A Grade II Listed Building in the Climate Emergency

heritage open days

Tours, Winchester

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Energy generation and storage

1. Photovoltaic Panels

Because we are in a conservation area, we only got planning permission if the panels could not be seen from a public street and were unobtrusive from both front and rear. They hide in our valley roof.

We would have preferred to have more but that would have made them visible.



2. Energy-storage

Energy from the pv cells goes into a battery under the stairs. On a sunny day we store almost enough energy to keep us going till sunrise the next day.

Glazing

3. Double Glazing

Conservation officers did not like double glazing in listed buildings when we did the work, even with windows that look similar to the ones they would replace. We were allowed to replace one window because secondary glazing would have blocked the fire exit, but only if the glass on the exterior layer was barrel glass. The space between the layers of glass is reduced by using inert gas. We understand the council is actively considering changing policy on this. We would like to replace some of our rotting upper windows.

4. Double secondary glazing

We were allowed to install secondary glazing units inside the other old windows. In addition to the original window, we installed two Perspex sheets separated by a plastic spacer, kept in place by magnetic strips. They are quite heavy but stay in place well. Including the original glass there are now three layers to insulate against heat and cold, and stop draughts.

Insulation

5. Conservatory

Because we had a modern plastic conservatory, we were allowed to replace it with a more thermally efficient one. It is triple glazed, supplied by IQ. The roof window shuts automatically when it rains.

It is a source of heat on sunny days and warms the whole of the rear of the house. We pump hot air from the conservatory into the lower hallway on sunny but cold days.

6. Underfloor Insulation

Between the floorboards and the joists in the dining room and in the hallway we have inserted a layer of Superfoil (SF19FR) insulation. We have plans to install a high standard of insulation beneath the kitchen floor.

7. Thermal Liner

We have papered some external walls with V600 thermal liner. This is like very thick wallpaper. This helped reduce heat loss and eliminate damp corners. We have plans to add a layer of insulating plaster inside external walls as far as our budget will allow, focussing first on where most heat escapes.



8. Heat Recovery Air Extractor

The fan in the kitchen transfers the heat in the air being extracted to heat up the air being sucked in. Ventaxia produce several sizes that fit the same sized holes as their range of simple extractor fans.

9. Wood Fibre Insulation

The walls in the conservatory are covered with 100mm PAVADENTRO wood fibre insulation boards and coated in lime mortar.

10. Wood-burning stove

With heat from the solar insolation in the conservatory, the drawing room rarely requires much heat, even in winter. We installed a wood-burning stove there. It was an approved type when we bought it, with relatively low emissions. Subsequently, research has shown that even low-emission stoves produce more particulates than are desirable. So now its main value is that it blocks the chimney and prevents the high levels of heat loss that the open chimney once caused. Apart from testing it, we have never used the stove..

11. External Doors

Draught strips, a flap for draughts through the letterbox and escutcheon on the keyhole.

Water

12. Shower use

The shower runs cold till the hot water reaches it, so we collect the cold water in a bucket and use it to flush the WC.

13. Cast Iron Pipes

Where necessary we replaced broken gutters and pipes with cast iron ones. More to do with heritage than ecology.

14. Garden Pond

Reduces the rate of run-off at times of heavy downpour and attracts dragon flies and frogs.

15. Water-butt

We installed this to reduce piped water consumption and provide rainwater for washing windows and watering indoor plants

Outside and Garden

16. Green wall

The greenery on the wall in the garden will hopefully increase CO_2 extraction.

17. Compost

Two tumblers for compost – so far, they've not attracted rats.

More to do:

- Underfloor insulation
- Internal wall insulation
- Replacement of the gas boiler, or moving to heat pumps.

Major structural work was designed and overseen by CHDP Architecture.
Further work: architect Rupert Cook rupert@mcma.design

The Chronology

Completed	Date	Comments
Acceptance of the need for double glazed window by conservation officers	28 July 2014	Conservation officers 'reluctantly' agreed to the need for some double glazing because of the need to maintain a fire escape route. Double glazing of south-facing window refused.
Replaced all light bulbs with LEDs	10 September 2014	Probably the cheapest and simplest way of reducing electricity consumption.
Listed building consent for alterations	30 Sep 2014	A number of closely negotiated conditions
Acceptance of tender	21 July 2015	All major building items
Photovoltaic Cells	23 December 2015	Conservation officers required a reduction of panels from 12 to 8, and that they be mounted as out-of-site as possible. They had to be repositioned to comply with the plans.
Secondary Double Glazing	31 March 2016	Double secondary glazing panels (two layers of Perspex, frame spacer, magnetic attachment) for most windows in the house
Double glazing (argon filling U value 1.3) with barrel glass exterior and other insulation at the rear	1 June 2016	Several attempts at getting the windows right.
Conservatory made weathertight	20 Sep 2016	There was a long snagging list
Additional insulation work in conservatory	10 May 2017	To improve insulation and address condensation problems
Sign off of Battery Storage (Simpliphi PHI 3.4)	4 Sep 2017	"The PHI 3.4™ kWh 60 Amp deep-cycle Lithium Ferro Phosphate (LFP) battery is optimized with proprietary cell architecture, power lectronics, BMS and assembly methods. It is modular, lightweight and scalable for installations that range from kWh to MWh."
Dining Room and Hallway underfloor insulation	29 March 2019	
Submitted plans for further work	14 February 2023	Internal insulation of external walls Further underfloor insulation
Approval given for further works	27 April 2023	Conservation officers were positively enthusiastic
Plans for repair of rear 'Roman Wall'	June 2023	All lime repair specialists very busy; quotations difficult to obtain