DAC Environmental Policies

Sustainability principles from the Diocese of Leeds
The fifth mark of mission set out by General Synod calls us “To strive to safeguard the integrity of creation and sustain and renew the life of the earth”. The Diocese of Leeds Diocesan Advisory Committee has adopted environmental policies to help PCCs improve the sustainability of church buildings and churchyards, as part of this commitment. This guidance aims to support you in finding ways to address these.

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Who is this guidance for?

It is particularly aimed at churchwardens and members of the PCC with responsibility for the care of your church building, churchyard and any associated buildings. It is intended as an introductory guide and not a detailed technical document.

Why are there policies in place?

General Synod has committed us to reaching zero carbon by 2030 as part of our Christian responsibility to care for God’s creation and the Diocese of Leeds has formally accepted this target. Leeds DAC is committed to promoting best practice on all buildings matters including environmental sustainability and energy efficiency. Action by every PCC is needed to reach the Church of England’s targets and church buildings are a key area of energy consumption.

How are the policies relevant to my PCC?

The DAC advises on all faculty applications, so if you want to carry out works to your building or churchyard, you need to check what specific policy is in place and make sure you consider this in developing your ideas. You will need to show how you have responded to any relevant policy in your faculty application. The policies encourage you towards best practice, rather than being intended as restrictive.
What does this guidance cover?

Each section explains why that policy is in place and what it is aiming to address. Key phrases or words are explained. Tips are provided to help you start thinking and then take action. There are links to external guidance where you can find more detailed information. The guidance is not definitive and it is expected that it will be under frequent revision. This is not only in order to keep up with some of the constantly evolving areas addressed in the document but also to ensure that links to new useful information can be added as they emerge.

What if we can’t afford to make changes?

The DAC recognises that not all measures will be suitable or affordable for all PCCs, but you need to think about what you can do. Life-cycle costs are the watchword. Even if implementing improvements appears costly, many will result in longer term cost-savings. There are also some funding opportunities available to give incentive for improvements. More information can be provided from the Stewardship and Income Generation Team.
Where can I go for further advice?

Many of the topics here are complex and you may or may not have heard about all the different measures and technologies that are now available. Some have been around for a while others are new. There are many experts now which you can access, so you are not expected to come up with the answer yourself.

For initial advice, contact the DAC staff. Call 0113 2000 540 and ask to speak to the DAC or send an email to dac@leeds.anglican.org. Our specialist advisers can help you think about how best to go about making improvements.

You should also always talk to your inspecting architect at an early stage before planning any works. Architects are increasingly thinking about how to respond to climate change themselves, so should have good tips for you.

Specialist consultants can also be approached for advice – some of which will provide a free assessment and initial advice. PCCs need to be aware that some consultants will be selling a specific product and some “miracle solutions” are not tried and tested, so care needs to be taken. Using consultants with accreditation relevant to their area is important. The DAC can point you to firms who have worked with other churches, or you can search sites such as:

- **CIBSE register** for building services engineers with expertise as Low Carbon Consultants (select the filter option ‘LCC’) – but ask if they have specific experience with historic buildings.
- **Passivhaus Trust** for architects specialising in sustainable buildings (more appropriate if you are thinking of new build/extension).
Why do building materials matter?

Different materials have different initial and ongoing environmental impacts. The most appropriate choice of materials is one that minimises energy use in production, helps to conserve energy when in use in a building, and gives a long, low-maintenance life span.

What does the DAC mean by …

- **ethically sourced?** From suppliers who treat employees fairly.
- **reclaimed?** Components that are still of good quality or have been reconstituted so that they are durable enough for reuse.
- **emissions in production process?** Chemicals released when making a material, often related to the energy used by the machinery but also released from the materials themselves as they are created. There are also emissions from transporting materials. You will often hear this referred to as “embodied carbon”. Calculating “embodied carbon” helps designers choose which material is most sustainable for a particular application.
How can my PCC act on this?

- When planning a building project, make sure your architect knows that you want sustainability at the heart of the design, so that the choice of materials can reflect this. There may be some cheap alternatives available, but these will have a shorter life-span, so are a poorer choice in the long-run, both for the environment and costs.
- Stone and brick can both be reclaimed but, if using new materials, stone is more environmentally friendly than brick. In general, natural materials have lower emissions than man-made. Timber is often economic for small projects. For mortars, lime-based materials rather than cement are best environmentally (and for historic buildings).
- Concrete and steel both have a high environmental impact so are less preferable. In addition, external concrete can weather badly unless of very high quality. If structural steel is needed, its use can be minimised by careful design by the architect.

Where can I find more information?

- Designing Buildings Wiki – links to technical information on embodied carbon

See also... Policy SD1 on sustainable design
Why does biodiversity matter?

Biodiversity is essential for human life, enabling food to grow and contributing to cleaning the water and air. Modern agricultural practices, deforestation and climate change have negatively impacted biodiversity, leading to loss of species and an indirect impact on people.

What does the DAC mean by ...

• **biodiversity**? The mixture of plants and animals that interact naturally together to create and support ecosystems.

How can my PCC act on this?

• Whilst you need to keep your churchyard in good order, so that it remains safe and people can see it is cared for, this can be done in a way that encourages nature to flourish. You could allow some areas of the churchyard to grow in a more wild fashion and use gentle maintenance methods on grass and other vegetation. Leave lichen to grow on churchyard walls and graves. If you can, use manual tools (such as secateurs and even scythes) rather than mechanical equipment (such as lawn mowers).

• When you carry out maintenance is as important as how you do it. Pruning and planting will be beneficial for different species of plants at different times of year and will need to be done at the right time to enable flourishing. Nesting seasons need to be considered when planning works to hedges and trees, so as to preserve habitats.
• Consider planting trees and hedges of a mixed variety to provide food and shelter for different kinds of animals. You can also create man-made habitats for insects with wood or stone piles – though if you do this, signage can be important so that visitors understand that your “rubbish” heap is purposeful. More generally, making information available about the habitats in your churchyard can contribute to community engagement.

Where can I find more information?

• [Caring for God’s Green Acre](#) – maintenance and other resources

See also… Policy C2 on trees and Policy C3 on footpaths and hard-standing
Why do trees matter?

Trees are crucial to absorbing CO2 from the atmosphere and generating oxygen, with an estimate being that seven mature trees are needed per person to provide enough oxygen. Trees also contribute to the health of the environment by supporting natural ecosystems. The DAC therefore has a strong preference for retaining healthy trees.

What does the DAC mean by …

- **compensatory planting?** This is planting to make up for the loss of trees removed. The DAC promotes planting three trees for every one removed as it takes 20 years or more for three young trees to grow enough to absorb the same amount of CO2 as one mature tree.
How can my PCC act on this?

- Carefully consider whether a tree needs removal or if any issues can be solved by better maintenance, which can be done under List A or B. All churches would benefit from a tree survey with management plan, updated on a regular basis by a professional arboriculturalist (rather than a general tree surgeon). Information on finding a suitable professional is available in the Church Buildings Council guidance below.
- Choose native species when planting new trees. Some species are better as they absorb more carbon and hence produce more oxygen. Source trees locally, to prevent the risk of importing diseases that may kill existing trees. Consider carefully where any new trees are planted – roots can cause structural damage; leaves can block gutters.
- Check for Tree Preservation Orders (TPOs). This information is available by contacting the planning section of the local authority or checking their website. If you have TPOs or are in a conservation area, you will need to obtain permission from the local authority for any work.

Where can I find more information?

- [Church Buildings Council trees overview (with links to individual guidance sheets)]
- [Royal Horticultural Society guidance on native species]

See also... Policy C1 on biodiversity and Policy C3 on footpaths and hard-standing
Why do paths and hardstanding matter?

Paths and hardstanding that are permeable allows rain water to drain down into the soil underneath. Impermeable materials and poor design can lead to rain water running off into drains in the street and risk local flooding as well as an increase the levels of water feeding into local sewage treatment.

What does the DAC mean by …

- **hardstanding?** A hard surface in any form which can support vehicles.
- **permeable material?** A porous textured material that allows water to soak through.

How can my PCC act on this?

- Think carefully about your choice of materials, both for replacement and new paths. Stone flags are generally preferable if your church is historic. However, some types can be slippery or prone to theft, in which case you might consider “resin bound” gravel. This is porous with a smooth texture unlike “resin bonded” gravel (which is impermeable).
• You should avoid concrete flags, as these have a high level of carbon in their production (see also policy BM1). Also be aware that some stone (such as India stone) will be imported over long distances, so involve more energy consumption than local stone.
• The alternative to using permeable material is to design the hard surface with a camber or gradient towards the churchyard so that all the water is directed into the grass or soil and cannot run off into the street. Ask your architect to consider this in their design.

Where can I find more information?

Links to useful external sources will be added to this guidance in future revisions – until then, get in touch with the DAC.

See also… Policy C1 on trees, Policy C2 on biodiversity and Policy WM1 on rainwater disposal
**Why do sustainable fuel sources matter?**

In order to achieve the goal of becoming Carbon Neutral by 2030, we have to stop burning fossil fuels like gas and oil to heat our churches. If your church is running on gas or oil, you should look at a strategy for a low carbon replacement now, rather than wait until your boiler breaks down and you need to act urgently.

**What does the DAC mean by …**

- **green tariff supplies?** A number of energy supply companies offer tariffs providing 100% renewable “green” electricity, usually generated by solar, wind or water or biomass (that is, burning natural materials such as woodchip or wood pellet).

- **zoned heating?** If you have a central heating system in your church it may be possible to fit motorised valves to allow heating to be provided just to those parts of the building that are occupied at any one time.
• **smart controls?** These controls can perform a variety of functions, such as controlling heating zones, optimising start/stop times and providing accurate temperature control.

**How can my PCC act on this?**

• Possible renewable electricity options include air source and ground source heat pumps with central heating, or electricity generation by solar and wind, used with radiant electric heaters or under-pew heaters. Biomass heating using wood pellet from a sustainable (ideally local) source may be appropriate in some areas or you may have a district heating system. A consultant will help you narrow down options, including giving you an idea of not only installation but also running costs.

• It is important to look at possible ways to reduce the capacity of a new system and the patterns of occupancy of the church (now and in the future) before making any decisions. The introduction of smart controls can be one of the quickest and cheapest ways to reduce energy consumption and can be added to an existing heating system.

**Where can I find more information?**

• [Church Buildings Council heating advice pages](#)

**See also...** Policy H2 on reducing heat loss, Policy RG1 on renewable generation
Why does minimising heat loss matter?

For many - if not most - churches, the heating is the largest part of their energy use. Reducing heat loss can cut the amount of energy needed to run heating and reduce the capacity of any future heating installation. Combined with focusing on heating the building users rather than the overall building, you can make significant savings.

What does the DAC mean by ...

- *heat loss calculations?* These are room by room calculations that assess the rate of heat lost from the building, and hence the size of heating system required to warm the building.

How can my PCC act on this?

- Draught-proofing is one way to stop heat getting out and cold air coming in. Many churches have internal lobbies at the entrance to prevent air coming straight through when the outer door opens, or might add an external door when there is already a porch. You will need to consider the impact on appearance and any historic doors in planning such changes.
Insulation is the other main way of controlling heat loss. The scope for installing insulation will often be limited by the need to preserve the historic character of the church. However it can often be incorporated into roof renewal works and/or installed in any existing loft spaces, and it may be possible to install internal wall insulation and secondary glazing. Thermal insulation is likely to have most benefit and impact for churches with regular use, rather than churches that are only occupied for short periods once or twice a week.

Measures to prevent heat loss can have knock-on effects and cause other problems, especially if there is not also good ventilation. Control of humidity is key to ensuring comfort for people and care of your building. There are lots of factors to balance, and expert advice from your architect will be required.

**Where can I find more information?**

Links to useful external sources will be added to this guidance in future revisions – until then, get in touch with the DAC.

**See also...** Policy H1 on sustainable fuel sources
Why do efficient systems matter?

As part of our path towards becoming carbon neutral we need to make our churches as energy efficient as possible. For many churches, the energy used for lighting is second only to that used for heating.

What does the DAC mean by ...

- **energy-efficient fittings and light emitters?** In almost all applications LED bulbs (sometimes called “lamps”) will be the most energy efficient. Some light fittings are more efficient at reflecting light from the bulbs into the area you want lit.
- **smart controls?** These include detectors that turn lights off in unoccupied spaces, dim lights when lower light levels are sufficient, and respond to daylight levels.

How can my PCC act on this?

- For light fittings that accept standard bulbs or lamps, it should be simple enough to fit LED lamps with equivalent light output as replacements. If considering a full lighting upgrade it is worth taking professional advice to ensure recommended light levels are achieved. Also consider the colour of the light – whilst the cheapest option is often white, this can be overly harsh and “cold”.

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L1: The DAC will positively view applications for lighting schemes (both internal and external) which reduce the overall energy consumption through use of more energy-efficient fittings and light emitters.

Additionally, it will positively view applications where the PCC can demonstrate that it has considered the incorporation of smart controls.
• A good design will avoid glare and inefficient placement (such as uplighting a dark ceiling), and include appropriate controls to maximise overall efficiency. Ensure that whoever carries out the design provides light level calculations that show brightness (“lux”) levels.

Where can I find more information?

• [Church Buildings Council lighting web pages, with links to guidance documents](#)
• [Chartered Institute of Building Services Engineers guidance, including recommended lux levels](#)

See also… Policy L2 on external lighting
L2: The DAC will require applications for the introduction of external floodlighting to demonstrate that:

- the additional energy consumption has been minimised as far as possible;
- any additional energy consumption is outweighed by the public and missional benefits of the proposals; and
- the installation will not have a negative impact on local wildlife or contribute significantly to light pollution.

Why does external lighting matter?

As well as adding to the carbon footprint of your church external lighting can have a detrimental effect on wildlife and our ability to study the night sky.

What does the DAC mean by …

- **public and missional benefits**? These are improvements for the sake of local people and the general public, or opportunities to attract more people to the church. Examples might include making people feel safer around the church or bringing the building to people’s attention, particularly when events are going on.
- **light pollution**? This essentially is light shining where it can have a negative impact on people and animals. Upward light in particular can cause problems for local astronomers. Night-time light can affect the daily patterns and habits of birdlife, bats and small mammals.
How can my PCC act on this?

• If you believe external lighting to your church is justified, ensure the lighting design shines light only where it is needed. External lighting need not be very bright to have a visual impact, especially in rural locations, and focusing light on specific areas can be more dramatic than floodlighting.
• Also ensure light shines only when needed, for example, by using controls to automatically switch off lighting at (say) midnight. Daylight sensors can also be incorporated to moderate when lighting comes on and off. Energy reduction can also be made through use of LEDs.

Where can I find more information?

• Bat Conservation Trust: Artificial lighting and wildlife
• Historic England: External Lighting on Historic Buildings

See also... Policy L1 on efficient lighting systems
Renewable generation

RG1: The DAC will positively view applications for renewable energy generation, particularly if it can be demonstrated that the PCC has already implemented improvements to the energy efficiency of the church, churchyard and associated buildings to reduce the amount of energy use needed.

Why does renewable energy generation matter?

Energy use is necessary for making our buildings comfortable and welcoming, even if we make many improvements and reduce what we use. So we can’t reduce to zero energy use but renewable energy generation will help towards being Carbon Neutral by 2030. It will also save money with traditional energy becoming more expensive.

What does the DAC mean by …

• **renewable energy generation?** This is making energy by drawing on natural fuel sources, such as from the sun or air. This may include photovoltaic (pv) panels installed on the church roof, elsewhere within the church grounds, or on associated buildings. Ground source and air source heat pumps, as well as biomass boilers, also use renewable energy to provide heating.

How can my PCC act on this?

• Commission an energy audit of your church to identify potential energy improvements and carry out simple changes to reduce your energy use as much as possible, on things such as heating and lighting. Energy generation is a big step so you want to first know that you have reduced how much energy you will need to produce.
• If your church has a southerly facing roof that is unshaded by trees or other buildings a pv panel installation may be appropriate. This will be more cost effective if you are using electricity regularly in the daytime, and quotations should identify the “payback” period on an installation. A small scale wind turbine could be an option for rural churches where there is a location for a turbine clear of the “wind shadow” from buildings and trees.
• Energy consultants will be able to assess your individual conditions (such as how much “solar gain” your building has) and whether energy generation will be worthwhile.
• In addition to faculty, planning permission will usually be required for any external works such as pv panels, turbines, or other energy generating units.

Where can I find more information?

• Church Buildings Council guidance on renewables, including link to contractors

See also… Policy H2 on reducing heat loss; policy L1 on efficient lighting systems
SD1: The DAC will positively view applications which incorporate sustainable design, particularly where this can be demonstrated by:

- a Statement of Needs which sets out how the proposed works will mitigate or reduce the impact on the environment; and

- an accompanying energy audit.

The DAC will set higher expectations on new build works (including extensions and detached buildings), which should meet with the highest standards of energy efficiency or give clear justification why these standards cannot be met.

Why does sustainable design matter?

Reorderings or new developments provide an opportunity to introduce measures which both meet immediate needs for using the church, whilst improving its long-term sustainability, in ways that may be costly or difficult to undertake on their own.

What does the DAC mean by ... 

- **sustainable design?** Design which contribute to reaching carbon zero, through selection of materials, positioning and layout to make best use of environmental conditions, as well making it easy for users of the building to follow best practice.
- **energy audit?** A document which assesses a building’s current energy usage and provides recommendations for improvements.
How can my PCC act on this?

- Write a clear brief for your architect which sets out your needs and priorities. This will enable them design any new facilities in a way that suits your needs but can reduce your energy use – for example, by providing natural light or spaces that can be individually heated. If you are planning an extension or new building, the choice of location can be significant to the energy use of the building, as will be materials.
- Make sure you incorporate plenty of storage. In kitchens, include cupboards for reusable crockery (and make sure your appliances are energy efficient). Having plenty of cupboards for items used by other groups reduces the need for them to transport anything by car.

Where can I find more information?

- Diocesan Environment webpage – provides information on getting an audit.

See also... Policy BM1 on building materials
Why does transport matter?

To achieve the 2030 Carbon Neutral target, we need to adjust to new ways of travel that are less reliant on petrol/diesel-fuelled individual vehicles. Changing the way we move around can also increase quality of life for us individually, in terms of physical and mental health.

What does the DAC mean by …

• **transport accessibility?** Making sure it is as easy as possible for people to get to your church, in a way that is safe, secure and economical, whatever their circumstances.

• **a travel plan?** A statement of a series of actions to bring about positive change in travel.

• **environmentally sustainable transport forms?** Ways of getting from place to place that are not powered by fossil fuels such as petrol or diesel.

How can my PCC act on this?

• Find out about existing public transport network and promote these to people coming to your church. If the local network is poor (for example, with infrequent services or lacking disabled access), you might campaign for improvements.
• Work out what the transport needs are of those attending church and other activities in your building. If people are mostly local, encourage walking and cycling. Travel to church can take on a spirit of pilgrimage when slower transport methods are used, becoming a journey to a special place rather simply a rushed race.

• A certain amount of parking space may be needed, to accommodate the needs of anyone requiring special assistance due to disability or other causes. If there are no electric car charging points locally, installing one or more at your church could encourage greener travel. You will have to check if you have the electric supply capacity for this, what socket type to use (there are more than one kind) and you might need to consider a fee for people using them to cover your costs.

Where can I find more information?

• [Church Buildings Council webpages on car charging points](#)

See also… Policy C3 on hardstanding (for car parking design)
Why does rainwater disposal matter?

Unless rainfall can drain away quickly, it will overflow the gutters and the down pipes. This causes damp to enter the church foundations and walls, damaging the building and increasing the need for heating, as damp walls drain heat quicker than dry walls.

What does the DAC mean by...

• *rainwater disposal goods?* The gutters and down pipes which take rainwater off the church roof. They either feed into gullies in the ground connected to a soakaway (which slowly discharges water into the ground) or into the main sewer system.

How can my PCC act on this?

• Firstly, ensure that gutters and downpipes are cleared twice a year of leaves and debris, when a check can also be taken to ensure they are in good condition with no leaks. This will ensure they are at full capacity and work effectively.
• Have your architect assess whether gutters and down pipes are adequately sized to take the volume of water you might receive from increased occasions of heavy rainfall.
• Also consider where rainwater goes. It is best to allow it to drain away in the churchyard, if the ground is free draining, but soakaways should be kept well clear of the church foundations. If feeding into the main sewer system, determine with the water company whether surface water is taken away separately from other types of sewerage as this is better environmentally than when both drain into a combined system.

• Consider using grey water (recycled from roof run off) to flush toilets. This will not only reduce general demand on drinking water supplies but will also recycle what is otherwise a waste product.

Where can I find more information?

Links to useful external sources will be added to this guidance in future revisions – until then, get in touch with the DAC.

See also... Policy WM2 on water waste and Policy C3 on hardstanding and water run-off
Why does waste water and sewerage matter?

Water is a natural resource so we should manage how much we use. It can be disposed of in a number of ways so choosing a system that works more naturally can reduce your church’s energy use and can ease the load on the sewer network, so reducing the local water company’s energy use in transporting and treating waste.

What does the DAC mean by…

• waste water? This is water flushed from toilets or water from hand basins or sinks.

How can my PCC act on this?

• Reduce the amount of water being used by adding water-saving devices such flow regulators on taps and installing WCs with half-flush buttons. Your plumbing design can also impact energy usage – keeping hot-water pipes runs short and ensuring they are “lagged” means that the boiler doesn’t have to work as hard as the water cools less as it travels to the tap.

WM2: The DAC will positively view applications that use measures to minimise water waste and reduce pressure on local sewerage networks.
• Consider how often your church is used and select a waste disposal system that will meet your needs. If your church is used a few times a week, there is likely to be less waste water and a trench arch system could be used. These work on gravity, designed with a gradient to allow waste to flow downhill across the churchyard and to compost naturally. It is easier to manage than a septic tank because it does not need to be emptied. The trench is not very deep so it can also minimise the impact on burials, but you may still need an archaeological assessment, especially if your churchyard is more ancient.

• Avoid mechanical systems needing electric power such as pumps and macerators. They not only add to energy consumption but are something that can go wrong and break. Macerators, which churn up solids, are also very noisy and often smell.

Where can I find more information?

• Diocese of Gloucester report on waste water and trench arches

See also... Policy WM1 on rainwater disposal and Policy C3 on hardstanding and water run-off
For more resources, support and help, please visit www.leeds.anglican.org/dac

For support with anything in this document, please email communications@leeds.anglican.org

or

dac@leeds.anglican.org