OxFutures

Energy Saving Recommendations Report

for

The Mix

February 2018

Survey of The Mix Community Space

European Union

European Regional Development Fund

OXFORD BROOKES UNIVERSITY

low carbon hub

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Bioregional

Cherwell DISTRICT COUNCIL NORTH OXFORDSHIRE

ORGANISATION OVERVIEW

Report overview
EiE carried out a site visit and met with Jo Harvey. All recommendations in this report are based on information and observations obtained during the site visit and information subsequently provided. The report is set out in order of recommended priority based on ease of implementation, carbon impact, cost and factors discussed on site.

Client details		
Organisation name	The Mix	15 Mill Street Wantage OX12 9AB
Contact names	Mim Norvell Jo Harvey	mimnorvell@gmail.com joharvey100@gmail.com 07969 797 322
Date of site visit	13/02/2018	Carried out by Moira Dorey

Energy savings recommendations - summary

Below is a summary of the opportunities recommended in this report. Costs and savings have been estimated using available information; an explanation is provided in detail for each opportunity. Estimations have been made based on energy data provided.

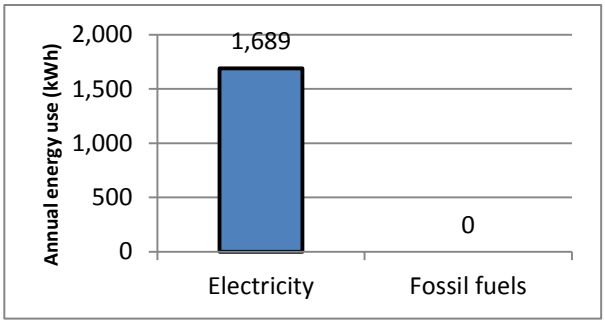
Opportunity	Savings (kWh / yr)	Savings (£ / yr)	Cost (£)	Initial payback	Carbon Impact (tCO_2e / yr)
Add draught proofing to external door	0	0	5	n/a	0.00
Install secondary glazing	84	15	105	6.98	0.03
Install low-output heater in toilet	0	0	27	n/a	0.00
Update lighting to LED	14	3	12	4.79	0.01
Install electric wall mounted heaters	0	0	2,000	n/a	0.00
Provide signage	42	8	0	0.00	0.02
Add cavity wall insulation	84	18	325	43.21	0.02
TOTAL	**224 kWh/yr**	**£44/yr**	**£2,474**		**0.08 tCO_2e / yr**

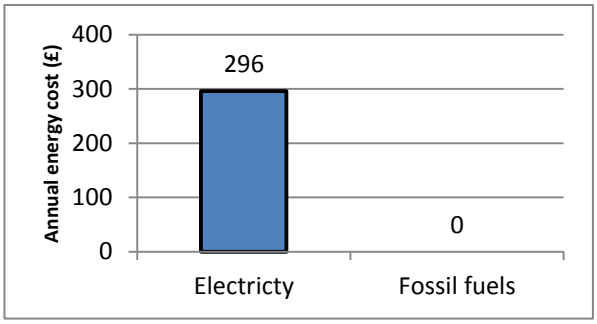
Site details
The Mix Community Space is located in the centre of Wantage in a leased building thought to have been built in the 1910's. It is used for approximately 30 hours a week as a multi-purpose community space with a room available to hire, a range of workshops and hot-desking space. It is heated with mobile oil-filled electric heaters. The Mix hopes to improve the building and increase its use over the coming months.

ENERGY PROFILE

Energy consumption annual profile				
Fuel type	**Annual Energy use (kWh)**	**Cost per kWh (p)**	**Standing charge (p/day)**	**Approx. annual cost (£)**
Electricity	1689	Day rate 17.91 Night rate 7.87	Day rate 30.88	296

Energy profile breakdown for The Mix consumption (left) and costs (right)





Consumption is based on figures provided from 27/11/2016 to 02/12/2017.

Add draught proofing to external doors		
Energy saving (kWh)	**Cost saving (£)**	**Cost of action (£)**
0	0	5

You have successfully added draught strips to most of gaps previously identified around the front door however there is a draught from a remaining gap (see image).

Heat will escape in winter through any gaps around the door; draught proofing will greatly reduce this.

An example of draught stripping can be found online here: http://www.screwfix.com/p/stormguard-door-window-strips-brown-1-05m-5-pack/35308

You may also be able to get your neighbour who previously carried out the work to add further draught-proofing to the remaining gap in the door.

Actions

- Add draught stripping to the door or door frame.

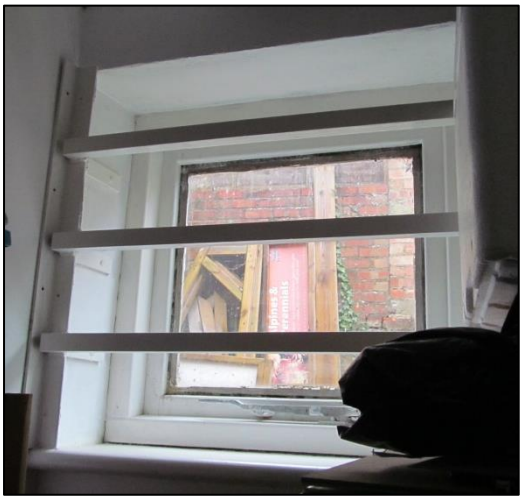
Costs and savings

Savings are negligible but this action will help reduce discomfort in winter months. Costs is estimated at £5 for materials and this work could be carried out by a volunteer.

ENERGY SAVINGS RECOMMENDATIONS

Install secondary glazing

Energy saving (kWh)	Cost saving (£)	Cost of action (£)
84	15	105



The three small windows at the back of your premises are single glazed. Secondary glazing installed inside of single glazing will reduce heat loss and draughts to help keep the building comfortable in cold weather.

You regularly open these windows in summer. Double or single secondary glazing that will allow you to open the windows is going to be expensive in relation to your energy bills and would be need to be professionally installed. However there are a couple of solutions that would reduce draughts from these windows in winter that could be installed by volunteers and removed in summer.

One option is removable magnetic perspex glazing. See:
http://www.magneglaze.co.uk/index.php
https://www.theplasticpeople.co.uk/uses/secondary-glazing/magnetglaze-double-glazing-kit/
https://www.twplastics.co.uk/Categories/42/secondary-double-glazing-kits

Another option is seasonal secondary glazing film. See:
https://www.wickes.co.uk/Wickes-Seasonal-Secondary-Glazing-Film-6m2/p/210014

We would recommend the removable magnetic Perspex glazing option as it can be removed and replaced again and again. The secondary glazing film, while less expensive, needs to be replaced every year.

Actions

- Discuss window draught proofing options with volunteers.
- Obtain quotes from several perspex glazing companies – many will offer on-line quotes.
- Install secondary glazing in time for next winter.

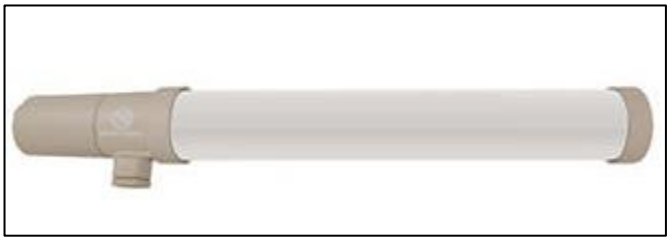
Costs and savings

The cost to add magnetic Perspex secondary glazing is estimated at 3 windows x £35 = £105.
Savings assume that this will reduce heating costs by 10% and that heating represents 50% of your electricity bill.

Install low-output heater in toilet

Energy saving (kWh)	Cost saving (£)	Cost of action (£)
0	0	27

Your toilet is currently unheated. As the toilet has an outside wall you risk the chance of frozen pipes in winter. Additionally, in order to make the entire building a welcoming space, the toilet should be heated. Adding a low-output electric heater in the toilet will take the chill off the room without wasting energy.



The least expensive models have no thermostat. For example: https://www.tlc-direct.co.uk/Products/HETH452.html. We would recommend however that paying a little more for a model that is thermostatically controlled will reduce running costs in the long run. For example: https://www.screwfix.com/p/dimplex-ecot2ft-wall-mounted-tubular-heater-80w/1796f (see image).

When set to a low temperature (e.g. 5oC) this heater can be left on throughout the winter as frost protection. You may want to turn it up to a high setting when you have meetings or workshops in the space in the winter although, to save energy, it should be turned down again after the event.

As an indication of running costs, if this type of heater used 1kW every 24 hours to keep the chill off the room for 4 months of the year the annual running cost would be around £16.

Actions

- Discuss options for heating the toilet with your volunteer electrician.
- Install appropriate heater with thermostat ensuring that it is a low-output heater (under 100W).

Costs and savings

Cost for a 2 foot tube heater is £27. There are no savings as this is an additional heater.

ENERGY SAVINGS RECOMMENDATIONS

Update lighting to LED		
Energy saving (kWh)	**Cost saving (£)**	**Cost of action (£)**
14	3	12

The lights in your building are partly CFL bulbs and partly LED bulbs. There are 6 light fittings in the front of the building where the lights are switched on most of the time when the buiding is open. 50% of these lights are LEDs and the other 50% are CFLs. We would recommend that you change out all these remaining lights to LEDs immediately. LEDs are lower wattage and therefore save electricity as well as showcasing LED lighting in this space that promotes sustainable living.

The lights in the rear of the space are much less frequently switched on. We would recommend that you change those bulbs for LEDs when they fail.

When selecting lights consider both the colour temperature preferred (ranging from warm white, cool white or daylight) and the level of brightness needed (measured in lumens). You will see from the image that the colour of the lights are not consistent with each other at the moment.

Actions

- Exchange CFL bulbs for LEDs bulbs in the front of the space immediately.
- Exchange CFL bulbs for LEDs bulbs in the rear of the space when they fail.

Costs and savings

Costs are based on 3 LED bulbs at £3 per bulb = £12. Savings are based on 3 lights saving 3W per hour with the lights on for 1560 hours per annum. (30 hrs x 52 weeks).

Install electric wall mounted heaters

Energy saving (kWh)	Cost saving (£)	Cost of action (£)
0	0	2,000

Your space is currently heated with 3 x 2kW mobile heaters that are switched on when the building is in use. There are occasions when users do not turn the heaters off as they leave the premises. These heaters struggle to warm the space on cold days and evenings, and may be discouraging some users from booking the space in the winter for events, workshops and meetings. A more modern heating system is being considered to replace the current mobile heating system.

You have already obtained competitive quotes in 2015 for replacement systems. You are considering night storage heaters with a convection heater top up function or an electric wet radiator heating system. Both systems are a similar cost to install therefore on-going cost of running the system should be considered.

The night storage system benefits from using night rate electricity to charge up the heaters that slowly release heat throughout the day. At the present time you are paying 7.87p/kWh for night rate electricity and 17.91p/kWh for day rate electricity through your preferred supplier Ecotricity. The night rate is therefore less than half the cost of the day rate.

With this in mind, if you choose to continue with Ecotricity, whose day rates are higher than many suppliers, installing modern night storage heaters to take advantage of the excellent night electricity rate may be the preferred option.

Modern night storage heaters have multiple settings to release the heat when it is needed therefore ensure that full training is given when they are purchased and instructions are left for subsequent users.

Additionally, ensure that you purchase combined night storage and convector heaters that allow a heating boost in the evening if the space has cooled down. For example:
https://www.electricpoint.com/dimplex-cxls24-35kw-combined-automatic-storage-heater-and-convec.html?utm_source=googlebase&utm_medium=datafeed&utm_campaign=google-shopping&gclid=EAIaIQobChMI_aq_vsy02QIVDx4bCh10zAIYEAYYAiABEgJG_PD_BwE

Actions

- Obtain quotes for wall-mounted electric heaters from local, qualified electricians. We recommend obtaining at least 3 quotes.
- The quote that you have previously received from M & A suggests that 2 x 3.4kW heaters will be sufficient to heat the space. Check this specification with other contractors when they quote.
- Ensure that the heater is fully guaranteed with a service agreement in place (preferably built into the cost) for a number of years.
- Simple operating instructions are provided by the installer and need to be attached to the heating controls to guide users.

Costs and savings

Quotes already received for new heating systems are approximately £2000. There wil be no saving as this heating system is likely to be at least as expensive as the current system however it will provide a much more welcoming temperature for users.

Provide signage

Energy saving (kWh)	Cost saving (£)	Cost of action (£)
42	8	0

There is some evidence that users leaving the building after evening events forget to switch off heaters and toilet lights, which wastes energy overnight. If the event is on a Saturday the heaters and / or lights may be left on unnecessarily until someone comes into the building on Monday morning.

Having clear shut-down procedures in written form for all users may remind them of their obligations. This may include a variety of reminders, e.g. checking the back door is locked, turing lights off, unplugging heaters, tidying up etc.

As you currently have some D of E volunteeers with caligraphy skills this instruction could be tastefully written and displayed in a prominent spot for users to read as they leave the premises.

Additionally, a copy of the shut-down procedurues should be included in the hirer agreement paperwork.

Actions

- Engage a volunteer to write simple signage to remind users to turn off heating and lighting as well as other shut-down requirements when they leave the building.

Costs and savings

There is no cost to this action. Savings are based on a 5% reduction in heating costs as a result of the heaters no longer being left on overnight and at weekends.

Add cavity wall insulation

Energy saving (kWh)	Cost saving (£)	Cost of action (£)
84	18	325

The brickwork pattern of the building suggests that it has cavity walls. The date of construction (pre-1980s) suggests that these cavities may well be unfilled. 10% to 30% of heating may be lost through unfilled wall cavities. Increasing insulation will minimize heat losses in winter, reduce heat gains in summer, improve comfort levels for users, and reduce annual energy bills by reducing heating requirements.

Examples of cavity wall insulation can be found here: https://ciga.co.uk/registered-installers/ https://www.carbontrust.com/media/19461/ctl176-how-to-implement-cavity-wall-insulation.pdf

You have already received 2 quotes for this work in 2015, however these quotes would need to be updated. Additionally, it is not clear from the quotes exactly what walls they are planning to fill as they are quoting for different wall areas (80m² versus 110m²).

Identifying all the external walls to your building and getting re-quotes from several contractors on a like for like basis at 2018 prices will allow you to make a more informed decision.

As part of your planning, discuss with your landlord the option of adding insulation to the walls of the flat above at the same time. By splitting the bill this will benefit you both and also improve the insulation of his flat.

Actions

- Discuss cavity wall insulation with your landlord in order to get the flat walls insulated at the same time and share the cost.
- Identify all external walls that will need to be filled.
- Obtain quotes from qualified suppliers for insulating the wall cavities ensuring that quotes are like-for-like.

Costs and savings

The cost of cavity wall insulation is based on quotes received, identifying the cost on cavity wall insulation as £6/m². It is assumed that the landlord will pay 50% of the total bill. Savings are based on Carbon Trust figures which suggest a 10% reduction in heating costs as a result of adding cavity wall insulation.

FURTHER RESOURCES

FUNDING

Possible sources of funding for the recommendation in this report:

OxFutures – 25% funding towards the cost of energy reduction and generation measures. Contact Alison Grunewald E-mail: alison.grunewald@lowcarbonhub.org.

TOE2 – Grants of up to £5000 for energy efficiency actions. http://www.trustforoxfordshire.org.uk/ Contact Lynn Parker admin@trustforoxfordshire.org.uk

Carbon Trust Green Business Fund - https://www.carbontrust.com/client-services/programmes/green-business-fund