

FLOODLIGHTING

Guidance note

From the Diocesan Advisory Committee for the Care of Churches



The DAC advises that the installation of external lighting can be a sensitive matter. It is important to consult immediate neighbours of the church building and the wider community at an early stage in the development of a proposed scheme. Light “spillage”, either as general pollution or as light which directly affects neighbours’ properties, is a serious problem which the PCC must take into account.

PCCs should also be aware of wide concern about the use of the world’s resources and questions as to whether Christian (or any other) organisations should be using electricity to illuminate their buildings. There may be sound health and safety reasons for wishing to provide appropriate external lighting to steps into the churchyard, paths, or doorways but the PCC may find it harder to justify “floodlighting” in the conventional sense.

Floodlighting can also have an impact on bats. An assessment should be made at an early stage by a suitably licensed bat surveyor as to whether or not bats are present. It is a requirement of legislation that Natural England be informed of any operation that may affect bats or their roost, even when the bats are apparently absent. (In the first instance contact the Bat Conservation Trust on 0845 1300 228 for an initial free visit from a bat warden. Make sure they know what work is being proposed before a visit is made.)

If you are fortunate enough to have peregrines nesting on your church – do check with the RSPB before proposing any floodlighting. There may be restrictions on times of year when it could be used.

The UK has some of the largest areas of dark sky in Europe. Of the 11 International Dark Sky Reserves in the world, four of them are in the UK, with Exmoor in Devon being the first to be designated in Europe back in 2011. Therefore careful consideration must be made to floodlighting proposals within areas of existing “dark sky” or recognised Dark Sky Reserves, with the impact of existing schemes mitigated to avoid light pollution.

PCCs should ask for early Informal Advice from the DAC before drawing up plans for floodlighting.

WHY FLOODLIGHT?

The floodlighting of prominent buildings became popular during the 1930s when electricity became readily available and cheap. Commercial buildings came first, in particular those of the modern movement. With the 1939-45 war came the blackout, so at the end of hostilities lights were switched on with joy. Since that time floodlighting has become an accepted element of urban life. Offices, town halls, cinemas, theatres and filling stations all have vied to be the brightest and most notable. Churches, certainly smaller ones, have arrived late on the scene. Larger churches and cathedrals entered into the spirit of this enthusiasm and the floodlighting of monuments, such as St Paul's Cathedral, which has become one of the sights of the City of London.

Alongside this movement has come improved street lighting and the continuous lighting of major roads and motorways. For those of us who live in and near towns, this has led to our night skies having a permanent orange glow (sky glow). This phenomenon has become known as light pollution. One has to go far away from urban centres in order to see a night sky sparkling with stars. Amongst others, amateur astronomers are loud in their objections to light pollution. Such objections in cases of rural churches may lead to decisions not to floodlight at all.

The first question which a parish should therefore ask of itself is "why floodlight?"

The principal objectives of church floodlighting are generally commendable, amongst them are the following:

1. To make the church a living building in the settlement;
2. To show off the visible aspirations of centuries of masons and architects, including their towers and spires, built to the Glory of God, to their best advantage, dramatically against the night sky;
3. Floodlighting should not be confused with security lighting or health and safety lighting. Floodlighting should be controlled by a time switch in series with a photo cell to ensure the lights do not come on before dusk and go off at a realistic time, not later than 11pm. Security or health and safety lighting should be capable of operating at any time during the hours of darkness, ideally by presence sensors.

If the principal reason for installing floodlighting is to show that the church is a living and used building, consideration might be given to keeping the lights on inside the church at night to show that there is "someone at home".

Occasionally a case can be made for the security value of floodlighting but generally, if security lighting is necessary, it should be achieved by a specific security scheme. Also, in particular circumstances, there may be a requirement for other external illumination, such as a halo-lighted cross or a spotlighted notice board.

IF THE PCC WISHES TO FLOODLIGHT ITS CHURCH

Having decided to pursue the *possibility* of a floodlighting scheme a parish must also consider the costs, both capital and revenue. It is likely that the major part of capital costs will have to be found by the parish. Revenue costs, electricity charges and maintenance of fittings will be ongoing and the installation of a scheme will involve annual expense for future PCCs. Although modern lights have longer lives and are cheaper to run, they can be costly to replace. Running costs may be defrayed by having businesses or individuals sponsoring lighting for

certain periods, although this may be a one year wonder for which enthusiasm may fade. Sometimes floodlighting and its running costs are paid for from a parishioners legacy to the church.

It would be wise for PCCs to carry out an assessment of the electricity consumption floodlighting would take and to have an understanding of what percentage of their energy bill floodlighting could involve, as knowing the price - economically and environmentally (e. g. tons of carbon produced) – would help inform decisions.

Consideration should be given to the local community and to the hours of use of floodlighting. In urban areas there may be little or no objection to such a proposal, but in rural situations there may be local opposition.

Views of the parish and district councils should be sought together with those of immediate neighbours.

Planning authorities should be consulted on all proposals, even if planning permission is not required. Traffic engineers may have concerns if the lighting affects the highway.

The DAC, as ever, should be consulted informally as early as possible in the planning process and it may be possible for a DAC specialist to show the effects of certain types of lighting.

A specialist lighting consultant will normally be appointed by the parish. Before a consultant is appointed the parish must draw up a brief setting out its specific requirements; for instance which parts of the church are to be floodlit and where might be suitable lines for cabling. The parish must consult its architect at this stage; s/he may be able to offer advice on selecting a consultant.

An appropriate consultant will advise on:

1. Which parts of the church are best suited for floodlighting;
2. The location of light fittings;
3. The appropriate light source (colour rendering and intensity);
4. The quality of the light fittings and appropriate beam angle lamps or barn door attachment (if necessary) to ensure that the required part of the building is lit without light spill or glare in order to minimise general light pollution.

DESIGNING CHURCH FLOODLIGHTING

Of its nature floodlighting is from below, or at the very best from a height of 5m or so. English parish churches from Saxon times to the present century have embodied the best of design and craftsmanship. One element of the designs is the play of light and shade which, combined with practical features such as copings, cills, door hoods and string courses, has modelled the buildings and given them their individual characteristics. This modelling depends upon light and shade, the light always coming from above and casting a shadow below. By floodlighting from below, these details become distorted. Window and door hood mouldings throw a shadow upwards creating a reverse image of daylight. On the other hand, lighting from below will pick out and articulate the masonry and architectural features to greater effect than a horizontal beam of light, and buildings are generally designed to be viewed from ground level. Lighting a building from above or with a horizontal beam can lead to issues of light glare and spillage in through windows, whereas use of up lighters can avoid this.

In designing a floodlighting scheme a lighting engineer will seek to avoid too dramatic an emphasis on this upward shadowing but it will be difficult to avoid it altogether. Sometimes there is the opportunity to light part of the building, such as the tower and/or spire, from the roof. In some urban situations it has even been possible to floodlight off street lighting columns or from fittings mounted on nearby buildings. A good designer will take care that there is minimum light pollution or overspill towards neighbours.

The **colour rendering properties** of the light source must be chosen with care to ensure that it reveals the church as closely as possible in its natural colours. Where different materials abut, for instance boarding or rendering against stone, the colour of the light source should ensure the differentiation is maintained. Generally, a white light source is the best way of achieving this. However in terms of minimising impacts on wildlife, humans and sky glow light pollution, the blue/white end of the spectrum should be avoided and yellow or amber light sources including narrow-band amber LEDs would offer the least disruption.

Special features such as a prominent cross or a gilded weathervane will be obvious targets for spotlighting. In some cases it may be that only a part of the building would be lit, a tower or spire would be the most likely choice.

The parish should also require the designer to take account of the **environmental impacts** of energy use. LED light sources are very low in power consumption and have a long life, are available in a variety of colours, and are now available in spotlights and floodlights.

The problem of **possible vandalism** will have to be addressed, particularly in urban locations. Ground level fittings will have to be bolted to concrete bases and covers will have to be of toughened glass. There may be a need for wire guards. Fittings sited on poles or on buildings will need to be located out of reach of pedestrians, yet still be accessible for maintenance. Many lighting contractors now do not work off ladders, but require the fittings to be accessible from a hoist attached to a vehicle of some kind. Accessibility for maintenance vehicles is thus an important consideration.

Installation of lighting can also produce **clutter**, including the fittings themselves, and the associated equipment such as guarding, poles, control pillars and cabling. Such clutter can be undesirable within graveyards and close to (and on) historic buildings such as churches, and therefore the perceived benefits of installing lighting need to be carefully weighed against such considerations, and schemes will need to be carefully designed to reduce their visual intrusiveness during day time.

Cable runs must be carefully considered. These may disturb graves or potential buried remains and as a result may require archaeological recording - it is wise to consult the Diocesan Archaeological Adviser, via the DAC, during the planning stage of a floodlighting scheme. Where they need to be attached to the church or another building, the routes need to be carefully designed in order to be as visually unobtrusive as possible and so as not to compromise important historic fabric or architectural features such as carved stonework. Steel wire armoured cable would be required where the cabling is buried or at low level where mechanical protection is necessary. Other cabling could be unobtrusive copper based cable. (NB - examples of this can be seen in Exeter on buildings in Broadgate and in the High Street opposite the Guildhall.)

Floodlighting can be extremely disturbing to bats, hence the requirement to have a **bat survey** undertaken at an early stage.

In some cases it has been suggested that lights may be sited in **trees**. This is not a good idea, either from the point of view of the tree or the light fitting. Trees and other vegetation should also be taken into account when a scheme is designed; in particular young trees will develop and may obscure the lights. Trees in summer provide far more screening than they do in the winter.

The **church's insurers** will need to be asked whether the church's policy will cover the floodlighting or whether additional insurance cover will be required.

Although **local planning authorities** may not require a planning application for floodlighting unless the church is in a conservation area, they should be consulted on all major proposals. One of the concerns will be to ensure

that the lighting does not detrimentally affect neighbours or traffic on adjoining roads, or the fabric and settings of historic buildings.

TEMPORARY FLOODLIGHTING

Some parishes might wish to floodlight their churches for the Christmas/New Year period. It is important that any such temporary floodlighting should (a) have the agreement of the church's insurers; (b) be safely installed by an approved contractor (who would ensure that the relevant circuit has the appropriate level of protection to conform with current safety wiring standards), with no wires causing trip hazards; (c) not dazzle passers-by or traffic; and (d) not adversely affect wildlife.

MINIMUM DESIGN STANDARDS TO SATISFY DARK NIGHT SKY AGENDA:

1. The appropriate amount of lighting is being used when it needs to be used for specific areas and tasks;
2. Any lighting fixtures containing lamps emitting 1000 lm or more shall use fully shielded fixtures emitting no light at or above the horizontal, and;
3. The type of lamp (colour, efficiency, technology) to be used has been considered by carefully choosing appropriate energy efficiency technology and methods for minimizing impact to wildlife, stargazing activities, and nocturnal scenery, e.g. lighting should avoid emitting any ultra-violet or infra-red radiation and should peak higher than 550nm i.e. should be in the green to orange range of the light spectrum.

REPLACEMENT FLOODLIGHTING

It may be the case that a PCC wishes to replace its current flood lighting provision with a new installation due to deterioration or damage of the fittings etc. It is advised that the PCC should use this guidance to action this replacement. Consideration should be given as to whether the lighting is needed, where it is required and for what purpose. Replacement lighting should be specified to be low in energy consumption, causing minimum light scatter and sky glow pollution and with consideration to areas of dark skies. Contemplation of new shielding, controls and the colour spectrum of the lights should be implemented, along with consultation with neighbours and any statutory consultees if the provision of external lighting is to differ from the previous installation.

FACULTY CONSENT

When a parish has decided it wishes to floodlight and preliminary investigations have been made, including an early approach to the DAC for initial comments, it will be useful to ensure that any problems are resolved before detailed decisions are taken. It is recommended there should be an experimental trial of any proposed lighting to decide upon the location of fittings and the colour and type of the light source, and so that neighbours, the PCC and the contractor can comment on the effect of the lights and the specification can be modified accordingly. It is suggested the Church Buildings Office is notified as quickly as possible of the date/s of any experimental lighting trials so that members of the DAC can be invited to come and see what is proposed. In some cases it may also be advisable to invite representatives of the local planning authority and highway authority if the proposals are likely to have any planning or highway implications.

The DAC will not only be concerned with the design of the scheme but also with the principle of floodlighting and with the financial implications, (capital, running and maintenance costs), in the interest of the parish.

Wider consultation

- Natural England: This contact, via the Bat Conservation Trust (details above) should be made at a very early stage.
- It is possible that Historic England or other bodies will need to be consulted about proposals. If the DAC believes that this is the case the PCC will be advised early on in the consideration of the work.
- The installation may well have archaeological implications. The DAC will advise the PCC on this matter but this is not possible until full details of trenching have been made available to the Diocesan Archaeological Adviser via the DAC. The archaeological implications of the works may affect the location of lamps and route of trenches.
- The Local Planning Authority may need to be consulted in case it needs to grant permission for any aspect of the works. This is not normally necessary but in some cases there will be a requirement e.g. where lamps are to be fitted on poles.
- The Highway Authority may need to be consulted if the proposed lighting is close to a road.

Information required to accompany an application for DAC Notification of Advice (required before a petition for Faculty can be made) is:

- An illustrated plan of the church and churchyard showing: where the new fittings/equipment are to be positioned, cabling routes and depths, and where any alteration needs to be made to the fabric as part of the works.
- Specification or quotation giving full details of the equipment, and how it is to be installed. Quotes for electrical work should be from NICEIC, ECA or NAPIT full scope registered contractors.
- Catalogue illustrations of light fittings/guards.
- Photographs of the area(s) of the church and churchyard showing the context and position of where the equipment is to be installed.
- Confirmation that the church's architect/surveyor is content with the proposals (if they have not prepared the specification).
- Confirmation that the local planning authority has been consulted as to whether planning permission is required, and copies of any correspondence from them as appropriate.
- Details of when it is proposed to use the floodlighting (e.g. between 1800-2200 hours November to February).

All applications for a faculty should be made via the Online Faculty System:

<https://facultyonline.churchofengland.org/>

See also: <http://www.churchcare.co.uk/shrinking-the-footprint>

This guidance is taken from material produced by Chelmsford and Peterborough DACs and written in conjunction with Devon Association for Renewable Energy (DARE).