



MANAGING YOUR JOURNEY TO A GREENER FUTURE



St Peter, Byram Street, HD1 1BU

Energy Opportunity Survey Summary & Recommendations

Introduction

Green Journey aims to help churches to put the stewardship of God's creation into practice. Reducing our energy consumption and cutting carbon dioxide emissions is of paramount importance for all of humanity, as together we face the effects of unprecedented climate disruption. The church can bring the gospel hope of a better future by transitioning to a low carbon society.

Electricity generation produces around 30% of the United Kingdom's carbon dioxide emissions. Renewable Energy (wind, wave, tidal, solar and hydro) is becoming an important partner to fight against climate change impact and maintain our energy needs. In 2015, renewables' share of electricity generation increased to 24.7% from 19.1% in 2014. The UK is moving toward a more sustainable future.

Green Journey's buying power allows us to offer renewable energy at the same price as standard energy. This allows all churches in the Green Journey to practise responsible stewardship, while also making a saving.

***"...the land is mine and you reside in my land as foreigners and strangers.
Throughout the land that you hold as a possession, you must provide for the
redemption of the land." Leviticus 25:23-24***

Green Journey will 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 claimed back over £35,000 for the Church of England due to
misbilling and provided annual savings of over £85,000 in energy bills. "***

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%, boiler pumps 10%, 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.

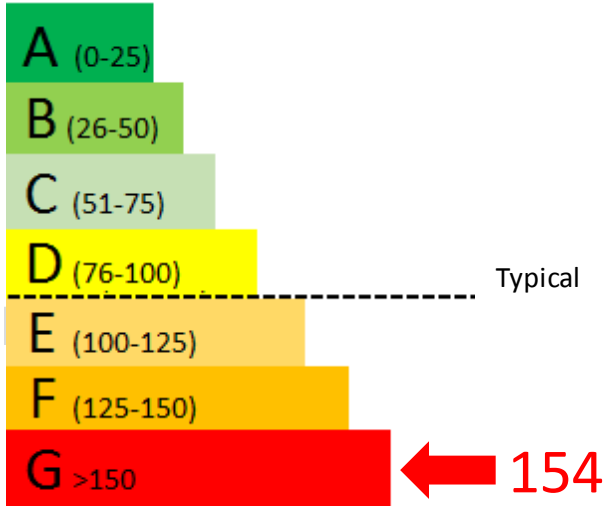
Green Journey Display Energy Certificate

St Peter
Byram Street
HD1 1BU

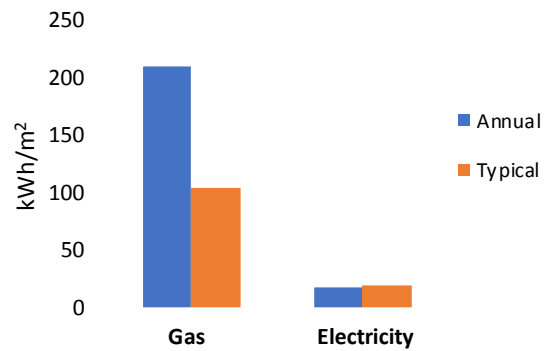


Overall Energy Performance

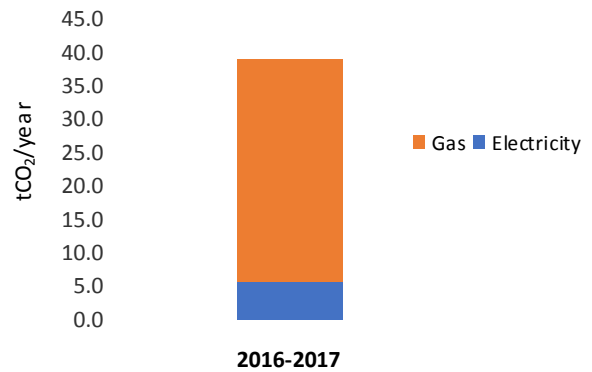
30/05/2017



Energy Benchmarks



CO₂ Emissions



Information Summary

Annual Electricity Usage	13,500
Annual Gas usage	155,354
Main Heating Fuel:	Gas
Total Gross Floor Area (m ²):	740
Annual Operating Hours:	1,100
LED Lighting (%):	18
Heating Controls:	Heatmister Controls

	Gas (kWh/m ²)	Electricity (kWh/m ²)
Annual (kWh/m ² /year)	210	18
Typical (kWh/m ² /year)	105	20
Energy From Renewables	0%	0%

The Green Journey Display Energy Certificate describes your churches energy performance and efficiency based on the carbon emissions per m². A numerical rating above (below) 100 means your church has higher (lower) emissions than is typical.

Please note, that this certificate should not be used for compliance with the Energy Performance of Buildings Directive.

Site Summary

St Peter

Byram Street

HD1 1BU

Energy Consumption

In the 12-month period between November 2015 and October 2016, the site used a total of 168,854kWh/year. This is comprised of gas (155,354kWh/year) and electricity (13,500kWh/year).

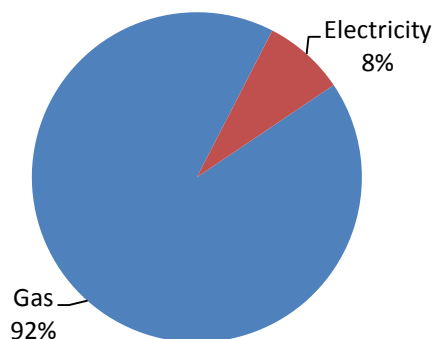
Metering

Your church has 1 gas meter and 1 electric meter. A breakdown of your church's energy consumption profile is provided below.

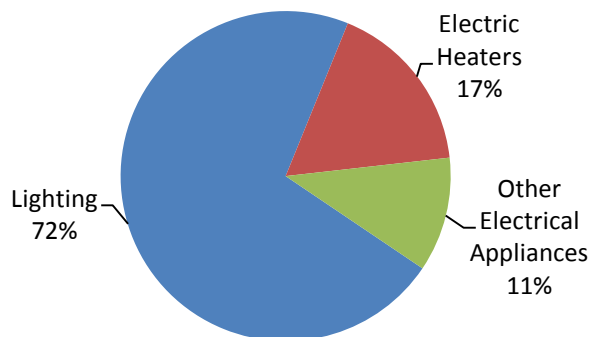
Total Energy Breakdown

The chart on the left provides a breakdown of energy consumption for the church whilst the chart on the right provides a breakdown of the electricity consumption. These breakdowns are based on observations made at the site and discussions with the church representative during the site visit.

Total Energy Breakdown



Electricity Breakdown



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). The remit of this report also extends to profiling your water usage and how this can be optimised to contribute to your church's sustainable practices.

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. If you would like to follow up/seek further advice on any of the recommendations made here, please get in touch and we will be happy to assist.

Note that should you wish to proceed with any of the recommendations in this report you are advised to 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.

Windows

The windows at the church feature single glazed fittings.

It is understood that due to the restrictions on this Grade II* 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.

Mains Heating - Gas

The church has one gas fired boiler which accounts for 100% of the total gas consumption. The boiler is estimated to be 20 years old and is anticipated to be 64% efficient.

We would advise, where financially possible, replacing the current 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 64%. 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. If the church were to install a new 125kW boiler, the estimated payback period will be 7.3 years.

We would advise that the scheduled usage of the boiler 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 boiler usage accurately reflects this. By closely coordinating the church's schedule with boiler usage it may be possible to optimise your heating system and subsequently reduce your consumption.

We would advise that Magnaclean filters be installed, to prevent small metal particles and debris leading to corrosion in your heating system, or at worst, a central heating breakdown. These debris can be magnetically extracted with a Magnaclean filter, thus protecting the heat exchanger and improving the lifespan and efficiency of your boiler. The hot water will be able to run at a higher pressure meaning that your church will heat up quicker, saving you gas and money.

We would advise that Endotherm is regularly added to the water in 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.

Mains Heating - Electric

The church uses electric infrared heaters which account for 17% of the electric consumption.

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 also advise that the scheduled usage of the heaters be examined to identify any potential reductions in electric consumption.

We would like to commend the church in using infrared heaters over conventional space heaters. By directly heating the areas which require it (as opposed to heating the entire church area) the church is saving energy and money by more efficiently meeting its space heating needs.

Lighting

In total, lighting contributes 72% of the site's total electric consumption. Lighting fixtures within the church are predominantly halogen lights, for example the five 90W halogen spotlights.

We would advise replacing the existing light fixtures with 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 90W halogen spotlights be prioritised for replacement. Halogen lighting has a high-energy consumption/light emittance ratio, which means its efficiency is low. As an illustration, 90W halogen spotlights can typically be replaced by 7W LED equivalents. Thus, the same quality of light can be produced by an LED equivalent with a 92% reduction in energy consumption being observed.

Current 90W Halogen Spotlights:



Proposed 7W LED Retrofits:



Appliances

In total, appliances contribute 11% of the site's total electric consumption. Appliances within the church include, but are not limited to, a fridge, a kettle and a microwave.

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+++.

Summary of Recommendations

The recommendations below can help to reduce the ecological footprint of your church:

- Installing magnetic & sediment filters represent a quick and easy means by which your church could benefit from a reduction in gas consumption and extend the lifetime of your current boiler and heating system.
- Adding Endotherm to your heating system can bring benefits of lower gas bills by enabling the system to heat up quicker and remain at a higher temperature for a longer period of time.
- Maintain the area surrounding the windows to ensure that there are no damaged areas around the windows that could be a source of additional heat loss.
- Where applicable, replace non-LED light fixtures with LED equivalents to aid in reducing energy consumption. This may also reduce expenditure in the mid-long term as replacement lighting will be required less often (due to LEDs having a longer working life).
- Where possible, replace your existing boiler with a new, more energy efficient condensing equivalent.
- Install timer controls for the electric infrared heaters to ensure your church is only heated within the times of scheduled church usage.
- Install plug timers to ensure appliances are not accidentally left switched on or left in standby mode outside of their intended operating hours.
- Where possible, adopt an energy efficient procurement policy, whereby any appliances are replaced by more energy efficient alternatives at the end of their working life.
- Appoint an 'Energy Champion' to ensure appliances and energy consumers are switched off when unnecessary.
- You can seek further advice from the Diocesan Environment Officer or visit the Environment pages on the Diocesan Website.

Water Overview

As of 1st April 2017, the water market in England became deregulated. This allows non-domestic entities to switch water suppliers, the Church of England is included within this. 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:

- 1) **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 buildings in the U.K based on the area and operation of the building.
- 2) **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.

We would advise that the church install rainwater harvesting technology. 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 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.

We would also advise installing tap aerators, which can reduce water supply rates by as much as 60% per minute. Older taps, such as those installed within churches, supply water at an average rate of 15 l/s, compared to 6 l/s 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.

Sustainability Pointers

Energy

Ensure that lights are switched off when not in use.

Turn your thermostat down two degrees. This can reduce your energy consumption by up to 20 %.

Don't leave televisions and appliances on standby. As a general rule, switch all plugs off at the wall socket at night.

Don't overcharge appliances and unplug the charger once the appliance is charged.

When you change your white goods (fridges, freezers etc), try to buy >A rated goods.

Create an energy policy that helps people understand why it is important to reduce the church's energy consumption and sets forward ways in which this can be done.

Waste

Ask the council to supply appropriate bins for your church to recycle glass, metals and paper.

Buy composters for food and gardening waste.

Reduce packaging and waste – Buy loose fruit and vegetables.

Reuse what you can—e.g Plastic bottles.

If you have a printer, set it to print on both sides of the paper.

Recycle print cartridges. Many charities collect them to raise funds.

Give clothes, books and toys to charity shops.

Dispose of unwanted furniture by donating it to a local furniture recycling centre.

Remember to buy recycled products (office stationery, glassware, printing paper etc).

Join or arrange a clean-up in a part of your neighbourhood that needs it.

Transport

Walk to church.

Use public transport.

Make sure the churchyard or area around your church is an attractive place to rest for walkers.

Organise car-sharing to go to church, if you can't walk.

Cycle instead of using the car and carry out regular maintenance on your car.

Buy a smaller and more fuel efficient car.

Lifestyle

Buy local produce.

Support local farmer's markets.

Use fair-trade products.

Buy animal friendly cosmetic products.

Buy seasonal organic products.

Biodiversity

Look for opportunities to create suitable habitats for insects, birds and small mammals.

Plant a wide variety of plants, flowers and trees around your church.

Encourage your church to enter for wildlife awards, often organised by local wildlife trusts.