.

Additionally, lighting can provide dramatic effects and create an atmosphere and enhance the building's architectural characteristics. The quality and direction of the light is as important as its intensity, and a well designed lighting scheme will take the above into consideration.

Health and Safety

A good lighting scheme will have a positive impact on health & safety implications for a building. Good lighting should make it quicker and easier to identify hazards and then avoid them. Safety standards have increased in recent years, and those considering a new lighting scheme should factor in at the planning stage, how light fittings can be accessed for light bulb changes.

The introduction of emergency light fittings should also be considered.

Design Brief

When considering a lighting plan, it is vital for the PCC or Chapter to first be clear of its reasons for change, its needs and what it hopes to achieve. This will enable them to engage meaningfully with their architect/surveyor and any specialist consultants. It is helpful to bring in a specialist lighting consultant at the

earliest possible stages of the consultation. An independent consultant will usually provide advice based on a wider range of products to the PCC than a lighting company, and will go through a tender process with the PCC to appoint the appropriate contractor.

It will be important for the PCC to prepare a brief for the consultant. When preparing the brief, consider including information on:

- All uses of the building, including regular and special services as well as midweek activities.
- Routes in and out of the building.
- Areas with more specific functions (vestry, kitchen etc).
- Whether the ability to dim the lights is necessary.
- The opportunity for increasing energy efficiency.
- Areas of vulnerability (steps, tower, crypt).
- Changes in natural light throughout day and year.
- Special features to highlight (wall paintings, architecture).
- Cabling runs.
- Ensuring that there is no glare affecting visitors' eyes.
- The capacity for dimming or otherwise controlling the lighting effects.
- The capacity for repairing and maintaining light fittings.
- The scale and character of the fittings and how they might relate to the building itself.

General issues

If the existing lighting in a church is thought to be unsatisfactory, it is useful to consider the reasons. Do the fittings no longer provide enough light and is the installation unsuitable for the current pattern of worship and other uses of the building?

External lighting

Floodlighting your building can be a great means of highlighting the building within the street/town/landscape. However, impacts such as light pollution, effect on neighbouring properties and the use of the building when the floodlights are on need to be considered. A detailed guidance note is available here: http://www.churchcare.co.uk/images/ShrinkingtheFootprint/Floodlighting.pdf and here http://www.english-heritage.org.uk/professional/advice/advice-by-topic/buildings/services/lighting/

Specialist considerations

In your brief you need to outline any special features of interest to highlight within the new scheme but care is needed to ensure that the scheme doesn't have a negative environmental impact on those features either through UV or heat. Wall paintings in particular will need specialist conservation advice. Your professional adviser or DAC secretary will be able to advise on finding a conservator.

Aesthetics

Any lighting scheme will require a great deal of cabling and this can be as important to a successful scheme as the type, design and location of light fittings. It may be possible to use previously used routes and fixings if these are deemed acceptable. However, it is also important not to reuse badly positioned cable runs if a better alternative is available. Cables should be as unobtrusive as possible and with minimal impact to historic fabric. You will need to discuss this with your professional lighting adviser, architect/ surveyor and DAC.

In many schemes the fittings also should be sited to be unobtrusive, their function to provide the source of light and not to be looked at. Both fittings and cables may be selected or painted in colours to blend with the background. However, fittings themselves can be considered as aesthetic, as objects of beauty, if well designed and crafted. Wherever possible fine historic fittings should be retained and adapted and/or incorporated into any new scheme.

Excellently designed light fittings can in themselves help define space within a building

(for eg the regular march of chandeliers or other large pendant fittings down a nave) and thereby significantly add to the quality of the visitor's experience.

From the huge range of sizes and styles, you need to select something that will continue to complement your church for years to come.

Fittings

The quality of the light fitting and the extent to which it enhances your church is something to which you should give a great deal of thought. There are many different types of fittings including up and down lighters, pendants, chandeliers and so on. Each will perform differently and the key consideration will be functionality and visual impact on the interior of the church.

Your DAC will want to advise on the impact of any new fittings. Lighting fittings should be designed and constructed to conform to all relevant BS and EN standards, and should carry a CE mark where appropriate. You need to make sure any new fittings are readily accessible for maintenance.

Controls

Ease of operation/controls of the lighting system is very important. Most modern lighting systems will have a computerised control system. This will be pre-set by the lighting designer to meet your needs, and allows the system to be adjusted for different parts of the church, different events and different times of year. Make sure that at least two people in your congregation/ staff know how to use it.

Testing and maintenance

Your lighting consultant will be able to advise on specific maintenance measures.
The electric system as a whole should be tested every five years by an appropriately qualified electrician.
Luminaires (light fittings) should always be kept clean to ensure ultimate performance. You will also need to be able ensure safe access for maintenance purposes.
Please also refer to our Guidance on electrical wiring installations in churches at: http://www.churchcare.co.uk/images/Guidance_Notes/Electrical-Wiring.pdf

Trialling

It is absolutely vital to undertake proper trials of your lighting scheme with your consultant. You cannot predict what is going to happen with lights until you see them in action.

Initial tests should look at colour temperature, power, position etc.

A second round of tests should look at luminaires and wiring. Although there are cost implications, this can be a crucial time to notice any problems or omissions and rectify them. The cost of trialling is going to be a lot less than the cost of *not* trialling. Lighting comes with wiring and power supplies, and those will also need to be considered from early on in the process. Any proposed changes to the wiring or lighting must be approved by the church's insurers.

Light bulbs

Technology in lighting is constantly evolving and there is scope now to be much more energy efficient. Your professional adviser will recommend the most suitable lamp for the particular specification of your building.

The introduction of new low energy fittings means that the church should have significantly reduced maintenance costs.
See the table on the next page for the pros and cons for different types of lamps (light bulbs). Lighting designers should look to the “Places of Worship” section of the current edition of the CIBSE Code for Lighting (Chartered Institute of Building Services Engineers) for recommended light levels.
http://www.cibse.org/knowledge/cibse-lg/lighting-guide-13-lighting-for-places-of-worship
This document has a charge attached.

Bats

Some bat species are highly susceptible to light. For more information, please see our guidance.

Types of Lamp				
	Efficiency (lumens / Watt)	**Lamp life**	**Advantages**	**Disadvantages**
Tungsten halogen	Low: 18-25 lm/W	Short: 2,000-3,000 hours	•Provide instant full output. • Dimmable. • Good colour rendering.	• Can get uncomfortably hot. • Not as energy efficient or as cheap to run as fluorescent lamps or LEDs.
Compact fluorescent (CFL's)	High: 70-75 lm/W Can be dimmed down to 1%.	Long: 8,000 hours	• Do not get hot. •Relatively inexpensive.	• Only some CFL's are dimmable. • Emit small amounts of UV. • Once switched on, unless they are 'quick start' they can take time to reach full brightness.
Fluorescent tubes	High 80-100 lm/W	Long: 9,000 hours	• Do not get hot. •Relatively inexpensive.	•Specialist dimming ballast may be required. • Difficulty of rendering them aesthetically.
Light emission diodes (LED)	40-100 lm/ W	Very long: 30,000-60,000 hours	•Once switched on they give instant full output • Do not produce UV. • Negligible heat. • Dimmable.	• Relatively expensive even though the process are coming down. • Technology still being developed.
Metal halide	80 lm/w	Long: 12,000 hours	•High efficiency. • Good colour rendering after initial warm up. • Wide range of wattages.	• Colour may vary from lamp to lamp and as lamp warms up. • Colour may shift over the life of the lamp and during dimming. • Time delay if switched on immediately after switching off.
High pressure sodium	125 lm/w	Very long: 20,000 hours.	• Good where colour rendering is not critical.	• Take a long time to reach full brightness. • Limited colour rendering.

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Further information on lighting is available here: http://www.churchcare.co.uk/shrinking-the-footprint/ways-to-take-action/sustainable-building/lighting

VAT: The Listed places of Worship Grant Scheme (www.lpwscheme.org.uk) will repay the full amount of VAT incurred on new lighting schemes – including the light fittings, and security lighting, for listed churches.

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