



Energy Opportunity Survey

St Edmunds, Roundhay, LS8 1JN

Green Journey

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THE CHURCH
OF ENGLAND

Diocese of Leeds

Energy Opportunity Survey

Green Journey has been appointed by the Diocese of Leeds to carry out energy surveys and provide churches with the opportunity to join the Green Journey energy basket. The aim is to reduce the carbon footprint and energy costs of all churches within the Diocese of Leeds and across the wider Church of England.

Green Journey's buying power allows us to offer renewable energy at a similar, or lower, price to standard energy. This allows all churches opting into Green Journey to practise responsible stewardship, while also making a saving. Green Journey can help you in your stewardship by reducing your electricity and gas bills, whilst also providing a report detailing your church's energy consumption and sustainability, advising on how both can be improved.

“To date, Green Journey has saved the Church of England over £370,000 in energy bills and VAT reclaims.”

Reducing our energy consumption and cutting carbon dioxide emissions is of paramount importance for all, as together we must face the effects of climate change. The Church of England is a leading advocate of sustainability awareness and action, promoting a more environmentally conscious stewardship at local, regional and national levels.

Consumption figures presented in this report are calculated from billing figures and information collected during the energy survey. An estimation of your electricity consumption breakdown is also included, for example lighting could be projected to comprise 60%, kitchen appliances 30% etc. Due care has been given to ensure that these are as close to the observable figure as possible, however these should be considered as calculated approximations only.

Energy Opportunity Survey

Site Summary



Site Overview

Site Address		Site Contact	
Church Name	St Edmunds	Contact	
Town	Roundhay	Telephone	
Postcode	LS8 1JN	Email	

Audit Information		Site Information	
Auditor	Mark Rudhall	Annual Operating Hours	1200
Audit Date	14/05/2019	Square Meters	1,083.76 m ²
Audit Time	10 AM		

Report Information	
Report Author	James Carson
Date	06/06/2019

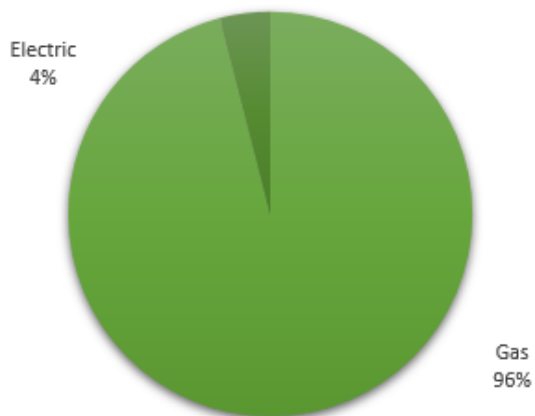
Energy Opportunity Survey

Energy Overview

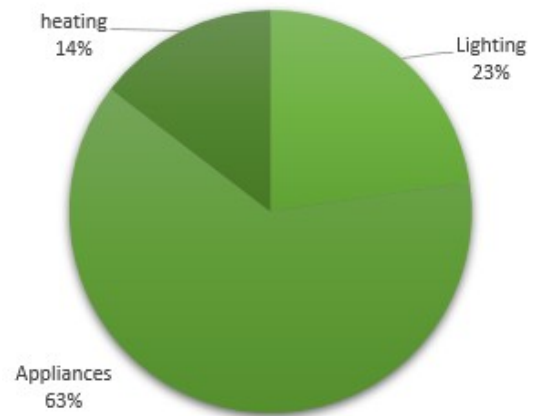
Energy Breakdown

Electricity		Gas	
Period Covered	May 2018– May 2019	Period Covered	May 2018– May 2019
Electricity Usage (kWh)	22212	Gas Usage (kWh)	534,841
Cost per Annum (£)	£4,911.61	Cost per Annum (£)	£19,564.09
Meter Quantity	3	Meter Quantity	2

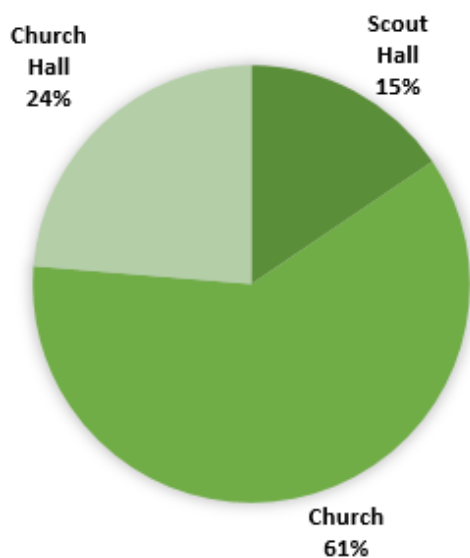
Total Energy Breakdown



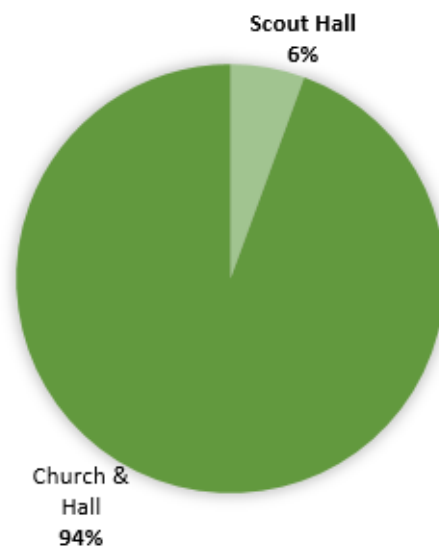
Electricity Breakdown



Electricity Breakdown



Gas Breakdown



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Sustainability Overview

The following paragraphs contain information on the energy efficiency and sustainability of your church. This draws on observations made on, but is not limited to, building structure, lighting and space heating (such as boilers, electric heating). All recommendations provided within the report are intended to help your church streamline its energy consumption, reducing costs and ensuring the sustainability of your church is as near to what is deemed to be practically feasible. For example, churches that replace inefficient lighting with LED fixtures have observed on average, an 80% saving in lighting costs.

If you would like further advice on any of the recommendations made here, please get in touch and we will be happy to assist. We advise that you also speak with either the DAC Secretary or your Archdeacon to ascertain if a Faculty decision will be required, and if so to find out how your PCC should proceed.

Main Heating - Gas

It is often challenging to find the correct temperature to heat your church. The following guidelines are provided based on our experience and if followed can help preserve the long-term structural integrity of your church.

Occupancy	Temperature (°C)	Comments
During a church Service	18-21°C	Most suitable temperature for the congregation during a service
Open Door (if the church remains open to the public throughout the day)	12°C	Comfort Temperature
Vacant/Overnight	8°C	Minimum temperature for reducing surface and interstitial condensation of the church building

However, it is acknowledged that financial restraints may not allow for a minimum background temperature of 8°C to be followed at all times.

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Balance and Temperature

Balancing Energy Consumption, Comfort and Conservation

Balancing the conflicting requirements of occupant comfort, protection of historic fabric and energy consumption can be challenging. Historic buildings are sensitive to changes in environmental conditions. This is particularly true in those that contain organic materials in their construction or contents such as furniture, pictures, timber panelling and leather components such as those found in church organs.

The most important environmental parameter in a historic building is relative humidity (RH), which should ideally be in the 40-65 per cent range. When RH is too low, cracks can form in organic materials and furniture joints tend to become loose. When RH is too high there is an increased risk of mould growth, dry rot and insect infestation.

Understanding the prevailing conditions in a building is key to providing effective control. Factors such as moisture entering the building due to poor maintenance of rainwater disposal will affect the internal environment.

Temperature, Humidity and Comfort

If a volume of air is cooled, its relative humidity will rise up to the point of 100 per cent RH, which is known as its dew point, and further cooling will cause the water vapour to condense out. This is demonstrated when warm air touches a cold single glazed window in the winter months and condensation forms on the surface of the glass.

The external environment changes during the seasons, being generally cold in winter with lower RH and warm in summer with higher RH. When buildings are heated in winter to make them more comfortable for the occupants, the general RH in the space is reduced below the ideal humidity range for conservation and this presents an increased risk to organic contents and fabric.

One approach that is often used in historic buildings is 'conservation heating'. It has been found that heating the internal space of a building to a few degrees above the external ambient air temperature generally maintains the internal relative humidity within the ideal range.

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Types of Heating

Central Heating

Central heating is designed to provide even heat distribution within the whole building, at the same time supplying heat to the building envelope. It is used to reach the desired comfort level, or to provide background heating to the building in order to prevent very low temperatures and frost. The most common use is for large building volumes, and the most popular systems are radiators, warm-air heating, natural or forced-air convectors, electric or fuel stoves and underfloor heating.

Central heating requires a huge amount of energy, a part of which is wasted through thermal bridges, leakage and storage in the building envelope. Typically historic churches are not energy-efficient buildings and their scope for improvement can be limited. Being based on the dispersion of heat, central heating is not very effective in this type of building, where there are so many potential sources of heat loss.

Local Heating

Local heating is designed to produce the best radiant temperature only in the occupied parts of the building, with some local increase in air temperature and a minimum of draughts. The rest of the church volume remains almost unaffected and preserves its historical climate, or departs from it only slightly. Local heating is most commonly used for small congregations and building volumes, for example small churches or specific parts of them which are in use. The most popular systems are radiant heating from infrared (IR) emitters located overhead, on side walls or at floor level; and pew heating using electric panels, tubular heaters, water pipes or radiators, or heated carpets.

This type of heating system disperses a small amount of heat in targeted areas, while the building envelope and historic furnishings or artworks are exposed to little or no change in temperature. Outside the moderately heated occupied area, the RH remains almost unaffected.

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Types of Heating Continued

As we have seen, church heating usually comes in two forms. The most common type of system (**Central Heating**) uses cast iron radiators or large pipes, often located against the external walls but less frequently against internal partitions. Pipes (either elderly cast iron or modern 'finned' pipes which release heat more efficiently) are also commonly found beneath cast iron grilles which run down the aisles. These are usually fed by gas/oil boilers in a semi-underground chamber. Occasionally this is supplemented by the other widely used system (**Local Heating**), electric radiant heating coils fixed beneath the pews or on the walls. These are often used as a primary heat source in smaller churches.

Old churches are seldom insulated and often have large expanses of single glazing. Some heat radiates from the appliances but reaches only a small proportion of the floor area, while the rest circulates through convection currents, and most of the benefit is lost as it cools in the upper voids of the building. Much of the perceived warmth tends to come from the body heat of the people in the congregation, who are usually dressed in outdoor clothing.

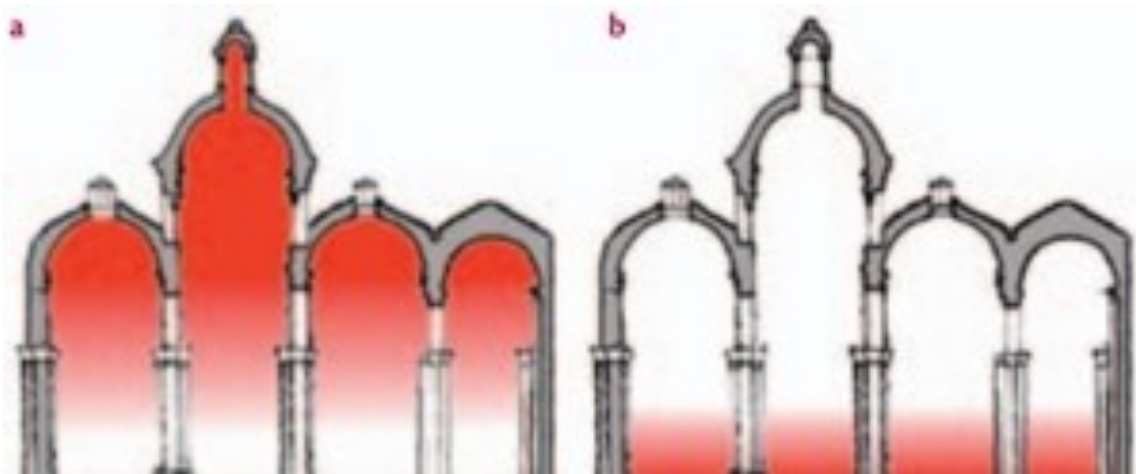
Underfloor heating is usually considered in churches where there is an uninterrupted expanse of flooring and a desire to reduce energy consumption. With a low surface temperature of around 29°C, the primary advantage of an underfloor heating system in a church is that heat is provided evenly across a broad area, enabling an ambient temperature of around 18°C to be maintained up to two metres above the floor and emanating from directly beneath the congregation. This means that the visitors readily perceive warmth on entering the building and can shed their coats.

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Types of Heating Continued

Considerable fuel savings can be achieved by installing a dual-fuel system where a ground source heat pump (GSHP) can run the underfloor heating, and gas, where available, can heat the radiators. GSHP is a viable source of energy even at sites with sensitive archaeology as it is now possible to extract heat from ground below the archaeological threshold by using radial boreholes, avoiding long trenches for pipes in the churchyard.

Underfloor heating can also work with solar thermal energy as a source, provided there is space for a large thermal store of warm water, but there are almost always difficulties (ethical and aesthetic rather than practical) associated with installing solar panels on the roof of a historic church. Insulation can also be installed under the floor at the same time as underfloor heating and, in a historic building, this may be the only place where it can be introduced.



The two heating strategies: (a) central heating aims to provide even heat distribution throughout the building while also supplying heat to the building envelope. Most of the heat is accumulated in the upper part of the building (b) local heating aims to produce the best radiant temperature within the occupied area of the church only, with some local increase in air temperature and minimum draughts. The rest of the building remains almost unaffected and preserves or remains close to its historical climate.

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Main Heating - Gas Boiler

The following information in this section highlights implementations which could be given consideration, in order to improve heating efficiency of your church. Should you wish to act upon any of the following suggestions you should first consult your Diocese Heating Advisor.

Location	Boiler Model	Quantity	Estimated Efficiency	Output (kW)	Condensing
Boiler Room	Beverley	1	71.7%	133	No
Cleaner Room	Evomax	1	83.5%	120	Yes

N.B. Age and efficiency are based on observations made at the site and discussions with the church representative during the site visit.

We would advise, where financially possible, replacing the current non-condensing boiler with a newer, more efficient condensing equivalent. Condensing boilers can reuse the heat embedded within the boiler flue gases to increase the boiler efficiency to a value around 90%. This compares favourably to the current estimated efficiency of your boiler, which is 83.5 and 71.7%. As such, the boiler will have to consume a larger amount of gas (as more will be lost from inefficiencies) for the same heat output, thus increasing your gas bill.

We would advise that magnetic and sediment filters be installed, to prevent small metal particles and debris leading to corrosion in your heating system, or at worst, a central heating breakdown. This debris can be extracted with a magnetic and sediment filter, thus protecting the heat exchanger and improving the lifespan and efficiency of your boiler.

We would advise that EndoTherm is regularly added to the water in the radiators of your heating system. This is a liquid that improves heat transfer rate and efficiency, resulting in the system heating up faster and maintaining the determined temperature for longer.

Heating System Solution	Total Cost (£)	Annual saving (£)	Payback (years)
EndoTherm	£1,084	£2,930	0.4

EndoTherm

Awards Won

H&V News Awards 2015 – Domestic H&V product of the year

Ecobuild 2015 – M&S big innovation pitch winner

CIBSE Building Performance Awards 2016 – energy saving product of the year

National Energy Efficiency & Healthy Homes Awards 2017 – product of the year

About It

EndoTherm is 100% organic and saves up to 15% of energy that is used. As well as this it is a non-corrosive substance that works within an hour with a CO2 payback of a day and a ROI of less than a year. EndoTherm works in any sealed, wet heating system.

How It Works

It reduces surface tension of water.

Makes water more 'wet' by breaking up the hydrogen bonds so it is able to reach all the imperfections of the systems surface.

Improves the thermal properties of the water to increase efficiency of the heating system.

Systems heat up quicker.

Stay hotter for longer.

Only need to use a 1% concentration in comparisons to system size.

Independent Studies

Enertek International

- A privately owned R&D company who work on behalf of major multinational corporations, leading private companies, trade associations, and government departments.
- Direct comparison tests with and without EndoTherm in the system water indicate that the gas consumption of the boiler in the heating system can be reduced by up to 15%. "This empirical evidence indicates that the addition of EndoTherm can significantly reduce gas consumption and therefore CO2 emissions".

University of the West of Scotland

- A collaboration between the Innovation & Research Office (UWS), the Institute of Biomedical & Environmental Health Science (IBEHR), and their partners was conducted to investigate the impact of EndoTherm as an energy saving technology.
- Surface Tension measurements using K11 Kruss Force tensionmeters confirmed a reduction in surface tension of over 60%.

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Main Heating (Gas Continued)

It is our understanding that it can be sometimes challenging to prevent tampering with timers and controls which can therefore result in energy wastage. This can be avoided by appointing an 'energy champion' who is responsible for programming the controls. It may also be necessary to install a tamper-proof box where continual interference is a common theme. In our experience, churches that have followed this advice have benefitted from reduced energy bills.

We would advise that efforts be directed towards increasing the insulation thickness on heating pipework. This could reduce energy losses by as much as 90% across the length of pipework and adjoining infrastructure.

We would advise that a further investigation be undertaken to determine whether the set flow temperature of your condensing boiler could be reduced. Condensing boilers harness the heat energy encapsulated within the boiler flue gases, however, this cannot happen if the return temperature is above 57°C. As the flow and return temperatures are linked, reducing flow temperature could enable your boiler to achieve greater efficiencies up to and around 90%.

We would advise a Magnetic Fuel Conditioner be installed ,the magnetic fuel conditioner breaks apart these molecule clusters and provides a much cleaner burn, resulting in less fuel required to do the same amount of work, reduced burner deposits which helps lower otherwise costly maintenance, and lowers co2 emissions which is better for people and the environment.

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Heating Controls

The overall efficiency of a heating system is based on three factors: the efficiency of the boiler, the type of fuel used and the responsiveness of the controls. It is often the latter of these that gets overlooked. Appropriate controls will ensure that a heating system is only in use when actually needed; saving money, reducing carbon emissions and maintaining the correct comfort level.

There are many varieties of controls, but they all control the timing of the heating system and/or the demand temperature required. Traditionally, a heating system would be fitted with a programmer (a clock device with "on" and "off" periods) and a room thermostat (that monitors the air temperature in the church). There are now many automated devices that can offer these from a remote location, called "smart controls" such as Nest, Hive and Evohome.

In addition to the above, modern controls include thermostatic radiator valves (TRVs), programmable TRVs, zone control, boiler energy managers, weather compensators and load compensators.

In real terms, the three most cost effective controls in building's and church halls, depending on the heat demand and budget available are:- boiler energy managers, programmable room thermostats and TRVs.

However, a note of caution. The pipework of old heating systems may not be configured to take modern controls. We would be happy to carry out a detailed survey and advise further, but would also recommend consultation with your Diocesan Heating Advisor.

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Energy Supply and Metering

Green Electricity & Carbon Neutral

Currently St Edmunds purchase electricity from SSE green (22,212 kWh/annum) and carbon neutral gas from Crown (534,841 kWh/annum).

Electricity kg of CO ₂ per kWh	Gas kg of CO ₂ per kWh
N/A	N/A

St Edmunds electricity supply accounts for 0 tonnes of CO₂ per annum,

St Edmunds gas supply accounts for 0 tonnes of CO₂ per annum,

Automatic Meter Reading (AMR)

AMR-metering provides accurate, remotely read data on energy consumption. This allows for analysis of real time half- hourly data for both gas and electric, identifying areas for significant energy savings, such as out of hours consumption.

In addition, AMR metering enables a water consumption profile analysis to be undertaken, allowing for any leaks to be identified.

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Main Heating (Electric)

The church has 4 heaters which account for 14% of the total electricity consumption. Electric heating is in use during church services and events throughout winter.

We would advise that timer switches be installed on the heaters in order to reduce energy consumption by ensuring the heater is only operated when required.

We would advise that the scheduled usage of the heaters be examined to identify any potential reductions in electricity consumption. For example, if the church has two events on per week and is otherwise unoccupied, it would be prudent to ensure that the electric heater usage accurately reflects this. By closely coordinating the church's schedule with electric heater usage it may be possible to optimise your heating system and subsequently reduce your consumption.

Warmth is normally retained in buildings by physical barriers. However there are many situations where this is not practicable, such as in a busy shop or restaurant. Air curtains are designed to counteract convection heat losses by using a fan to direct a thin jet of air across the width of the opening. To counter residual heat losses air curtains normally incorporate an internal heat source (typically electric element) to raise the temperature of air that passing through the unit. Air curtains generally have adjustable fan and heat settings which makes them suitable for spring and autumn use as well as mid-winter. In summer they can be operated without heating to improve the efficiency of air conditioning or to reduce levels of airborne nuisance such as small insects or traffic fumes. They are generally designed to be either surface mounted above a door or recessed into either a standard suspended grid or plasterboard ceiling.

Please note, that if you wish to make any changes to your current heating system you should first consult your Diocese Heating Advisor.

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Main Heating (Gas) and HVAC

The church has 4 heaters which account for 33% of the total gas consumption. Gas heating is in use during church services and events throughout winter.

We would advise that timer switches be installed on the heaters in order to reduce energy consumption by ensuring the heater is only operated when required.

We would advise that the scheduled usage of the heaters be examined to identify any potential reductions in gas consumption. For example, if the church has two events on per week and is otherwise unoccupied, it would be prudent to ensure that the gas heater usage accurately reflects this. By closely coordinating the church's schedule with gas heater usage it may be possible to optimise your heating system and subsequently reduce your consumption.

Heating, Ventilating, and Air Conditioning (HVAC) equipment perform heating and/or cooling for residential, commercial or industrial buildings. The HVAC system may also be responsible for providing fresh outdoor air to dilute interior airborne contaminants such as odours from occupants, volatile organic compounds (VOC's) emitted from interior furnishings, chemicals used for cleaning, etc. A properly designed system will provide a comfortable indoor environment all year round when properly maintained.

Please note, that if you wish to make any changes to your current heating system you should first consult your Diocese Heating Advisor.

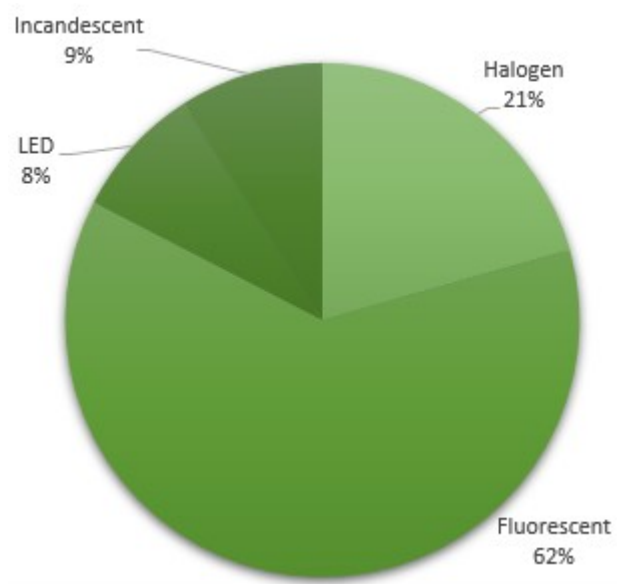
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Lighting

In total, lighting contributes 23% of the site's total electricity consumption. Lighting fixtures within the church are predominantly Fluorescent lights, for example the 11 70W floodlights

We would advise replacing the existing light fixtures with light emitting diode (LED) equivalents. This could manifest as a proactive LED retrofit scheme or as a reactive scheme whereby current fixtures are only replaced at the end of their working life.

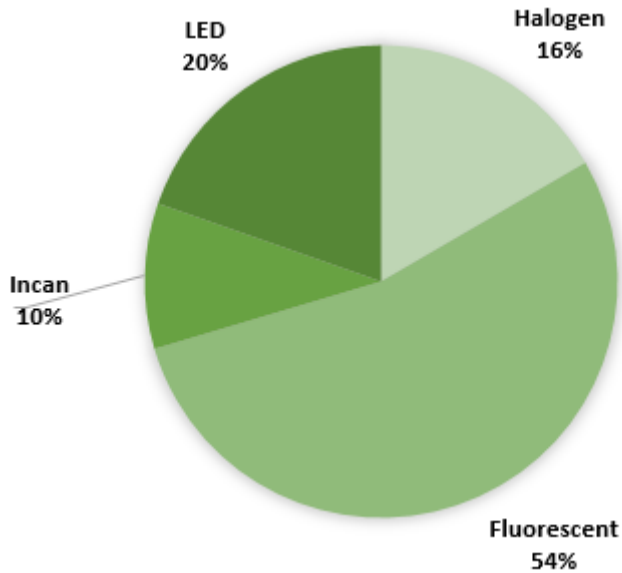
It is suggested that the (Fluorescent 70W) be prioritised for replacement. Halogen lighting has a high-energy consumption/ light emittance ratio, which means its efficiency is low. /Although fluorescent lighting is efficient compared to halogen/incandescent lighting, further efficiencies can be yielded by replacing it with an LED equivalent. As an illustration, (fluorescent 16 W butterfly) can typically be replaced by 9W LED equivalents. Thus, the same quality of light can be produced by an LED equivalent with a 90% reduction in energy consumption being observed.



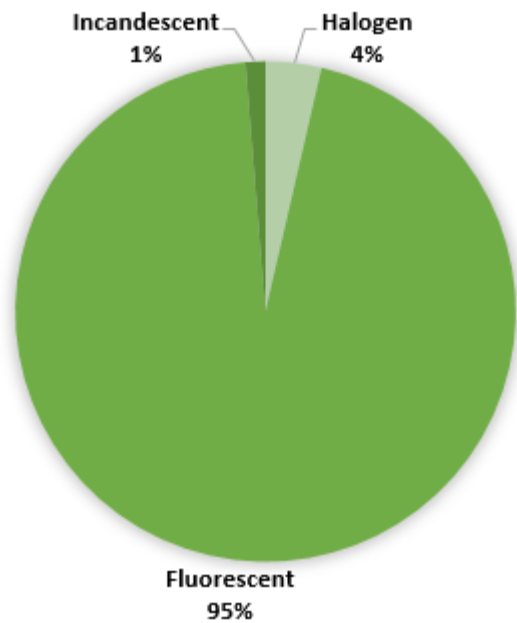
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Lighting Breakdown

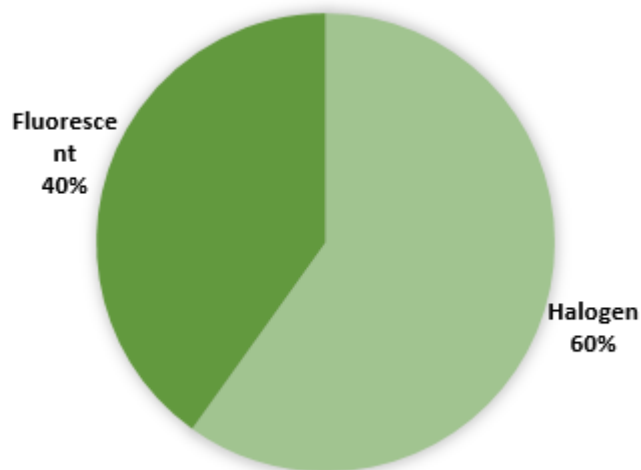
Church Lighting



Hall Lighting



Scout Lighting



If you would be interested in receiving a bespoke quotation (incl. delivery & installation) for new LED lighting at the church, please call Green Journey on either of the below numbers;

0191 300 6161 or 0333 006 7177

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Renewables Recommendation

Solar Photovoltaic Electricity (Solar PV)

Due to the location and construction of the roof, there is scope for St Edmund's to consider the installation of solar PV panels. This would allow the generation of renewable power on site and provide a certain degree of independence from the national electricity grid. Should you wish to consider solar PV, we would arrange for a solar PV specialist to inspect the Nave & Church Hall roof and provide a quotation for the cost of installation and the likely payback; we would be able to assist with the preparation of the Statements of Significance and Need. However, it is likely that your insurers, particularly Ecclesiastical Insurance, would require to approve and inspect any such scheme prior to the commencement of work. Of course, any PV scheme would also require approval from your DAC, local Planning Authority, Historic England and possibly the Society for the Protection of Ancient Buildings.



Location	Project Cost (£)	Number of Panels	Annual Saving on Electricity (£)	Total Annual Savings (£)	Payback (Years)
Nave Roof	£16,500	50	£1,247	£1,247	13.20
Hall Roof	£13,312.5	31	£729	£729	14.1

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Renewables Information

Biomass

When the gas grid is unavailable, particularly in rural areas, wood fuelled systems, called biomass, are often a cost effective and environmentally friendly option.

Biomass is regarded as a low carbon form of heating as the carbon dioxide emitted when the wood is burned is assumed to be the same amount that was absorbed over the tree's life when it was growing. The process is regarded as sustainable if new trees continue to be planted in place of those used for fuel.

Biomass boilers often tend to be more expensive to install compared to their oil-fired equivalents; however, they may attract Renewable Heat Incentive (RHI) payments that could help offset the initial capital cost.

Ground and Air Source Heat Pumps

Heat pumps absorb heat from the air or ground around a property and convert it to usable heat that can be used in radiator, or preferably, underfloor heating systems. Like biomass systems, heat pumps may be a viable option when there's no access to the mains gas grid, however, a reliable electricity supply is essential.

Heat pump systems could qualify for RHI payments and may reduce carbon emissions, depending on which fuel is being replaced.

Green Journey is able to provide specialist advice on the above technologies and RHI payments.

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Appliances

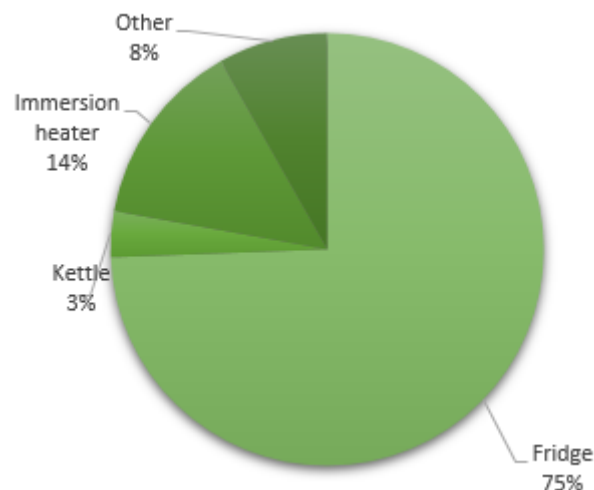
Appliances

In total, appliances contribute 63% of the site's total electricity consumption. Appliances within the church include a fridge/freezer, immersion heater and other small appliances

We would advise ensuring that there is at least a 2 inch gap between the wall and your fridge/freezer. This will ensure that the device efficiently releases heat, meaning less energy will need to be used to keep the appliance interior cool.

In order to yield reductions in appliance energy consumption, we would advise that the church ensures that appliances have a scheduled switch off time. This could be achieved by installing plug timers on the wall sockets, this acts as a failsafe should the appliances accidentally be left on.

Furthermore, we would advise that, where finances permit, the church seeks to purchase only equipment which has a high energy efficiency rating. Ratings typically go from "A" to "G" however some appliances, such as fridges and freezers, go up to A+++.



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Windows

Windows

The windows at the church feature single glazed fittings.

Double glazing reduces the rate of heat loss by up to 65% compared to its single glazed counterpart. Benefits of double glazing also include a reduction in condensation, noise pollution and improved security.

It is understood that due to the restrictions on this Grade II/I listed building it is not deemed possible to improve over the current windows without consent, due to the Planning (Listed Buildings and Conservation Areas) Act 1990.

However, it may be possible to improve the areas around the windows. For instance, make sure that there are no gaps between the fixture and the wall as this could be a source of heat loss within the building.

We would advise where possible, that the church installs secondary single glazing. Secondary single glazing adds another single pane to the currently installed fixture. It is possible that secondary single glazing can reduce heating consumption by as much as 10% from current levels.

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Summary of Costed and Non Costed Recommendations

Recommendation	Total Cost (£)	Annual Saving (£)	Payback (years)
Endotherm	£1,084	£2,930	0.4
Solar PV	£16,500	£1,247	13.2
Solar PV	£13,312.50	£729	14.1

Recommendation	Benefit
Replace non-condensing boiler	This can improve the efficiency to >90% compared to the current esteemed efficiency of "71.7%".
Investigate the possibility of reducing the set-flow temperature of the condensing boilers	The boilers may be able to achieve greater efficiencies.
Install a tamper-proof box for boiler controls	This will ensure that only authorised people can programme the boilers' timer and thermostat.
Maintain areas surrounding the windows	Ensure that there are no damaged areas around the windows that could be a source of additional heat loss.
Install secondary single glazing	This can yield heat loss savings of up to 10%.
Adopt an energy efficient procurement policy	Replace existing appliances with more energy efficient alternatives at the end of their working life.
Appoint an 'Energy Champion'	Appoint someone to ensure appliances and energy consumers are switched off when not needed.
Warm Air Curtains	To retain heat in the building by creating a barrier to the cold air.
Magnetic and Sediment Filters	A magnetic filter filters out any sludge built up from rust particles helping to prevent blockages. A sediment filter sieves out any unwanted particles in your heating system.
LED Lighting	Light Emitting Diodes use less electricity and have a lower wattage rating whilst being brighter and lasting up to 50,000 hours.

Further advice can be found from the Diocesan Environment Officer or visit the Environment pages on the Diocesan Website. Your Diocese Heating Advisor should be consulted before any heating recommendations are to be acted upon.

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Green Journey Contacts

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Diocese of Leeds - Diocese Environmental Officer

Jemima Parker

Diocese Environmental Officer

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Appendices

Appendix 1 – Exterior wall



Appendix 2 – Windows



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Appendices

Appendix 3 – Ceiling



Appendix 4 – Interior Lighting



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Appendices

Appendix 5 – Boiler



Appendix 6 – Radiator



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Appendices

Appendix 7 – Gas Heater



Appendix 8 – Outdoor Lighting



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Appendices

Appendix 9 – Hall boiler



Appendix 10 – Hall Heater



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Water Overview

As of 1st April 2017, the water market in England became deregulated. This allows non-domestic entities to switch water suppliers. Green Journey is delighted to be able to provide water efficiency and procurement services to churches. It is important to note that your church's water consumption will be billed based on one of the two tariffs outlined below:

- **Non-metered Value** – In this case, your consumption is estimated based on an estimated water consumption, in addition to a Rateable Value (RV) attributed to your church. RV is a value given to all churches in the U.K based on the area and operation of the church.
- **Metered Value** – In this case, volumetric consumption data can be recorded and transmitted to your water supplier, this may also extend to surface water/sewerage charges, where a secondary water meter exists.

For more information on the above, please get in touch with Green Journey whom can help you secure the most competitive water rates. In the meantime, there are a number of ways your church can improve its water consumption, as detailed below.

Rainwater Harvesting - This involves rain water being collected in outside tanks, which can then be reused. This will reduce the volume of water the church uses, as they can harness rainwater for usage in urinals/toilets and other greywater facilities. As such, your church will require less water by volume, allowing it to improve its water efficiency.

Tap Aerators - Tap aerators can reduce water supply rates by as much as 60% per minute. Older taps, such as those installed within church's, supply water at an average rate of 15 l/m, compared to 6 l/m when having an aerator installed. This will reduce your annual water consumption, especially where your kitchen and toilet areas are in frequent use. Aerators can be installed on most taps; Green Journey can facilitate this should your church wish to go ahead with it.

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There are an array of funding mechanisms available to churches to make alterations to its building structure, undertake crucial maintenance work and to improve on current energy efficiency. Our in-house team can assist your church in applying for such funding, ensuring that you will have the best chance of being successful in your application.

Listed Places of Worship (LPW) Grant Scheme

This scheme allows eligible churches to claim back VAT on qualifying services and products it purchases. It is only aimed at listed church buildings which provide public religious services at least six times each year. Qualifying services and products are detailed in depth in LPW guidance, however the key areas that qualify for this grant are identified as: electrical (including energy efficiency improvements) and structural works, aesthetics improvements, plumbing (including heating systems). Funding is accessible via two separate routes:

- Projects with a value of £500-£1000 (only one application can be submitted per year)
- Projects >£1000 (an unlimited number of applications can be submitted in this category)

Heritage Lottery Funding

Available since September 2017, this supersedes the “Grants for Places of Worship” programme. 100% of funding can now be applied for via:

- “Our Heritage” scheme (up to £100k)
- “Heritage Grants” (up to £5million)