



Harbury Energy Initiative
On behalf of
HARBURY PARISH COUNCIL

David Bristow, Chair of HEI, 11 March 2023

Emergency exits



HOUSE ENERGY SAVING

- Keep warm
- Save money
- Save energy
- Save the planet

David Bristow, Chair of HEI, 11 March 2023

Climate Emergency

United Nations International
Panel on Climate Change

- Climate change widespread, rapid, and intensifying
- 1.1 degree Celsius of warming already
- Expected to reach or exceed 1.5 degrees of warming averaged over the next 20 years



**The Climate Emergency has been
acknowledged by:**

**The United Nations
The UK Government
Warwickshire County Council
Stratford District Council
&
Harbury Parish Council**

Harbury Parish Council

**is responding to the
Climate Emergency**



BRIEF FOR PRESENTERS



- 4 minutes only
- Is this measure worth considering?
 - What are the benefits? How important are they?
 - What disruption would the work cause?
 - Very roughly, how much would it cost?



RETROFIT PLANNING

Dr Sarah Price

Building Physicist and Retrofit Expert



Where to start?

Look at your Energy
Performance
Certificate

Recommendations

The measures below will improve the energy performance of your dwelling. The performance ratings after improvements listed below are cumulative; that is, they assume the improvements have been installed in the order that they appear in the table. To receive advice on what measures you can take to reduce your energy bills, visit www.simpleenergyadvice.org.uk or call freephone 0800 444202. Before installing measures, you should make sure you have secured the appropriate permissions, where necessary. Such permissions might include permission from your landlord (if you are a tenant) or approval under Building Regulations for certain types of work.

Recommended measures	Indicative cost	Typical savings per year	Rating after improvement
Flat roof or sloping ceiling insulation	£350 - £1,500	£ 87	
Cavity wall insulation	£500 - £1,500	£ 190	
Internal or external wall insulation	£4,000 - £14,000	£ 37	
Floor insulation (suspended floor)	£800 - £1,200	£ 38	
Floor insulation (solid floor)	£4,000 - £9,000	£ 29	
Low energy lighting for all fixed outlets	£45	£ 47	
Solar water heating	£4,000 - £6,000	£ 43	
Solar photovoltaic panels, 2.5 kWp	£5,000 - £8,000	£ 290	

Energy Efficiency Rating



For more extensive 'whole-house' retrofits:

- Improvement options evaluation
- Fabric options assessment
- Decarbonisation plan

	Internal wall insulation (wood fibre 80mm)	Floor insulation (40mm PUR)	Roof insulation (275mm mineral wool for 30-40 m² roof area)	Repair existing timber, single glazed sash windows	New timber double glazed sash windows	High performance, airtight, triple glazed sash windows
Capital Cost per flat	£3,500 - £5,000 (£36/m²)	£3,100 - £5,400 (£73/m²)	£320 - £350	£900 - £1,300 (£175/m²)	£4,000 - £1,800 (£400/m²)	£6,100 - £11,000 (£935/m²)
Cost per tonne of CO ₂ saved	£4000/tonne	£14,000/tonne	£250/tonne	£14,000/tonne	£2,000/tonne	£1,000/tonne
Energy bills savings	£800	£	£	£	£	£
Comfort improvements						
Practicality & disruption						

Do I need to get a Retrofit Expert involved?

- Are you putting more than one insulation element together?
- Are you making your home more airtight?
- Is your home pre-1919, solid walled, in a conservation area or listed?

Then yes, you may need a retrofit expert:



Getting quotes

- Produce a specification
- Speak to several contractors in person
- Get them to come and look at your home
- Ask questions, or ask your designer help interview contractors
- Don't just go for the cheapest.
- Do you need a conservation builder?

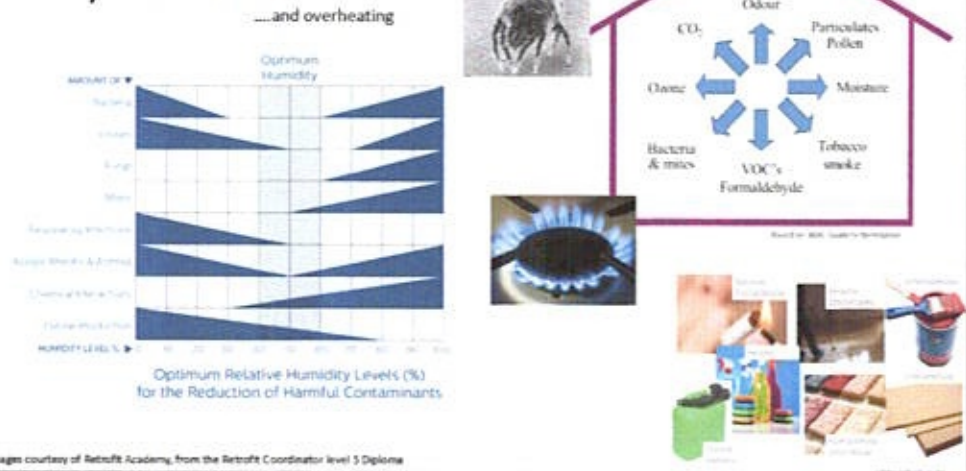


The ingredients of a successful retrofit

ventilation
ventilation
ventilation

Build tight, ventilate right

Why ventilate?



Unintended consequences

A bad retrofit can be worse than doing nothing



Images courtesy of Retrofit Academy, from the Retrofit Coordinator level 5 Diploma

Other opportunities in retrofit





GRANTS FOR LOWER INCOME HOUSEHOLDS

Susan Needham

Act on Energy, Salford Priors

ECO 4 - from April 2023

Complete upgrade package



- Owners or tenants
- Either receiving a listed benefit, or 'vulnerable'
- **Possibly** gross income below £31,000
- EPC rating very poor (E, F or G on energy performance certificate)
- Funds are limited - register **now** with your energy supplier, and with Act On Energy

ECO+

Can be for a single upgrade measure



- Council tax band A to D - income does not matter
- EPC rating D or below
- ££ contribution may be required
- Register now with Act on Energy and your energy supplier

Other sources of funds??



- Government "Sustainable Warmth" - currently expended
- Stratford District "Energy Support Fund" - for those in severe financial stress



HARBURY ENERGY INITIATIVE

Smart meters, consumption meters,
draught proofing, radiator foil,
heating controls

Ted Dowdeswell, Alan Guy, David Bristow

Smart Meter

For gas as
well as
electricity



Door closer

Instead of chastising the
children ...

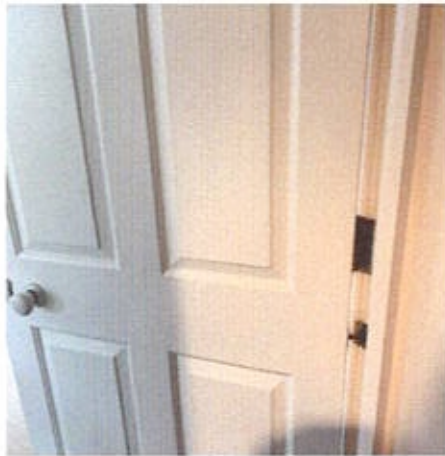


Draught proofing brush £10



Door Closer

Can you spot it?



Consumption meter

Showing cost of 2p for kettle boiling water for two cups of coffee



HEATING CONTROLS



- Fixed timer or programmer
- Room thermostat - fixed, portable and/or programmable
- Thermostatic radiator valves - manual or smart
- Systems controlled by apps - Tado, Google Nest, Hive etc

Programmable thermostat

Honeywell - other makes are available!



Smart thermostat controlled by app

Hive
(Other makes are available!)



Standard TRV

Thermostatic radiator valve



Smartphone app (Tado - others are available)

Works with wi-fi
connected TRVs and wall
thermostats

(and underfloor heating)

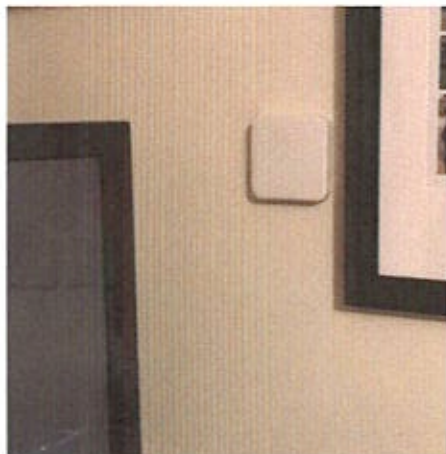


Wi-fi radiator valve

Doesn't anyone take labels
off?



Wi-fi room thermostat



Wi-fi room thermostat

Touch control



Solar PV diverter

Diverts excess solar PV
generation to immersion
heater

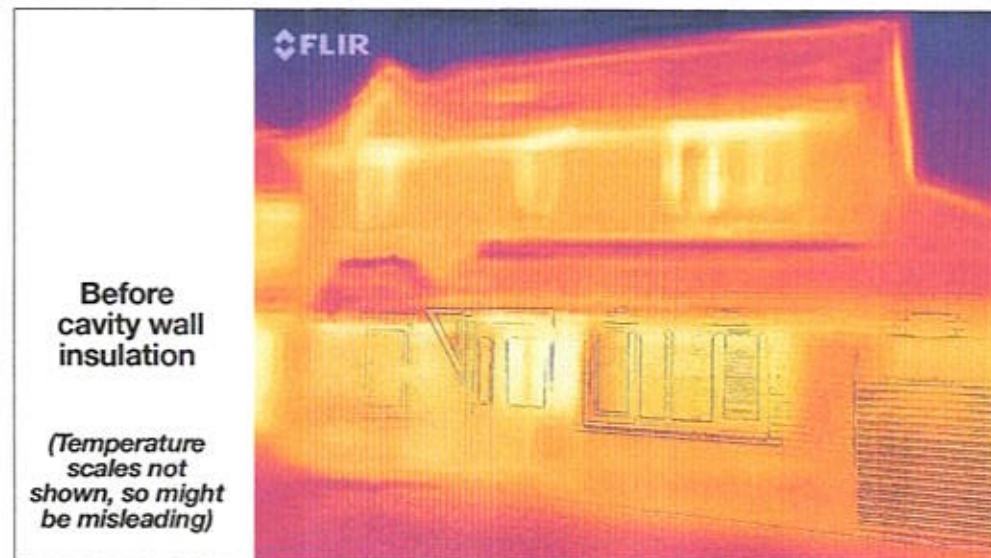
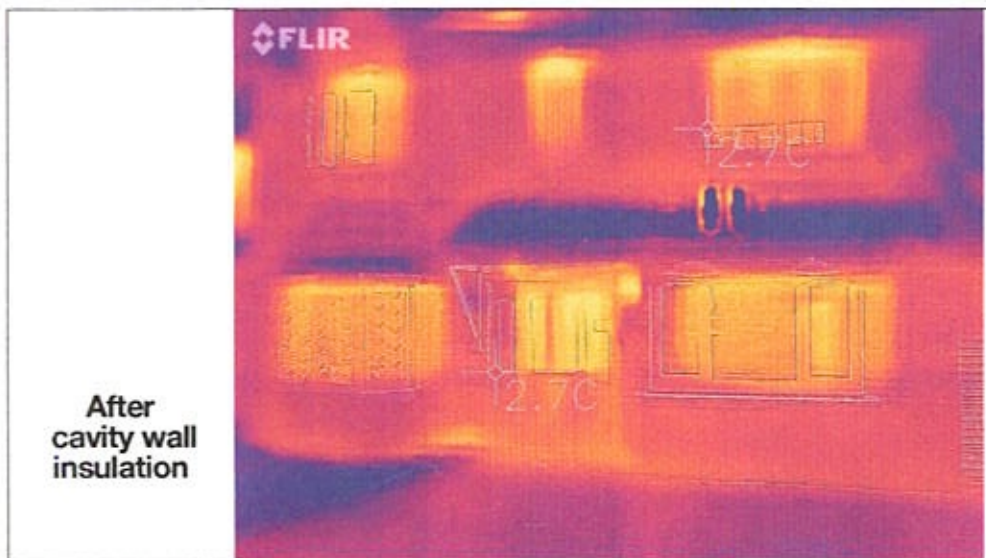
£500 or so if fitted with solar
PV system



INFRARED CAMERA

Mark Thompson

Boddington



HARBURY PARISH COUNCIL

HEI

INSULATION

Joe Quinney from HEI standing in for Anthony Jordan

A&M Energy Solutions Ltd, Leicester

The Energy Saving Industry

Cutting energy costs.
Lowering your carbon foot print.
Positive impact to EPC on the property.
Reduce noise from outside.
Prevents moisture condensation.

Up to 25% heat loss through the roof

Up to 25% heat loss through uninsulated walls

Insulation Measures

Loft Insulation (Cold Roof)
Room in Roof (Warm Roof)
Wall Insulation (EWI/IWI/CWI)
Underfloor Insulation

Loft Insulation(Cold Roof)

- Loft insulation - the easiest way to save energy.
- Insulation is laid in-between and across joists.



Room in Roof(Warm Roof) Insulation

- To insulate the living space within the room in roof
- Using a PIR/PUR or Rafter Roll Insulation



Costs for 3 bed semi

Loft insulation (cold roof) £504 to £700
(Could save £330 to £590 per year)

Room in roof (warm roof) £900 to £2,500
(Could save £225 per year)

Installing Cavity wall insulation



Costs for 3 bed semi

Cavity wall £950 to £1350
External wall £10,000?
Internal wall £3,500 to £8,000
(Could save £180 to £690 per year)

Underfloor Insulation

Suspended Floors

Timberframe Roll Insulation inserted between flooring joist.



Costs for 3 bed semi

Insulation between floor joists
Cost would be at least £1200
.....how much more depends on issues
(Could save £110 per year)



INTERNAL WALL INSULATION

Essentially a job for a plasterer

For a small bedroom with one external wall, one socket and one radiator - perhaps around £750

Ask at the HEI stand



GLAZING

Mike Bevan



How old are your house windows?



- Double glazing only compulsory after 2002
- How wide is the gap between the panes?
- Spacer bars made of steel or aluminium?
- Space filled with air?
- Two layers of ordinary glass?

Current double glazing



- UPVC joints fusion welded for greater strength and less air leakage
- 20 mm gap between panes
- Thermobar warm edge spacer bar
- Gap filled with Argon gas
- Low emissivity glass
- Could also choose solar control glass, low iron glass or laminated glass

Window Energy Rating

- Scale from A++ to E
- Building regulations require minimum of B



This energy index takes into account:

- Thermal transmittance (U-value)
- Solar gain (G-value)
- Air leakage (L-factor)



So is it worth replacing your windows?

- Not generally cost effective to upgrade double glazing for energy efficiency only
- Consider secondary glazing - single or double
- Secondary glazing works in conservation areas and generally in listed buildings





How much could it cost?



- Double glazing - 1.2m x 1.2m A rated - £526
- Triple glazing - 1.2m x 1.2m A+ rated - £662
- Secondary glazing - it depends on the type you choose



SOLAR PV, BATTERY STORAGE, SOLAR HOT WATER, EV CHARGING

Ben Robinson & Avnash Jhita

Nexus Building Solutions, Warwick

Harbury Community Renewables Event

11th March 2023



nexus
THE PROPERTY TECHNICIANS





Financial

- Cost of electricity (self consumption)
- Smart Export Guarantee (SEG): 3p to 15p per kWh
- ECO4 funding (means tested <£31k per household)
- Finance/loans available
- Tariffs and time of use charging

Technical

- G98 or G99 DNO requirement
- Permitted Development
- Microgeneration Certification Scheme (MCS)
- 25 year warranty on products
- 10 year Quality Mark workmanship warranty

SolarEdge Inverters



SolarEdge Battery Storage



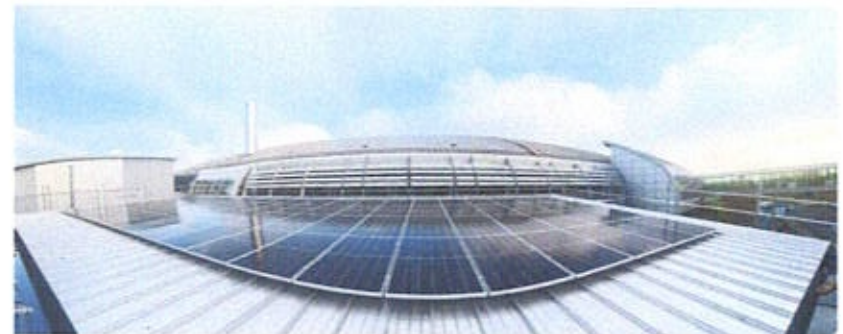
Tesla Powerwall 2



Zappi EV Charger



Immersion Heater Controllers



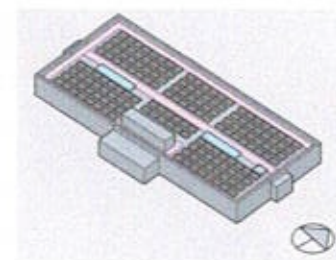


Energise Leamington CBS
MYTON 6TH FORM - 103.96 kWp System
Myton Road 174, Warwick, CV34 6PS

SYSTEM OVERVIEW 128 PV Modules 1 Inverter 11.8 MWh

SIMULATION RESULTS

Installed PV Power	Max Achievable PV Power	Annual Energy Production	CO2 Reduction (tonnes)	Equivalent Fuel (tonnes)
91.32 kWp	66.92 kWp	81,609 kWh	18.11 t	8.32
Max Achievable PV Power	Max Annual Energy Production	Max Annual PV Production	Performance Ratio	Performance Ratio
77.62 kWp	120 t	66.92 kWp	29%	543 kWh/kWp



Annual energy generation estimate: 81,609 kWh @ 40p/kWh = £32,643
 Panels: 228 x 450 Watt
 Inverter: SolarEdge 56.5 kW Synergy Master DC switch DC SPD
 Mounting system: Flat Roof system using Schletter ballasted flat roof system



Ben Robinson
ben@exeoenergy.co.uk
07394 560352



Avnash Jhita
avnash@nexusbs.co.uk
07989 999993



HEATING CONTROLS

GROUND-SOURCE HEAT PUMPS

Andrew Cottrill

ABC Plumbing and Heating, Harbury

Smart and wifi controls

New or retrofit

- Typical cost £100 to £400
- Very easy to fit - very little disruption





Honeywell Home

Solar water heating

- Cost from £2,500
- 2 to 5 days installation
- Needs roof access, and low to medium impact indoors

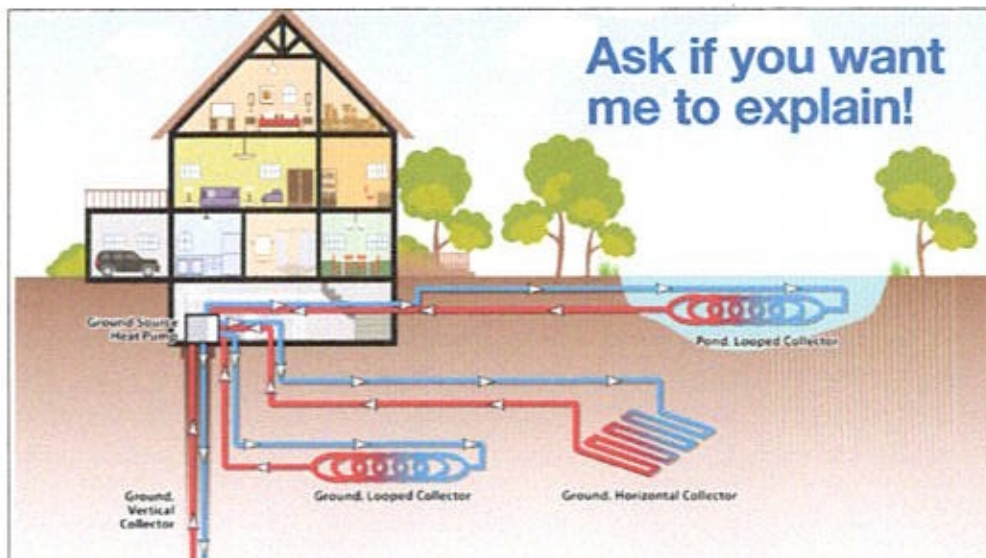


Renewable energy - Solar Water Heating

Ground source heat pumps

- They are low carbon, so they are the future
- Need a highly insulated house
- Ideal with underfloor heating
- Retrofit would involve at least doubling the sizes of all radiators, so best suited to new build or serious property renovation
- Cost from £12,000, highly disruptive



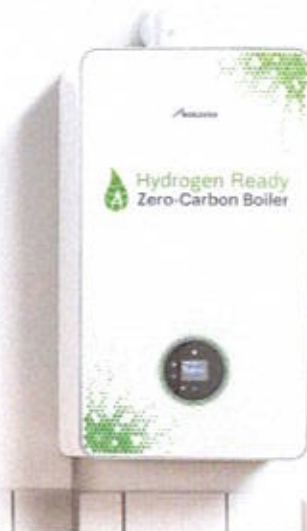


... and this!



Hydrogen may be the future for gas boilers

- But there won't even be 20% hydrogen until at least 2028
- 100% hydrogen won't arrive until at least the mid 2040s
- And is likely to be more expensive than electricity



If you have to fit a new gas boiler ...

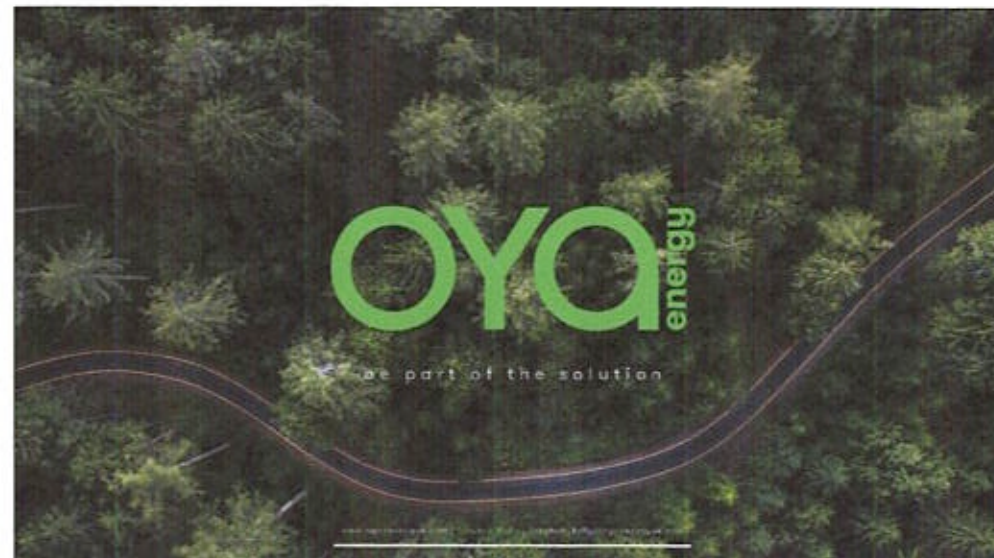
- Choose a highly efficient, condensing boiler
- Make sure it is hydrogen blend ready (most are)
- Cost from £1,600
- Normally 1 to 3 days install time
- Low impact on household



HYBRID SYSTEMS WITH AIR-SOURCE HEAT PUMPS

Dr Stephen Kelly

Oya Energy UK, Southam



OYA'S MISSION

The UK housing stock emits over 65 million tonnes of carbon each year, and we have a solution to reduce this by up to 75% in one simple step.

HELP US TO HELP YOU ADDRESS THIS ENORMOUS ISSUE.

FINANCE

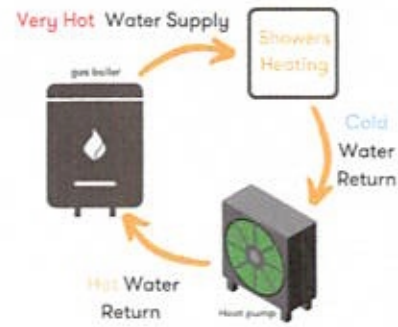
We have partnered with a finance house that will provide flexible options to individual homeowners that will help people decarbonise now, but pay later with 0% interest!



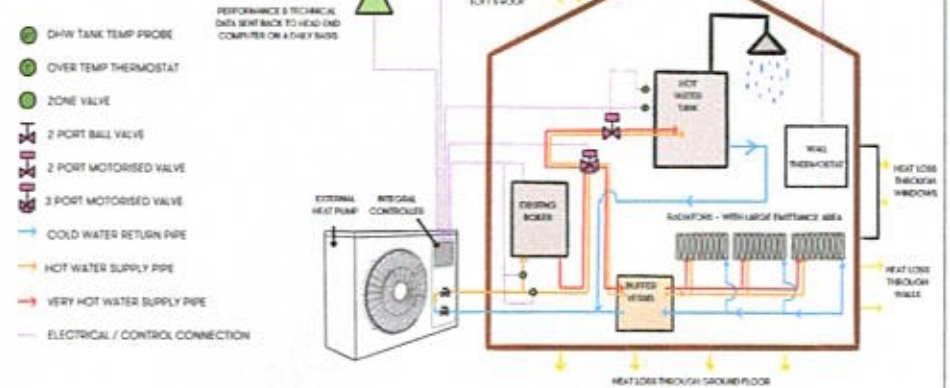
BEFORE OYA



AFTER OYA



OYA SCHEMATIC



GET IN CONTACT



14 Maricott Court, Holywell Business Park,
Northfield Road, Southam, CV470FT

info@oyaenergyuk.com

Stephen_kelly@oyaenergyuk.com

01926675395

www.oyaenergyuk.com



CONCLUSIONS



- We can't continue fly tipping CO2 - we must stop using fossil fuels
- Renewable electricity
- Draught proofing - with ventilation
- Insulation is essential
- Have a retrofit plan



PLEASE NOTE



- No liability accepted for advice
- HEI is not recommending contractors
- However, recommended by individual villagers
- Take more than one quote
- Check professional association membership (eg MCS, FENSA, IAA, Trustmark)



AWKWARD QUESTIONS

Paul Quinney

Director & Project Manager, Allen Construction Consultancy
HEI stand

