

Assessment Of Energy Saving Opportunities For

Old Weston Methodist Church



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EXECUTIVE SUMMARY

The Carbon Trust is grant funded by the Department for Environment, Food and Rural Affairs, the Department for Business, Enterprise and Regulatory Reform, the Scottish Government, the Welsh Assembly Government and Invest Northern Ireland.

This report presents the results of a CMEE (Carbon Management Energy Efficiency) site survey of the Methodist Church in Old Weston carried out by Natalie Isaac and Adam Fjaerem of AECOM. The agreed objectives of the wider CMEE project is to undertake audits of 12 churches to identify energy saving opportunities and to produce a short, site specific report. The 12 reports are to be used to prepare a 'How To Guide' which will be distributed to all Methodist Churches to help them prioritise energy saving actions at their sites using real case examples.

Site visits were to concentrate on lighting, space heating and hot water as well as opportunities for changing people's behaviour. If a site is entitled to apply for the Carbon Trust Loans to assist in paying for installation of the measures recommended within the report then this will be indicated within the Action Plan (overleaf). For more information on the Carbon Trust Loan scheme, see <http://www.carbontrust.co.uk/cut-carbon-reduce-costs/products-services/business-loans/pages/loans.aspx>

If all the prioritised measures at this site are implemented, the aggregated savings from the measures identified represent a 60% reduction in energy consumption and a 54% reduction in cost or £32 which translates into direct cost savings.

ACTION PLAN

The recommendations listed below are prioritised, according to estimated annual savings and payback, with energy management the first priority.

Priority	Recommendations						Timescale for implementation and by whom	May be eligible for loan*
		Estimated annual savings			Estimated cost (£)	Payback period (years)		
		(£)	CO ₂ (tonnes)	(kWh)				
1	Replace pew heating with two wall mounted radiant heaters	£28.95	0.136	249.90	£600.00	20.7	0 – 3 months D Warnock	YES
2	Insulation in Chapel roof**	£2.94	0.011	60.24	£492.00	167.1	3 – 6 months D Warnock	YES
3	Separate the lighting circuit for the upstairs lamp**	£0.46	0.002	3.96	£150.00	326.8	3 – 6 months D Warnock	YES
TOTAL	TOTAL Savings	£32.4	£0.1	£314.1	£1,242.0			

* Please refer to the Site Survey Publication for eligibility details or visit www.carbontrust.co.uk/loans

**Please note that this opportunity type will only be economically viable if installation can be achieved with voluntary help and/or if a grant or donation is received.

1. INTRODUCTION

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1.1. Site details

The Old Weston Methodist Chapel is part of the Nene Valley Circuit, Northampton District. It is used for one hour a week. The Chapel was built in 1839, is of brickwork construction with hipped roof covered with clay tiles. Access to the site is limited and the building is not listed.



The windows at Old Western are timber frame single glazed windows with top hung opening fanlights and there is no roof insulation. Heating was originally provided by a Coleman oil boiler and is now provided by electric under pew heaters and two new radiant heaters on the wall of the Chapel. There is no caretaker in charge of building maintenance at Old Weston. Heating and lighting are managed by building users. Good practice on site includes the recent installation of a high frequency T5 lamp and the labelling of heating controls.

2. ENERGY USAGE PROFILE

2.1. Site Energy Consumption and Spend

The site consumes approximately 520 kWh of energy per annum (based on estimates), costing a total of £60. All energy values are in terms of delivered energy.

This comprises

Utility	Energy Consumption		Cost		CO ₂ Emissions
	kWh/year	%	£/year	%	tCO ₂
Electricity (if used)	520	100	£60	100	0.28
Total Energy	520	100	£60	100	0.28

The unit cost for electricity used for the purposes of this report is 11.58p/kWh has been used. The electricity costs above include the Climate Change Levy. Carbon conversion factors used – Grid electricity (0.544) kgCO₂/kWh.

3. CARBON REDUCTION OPPORTUNITIES

Priority no. 1	Replace pew heating with two wall mounted radiant heaters			
Cost Saving £/yr	CO₂ Savings tonnes/yr	Energy Savings kWh/year	Cost £*	Payback Years
£28.95	0.136	249.90	£600.00	20.7
Detail	<p>The current electric pew heating should be replaced with more energy efficient wall mounted radiant heaters – such as those already installed in the Chapel, see below.</p>  <p>The new heating may be connected to the current heating controls to allow for flexibility of use depending upon attendance and temperature needs.</p> 			
Risks	None			

Priority no. 2	Insulation in Chapel roof			
Cost Saving £/yr	CO ₂ Savings tonnes/yr	Energy Savings kWh/year	Cost £*	Payback Years
£2.94	0.011	60.24	£492.00	167.1
Detail	<p>The Chapel roof at Old Weston is not insulated. Up to 25% of heat loss from a building's fabric is lost through the roof, insulation can reduce this heat loss by up to 90%. Old Western should investigate the possibility of reducing energy loss from this area by installing insulation.</p> <div data-bbox="668 685 1211 1090" data-label="Image"> </div> <p>Calculations for this opportunity are based on the installation of 250mm glass or rock wool blanket insulation between wooden frame members or laterally across the frame members.</p> <p>Ensure that the work is carried out by an experienced and professionally registered contractor.</p> <p>*Please note that this opportunity type will only be economically viable if installation can be achieved with voluntary help and/or if a grant or donation is received.</p> <p>Although the cost savings are low it is an example of how insulating the roof can assist the Church to reduce energy use by reducing heat loss from the fabric of the building.</p>			
Risks	<p>No risks – however here are some things to consider:</p> <ul style="list-style-type: none"> • Existing roof condition • Access to roof • Possible disruption to Chapel use 			

Priority no. 3	Separate the lighting circuit for the upstairs T5 lamp			
Cost Saving £/yr	CO₂ Savings tonnes/yr	Energy Savings kWh/year	Cost £*	Payback Years
£0.46	0.002	3.96	£150.00	326.8
Detail	<p>During the site visit it was observed that the upstairs T8 lamp is on the same circuit as the main lighting. It should be on a separate lighting circuit as this area is very rarely used.</p> <div style="display: flex; justify-content: space-around;">   </div> <p>*Please note that this opportunity type will only be economically viable if installation can be achieved with voluntary help and/or if a grant or donation is received.</p> <p>Although the cost savings are low it is a good example of how separating lighting can assist the Church to reduce energy use by offering building users the chance to only switch on lighting when necessary.</p>			
Risks	Work should be undertaken by a qualified electrician.			

Further Considerations:

In addition the following measures are recommended for further investigation by the site, but are not graded as a priority for action at the present time:

Item No	Description of Recommendation
1	<p>Double glazing: The building would benefit from reduced heat loss in the winter with the installation of double glazing or secondary internal glazing.</p>  <p>The high capital cost of double glazing makes this unlikely to be suitable at Old Weston Chapel in the near future.</p>