

Shirley Parish B90

Journeying in Faith towards Net zero



Church House



July 2025

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Shirley Parish- People and Buildings

Shirley is the largest Parish in the Birmingham Diocese, serving a population around 37000. It lies in the Metropolitan Borough of Solihull, on the southern edge of the West Midlands conurbation. The population is growing with many new homes being built.

The Parish has two churches, St James's, the Parish Church, and St John's in Tidbury Green.

On the first Sunday of the month, everyone comes together at St James's for Parish Eucharist. There is a fortnightly Sunday service at St John's so that the building is in use for about 5 hours per month. Services at St James's account for 32 hours per month (including periods of intense use at Christmas/Easter/Harvest). St James's Church is open daily from 9 to 4 for private prayer (but not heated).

St James's Church dates from 1833, when it was built as a chapel of ease for Solihull Parish Church (St Alphege's). The building was completed in the mid 1880s, apart from the addition of a sacristy about 35 years ago. It is brick- built with a high, pitched slate roof over fine wooden beams and is Grade 2 listed

We have some beautiful Victorian stained glass but plain louvre windows in the nave, providing good ventilation in summer but very draughty. There is not much scope for insulation, but draught reduction is a must!

For the last 35 years, heating has been provided by two ideal concord gas boilers. They are dirty, inefficient and unreliable and it is no longer possible to source spares. The heating is programmed weekly to provide heat for services with a 2 hour warm up. In winter, the temperature for church services rarely reaches 16 C. In very cold weather, the frost-stat keeps the heating on for prolonged periods so that the building becomes warm while empty.

The pipes from the cellar supplying the radiators have leaked on two occasions, causing costly damage under the altar area and the radiator in the vestry is severely corroded.

St John's Church has just celebrated its centenary and is a small wooden building in the village of Tidbury Green.



It is heated on demand by electric radiators and with a 100% renewable contract with Octopus has had zero carbon emissions for years.



Church House, our church hall, is the centre of our social life and community outreach and is situated opposite St James's, across a busy road. It accommodates the Parish Office, a small hall (maximum capacity 60 seated), kitchen and toilet facilities. Built in 1912 it is a much loved but rather unlovely building, prone to condensation and in need of improvement when we can afford it. It does however have a much-lowered carbon footprint since 2022 when we removed the old gas boiler and installed infrared electric heating panels. This project is described in more detail below

Joining Ecochurch

In 2019, we became aware of the Ecochurch movement and started to use its resources to focus our ideas on how we might make our Parish life more sustainable. We believe that God has given us the responsibility of caring for Creation and that we need to declare this through worship, care of our buildings and land and outreach to our community and beyond.

We gained a bronze award in 2020 and Silver in January 2023. We are now working towards Gold but have decided to make work on moving towards net zero emissions our priority.

Paul Day, our former Vicar, was very clear that we should cease using fossil fuels to power our buildings and we moved to a green tariff for our electricity in 2022. Our current contract does not meet the green standards now recommended by the Church of England and will be reviewed in 2028 when due for renewal.

Refurbishment of Church House 2022

In 2022 both the gas boiler and the electrics were in poor condition. The boiler was around 35 years old, inefficient and difficult to repair and linked to a corroded wet system. The wiring was in urgent need of repair and modernising.

We were fortunate to obtain grants totaling £36 K from Veolia and the Lottery Community Fund and with support also from the Friends of St James we were able to upgrade the wiring, install LED lighting and new emergency lighting, replace the boiler with infrared electric heating panels zoned and thermostatically controlled, insulate the loft and East wall and redecorate.

The building is now well lit and can be warmed quickly when needed. The thermostats ensure frost protection when the building is empty in winter. The heat from the panels is pleasant- like sitting in the sun, warming the occupants rather than the air or fabric of the building.



Heating panels suspended from the ceiling- centrally (the panels at the sides are for acoustics.)

Outcomes and learning

1.The warmth arrives quickly but when the set temperature is reached and the panels turn off it cools noticeably- until the heating kicks in again. Not a problem, but a bit uneven compared with air heating systems

2.The heating is programmable but the thermostats are designed for domestic use with only 4 heating slots in the 24 hours. This does not give the flexibility needed for church hall use. We solved this by only pre-programming events booked by outside groups. The heating for church- run events is switched on and off by the team as needed. After we moved to this system, the use of energy actually fell!

Programming of the system is quite tedious but the technology is improving and remote switching is becoming available. With the advantage of hindsight, we should have thought more carefully about this at an early stage in the planning.

3. Bouncy castles and confetti bombs do not mix well with ceiling mounted heaters!

4. Use of energy has declined since moving to electric heating.
Unfortunately, the unit cost of electricity has soared at the same time so that bills are still high.

Cumulative impact on energy use from replacing Church House Boiler with infrared panels

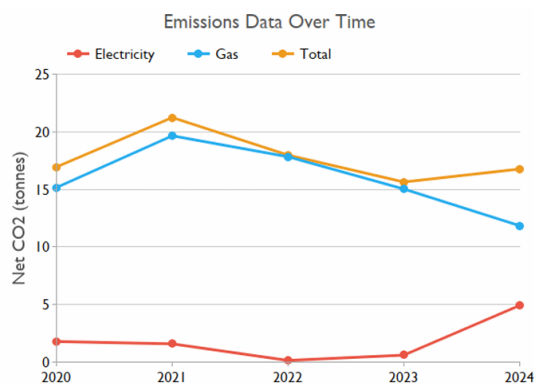
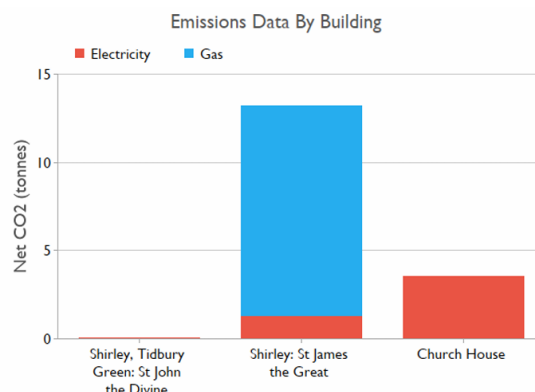
In 2022 the boiler was removed and electric heating installed in August

In Spring 2024 we moved from pre- programming to on demand use

	2021	2022	2023	2024
Gas use KWH	24963	16015	0	0
Electricity KWH	2193	5112	12099	11855
Total KWH	27156	21127	12099	11855

Different weather conditions may have contributed to this, but the use of the building has increased significantly since 2022 so the saving of energy looks genuine.

5. Effect on Emissions and Carbon Footprint (C of E Energy footprint)



Graph shows declining emissions from gas following electrification of Church House

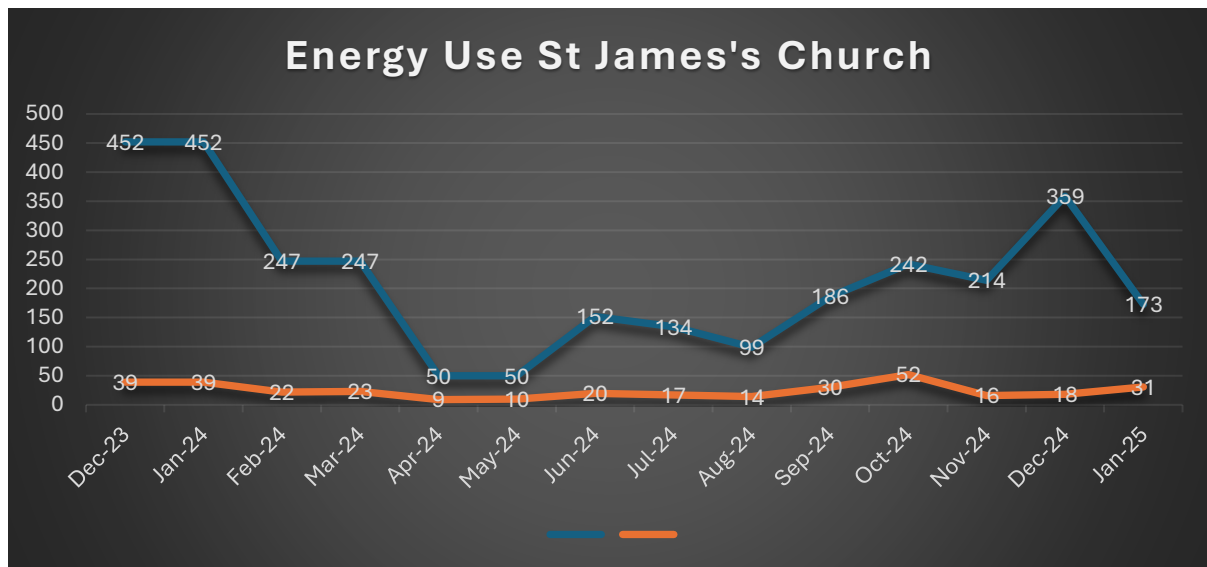
St James's Church Lighting 'Quick win grant' 2024

The 'quick win' grant programme was introduced in 2024 and funded by the Church of England to support projects aimed at reducing energy use by church buildings. Our lighting was in poor shape with old halogen lights and

fluorescent strips, many of which had failed, making the interior of the church gloomy and the sacristy dark.

We were given a grant of £2500 which covered half the cost of changing to LED lighting. This was mainly changing of light bulbs but some fittings had to be replaced (like for like). There was no alteration of switches or circuitry.

In spite of the fact that at least a third of the lights had failed, there was demonstrable saving of energy.



LEDs installed in October 2024. The difference in energy use December/January 23/24 and 24/25 was 272KwH. The orange line is the off peak use, which is very low.

Outcomes and learning

1. More light for less energy use.
2. Some parishioners find the lighting too bright and angling the lamps upwards is an important way to avoid direct dazzling.
3. Archdeacon's permission was needed for the project to proceed. Having had the grant approved it is important still to make a detailed technical application to the DAC



St James's Church Heating Project 2023-2026

1. Preparation 2023-25

It had been clear for some years that the boilers heating the church were at the end of their useful life. The wet system was also old and had leaked under the altar dais, with expensive damage to the fabric.



Ideal Concord boilers about 35 yr old. Only one still operating in 2025

We began to look at options in February 2023, in discussion with Ian Simpson, Historic Places of Worship Support Officer at Birmingham Diocese.

We completed the self-assessment questionnaire produced by the Diocese of Ely, looking at the needs of the congregation, patterns of use of the church building and the structure and contents of the church.

We concluded that a good option for us would be to heat the people, rather than the fabric of the building. Our experience with the infrared electric heating in Church House was proving positive and we started to investigate options for a similar strategy in the Church. David Paice, a parishioner with engineering experience came across information on heating chandeliers, which seemed a good choice for a Victorian building.

We had discussions with two companies, Electric Heating Solutions (EHS) and Herschel, who offered infrared chandeliers with minimal glow. Both offered a quality product, but the EHS quote was much more affordable and EHS both manufacture and install their heaters. (At that time Herschel did not install.) EHS pioneered the idea of chandelier heating and had been installing their products in churches since 2016. They provided a list of past customers who, when contacted vouched for the product and service provided by EHS.

In the summer of 2023, we started a faculty application, based on the EHS quote. The DAC scrutinised the plans and EHS provided in depth technical detail and advice. A Faculty was granted in October 2024 and we were able to start fundraising. This was constrained by the fact that we had just appealed for funds to install a toilet and kitchenette in the church and had recently received funds from Garfield Weston, the Benefact Trust, The Joseph Rank Trust and a number of local charities.

The PCC and the Friends of St James each pledged £8000 and two parishioners gave £5K and £10K. We planned to reclaim the VAT from the Listed Places of Worship grants, although the continuation of the scheme had become uncertain . We had no success with a volley of grant applications then, in October 2024, we were invited to apply for Demonstrator status. An application for a Stage 1 grant was submitted in February 2025 then, in view of the preparation we had already done, we were encouraged to proceed directly to a Stage 2 grant application.

2.Demonstrator Grant June 2025

The application process was rigorous but we received a Level 2 grant (capital costs) offer about 4 months after submitting. There were a number of conditions attached, some concerning monitoring, reporting and demonstrating but also a requirement to return to Level 1 by commissioning a Heating Engineer report. Much of this revisited the discussions with the DAC, and proved of limited help. It was felt that our chosen solution would be effective in heating the people but to protect the church fabric it should be supplemented by two air source heat pumps at a cost of £125K plus a new wet system and £7K annual running costs.

The church has always been heated only when in use and we have not had issues with the fabric. Both the Faculty and the Demonstrator grant had been awarded for a 'heat the people rather than the fabric' solution so this suggestion did not feel appropriate for us- or affordable..

The grant met just under 50% of the cost of the project and by completing the project in 2025 we just qualified for VAT reimbursement under the Listed Places of Worship Scheme.

3.Implementing the plan July to November 2025

At a site meeting in July, Dave Tyrer (EHS) proposed a variation in the heater layout so that the crossing would be heated by chandeliers rather than heating panels. The Diocese approved the change of plan, and the extra cost was met by Electric Heating Solutions. This promised a better view down the nave but there was some uncertainty about the heat which would be available to the transepts. A 2Kw IR wall heater was assigned to the North Transept. The configuration of the South Transept had been altered since the original survey by the addition of the toilet and kitchenette and it was thought that the reduced area might receive sufficient warmth from the chandelier. The situation was complicated, however, by the arches separating the crossing from the transepts and potentially blocking IR rays.

A second site visit with Dan, the electrician and our Architect checked the wiring route and other technical details a week before installation.

The system was installed in the second week of November and took 3 (very full) days. The electricians were very thoughtful, skilled and well organized and everything went smoothly.



Day 1



Day 2



Day 2 Control box under construction



Day 3 Chandeliers installed in Nave



Day 3 Control cabinet complete

4.Outcomes, Impact Ongoing Learning

Tidying up: decommissioning boilers, removing meter and supply

This proved to be quite challenging. The boilers were disconnected early in December 2025. Understanding the configuration of the water supply to the boilers took several hours. The header tank was isolated and drained. Because the cellar is no longer warmed by the boilers all pipes were lagged.

E-ON undertook to remove the gas meter but on the day, the engineer decided that a specialist contractor was required and the work was carried out some weeks later by Energy Utilities.

Once the meter was removed, Cadent disconnected the supply at the road (April 2026) We now have no fossil fuel in our churches or church hall.

Snags Three of the heating elements failed in the first few weeks. These were replaced promptly by EHS and there have been no further failures (at 11 months)

Efficacy The chandeliers perform well with a quick warm up and a steady, gentle heat. There is a mild glow from the chandelier elements and strong red light from the panels. The heat is more uneven than with boilers and a wet system

Ease of Use and Flexibility .The controls are very easy to manage and allow a degree of zoning so that smaller congregations can be warmed without heating empty pews. The Thursday congregation is now able to have refreshments in the North Transept rather than having to cross the road to Church House (and heating 2 buildings)

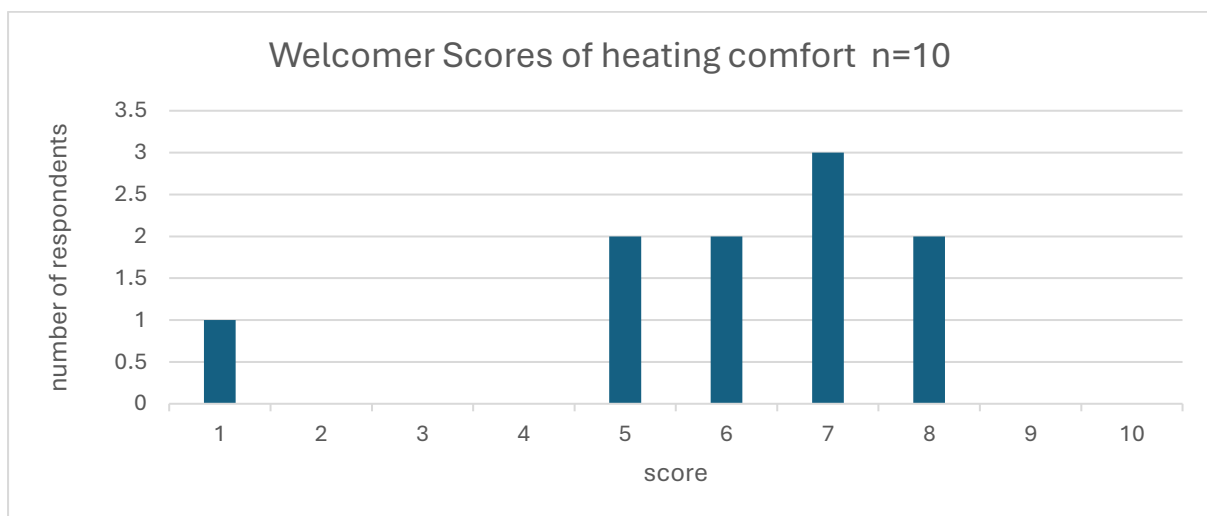
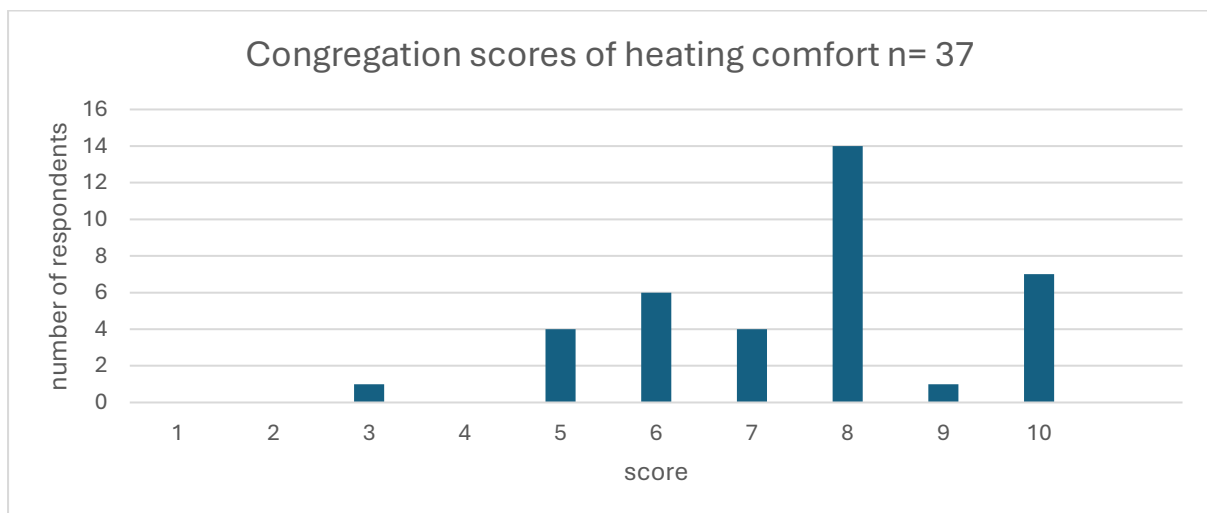
Parishioner satisfaction Two surveys were carried out. The first asked the volunteers managing the heating for their views on how easy it was to operate alongside other duties, how effective it was for their congregation and how they rated the lighting and appearance of the chandeliers. Score 0-10.

The second survey sampled 25% of each of the regular congregations for their views of how comfortable they felt and their views on the lighting and the visual effect of the chandeliers in the church.

There was almost unanimous approval for the lighting and the suitability of the heaters for our grade 2 listed Victorian church. Operators reported very high satisfaction with the controls and flexibility of the system.

Views on thermal comfort were more mixed and reflects several factors,

- Cold spots related to insufficient cover by the heaters
- The learning needed to be able to judge warm up time in different conditions.
- Draughts
- Individual sensitivity to cold/heat



Comments were wide ranging but with some themes:

- People giving low or high scores tended to volunteer 'but I feel/don't feel the cold'
- 'Heat from above leaves feet cold.'
- 'Need to be directly under the heater to get warm.'
- 'Cold in mid-winter.'
- 'You need to dress for the weather'

Running Costs

Having been quite worried about running costs we found that we were saving significantly on fuel costs.

Comparing fuel costs December 2024-July 2025 with December 2025- July 2026 the saving is just under £2K predicting an annual saving of £3K.

Frost Protection

Having drained the wet system when the boilers were decommissioned, we had to be cautious about the water pipes in the sacristy, toilet and kitchen cupboard. Radiators with a frost-stat protected the sacristy and toilet effectively. An 80w Dimplex small space heater was effective for the cupboard kitchenette with temperature not falling below 6 C even when it was -5C outside.

Draughts, Temperatures and Humidity & Health of the Building

Monitoring of heat and humidity in the nave and north transept demonstrates generally lower temperatures and higher humidity in winter than recommended for protection of the fabric.

The building has never been constantly heated and we have not had issues with condensation, damp or mould. It is possible that the draughts help to ventilate the space and keep it dry.

As noted above, recommendation of the heating consultant is to install 2 heat pumps to provide background warmth keeping the building at 10C throughout winter. However, the cost of this would be £150K for installation with an annual running cost of £7.5 k. We would probably also need a new wet system.

Anticipated cost of just heating the people c £3.5K/yr

Conclusion

Overall, there is much to celebrate:

We replaced the gas boilers before they finally failed and greatly reduced our carbon footprint, with no fossil fuel now used in our buildings.

We did this on a very tight budget, with generous help from the Church of England Demonstrator Project, two parishioners and the Friends of St James.

Evaluation questionnaires revealed high satisfaction with the appearance of the chandeliers. the quality of the lighting and the ease of control. They also highlighted the need to deal with cold spots and provide for those parishioners who were not warm enough.

The running costs to July 2026 demonstrated a saving of just under 2K on 2025 energy bills, predicting an annual benefit of £3K

The Future- Building on the Heating System

Quick Wins

- Draught reduction
- Offer of knee rugs in mid-winter
- EHS have offered free upgrade of wall heating units to a more efficient version and an extra heater in S transept.
- Heated vests available for clergy, servers and organist in cold weather.
- Heated cushions available for 2 seats at back of nave
- Longer warm up in cold weather

Longer-Term Possibilities

- Use more powerful elements in the heaters- but this will require either a power supply upgrade or a battery and will, of course, increase running costs
- Solar panels (if permitted) with battery storage
- Heating in the chancel (currently rarely used)
- Air source heat pump for background heat- if ever affordable.

Thank you to....

Paul Day our former Vicar, for his determined vision to move away from fossil fuels and seek ever greener suppliers of energy.

Linda Pitt, Parish Warden, for her steadfast support and optimism.

David Paice, parishioner and retired engineer, for asking all the right questions.

Ben Smith, Net Carbon Lead for Birmingham Diocese, for wise advice and help navigating the complexities of the Demonstrator Project.

The Benefact Trust and the Archbishops' Council for the Demonstrator Grant.

The PCC, Friends of St James, 3 anonymous donors and the Listed Places of Worship Scheme for help with financing the project

Dave Tyrer, Director of Electric Heating Solutions for his skill and patience in developing our project and answering so many technical queries.

The Welcoming teams for taking on the extra work of managing the heating.