sustain

Energy Audit of St Mary's, Adderbury (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, Adderbury.

The report was prepared following a site audit conducted by Marisa Maitland, Sustain on 7th January 2014. She was accompanied by George Sainsbury and Rev Stephen Fletcher.

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 Adderbury is the local parish church serving the community. It is located in North Oxfordshire and dates back to mid 13th century.

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 approximately 640m^2.

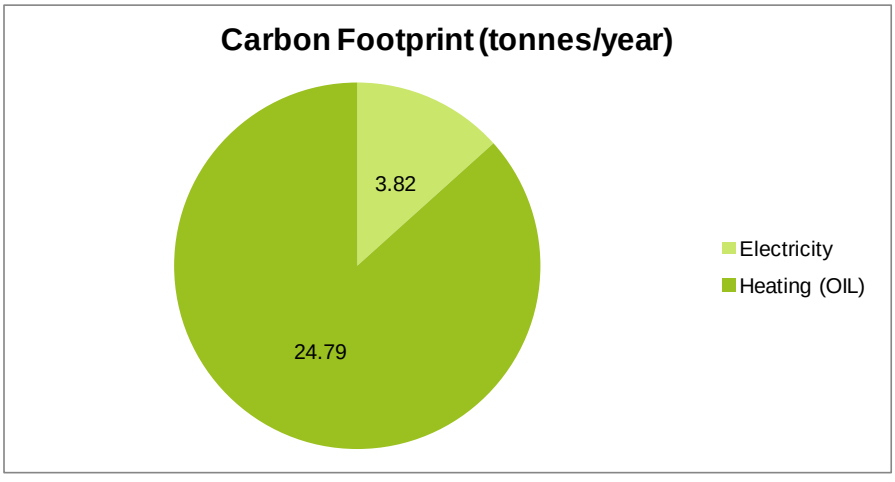
From discussions on site during the audit it has been established that the typical usage of the church is for 20 hours per month.

	Description	Average Monthly Use
Church Use	Services and church meetings	15 hours/month
Community Use	Concerts	5 hours/month
Administration	n/a	
Catering and Events	n/a	
TOTAL		**240 hours/year**

The average congregation size is dependent on the service, and varies between 50 people to 120 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 28.61tCO_2e per year.



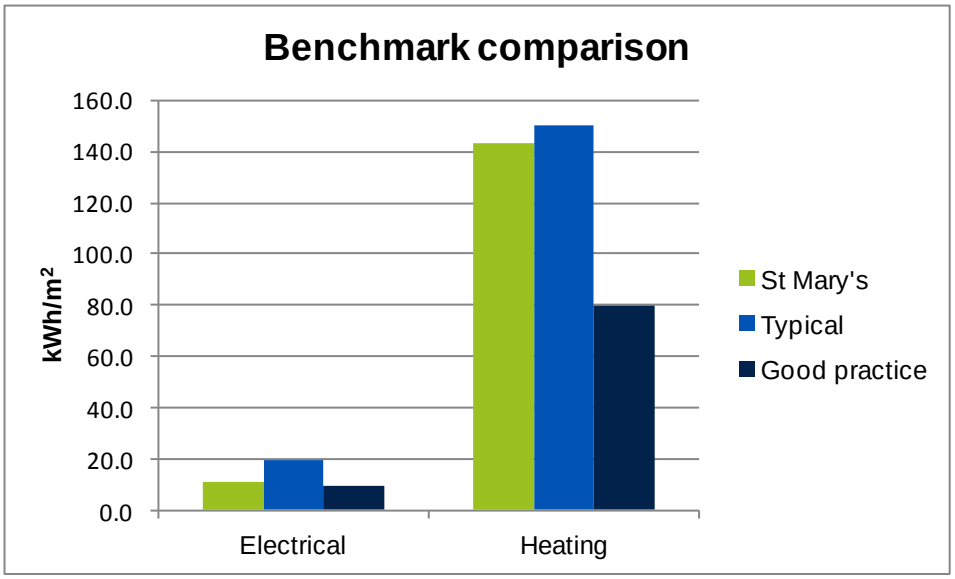
The annual energy consumption has been taken from the total energy spend for the past year for the oil and electrical consumption. The total energy consumption was calculated based on the assumption that the oil was priced at 5.5p/kWh and the electricity at 11p/kwh. Using this method to calculate the energy consumption is not the most accurate method, and we recommend that the church take regular meter readings in the future.

	kWh/year	Cost/kWh	Total £	Total CO_2e (tonnes)
Electricity	7,273	£0.110	£800	3.82
Oil	92,236	£0.055	£5,073	24.79
TOTAL	**99,509**		**£5,873**	**28.61**

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 less electricity, but about average oil than would be expected for a church of this size. The benchmark however is a comparison for a gas heated church, so it is not a true comparison of consumption. The main limit to benchmarking is that it does not take into account occupancy hours.

	St Mary's kWh/m^2	kWh/m^2 benchmark (typical)	kWh/m^2 benchmark (good)
Electricity	11.3	20	10
Oil	143.2	150	80



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

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.

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

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 or from the reduction in VAT 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
Spot lights in the church	PAR38 80W	PAR38 CLF 20W	http://www.tlc-direct.co.uk/Products/LAPAR3820ESDL.html?source=adwords&kw=&gclid=CLzkn_uinrwCFafnwgodTSAAJQ

If all of the above lamps are changed we estimate this to **cost £188** but **save £40** per year therefore providing a payback in 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.

There are also a large number of flood lights, and when these are due to be replaced, we recommend that the church look to use LED alternatives.

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.

3.1.2 Controls

The lights are currently controlled by switches located in the vestry. These are clearly labelled however 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.

3.2 External Lighting

This church only has minor external lighting to the porch and there is also tower lighting.

The external lights are controlled by a timeswitch which is manually adjusted to take into account the change in daylight hours. It is recommended that this is changed to a dusk to dawn controller with a time selected off setting, such units are produced by a company call Sangamo. It is then advised to set the unit so that the lights come on at dusk and then turns off at around 10.30pm.

3.3 Small Power

During the site visit it was noted that the hot water heater was left on during the week, when it was not used. The Ariston water heater stores water and will keep it up to temperature during the week which will result in unnecessary energy usage to keep the water hot when it is not required. We recommend that the water heater is manually turned off following the services on a Sunday and back on the following Sunday morning prior to the service, and this will result in a cost savings of over £20 a year.

4.0 Heating System Saving Recommendations

4.1 Boiler

The heating at the church is currently provided by an oil boiler. This is 130 kW in size and was installed approximately 1989 according to the manufactures plate on the boiler. The boilers efficiency 5 years ago was 84.9% and this will had reduced since then.

The boiler is now a considerable age and although it is still working for the church, it will not be as efficient as a new boiler and will result in a higher running cost.

When the church is considering replacing the boiler with a new boiler, it would be worth considering the source of heating fuel to use. The current system is oil, however this is a more expensive fuel, and if gas or biomass were used, between £800-£1,500 could be saved as a result of the lower running costs. They both also have lower carbon emissions which will reduce the church's carbon footprint.

When considering a boiler replacement it is worth taking into account the following;

- If the current system is suitable for a condensing boiler. Condensing boilers are most efficient 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 isto be used, soin 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 pipework within the boiler room is cast-iron and requires additional lagging to the pipes. Not only will this help to save energy through reduced heat loss but will also provide better protection against burst pipes.

Within the body of the church the heat is distributed via the pipework to cast iron radiators.

Un-insulated pipework in the boiler room

4.3 Radiators and other heat emitters

The heating within the church is supplied via cast iron radiators and also via trench pipework which runs along the floor in the main aisle. The radiators are regularly bled to let any air out of the system. When they are bled the water appears to be fairly clean which indicates that there is not too much dirt in the system. If the water that is drawn off does ever look dirty, it would indicate that the system has not got adequate corrosion inhibitor within it. If that is the case we 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.

We do recommend that the floor trenches are cleaned to remove the dust and debris from around the pipework to enable the heat to be emitted more successfully.

Radiators in the vestry

Trench heating in church floor

There are a number of radiators on external walls which will benefit from radiator panels behind them. These panels reflect the heat from the radiator back into the room, rather than being absorbed into the stone wall. These are a low cost measure and simple to fit. The installation of the radiator panels will need to by checked with the DAC.

Additional heating is provided in the vestry/parish office when it is in use via small electrical fan heaters, which are only turned on when the office is in use 4 hours a week.

4.4 Controls and Frost Protection

The heating system is controlled by a Honeywell programmer. The heating is programmed on Sunday for 5.30am – 12pm and then 3pm-6.50pm. This matched the occupancy of the building and the usage of the building.

There is a heating thermostat which is located on the internal wall of the tower in and it is set to 18^{o}C which is appropriate for a church building such as this. There is also a frost stat connected to the pipework in the boiler room. This is set to the minimum setting possible.

Thermostat

Frostat

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. If the roof is replaced at a later date then insulation should be seriously considered.

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.

5.4 Windows

The windows are in good condition, with no broken window panes or gaps between the glass and the abutments witnessed.

5.5 Doors

There are a number of doors in the church which have gaps around them which will be creating draughts. 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.

The doors that were noted to be in need of draught proofing were the South door, the side door in the chancel opposite the vestry, and also the door in the vestry which leads to the stairs to the organ loft and the chancel roof.

Side door in chancel

South door

The edges of the doors can be sealed using the Quattro seal method which is suitable for historic buildings and is recommended (www.quattroseal.com) for your doors. Their product is recognised by English Heritage for listed buildings as it is fully reversible which makes it idea to be used in churches. Also the doors would benefit from a brush strip to be fitted at the base to reduce the draughts from under the doors.

We also recommend the installation of an air curtain above the main South door. 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 roof of the chancel would provide a suitable location for the installation of photovoltaic (PV) panels on the church. They would not be able to be seen from the ground and the roof is south facing.

There is space for the inverter in the vestry. The availability of distribution board spare ways of a suitable capacity would need to be checked. There is also some shading that can be seen from the decorative pillars on the parapet of the roof, so the panels would require individual invertors to ensure that any shade onto the panels would not result in the loss of output from the whole array.

Aerial view of church

Chancel roof

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 3kWp installation with a yield of approximately 2,550kWh. 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 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.

Our calculations assume the church would receive the lower generation rate. Depending on the amount of electricity generated and exported, the church could expect to pay off the initial investment within 14 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 ground source heating within this building.

6.6 Air Source Heat Pump

Air source heat pumps are most effective in very well insulated buildings with long occupancy hours. They are also unlikely to be approved by the DAC therefore not deemed appropriate for this site.

6.7 Biomass

A biomass boiler is a possible heating solution for this church. The church is currently not connected to the mains gas grid and the current oil boiler is old and likely to be due for replacement in the near future. We strongly recommend that the church consider a biomass boiler as a viable heating and low carbon option.

It is likely that a new boiler house would be required to be constructed to house the boiler and also provide a fuel store, but there is space for this to built at this site. It would need to be built in-keeping with the adjacent church building. The site appears to have suitable access for fuel deliveries from the road, but the site of the fuel store would need to take into account of the delivery of the fuel.

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.

They 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.
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, distribution system, radiators and boiler room would all 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**	**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 ~ £150.	0.57 tCO_2^e	
Calculate and monitor	£0			
Communicate	£0			
Housekeeping	£0			
Turn hot water off during when not in use	£0	£21	0.10 tCO_2^e	
Draught proof South door, chancel door and vestry door to staircase	£134	£100	0.50 tCO_2^e	
Install dusk-till-dawn sensor for external tower lights	£65	£16	0.08 tCO_2^e	
Install reflective panels behind radiators on external walls	£90	£50	0.25 tCO_2^e	
Lamp replacement of PAR38 spots with CFL PAR38 lamps	£188	£40	0.19 tCO_2^e	
Insulate pipework in boiler room	£100	£238	1.16 tCO_2^e	

Medium Term Improvement Measures				
Description	**Estimated Cost**	**Estimated £ Saving per year**	**Estimated Carbon Savings per year**	**To be actioned by**
Use Gylcol inhibitor in water pipes and remove the froststat	£480	£250	1.24	
Install an air curtain above the South door.	£1,400	Improved comfort. There may also be some saving in heating use but probably church would just be heated to higher temp.	~	

Long Term Improvement Measures				
Description	**Estimated Cost**	**Estimated £ Saving per year**	**Estimated Carbon Savings per year**	**To be actioned by**
Powerflush of the heating system to improve efficiency	£1,500	£700	3.72	
Install Photovoltaic panels on the chancel roof	£4,500	£320	1.34	
Consider installing gas boiler and wet heating system	Quotation to be obtained from installer – likely to be in the range of £35-50K plus maintenance costs.	Dependent on type of system installed and capital cost.	~	
Consider installing biomass boiler and wet heating system	Quotation to be obtained from installer – likely to be in the range of £40-55K plus maintenance costs.		~	

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