A practical guide to help your church reach net zero carbon

Net Zero Carbon 2030

THE CHURCH OF ENGLAND

Working together to care for God's creation

Climate change is having a devastating effect on communities all over the world, especially the poorest countries and poorest people. By tackling climate change we support our local mission and witness to our communities that we are people who care about climate justice, now and for the future.

That's why the Church of England has set an ambitious target to reach net zero carbon by 2030.

One of the ways we can tackle climate change is through reducing the carbon we release from our buildings into the atmosphere.

But where do you start? How can your church help tackle climate change?

This guide aims to give your church some **simple practical steps** as you begin your journey to net zero carbon.

Our hope is that by 2030, our **churches will be bright, warm and welcoming, consuming much less energy and emitting less carbon** than they do now.

And that will be good for the people in our churches, and good for the whole of creation.

Quick and easy steps to get started

There are many simple actions nearly all churches can take to lower carbon emissions. Many are low cost options and can help you begin your journey to net zero carbon.

Maintain your roof and gutters to prevent damp

Fix any broken window panes

Insulate pipes, pumps and valves

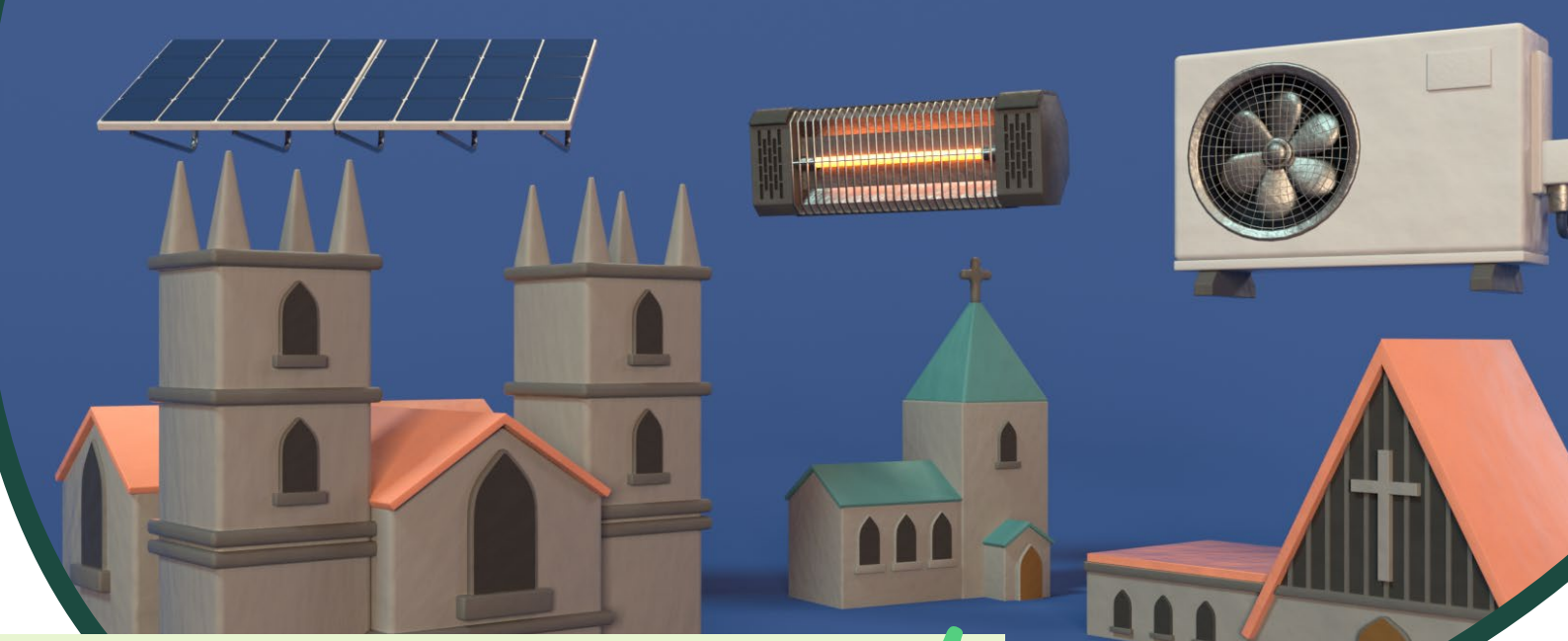
Draught-proof your doors

Install automatic timers for lights and heating

Replace inefficient lightbulbs and floodlights with LEDs

Install a smart meter to measure the energy you use

Buy heated cushions for pews



Choosing the *best* heating solution

Heating typically makes up over 80% of a church's energy use. So, decarbonising this heat is critical in cutting your carbon footprint. This means moving away from fossil fuels such as oil, gas or LPG for heating.

Making your church more energy efficient and switching to a heating system powered by true green electricity is the best route to net zero carbon – read on to find out how.

Small churches, used only on Sundays will have a very different journey to a large and busy church used every day. Each church will be at a different starting point and its journey will be unique.

- Every church can take some initial steps which won't cost anything and can save money and carbon.
- Most churches will be able to go a bit further and install some low-cost measures too. In many of these churches, this will be enough to reach net zero carbon.
- Some churches will need to do big projects, requiring large grants and a team of professionals to reach net zero carbon.
- One church might be able to start straight away, another will take time. Some will be able to reach net zero carbon quickly, others may take several years.
- Once a church has understood it's preferred solution it might need to deliver this in stages or build this approach into other maintenance, development or reordering projects.
- It's worth making a plan even if your current boiler is still working. This gives you time to find the right advice and grants.

You must also consider how to conserve the fabric of the church and its furnishings – especially in sensitive, historic buildings, and how to protect nature in and around the church.

Different heating approaches achieve different outcomes and different people within the church community have different points of view, as do many of the experts who work in this sector. The Net Zero Carbon Programme has resources to help all types of churches reach net zero carbon, wherever you are on the journey.

Where SHOULD I START?

Follow our flow chart for ideas on which heating system might be suitable for your church.

KEY

- QUESTION
- KEY STEP
- ADVICE
- BRANCHING OPTIONS

I'm interested to know what this all means for my church?
What should I do?

See if you can find a couple of people in your church, or wider community to help you.

- I'M ALONE → There's only so much you can do. Have a look at the steps, and ask for help from your diocese when you need it.
- I'M NOT ALONE → Work out your carbon footprint using the Energy Footprint Tool (EFT) (ask your treasurer to help – they receive the energy bills and can log into Parish Returns). Filling in the EFT will increase your eligibility for grants.

Have you got any other building plans or reordering projects coming up?

- YES → Think about whether you could include any energy saving measures or changes to heating as part of the plans. Get advice from your DAC. → Take time to co-ordinate net zero changes with your project and seize opportunity for improvements where possible.
- NO → Do you know what you could do in your church to save energy and reduce your carbon emissions?
  - NO → Get independent advice by booking an energy audit.
    If your church is one of the highest emitting churches you might be offered an energy audit - fill in the EFT so we can check.
    If you can't afford it, you can do a DIY audit using our Church Heating Checklist.
  - YES → Speak to your DAC or QI architect for advice. You will need to get quotes from suppliers and make a plan for how to fund the project.

What type of project do you need to do to reach net zero carbon?

LESS THAN £10K OF CHANGES

You could apply for small Church of England grants or get support to raise funds for your project.

CHECK OUT OTHER FUNDING OPTIONS HERE

SOMEWHERE IN-BETWEEN

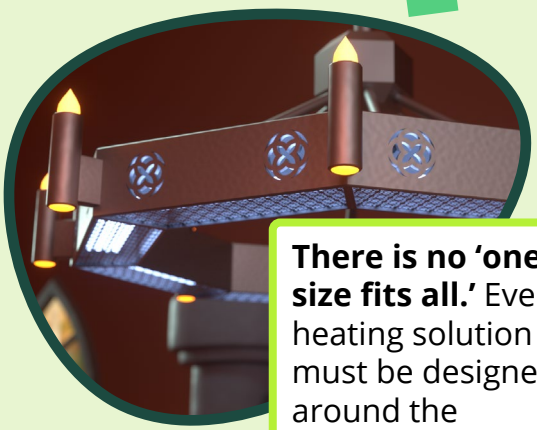
You could break the project down into separate stages and apply for small grants. And take it one stage at a time.

LARGE COMPLEX PROJECT

There may be Net Zero Programme grants available - talk to your diocesan Net Zero Carbon Officer. You can also find support with fundraising.

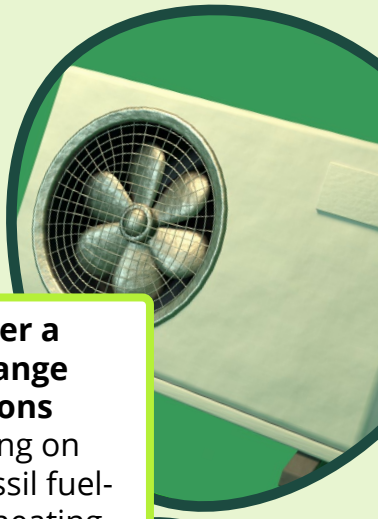
Top Tips

Establish how the church space is used: the way the church is used might have changed since the heating was last installed.

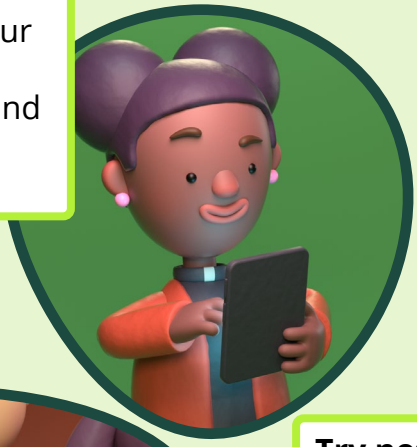


There is no 'one size fits all.' Every heating solution must be designed around the individual church's use and nature.

Seek specialist advice where there are historic interiors or heritage vulnerable to change.



Consultation is vital: contact your DAC, local architect and get expert advice.



Find some people to work together, this is a big challenge to do alone. Maybe you could team up with another church in your deanery, or get a keen volunteer from the community.

Consider a wide range of options focussing on non-fossil fuel-based heating.

Try not to feel overwhelmed or fearful of change, if there are unfamiliar terms or things to learn, investigate what you can and ask others for help. Remember, the only silly questions are the ones you don't ask.

Think about the level of heat you need. Higher temperatures don't always make people comfortable and are not environmentally sustainable. Inappropriate heating may also cause significant damage to the historic building fabric and to artefacts, which can result in considerable costs for the PCC.

Park any preconceived ideas about high costs and length of projects. These are all valid concerns but they shouldn't dictate the outcome or blur an unbiased assessment of needs.

A Practical Pathway to Net Zero Carbon for Churches

Your unique journey to net zero carbon starts here.

The following table is packed full of practical step by step tips to help you **lower your church carbon emissions.** Not all actions will be relevant for every church – it's important to seek advice for your building and **find the right solution** for your church. See the information about the different types of permissions here.

If you are unsure about any permissions, always ask your DAC. And don't forget to consider if you also need Planning Permission if the changes are visible outside the building.

Let's get started!

These are easy actions which nearly all churches can beneft from, even if your church is only used on a Sunday.

	Action	What type of permission do we need?	Find out more	Complete
Reducing heat loss	Maintain the **roof and gutters**, to prevent damp entering the building and warm air escaping.	Typically, routine maintenance is List A, small scale repairs are List B	Caring for heritage buildings from Historic England	
	Fix any broken window panes and make sure opening windows shut tightly, to reduce heat loss.	If your church has modern or plain sheet glass – LIST A If it has stained or historic glass - FACULTY	If interiors are of historic, architectural or artistic interest, seek professional and Diocesan Advisory Committee (DAC) advice first.	
	Insulate heating pipes, pumps and valves to prevent heat being lost.	LIST A	Focus on heating pipework hidden-away in cupboards, voids, boxings or unheated rooms, not exposed within the worship space. A Net Zero Carbon Church Historic England advice on heating	
	If draughts from doors are problematic, **draught-proof** the gaps or put up a door-curtain.	Draught-proofing the doors – LIST A Installing a door curtain - FACULTY	If interiors are of historic, architectural or artistic interest, seek professional and Diocesan Advisory Committee (DAC) advice first. A guide to ventilation and draught-proofing in historic churches	
	Consider using **rugs/floor-coverings** (with breathable backings) and cushions on/around the pews/chairs.	Pew cushions and matting between pews – LIST A Replacing fixed carpet – LIST B Introducing new fixed carpet - FACULTY		

	Action	What type of permission do we need?	Find out more	Complete
Heating and lighting	If you have a traditional radiator system with water inside, review whether your **conservation heating, background temperature, setback temperatures** and frost settings achieve your needs.	LIST A	Heating historic places of worship from Historic England These approaches for wet central heating systems are often used incorrectly which can have implications for churches and historic buildings. You may need to seek specialist advice to understand the differences and understand the best solution for your church.	
	If you have an **electric heating system**, which could be far-infrared or electric radiators, review whether you are using these systems as originally designed and intended.	Not applicable	Church of England Heating Guidance Getting Permission to Make Changes | Historic England	
	Replace inefficient **lightbulbs** with LEDs, where simple replacement is possible.	Lightbulbs only (not fittings) – LIST A	See how one church saved thousands off their energy bills after switching to LED bulbs	
	Replace inefficient **floodlights** with new LED units.	LIST B	Read your Diocesan Advisory Committee (DAC) Environment Policy for more information on this.	
	If you have internet connection, install a HIVE or NEST-type **heating controller**, to better control heating.	LIST A	This is most suited for recently installed heating systems.	
	Get your energy supplier to install a smart meter, to better measure the energy you use.	LIST A	Not necessarily an up-front cost but may come with increased tariff charges.	
	Learn how your building heats/cools and the link to comfort, by using **data loggers.**	Un-fixed loggers – LIST A Fixed but temporary loggers – Temporary Minor Reordering License from the Archdeacon. Permanently fixed loggers - FACULTY	Data loggers can be hired, but seek guidance on where to place them, comparing with outdoor temperatures and opportunities to measure other useful data such as humidity. Approach your Net Zero Carbon Officer to find out who can support you with this.	
	If your current appliances fail, then replace with **A energy rated appliances.**	LIST A		
	Consider some **heated seat cushions** to provide extra warmth in small areas, such as for the choir or for vulnerable members of the congregation.	LIST A		

Next steps

These are actions with a reasonably fast pay back for a church with medium energy usage, used a few times a week. Perhaps half of churches should consider them. Most actions cost more than the first steps and require more time and thought. Some require some specialist advice and installers.

	Action	What type of permission do we need?	Find out more	Complete
Reducing heat loss	If you have an uninsulated, easy-to-access roof void, consult with your Quinquennial Inspection (QI) about **insulating the loft.**	Non listed building - LIST B Listed building – FACULTY	If interiors are of historic, architectural or artistic interest, seek professional and Diocesan Advisory Committee (DAC) advice first. If there is evidence of bats or nesting birds, seek specialist advice before closing draughts or insulating lofts.	
	If you have problematic **draughts** from your door, and a door curtain wouldn't work, consult with your QI architect about installing **a glazed door** within your porch, or even a draught-lobby.	FACULTY	If interiors are of historic, architectural or artistic interest, seek professional and Diocesan Advisory Committee (DAC) advice first. If there is evidence of bats or nesting birds, seek specialist advice before closing draughts or insulating lofts.	
	Consider creating one or more **smaller (locally heated) areas for smaller events**, or re-locating events to a different venue.	Non listed building - LIST B/Faculty Listed building – FACULTY	If interiors are of historic, architectural or artistic interest, seek professional and DAC advice first.	
	Consider **fabric wall-hangings** or panels, with an air gap behind, as a barrier between people and cold walls.	Non listed building - LIST B Listed building – FACULTY	If interiors are of historic, architectural or artistic interest, seek professional and DAC advice first.	
Heating & lighting	Improve your **heating zones and controls,** so you only warm the areas you are using.	If no change to heating system – LIST A	There are some risks associated with this action that may affect your heating system if not carefully considered - seek advice from a heating engineer first.	
	Install **Thermostatic Radiator Valves (TRVs)** on radiators in meeting rooms and offices, to allow you to control them individually.	LIST A	There are some risks associated with this action that may affect your heating system if not carefully considered - seek advice from a heating engineer first.	

	Action	What type of permission do we need?	Find out more	Complete
Heating and lighting	Consider **under-pew electric heaters.**	If pews were installed after 1850 and not of historic interest – LIST B If pews were installed before 1850 - FACULTY	If interiors are of historic, architectural or artistic interest, seek professional and Diocesan Advisory Committee (DAC) advice first. Read about Net Zero Carbon churches Find out more about under pew heating	
	Consider **infra-red radiant heaters**, which keep people warm without trying to heat the whole church space. Radiant heaters are especially good for specific spaces like chapels and transepts, which you might want warm when you don't need the whole church to be warm.	FACULTY	Find out more about infrared heaters Diocesan Advisory Committees are not generally in favour of infra-red, as can lead to deterioration of fabric if no space heating.	
	If you have radiators, install a magnetic sediment **'sludge' filter** to extend the life of the system.	LIST A	There are some risks associated with this action that may affect your heating system if not carefully considered - seek advice from a heating engineer first.	
	Consider **thermal and/or motion sensors** to automatically light the church when visitors come in, for security lights, and for kitchens and WCs.	LIST B	See how one church saved money on its energy bills by making this and other simple changes.	
	Install an **energy-saving device** such as 'Savawatt' on your fridge or other commercial appliances.	LIST A	Watch how a church in Southampton monitored the freezers used for a local food bank with surprising results.	
	Consider a voltage optimiser, you will need to seek an electrician's advice on the suitability of this.	LIST A		

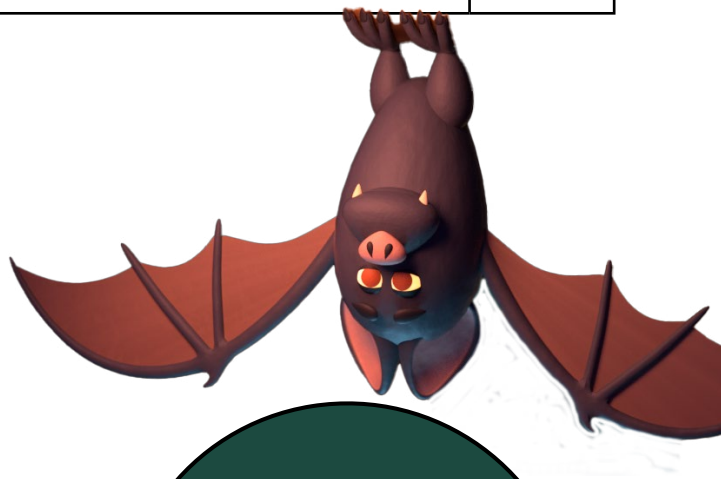
Bigger steps

These are bigger, more complex projects, which only busy churches with high energy use are likely to consider. They could reduce energy use significantly, but require substantial work (which itself has a carbon cost) and have a longer payback. They all require professional advice, including input from your Diocesan Advisory Committee.

Reducing heat loss

Action	What type of permission do we need?	Find out more	Complete
Draught-proof windows.	Modern or plain sheet glass – LIST A or LIST B Stained or historic leaded glass – LIST B or FACULTY depending on proposals	Ventilation and draught-proofing in historic churches advice If interiors are of historic, architectural or artistic interest, seek professional and Diocesan Advisory Committee (DAC) advice first.	
If you have an open tower void, **insulate or draught-proof the tower ceiling** (could also consider doors into the lower rooms.)	Non listed building – LIST B Listed building - FACULTY	Take advice from the QI architect for insulating tower ceiling. If interiors are of historic, architectural or artistic interest, seek professional and Diocesan Advisory Committee (DAC) advice first. Heating_principles.pdf	
Double-glaze or **secondary-glaze** suitable windows in well-used areas such offices, vestries and halls.	FACULTY	Modern windows only - some historic vestry glass could have secondary glazing. Read Historic England's advice about glazing in places of worship If interiors are of historic, architectural or artistic interest, seek professional and Diocesan Advisory Committee (DAC) advice first.	
Internally **insulate** walls in well-used areas such as offices, vestries and halls.	List B or Faculty	Check the need for ventilation with the QI architect first to avoid condensation and mould growth. If interiors are of historic, architectural or artistic interest, seek professional and Diocesan Advisory Committee (DAC) advice first.	
If you have **pew platforms**, consider insulating under the wooden platform with moisture open materials.	FACULTY	If interiors are of historic, architectural or artistic interest, seek professional and Diocesan Advisory Committee (DAC) advice first. Check with QI architect first as many pew platforms have voids underneath or are placed directly onto earth. May be better to introduce matting/carpet between the pews instead.	
Reinstate ceilings, and insulate above.	FACULTY	If interiors are of historic, architectural or artistic interest, seek professional and Diocesan Advisory Committee (DAC) advice first.	

	Action	What type of permission do we need?	Find out more	Complete
Heating and lighting	Install **solar PV,** if you have a suitable roof.	Non listed building – LIST B Listed building - FACULTY Check if Planning Permission is needed	Consider installing a 'battery-ready' system if you might install a battery in the future. Read about a historic church in Norwich which has installed solar panels to reduce its carbon emissions.	
	Add **battery storage** to a PV system (new or existing) where the church has a daily usage of electricity but not all that usage is during daylight hours (for example, evening lettings or floodlighting.)	Non listed building – LIST B Listed building - FACULTY	Supplementary guidance note on solar PV – add link	



Don't forget about bats!
Click to read our guidance on bats in churches

Going even further...

These are actions you would do at specific times (such as when reordering is happening) or in very specific circumstances. Nearly all require professional advice, including input from your Diocesan Advisory Committee (DAC).

	Action	What type of permission do we need?	Find out more	Complete
Reducing heat loss	If you are **reroofing** anyway, then **consider adding insulation** where possible.	Non listed building – LIST B Listed building - FACULTY	If interiors are of historic, architectural or artistic interest, seek professional and Diocesan Advisory Committee (DAC) advice first. Seek advice from your QI architect.	
	If you have an **uninsulated wall with a cavity** (typically build 1940 onwards), then consider insulating the cavity.	List A or B - seek advice	Seek advice from your QI architect.	
	If the building is regularly used and suitable, such as a church hall, consider appropriate **external insulation or render**, appropriate for the age and nature of the building.	FACULTY	If the church hall is under Faculty Jurisdiction (FJ) then will need faculty. Will also need Local Authority planning. If Listed and not under FJ, will need Listed Building Consent (LBC).	
Heating and lighting	If yours is a well-used church which you need to keep warm throughout the week, then consider a **heat pump**. There are different types, the most appropriate heat pump needs to be determined by a specialist consultant.	FACULTY	Air source heat pumps are cheaper and less invasive than ground source, but may have slightly higher running costs. Adapting historic buildings for energy and carbon efficiency by Historic England. Read about a large, listed church in Leicestershire which is heated efficiently by an air source heat pump.	
	If your church has sporadic weekday usage (such as a few mid-week services, weekly coffee mornings, several evening usages for choir or community groups) consider using an **air to air source heat pump**. (An approach also being adopted as a form of people heating rather than space heating.)	FACULTY	A church in Rugby has installed solar panels, air to air heat pumps, insulation and LED lighting, all with the church's future carbon footprint firmly in mind.	

Going even further...

These are actions you would do at specific times (such as when reordering is happening) or in very specific circumstances. Nearly all require professional advice, including input from your Diocesan Advisory Committee (DAC).

	Action	What type of permission do we need?	Find out more	Complete
Heating and Lighting	If you are doing a major reordering or lifting the floor anyway, and your church is regularly used, then consider **under-floor heating**, and appropriate insulation. This can work well in combination with an air-water heat pump.	FACULTY	A Grade II listed church in Willesborough, Ashford, installed under floor heating, which provides low level heat underneath people – enabling its services, café and night shelter to be enhanced.	
Heating and Lighting	If the circumstances mean you cannot replace your old gas boiler or an oil boiler with a non-fossil fuel solution, consider a **hybrid solution using a green technology** alongside a more efficient gas or oil boiler, as a transitional measure, to reduce the use of fossil fuels.	Seek advice	Further advice on a Net Zero Church.	
Church Grounds	If you have car parking that is sufficiently used, **EV charging points for electric cars** can work out cost neutral or earn a small amount of income for the church. Note, they will increase the church's own energy use, but will support the uptake of electric cars. They could be good in combination with solar PV panels.	In car park or churchyard – LIST A Attached to a non Listed building – LIST B Attached to a Listed building - FACULTY	A brief guide to electric car charging These can be leased, but can require substantial electrical wiring for connections.	

KEY

LIST A Works which the Parochial Church Council (PCC) can carry out on their church without a Faculty and without consultation.

LIST B Works which do not require a Faculty but do require the written permission of the Archdeacon.

FACULTY Works to a church building, except those exempted in List A and B, will require a permission called a Faculty. Some works may also require Local Authority Planning Permission.

Watch the animation:

Useful resources

Visit our Linktree

Net Zero Carbon 2030

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