HEATING PLAN FOR HOLY TRINITY CHURCH, HARTSHILL, NUNEATON, CV10 0LY

1 Introduction

We were guided by the Church of England's The Fifth Mark of Mission – which asks us "To strive to safeguard the integrity of creation and sustain and renew the life of the earth".

We also want to obtain an outcome which offers the best combination of comfort and environmental care as a form of mission; and showing that we care about climate change by our actions, create a bridge over which to engage with society, and to be Good News - practically as well as spiritually, using our limited resources to their best.

We spent some time doing some considerable desk research (using the documents shown below), analysing the church building's current usage, together with looking to the future use of the building.

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We undertook a 12-week monitoring exercise. The dataloggers used gave us a very clear picture of temperature and humidity at 14 locations throughout the church building, providing a profile of what was happening every 5 minutes of each day and night.

2 The Way Forward

As a project team, we concluded that the best way forward was to use the principles of what is known as the '***winter church***' – where we create a space within the church which can be kept warm enough to use during winter, without needing to warm the whole space.

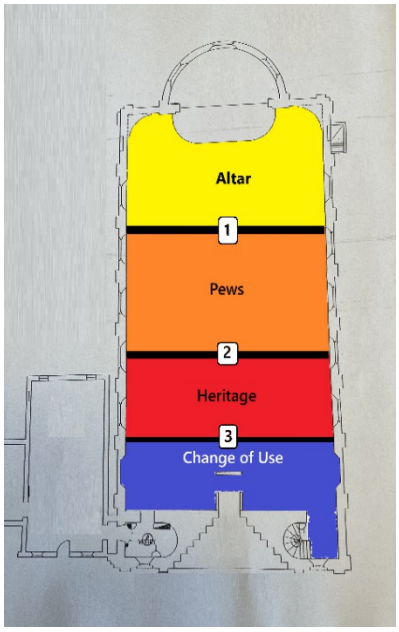
Taking into account our normal weekly pattern of usage:

- There is **No** requirement for **BACKGROUND** heating; and

- We need to put greater emphasis on control of humidity for our church organ - rather than temperature.

2.1 Zoning of the church building

We want to divide the church into four zones as indicated by the different coloured sections in the diagram below.



We would like to do this by installing three separate curtains – shown by the black lines, and numbered 1, 2 and 3

Curtains 1 and 2 would be full width and height.

Curtain 3 would be full width, but with a drop of 4m – as we only require the top half of the building to be zoned off – so it will look something like the picture to the right. It would consist of two curtains with 5.5m width. Curtain 3 would be in a fixed position.

For curtains 1 and 2 we are looking for a style we believe is called a Tableau Drape – also known as a Wagner Drape.

We would like the curtain to be either:

1. Fully closed – as per lefthand of this diagram

2. Fully open – as per the righthand of this diagram

3. Partially open to form a "doorway" through the curtain

By re-positioning some of the pews within the building, the Altar Zone will comfortably accommodate over 75 people, which will be sufficient seating to accommodate 88% of all current services – including baptisms, weddings and funerals if needed.

If we open Curtain 1 to have the Altar Zone combined with the Pews Zone, this would accommodate 95% of all services.

For the four times a year where we need a full church usage, we would simply open Curtains 1 and 2.

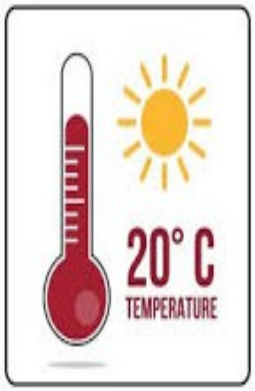
3 Heating Approach for the Altar Zone only

3.1 Primary Heat Source

Heating guidance led us to focus not primarily on boilers or heaters, but instead on people, and how they use the building.

It is people who feel comfort or discomfort and people who are the focus of the mission of the church.

We are therefore going to heat the people, and not the building.

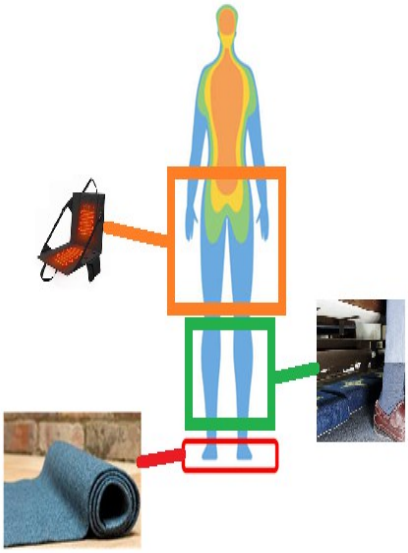


Most people who come into the church, enter in a "warm state".

If the ambient temperature is below 20°C, the body will start to cool.

The aim of our project is to try to keep the temperature in the persons' immediate proximity as close to 20°C as we can.

If we can achieve this, then for the time the local ambient air is at 20°C, the person will feel comfortable in their surroundings.



As most of the heat loss is through the lower part of the body, this will be our target area.

For the lower back down to the knees we will be using individual, portable, rechargeable, heated stadium seats.

From the knees down to the ankles, we will be using underpew heaters on a timed control system, only to run during the service.

For the feet, we will be carpeting the entire area.

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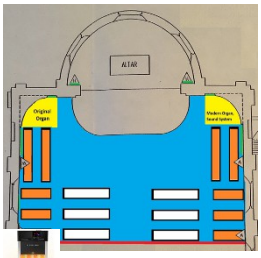

We will only be installing underpew heaters on the pews coloured in orange.

We are doing this because;

- Not everyone will require the underpew heating; and
- Installation will not require additional electrical cabling across aisles

For the area behind the altar, we will install infra-red heaters.

3.2 Secondary Heat Source

When the external temperature is particularly cold, we are looking to instal two convection heaters at the front of church.

The convection heater will tend to reduce the temperature of an individual, due to airflow over the body.

Therefore, we will only run the fans before the start of any relevant service.

Their use will be regulated and turned on when required through external control.

3.3 Tertiary Heat Source

If required, we will use radiators – but this is discussed more in section 4.2 below.

4 Heating Approach for the combined Altar Zone and Pew Zone

When there is a need for more space to accommodate larger services, Curtain 1 will be opened.

4.1 Primary Heat Source

In addition to the heat sources for the Altar Zone (see items 3.1 and 3.2 above) we will be installing two additional convection heaters. As before, these will only be used prior to the start of any service.

4.2 Secondary Heat Source

We currently use a gas fired boiler to provide heating to the church. The system is on its last legs. We have decided that when replacement is required, we will go to an electric boiler.

Moving from natural gas to electric heating offers numerous benefits, including environmental improvements, potential cost savings, enhanced safety and less polluting than gas heating.

Furthermore, electricity can be sourced from renewable energy, further reducing carbon emissions.

Electric heating eliminates the risks associated with gas leaks, carbon monoxide poisoning, and the need for venting, making it a safer option.

As countries move towards net-zero emissions, relying on renewable electricity sources will become increasingly important. Embracing electric heating allows for a future-proofed heating system.

4.2.1 Three Phase Supply

The installation of an electric boiler will require the incoming electrical supply to be changed from single phase to three phase.

4.2.2 'Green' Electricity

It is our intention to purchase electricity generated from renewable energy sources like wind, solar, and hydro power.

4.2.3 Upgrade of Radiators

It is our intention to upgrade all radiators throughout the church building

4.2.4 Reposition Radiators

The location of the radiators within the Altar zone are positioned appropriately.

Currently, there are no radiators located in the Pews Zone. We will install 4 new radiators.

5 Heating Approach for the Heritage Zone

5.1 Primary Heat Source

We will install 2 additional convection heaters

5.2 Secondary Heat Source

The radiators within this zone are not located in the best location. As such we will upgrade them and re-assign to a more suitable position.

6 Heating Approach for the Heritage Zone

We want to establish two new areas under the balcony. The areas will be constructed of safety glass walls.

6.1 Primary Heat Source

Each of the two spaces will be heated using an integrated light and infra-red heater.

7 Overall Impact

7.1 Current Running Costs

Analysis of the gas bills and records of church services for the period 1st October 2023 to 30th April 2024 showed that:

- The total cost of gas supplied was £881.18
- The total cost of the standing charge was £555.95
- The church building was used on 48 separate occasions – of which there was less than 75 people attending on 40 occasions.
- By calculation, the 'average' cost per service (including standing charge) was £30.06 – **please note that we know this figure is low due to the fact that for a number of services the heating was not working.**

7.2 Anticipated Running Costs

- The cost of heating a one hour service during the 'winter church' scenario is anticipated to be 25kW @ 24.5p/kWh = £6.13
- The cost of heating a one hour for the full church scenario is anticipated to be 53kW @ 24.5p/kWh = £12.99
- So as a comparison with the current running cost, the cost of heating 40 services @ £6.13 plus 8 services @ £12.99 = £245.20 + 103.92 = £349.12

7.3 Comparison of Running Costs for the winter period

- The current cost of gas heating was £881.18
- The anticipated cost of electric heating is £349.12
- This could potentially give us a saving of ~60%

- Please note that the anticipated cost of electric heating (£349.12) is less than the current gas standing charge (£555.95).

7.4 Comparison of Environmental Impact – total kW usage

The gas heating system used 15,329kW

The anticipated electric system will use 1,425kW

In kW, this could potentially give us a saving of 90%

8 Summary of our proposed heating plan

✓ We believe that keeping people comfortable will be a better approach than trying to warm the whole space.

✓ We are looking to use the model commonly called the "Winter Church Approach", where we create a space that can be kept warm without heating the whole space.

✓ We are looking to heat the congregation rather than the building.

✓ We will only apply heat when we need to, rather than applying background heating which we boost for the services.

✓ Additionally, we are looking to ensure humidity levels are maintained between 55% and 75% for conservation reasons mostly the church organ.

✓ We aim to use Green Electricity as our energy source.