

Turning down the volume

Brian Cuthbertson summarises the Diocese of London's approach to reducing its carbon footprint across its 480 churches and how it plans to achieve ever-increasing targets

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This south-facing side of the roof at St Silas Pentonville is fitted with solar tiles, the rest being new slate

The Church of England Diocese of London is working to lower churches' energy use and carbon footprint, as part of the Church of England's national Shrinking the Footprint campaign.

Shrinking the Footprint has adopted the UK government's target of 80% reductions in carbon emissions by 2050. In its long-term plan, Church and Earth, it has also laid down a challenging interim target of 42% cuts by 2020 – the full recommendation derived from the science by the UK's Committee on Climate Change. But even 2020 is a long way to see ahead – so the Diocese of London has set a short-term target of 20.12% carbon reductions by 2012 (we can't measure that accurately, but it's easy to remember).

Measurement of our energy use and emissions is the first step in the Shrinking the Footprint Path, leading to:

- more efficient energy use
- purchase of renewable energy
- on-site micro-generation.

We have 480 churches in the Diocese of London and a growing number have embarked on these steps.

Buildings are at the core of the effort: almost all our energy is used to run buildings – two thirds from fossil fuels, the rest from electricity. The total carbon footprint of our church buildings in 2005 was 22,600 tonnes – 47 tonnes of CO₂ each – enough to fill a church's own volume with CO₂ (anyone performing the same calculation for their building, whatever the type, will likely get a similar shock).

Our figures come from parish annual returns since 2005, and from a programme of audits of energy and carbon, water and waste. This has been conducted for us by Somerset-based firm Aardvark EM,

beginning with churches in the Cities of London and Westminster.

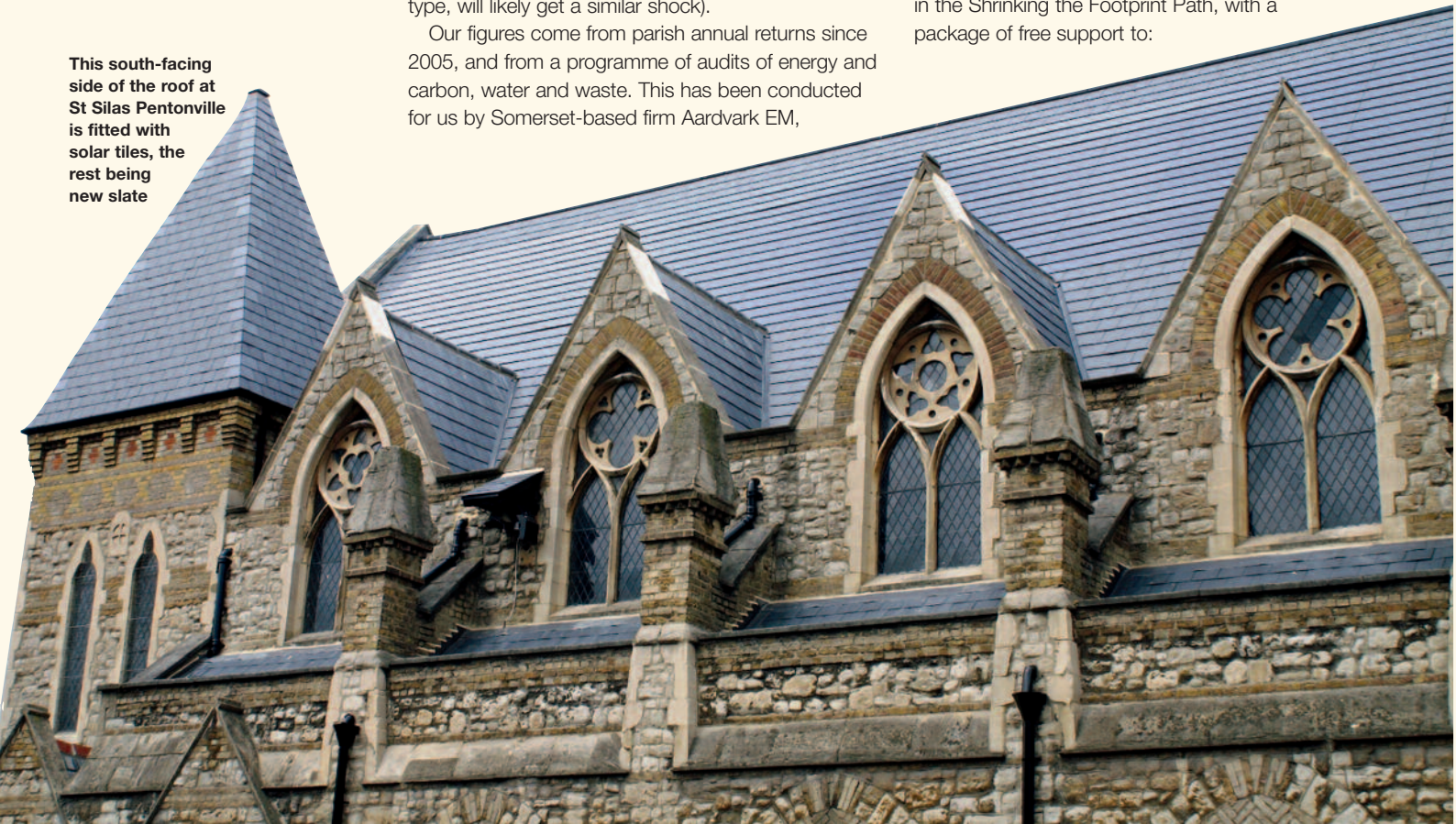
These audits are the first strand of the Diocese's Climate Action Programme, a project to analyse the energy performance and carbon emissions of churches across the Diocese:

1. *Environmental Audits* have concentrated on the short- to medium-term
2. *Generic Building Solutions* looks ahead to the mid-21st century. With Carbon Trust support and Arup as consulting engineers, 20 churches have been sampled – flagging up generic interventions, to show what might be done to make the leap up to and beyond 80% savings. For example, what kinds of interventions are suited to different kinds of buildings, especially the 70% that are listed?
3. *Energy Saving Benchmarking* has been developed in partnership with Rickaby Thompson Associates (see panel opposite).

The Climate Action Programme provides a resource of analysis, measurement and scoping. Climate Action Plans follow hard on its heels with Stage 1 of the implementation phase – navigating our churches to our 2012 target and beyond.

Most churches, like everyone else these days, don't have money to spend. So we've devised a means to drive down energy and carbon – with no money – and can demonstrate net savings through worked examples.

At the same time, we aim to meet the challenges in the Shrinking the Footprint Path, with a package of free support to:



- measure each church's energy consumption and calculate its emissions
- compare them to the church's size and activities
- create a benchmark to compare like-for-like with a typical church
- set a target and tailored menu of savings
- negotiate best energy tariffs
- and even offer a mechanism to become carbon neutral.

Here's how: energy consumption is measured from meters and bills (once the cobwebs are cleared from the meter cupboard). Added up over a year, they are entered into a simple survey form, together with building uses, hours and numbers.

The carbon footprint is calculated using Defra's carbon factors, while the main spreadsheet outputs the benchmark and relative economy of each church. This is calibrated against the average performance across the Diocese for the year – yielding a measure of how far each church still has to go by 2012.

This becomes the church's individual savings target. How do they meet this? Well, we provide a checklist of zero-cost efficiencies – simple management and user actions – for each church to plan a tailor-made menu of savings. Then we offer some more options:

- sign up to Good Energy, the UK's best supplier of renewable electricity, or
- the non profit-making company Charity Funding Solutions works with each parish to negotiate the best tariff for their circumstances.

Jigsaw pieces

However, the cheapest tariff won't necessarily be the greenest, so the final piece in the jigsaw looks at residual carbon emissions (i.e. those that can't yet be avoided even after all the planned savings) and those associated with non-green energy, which can be matched by buying carbon credits and withdrawing them permanently from the EU Emissions Trading Scheme (ETS). This is called 'Carbon Retirement', i.e. the purchase and disposal of credits is performed by the Battersea-based company of the same name. The cost will be funded by energy savings and tariff reductions. ETS companies then have fewer credits to go round, forcing them to make even deeper cuts instead.

This is a major challenge – but no-one ever said dealing with climate change would be easy. We must meet everyone where they are as every church and building is different. In particular, we do not penalise churches which are active and successful. Benchmarking highlights and rewards churches that are enhancing their communities, yet being frugal in their energy use.

Take the example of St Peter De Beauvoir Town in Hackney. At our Resourcing the Challenge event in November 2010, at which our Climate Action Plans were launched, the Vicar of St Peter's was presented with a certificate for being the first church to achieve Grade A for energy use and reduced carbon emissions, relative to its size and pattern of use.

Energy-saving benchmarking

Energy-saving benchmarking is designed to compare the energy use and carbon emissions of churches on a like-for-like basis. Without benchmarking it is impossible to tell whether energy use is high or low, frugal or wasteful.

Churches come in all shapes and sizes. They have many uses – worship, community uses, public concerts, pre-schools, crypt cafés, vestries and parish offices. Some are used mainly for Sunday services, others are open 24/7.

The Excel spreadsheet for energy-saving benchmarking imports multi-fuel consumption data, then calculates the carbon footprint for each fuel, and the total for each church. CIBSE benchmarks for the constituent uses are composited pro rata by floor area, to generate a site-specific benchmark for each church. Each church's actual use and actual carbon footprints are compared with its own benchmark. This yields A to G grades for efficiency in energy and carbon emissions.

The Diocese's targets for 2012, 2020 and 2050 are totals – different contributions will be appropriate from different churches, depending on how efficient they are already. A target for each church is derived from its variance above or below the average for the diocese as a whole.

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St Peter's is a thriving and active church: in addition to Sunday services, its crypt is the base for 40 local organisations including artistic and theatre groups, an over-60s club and a café. So how do they save energy with all that going on? In the words of the Vicar, the Rev Julia Porter-Price: "I blame the Treasurer. He watches our bills like a hawk and never lets us waste a drop of energy!"

Its benchmarking result has put St Peter's ahead of the curve, and will provide a basis to monitor the church's ongoing energy use, comparing how it changes after its forthcoming crypt improvement project (to provide a decent environment for all these activities).

We don't imagine that once we've achieved our short-term target we can then rest on our laurels. To get to 2020 and 2050, capital works to our buildings will be needed.

The top two renewable technologies with application to churches are solar panels and wood pellet boilers. Biomass has some way to go before we can roll it out widely but, in the meantime, we're making strides with solar panels. The acclaimed scheme of solar tiles at St Silas Pentonville, integrated with the church's new slate roof, is a case in point.

We are currently looking at how to raise capital for more such schemes; we need to extend the range of site-specific PV solutions to minimise the visual and heritage impact on our diverse stock of buildings, while taking advantage of the Feed-In Tariff for micro-generation. But this is a story still to be told...

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English Churches Explained is available from www.ricsbooks.com



For an article on water initiatives, see *Liquid Assets*, page 30, *Modus*, January 2011



Related competencies include: M009, T012