St Lawrence Church
LECHLADE-ON-THAMES

Newsletter No. 6

PROJECT INSPIRE

Conserving our heritage
Making bold improvements
Creating welcoming spaces
Reducing our carbon footprint

Winter woes

Parishioners will not be at all surprised to learn that the project group still is unable to confirm a date for the launch of the next stage of public consultation and sharing the output of much work undertaken in the last year or so. Rest assured, once the national situation allows, a date will be set and widely publicised. Meanwhile, the project group continues to work on aspects such as the design of the heating system, lighting, kitchen and storage; we also await a visit from members of the Diocesan Advisory Committee (DAC) to address their comments and further explain our proposals.

Environmental aspects

In view of the launch hiatus, this edition of the newsletter explores some of the environmental aspects of the project being pursued not only as a consequence of the Church of England's environmental commitments but also to make best use of technology and to manage energy consumption and costs within the limitations of a C15 building.

Church of England's position

On its website, the national position is stated as: '*We believe that responding to climate change is an essential part of our responsibility to safeguard God's creation. Our environmental campaign exists to enable the whole church to address — in faith, practice and mission — the issue of climate change*'; some low-key schemes have been adopted locally such as the eco area in the churchyard but the restoration and reordering project compels us to consider a much wider range of factors.

At St Lawrence Church

Our greatest carbon impact is using natural gas for our heating with two boilers in the cellar and one in the cottage. With our electricity use, our total carbon emissions are about 10 tonnes per year.

Zero carbon

The Church of England's General Synod in February 2020 set new targets for all parts of the church to work to become carbon 'net zero' by 2030*. Clearly, this is a challenge for such an old and historic building but carbon reduction options can be incorporated in plans; use of renewable energy sources (such as heat pumps) are under consideration.

*The 'net' target relates to operational carbon such as energy used for heating and lighting and not embodied carbon which is energy in manufacturing and construction.

Heating

So, what are we doing to meet this target? Heating such a vast volume within our lofty church building is a challenge.

Firstly, we plan to reduce heat loss with effective insulation in the new, raised floor and by use of draught reduction measures.

Secondly, based on professional advice, we propose to make heat distribution more effective using a combination of underfloor heating, trench heaters and convector heaters.

Thirdly, the greatest carbon gains can be made from alternative power generation with options to include heat pumps, photo-voltaic (PV) cells and off-site generation through purchase of 'green' electricity and gas.

A typical air source heat pump

New technologies such as air- and ground-source heat pumps are becoming available although few have been installed in churches. Air source heat pumps (ASHP) absorb heat from the outside air to heat water which is circulated through heat distribution systems within buildings. ASHP can still extract heat when air temperatures are as low as -15°C although at lower efficiency. The location of the ASHP will need to meet DAC and planning requirements when located unobtrusively outside the church. We found that ground source heat pumps are not feasible because of the lack of space in the churchyard. We would face insurmountable problems with the presence of graves (many unmarked) and listed table tombs. The DAC does not support the disturbing of such burials.

Heating pipes being built into a raised church floor

Inside the church, much effort has been given to examining the benefits and risks of underfloor heating so that a set ambient temperature is maintained and then boosted before services or other events. Other means of heat distribution around the church can be achieved by use of trench heaters – heaters set in a shallow trench in the floor and covered with a grille to enable heat to rise. Discreet wall mounted heaters also could be used.

The walls

Our plans are to restore the lime rendered walls and wherever possible have them unencumbered with radiators. Certainly, the huge iron radiators and large wall-mounted pipes we have now will be removed. All the unsightly cabling and pipework will be routed in the new floor.

Insulation and draughts

The proposed new floor will include substantial insulation. A new entrance using the north porch with new external doors will minimise draughts.

Photovoltaic cells

Photovoltaic (PV) cells generate electricity by absorbing sunlight and using that light energy to create an electrical current. There are many PV cells within a single solar panel, and the current created by all of the cells together could provide electricity to support other power sources. We know that panels can be installed on the roof of the south aisle and be completely out of sight from the churchyard and river bank; many historic churches have installed such cells.

A typical PV arrangement on a church roof

Lighting

The installation of new lighting not only offers an opportunity to reconfigure it for the various uses of the church but also enables low energy systems to be adopted. The much longer life of LED type lamps reduces our maintenance burden too. New lighting will provide a whiter light that is brighter (more lux) yet uses less energy and thus contributes to the national goal of reducing our impact on the environment.

Next steps

We are now evaluating alternative power sources and effective heat distribution or a combination of these technologies. We have contacted some churches which have implemented or are planning new low-carbon heating systems. We plan to visit some of these when Covid-19 restrictions allow. Technology is progressing rapidly so at some stage a decision will have to be made using the best available solution within our means at that time.

Newsletter No. 6 Published March 2021 by
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