Sustainable Heritage

Navigating the Path to Net Zero



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March 2026









This document shares insights gained through the Net Zero journey at All Saints Church, Bedworth.
The transition was supported by grant funding from the **Coventry Diocese** and **Benefact Trust**
in association with the **Net Zero Carbon 2030 Demonstrator Church** project.

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Introduction

Over the last few years, I have been researching and navigating the complexities of implementing low-carbon options for my church. **All Saints, Bedworth**, is a Grade II* listed building in an urban Conservation Area. It is a historic space with extensive community ministries, and I quickly discovered that practical, "on-the-ground" support for this journey was difficult to find.

Whether dealing with the "invisible" technicalities of meter types or the visible impact of solar panels on a historic roof, the process is as much about navigating bureaucracy as it is about installing technology.

All Saints has opted for solar panels, battery storage, and air-source heat pumps (powering radiators to support our daily community use). While your specific technical solutions may differ, you will likely face the same hurdles we encountered: **design choices, Faculty, Planning Permission, and Funding.**

My background is in software usability and leadership coaching — not Church of England processes, Planning departments, or grant management. Administration and spreadsheets are not my natural habitat. However, I do have a technical aptitude and personal experience with domestic renewables.

This document captures the key points I have learned through research, trial, and error. My hope is that these insights help you avoid the "trip hazards" of the process. Consider this a **'travel guide' for the administrative and planning journey**, rather than a technical engineering handbook.

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Foundations: Preparation and Monitoring

Don't rush into technology. Understand how your building behaves in relation to temperature.

1. **Benchmark your start** with the **Energy Footprint Tool**. You will need to know your electricity supplier, the annual energy used and the annual cost. Update each year to help you see progress. It is required for any national C of E or Diocesan grants.
2. **Track monthly gas and electricity** use (both kWh and cost) in a spreadsheet, going back a couple years if possible.
3. **Place Bluetooth thermometers** in various areas, to monitor how the building heats and cools. (Wi-Fi enabled is convenient - IF your church has Wi-Fi - so you can read them from home.) This data is invaluable for system designers to understand your church's thermal mass. For example, our Nave can take three to eight hours to rise by just 1°, depending on the external temperature and boiler temperature. You may be able to borrow them from your Diocese, or buy your own.
4. **Develop a Net Zero plan** for your church. **Appendix A** is a template to get you started, with some dummy answers as examples. The plan contains a number of suggestions according to the size and activities of your church. You don't have to do everything, and certainly not all at once, but note what you've already done and what makes sense for your specific church, to manage the project over several years. Nothing is mandatory - some items may be totally inappropriate to how you use your church.
5. **Gather a team,** if you can. It can spread the work load. It can all still be done by one person, but it will take longer.

Existing gas boilers

This section may only be relevant if your church is using the heating three or more times per week.

If you currently have a gas boiler that's a condensing boiler (likely, if less than 20 years old) have a look at the exhaust. Is it just wisps of steam, or a dense plume? If it's a dense plume of steam, experiment with turning it down at the boiler if you can (Google Lens can help you find instructions for your boiler online) or ask the engineer to do it when it's next serviced. It typically should be running at 60° or less to condense properly.

In Spring and Autumn, experiment with running at 55° or less as it warms, I've found that the church uses **less gas** when running the radiators cooler. Note that it will take longer to warm the space with cooler radiators, so extend the pre warming time if needed, to reach the ambient for your services.

If you have a thermostat to control your heating, consider if you could benefit from a programmable thermostat (it should be able to connect to the same wires as your existing thermostat) which will let you set different temperatures for different times.

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Low-Carbon Heating Options

I'm sure you've heard this, but keep in mind that NOT all kinds of electric heating are the same. The most expensive to run are electric space heaters because they're trying to heat the air with electricity. Any sort of heat pump should be giving you 3X to 5X the amount of warmth compared to what power they're using. Historic England supports the use of heat pumps in historic buildings, and offers advice on getting the best design in terms historic sensibilities. The steady gentle warmth of background warmth is good for building conservation. Contact your regional HE office for a chat - they may take a few weeks to come back to you.

Ground Source Heat Pumps (GSHP) are expensive to install whether you have a shallow coil in the churchyard (problematic with graves!) or boreholes 125m deep. You'll get 4 to 8kW per borehole (depending on the ground), and you need perhaps 30 - 100kW or more to heat the church. They work really well with underfloor heating and so the heating system is therefore invisible to most people. It is the most consistent kind of heat pump because below 2m the temperature varies little. You'd run them constantly at a low flow temperature for a steady moderate ambient, because the floor will slow to warm up and slow to cool down. You may find you also want to add a couple radiators or some IR panels in certain places.

Air-to-Air Heat Pumps (ASHP for warm air) can be reasonably economical to install and are *much* cheaper to run than traditional radiant or infrared heaters. They can be used 'on-demand,' making them super flexible for churches with varied use patterns. Multiple external condensers are required but they are not very big and can usually be screened in the churchyard or tucked in either side of the Chancel. They can also be painted or wrapped, if needed. Full planning permission is highly likely to be required. As a church becomes more active, using it for more hours is still affordable. There are small internal-only units available, which might suit a coffee lounge or similar, but check the minimum operating temperature.

In contrast, **Air-to-Water Heat Pumps** (ASHP for radiators or underfloor) are better suited for 'high occupancy' churches that are busy most days of the week. They typically use a radiator system or UFH (underfloor heating) and work most efficiently when maintaining a consistent background temperature (e.g., 16°C) rather than heating from cold. Fewer external units are typically needed. Black/graphite/charcoal tend to be favoured in Historic circles, but they can be painted, wrapped, or put behind a laser cut cover.

Infrared (IR) can work well for infrequently used churches as they heat people directly rather than the air. It can also be helpful to 'fill in' cold spots with other heating systems. However, Infrared can be expensive to run for long periods and may feel less comfortable than air-based systems in very large spaces. Infrared is not able to heat shaded areas such as feet when sitting in pews, so for the coldest weather you may require pew heaters or other supplement. It can be controlled more easily than conventional space heating and zoned, often leading to less energy consumption and lower running costs. IR systems don't incur the need for planning permission as all the equipment is contained within the building.

Pew Heaters and **heated cushions** for the pews are two more effective and very targeted heat-the-person approaches, with the heated cushions being the cheapest to run.

With all systems, **mind your electrical requirement**. If you're not already there for other reasons, AVOID going over 100A per phase (69kVA) or you'll be into commercial **half-hourly standing charges**, which can be as much as your current daily standing charges but every half hour.
Get quotes on supply before making decisions that require a 200A (138kVA) system.
Your preferred technology can probably be configured to 'manage' on less power.

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Solar PV and Battery Storage

Why Solar? As the national grid continues to decarbonise, the primary argument for solar PV and battery storage is shifting. The impact on CO^2 reduction is decreasing as the Grid decarbonises, but the practical value remains high. The supply of low-cost electricity is the key ongoing benefit, essential for managing the ongoing costs associated with electrifying our heating.

Visibility. For system design in listed buildings, minimising visual impact is more important than maximizing production. You'll need to emphasise this to installers, who will typically offer you what they normally offer. If you have a South Aisle or a high roof with parapet, it will be easier to have a discrete design to persuade the Planners. When you get your quote, ask for them to include scaffolding and bird-proofing. If you want special scaffolding (see section 8) let them know so they can get the right quote.

This is the start of a long process: you need a design before you can apply for Faculty, Planning or grants. So as you weigh up which installer to choose, the key criteria to my mind are:

- Do they have established credentials and good reviews? MCS/Napit registered?
- Do they refrain from pressure selling extra gadgets or finance?
- Do they communicate well, coming back to you promptly when you have questions?
- Are they aware that this will take months, and won't pressure you for an early commitment?
- Can they manage any subcontractors required without you having to organise it separately?

I'm sure you know you should **get 3 or more quotes**, and take your time to choose your **'preferred supplier'**. You can't place a deposit with them until you have Faculty, Planning permission and funding, but you want them to know that you have selected them and anticipate potentially evolving the package. You may need them to supply extra details requested by Planning or Faculty. When you're ready to pay the deposit, they will re-do the quote for you to sign as aspects of the price may have changed by then.

Have your annual and monthly electricity use ready, as well as the roof direction and pitch, the presence/ age/height/species of any nearby trees, and your energy tariff. If available to you, half-hour data is valuable, otherwise just let them know your monthly consumption and daily usage pattern. Your potential installers should then forecast the following:

- annual generation (accounting for the variation in sun angle through the year and any shading)
- how much of generation could be used by church (self-use - calculate saving with your day rate)
- how much generation could be exported to the Grid (income - kWh x export rate)

This isn't guaranteed output, but it will give you a baseline to compare your options. Do this for each quote, and for any scenarios you want to explore, such as optimisers. You can compare the results of one array size against another, and of one battery size against another, or compared to none. You can also check if any extras they might try to sell you (usually optimisers or micro inverters) make enough of a difference to your particular installation to be worth their (not trivial) additional cost. You may also want to calculate cost-per-panel or per-kWp, or cost-per-kWh of battery, for comparing suppliers.

The greatest financial benefit to our church is from saving day-rate electricity at 25-30p. Export earnings are a lesser benefit with an uncertain future, but still worth calculating. The credit you earn in summer will contribute to bills during winter. Investigate the tariffs available - Octopus Energy, Eon.Next and Ecotricity are good starting places (as of January 2026). The best export rates are with a supplier; and the highest rates (perhaps for 1 year) from companies who install the system, too. Also note that the export rate for Commercial accounts (which the church will likely be) will be different from what you've heard is available to Domestic accounts. If you have a low-use church, the export earnings may be of greater benefit.

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Batteries can roughly double the benefit of the solar panels under certain conditions - the generation and self-use forecasts can help you evaluate this for your own project. For a once-a-week church with nothing going on in the week but with electric heating on Sunday, a battery could charge throughout the week from even a modest array in winter, and then be used towards the heating on Sunday.

Regarding safety, look for LFP (LiFePo4) chemistry. These batteries are extremely safe, non-toxic, and almost impossible to set on fire compared to older technologies. Some are weather proof for outdoor installation.

Navigating Permissions

PCC

It's likely that the PCC are already involved, or at least encouraging you. As a minimum, you will need a resolution recorded in the PCC Minutes that explicitly says they want you to do whatever your project is about. Save a copy of the Minutes in your Project file, highlight the relevant section, and save as PDF. This will reduce time looking for it when you need it later. Find out if your PCC want a regular report/discussion, or whether you'll be largely left to ask for discussion when needed.

Faculty

The DAC (Diocesan Advisory Committee) will need a 'Statement of Need' and a 'Statement of Significance'. These explain why the change is necessary and how it affects the historic fabric.

The Statement of Significance has a standard structure. The church may well have one from previous projects that you could adapt, but if not here are the main headings:

- About the town or village - for context
- About the Church building - history, description
- About Church life - what goes on through the week and the year
- Church finances and maintenance (eg progress on Quinquennial issues)

The Statement of Need is really useful to draft early on, and to iterate as your plans evolve. There are many ways to write this, and you may have others from previous projects to use as a model. If not, these headings are a starting point:

- The Church's Net Zero journey
- Current situation re: project focus
- The project options
- Proposal
- Rationale
- Conclusion

It is often better in practical terms to apply for heating and solar as separate applications so one doesn't hold up the other. Each will take around **two** months **after** they have everything they need and are happy with your design - but that preparation and discussion work can take weeks or months.

The DAC will want to see the final design, and potentially discuss the details.

There is a User Manual on the Coventry Diocese Faculty site, under the Help tab, and an FAQ.

For solar panels, you will need a structural survey of the roof. Ask your church architect to recommend someone, as simply looking on the Internet could mean paying 10X as much. Find out what the roof is

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covered with (eg slate, clay or concrete tiles, lead, or copper, tern-coated steel) as it will affect how the panels are installed. You may also need a bat survey (contact the charity bats.org.uk for a free survey). Having bats does not preclude getting panels, but will affect what time of year you can install them.

Your Faculty application will also need technical details of your project from your chosen installer, along with plans and elevations. Visual mock-ups are a help, and if you don't have access to that skillset you could try an AI such as Gemini. Tell it what you want to end up with, and ask it what it needs you to supply in order to do it. (It's a gamble, but may be worth a try.)

Planning permission

Planning Permission is required for anything visible outside, and is also likely to be **at least** a further two months once you submit the application. I recommend reading sections 199–208 of the National Planning Policy Framework (NPPF) regarding heritage assets. There are many hours of work in preparing the application and its supporting documents (perhaps 15 to 25 hours) especially if it's unfamiliar territory. You may find Gemini or another AI helpful, to understand what the questions are asking for. You can also type in what you plan to write, and it will rephrase it for you in the planning-friendly jargon. (Be sure to tell it to leave out the surplus adjectives!)

Ask your local Planning department if you need to complete a Sustainability Checklist. It looks daunting at first, but only 4 rows are likely to apply to these types of projects. **See Appendix B** for an example.

Your discussion with the Planning department will be about trying to show that any perceived 'harm' to the historic structure is trivial, and more than balanced by the social benefits of reduced carbon and assisting the church to serve the community for longer.

You access Planning via the national **Planning Portal**. You can leave it any time, it is saved in the portal. When you are mostly complete, *download a copy* of your application for review to see if you've covered everything. The process has a stage to calculate what you need to pay, which at the time of writing is £588 for full planning permission, plus a non-optional £85 service charge.

The site also includes an online tool for your Location plan (which locates the church among roads and landmarks) and site plan (zoomed in a little). These indicate which bits your application affects with a red line. Use a blue line to outline the rest of the church property. (I found the site instructions very confusing, so I include examples below.) When your submission is complete, the Planning officer will transfer the completed application and supporting documents to their local server.

Figure 1: Site plan with too much red line detail, vs a simpler site plan with blue church property boundary



You will need precise plans and elevations for your project which you may need to pay your church architect for unless you have in-house skills or your installer provides. A visual mock-up can be useful. Your architect may specify the best route for electrical cables in order to keep them hidden, and heat pumps may need screening. You will NOT need 'Listed Building Consent' from the Planning Department, because of the *Ecclesiastical Exemption act of 2010*. The Faculty process will cover that requirement, but you may have to mention that up front in your application or to the Planning Officer in charge of the case.

If you have a listed building, contact your regional Historic England office early on for their free pre-planning advice on your installation - that will probably take a number of weeks. They will then write a letter

with their advice, which you can include with your Planning application, or potentially send in afterwards when you get it. You will also need a Heritage Statement, written by a recognised professional with the right qualifications - your church architect is a logical first port of call. That might be around £700 to £1800 (plus VAT) depending on what your project is and whether you request a 'lightweight' two page version or the full 12-14 page document.

If your application is controversial, a potential tactic for success is to engage local councillors and the congregation to write letters of support during the public consultation period. This can help push an application toward a Planning Committee and a vote rather than a single officer's 'no'. Use visual mock-ups (created in Photoshop or AI) to show how the panels or heat pumps would look from the ground, and any support you have from Historic England. The main judgement seems to be whether any 'perceived 'harm' to the 'historic asset' is outweighed by the 'social benefit' of lower carbon or a sustainable church ministry.

If you know you have support in the Planning Department, then you could just trust the process without that overhead, or ask a handful of supportive individuals to write in to demonstrate community backing.

Grants and funding

Discuss with your Vicar and/or PCC what funds the church has to put towards the project, as well as what might be raised through a special Gift Day and/or events. Start a spreadsheet with what your project might cost, and where you hope to get what sums of money. This will likely evolve over time. Contact your Diocese to see if they have a dedicated person for grant support, and also a Net Zero Officer.

There is a lot of money out there for grants, but it takes some persistence to track down the ones that support your type of project, in your particular part of the country. Once found, the grants have different timelines and requirements, and it's worth tracking the details in a document or spreadsheet. Some are online forms, while others want effectively a multi-page essay about why your church should receive their grant. Your Statement of Need might be a useful source of words to raid for applications.

Some grants (but not all) require Faculty and Planning permission to be in place **before** you apply. A large grant might be from someone who is your 'first funder' but they will want to know a significant degree of technical detail and may require an Energy Audit. The church may have a legacy or large personal gift. Some grants will require you to have at least 50% raised from other sources. All grants will have different timetables and processes, so you'll want to track what was sent when and where you are in that process. Look for Diocesan 'Quick Win' grants for smaller items like thermometers or smart controls, to use during your information gathering stage.

As you work through your applications (I would allow several hours for each one, perhaps across a few days) it is valuable to save a copy of what you're doing. Some applications can be saved online and returned to repeatedly, but disasters do occur and a local copy of at least the long wordy answers will be a useful backup. Indeed, you might be able to re-use wording in other applications. An AI might be helpful with getting your head around what funders are looking for, if you don't have experienced support. (See the section **A note about using Artificial Intelligence**.)

All funders for carbon reduction projects will want to know about your journey so far, such as whether you are an Eco Church, have you got a Path to Net Zero (see **Appendix A** for a template), what measures have you taken so far in reducing carbon and energy use, and what was your last Energy Footprint Tool return.

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If it's a Church grant, such as from your Diocese or from the 'Give to Go Green' matching fund, you will also want to speak of the impact you have on the area spiritually, and how this project will support your long-term survival as a spiritual presence in the community, or how the project is an expression of faith.

Some funders support projects that specifically help the community, and churches are sometimes allowed to apply if they are registered charities. They will want you to show who in your community will benefit from your project, how many beneficiaries you estimate, and in what ways they will benefit.

Some funders will specialise in helping historic or rural churches have a future, and you will need to show how your project will contribute to your work in the community or the survival of the 'historic assets'.

This is a typical list of supporting documents you will want to have to hand. Some funders will require all of them, others perhaps just a couple, or some will want others besides. I've been trying to keep a central folder of support documents, and include the church initials in the name. Then each individual grant has a folder with a copy needed for that grant. I think it's good to number them within that folder.

- The annual accounts for the most recent year available (get from Charities Commission site)
- Bank statement less than 3 months old
- A copy of the governing body's (ie PCC) constitution
- A list of the Trustees (than is, the PCC members)
- The church's Safeguarding policy
- The church's Equal Opportunities policy
- Your Net Zero Plan (see **Appendix A**)

Insurance, Finance, and Risk

Insurance for solar and batteries is a developing area, and somewhat behind current technology. Insurers like Ecclesiastical may treat all batteries the same regardless of chemistry. While they prefer batteries to be outside, you might negotiate indoor placement (if you wish) by highlighting safety mitigations and quality installation. For an internal installation, ideally create a space with 60 minutes fire resistance, and then the increase in premium may be small. Some batteries have built-in fire retardant features. Certain insurers like Trinitas (from Aviva) are not especially concerned where you have your batteries.

Scaffolding is generally required for solar installation, and insurers may suspend 'Metal Theft' cover unless specific precautions are taken, such as 4-metre tall shuttering, Smart Water, and roof alarms. If you have a lead, zinc or copper covered roof, it's quite possible you already have the roof alarm and Smart Water in place to mitigate the cost of insurance. If you need this aspect of cover, complete the form (which needs details about the scaffolding installation) about six weeks ahead of installation.

When getting quotes for solar, let the supplier know whether you require scaffolding to this spec, because it will cost more. They will have to find a company accustomed to the requirements.

However, if you can't meet the scaffolding specification, it simply means that metal theft cover is suspended for the time it is in place. That is, the church bears the risk rather than the insurers for metal theft. The rest of the church cover should be as normal, though you might want to check.

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A note about using Artificial Intelligence

I've mentioned using an AI a couple of times, because it can help support you with writing, but it will give you very confident answers that may not be correct. Gemini uses your Google account (or you can set up an account with another AI) - this stores your chats to refer back to. It might useful to upload a PDF of your *Statement of Need* to give it good context of your church, community, ministries and project.

Here are some beginner tips from Gemini (edited for focus on our particular issues).

Getting Good Results

- **Start small:** Begin by using AI to automate simple tasks, such as summarizing long documents or brainstorming ideas. Paste a question from an application, give it the context (what grant organisation, what project) and see what answer it gives. Prepare to dialogue.
- **Provide context:** Tell the AI who you are, what you are trying to find out and what sources to use or what writing style. It sometimes helps to ask it what information it needs from you.
- **Master "prompt engineering":** Prompts are instructions. Be specific, clear, and detailed. For example, instead of 'What is the answer to…,' try 'My application for a grant for my church solar installation has this question: "Describe your beneficiaries". Limit answer to 100 words.'
- **Iterate:** If the first answer is not perfect, refine the request. Ask the AI to make it shorter, more formal, fewer adjectives or change the tone. Correct it, if it says something you know to be wrong.

Managing "Hallucinations"

- **Verify everything:** AI can generate false, outdated, or biased information or even just make things up to fill in any gaps (known as "hallucinations"). You can ask it to tell you when it doesn't know.
- **Check sources:** Always fact-check crucial information. It will remember what you told it before.
- **Use as a co-pilot:** Treat AI as a research assistant, not the final author. Human oversight is essential for quality control. It is also further trained by your corrections and documents.

Final thoughts

The Church of England's goal is to reach Net Zero Carbon by 2030. While almost any form of electrification replacing oil or gas will achieve the bulk of that target, your role is to find the right solutions and design for your specific building—not just "any" electrification.

While grants may be available to assist with capital installation costs, they rarely cover ongoing energy bills. Choosing an efficient, sustainable system is as much about long-term financial stewardship as it is about environmental impact.

For deeper exploration, I highly recommend the following resources:

- **Eco Church:** Excellent for broader environmental awards and guidance.
- **Church of England Webinars:** Practical, in-depth sessions on the Net Zero journey.
- **Churches Seeking Net Zero (Facebook):** A supportive community for asking questions and sharing experiences.

If you have specific questions or need a starting point, please feel free to email me at **eco@bedworthparish.org.uk**. I will do my best to point you toward someone who can help.

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Quick start checklist

This checklist might be a helpful reference as you go forward. Ask questions all the way, and don't let go until you are satisfied with the answer.

Phase 1: Foundations

- **Benchmark & Monitor:** Start the Energy Footprint Tool and place and track Bluetooth thermometers (See **Section 2**).
- **Plan & Team:** Draft your Net Zero plan and gather a small group to share the load (See **Section 2** and **Appendix A**).

Phase 2: Design & Quotes

- **Define needs:** Determine if solar panels, Heat Pumps, IR panels, or simple "Easy Wins" suit your usage (See **Section 4** & **Appendix A**).
- **Get quotes:** Get at least three quotes and check for visual impact (**See Section 5**)
- **Consult Professionals:** Speak to your Church Architect and Historic England early.

Phase 3: Permissions

- **PCC & Faculty:** Secure a formal resolution and begin your Statements of Need/Significance for the DAC **(See Section 6)**.
- **Planning:** Engage with the Planning Portal and Historic England for external changes **(See Section 6)**.

Phase 4: Funding & Risk

- **Grants:** Track applications and prepare your "pack" of supporting documents (**See Section 7**).
- **Insurance:** Negotiate battery placement and scaffolding requirements with your insurer (**See Section 8**).
- **Go Live:** Sign and pay for the deposit only once Planning, Faculty and Funding are secured.

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Appendix A

A practical path to "net zero carbon" for your church

These recommendations from the C of E aim to help churches reduce their energy use and associated carbon emissions. They are based on the findings of their church energy audit programme and input from of a range of professionals in the field. The Progress column holds examples.

NOTE: Many of the suggestions below require faculty; please seek input early on. Where historic fabric is involved, seek professional & DAC advice first, before making changes; stabilising the environment for these interiors is important to minimise cycles of treatment, with inherent carbon cost.

This version of "*A practical path to net zero carbon*" was adapted by Christine Rigden of All Saints Church, Bedworth, for churches to develop their own plan to suit their own churches and congregations. The original version [the-practical-path-to-net-zero-carbon-numbered-Jan2020] is @Archbishops Council April 2020.

Easy wins, with relatively fast pay back

The building itself:	**Progress** *[these are examples]*
A1. Maintain the roof and gutters, to prevent damp entering the building and warm air escaping.	A contractor cleans the gutters twice a year.
A2. Fix any broken window panes* and make sure opening windows shut tightly, to reduce heat loss.	They are visually inspected. Two small panes to fix. Thermal Imaging planned for Oct 2024
A3. Insulate around heating pipes to direct heat where you want it; this may allow other sources of heat to be reduced in this area.	Insulated pipes from boiler in cellar in 2022
A4. If draughts from doors are problematic, draught-proof the gaps* or put up a door-curtain*.	Draft proofing doors done 2022 in Tower and Studio.
A5. Consider using rugs/floor-coverings (with breathable backings) and cushions on/around the pews/chairs.	Carpeting in Sanctuary, offices and meeting rooms

Heating and lighting:

A6. Switch to 100% renewable electricity, for example through Parish Buying's energy basket or getting quotes directly.	With Octopus from 23 Nov 2023
A7. Match heating settings better to usage, so you only run the heating when necessary for people (or the historic fabric - speak to DAC).	Used most days, so Sanctuary now 16° x4 days, 18° x3 days.
A8. If you have water-filled radiators, try turning-off the heating 15 minutes before the service ends; for most churches this allows the heating system to continue to radiate residual warmth*.	Heating in offices turns off before areas are due to be vacated.
A10. Replace lightbulbs with LEDs, where simple replacement is possible.	All halogen bulbs have been replaced.
A11. Replace floodlights with new LED units.	Done by Council.
A12. If you have internet connection, install a HIVE- or NEST-type heating	N/A, Programmable thermostat

controller, to better control heating.	installed.
A13. If your current appliances fail, then replace with A+++ appliances.	(Haven't found A+++ for commercial appliances)

People and policies:

A14. Complete the Energy Footprint Tool each year, as part of your Parish Return, & communicate the results.	Completed, need to communicate at APCM.
A15. Create an Energy Champion who monitors bills and encourages people to turn things off when not needed.	<name>, liaising with <name>.
A16. Write an energy efficiency procurement policy; COMMIT to renewable electricity & A+++ rated appliances.	
A17. Consider moving PCC meetings elsewhere during cold months, rather than running the church heating.	

Offset the rest:

A18. For most low usage "Sunday" churches, once they have taken steps like these, their remaining non-renewable energy use will be very small. For the majority, all they need to do now to be "net zero" is offset the small remaining amount of energy through Climate Stewards or other reputable schemes.

A19. Also, think about your church grounds. Is there an area where you could let vegetation or a tree grow?

Actions with a reasonably fast pay back for a church with medium energy usage

Perhaps half of churches should consider them. Most actions cost more than the ones above, and/or require more time and thought. Some require some specialist advice and/or installers. They are often good next steps for those churches with the time and resources to move on further towards 'net zero'.

The building itself:

B1. If you have an uninsulated, easy-to-access roof void, consult with your appointed church Architect about insulating the loft*****.	
B2. If you have problematic draughts from your door, and a door curtain wouldn't work, consult with your appointed church Architect about installing a glazed door within your porch, or even a draught-lobby*****.	
B3. Consider creating one or more smaller (separately heatable) spaces for smaller events.	
B4. Consider fabric wall-hangings or panels, with an air gap behind, as a barrier between people and cold walls.	

Heating and lighting:

B5. Learn how your building heats/cools and the link to comfort by using	

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data loggers (with good guidance).	
B6. Improve your heating zones and controls so you only warm the areas you are using.	
B7. Install TRVs on radiators in meeting rooms & offices to allow you to control them individually.	
B8. Consider infra-red radiant panel heaters*, which keep people warm without trying to heat the whole church space.	
B9. If you have radiators, install a magnetic sediment "sludge" filter to extend the life of the system.	
B10. Consider thermal and/or motion sensors to automatically light the church when visitors come in, and for kitchens and WCs	
B12. Get your energy supplier to install a smart meter, to better measure the energy you use.	Octopus will install it for free, if you're a customer

People and policies:

B13. Vary service times with the seasons so in winter you meet early afternoon when the building is warmer.	

Bigger more complex projects, for busy churches

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 DAC.

The building itself:

C1. Draught-proof windows in Sanctuary*.	
C2. If you have an open tower void, insulate or draught-proof the tower ceiling *****. Tower structure, from top: roof; bell chamber with floor; clock chamber with floor; ringing chamber with radiator, carpet & window; tower entrance with modern ceiling & radiator.	
C3. Double-glaze or secondary-glaze suitable windows in well-used areas such offices, vestries and halls*****.	Secondary glazed offices and Side Chapel
C4. Internally insulate walls in well-used areas such offices, vestries and halls*.	
C6. Reinstate ceilings, and insulate above*.	

Heating and lighting:

C7. Install a new LED lighting system including all harder-to-reach lights,	

new fittings & controls.	
C8. Install solar PV if you have an appropriate roof and use sufficient daytime electricity in the summer.	

Actions for specific times/circumstances (such as when reordering is happening).

Nearly all require professional advice, including input from your DAC.

The building itself:

D1. If you are reroofing anyway then insulate the roof if appropriate for your roof*.	
D2. If you have an uninsulated wall with a cavity (typically builds 1940 onwards), then insulate the cavity.	N/A solid stone walls
D3. If the building is regularly used & suitable, consider appropriate external insulation or render, suiting the age and nature of the building*.	N/A not appropriate for our Grade II* listed stone church

Heating and lighting:

D4. If there's no alternative that does not run on fossil-fuels, then replace an old gas boiler or an oil boiler with a new efficient gas boiler.	Two reasonably efficient gas boilers in place, ~ 13 years old
D5. If yours is a well-used church which you want to keep warm throughout the week, then consider an air or ground source heat pump. Ground source heat pumps are more expensive and invasive to install than air source heat pumps, but run more efficiently once installed, depending on ground conditions.	Currently investigating ASHP for a feasibility study and funding
D6. If you are doing a major reordering or lifting the floor anyway, and yours is a very regularly used church, then consider under-floor heating. This can work well in combination with a heat pump (above).	Currently investigating for a feasibility study. Not otherwise planning major reordering.

Church grounds:

D7. 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.	

Unlikely actions

Often mentioned in this context, but are generally not recommended, because of the risk of harm to the fabric, energy used, and/or the cost.

- Standard secondary glazing on the main, historic windows (this can be inefficient, expensive, & cause damage. Bespoke heritage secondary glazing is available).

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- Install solar thermal panels to generate hot water (hot water use is generally not high enough to justify it - current water heating is electric).
- Background space heating at all times unless needed for stabilisation of historic interiors (high energy use). [NB - A church with frequent use might find it useful to experiment with a low boiler temperature and constant heating to a modest setting.]

***** *If interiors are of historic, architectural or artistic interest, seek professional & DAC advice first.*

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Appendix B

Sustainable Design and Construction Checklist

Your Planning department may require you to complete a Sustainable Design and Construction Checklist confirming where in the application the policy a requirement has been addressed. Here is an example from my council, yours may differ. Note how N/A also has text to indicate why.

Priority	Key consideration	Applicable to development type	Where referenced/ considered/ justified in developers' planning application	Yes or No
Local Context	Has local context been addressed in the application?	All applications	**01. D&A Statement** / **04. Noise Impact Statement**. Units are sited in discreet locations (modern extension/planter) to minimize visibility. Graphite finish chosen to recede against stonework.	Yes
Current Use of Buildings	Is the development in sympathy with the uses and activities of the surrounding area?	All applications	**04. Noise Impact Statement**. Replaces gas with low-noise renewable energy, to ensure no noise nuisance and not impede streets or paths	Yes
Ownership and Tenure	Is the proposed ownership/tenure supported by evidence?	Major residential applications		N/A - Not a residential application.
Street Layout	Has the user hierarchy been followed in the design process?	Major applications		N/A - Development is "Minor" & under the relevant thresholds
Street Layout	Do the designs support sustainable transport options?	Major applications		N/A - Development is "Minor" & under the relevant thresholds
Street Layout	Has the visual interest of the street layout been considered in the application?	All residential applications		N/A - Not a residential application.
Patterns of Development	Does the building arrangement consider the existing streetscape?	All applications	**01. Design & Access** - Minor equipment installation only. Removal of redundant brick gas cupboard at East End improves existing streetscape. Railings at West end to echo existing black railings.	Yes
Residential Amenity-Daylight	Have daylight, sunlight and privacy been considered in the application?	All applications	**04. Noise Impact Statement** - Low-profile ground-level units (<2m height), no impact on light. The proposal does not involve any new windows or openings that would affect privacy. Noise levels at neighbours are ~ 26 dB(A), well below the 42 dB(A) limit	Yes

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Residential Amenity - Outdoor	Has outdoor amenity space been considered in the application?	All residential applications		N/A - Not a residential application.
Residential Amenity - Transport	Has the storage of transport vehicles been considered in the application?	All residential applications		N/A - Not a residential application.
Residential Amenity- Waste	Is there sufficient space for bin storage which protects visual amenity and prevents risk of hazards?	All residential applications		N/A - Not a residential application.
Site and Arrangement - Internal Minimum Space Standards	Does the design conform to the Technical Housing Standards- Nationally Described Space Standard?	All residential applications		N/A - Not a residential application.
Built Form	Does the design have regard for characteristics of the area?	All residential applications		N/A - Not a residential application.
Built Form	Where developments occur within a Landscape Character Area have the guidelines in latest Nuneaton and Bedworth Landscape Character Assessment guidelines, or the Nuneaton and Bedworth Land Use Designations been adhered?	All residential applications		N/A - Not a residential application.
Built Form - Extensions and Alterations to Existing Houses	Are the proposed alterations in conformity with the recommendations in this SPD?	All household applications		N/A - Not a household application.
Residential - Building for Life	Does the development achieve green scores against all Building for Life 12 questions?	Major residential applications		N/A - Not a residential application.
Optional Building Regulations - Accessible and Adaptable Dwellings	Do 35% of dwellings meet the M4 (2) standard	Major residential applications		N/A - Not a residential application.
Passive Solar Design	Is the overall design in accordance with the principles of Passive Solar Design?	Major residential applications		N/A - Not a residential application.
Secured by Design	Does the application incorporate the principles of Secured by Design (SbD) contained within the relevant SbD design guide?	Major residential applications		N/A - Not a residential application.
Air Pollution	In non-strategic allocations, does the application include an air quality assessment?	Major residential applications		N/A - Not a residential application.
Air Pollution	In areas with sensitive receptors, does the application include an air quality	Major residential applications		N/A - Not a residential

	assessment?			application.
Noise Quality	Where requested by the Council, does the application include a Noise Impact Assessment?	Major residential applications		N/A - Not a residential application.
Light Pollution	Is the lighting at a level for which it intended and does not cause disruption to other street users	Major residential applications		N/A - Not a residential application.
Light Pollution	Does the lighting infrastructure enhance the overall look of the street design?	Major residential applications		N/A - Not a residential application.
Soil	Does the Site Waste Management Plan identify soils and detail their protection during construction and subsequent re-use?	Major residential applications		N/A - Not a residential application.
Commercial-BREEAM	Has a BREEAM design stage assessment, which achieves at least a 'Very Good' rating, been submitted prior to development?	All major commercial applications		N/A - Development is "Minor" & under the relevant thresholds
Commercial-BREEAM	Has provision been made to submit post construction certificates which achieve a minimum 'Very Good' rating?	All major commercial applications		N/A - Development is "Minor" & under the relevant thresholds
Sustainable Construction	If required, has a Demolition Method Statement been completed?	All major applications		N/A - Development is "Minor" & under the relevant thresholds
Sustainable Construction	Has a Construction Management Plan been completed?	All major applications		N/A - Development is "Minor" & under the relevant thresholds
Construction Waste	If demolition cannot be avoided has an audit been included in the Site Waste Management Plan which shows the percentage calculated of materials which can be reused or recycled?	All major applications		N/A - Development is "Minor" & under the relevant thresholds
Construction Waste	Is the recovery rate in accordance with the Waste and Resources Action Programme (WRAP) guide Waste Recovery Quick Wins?	All major applications		N/A - Development is "Minor" & under the relevant thresholds

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