sustain

Energy Audit of St Mary's, Witney (I)

January 2014

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1.0 Introduction

This report has been prepared to detail the energy saving measures and renewable energy generation potential that exist at St Mary's, Witney.

The report was prepared following a site audit conducted by Marisa Maitland, Sustain on 22nd January 2014. She was accompanied by Robin Brunner-Ellis.

A summary of recommendations is made in Section 8.0 of this report.

The findings of this report in no way negate the PCC of St Mary's to petition for a faculty in order to conduct any works at the church. For further advice on the requirement for a faculty the church should seek advice from the DAC Secretary.

Further advice in planning and implementation of the recommendations may be sought from the Diocesan Advisory Committee (DAC).

"…churches aren't just places of wonder, encounter and community; they're also real buildings which make an impact on the natural world, and it's our responsibility to make sure that their carbon footprint is as small as possible. We have over 800 church buildings in our diocese, and with all the people who pass through them in a year, we can influence literally hundreds of thousands more buildings."

Bishop of Oxford

This energy audit has been carried out as part of a scheme to encourage and support church buildings in Oxfordshire to become more energy efficient. The scheme is being run by the Trust for Oxfordshire's Environment (TOE2) in partnership with the Diocese of Oxford, with Sustain as the delivery partner.

TOE2 is an environmental funder for Oxfordshire, supporting and developing projects which improve and benefit Oxfordshire's environment and local communities. TOE2 supports projects in 3 main areas: biodiversity, access to green spaces and energy efficiency and the sustainable use of resources.

This church energy audit scheme for Oxfordshire is being supported by TOE2 with funds from the Patsy Wood Trust, the Beatrice Laing Trust and Charlie Laing, with additional funding provided by the Bishop of Dorchester and the Diocese of Oxford.

For further information about TOE2 please contact us at:
fionadanks@trustforoxfordshire.org.uk or www.trustforoxfordshire.org.uk

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2.0 Church Details

St Mary's in Witney is the local parish church serving the community. It is located in West Oxfordshire and dates back to 1060.

2.1 Listed Status

St Mary's is of a Grade I listed status. This listing has been taken into account when determining the recommendations for energy saving measures and renewable energy within this building.

2.2 Size

During the site visit the approximate internal area of the church was measured as 830m^2.

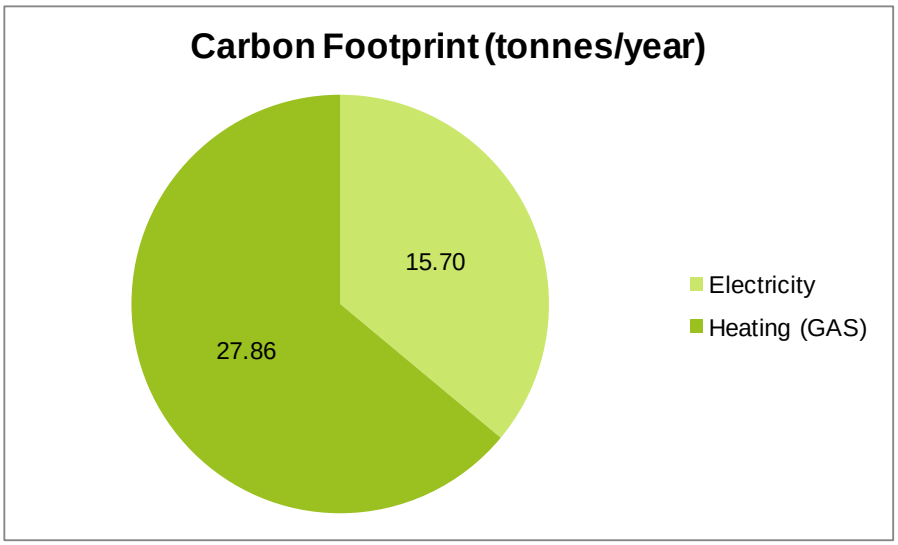
From discussions on site during the audit it has been established that the typical usage of the church is for 317 hours per month.

	Description	Average Monthly Use
Church Use	Church services, study groups,	317 hours/month
Community Use	Children's group, choir practice, Mothers Union, art classes, late night cafe,	
Administration	Church office.	
Catering and Events	Concerts, open mic, flower show, art exhibition, beer and food festivals	
TOTAL		**3804 hours/year**

The average congregation size is dependent on the service, and varies between 150-170 people.

2.3 Current Energy Usage

Annual energy bills for the church have been provided and examined. These show that the current carbon footprint of the church is 43.56tCO_2e per year.



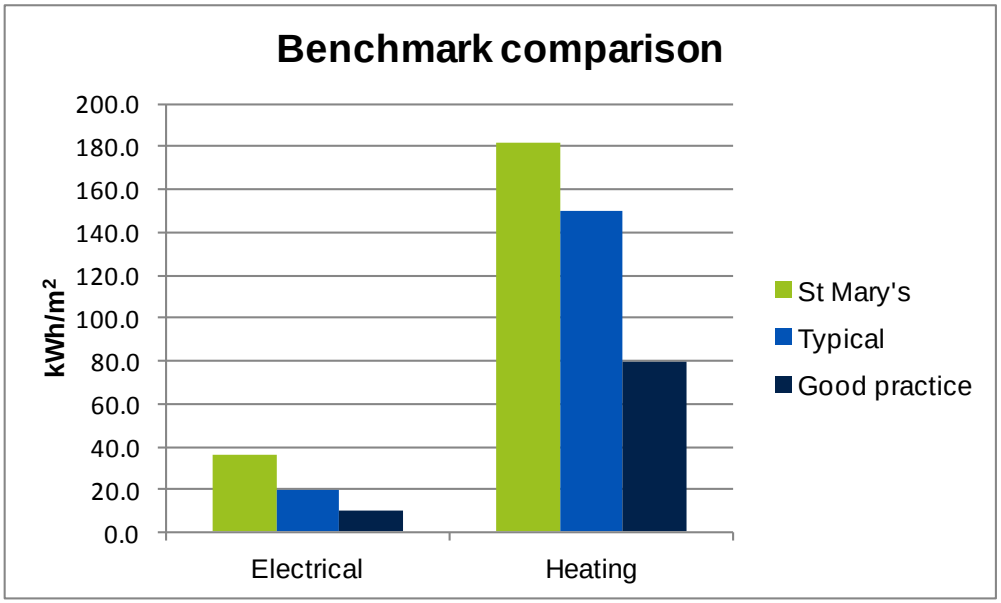
The annual energy consumption has been taken from the energy bills provided from January 2013 to Dec 2013 for electricity and February 2013-January 2014 for the gas. These may include the use of estimated readings where actual readings have not been taken.

	kWh/year	Cost/kWh	Total £	Total CO_2e (tonnes)
Electricity	29,899	£0.1065	£3,186	15.70
Gas	151,410	£0.0300	£4,542	27.86
TOTAL	**181,309**		**£7,728**	43.56

Note: The above costs are for the energy only and do not include standing charges, VAT etc

In comparison with national benchmarks[1] St Mary's consumes more gas and electricity than would be expected for a church of this size. A focus on reducing both the gas and electricity consumption is therefore advisable and the recommendations within this report should help to bring the church within the expected benchmarks. However it should be noted that these benchmarks do not take into account of occupancy hours.

	kWh/m^2 St Mary's	kWh/m^2 benchmark (typical)	kWh/m^2 benchmark (good)
Electricity	35.8	20	10
Gas	181.5	150	80



All energy bills should apply the VAT rate of 5% due to the charitable status of PCC's and this is being correctly applied at this church.

[1] CIBSE (2012) *Guide F Energy Efficiency in Buildings*

2.4 Energy purchasing

The church may benefit from obtaining reduced energy rates by switching energy suppliers. The church could also use the opportunity of switching suppliers to explore ‘green electricity’ options.

The Church of England has created the National Parish Buying scheme to provide churches access to negotiated schemes with energy providers and pool their energy to buy in bulk with an ‘energy basket’ – in the first instance this is a ‘brown energy’ basket, but a ‘green’ version will be available if enough churches express an interest, so please specifically register an interest in a ‘green option’ when contacting Parish Buying. By bulk buying energy it is anticipated that the costs will be 10% lower compared to buying alone.

Alternatively the Diocese of Oxford has negotiated green electricity schemes with both Good Energy and Ecotricity, who supply electricity from renewable energy sources at competitive prices.

For more details on all the above options visit: http://www.oxford.anglican.org/mission-ministry/environment/resources/switch-your-church-to-green-electricity/

It is further recommended that any cost savings obtained from improved rates through the purchasing scheme are re-invested in the energy saving measures outlined within this report.

3.0 Electrical Saving Recommendations

3.1 Internal Lighting

The energy used for the internal lighting within churches typically makes up the largest use of electricity (except where all electric heating is installed) and therefore savings made to this area can result in significant overall reductions to energy usage.

The internal lighting within the church has been surveyed and it is recommended that the following improvements are made.

3.1.1 Replace bulbs/lamps within existing fittings

The following lights can simply have a new low energy bulb fitted to them to generate an energy saving.

Location	Existing Lamp Type	Recommended Lamp Type	Example Source
Winchester Room	T12 fluorescent tube	T5 fluorescent tubes (plus adaptor kit)	http://www.energyatwork.co.uk/eaw/8ft-T12_8ft-fluorescent-tubes_T8_to_T5_Adapters.html

Winchester Room lighting

If all of the above lamps are changed we estimate this to **cost £95** but **save £70** per year as compared to the lamps being replaced like-for-like basis with the existing T12 tubes, therefore providing a payback in 1.4 years. We have assumed that the church can safely purchase and install the new lamps themselves without use of an external contractor. The changing of lamps within existing fittings will not require a faculty, but might require an electrician.

3.1.2 Replace existing fittings with new low energy fittings

Due to the nature of the existing fittings the following lights would require the fitting to be replaced to create a low energy light source.

Location	Existing Fitting	Recommended New Fitting	Example Source
Main body of the church, including nave and aisles	Flood light – assumed 150W	50W LED flood – warm white	http://www.deslamps.co.uk/50-watt-warm-white-led-flood-light-p-8954.html

If all of the above lamps are changed we estimate this to **cost £3,480** but **save £1,175** per year therefore providing a payback in 3 years. Changing the light fittings should be carried out by a qualified electrical contractor and advice on the requirement of a faculty should be sought.

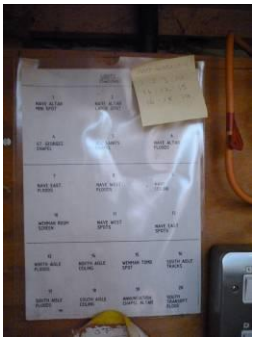
Flood lights in the church

When sourcing alternative bulbs it is important to consider the aspects listed below. Suppliers can provide advice and will often allow customers to trial lamps as long as they are returned in re-saleable condition. It is usually not recommended to mix lamp types within a fitting so it may be necessary to change all the lamps at once rather than as each fails.

- The lumen output of the light - a measure of how bright the light is, higher is better.
- Lamp efficacy measured in lumens/Watt - a measure of the lamp's energy efficiency. A good quality LED will now have over 70 lumens per watt output.
- Lamp life expectancy in hours - if a lamp has a short life expectancy, this will have an impact on your maintenance costs. One of the main secondary benefits of LEDs is that the maintenance time is vastly reduced due to the 20,000 - 50,000 hour lifespans.
- The time it takes to get to full brightness, LEDs are often instantly at full brightness, whereas even the best compact fluorescents often only start at 80%, and take a while to fully "warm up".
- Colour rendering quality and index (i.e. 100 - Excellent to 0 - Poor) - a measure of the accuracy with which colours can be seen.
- The beam angle/spread - think of a torch, the wider the beam the less the average illuminance (brightness) is, you get the same light out with a wide beam but it is spread more "thinly" over a wider area, compared to a narrow, bright spot for a "tight" beam.
- Colour temperature - a measure of the colour appearance of a light source ranging from "warm" light (for example, the light a candle produces) through to "cool" light (for example, a bright white fluorescent light). This is measured in Kelvin (K). Lamps below 3,300K are classed as "warm" whilst those above 5,300K are "cold" or "daylight".
- If the light is suitable for use with dimmers.

3.1.3 Controls

The lights are currently controlled by switches located in the vestry and others around the building. They are labelled with a diagram indication what each switch controls. In order that those using the building only turn on the lights they need at that time it is advised that each switch is labelled to describe which light it switches on and off. A simple use of red and green dots can be helpful to indicate which lights are required for general visiting.



Lighting switches and layout

3.2 External Lighting

This church has fairly major external lighting, however the responsibility for the maintenance of the light belongs to the Parish Council, so the church has no direct control over the lighting of the church yard or the exterior of the church.

External flood lights

3.3 Small Power

There are a number of small power appliances at the church, for example, the hot water heater in the kitchen and photocopier in the church office. These can consume power even when thought not to be doing anything. The hot water boiler was reported to be only turned on when being used, which is how all electrically appliance should be used.

4.0 Heating System Saving Recommendations

4.1 Boiler

The heating at the church is currently provided by a 3 gas boilers and night storage heaters in the extension.

The main church is heated by two large Ideal Concord C boilers; however the rating of these boilers was not able to be attainted. The third gas boiler is manufactured by Vaillant and is used to provide heat to the Wenman Room (which includes the church office and vestry).

Main church boiler

The Wenman Room boiler

The two Ideal floor standing boilers were installed in 1996 and are coming towards the end of their expected lifetime. The church is looking to replace these boilers in the near future and considering how best to heat the church.

If the church does carry out a like for like replacement of the boilers, we recommend that they take into account the following:

- If the current system is suitable for a condensing boiler. Condensing boilers work most efficiently at lower flower temperatures, so if the heating system is not designed to work at a lower temperature the efficiency from a condensing boiler would not be noticeable. Also, if the current heating system is old and liable to have dirt in the system a non-condensing boiler would be better suited as the larger pipework will be less susceptible to blockages.
- If a dual burner boiler can be used, so in Spring and Autumn only half the boiler will fire.
- If the existing boiler is over-sized and could it be reduced.
- Can the heating controls be up-graded to include weather and load compensation

4.2 Pipework and Distribution

The water circulating within the heating system has been drawn off and inspected by the churchwarden and it was found that the water within the heating system is not fully clear which indicates that the system has not got adequate corrosion inhibitor within it. It is

recommended that the system is emptied, power flushed and refilled with a suitable inhibitor. This will improve the performance of the boiler by reducing energy use and allow the building to be heated quicker and more effectively. It will also improve the performance of units with small hot water elements such as fan convector heaters.

The presence of air within the system was reported at the time of the visit to be an issue, and is found to be present in a number of radiators, but one in particular which might be the end radiator. This will be reducing the effectiveness of the heating system and the churchwarden regularly bleeds the radiator almost weekly during the heating season. This should be carried out when the boiler and circulating pump are on, and during the next boiler service visit ask the engineer to see if they are able to find the cause of so much air entering the system.

4.3 Radiators and other heat emitters

The heating within the church is supplied via a mix of radiators and forced air fan convectors. The forced fan convectors are located around the external walls of the church and the radiators on the inner pillars in the nave and in the church office.

We recommend that the fan convector heater grills are regularly cleaned to remove any dust, especially where filters are present, as dirty filters can reduce the effectiveness of the fan to circulate the air.

In the Winchester room, the space is heated by Night Storage Heaters (NSH), which are located on the external walls. The controls are located on the top of the heaters and there are written instructions on how to use them, for all users of the room.

The NSH also have a boost function, which the users are discouraged to use, due to the cost of running the heaters on boost.

Night storage heaters in the Winchester Room

4.4 Controls and Frost Protection

The main heating system is controlled by a programmer located in the vestry. The timing for the heating has been set to a default of 8am-2pm every day, and then for ad-hoc church useage, the timings are manually adjusted, or the ‘extend’ function is used, which allows 2 hours of additional heating. There is also a ‘crop’ function, which is sometimes used to stop the heating early.

It would be better if the heating timings we set each week to match occupancy, instead of using ad-hoc adjustments, to avoid any unnecessary accidental heating when the church is not being used.

The Wenman Room is heated every day from 8am-2pm, however there was some uncertainty is this was still the case, or it if was turning off at the correct time. We recommend that the time settings for the Vaillant boiler are checked.

The heating is protected against frost by a frost stat located in rear of the nave against the wall to the Wenman room, and it is set to 5^{o}C which is an appropriate setting.

It is not unusual for over 30% of the heat energy used in churches to be used to protect the heating system itself from frost damage. As an alternative to firing the boiler to warm up the water to prevent it from freezing the system can instead be filled with an antifreeze based inhibitor such as X500 from Sentinel. As the recommendation above is to flush and clean the system it is further recommended that the system be re-filled with a Glycol based inhibitor and the frost stat removed.

5.0 Building Fabric

While it is acknowledged that the potential to undertake significant improvements to the traditional and protected fabric is limited, there are a number of areas noted below where improvements can be made which will result in a reduced amount of energy consumed and improved levels of comfort being achieved.

5.1 Roof

There is no loft space in the roof in which to install any insulation. The roof was replaced 3 years ago, so there are no opportunities in the near future to install any insulation.

5.2 Walls

Given the listed and historic nature of the building and that the walls are exposed both internally and externally no improvement recommendations have been made in this regard.

5.3 Floors

There were no opportunities to install any insulation in the floor at the church. The church is considering replacing the floor in the near future, and when this is done, we recommend that the inclusion of insulation is considered.

5.4 Windows

The windows are in the process of being refurbished, over 4-5 years all windows will be re-leaded and all gaps rectified.

5.5 Doors

The West doors at the church are not well sealed and daylight is visible through the door join. Likewise, the front doors in the porch to the church have visible gaps at the base. It is estimated that up to 15% of heat generated can be lost through draughts and gaps in doors and windows, so it is a good idea for this to be reduced where possible and draught proofing doors is a simple and quick measure to install.

For the West door, we recommend draught proofing is installed using the Quattro seal method suitable for historic buildings. (www.quattroseal.com).

For the porch doors a brush seal on the bottom of each door leaf could be fitted r to eliminate this gap.

West door

North door

In addition, the church should consider the installation of an air curtain above the main North door to the church. An air curtain is a device used for separating two spaces from each other, usually at the exterior entrance. The most common configuration for air curtains is a downward-facing blower fan mounted over an opening, blowing air across the surface of the opening. Air curtains can come with, or without heaters to heat the air. It helps keep out outside air, reducing infiltration though the opening. They can also be used to avoid cold draughts by mixing in warm air heated by the air curtain. The fan must be powerful enough to generate a jet of air that can reach the floor.

Example of an air curtain in a church

This will help to reduce heat loss and cold air entering the building just prior to a service and reduce the need for longer warm up times. The air curtain must go across the full width of the door way to be effective. It is likely that the DAC will need to be consulted before installing this measure. There are many manufactures of air curtains, and Dimplex have a large range. You will need to employ an electrician to carry out the installation.

6.0 Renewable Energy Feasibility

The below reviews the viability of renewable technologies at your church and indicates if it would be possible for each of the technologies to be installed.

More details on the major technologies can be found by going to the following website www.oxford.anglican.org/mission-ministry/environment/resources

Also included in this website is a directory of installers who will be able to help you in providing you with specific costs for either a feasibility study or installation at your church depending on what your requirements are.

6.1 Solar Photovoltaics

The installation of Photovoltaic (PV) panels on the South facing roof if the nave should be considered. Given that the church is Grade 1 listed, the panels would only be allowed if they are not visible. There appears to be a small parapet running around the top of the roof, which will provide some screening of the panels. Also there are a number of large trees in the grounds of the church on the South side, so the shading of these trees onto the roof would need to be analysed to ensure there is not too much shading which would reduce the effectiveness of the panels.

Aerial view of church

There is space within the Wenman room for a PV invertor to be installed, and the distribution board will need to be checked to make sure there are enough spare ways for the PV to be connected into.

Ideally a solar PV system should face between south east and south west, and be free of shade. For best performance they should be angled at 30 to 40 degrees – although you will still catch a reasonable level of sunlight at angles of 20 – 50 degrees. Solar panels can be fairly heavy, so your roof must be strong enough to hold them, however Solar PV systems are easy to install, need virtually no maintenance and are estimated to last 40 years. They are suitable for use in urban areas which wind or hydro systems don't tend to be. The solar PV systems generate electricity from the solar radiation from the sun, and any electricity that is being generated can be used within the building or fed back to the National Grid.

An initial assessment indicates that there would be space for a 4.25kWp installation on the South side of the nave, with a yield of approximately 3,600 kWh. The church will be able to use this electricity when it is occupied during the day, reducing the electricity bill. The installation would be eligible for Feed-in Tariff payments. This means the church will be paid for the electricity generated by the solar panels and the electricity that is not used and exported back to the National Grid. The export rate is currently 4.64p per kWh of electricity exported. The generation rate is dependent on the church's EPC (Energy Performance Certificate) rating. If this rating is D or higher the higher FIT rate is applicable (currently 13.5p/kWh). If it is below D, the lower rate is applicable (currently 6.85p/kWh). Due to the historic nature of the church it is unlikely that it will gain an EPC band D even with energy efficiency improvements.

Depending on the amount of electricity generated, used within the church and exported, assuming the church would receive the lower generation rate, the church could expect to pay off the initial investment within 12.5 years. However this would be variable depending on the exact make and model of the PV units being considered.

6.2 Micro-Wind

Micro wind units require highly exposed sites and should be located 250m away from buildings. They are not suitable to be located in the curtailage of listed buildings. Given these parameters it is concluded that micro wind generation is unsuitable at this site.

6.3 Micro-Hydro

Hydro electricity is a highly efficient source of renewable energy but requires a flowing body of water with a differential height, this is not present at this site and therefore such an installation would not be feasible.

6.4 Solar Thermal

Solar thermal installations are best suited to heat water for use in washing up, hand washing and bathing. The demand for hot water is very minimal within the church and therefore the use of renewable heat for such a small demand is not recommended.

6.5 Ground Source Heat Pump

Given the church yard has numerous archaeological features with graves and the like it is not recommended that any consideration is given to the feasibility of the installation of a GSHP within the confines of the church yard, however there is a lot of green space around the church with sports fields and the town green, which would be an innovative approach to using GSHP within the church.

It is worth bearing in mind that all heat pumps work best with well insulated buildings, and low temperature heat emitters, such as underfloor heating or large radiators. There is also a long lag time to respond to changes in the heating demand.

6.6 Air Source Heat Pump

As a gas central heating system is in place it would not make financial sense to install air source heat pumps. . They are also unlikely to be approved by the DAC therefore not deemed appropriate for this site.

6.7 Biomass

Biomass boilers burn logs, wood chips, wood pellets or other forms of biomass. The most advanced boilers are fully automatic. They control the amount of fuel and air supplied to the combustion chamber. As a result they are highly efficient and emissions are low.

Biomass boilers are fed with wood chips or pellets from a large hopper sited nearby. If you've got space, manufacturers recommend a hopper that's big enough to hold a year's supply of fuel. This minimises transport and delivery costs for fuel, as well as work for the owner. Maintenance is minimal – although you will need to clean it and remove the ash about once a month.

A new external boiler house and fuel store would need to be built adding to the cost. There are a number of possible locations for this however the ease delivery of the fuel would need to be considered. Ideally the fuel store should be within 30 meters of the delivery truck to pneumatically delivery wood pellets, and as such this might not be possible to achieve at this time. Alternatively the fuel could be bought in bags and hand loaded into the fuel store. As delivery mechanisms of biomass improve, this might not be a problem in the future.

The boiler would require slightly more maintenance than a gas boiler so a service and maintenance contract should be put in place. The system would be eligible for the Renewable Heat Incentive which is currently 8.6p/kWh (small commercial biomass, tier 1).

The cost of the installation of the boiler would need to be obtained from installers due the specific requirements of the church. A biomass boiler can cost between £5,000 to £11,000, however the cost of the installation and boiler room would also need to be included. As these costs are specific to the church we are not able to provide an estimate as the parameters are wide ranging.

You also might find it useful to contact Oxfordshire Woodfuel Programme (setup by TOE2) who provide advice and support in this area www.oxonwoodfuel.org.uk.

7.0 Energy Management

Energy savings can be achieved by simply keeping a closer eye on your church's energy use and communicating your carbon footprint to the congregation. Typical steps would be as follows.

7.1 Measure

- Nominate someone to have lead responsibility for energy management
- Take monthly meter readings and keep a record of these
- You could even take a meter reading at the start and end of when your church is used on a Sunday and use this to calculate the carbon footprint and costs of the service
- If you would like to establish how much it costs to run the church heating per hour you could take a meter reading at the beginning and end of an hour when only the heating is on (e.g. before a service if the heating is turned on more than an hour in advance).

7.2 Calculate and monitor

- Calculate the energy use using the meter readings and look for any stories behind the numbers e.g. how does this year compare with last? If it's greater, what are the reasons behind this? Is there anything that could be done to mitigate the increase?
- Calculate the church's carbon footprint.
- If you have not joined the scheme already, in order to provide more detailed review and measurement of the church's carbon footprint in the future, we recommend that the church join the CofE's national Shrinking the Footprint Energy Monitoring Scheme with sMeasure or a similar energy monitoring scheme. This will help the church estimate its future costs of energy and report on its carbon.
- For more information on the scheme please visit www.oxford.anglican.org/mission-ministry/environment/resources/energy-monitoring-scheme

7.3 Communicate

- Let the congregation know the carbon footprint of the church and the annual energy running cost
- Ask them to consider energy efficiency where it is under their control
- Ask for suggestions and ideas on how to reduce the church's carbon footprint
- Communicate to the congregation with a poster for example the latest carbon footprint figure each month / quarter and how it compares with the same period last year

7.4 Housekeeping

- Write up a procedure for energy efficiency in the church and associated buildings to help user of the building use the space more efficiently and effectively, and giving them the ability and know-how to make these changes.
- These procedures could include what to turn on (such as lighting and heating) when the building is being used for different functions, e.g. open for public during the day, services on a Sunday and midweek or larger public events such as flower displays.

8.0 Summary of Recommendations

This report has made numerous recommendations on improvements that can be carried out to reduce energy and carbon emissions from the operation and use of this church.

These have been summarised here in short, medium and long term measures taking into consideration the payback, capital investment and ease of carrying out each improvement. Also please take into consideration that the more the church is used, the greater the savings will be in the below table, as these are based on current usage times of the church.

These recommendations and this report should be presented to the next available PCC meeting and an action plan developed to implement as many of these actions as possible.

The costs below are indicative only based on our experience and are not specific to this church.

Short Term Improvement Measures				
Description	**Estimated Cost**	**Estimated £ Saving per year**	**Estimated Carbon Savings per year tCO2e**	**To be actioned by**
Measure	£0	The savings depend on how much energy wastage there is currently. A fair estimate is 2-5% of energy consumption a year ~ £375.	1.9	
Calculate and monitor	£0			
Communicate	£0			
Housekeeping	£0			
Check heating timings for Wenman Room	£0	Dependant on current settings		
Clean grills on fan convector heaters	£0	£45	0.28	
Install brush strip at base of entrance door in North porch	£45	£68	0.42	
Draught proof the West door with Quattroseal	£150	£91	0.56	
Replace T12 lamps with T5 fittings and lamps	£95	£70	0.35	

Medium Term Improvement Measures				
Description	**Estimated Cost**	**Estimated £Saving per year**	**Estimated Carbon Savings per year**	**To be actioned by**
Glycol inhibitor for frost control	£256	£227	1.39	
LED flood lights	£3,480	£1,175	5.79	
Powerflush and clean heating system water	£1,500	£908	5.57	

Long Term Improvement Measures				
Description	**Estimated Cost**	**Estimated £ Saving per year**	**Estimated Carbon Savings per year**	**To be actioned by**
Gas boiler replacement	Boiler replacement approx £7,000-12,000			
PV installation	£6,375	£506	1.9	
Biomass boiler.	Biomass boiler approx £5k - £11, plus cost of installation and boiler room.	To be calculated as specific to this church.		

9.0 Funding options

You may wish to consider seeking funds to implement the energy efficiency improvements recommended in this report. For further information please contact:

- **Diocese of Oxford** – for the latest funding advice for energy efficiency improvements that the diocese is aware of please contact the Diocesan Environment Officer using environment@oxford.anglican.org or 01865 208745.

- **TOE2** – can consider applications for up to £10,000 for works recommended in the Sustain report, usually supported with funds from Grundon Waste Management through the Landfill Communities Fund (LCF). www.trustforoxfordshire.org.uk

- **Other Landfill Community Funds** – the following organisations may consider applications from projects within 10 miles of the relevant landfill sites.
  WREN – www.wren.org.uk
  Viridor Credits – www.viridor-credits.org.uk
  Biffaward – www.biffa-award.org

- **Renewable Technologies** – Technologies that produce heat or electricity may be eligible for an on-going payment based on the amount of energy produced.
  - For heat generating technologies, such as biomass boilers, the Renewable Heat Incentive (RHI) might be applicable. For further information, please go to www.energysavingtrust.org.uk/Generating-energy/Getting-money-back/Renewable-Heat-Incentive-RHI
  - For electricity generating technologies, such as solar PV, the Feed In Tariff (FIT) will be applicable. For further information please go to www.energysavingtrust.org.uk/Generating-energy/Getting-money-back/Feed-In-Tariffs-scheme-FITs