Lighting Cathedrals

1. Overview

The seminar 'Lighting Cathedrals and Major Churches', held at St Paul's Cathedral in March 2007, provoked much interest and raised important issues. This enthusiasm prompted The Association of English Cathedrals **Cathedrals' Liturgy and Music Group (ClaM)** to investigate the matter further.

A questionnaire was drafted and circulated to all Anglican cathedrals. (1) The responses revealed that artificial lighting is high on the agenda of many cathedrals, and that advice and general comment would be welcomed. (2)

The following paper summarises the issues discussed at St Paul's and reflects on the comments from the ClaM questionnaire. It outlines a means of tackling a scheme for lighting, and identifies some of the key aspects which will need to be addressed. Foremost amongst these are:-

- Thorough consultation with all "stakeholders": users, permission granters, designers, funders, and also those who have completed comparable projects. (3)
- Well researched and justified design criteria, leading to a clearly defined Brief: a yardstick to guide and control the scheme.
- Careful choice of specialist designers and installers.
- An appreciation of the necessity to conserve energy.
- An understanding of likely capital costs, costs in use and life expectancy.
- An awareness of the different requirements of a lighting scheme, and the choice of solutions available.
- An acceptance and allowance that technology will advance, and use patterns within the cathedral are likely to change during the life of any installation.
- Allowance for a period of testing, experimentation and use-training before the installation is finally signed off.

The whole process can be summed up in the sequence:-

Identification – Consultation – Briefing – Design – Installation – Training – Fine Tuning – Acceptance

2. Defining Objectives

Any design problem, especially one connected with a complex and precious building such as a cathedral, needs to be carefully considered and closely defined.

When the necessity for a new or enhanced lighting scheme becomes apparent, it is suggested that the Cathedral Chapter sets up a small "Task Group" to oversee the whole programme, and represent the cathedral as client, from the clarification of needs to the final acceptance of the installation. That group is likely to contain a senior cleric, the administrator or finance officer, a member of Chapter and the cathedral architect. An expert lighting consultant might usefully be brought on at this stage; either to advise the group and oversee the team who will later be appointed to design and install the scheme, or to be the lead designer.

The initial task of the group, however, will be to consult with all those who will use, operate, advise, control and finance the scheme; not forgetting, and making allowance for any body who could not be contacted directly. (eg. An important member of staff not in place during this process). The particular groups who must be consulted can be considered under four headings:-

- **Key Users:** The clergy, musicians, congregation, those who stage events in the Cathedral, and even those who might be attending them. Broadcasting companies should also be contacted, so that lighting requirements for televised services, concerts etc can be incorporated.
- Operators: Vergers, maintenance staff, technicians.
- Advisors: Permission granting bodies, (FAC, CFCE, and if external lighting is on the agenda, the cathedral archaeologist, the local planning authority, who might be able to contribute to capital and running costs.) The CFCE will probably wish to be kept abreast with progress as the scheme develops.
- Financers: Money is always going to be critical.

From this consultation, a list of priorities can be drawn up; the size and scope of the scheme established, a budget and timetable considered.

3. The Brief

A clear and comprehensive written Brief is fundamental to the success of any design project. It is the basis against which critical decisions are taken and results judged. It must be robust enough to withstand close scrutiny, especially from grant makers and permission givers.

The needs and priorities deduced from the period of consultation should be distilled by the Task Group into a concise Design Brief; to be endorsed by the Chapter. The Brief should state clearly what the proposed installation should achieve without itself suggesting solutions. It might however give some guidance about the quality of lighting required, and its means of control.

4. Procurement

The Team which will design and later implement the proposal is now considered. Taking an idea to fruition is likely to involve three complementary skills:-

- A lighting designer; to translate creatively the client's wishes, and keep control
 on the programme and budget. (This person might already have been coopted into the Task Group)
- A specialist engineer: to devise the necessary hardware.
- A competent contractor, probably selected by competitive tender at the appropriate time, from technical documentation supplied by the designer and engineer.

These specialists will work closely through the Cathedral Architect (who will oversee the scheme on behalf of the Chapter), with the Task Group, and each must be aware of the others' expertise. The specialists must also be conversant with the wider implications of any proposal: the many and subtle demands of cathedral lighting, (which are likely to be even more complex than theatre lighting, from which many church lighters have graduated) and the need to respect the fabric when installing the scheme.

It should be noted that there are a number of commercial lighting firms who may offer to deliver the complete package from design to final installation. This can appear attractive financially, and relieve the cathedral client of management involvement. The downsides of this approach however are the probable lack of an independent view, a likely absence of crucial creative dialogue between client designers and contractor, and that lighting sources may be confined to the fittings the contracting firm normally uses, when something more "bespoke" may be required.

CLaM's questionnaire revealed these there are a number of designers, engineers and even contractors who have built up a body of expertise in lighting cathedrals and the greater churches in the UK. Whilst it is sensible that such proven expertise should be considered, opportunity might be taken to consider searching more widely for consultants who may be able to offer a different approach. (4)

Most recent schemes in Britain have a used a similar mix of concealed indirect lamps and discrete direct fittings, usually chosen from a catalogue. Schemes in other other countries, such as Sweden, have taken the opportunity to install specially designed fittings, often with a mix of electrical and candle power. (5) This negates somewhat the tendency to overlight, and ensure that the final result is not too theatrical or overcomplicated. Historically, great churches have only been lit by candles for the majority of their lives!

5. Capital Costs

ClaM's questionnaire revealed that at 2007 prices, one smaller parish church cathedral had completed a relighting of its interior for about £100k. Larger buildings are spending between £250k and £500k, whilst a comprehensive external scheme will also cost about £500k, depending on size and complexity. The greatest cathedrals, with complex installations for a variety of uses and moods, might budget for up to £1M to relight an interior.

As the average life of any installation is likely to be little more than 30 or 40 years, (and advances in electronics are very rapid) depreciation is relatively rapid. Considering also ease of maintenance and control, simplicity and a degree of modesty may be a sensible approach.

6. Common Issues

The Seminar at St Paul's and the continuing investigations by CLaM have identified a number of factors which seem to be common to many places, and should be borne in mind when carrying out consultations and preparing the Design Brief:-

- The differing requirements of lighting liturgical action and other cathedral functions (from general background lighting to concerts and events) adds a further complication to the design process.
- A degree of flexibility should be built into the installation: to allow for advances in technology, liturgical developments and possible changes of programme within the cathedral.
- "Preset" programmes have become the norm over recent years: computer control can set up various settings, which at virtually the touch of a button, different scenarios can be lit. St Paul's has about a dozen of these, but many others are possible.
- "Mock-ups" of fittings and various alternative arrangements should be allowed for in the programme and the budget.
- The need to build in a period of testing, adjustment and staff training is essential for any programme. This should be allowed for in the contract price, and completed before the installation is signed off.

- Although life expectancy of a new installation is usually only about 30 or 40 years, it may be possible to refit some of the existing light fittings with new and different lamps.
- Beware of light pollution, especially from external lighting sources.
- Beware of over theatricality, over-lighting, and the seduction of the latest gimmick.
- Ease and safety of maintenance is now essential. The hire of expensive scaffolding to change a lamp can be exhorbitant.
- Bespoke fittings maybe initially expensive, but specially designed lights (perhaps containing electrical and candle sources) might be of longer-lasting value.

7. Notes and references

- 1. The response was over 60% of those circulated and represented a fair reflection of the different sizes and ages of the various cathedrals in England.
- 2. Durham Cathedral had installed its ground-breaking and comprehensive scheme in 1990-1991. Ten other cathedrals reported the installation of a lighting project (whole or partial) within the last five years. Thirteen other cathedrals were either actively considering relighting or were interested in receiving further information and advice.
- **3.** Recent lighting schemes, of varying values, have been completed or are currently in progress in the cathedral churches of : Blackburn, Carlisle, Chelmsford, Ely, Guildford, Hereford, Peterborough, Ripon, Sailsbury, Southwell and St Pauls.
- **4.** The magazine **Church Building** reviewed the lighting scheme for St Paul's in edition **105** (May/June 2007) articles, in the same magazine, about lighting can be found in editions **44. 47. 53. 61. 75. 93. 97** and **111.**
- **5.** Jerk Alton's article in **Church Building 53** (Sept/Oct 1998) "The Lighting of Liturgical Space" deals specifically with this approach.