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As explored last week by Professor Tim Gorringer, sustainability is crucial to the Christian vision for housing being discerned by the Archbishop of Canterbury's Commission on Housing, Church and Community. We not only have to respond individually, but also as an institution. Some great work has already been done on this area, and this week we hear from Mark Wild, Diocesan Surveyor for the Diocese of Worcester. If they were doing this over a decade ago, how can we respond now?





In 2008 it became clear that two of the existing parish clergy houses in our diocese were no longer fit for purpose and there was the potential to build new ones. The opportunity to design a house fit for the needs of modern clergy is always exciting, but this time it coincided with another project.

A Diocesan Environment Group had been created, to discuss the overall diocesan carbon footprint. I was one of the members of this group, so I was acutely aware of the issue, and I was already upgrading the levels of insulation to the existing clergy housing stock. When the opportunity presented itself to start from a blank canvas with sustainability in mind, I jumped at it.

I knew we should be aiming high. As well as complying with the Church Commissioner's Parsonage Design Guide, the design brief for the new houses was to meet the Government's voluntary Code For Sustainable Homes to level 6, the highest level.

To do this, we were going to need a talented architect. John Christophers of Associated Architects in Birmingham was selected. John is very



experienced in designing buildings with the environment in mind.

The design process had already begun, when the services engineers, Couch Perry and Wilkes, said that we should be designing to the German PassivHaus standard instead. This specifies a maximum power consumption for space heating of 15Kwh / sqm / pa and an air tightness rating of less than 0.6ac / hr. This was, and is, considerably better than the industry standard.

This standard had clear benefits, and we wanted to use it, but it didn't cover all the areas in the voluntary code, and wasn't recognised in the UK in the same way. We didn't want to compromise, so we asked if both standards could be met. We were told that it may never have been done before, but that it was possible, and the brief was changed accordingly. Don't say the church can't innovate!

## **What are they like?**

In addition to designing the houses to be carbon neutral in use, the carbon footprint of the materials and the ability to recycle them when the house is demolished or a major refurbishment is undertaken were also factored in. There is rainwater harvesting and the heating and hot water is all provided by solar energy or electricity, over 85% of which is generated on site.





*The insulation used on the houses!*

All of the walls and floors are made of concrete, which acts as a thermal store and buffers the internal temperatures against extreme hot and cold outside. Most of the windows, which are all triple glazed, face south to maximise solar gain and there are external blinds which prevent over heating in the summer months.

There is also a full mechanical heating and ventilation system built into both houses. This provides a full air change every hour and a half and enables the warm air leaving the building to heat the air coming in. The temperature of the incoming air is either pre-heated, or pre-cooled, depending on the temperature outside, by drawing it through 60m of pipework buried in the garden. This adjusts the air temperature using the ambient ground temperature.

Biodiversity was an important consideration with bird boxes being built into the external walls, as well as fixed to trees in the gardens, and trees of suitable types were also planted.



In addition to operating the external blinds, there are also summer and winter settings for the air handling unit, to ensure that the internal temperature in the building is maintained at a suitable level.

The principles behind the design of these houses has also been used to upgrade the insulation values of existing houses. The big challenge now is not only to ensure that all new build projects are designed to the highest standards, but also to address the lack of insulation in our existing housing stock.

## Why do it?

Those involved at the Diocese of Worcester wanted to show others what could be done in terms of house design, to start redressing the imbalance between current energy consumption and the levels the world could sustain. As Christians, we have a prophetic ministry to show and lead others towards a greater understanding of our God and what it means to be part of the world that he created. We are called to be stewards of our world and a big part of that is looking after it, for us and for future generations. There are resources available for us to use, but these should not be abused. These houses were designed to be a statement of what could be done, but also what should be done.

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