Energy Audit and Survey Report

St Mary the Virgin, Horsham Lane, Upchurch

PCC of St Mary the Virgin

Version Control

Author	Reviewer	Date	Version
Paul Hamley	Matt Fulford	10th February 2020	1.0

© ESOS Energy Ltd

Contents

1. Executive Summary

An energy survey of St Mary the Virgin, Horsham Lane, Upchurch was undertaken by ESOS Energy Ltd 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. This audit has been provided in conjunction with 2buy2, the Church of England's Parish Buying scheme provider and is subsidised from Total Gas & Power, the Parish Buying schemes principal energy suppliers.

St Mary the Virgin, Horsham Lane, Upchurch is a Grade I listed church with chancel dating from around 1300. Much of the church is 14th century including some glass and an area of mediaeval tiled floor and continuous wall seats. Externally the tower is surmounted by an unusual two stage spire. There is both gas and electricity supplied to the site.

The church has a number of ways in which is can be 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 (£)	Simple Payback (years)	Permission needed	CO2 saving (tonnes of CO2e/year)	£/tonne of CO2
Switch electricity (and gas) suppliers to ones which provide 100% renewable (or green gas) supplies	Nil	10-15% savings likely	Nil	immediate	None	N/A	N/A
Install draughtproofing measures to doors	1,970	£96	£400	4.19	List A	0.36	£1,103.75
Replace floodlights in chancel and tower with LED floodlights	900	£168	£500	2.97	List B	0.28	£1,808.45
Complete replacement of 40 x 60W candle bulbs with 7W LED bulbs	1,400	£262	<£100 as some already fitted	0.38	None	0.43	£232.51
Complete replacement of 3 x 100W spotlights in chancel and porch with 12W LED bulbs	177	£33	£20	0.6	None	0.05	£367.82

© ESOS Energy Ltd

Install electric under pew heating	Combined below		£6,300		Faculty		
Install radiant infrared panel heaters in other areas as required	Combined below		£6,000		Faculty		
Install overdoor heater	Combined below		£1,000		Faculty		
	Replace 40,000 gas with 10-15,000 electric	**Around £1,780 see Section 13**	**£13,300**	**7.5**	**Faculty**	**2.75**	**£4,836.36**
Install solar photovoltaic panels on nave and chancel roof	9,000	£1,685	£10,800	6.4	Faculty	2.76	£3,906.25

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

Based on contracted market prices of 18.72p/kWh for electricity and 4.885p/kWh for mains gas respectively.

If all measures were implemented this would save the church around £2,250 in operating expenditure per year.

Operating costs of electric heating are equivalent to those of gas, since less preheating is required.

2. Introduction

This report is provided to the PCC of St Mary the Virgin, Horsham Lane, Upchurch to provide them with 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 and seek to improve the levels of comfort. 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 Mary the Virgin, Horsham Lane, Upchurch, ME9 7AL was completed on the 22nd January 2020 by Dr. Paul Hamley. Paul is an energy auditor with experience of advising churches and small businesses. He is part of the Diocesan Environment Officers Energy Group developing advice for the Church of England and authored the "Assessing Energy Use in Churches" report for Historic England. He is a CIBSE Associate member and a Chartered Scientist, with experience of the faculty process gained from chairing the building committee of a Grade I listed church.

St Mary the Virgin, Horsham Lane, Upchurch	**606311**
Gross Internal Floor Area	500 m^2
Listed Status	Grade I
Typical Congregation Size	30

The church typically used for 13 hours per week for the following activities

Services	2.5 hours per week (3x per month)
Meetings and Church Groups	1.5 hours per week
Community Use	8 hours per week
Occasional Offices	2 Weddings, 8 baptisms, 10 funerals

Church annual use = 670 hours

Heating hours: = 330 hours

Estimated footfall = 7000 people

3. Energy Procurement Review

Energy bills for gas and electricity have been supplied by St Mary the Virgin, Horsham Lane, Upchurch and have been reviewed against the current market rates for energy.

The current electricity rates are:

Single / Blended Rate	18.72p/kWh	Above current market rates
Standing Charge	14.80p/day	N/A

The current gas rates are:

Single / Blended Rate	4.885p/kWh	Above current market rates
Standing Charge	16.45p/day	N/A
Availability Charge	p/kVA	N/A
Meter Charges	p/day	N/A

This church has the highest gas rates of any visited by this surveyor over the past 6 months, and the third highest electricity rate.

The above review has highlighted that there are opportunities to gain cost savings from improved procurement of the energy supplies at this site. We would therefore recommend that the church obtains a quotation for its gas and electricity supplies from the Diocese Supported parish buying scheme, http://www.parishbuying.org.uk/energy-basket. This scheme only offers 100% renewable energy sourced energy and therefore it is 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.

4. Energy Usage Details

4.1 Annual Consumption

St Mary the Virgin, Horsham Lane, Upchurch uses around 3,700 kWh/year of electricity, costing in the region of £750 per year, and 40,000kWh/year of gas, costing £2,000.

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

Utility	Annual use/ kWh	from	to	Cost
Electricity	3,677	30/11/18	30/11/19	£741
Gas	39,367	30/11/18	30/11/19	£2,041

Utility	Meter Serial	Type	Pulsed output	Location
Electricity – Church	E12Z005090	EDMI Atlas MK10D	Yes – AMR data should be available	Sealed blue cupboard in tower
Gas – Church	M016 A04927 02 A6		No	Cabinet next to tower SW side

It is recommended that the church consider asking their gas supplier to install a smart meter so that the usage can be monitored more closely and the patterns of usage reviewed against the times the building is used.

4.2 Energy Profiling

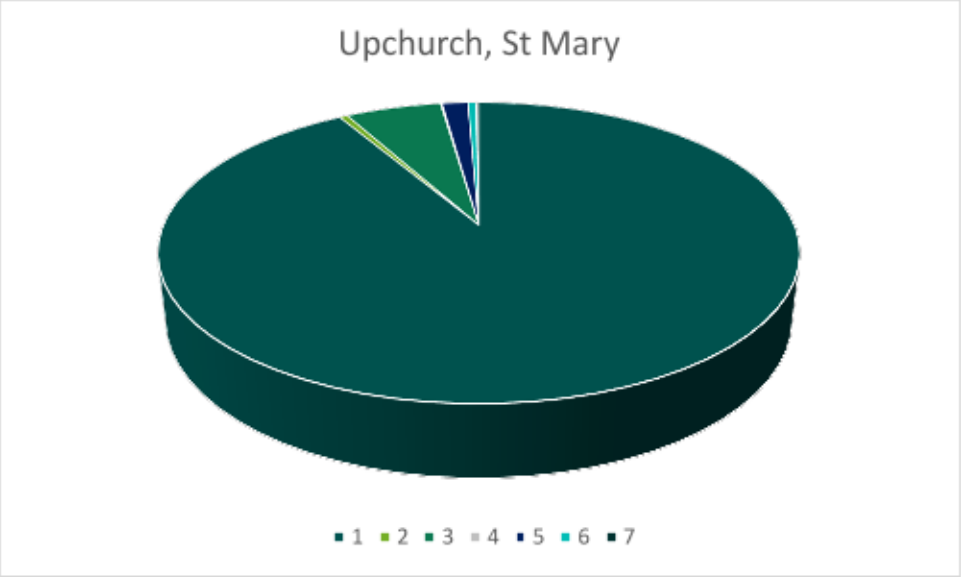
The main energy use within the church can be estimated as follows:

Service	Description	Power	Annual Use/ kWh	Estimated Proportion of Usage %
Gas heating	Powermatic gas fired air handling unit, 87% efficient (117kW output when new)	133kW	39367	90.1%
Electric Heating	Bell tower: portable heater. 3 hours use per week x 30 weeks	1.5kW	135	0.5%
	Radiant halogen heater	1.2kW	72	
Lighting				
Nave	4 chandeliers x 8 bulbs; 32 x C (mixed)	1920W		
Chancel	2 spotlights x 100W	200W		
	4 floodlights x 250W	1000W		
South Aisle	2 chandeliers x 4 bulbs; 8 x C (mixed type)	480W		
Porch	1 spotlight x 100W	100W		5.8%
Toilet	2 fluorescent circular diffuser x 50W	100W		
Tower	1 small floodlight x 150W	150W		
Choir vestry	1 pedant ~ 50W	50W		
	TOTAL	4kW	2480	
Outside lights	5 motion sensitive x ~150W	750W	40	
Hot Water	Kettle~ 7 boils per week = 18hrs per year	3kW	54	
	Coffee machine ~ 30 mins per week	2kW	200	
	Urn (Swan), use every time church used	2.2kW	300	
	Fixed water heater (washing up etc)	2kW	104	1.5%
	Triton hand water heater (toilet)	1kW	12	
Other Small Power	Sound system	1kW	100	
	Vacuum cleaner	1.5kW	100	
	Toilet extraction fan (minimal use)		10	
	TOTAL			0.5%
Organ	Organ, estimated 70 hours use	1kW	70	0.2%

Total Annual Consumption 2019: 3,677kWh

C: candle bulbs, 60W being replaced by 7W LED bulbs

Spotlights, 80mm E27 bulb, 100W being replaced by 12W LED



KEY 1 Gas heating 2 Electric heating (minimal) 3 Lighting Internal 4 Lighting external

5 Hot water 6 Small power 7 Organ

4.3 Energy Benchmarking

In comparison to national benchmarks[1] for Church energy use St Mary the Virgin, Horsham Lane, Upchurch uses less electricity and heating energy than would be expected for a church of this size.

This is mostly due to low hours of use (about 8% of the year).

	Size (m^2 GIA)	St Mary the Virgin, Horsham Lane, Upchurch use kWh/m^2	Typical Church use kWh/m^2	Efficient Church Use kWh/m^2	Variance from Typical
St Mary the Virgin, Horsham Lane, Upchurch (elec)	500	7.35	20	10	37%
St Mary the Virgin, Horsham Lane, Upchurch (heating fuel)	500	78.7	150	80	52%
TOTAL	500	86	170	90	50%

There is currently no benchmark data which takes hours of use and footfall into account.

[1] CofE Shrinking the Footprint – Energy Audit 2013

5. Energy Saving Recommendations (Electricity)

5.1 Lighting (fittings)

The church has begun changing bulbs over to LED. This process should be completed, and all non-low energy bulbs should be removed, perhaps as a Lent activity.

The four floodlights in the chancel area and one in the tower should be replaced by LED floodlights. There is no need to purchase the more expensive IP65 rated items for exterior use.

5.2 Lighting (control for internal lights)

As part of the planned re-ordering of the rear of the church, lighting controls should allow the various areas of the church to be lit independently.

If the church is to be open to visitors it is recommended that motion sensor operated lights are fitted and connected to a suitable sub set of lights.

6. Energy Saving Recommendation (Heating)

6.1 Heating System and Strategy

The church currently uses a gas fired air handling unit to heat the church by direct addition of warm air at a high level at the back of the nave.

The system is noisy so needs to be turned off before a service or meeting.

It is found that the warm air rises to the nave ceiling. Once the cold air has been displaced down towards the congregation, the warm air moves into the chancel, which warms before other areas of the church. The seated area of the nave then finally receives heat. It is unlikely that much heat circulates into the choir vestry in the north east chapel.

This image clearly shows that the heat rises to the ceiling. The heating had been running for approximately one hour.

Temperature measurements (°C): Carpet 11.5, Pews 10, east wall 10.9, north wall 16, nave ceiling east 18, nave ceiling west (top of photo) 19.1, wall under ducts 9.7, wall between heating ducts 21, heater output grilles 75. The black shape in the centre is an open door into the tower!

In the chancel, the heat is concentrated in the ceiling. Note that the windows are warmer than the surrounding stonework (it is normally the other way around). This is due to the external polycarbonate covers.

If the gas system is to be retained long term, it will need to be made hydrogen ready. 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.

A church with low hours of use per week will always fall back to "base" temperature between heating events (it may take around 24 hours for the temperature to fall). A system which can heat rapidly, without sending most of the heat to the ceiling first, and in addition can be configured to heat small areas independently for small services or midweek meetings will be more efficient than one which seeks to heat up the whole volume.

As with most medieval churches, this church would have survived most of its life without any form of heating the modern additional of heating is not needed to preserve the fabric but only to provide thermal comfort to occupants. The previous trend of 'conservation heating' for fabric issues is now largely considered to be unnecessary and is being avoided by the likes of National Trust and English Heritage.

Given the churches usage profile we would suggest that a revised heating strategy for the church would provide a much more efficient use of energy and a more comfortable church.

6.2 Future Heating Options

A discussion was held with the treasurer, William Little and PCC member Helen Osborne about the various heating options available. The church is considering re-ordering the rear of the nave with removal of the back pews and installation of a new toilet and refreshment bar. This programme could include a new heating system.

It is noted that there are original Mediaeval tiles at the front of the nave and these must not be disturbed.

1 Gas fired central heating with radiators

A report from a heating engineer has recommended a radiator based system, priced at £80k.

This would mean considerable disruption due to pipework and finding locations for radiators, plus concerns over the mediaeval floor area. It would still be a convection heated system, with warm air rising to the ceiling. We consider that it would be slower to heat the church than at present, due to the time taken for heat to transfer from boiler to water, and from radiator to air.

Installation of a new gas system of any kind is not recommended from an environmental viewpoint, and such a system is not compatible with a desire to use the building more but for (short) meetings spaced out during the week. For a sporadic use pattern a rapid heating, flexible system is required.

2 Electric radiant heating

Overhead radiant infrared heating with elements suspended from chandeliers as at St Catherine's, Faversham can offer rapid heating times.

At St Mary's there is poor alignment between the six arch centres from which chandeliers could be hung and the pews; they would be above the corridor areas in the centre bays and above the area to be de-pewed at the rear bay. At the front bay the heating chandelier centre would be above the front row of pews Also it would be too "busy" in addition to the existing lighting chandeliers and involve extra cost if the lighting mountings were changed as well.

Each element is about £500 installed.

3 Electric Under Pew heating

This is the most flexible method of heating since it allows each pew heater to be switched individually thus catering for congregations or meetings of different sizes.

There are 30 pews, which will reduce to 18 with removal of the rearmost ones. Six 4m pews would require three small heaters each and twelve 2.3m pews would require two small heaters.

An approximate cost for 42 x 400W heaters at £150 each installed is £6,300.

Cabling should run from the area to be refurbished eastwards into and under the pews.

Strategy

Under pew heaters could be installed whilst retaining the blown air gas heating for an initial period.

This allows the opportunity to experiment and see how much preheating the under-pew heaters will provide, and what heating would be required for other areas; the chancel (radiant panels?), South Chapel (overhead chandelier or radiant panels). and Choir vestry (minimal or none).

Further electric heating could then be added with a couple of year's experience defining the required location and amount of heating in the other areas.

Re-ordered area, rear nave

The rear area could be heated with rectangular, wall mounted far infra-red panels (e.g. in the tower/nave area, perhaps attached to the tower buttresses), or by two radiant chandeliers suspended from arch centres, or by underfloor heating. Underfloor heating is expensive at around £1000 per m^2 and requires either excavation or raising of the floor. It is not recommended except for churches in constant or regular use, since it has very long warm up times.

The chapel would probably require far infrared panels located on the wall just above chair level, or a ceiling mounted solution.

6.3 Heating Timing Optimisation

Purchasing of a temperature datalogger will allow the time for the church to heat (in different weather conditions) to be understood, as well as the time to switch off to be optimised. This would require someone with a computer to plug in the device and download the readings.

A suitable model retailing for around £40 is https://www.lascarelectronics.com/easylog-data-logger-el-usb-1/

7. Alternative Heating Systems -Details

7.1 Under Pew heating

Although electricity is currently more expensive than gas per kWh, this form of heating requires little preheating time and delivers heat directly to the congregation.

Heaters with an output of 400W seem to be more suitable than 500W models according to reports from different churches.

For replacement, two most popular under pew heaters within churches are BN Thermic PH30 heaters (http://www.bnthermic.co.uk/products/convection-heaters/ph/) or similar from http://www.electricheatingsolutions.co.uk/Content/PewHeating.

The under pew (see photo below) and panel heaters have been recently installed at St Andrews Church, Chedworth, Gloucestershire, GL54 4AJ. The church is open in daylight hours so can be viewed at any time.

An alternative design which is available in a variety of lengths (and hence outputs) is the "Cooltouch" fabric covered radiant under pew heater. https://www.cooltouchheaters.co.uk/

7.2 Use of Electric Radiant Panels for Heating Specific Areas only

To avoid having to heat up the entire church building for any meeting held in the south chapel it is recommended that the PCC consider installing electrical panel heaters in this area on a time delay switch. They are also recommended as heating for the re-ordered rear of the church.

Far infrared panels come in three types, low surface temperature designed for ground level installation and safe for schools (55°C) and hospitals (42°C), medium temperature, and high temperature at 150°C designed for installation under high ceilings. In churches they have been successfully installed under ceilings, often in aisles between the beams. Normally available in white, they can be sourced in other colours including matching with stonework or brickwork or decorated.
https://www.suryaheating.co.uk/custom-image-heating-panels.html

Suitable electric panel heaters would be far infrared panels such as https://www.warm4less.com/product/63/1200-watt-platinum-white- . 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.

Costs are £350-500 wall mounted and £500-700 ceiling mounted. Six at the rear and four in the chapel would cost in the region of £5-6,000.

7.3 Overdoor Air Heaters

In order to achieve the sense of a 'warm welcome' into the church an over door air heater could be provided. This would also help to provide warmth to the rear of the church. Such an over door unit should be sized to cover the whole width of the door and it is suggested the BN Thermic 860 model would be suitable. This has a 6kW output.

Install a BN Thermic 860 Overdoor Fan heater above the main entrance door wired in with a BN Thermic CS-7 control switch. The heater is mounted using a bracket attached to both its ends (which allows it to be rotated slightly and aligned) – using a bespoke deeper bracket would position the heater away from the wall and clear of the curtains which could be closed behind it when required.

The curtains clearly show the effect of heat rising from the blower (out of picture to the right).

8. Energy Saving Measures (Building Fabric)

8.1 Roof Insulation

Fit 270mm of insulation into the loft spaces

NB: If there are bats present (see section 10.1) then it will not be possible to add any insulation.

Both nave and aisles have internal ceilings. The loft void above the ceilings of the nave and aisles were not inspected as part of this audit. If they are bat free and accessible, it may be feasible to add insulation. This will not be cost effective for a church which is only heated once per week but is worth costing if the church will be brought onto regular use.

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

A free survey and quotation for the supply and installation of insulation to the loft spaces can be arranged through ESOS Energy Ltd (contact Adrian Newton 0117 9309689, adrian@esos-energy.com).

8.2 Draught Proofing of Doors

There are a number of external doors in the building which do not close tightly against the stone surround, hence a large amount of cold air can continually come into the church around the side and base of these doors. There is potential for the gap below to be closed.

Where a timber door closes against a timber frame it is recommended that draught proofing is fitted. A product called QuattroSeal (see link below) is often used in heritage environments to provide appropriate draught proofing.
http://www.theenergysavers.co.uk/application/files/1714/7197/4194/National_Trust_Case_Study.pdf.
Note this cannot be used where the timber door closes directly against a stone surround.

Other simple measures such as using a small fridge magnet painted black over the large keyhole or the use of 'sausage dog' type draught excluders at the base of little used doors can prove to be very effective. Doors should be reviewed in daylight and gaps where the light shines through sealed or filled in whatever the most appropriate way is for the specific door.

8.3 Closed Door Policy

The main entry doors in the porch should be kept closed in very cold or windy weather and quickly closed behind the congregation by your friendly welcome team! (With a "come in!" notice)

The internal glass doors cannot be made draught proof due to their design with intentional space around the edges including the curved feature above the hinge.

8.4 Windows

If there are draughts caused by cracked glass or gaps between glass and frames or stonework, or hopper windows not shutting correctly, a temporary solution is to use black plasticine to fill gaps.

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

9. Other Recommendations

9.1 Bats

Bats have been noted in the church. PH has already put WL in contact with the Bat people at Church House who run the Bats in Churches project to alleviate the problem.

It is noted that both nave and aisle roofs have ceilings – bats may have been roosting in the void for centuries. A hole was noted at the tower/nave junction which may be the current entry point.

https://www.churchofengland.org/more/church-resources/churchcare/advice-and-guidance-church-buildings/bats-churches

https://www.buildingconservation.com/articles/bat-management-churches/bat-management-churches.htm

10. 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, nave roof
Battery Storage	Yes
Wind	No – no suitable land away from buildings
Micro-Hydro	No – no water course
Solar Thermal	No – insufficient hot water need
Ground Source Heat Pump	No – archaeology in ground and no radiator system
Air Source Heat Pump	No – no radiator system
Biomass	No – not enough heating load as well as air quality issues

10.1 Solar PV potential

The south facing nave roof offers a potential site for installation of solar panels in the valley behind the south aisle roof, although it will be shaded by the south aisle and the tower at low sun angles.

This would have to be confirmed with your architect as to suitability for extra weight and wind loading on the roof structure.

The nave and chancel roofs offer an area of around 60m^2. [30m total roof length, minus ends] This could generate 0.15kWpeak/m^2 giving a 9kWpeak system. A 1kWpeak system can generate 1000kWh annually in Kent, although due to the proximity of the tower and the south aisle roof an overshading factor should be applied to give a total annual generation of 7000kWh. This is double the church's current annual electricity use (3677kWh) – although much of that use will be during the evening and night. All of the energy generated could be used on site if electric heating is installed, with a battery.

Using average 2018 installation costs for larger systems of £1200 per kWpeak; a 9kWpeak system would cost £10,800. This does not include cost of any battery.

Battery Storage is not strictly a renewable energy solution, but battery storage does however provide 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 particularly in this sort of church. This is a new but fast-growing technology with prices expected to fall substantial over the next 2 to 3 years therefore investment into this may be worth delaying at this stage.

The viability of a solar PV system would be increased if the heating system for the Attwood Rooms was to be changed to either a direct electrical system, or to a heat pump.

11. Summary of costs

Based on 400 heating hours and current electricity and gas costs.

	ITEM	CAPITAL COST/ £	POWER/kWh	OPERATING COST per annum / £
A	Electricity use, current Gas use, current	/	3,677 39,367	**741** **2041** **= 2782**
B	Under pew heating, 42 x 400W heaters; 16.8kW	6,300	6,720	1,260
C	Extra radiant heating 10 x 1kW panels + overdoor heater	6,000 1,000	4,000 200	749 37
D	Total energy costs B + C		10,720	2,046
E	Solar photovoltaic system	10,800	9,000	1,685 offset

F	Requirement from grid D-E		1,720	**361**
G	Reduced gas use, operated during coldest periods only		13,000 (1/3)	**635**
H	Annual operating cost with minimal grid electricity and low gas use F+G			**996**
I	Annual savings A total - H			**1,786**
J	Payback calculation. Cost = B + C + E	24,100		J/I = 13.5 years

More radiant heating (panels) will increase electricity costs but allow complete phasing out of gas heating and reduction in maintenance costs.

12. Funding Sources

There are a variety of charitable grants for churches undertaking works and a comprehensive list of available grants is available at https://www.parishresources.org.uk/wp-content/uploads/Charitable-Grants-for-Churches-Nov-2019.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.

14. Report Circulation

In addition to the PCC, this report is also sent to:

1. Your DAC secretary and your DEO, because
    - They maybe be able to offer you help and support with implementing your audit
    - They want to look across all the audits in your diocese to learn what the most common recommendations are.
2. Catherine Ross, the officer in the Cathedral and Church Buildings team centrally who leads on the environment, who wants to learn from all the audits across the country. She will be identifying cost-effective actions churches like yours might be able to make.