

# Ecology Building Society

Case Study: Renovating 2, The Fron

# About us

- American expats, moved (permanently) to UK in 2010
- I'm associate professor in theological ethics at the University of Birmingham (my AOS is eco-theology & environmental ethics)
- Living out our values is a core concern for our family!
  - Justice
  - Sustainability
  - Education
  - Commons



# Our vision for home

- Originally planned to self-build an eco-home, but land is impossible to get ahold of in the UK.
- Pivot to eco-renovation of an existing home, situated on some land
- Benefits here of lower carbon inputs and improvement of existing housing stock
- Also an opportunity to “prove the concept” that we can “insulate Britain” albeit with a bit of knowledge about the old ways of Victorian homes and building technologies (timber, lime, masonry, etc.)

# Getting finance was challenging

- Some banks were wary of immigrants (one building society refused to advance our mortgage application even after verifying we had permanent visas and employment in the UK)
- Other banks were anxious about “unconventional” houses requiring renovation as being risky
- Ecology was qualitatively different: responsive, sensible, understanding. We also liked engaging with a value-led financial institution. Financing an eco-renovation through Barclays or HSBC seemed a bit ironic.

# Welcome to 2, The Fron



We really  
like it here!

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## About the House

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- First home built in the area, initially around 1830, with extensions built ~1870. 1 acre of woodland behind the house with remnants of a Victorian orchard, paddock and ancient oak hedge
- High tech sustainable building: double brick solid walls, timber sash windows, welsh slate roof, 3cm thick lime plaster walls inside, hardwood floors over suspended timber & quarry tiles over earth. 7 fireplaces and 5 bedrooms.
- Electrical wire and gas introduced early (using lead pipes and lead-sheathed electrical wire), originally on pump-fed water from a cistern on the hill, now on mains.

# Renovation challenges

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- Massive damp issues in kitchen, and smaller issues in select places throughout the house.
- Electric wiring in need of replacement, 4 rooms without any sockets
- Central heating using gas boiler, with no radiators in 4 rooms
- Drafty and expensive to heat using gas
- Very hard to find trades available to do work in 2021-22!







# Renovation plan

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- Complete overhaul of kitchen, bathroom & cloakroom
- Installed Air Source Heat Pump (Nibe 16kw), unvented hot water cylinder, larger radiators (many aquired on gumtree & fb marketplace), and smart TRV valves for room-by-room zoned heating
- Installed all electric high-efficiency appliances (induction range for kitchen)
- Removed gas meter! Fossil fuel free since July 2021.

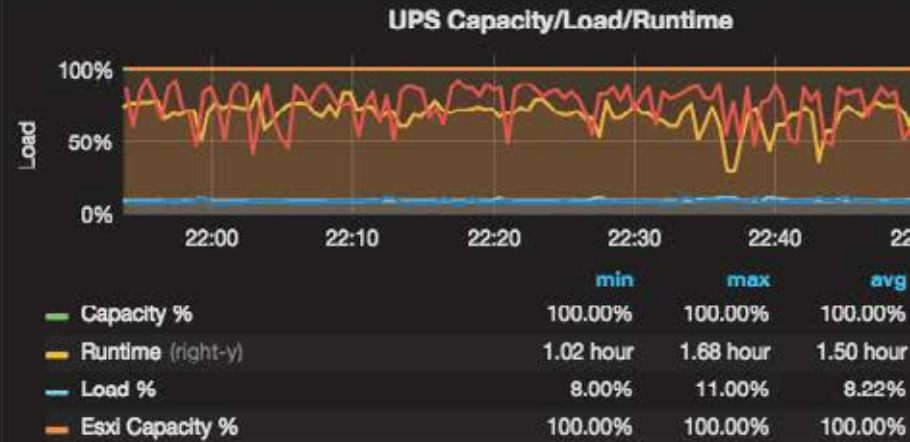
# Renovation plan

- Smart-home: wifi and zigbee mesh network for sensors throughout the house to monitor energy use, temperature, humidity and heating  
*Read more here: <https://github.com/kidwellj/victorian-smarthome>*
- Pending: 6kw roof-mounted solar array install, reglazing timber sash windows, installation of 8kw wood burning stove in front room
- Self-build approach, drawing on expertise of local trades to help with design and certify work at key junctures

14.30 TiB

OK

	min	max	avg	current
CPU Temp	45	62	49	50
System Temp	34	36	35	36
Peripheral Temp	47	49	47	48
PCH Temp	40	62	51	62
VRM Temp	42	45	43	45
DIMM1 Temp	34	36	35	36
DIMM2 Temp	33	35	33	34



Synology DS1512+

	Min	Max	Avg	Current
Disk_1	31 °C	32 °C	32 °C	32 °C
Disk_2	31 °C	32 °C	31 °C	32 °C
Disk_3	31 °C	32 °C	31 °C	32 °C
Disk_4	31 °C	32 °C	31 °C	32 °C
Disk_5	30 °C	32 °C	31 °C	32 °C

Synology DX513+

	Min	Max	Avg
Disk_1_(DX513-1)	33 °C	34 °C	33 °C
Disk_2_(DX513-1)	33 °C	34 °C	33 °C
Disk_3_(DX513-1)	33 °C	34 °C	33 °C
Disk_4_(DX513-1)	32 °C	33 °C	32 °C



# What we've learned

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- Victorian homes were not damp, they were the pinnacle of a certain kind of building technology. Important to “respect the tech”
- Beware of damp inspectors in pre-1930s homes. RICS doesn't provide training on lime building systems.
- You can do it! Homeowners can do almost any work in renovation, provided you go slowly, seek advice, watch youtube videos, and are willing to learn from mistakes.
- There are different models of sustainability: passivehaus v. breathable, both have merits and just need to be well designed
- Anyone can have a sustainable home. It takes grit and determination, a willingness to prioritise work.

# You can...

- Learn to plaster walls
- Repair lime mortar
- Replace floor joists
- Install electrical wire, sockets, lights and switches
- Install water pipe, sinks, toilets
- Install wood burning stoves and restore fireplaces
- Build cabinets

