ESOS-ENERGY
Energy efficient solutions

Energy Efficiency and Zero Carbon Advice

St Michael and All Angels Church, Martlesham Heath
PCC of St Michael's Church

Author	Reviewer	Audit Date	Version
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Contents

1. Executive Summary

An energy survey of St Michael and All Angels Church, Martlesham Heath was undertaken by ESOS Energy to provide advice to the church on how it can be more energy efficient and provide a sustainable and comfortable environment to support its continued use.

St Michael and All Angels Church, Martlesham Heath is a modern brick building, constructed in 1991. There is both gas and electricity supplied to the site.

The church has a number of ways in which it can become more energy efficient. Our key recommendations have been summarised in the table below and are described in more detail later in this report. It is recommended that this table is used as the action plan for the church in implementing these recommendations over the coming years.

Energy saving recommendation	Estimated Annual Energy Saving (kWh)	Estimated Annual Cost Saving (£)	Estimated capital cost (£)	Payback (years)	Permission needed	CO2 saving (tonnes of CO2e/year)
SHORT TERM						
Adjust boiler output temperature for condensing mode	Potentially 5% 750	£15	Nil	Immediate	None	0.14
Door replacement	2% 300	£6	£10,000	Not recovered	List B	0.05
MEDIUM TERM						
Roof insulation top up	5% 750	£15	£3,800	Not recovered	List B	0.14
Cavity Wall insulation	8% 1,200	£24	£7,500	Not recovered	List B	0.22
Replace fluorescent lighting with LED	1,800	£35	£1,000 installed	30	List A	0.33
LONG TERM						
Install solar photovoltaic panels	10,000	£3,400	£14,500	4	Faculty	2.53
Replace gas boilers with Heat Pump	15,000 gas	£830	£30 to £75k, system dependent	Not recovered	Faculty	2.76

The church should check any faculty requirements with the DAC Secretary at the Diocese before commencing any works.

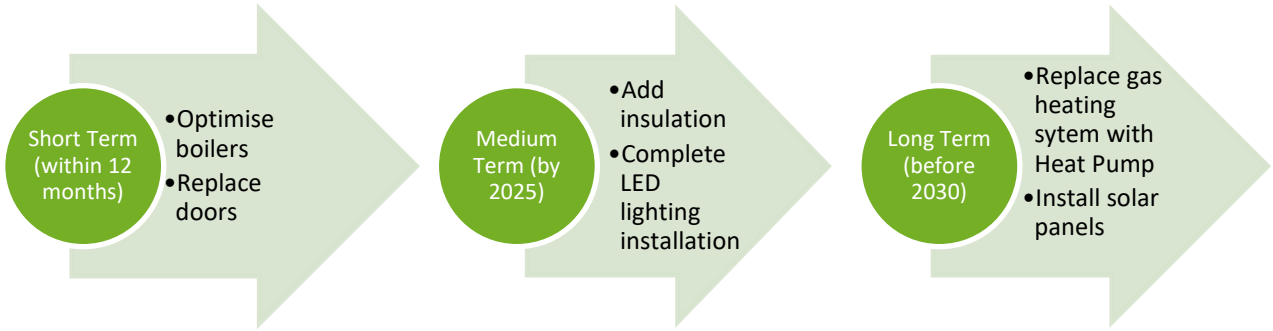
Based on current contracted prices of 34.463p/kWh and 1.9669p/kWh for electricity and mains gas respectively.

If all short term measures were implemented this would save the church around £95per year in operating costs, with significant savings from the installation of solar panels.

2. The Route to Net Zero Carbon

The General Synod of the Church of England has indicated that the Church of England should be Net Zero Carbon by 2030. Every church, cathedral, church school and vicarage will therefore need to convert to be a net zero building in the next 10 years.

This church has a clear route to become net zero by 2035 by undertaking the following steps:



Worship area

3. Introduction

This report is provided to the PCC of St Michael and All Angels Church, Martlesham Heath to give them advice and guidance as to how the church can be improved to be more energy efficient. In doing so the church will also become more cost effective to run. Where future church development and reordering plans are known, the recommendations in this report have been aligned with them.

An energy survey of the St Michael and All Angels Church, Martlesham Heath, IP5 3SA was completed on the 4th May 2022 by Dr. Paul Hamley. Paul is an energy auditor with experience of advising churches and small businesses. He is part of the Church Energy Advisors Network developing advice for the Church of England and authored the "Assessing Energy Use in Churches" report for Historic England. He is a CIBSE affiliate member and a Chartered Scientist, with experience of the faculty process gained from chairing the building committee of a Grade I listed church and has been an assessor for EcoCongregation.

The church was represented by Mr Paul Jordan.

St Michael and All Angels Church, Martlesham Heath	
Church Code	622495
Gross Internal Floor Area	485 m^2
Listed Status	Unlisted

The church typically used for 39 hours per week for the following activities

Type of Use	Hours Per Week (Typical)
Services	4 hours per week
Community Use	35 hour per week

There is occasional additional usage over and above these times for weddings and funerals.

Annual Occupancy Hours: 2,000

Estimated Footfall: 23,000

4. Energy Procurement Review

Energy bills for gas and electricity have been supplied by St Michael and All Angels Church, Martlesham Heath and have been reviewed against the current market rates for energy.

The current electricity rates are:

Single / Blended Rate	34.463p/kWh	In line with current market rates
Standing Charge	15.31p/day	N/A

The current gas rates are:

Single / Blended Rate	1.9969p/kWh	Below current market rates
Standing Charge	140p/day	N/A

Both utilities are supplied by SSE via the Charity Buying Group, via a recent contract.

It is recommended that future contracts also use group purchasing, ideally of 100% renewable electricity, comparing quotations for its gas and electricity supplies from the Big Church Switch scheme and the diocese supported Parish Buying scheme, http://www.parishbuying.org.uk/energy-basket.

These schemes offers 100% renewable electricity and a proportion of renewable gas and therefore are an important part of the process of making churches more sustainable.

A review has also been carried out of the taxation and other levies which are being applied to the bills. These are:

VAT	5%	The correct VAT rate is being applied
CCL	not charged	The correct CCL rate is being applied.

The above review confirmed that the correct taxation and levy rates are being charged.

The church is a charity and therefore can claim VAT exemption status. Whenever a utility supplier is changed, a VAT exemption certificate should be forwarded.

As such the PCC of St Michael and All Angels Church, Martlesham Heath should send the supplier at VAT declaration confirming this. VAT declarations are available from the suppliers website and can usually be found by typing the suppliers name followed by “VAT Declaration Certificate” into most website search engines.

Whenever monthly electricity consumption exceeds 12,000kwh or gas consumption exceeds 4,397kWh (52,000kWh per annum), 20% VAT is charged unless the customer has submitted a VAT declaration form. *Excess VAT paid can be reclaimed for the past three years.*

VAT declarations are available from the suppliers website and can usually be found by typing the suppliers name followed by "VAT Declaration Certificate" into most website search engines.

A detailed explanation is available here: https:// perfect-clarity.com/vat-on-church-utility-bills/#:~:text=There%20is%20no%20VAT%20chargeable%20on%20Church%20water%20bills

Main Hall

5. Energy Usage Details

5.1 Annual Consumption

St Michael and All Angels Church, Martlesham Heath used 6,640 kWh/year of electricity in 2021, costing in the region of £1,154 per year, and 25,000kWh/year of gas, costing £829.

This data has been taken from the annual energy invoices provided by the suppliers of the site.

Utility	Meter Serial	Type	Pulsed output	Location
Electricity	E18UP 02329	EDMI Single Phase	Yes	Cabinet, outside kitchen
Gas	K02794 17 D6	Elster Themis Mk – G10E	Yes	Cabinet, outside kitchen

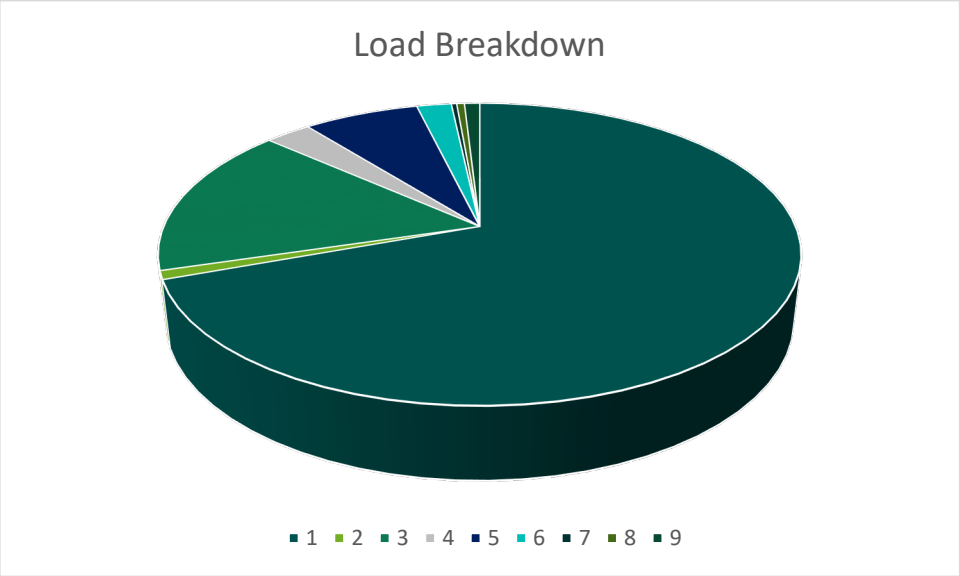
All the meters are AMR connected and as such an annual energy use profile for the site could be obtained from the supplier.

5.2 Energy Profiling

The main energy consuming plant can be summarised as follows:

	Equipment	Power kW	Annual Consumption kWh	Portion
Heating [Gas]	Church 2 x Baxi condensing boiler Runway Café 1 x Baxi condensing boiler 205 hours use if at full power	30 each	15,000	69.4%
Heating [Electric]	Boiler circulating pumps 200 hours use Portable convector heater(rarely used) 4 x Toilet hand dryers	0.2 2 3	40 10 150	0.9%
Lighting [Internal]	Entrance and Worship areas: LED Main Hall: Halogen uplights 6 x 250W Other areas: Fluorescent tubes, mostly T8 x 6ft length units, total no. 30 TOTAL LOAD	420W 1500W 2150W	300 1500 1700 3500	17.3%
Lighting [External]	Security lights, bulkhead, around all sides of building. On daily from dusk to 23:00 (average 5 hours daily)	300	600	2.7%
Hot Water	Kettle Coffee machines x 2 Wall mounter water heater Dishwasher x 2 TOTAL	3 3 + 3 3 3 + 3	1500	6.9%
Kitchen	Ovens Hob Microwave		450	1.5%
Office	Photocopier Printer Scanner	0.5 0.3 0.2	10 10 50	0.4%
Sound, Music	Sound system	0.5	100	0.5%
Small Power	Vacuum cleaner	1.5	200	0.4%

Annual electricity consumption, 2021 = 6,640kWh



KEY *1 Gas Heating* *2 Electric heating* *3 Lighting internal* *4 Lighting external*

5 Hot water *6 Kitchen* *7 Office* *8 Sound, music* *9 Small power*

As can been seen from this data, the heating makes up by far the largest proportion of the energy usage on site. The other significant loads are internal lighting and hot water.

5.3 Energy Benchmarking

In comparison to national benchmarks for church energy use St Michael and All Angels Church, Martlesham Heath uses 28% less electricity and 79% less heating energy than would be expected for a church of this size. This is due to a combination of better insulation than the vast majority of solid walled churches (cavity walls, 100mm roof insulation), and only needing to run the heating for one hour before use, compared to 6 to 12 hours for many traditional church buildings.

	Size (m^2 GIA)	Annual Energy Usage (kWh)	Actual kWh/m^2	Benchmark kWh/m^2	Variance from Benchmark
St Michael and All Angels Church, Martlesham Heath (elec)	485	6,640	13.7	19	-28%
St Michael and All Angels Church, Martlesham Heath (gas)	485	15,054	31.0	148	-79%
TOTAL	**485**	**21,694**	**44.72**	**167**	**-73%**

There is currently no benchmark data available which takes hours of use and footfall into account. [1] CofE Shrinking the Footprint – Energy Audit 2013

6. Efficient / Low Carbon Heating Strategy

The energy used for heating a church typically makes up around 80% to 90% of the overall energy consumption. Heating often uses gas or oil as its primary fuel, fossil fuels with high carbon emissions and little opportunity to decarbonise in the future. Electricity currently has carbon emissions of around the same level as mains gas but the carbon emissions associated with electricity are reducing rapidly as the UK builds more renewable energy and decommissions its remaining coal fired power stations. Mains gas does have some potential to reduce its carbon content through the use of bio gas and hydrogen but these are less developed solutions and will be unable to deliver 'zero carbon mains gas'. It is important to plan to make heating less carbon intensive. One way to achieve this is to consider a transition to electrical heating where this also represents a more efficient and comfortable solution for churches.

The church is heated by two gas boilers with a further boiler heating the Runway Café (building extension).

The boilers date from 2018, so it is likely that they will require repair or replacement by 2030.

The building is reasonably well insulated and has enough hours if use to result in it being fairly regularly heated during the winter. This means that only a short period of around an hour of preheating is required before an event. Heat is turned off around half an hour before each event concludes. Further optimisation can be obtained by ensuring that the return water temperature is low enough for the boilers to operate in condensing mode.

For the future, when the boilers eventually require replacement, the options are to replace the boilers with a heat pump. As this may be around a decade away, it is recommended that quotations are then obtained for the three different varieties of heat pump. Over the next decade, prices are expected to fall as the technology becomes widespread; but the different versions may enjoy differing levels of popularity, and hence cost.

- Air Source – operate with existing radiators
- Ground Source – operate with existing radiators, higher capital cost and require borehole or considerable amount of land
- Air to Air – need new pipework and internal units. Offer the best energy efficiency, at lower capital cost than Ground Source
- Electrical Heating - for any rooms which are required for only occasional meetings of short duration, direct electrical heating is recommended. This may apply to small rooms 1 and 2. However, once a room is used regularly, the 1kW heat for 1kW electricity used makes this more expensive than gas or a heat pump.

6.1 Fuel Supply

Whilst there are plans to add hydrogen to the network, and "green" gas from anaerobic digestion; some suppliers offering up to 20% "green gas" tariffs, the majority of the gas supply will continue to be fossil fuel for the next decade. The economics of hydrogen production and the need to replace some pipework make full decarbonisation of gas unlikely.

If the gas boiler is repaired or replaced, then long term, the boiler will need to be made hydrogen ready. Some hydrogen is due to be added to the gas grid over the next five year period. If plans to decarbonise the gas grid are implemented; the hydrogen mix will eventually exceed 20% and a hydrogen compatible boiler (and piping) will be required. The transition will be overseen by the regulatory bodies in a similar way to that between town gas and north sea gas.

The church should develop a boiler replacement plan, by obtaining detailed quotations for the options presented in this report.

6.2 Consider Electric Panel Heaters

If Rooms 1 & 2 are to be used for meetings of short duration (which could be arranged at short notice), then electrical heating should be considered.

If Room 1 is regularly used for short meetings in winter, installation of one or two electrical heaters would allow it to be heated independently of the rest of the building. If this is the case, it is recommended that one radiant (not glowing) infra red panel is installed at one end of the room to create a small heatable space.

If in regular use, or all day use, the greater expense of electrical heating makes either gas or heat pump central heating more cost effective.

Given that Room 2 contains cupboards and stored tables and chairs, this is probably not suitable as the wall surfaces are obscured and it is not set up as a meeting room.

Suitable electric panel heaters would be far infrared panels such as https://www.warm4less.com/product/infrared-heaters/wall-panels/1100-watt-eco/ or equivalent.

These can be purchased widely and fitted by any competent electrician. It is recommended that they are fitted with a time delay switch such as https://www.danlers.co.uk/time-lag-switches/77-products/time-lag-switches/multi-selectable-time-lag-switch/159-tlsw-ms so they cannot be left on accidently after use.

These heaters have a strong radiative effect (where heat is reflected to people from the surface) as well as a light convective effect (where air is warmed and moves around to heat the general space). As such these heaters tend to provide a relative instant sense of heat and comfort within the space and only need to be on for short periods of time.

7. Improve the Existing Heating System

In the years before the replacement of the existing heating system it is recommended that measures are taken to improve the efficiency of the existing heating system, this should include:

7.1 Improve Heating Control Settings

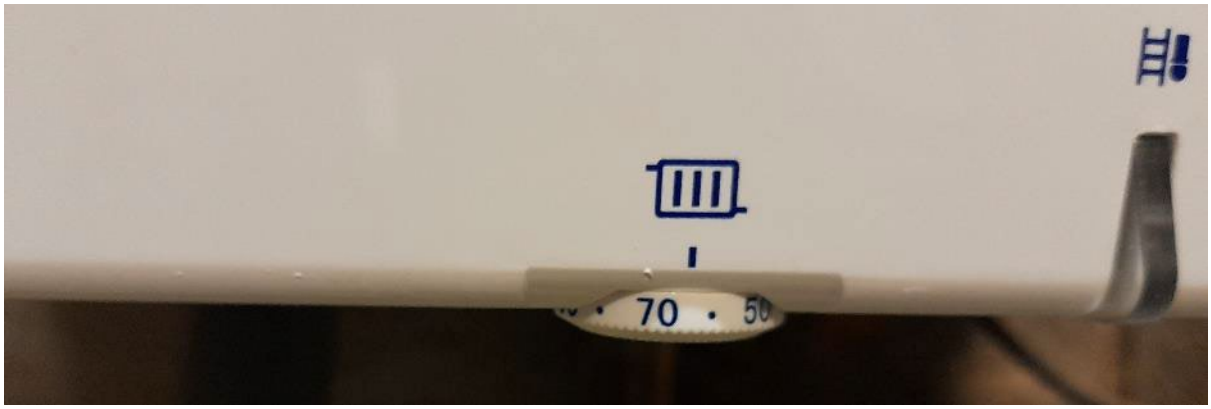
These are believed to be optimised. Heating is switched on only one hour prior to room use and turned off 30 minutes before the end of sessions. It is recommended that all those who are responsible for operating the heating system are aware of the optimum timings. In the "shoulder" heating months of October and April, heating could be switched off 45 minutes before sessions end.

7.2 Tune Boiler Settings

To allow the condensing boilers to recover heat from the exhaust flue gases, the water return temperature must be 55°C or below

This can be measured at the incoming brass fitting (labelled blue) either strapping a traditional thermometer, or using a datalogger (such as an Easylog USB or equivalent). The system should be left for the water temperature to stabilise, so the readings taken at the end of a church service just before the system is switched off.

If the return temperature is too high, easy adjustment of the output flow temperature can be made using the thumb wheel under each boiler.



7.3 Clean the Existing Heating System

The church should have a record of if the radiator system has been flushed and cleaned at any point since installation in 1991.

If not, it is strongly recommended that the heating system is cleaned to remove sludge from the system, this is done by using a chemical clean and/or power flush procedure where cleaning chemicals are put into the system which is then turned on and run through a filter consisting of high power magnetics to remove the sludge.

The cleaning of a heating system can be carried out by any competent heating engineer and typically increases the efficiency of a system by between 10 to 15%.

8. Energy Saving Recommendations

In addition to having a revised heating strategy there are also a number of other measures that can be taken to reduce the amount of energy used within the church.

8.1 New LED Lighting

There are around 30 strip lights fitted (mostly pairs of tubes within one diffuser). The majority of these are 70W units and account for about 1,800kWh of electricity use annually, costing around £620 at the new rate.

A plan should be developed to replace all of these units, with the entire unit (not just the bulb) replaced as this will be more convenient and cost effective. This would be a contractor's task.

Replacement could be by LED Light bars, or by individual LED spotlights carried on mounting bars. Careful selection should allow the power and hence cost to be halved. NB there are very powerful LED light bars available, designed to offer high intensity lighting, which would increase consumption if installed.

8.2 External Lighting Controls

It is recommended that the external lights are switched off between 11pm and 6am.

A timeclock with a time and day capacity is recommended over those that only have time of day capacity. Sangamo (http://sangamo.co.uk/) make a wide range of commonly used timeclocks which any qualified electrician can install.

8.3 Draught Proof External Doors

A £10k quote for replacement of the three pairs of single glazed wooden double doors to the main hall by double glazed PVC units.

The church should ensure that the installation includes a suitable upstand barrier providing a waterproof and draughtproof seal under, as the flat surface outside of the doors can allow wind blown water to penetrate underneath.

8.4 Cavity Wall Insulation

The architect's plans for the building were inspected. These specify roof insulation but do not mention cavity wall insulation. No indication that this had been retrofitted was seen (brown studs in the lower wall portion).

Prior to the early 1990's, building regulations did not require walls to be fully insulated and therefore it is likely that there is no insulation present but it could be added through injecting it into the cavity walls.

It is recommended that cavity wall insulation is considered and added to the walls where appropriate. A survey to check the width of the cavity, exposure of the wall and condition of the cavity should be carried out by a CIGA approved installer who will then be able to provide you with a quotation to undertake the works. Installing cavity wall insulation will help to reduce heat loss and improve the comfort of the space, but needs to be considered alongside other control measures such as TRV's or room sensors to ensure that the space does not over heat because of the additional insulation.

8.5 Insulation to Roof

The building plans specify 100mm of ceiling insulation, which was the standard in 1991.

In all cases where there is 100mm or less of insulation within accessible roof spaces it is recommended that insulation be added to prevent heat loss and create a more comfortable environment for the occupants of the building.

The ceiling/roof of a building is the largest contributing area to heat loss from a building as heat rises. The insulation of such spaces can therefore have a dramatic impact on both the efficiency of the heating system and the temperature of the space below.

9. Saving Recommendations (Water)

9.1 Detergents for Cold Water Hand washing

Use of cold water for hand washing can be just as effective as using hot and will save energy.

https://www.nhs.uk/news/lifestyle-and-exercise/cold-water-just-as-good-as-hot-for-handwashing/

10. Other Recommendations

10.1 Electric Vehicle Charging Points

The church has a car park to the side of it.

In order to make a visible statement on the churches mission of stewardship and to facilitate more sustainable transport choices by those both visiting the church and using the hall, the church may wish to consider installing an electric vehicle charging point, probably on the side of the church hall to allow visitors to charge their electric car.

Installing a unit such as a Rolec Securi-Charge http://www.rolecserv.com/ev-charging/news/view/Robust-EV-Charging-With-Rolecs-SecuriCharge-EV-Wall-Unit-Coin-Token-PAYG would allow the organisation control over who is allowed to use the unit with a key operated system. Or given the type of use of the building and control over the usage of the car park as a whole a simple 32 amp type 2 wall pod type charger may be most suitable and these are widely available through many suppliers such as http://www.rolecserv.com/ev-charging/product/EV-Charging-Points-For-The-Home.

If there are any staff employed in site (e.g for the café) it can be considered as a place of work and as such installation grants are available through the work place charging scheme https://www.gov.uk/government/publications/workplace-charging-scheme-guidance-for-applicants-installers-and-manufacturers which will fund 75% of the installation cost up to £500.

11. Renewable Energy Potential

The potential for the generation of renewable energy on site has been reviewed and the viability noted.

Renewable Energy Type	Viable
Solar PV	Yes
Battery Storage	Potentially
Wind	No – no suitable land away from buildings
Micro-Hydro	No – no water course
Solar Thermal	No – insufficient hot water need
Biomass	No – not enough heating load as well as air quality issues
Air Source Heat Pump	Yes
Ground Source Heat Pump	Yes

11.1 Heat Pump Overview

Heat Pumps are a low carbon method of creating heat,

It is recommended that plans are developed for replacement of the boiler by the end of the decade, with the extra electricity required to run heat pumps coming from solar PV panels.

Ground Source Heat Pumps [GSHP] deliver more heat per kW of electricity consumed than for Air Source. (This is measured by the Coefficient of Performance, or COP. 4 is a reliable assumption).

They require either a sufficient area of land to lay subsurface pipes (not enough is available from the car park and small area of grass), or a borehole. It may be possible to utilise the adjacent land for subsurface pipes if agreement could be reached with the owner.

Air Source Heat Pumps [ASHP] have COP values between 2 and 3, which are weather dependent. They are least efficient when required to deliver large amounts of heat when the air is cold, so are incompatible with heating a church once a week from cold.

Heat pumps generally deliver water at around 55°C (although there are higher temperature ones on the market which require more energy to run); thus are compatible with a building which is regularly used and can be supplied with constant, medium heat, rather than a full power heat up on Sunday mornings.

Air to Air Source heat pumps require internal fan units, blowing warm air, connected to external units – they do not require radiators. Systems provide summer cooling as well as winter heating and can deliver 4 to 5 times the amount of heat which they consume in electricity.

11.2 Heat Pump Calculations

The current boilers appear to be of 30kW capacity each with the café boiler being 13kW. Current annual heat input is at around 15,000kWh, with the building having around 2,000 hours of use.

Ground Source (using radiator network)

Building	Annual Gas Use kWh	Estimated Heating hours	Power kW	GSHP Power Needs kW	GSHP Electric Needs kWh	Operating Cost (without solar PV)	Capital cost
CHURCH	8,500	140	60	15	2,100	£724	£60,000
CAFE	6,500	480	13	4	1,920	£558	£13,000
Totals	15,000		73	19	4,020	£1,282	£73,000

Air Source (using radiator network)

Building	Annual Gas Use kWh	Estimated Heating hours	Power kW	ASHP Power Needs kW	GSHP Electric Needs kWh	Operating Cost (without solar PV)	Capital cost
CHURCH	8,500	140	60	24	3,360	£1,158	£24,000
CAFE	6,500	480	13	5.2	2,500	£860	£5,200
Totals	15,000		73	29.2	5,360	£2,018	£29,200

Air to Air Source (using new internal units)

Building	Annual Gas Use kWh	Estimated Heating hours	Power kW	ASHP Power Needs kW	GSHP Electric Needs kWh	Operating Cost (without solar PV)	Capital cost
CHURCH	8,500	140	60	15	2,100	£724	£27,000
CAFE	6,500	480	13	4	1,920	£558	£5,850
Totals	15,000		73	19	4,020	£1,282	£32,850

The operating costs are currently more than the annual gas expenditure – this should be kept under review and costs re appraised accurately when boilers are due for replacement.

11.3 Solar Photovoltaic Panels

The roof offers a total area of around 300m^2. Around half of this could be used for solar panels, an area of 150m^2. This could generate 0.15kWpeak/m^2 giving a 22.5Wpeak system. A 1kWpeak system can generate up to 1,000kWh annually, giving a total annual generation of around 22,500kWh. Orientation factor (roof slope and angle from south) would be near optimal.

Annual Generation (kWh) = Area x 0.15kWp/m^2 x K factor x Orientation Factor x Overshading Factor

= 150m^2 x 0.15kWp/m^2 x 1000kWh/kWp x 0.98 x 1

= 22,050kWh

This is much greater than the church centre's annual recent electricity use (6,640kWh in 2021). If a heat pump were installed, this would require extra power, about 4,000kWh. The system should therefore be sized to deliver the amount required, around 10,000kWh. There would be excess generation in the summer (unless an air to air heat pump is installed and used for cooling), and grid electricity would be required during winter. The system should be specified foir future addition of a battery, when battery costs reduce as this would extend system usefulness into the evening.

Using average 2019 installation costs (£1,450 per kWpeak); an optimal sized 10kWpeak system would cost £14,500.

Sources: Tables H3 & H4, SAP 2009, http://www.bre.co.uk/filelibrary/SAP/2009/SAp-2009_9-90.pdf

The Smart Export Guarantee pays about 5p/kWh for electricity generated and exported to the grid (the Feed in Tariff having ended). One of the issues for churches is that most lighting use is at periods when the electricity is not being generated, so installation of a battery to make maximum advantage is recommended. Using a battery will extend the usefulness of the power generated during the day into the evening, but some exporting of power to the grid in summer, and purchase from the grid for winter evenings will occur.

Battery Storage is not strictly a renewable energy solution but provides a means of storing energy generated from solar PV on site to be able to be used at peak times or later into the day when the PV is no longer generating. It therefore extends the usefulness of the existing PV system. This is a new but fast-growing technology.

Sources: Tables H3 & H4, SAP 2009, http://www.bre.co.uk/filelibrary/SAP/2009/SAp-2009_9-90.pdf

12. Funding Sources

There are a variety of charitable grants for churches undertaking works and a comprehensive list of available grants is available at www.parishresources.org.uk/resources-for-treasurers/funding/

This includes a 77 page guide to funders and their criteria:

https://www.parishresources.org.uk/wp-content/uploads/Charitable-Grants-for-Churches-Jan-2020.pdf .

13. Faculty Requirements

It must be noted that all works intended to be undertaken should be discussed with the DAC at the Diocese.

Throughout this report we have indicated our view on what category of permission may be needed to undertake the work. This is for guidance only and must be checked prior to proceeding as views of different DACs can differ.

Under the new faculty rules;

List A is for more minor work which can be undertaken without the need for consultation and would include changing of light bulbs within existing fittings, repair and maintenance works to heating and electrical systems and repairs to the building which do not affect the historic fabric.

List B is for works which can be undertaken without a faculty but must be consulted on with permission sought from the Archdeacon through the DAC. This includes works of adaptation (but not substantial addition or replacement) of heating and electrical systems and also the replacement of existing boilers so long at the same pipe work, fuel source and flues are used. It can also be used to replace heating controls.

All other works will be subject to a full faculty.

Works which affect the external appearance of the church will also require planning permission (but not listed building consent) from the local authority and this will be required for items such as PV installations.