Carbon Reduction Recommendations Report

for

Witney Parish Council

December 2025

Carbon & energy assessment of

Windrush Cemetery Depot Building

Witney OX29 6UT

ENERGY SOLUTIONS OXFORDSHIRE®

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WEST OXFORDSHIRE DISTRICT COUNCIL

ORGANISATION OVERVIEW

Report overview

Helen Watts from EiE met Janine Sparrowhawk on 16 December 2025. Recommendations in this report are based on our site visit & information obtained; we consider finances, carbon impact, and ease of implementation. Savings and costs are estimated using data provided and from our recent work. Below is a summary of the opportunities recommended; further pages provide detail on each opportunity.

Energy savings recommendations - summary

Opportunity	Payback (years)	Savings current & future energy prices (£ / yr)	Estimated costs (£)	Carbon impact (tCO_2e / yr)
1) Take and submit meter readings	-	0	0	0.00
2) Add heating controls	0.9	129	120 to 310	0.11
3) Add loft insulation	5.4	103	560	0.08
4) Add timer to hot water	4.3	42	180	0.03
5) Upgrade lighting to LEDs	7.6	230	1,750 to 2,100	0.19
6) Add draught proofing to external door	-	0	20 to 40	0.00
7) Investigate fridge use	-	See details	See details	0.00
8) Provide signage for disabled toilet door	0.1	18	1 to 2	0.02
9) Add solar PV panels	9.5	442	4,186 to 4,508	0.26
10) Consider an air to air heat pump system	11.6	519	6,000 to 8,000	0.42
	TOTAL	£1,483 per year	£12,817 to 15,70	1.11 tCO_2e per year

Site details

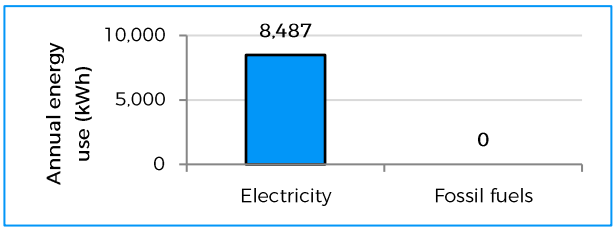
The depot was built in 2003 and consists of a mess room, toilets, visitor seating area, garage and drying/ storage room. It has an indoor area of 122m^2 and is owned by Witney Parish Council, who would like to make their buildings as sustainable as possible. Walls are likely to have some insulation based on construction date; the loft has a limited amount of insulation and windows are double glazed. There are electric panel heaters in the toilets, drying room and mess room. There is no gas on site. Most meter readings are estimated according to bills seen. The building is occupied Monday to Friday from 8.30am to 5pm throughout the year. There is no Energy Performance Certificate (EPC).

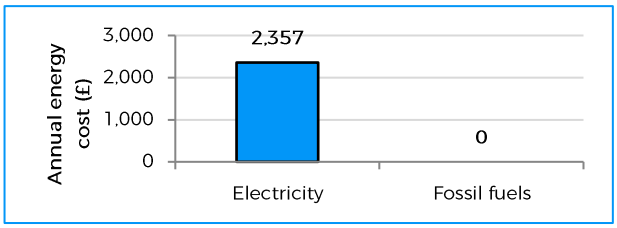
ENERGY PROFILE

Energy consumption annual profile

Fuel type	Annual Energy use (kWh)	Cost per kWh (p)	Standing charge (p/day)	Approx. annual cost (£)
Electricity	8,487	21.7	141.22	2,357

Energy profile breakdown for Windrush Cemetery Depot Building consumption (left) and costs (right)

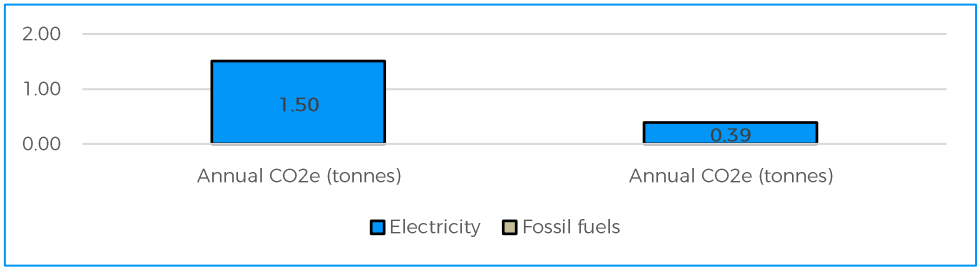




Consumption is based on information provided.

11.11 tonnes avoided CO_2e over 10 years by implementing recommendations (based on tonnes of CO_2e per year)

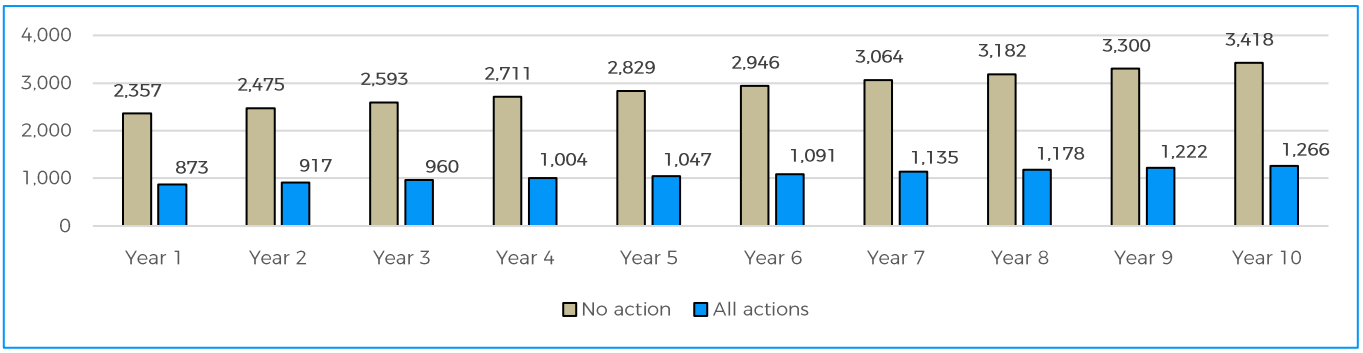
1.50 tonnes CO_2e from current annual energy consumption
0.39 tonnes CO_2e from implementing recommendations



Based on current annual CO_2e minus CO_2e implementing all actions using 2025 UK greenhouse gases coefficients.

£18,182 energy savings over 10 years by implementing all report recommendations

Windrush Cemetery Depot Building energy spend in the next 10 years



Savings are 'no action' minus 'all actions' using Laser mid-range predicted UK electricity price rises.

ENERGY SAVINGS RECOMMENDATIONS

1) Take and submit meter readings

Energy saving (kWh)	Cost saving (£)	Cost of action (£)
0	0	0

Many of your electricity bills are based on estimated readings. The meter is easily accessible. There is an opportunity to improve billing accuracy. By recording and submitting energy meter readings to your energy suppliers regularly and accurately, energy bills will be correct. Knowing annual kWh of electricity helps budget for new energy contracts. Meter readings build an energy profile that will help identify unexpected changes in energy use. This will be particularly useful to monitor the success of energy improvements you make. We recommend appointing someone to take monthly meter readings and submit them to energy suppliers.

Upgrading to a meter that submit automatic readings may be possible through your suppliers. These will automatically send readings so bills are not estimated.

Actions

- Arrange to record actual meter readings on the same day once per month. Enter these into a spreadsheet and calculate usage by subtracting the previous reading from the current reading.
- Submit meter readings to your energy suppliers prior to billing (the timing of this will differ for each supplier). Depending on your supplier, readings can be submitted via website, email, or by telephone.
- Use monthly energy consumption to form a baseline of use so that you can easily detect and act upon unexpected rises in use, as well as savings from implementing saving measures.

Costs and savings

There may be savings from more accurate billing. There is no cost to this action.

2) Add heating controls

Energy saving (kWh)	Cost saving (£)	Cost of action (£)
594	129	120 to 310

The OFXE Dimplex oil filled panel heaters are manually controlled using the dials on each heater. During the site visit, all the heaters were on despite no staff being on site. Having the heaters on when no one is in the building wastes energy. This can be improved. New controls will allow heating times and temperatures to be set more easily. This will help reduce costs from unnecessary heating. We recommend installing heating controls.

One option is a 7-day timer for each heater, Times can be set according to when staff are most likely to be in each space with heaters coming on a maximum of 45 minutes before staff come in and going off 15 to 30 minutes before they leave. It may be possible to have the heaters on in the morning, at lunchtime and for a period in the afternoon – it all depends on the usage of each room.

For examples see:
https://www.tlc-direct.co.uk/Products/SMETU17.html
https://www.screwfix.com/p/masterplug-tes7-digital-plug-in-plug-through-programmable-timer/50676
https://www.electricpoint.com/timeguard-ntt03-24hr-7day-compact-electronic-immersion-timer.html

Another possibility is using booster buttons which can be fitted to each radiator and when pressed, set the heaters to come on for a set time period between 15 minutes and 4 hours.
https://www.heatingcontrolsonline.co.uk/horstmann-secure-30-60-120-boost-timer.html
https://www.electricpoint.com/timeguard-tgbt4n-4-hour-electronic-boostmaster-timer.html

A further solution would be to install an air to air heat pump (see recommendation 10) with appropriate controls for each room. If this is a likely solution, and soon, we would not suggest adding heating controls as they will only be used briefly.

Actions

- Review heating requirements in the different rooms of your building taking into account:
  - Are user controls appropriate? How much control do you want to offer ranging from full control of time and temperature to a 'boost button' or no control at all?
  - Do you need a setback function to return the heating to its original settings if users alter controls?
  - Is heating required at the same time every day of the week or would a 7-day programmer, which would allow you to programme the heating a week in advance, be more appropriate?
- Once this review is completed, contact a local qualified electrician to quote for installing appropriate heating controls. We recommend contacting at least three contractors for quotes.
- Choose a preferred contractor and arrange for the controls to be installed.

Costs and savings

Savings are based on reducing heating by 10% (heating estimated at 70% of electricity use). Possible costs for the four rooms needing controls are as follows: A 7-day timer is approximately £30 and a boost button £20 to £40. Plug in timers do not require installation costs; booster buttons or hard-wired timers will require half a day of an electrician's time.

3) Add loft insulation

Energy saving (kWh)	Cost saving (£)	Cost of action (£)
475	103	560

Visual inspection showed that there is approximately 100mm of insulation in your loft. There is an opportunity to add insulation. Up to 25% of your building's heat is lost through the roof if it is un-insulated. We recommend increasing insulation to 300mm. This will minimise heat losses in winter, reduce heat gains in summer, improve comfort levels for users, and reduce annual energy bills by reducing heating requirements.

Loft insulation is widely available and mainly comes as glass or mineral wool. An example is here: http://www.wickes.co.uk/Products/Building-Materials/Insulation/Loft-Insulation/c/1000270

300mm of loft insulation will improve U-value, which is a measure of the insulation properties of the material (the lower the U-value, the greater the insulating properties). Check the U-value or ask a contractor if a U-value of 0.16 W per m^2k can be achieved.
Ensure that insulation is laid evenly over the whole loft, including right to the edges, to avoid cold spots where heat can escape.

Actions

- Install loft insulation to a recommended level of 300mm to maximise heat retention in the building. Discuss any moisture issues with contractor.
- Engage a qualified contractor for this work. Ideally obtain quotes from three contractors. The costs of installation can be reduced by using staff members to carry out this work.

Costs and savings

Savings are based on reducing heating by 8% (assuming heating accounts for 70% of elelctricity use). Costs are based on 200mm of loft insulation covering 28m^2 at £20 per m^2 including labour and other costs.

4) Add timer to hot water

Energy saving (kWh)	Cost saving (£)	Cost of action (£)
192	42	180

Your hot water heater in the disabled toilet appears to be always on and heating water 24 hours a day 365 days a year. It is rated at 3 kW and will use about 0.7 kW a day to heat the water. Arrange for a timer to be installed to control heating times. Energy will be saved by only heating the water when users are likely to be in the building. We recommend arranging to install 7-day programmable timer to control hot water heater times to save energy.

An example of timer is here: http://www.screwfix.com/p/lap-7-day-digital-immersion-timer/1804r

Electric hot water heaters store low amounts of water and represent low Legionella risk if they are on for 15 minutes at 60°C prior to use.

Actions

- Arrange for an electrician to install a 7-day timer on the hot water heater.
- Set timer to switch off when not needed, for example 5pm every night. Programme the timer to turn on 30 minutes before hot water is required, for example 9am. The timer can be off the whole of each weekend too, if appropriate.

Costs and savings

Savings are based on your hot water unit being off 75% of the time (5pm to 9am and off at weekends), assuming it uses 0.7 kW per day. As hot water heaters are hard-wired you will need to get a qualified electrician to wire in the timer, which will cost around £30 plus half a day's labour. If you change your lighting to LEDs (see recommendation 5), you could ask your LED lighting contractor if they can include this work when on site.

5) Upgrade lighting to LEDs

Energy saving (kWh)	Cost saving (£)	Cost of action (£)
1,062	230	1,750 to 2,100

There are some non-LED lights installed in the building that can be replaced with LEDs to reduce energy use and maintenance as well as providing improved lighting quality. These include five double 6ft fluorescent tubes and nine 2D bulkheads. LED lights are more energy efficient and exist for nearly every lighting type. They can reduce electricity use by up to 50% compared to other lighting. Additionally LEDs last at least 50,000 hours before they need to be replaced (fluorescent lights last 15,000 hours) resulting in reduced maintenance costs. We recommend replacing lights with LEDs to reduce the cost of lighting.

When selecting replacement lights there is also an opportunity to provide better lighting rather than using equivalent lights. Consider both the light quality preferred (known as colour temperature) that ranges from warm white, cool white or daylight and the level of brightness needed (measured in lumens). Ensure that, whichever contractor you use, they offer a minimum 5-year failure replacement guarantee. Consider additional lighting controls, such as absence detectors, that will switch off lighting when no movement is detected for a period of time. This is particularly useful for toilets, corridors and the garage where users spend short periods of time.

Actions

- Engage a lighting contractor to carry out an inventory of current lighting noting number and type of each light. For all non-LED lights discuss LED replacements. Generally LEDs are installed as entirely new fixtures rather than using existing fixtures.
- Alternatively, once current lighting stocks are used, ensure LED lights are always used to replace any future failed bulbs or tubes.
- Discuss additional lighting controls, such as sensors, with contractors.
- We recommend contacting at least three lighting contractors for quotes.
- Choose a preferred contractor and arrange for the lights and controls to be installed.

Costs and savings

Savings are based on LEDs using less energy and lights being on 2,210 hours per year in the garage and 1,105 hours elsewhere (8.5 hours on weekdays over 52 weeks, or half that for bulkheads) at 21.7p per kWh. There will be further savings from additional lighting controls, particularly in the garage. Costs are based on the lighting inventory above and include the cost of installation. Actual quotes from lighting suppliers may differ.

6) Add draught proofing to external door

Energy saving (kWh)	Cost saving (£)	Cost of action (£)
0	0	20 to 40

There was a noticeable draught by the main exterior door. There is an opportunity to reduce heat loss. Any gaps around the doors will let in cold air and draughts; blocking gaps with draught proofing will greatly reduce this. We recommend adding draught proofing to reduce discomfort during colder months.

Examples of draught stripping can be found online here: https://www.screwfix.com/c/security-ironmongery/draught-excluders/cat840242

The best way to determine if draught proofing is required on a door is to feel around the door when the heating is on and it is cold outside. Draughts will be very evident and remedial action can be taken.

Actions

- Add draught stripping to the door or door frame. If draught stripping is not suitable to attach (e.g. if the gap is not uniform), consider engaging a contractor to suggest improvements to the door frame.

Costs and savings

Savings are difficult to calculate, but this action will help reduce draughts and discomfort in winter months. Costs for draught strips are estimated at £20 to £40, attached by a member of staff.

7) Investigate fridge use

Energy saving (kWh)	Cost saving (£)	Cost of action (£)
See details	See details	0

The fridge in the mess room is on 24 hours a day, 7 days a week. There were a few bottles in the fridge, which may or may not have been in date, other than that it was empty. A fridge will constantly use energy and could be wasting energy if it isn't needed. This can be investigated.

Ask the staff about regularity of fridge use. It may be that the low usage seen during the site visit was an anomaly, in which case, no change is needed. If the fridge is rarely used, it may be possible to replace it with a mini fridge or take the fridge away altogether – or for it to be turned off during the winter months and turned back on during the summer.

Examples of mini fridges can be found here:
https://www.amazon.co.uk/mini-office-fridge/s?k=mini+office+fridge

Actions

- Survey staff to find out how much they use the fridge and decide whether it is necessary, whether it could be downsized or disposed of altogether.

Costs and savings

A constantly running under counter fridge will cost an average of £48 per year to run. At your tariff, this amounts to a saving of 220kWh if it is turned off. Mini fridges start at £100. There is no cost if the fridge is left as it is, but there may be a disposal cost to get rid of the fridge.

8) Provide signage for disabled toilet door

Energy saving (kWh)	Cost saving (£)	Cost of action (£)
85	18	1 to 2

The disabled toilet has a heater in it and this opens straight into the visitors waiting room, which is unheated and often open to the elements. On cold days, the heat from the disabled toilet will disperse directly outside if the toilet door is left open, resulting in wasted energy. This can be improved. Clear signage on the door asking users to keep the door closed will ensure more of the heating energy is kept inside the toilet.

Actions

- Write simple and eye-catching signage to encourage users to keep the door closed at all times.
- Visuals are often more eye catching than words. Consider using images as well as words.

Costs and savings

Savings are based on reducing heating energy use by 1% (heating is assumed to be 70% of energy use). There is minimal cost to this action.

9) Add solar PV panels

Energy saving (kWh)	Cost saving (£)	Cost of action (£)
1,490	442	4,186 to 4,508

There is sufficient space to install south facing solar PV panels on the roof to generate electricity from sunlight, which will reduce the amount drawn from the National Grid saving you energy costs and carbon. We recommend, subject to survey, a 3.22 kWp solar array of 7 panels generating an estimated 2,979 kWh of electricity per year. For every kWh generated from solar panels that you use on site you will save 21.7p (your day time electricity rate). Surplus solar electricity is exported back to the National Grid and you will receive approximately 5p to 15p per kWh from the Smart Export Guarantee, paid through your electricity supplier. We anticipate 50% of electricity generated will be used on site.

Find an MCS certified installer at this link: https://mcscertified.com/find-an-installer/

In addition to installing an array of solar PV panels on the roof, an inverter is installed indoors to make the electricity compatible with your building's electricity demand. While the sun shines every day, the amount generated is affected by temperature and cloud cover; weather data is used to estimate performance. Consider a battery to store electricity that would have been exported for use when the sun is not shining.

Actions

- Engage a solar PV contractor to design a solution for your premises. They will assess feasibility of the project, considering obstructions, such as trees. Speak to the designer about batteries for storing electricity that would have been exported. You can then engage a number of contractors with the design for quotes on installation.
- Contact at least three solar panel contractors to obtain quotes. Installation quotes need to include a structural assessment of the roof to determine if it can bear additional weight.

Costs and savings

Savings are based on using UK solar data to estimate generation from 460W solar PV panels, exporting at 8p per kWh. Costs are based on £1,300 to £1,500 per kWp. Prices from contractors will differ.

10) Consider an air to air heat pump system

Energy saving (kWh)	Cost saving (£)	Cost of action (£)
2,393	519	6,000 to 8,000

The current panel heaters are old and aren't straightforward to contol in an efficient way (see recommendation 1). One replacement possibility is an air source heating system (ASHP) that uses electricity but will deliver 3 units of heating from 1 unit of energy, making it 300% more efficient than current heating. Inertia in the air is increased via compression through the heat pump and transferred to gas sent to fan emitters (which can be wall or ceiling mounted as shown in the picture). Up to 5 emitters can be attached to one pump and emitters in different rooms can be set to different timings and temperatures, according to needs. Heat pumps can also cool during the summer, should that be needed. We recommend investigating an air source heating system as a potentially efficient and low cost heating solution.

For further details see: https://www.theecoexperts.co.uk/heat-pumps/air-to-air-heat-pumps.

Possible installers can be found here:
https://www.renewableenergyhub.co.uk/search-installers

If coupled with solar technology producing electricity to power the pumps, this technology could provide background heating at very low running costs.

Actions

- Discuss the potential for an ASHP system at the site.
- Engage a qualified contractor to determine the feasibility of the project and develop drawing and specifications.
- Request quotes from three competent and qualified suppliers.
- Choose a preferred supplier and arrange for the system to be installed.

Costs and savings

Savings are based on heat pumps being 300% more efficient that panel heaters. You may find the heat pump needs to be on slightly longer than the panels, so savings are estimated at 50% rather than 66% of the current usage (and electricity for heating assumed to be 70% of overall energy use). This will save 0.42 tonnes of CO_2e per year, amounting to £519 saving per year. Costs are based on heat pumps, pipework, fan emitters, and removal of the current heating system. There may be additional costs for improving the electricity supply to the site, etc.

RESOURCES & NEXT STEPS

Funding

Possible sources of funding for the recommendations in this report:

ESOx Green Fund (https://www.energysolutionsoxfordshire.org/get-match-funding-with-our-green-fund/) 25% match grant for recommendation in this report. The current round closes 11th March 2026.

The Oxfordshire Local Enterprise Partnership (OxLEP) may also have funding opportunities for businesses from time to time. Check here: https://www.oxfordshirelep.com/funding-grants

You can also **sign up to the ESOx newsletter** at this link (see bottom left): https://www.energysolutionsoxfordshire.org/articles/

Solutions fit for the future

This report recommends installing new electrical products. We recommend discussing some technical considerations with your contractors. While UK electricals must comply with safety standards, there is currently no requirement that items are able to communicate with other electrical systems to maximise operating efficiency both on site and within the National electricity grid. For example, heat pumps use electricity and are best operated in tandem with solar PV panels and batteries to minimise use of more expensive grid electricity. As electricity networks make more use of data sharing, **ensure contractors consider compatibility when installing** the items below to help avoid later upgrades:

Solar PV panels – Ensure inverters, which convert DC power generated to AC power compatible with your site, have **'modbus'** interface. This enables communication with other devices, including batteries.

Heat pumps – Ensure these include **OpenADR** (automated demand response), which allows better electricity management, particularly in areas where sub-stations have grid constraints.

RESOURCES & NEXT STEPS

Your action progress update

Our report recommendations may help you choose what actions your organisation would like to act on. After a number of months, we will ask for an update on your progress. Some actions will be completed, some in progress, and others not yet started. Below is an example of how you can indicate your progress (tick one box per row). There is no expected completion date for any action, however your information is extremely important for helping us track project improvements.

Opportunity	Action completed	Action in progress	Not begun but intending to	Not begun, not intending to	Not applicable
1) Take and submit meter readings	◯	◯	◯	◯	◯
2) Add heating controls	◯	◯	◯	◯	◯
3) Add loft insulation	◯	◯	◯	◯	◯
4) Add timer to hot water	◯	◯	◯	◯	◯
5) Upgrade lighting to LEDs	◯	◯	◯	◯	◯
6) Add draught proofing to external door	◯	◯	◯	◯	◯
7) Investigate fridge use	◯	◯	◯	◯	◯
8) Provide signage for disabled toilet door	◯	◯	◯	◯	◯
9) Add solar PV panels	◯	◯	◯	◯	◯
10) Consider an air to air heat pump system	◯	◯	◯	◯	◯