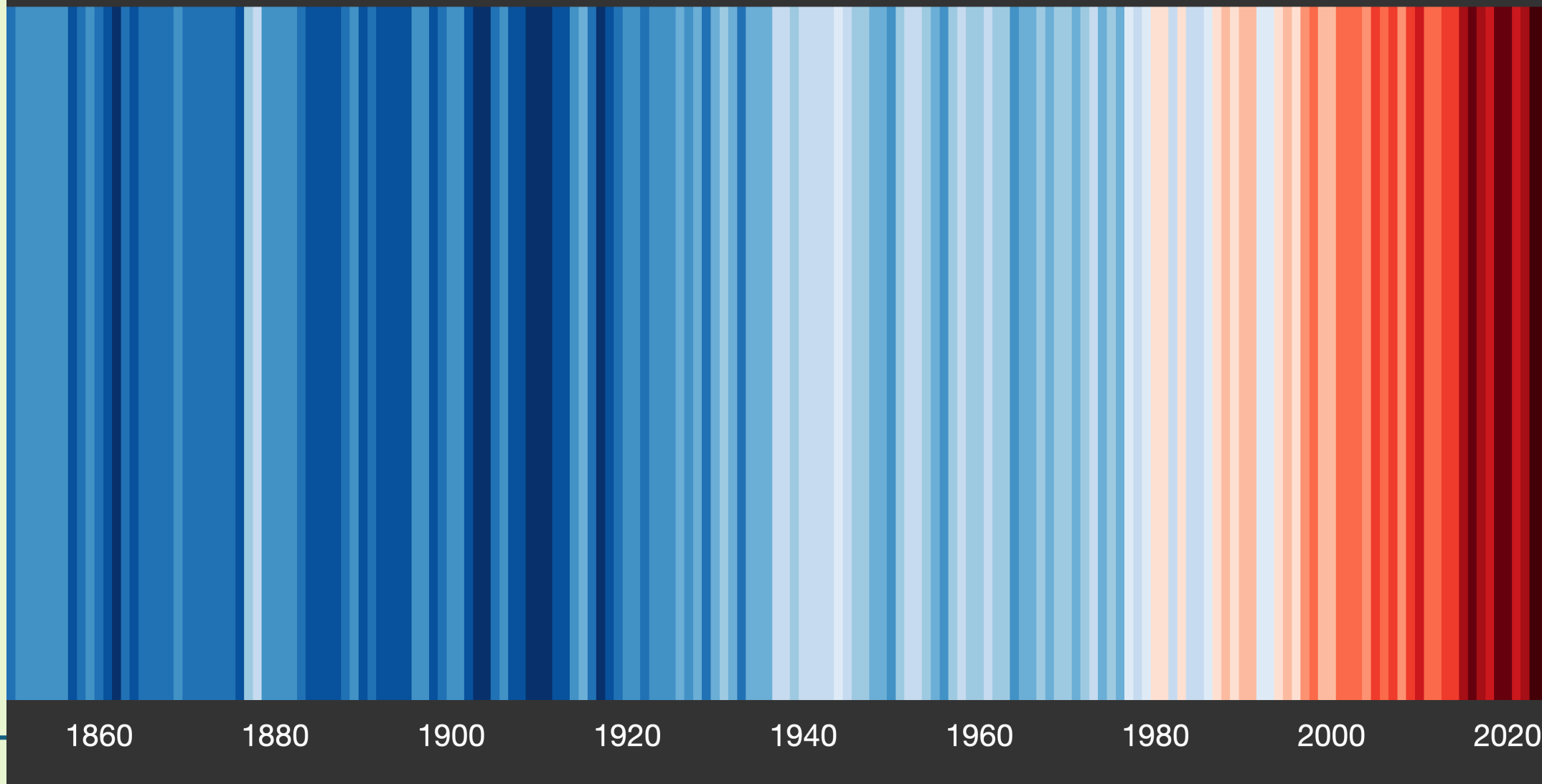


# Net Zero Carbon and the Environment: What does it mean for our churches?

Nigel Cooper

Diocesan Environment Officer

Global temperature change (1850-2024)



# London, United Kingdom

## Buckingham Palace

CLIMATE  
CO  
CENTRAL

Present-day sea level

Google Earth  
Imagery © 2014 Google  
Data SIO NOAA, U.S. Navy, NGA, GEBCO





# London, United Kingdom

## Buckingham Palace

CLIMATE  
CENTRAL

Multi-century sea level rise  
after 1.5°C of global warming

Google Earth  
Image Landsat / Copernicus  
Data SIO, NOAA, U.S. Navy, NGA, GEBCO





# London, United Kingdom

## Buckingham Palace

CLIMATE  
CO<sub>2</sub>  
CENTRAL

Multi-century sea level rise  
after 3.0°C of global warming

Google Earth  
© 2020 Google LLC  
Data: 2019, 2020, 2021, 2022, 2023





# Motivational target of NZC by 2030

- Set by General Synod in 2020
- National “Routemap” in 2022
- [www.churchofengland.org/about/church-england-environment-programme](http://www.churchofengland.org/about/church-england-environment-programme)
- Ely Diocesan “Action Plan” in Oct 2023

## Distinctive features of Ely NZC Action Plan:

1. Understood as Mission
2. EcoChurch Framework
3. Technical input
4. Delegated decision-making



St Michael All Angels Withington  
The Church of England's first net zero carbon church in the modern era





Outside the net zero church



Inside the net zero church



# The Practical Path to Net Zero for churches

- Quick Wins
  - General building maintenance
  - Improved heating settings
  - Replace lights with LEDs
  - Create an Energy Champion
  - Submit the Energy Footprint Tool
- Deeper actions
  - Insulation and draught-proofing
  - Improved heating controls
  - Thermal/motion sensors for lighting
- Bigger actions for high-use churches
  - Double- or secondary-glazing
  - Install solar PV

## CHECKLIST

### Part A - Where do we start?

These are actions that nearly all churches can benefit from, even those primarily used only on a Sunday.

They are relatively easy and are a good place for churches to start, when trying to move towards 'net zero'.

		Already done / up-to-date	Not applicable	Not a priority right now	Explore further / get advice	Priority
<b>The building itself:</b>						
A1.	Maintain the roof and gutters, to prevent damp entering the building and warm air escaping.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A2	Fix any broken window panes* and make sure opening windows shut tightly, to reduce heat loss.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A4	If draughts from doors are problematic, draught-proof the gaps or put up a door-curtain*.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A5	Consider using rugs/floor-coverings (with breathable backings) and cushions on/around the pews/chairs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Heating and lighting:</b>						
A6	Switch to 100% renewable electricity (for example through Parish Buying's energy basket) and 'green' gas.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A7	Match heating settings better to usage, so you only run the heating when necessary*.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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*.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A9.	If you have radiators, add a glycol based 'anti-freeze' to your radiator system and review your frost setting.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A10.	Replace lightbulbs with LEDs, where simple replacement is possible.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A11.	Replace floodlights with new LED units.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A12.	If you have internet connection, install a HIVE- or NEST-type heating controller, to better control heating.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A13.	If your current appliances fail, then replace with A+++ appliances.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>





# Starting on the practical path to net zero

“A: Where do we start?” (a sample of suggestions)

A1. Maintain the roof and gutters, to prevent damp entering the building and warm air escaping

Hopefully reassuring that it emphasises maintenance as the first action

The diocese is developing a ‘gutter scheme’

A6. Switch to 100% renewable electricity

A8. If you have water-filled radiators, try turning-off the heating 15 minutes before the service ends

A17. Consider moving PCC meetings elsewhere during cold months

A18. For most low usage “Sunday” churches, once they have taken steps like these, their remaining non-renewable energy use will be very small.

# Ideas to save energy and reduce energy costs

- Check your [energy bills](#),
  - are you paying reduced VAT rate?
  - are you paying the Climate Change Levy (CCL)?
  - if not, complete a VAT declaration form, available on your energy provider's website
- If you have a dual rate electricity tariff, check your meter shows the correct time and date
- Regularly check your meter readings
- [Experiment](#) with thermostat
  - Can you reduce by 1 or 2 degrees
  - Can you turn on heating later
  - Can you switch off heating earlier
  - Switch off between services (unless fabric, fixtures, fittings require it)
  - Switch off heating in unoccupied spaces
  - Add smart controls or timers to heaters so they can't be left on by mistake





# Ideas to save energy and reduce energy costs

- Heat the people (not the space!)
- Encourage people to sit away from walls, doors and draughts
- Energy champions could remind people to save energy (e.g. using eco settings on dishwasher)
- Turn off equipment when not in use (e.g. computers, printers and copiers)
- Create clear instructions for groups hiring the space
- Lighting
  - Check how light the building is before turning on
  - Consider motion operated lights
  - Put signs next to light switches asking people to turn them off when leaving
  - Think about reducing the hours/days your external floodlighting runs for
  - Use dimmers if you have them
  - Switch bulbs to LED where possible



# Energy Footprint Tool

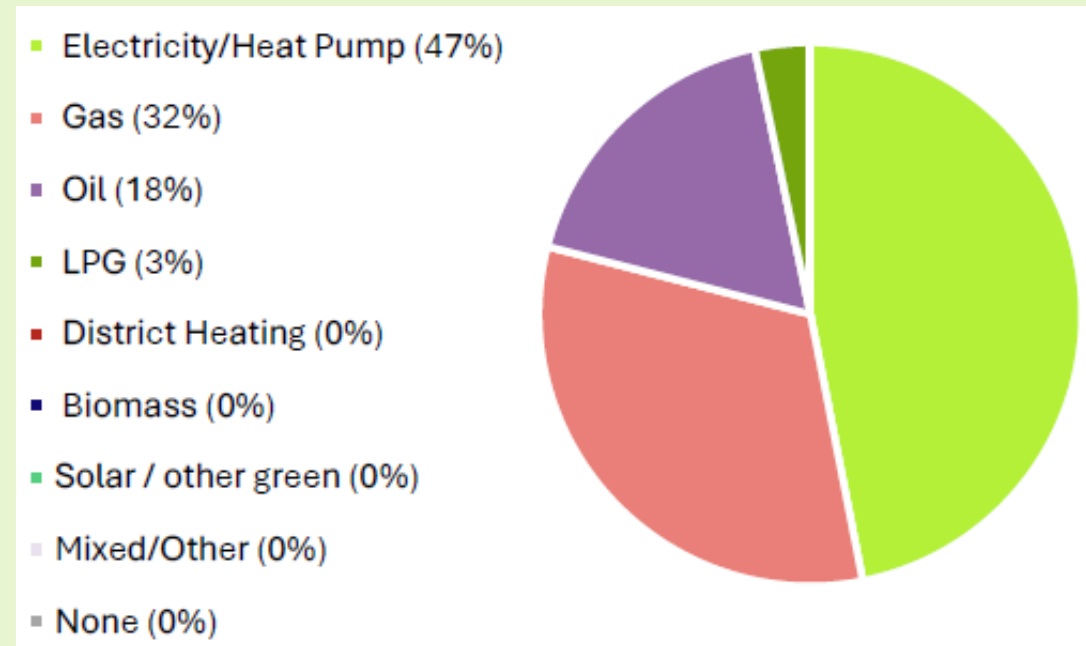
- Understand your church's energy use
- Take first steps as a church on your eco journey
- Your findings will help inform carbon reduction projects and will help you be eligible for grants
- You will also be helping the Church of England monitor progress towards becoming net zero carbon by 2030





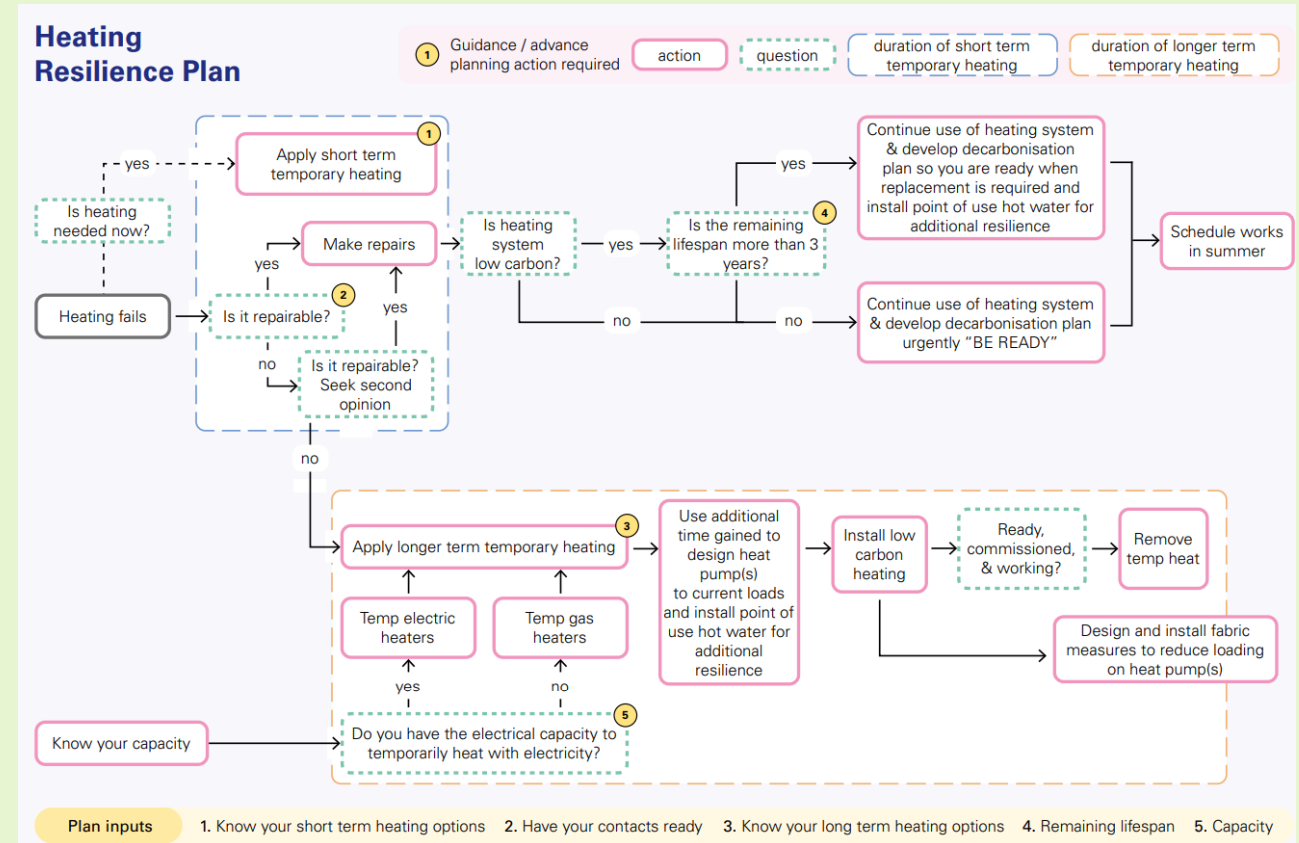
# Ely churches heating – primary fuel source

- 53% of churches in the diocese are heated using fossil fuels
- Nearly 50% of these have heating systems which are 20+ years old and nearing end of life



# Heating resilience planning

- Planning for the event of a heating system failure
  - Have contacts ready
  - Remaining lifespan
  - Electricity supply capacity
- Know your short-term heating options
  - Holding repair to boiler
  - Temporary heating
- Know your long-term heating options
  - Avoid like-for-like replacement
  - Preparation for costs, including fundraising and electrical upgrade requirements



# How to progress your long-term heating plans

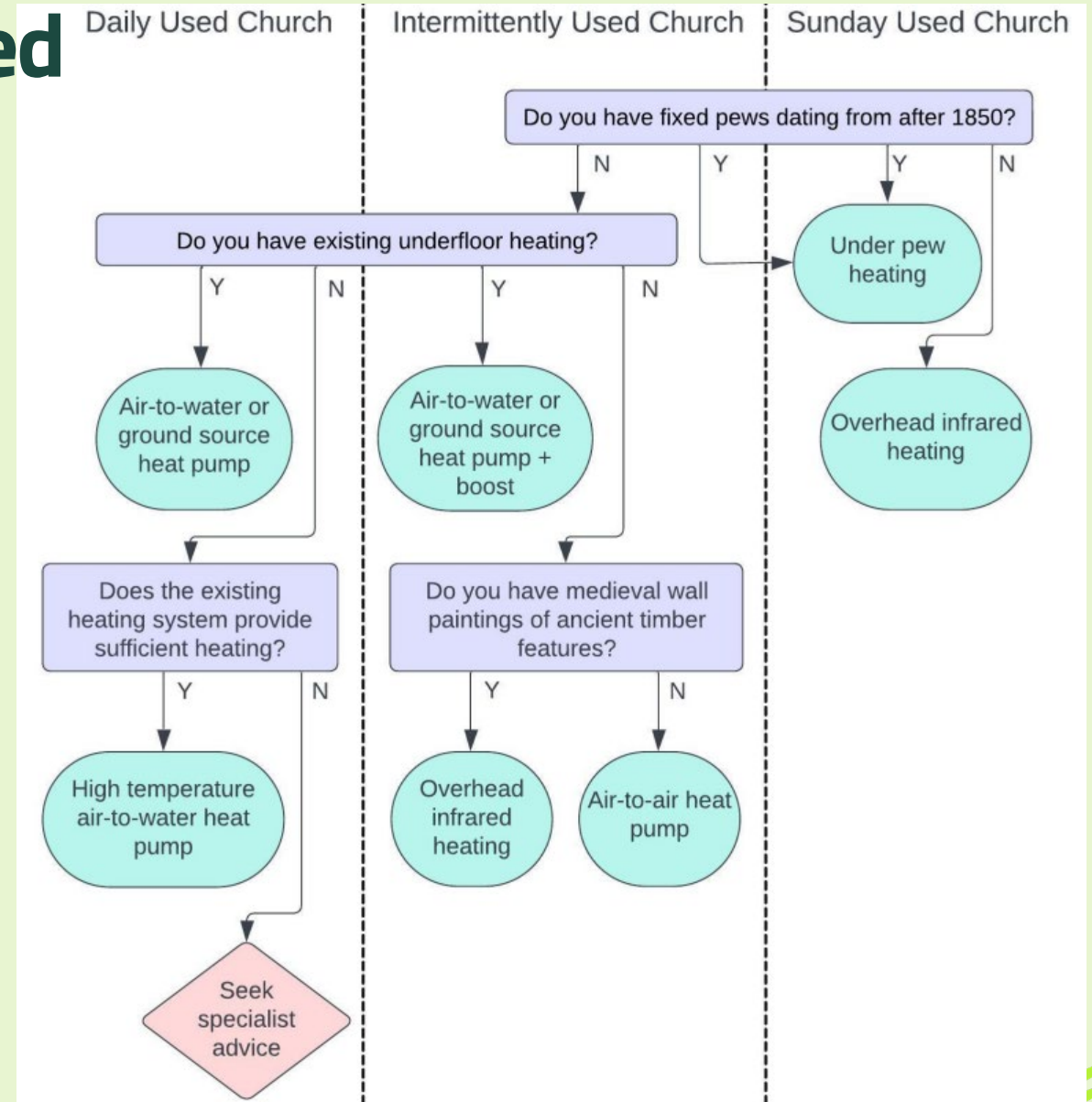
- Contact the DAC
- If you are a high emitting church (over approx. 8 tonnes), arrange an energy audit (if not already done so)
  - This will include a topline heating proposal
- Inform yourself
  - Review [Church Buildings Council heating guidance](#)
  - Complete the '[Heating Checklist](#)'
  - Watch [webinars](#)
  - Read [case studies](#)
- Visit churches with heating systems you are considering (peer to peer advice)
- Seek professional advice
  - Obtain an options appraisal
- Apply for permission
  - applicants need to provide, “in the case of matters to which net zero guidance applies, an explanation of how the petitioner, in formulating the proposals, has had due regard to that guidance”



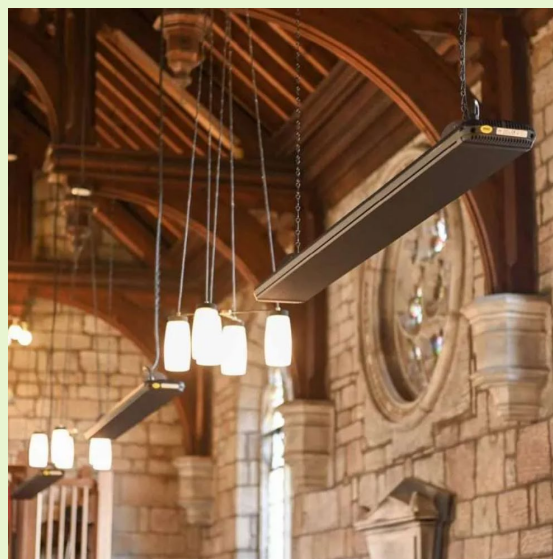


# Choosing your decarbonised church heating system

This flow chart suggests the most likely primary decarbonised heating solution for churches, based on their use patterns. All churches should be aware that there are often bespoke issues that may require specialist input, and which could affect the most appropriate outcome. This may include specific conservation needs of the building fabric or interiors, or the availability of suitable locations to accommodate internal and external elements of the heating systems.



# Infra-red 'heat the person' solutions





# Localised 'heat the person' solutions





# Air to air heat pumps



# Lighting

- Evaluate whether the existing system is adequate
- Inform yourself
  - Review the Church Buildings Council [guidance documents](#)
  - Read case studies
  - Watch the lighting [webinar](#)
  - Visit other churches for ideas
  - Consider switching options
- Seek professional advice
- Apply for permission



Holy Sepulchre, Peterborough

## Introduction

Lighting a church building requires both artistry and technical ability, and requires the input of specialist advice, ideally from a suitably experienced independent consultant in order to achieve a successful scheme. Modern lights, with effective and suitable controls, using only what light is needed, will significantly cut your energy use. This guidance note is intended to give a broad overview of the technology, an idea of what a lighting scheme could seek to achieve, and some basic principles to consider regarding the impact on your church building.

## What is a good lighting scheme?

Lighting within a church can have a positive or negative impact on people's experience of the building. At the same time, the energy used to run the lighting scheme will add to the church's carbon footprint, so the system and its components should be energy-efficient. An effective scheme will enable users, amongst other things, to:

- see and move around freely
- read services sheets / projected words and images
- see others – celebrant, choir and congregation
- enhance and appreciate the building's spatial qualities, architectural details and points of interest (wall paintings, artwork, woodwork, textiles, monuments, sculptural details, architecture)
- enhance liturgy
- easily avoid hazards around the building (steps, slopes etc)





# Case studies and webinars





# Climate resilient church (adaptation)

Adaptation Committee of the CCC: **The second National Adaptation Programme has not adequately prepared the UK for climate change.**

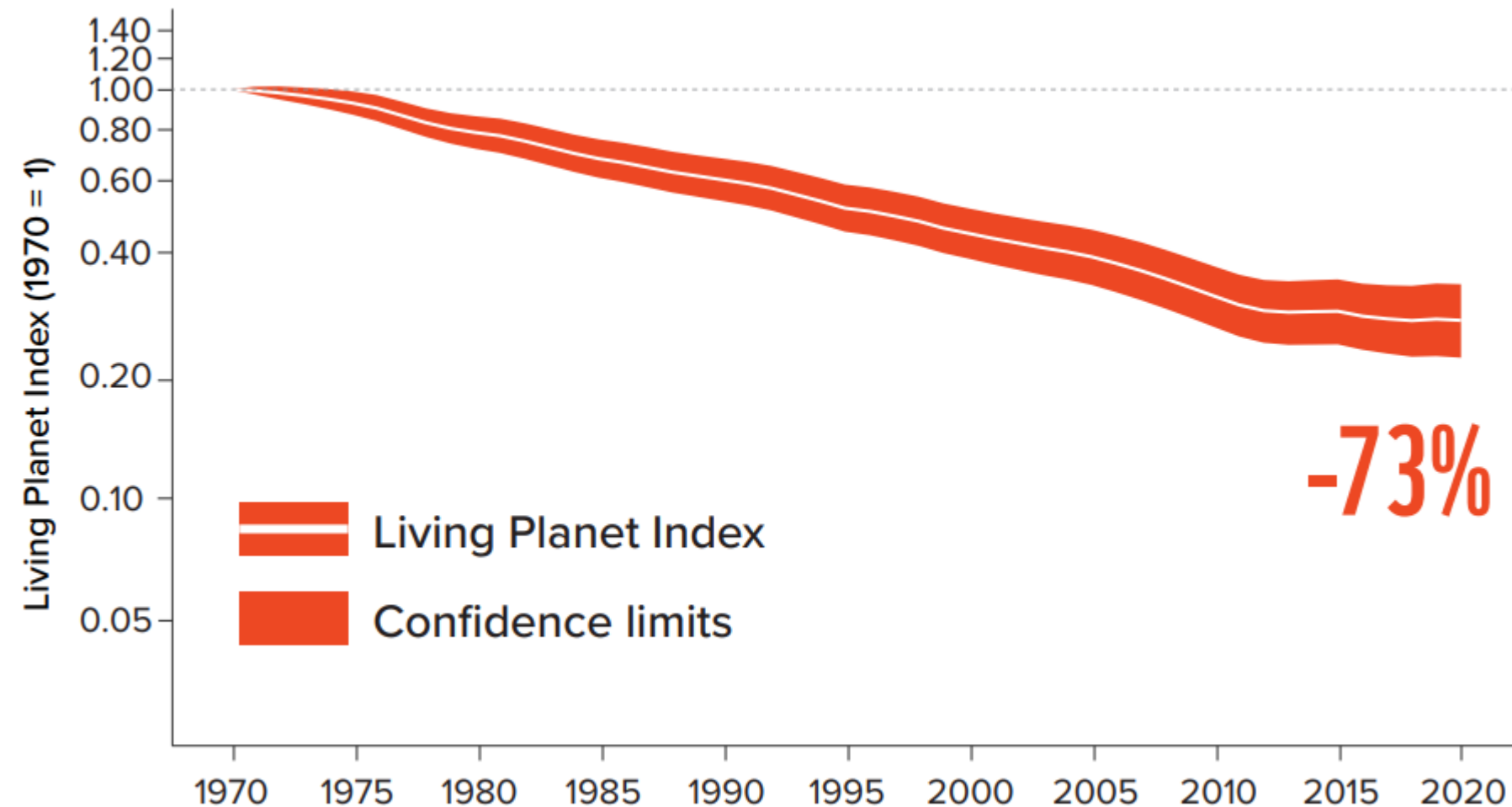
Key risks:

- Flooding
- Flash rainstorms
- Drought, heat and subsidence
- Wind damage
- Wildfires

Key actions:

- Maintenance
- Opportunities for planned resilience

# Global Biodiversity Crisis



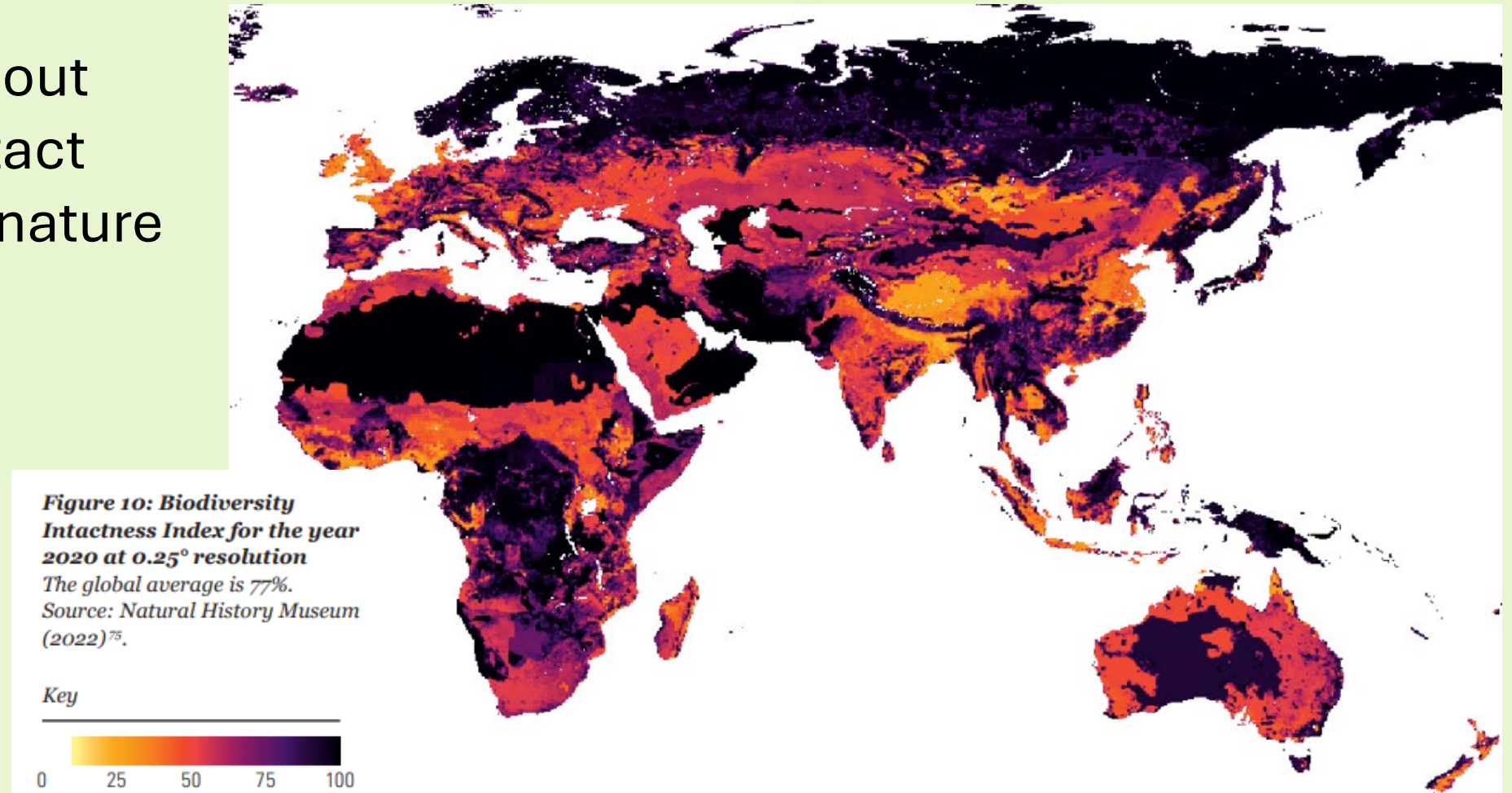
**The Living Planet Index: 1970 to 2020.**

Worsens from 69% to 73% in two years

N.B This is now on a log scale

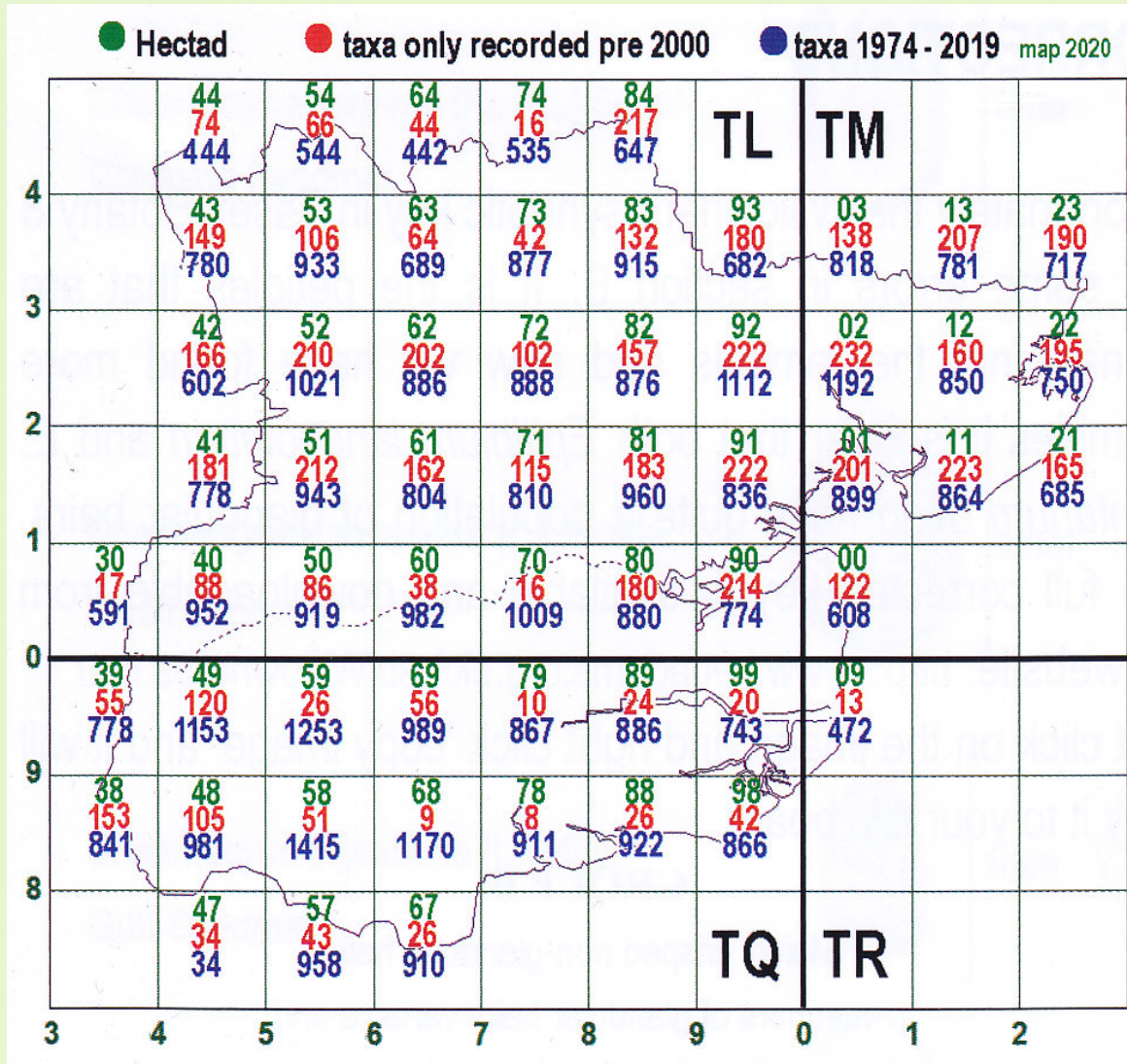
# Global Biodiversity Crisis - intactness

Britain is about the least intact country for nature in the world





# Extirpation – going bald one hair at a time!



Plant species recorded in Essex over past twenty years

- Blue numbers = total number of species found in 10x10 km
- Red = number of species not refound in past 20 years: LOST!
- Very variable, but approximately 10% lost since 2000

# Typical species in churchyards

- Norfolk:
- 50% of population:
  - Cowslip
  - Meadow saxifrage
  - Ox-eye daisy
  - Lady's bedstraw
  - Pignut
  - Lesser burnet saxifrage





# Grassland fungi

- Waxcaps - *Hygrocybe*
- Lt Leighs, Essex

pratensis

colmanniana

fornicata

irrigata

quieta

ceracea

Punicea\*

mucronella

conica

virginea

flavipes

psittacina

reidii

coccinea

insipida

aurantiosplendens

chlorophana

spadicea





# Mosses

- Value of paths and flat stones
- Cambridge mosses
  - *Tortula papillosa*\*
  - *Rhynchostegiella curviseta*
- Essex mosses
  - *Weissia microstoma*
  - *Ditrichum cylindricum*
  - *Pottia intermedia*



# Lichens

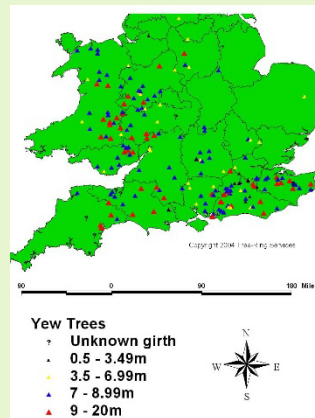
- 160 churchyards contain over 100 species
  - *Lecanographa grumulosa* (Churchyard lecanactis) growing on the tower of a church in Somerset.





# Ancient trees

- Yews
  - ‘oldest’ at Fortingall
  - Distribution
- Veteran Trees



# Swifts

- Ely diocesan swift survey 2006
  - 23 churches returned forms
  - 11 reported low-flying swifts
  - 5 almost certainly had nesting swifts





# Bats

- Nearly all old churches have bats
- Less than 5% have a bat problem





# Cambridge-shire WT

Run by a volunteer who works very closely with diocese

She visits to give advice and then arranges the award

**What to do** – Top tips for improving your churchyard for wildlife  
Every churchyard is different but here are some ideas on what you could do for wildlife;

Build a compost heap – great for reptiles and small mammals

Provide bird, bat and insect boxes plus log piles.

Plant hedges – providing cover and winter berries for birds and mammals



Leave small plants and lichens on walls and monuments

Are there any grassland areas you could cut differently? i.e. remove grass cuttings from mown areas to encourage wild flower growth



Plant herbs to attract butterflies and bees

Plant trees for the future, site them carefully and inspect them annually

Maintain a list of plants and animals seen in the churchyard and make this available on a noticeboard for everyone to see

Seek advice on surveying and caring for the churchyard



Bedfordshire  
Cambridgeshire  
Northamptonshire



## Cambridgeshire Churchyard Conservation Award Scheme

Patron; The Bishop of Ely, The Rt. Revd. Stephen Conway

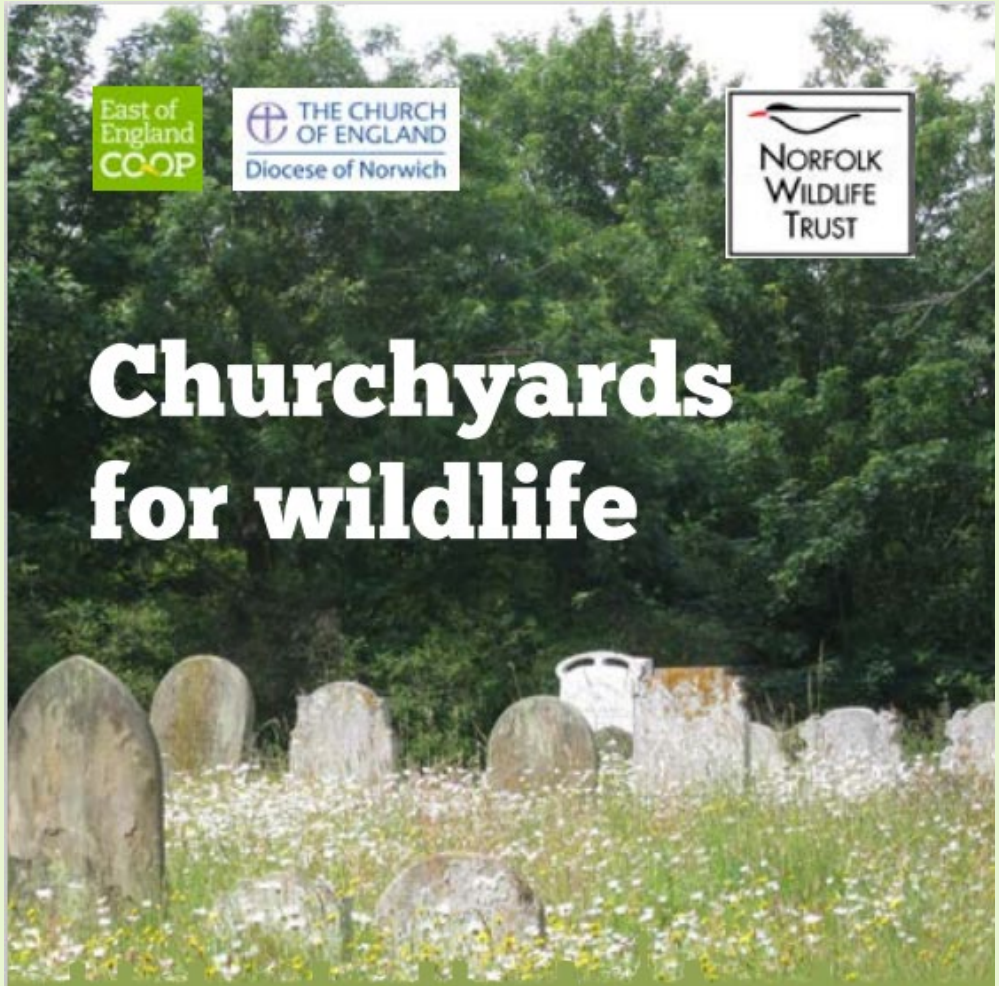




# Norfolk WT

As part of the scheme, they can:

- Carry out a free plant survey
- Discuss the individual needs of the church community
- Offer management suggestions tailored to your churchyard or burial ground.



East of England COOP

THE CHURCH OF ENGLAND  
Diocese of Norwich

NORFOLK WILDLIFE TRUST

## Churchyards for wildlife

The Norfolk Wildlife Trust (NWT) Churchyard Conservation Scheme (CCS) was established to encourage those responsible for churchyards to consider the needs of wildlife during routine management of the churchyard, as well as during works to the buildings, churchyard walls and tombstones.

The main purpose of churchyards isn't wildlife conservation. However, churchyards that are havens for wildlife can also have the desired tidy, cared and loved for appearance wanted by most. The two purposes can be brought together to create a beautiful place for people to rest and reflect. Areas where wildflowers are left to flourish are great places for bees and butterflies to thrive, but also add beauty for all to enjoy.

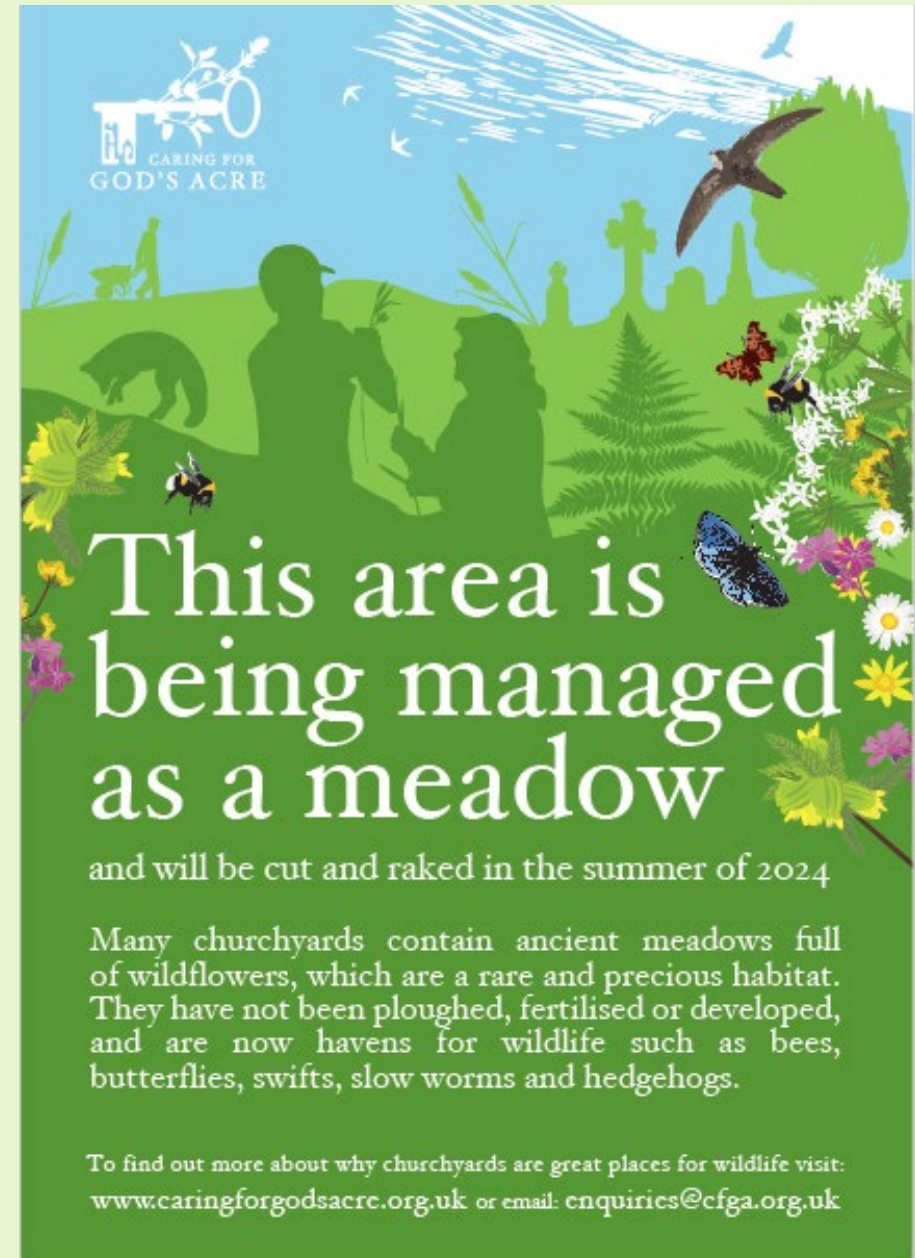
 

Saving **Norfolk's Wildlife** for the Future



# Caring for God's Acre

- cfga has excellent resources on its website
  - Such as this poster
  - Advice on volunteers
- And runs many events and programmes, including
- Churches Count on Nature
- But there is also local support:



National statutory guidance – ‘have regard to’



# Tree issues

- Work to trees and planting trees comes under Faculty, though most work is List B
- The PCC has liability over the safety of trees, especially if the PCC manages the churchyard, so get them inspected
- Look after your old trees, don't treat them carelessly, eg bonfires, compost heaps, grave digging beside them



Help us respond  
faithfully to the  
climate and  
nature crises

Worship and  
Teaching



Embedding creation care  
in worship, prayer and learning

Buildings



Finding energy efficient and innovative  
ways to manage our places of worship

Land



Nurturing spaces  
for people and nature

Community and  
Global Engagement



Transforming local and global  
communities and ecosystems

Lifestyle



Living joyfully and sustainably as  
followers of Christ

# EcoChurch framework

EcoChurch will be aligned  
closely to the CofE's Routemap  
later this year

EcoChurch provides great online  
resources

Stepwise progression:

Register

Plan your changes

Apply for Bronze Award

Go for GOLD!

# Eco Church – putting this in context

- Eco Church is the recommended programme for a comprehensive approach to the environment by a parish.
  - [Eco Church - An A Rocha UK Project](#)
- *It covers:*
  - Worship and teaching
  - **\*\*Buildings and energy\*\***
  - Land and nature
  - Community & global engagement
  - Lifestyle
- It has a progressive award scheme: bronze/silver/gold
- It has many resources and guidance documents, including on heating and lighting
- It helps a congregation to understand the theological basis of creation care
- It looks at issues such as personal lifestyle, churchyards, engaging your community, mission



# Quick Wins

- WORSHIP AND TEACHING
  - Include Creation in intercessions
- BUILDINGS AND ENERGY
  - Building maintenance, draught-proofing
- LAND AND NATURE
  - Churchyard care
    - Caring for Gods Acre
- COMMUNITY AND GLOBAL ENGAGEMENT
  - Local, Organic, Animal-friendly, Fairly-traded food/drink (LOAF)
- LIFESTYLE
  - Cleaning materials





# Next steps

- When you get back:
  - Eco Church to be a standing item on PCC meeting agenda
  - PCC member appointed responsible for Eco Church reporting and general environment work (doesn't need to be on Eco Church team, just to report on progress)
  - Everybody register if not already done
  - Start to get underway with next award (Bronze, Silver, Gold)
- Recruit parish Eco Champion from congregation
  - if you haven't one already...
  - progress church through Eco Church awards
  - share experiences with other churches – self help
- Eco Champions or interested parties to join Zoom session on 30 September



# Support Zoom Sessions

- Quarterly sessions
- Tuesday evenings 6-7pm
- Speakers
  - Eco Churches in the diocese
  - Specialists (climate justice/botanist)
  - Themed breakout sessions to discuss issues and challenges in smaller groups
- NEXT SESSION
- Tuesday 30 Sept 2025
- Email Sacha to book



# What is a Faculty?

- Legal Consent for works to the church, or in the churchyard, roughly equivalent to Listed Building Consent (LBC)
- Church of England has 'Ecclesiastical Exemption' from LBC, because it operates its own Faculty system instead
- Governed by 'Faculty Jurisdiction Rules'
- If abused, exemption could be removed, and consents would be via local authority instead



# When is a Faculty Needed?

- Most work to church buildings and in churchyards needs some form of consent – always check
- On the 1st of July 2022, the Faculty rules that govern how churches manage their buildings, churchyards and contents changed, making it easier for churches to request works that will reduce their carbon emission in line with the Church's aim to [become net-zero by 2030](#)
- As part of these new rules, several works have been added to List A (where permission is not required) and List B items (where archdeacon consent is required). In some cases, previous List B items have been removed; for others, updated specified conditions may be applied.

# The DAC: Diocesan Advisory Committee (for the Care of Churches)

## Who are they and what they do:

- Their role is to oversee the care and maintenance, repair and development of the fabric and contents of church buildings and review and recommend faculty applications
- Support and offer guidance with List B applications
- The members consist of specialist members, including historic building architects
- Meets every 2 months – discusses cases presented by CBPD
- To advise changes to proposals, balancing carefully between its core duty to 'have due regard to the role of the church as a local centre of worship and mission' and heritage considerations
- Specialists in:
  - Bells, Organs, Furnishings, Heraldry, Art, Glazing, Clocks, Archaeology, and Trees/natural environment.
- Membership is reviewed every six years

## To obtain the DAC's advice

- Contact the CBPD – Geoffrey, James or Sam – or email [DAC@elydiocese.org](mailto:DAC@elydiocese.org)
- Add you case to the online faculty system: [Home - Online Faculty System \(churchofengland.org\)](http://www.churchofengland.org)
- Advice and guidance for church buildings and on preparing applications and statements from the Church Buildings Council can be found here:  
<http://www.churchcare.co.uk/churches/guidance-advice/all-guidance-notes>

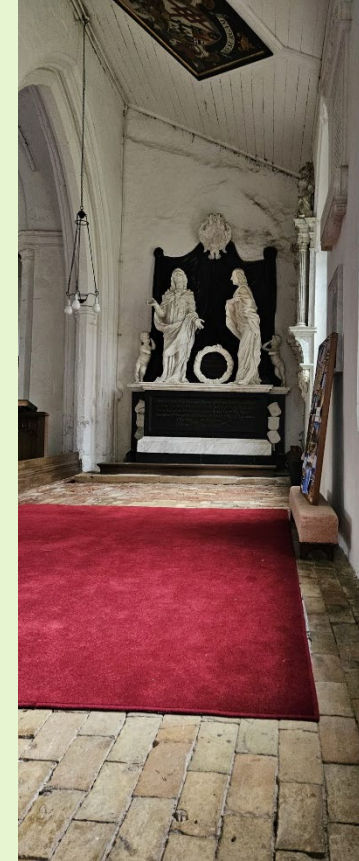


# What is a Friends Group?

A church friends' group is a community group consisting of local people who volunteer their time and talents to maintain a church building, and preserve its place as a space for worship and community use, and a venue for weddings, baptisms, and funerals.

Friends groups are often sub-committees of the Church PCC (Parochial Church Council), and unlike PCC's, they are not involved with the governance, ministry or mission of the church. As such you do not need be a church goer to get involved with the friends group.

Friends groups are all about harnessing the power of the local community to preserve and maintain the village church. So whether you are a great handyman, a keen gardener, a brilliant cake baker, you have a passion for local history, or a passion for your local area, we want you to get involved.



# Well done, CofE!

And in this matter I am giving my advice: it is appropriate for you who began last year not only to do something but even to desire to do something—now finish doing it, so that your eagerness may be matched by completing it according to your means. For if the eagerness is there, the gift is acceptable according to what one has—not according to what one does not have.

2 Corinthians 8:10-12  
New Revised Standard Version, Anglicised

Prevent us, O Lord, in all our doings with thy most gracious favour, and further us with thy continual help, that in all our works begun, continued, and ended in thee, we may glorify thy holy Name, and finally, by thy mercy, obtain everlasting life; through Jesus Christ, our Lord. Amen.

BCP Prayers if no Communion



## Contact Details:

[Nigel.Cooper@elydiocese.org](mailto:Nigel.Cooper@elydiocese.org)  
(Diocesan Environment Officer)

[Sacha.Watson@elydiocese.org](mailto:Sacha.Watson@elydiocese.org)  
(Net Zero Carbon Officer)

