Grove Cottage - *pioneering in the absence of evidence based national policy*

Speaker: *Andy Simmonds: Simmonds.Mills Architects*

AECB
the sustainable building association

2010 Annual Conference

Celebrating 21 years of the AECB

Something Old, Something New

1-2 October 2010 • WISE Building, CAT

Organised by:

AECB
the sustainable building association

In association with

Passivhaus Trust
The UK Passive House Organisation

Simmonds Mills ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB the sustainable building association

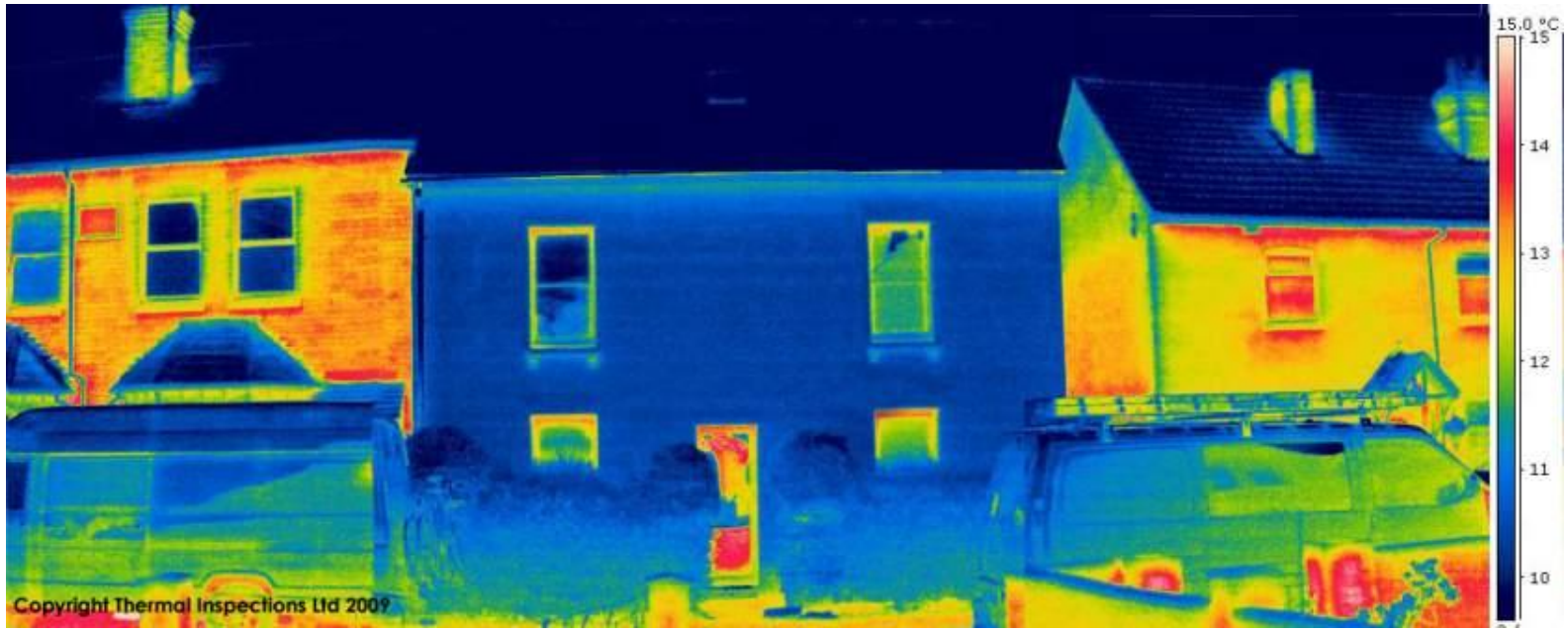
passnet

Grove Cottage

A low energy refurbishment

Speaker: Andy Simmonds: Simmonds.Mills Architects

Pioneering in the absence of an evidence based national policy



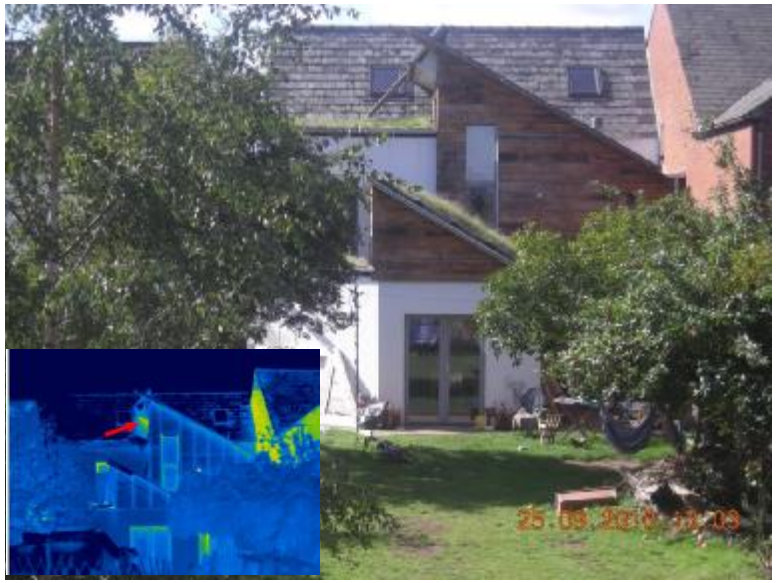
Simmonds Mills
ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

Design team

- **Architects**: Simmonds.Mills
- **Energy and services advice:** David Olivier (Energy Advisory Associates) and Alan Clarke
- **Structural engineer:** Bob Johnson
- **Builder:** Mike Neate (ECO-DC)
- **Guidance:** AECB CarbonLite, Passivhaus Institut
- **Commercial support:** Permarock Ltd, Knauf Insulation, Vencil Resil, Second Nature, Internorm Windows UK, Green Building Store, East Midlands Insulation, City Roofs, Keim Paints, Cemex Concrete Products
- **Mortgage:** Ecology Building Society – discounted C-Change mortage

Simmonds Mills
ARCHITECTS
www.simmondsmills.com

ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION



LESS IS MORE
developing an affordable policy after oil

- an AECB discussion paper in development

"This report sets out a view of the UK's energy future which differs from the orthodoxy by analysing engineering and scientific reality and making proposals based upon what has empirically worked in other countries.

Unless all aspects of energy efficiency are strongly emphasised, and given a central role in UK policy, we feel that the UK economy will face great problems in the future.

We think that it is better to be realistic now about the difficulties of securing sufficient renewable energy supplies, post-fossil fuel, than to continue with policies which could well be less than successful. "

Simmonds Mills
ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

Financial and energy austerity

More NegaWatts - less MegaWatts

"....comparative costs remain poorly-understood and the message escapes the attention of many policy-makers, financiers, bankers, brokers and investors. To these parties, "green energy" tends to mean renewable energy supply."

In the energy transition, the most sensible way to go is to is for the most cost effective measures to be adopted first (£/ tonne CO2 saved).

• the cost of demand reduction measures appear close to the cost of the fossil fuel supply system we are aiming to move away from*
•Measures associated with increasing energy supplies from existing or new technologies appear invariably more expensive.

Simmonds Mills ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB the sustainable building association

passnet

What might the local results of a 'Less is More' policy look like?

Detailed national / regional **heat plans**, mapping low carbon heat supply to villages, towns and cities, will help **define levels of energy efficiency measures** appropriate to **different areas** streets or villages.

Solar Collectors, Denmark and Sweden

Large solar collector fields produce heat at one-fifth the cost of heat from collectors on house roofs.

18,000 m^2 collectors help to heat the small town of Marstal (pop. 3,000), *top.*

10,000 m^2 collectors were added to the district heating system of Kungalv, 20 km N of Gothenburg in 2001, *below.*

Courtesy: Leon Miller and Kungalv Energi AB.

Simmonds Mills ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB the sustainable building association

passnet

However – in the *absence* of an evidence based national energy policy and ignoring the incentives provided by the Lower Carbon Buildings Programme and other government initiatives – we aimed at an 80% reduction in CO_2 emissions whilst extending the house from 90 to 136 m^2.

We used the Passivhaus demand reduction approach - Why?

Because we believed that this would result in a building that would perform in the real world as forecast 'on paper'.

Close the design-reality gap!

MEASURED
Space heating: 32 (cf 40)
Primary energy: 92 (cf 120)
CO_2 (kg/m2):18 (cf 22)

East Cambusmoon Farm - New House, http://tinyurl.com/2bdbxt3

Simmonds Mills ARCHITECTS ECOLOGICAL DESIGN

AECB the sustainable building association

passnet

Strategic design approach and targets

- Energy and CO_2

We have designed the extended and refurbished house to reduce its total CO_2 emissions by c. 80-85% compared to the typical measured performance of a similar house of the same size.

Last year measured: 125 (design 92)

Step	Standard	Useful space heating energy kWh/m^2.yr	Primary energy consumption [1] kWh/m^2.yr	CO2 Kg/m^2.yr	Reduction in CO_2 compared to average stock
One	Silver	≤40	≤120	≤22	70%
Two	Passivhaus Passivhaus in a UK context	≤15 ≤15	≤120 ≤78	No explicit limit ≤15	85%
Three	Gold	≤15	≤58	≤4	95%

Last year measured: 26.6 (design 18-22)

1. Table applies CLP standards to domestic sector - based on a typical 80m^2 semi-detached house

Simmonds Mills ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB the sustainable building association

passnet

Description of the building in its site

Simmonds Mills
ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

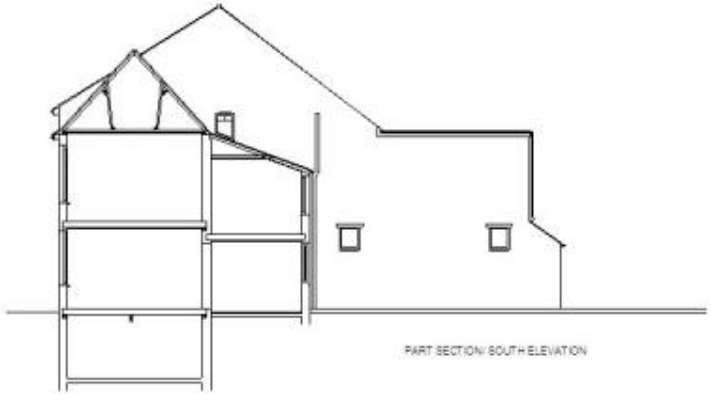
AECB
the sustainable building association

passnet

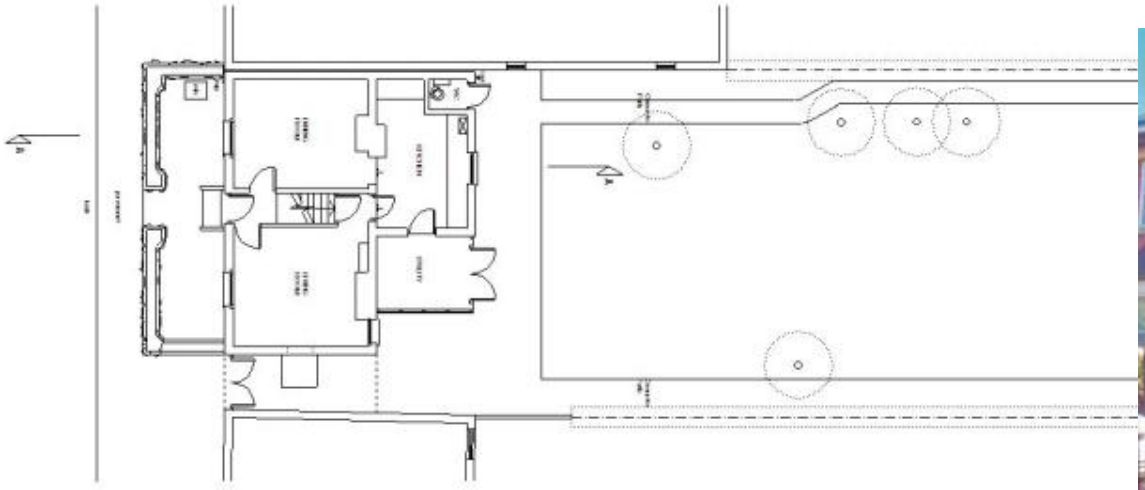
Description of the building - original house in 2007

WEST ELEVATION

EAST ELEVATION



PART SECTION/ SOUTH ELEVATION



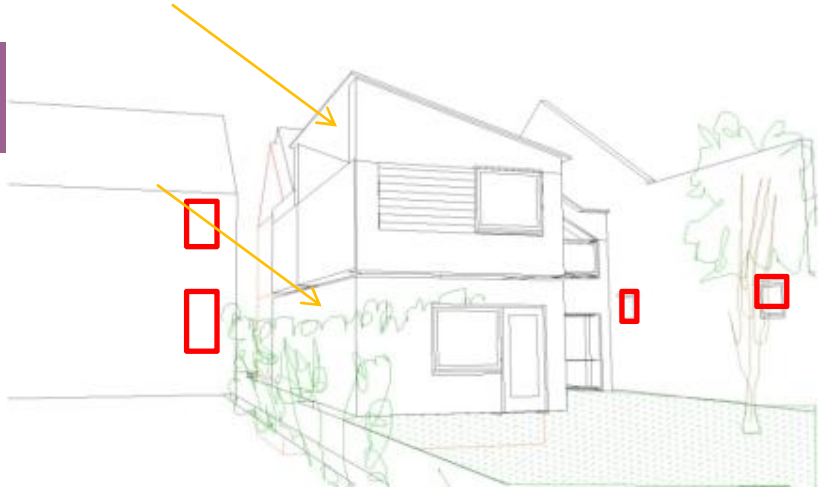
GROUND FLOOR PLAN

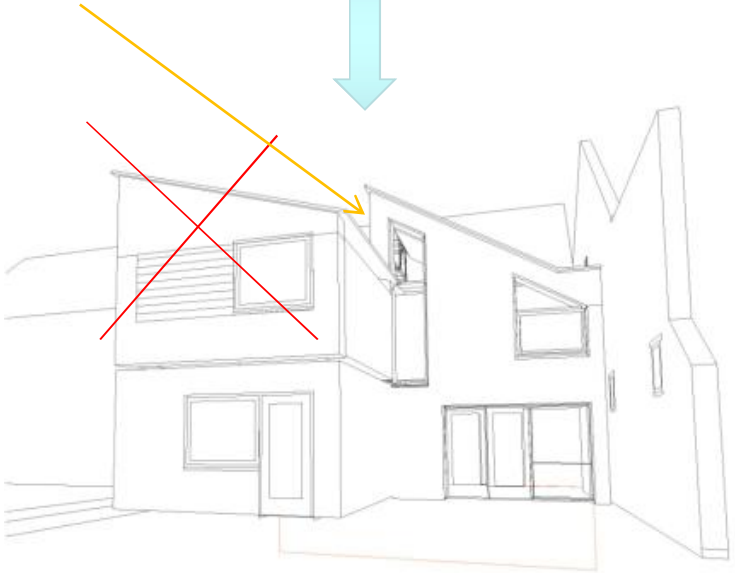
Simmonds Mills
ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB
the sustainable building association

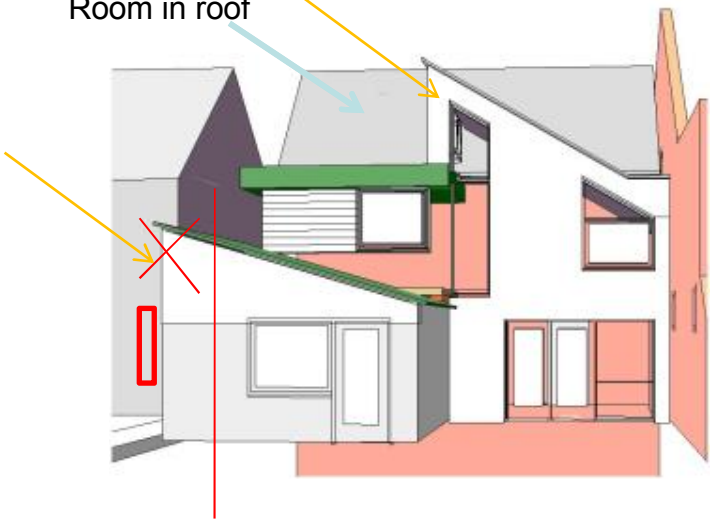
passnet

Design development (extension to East)





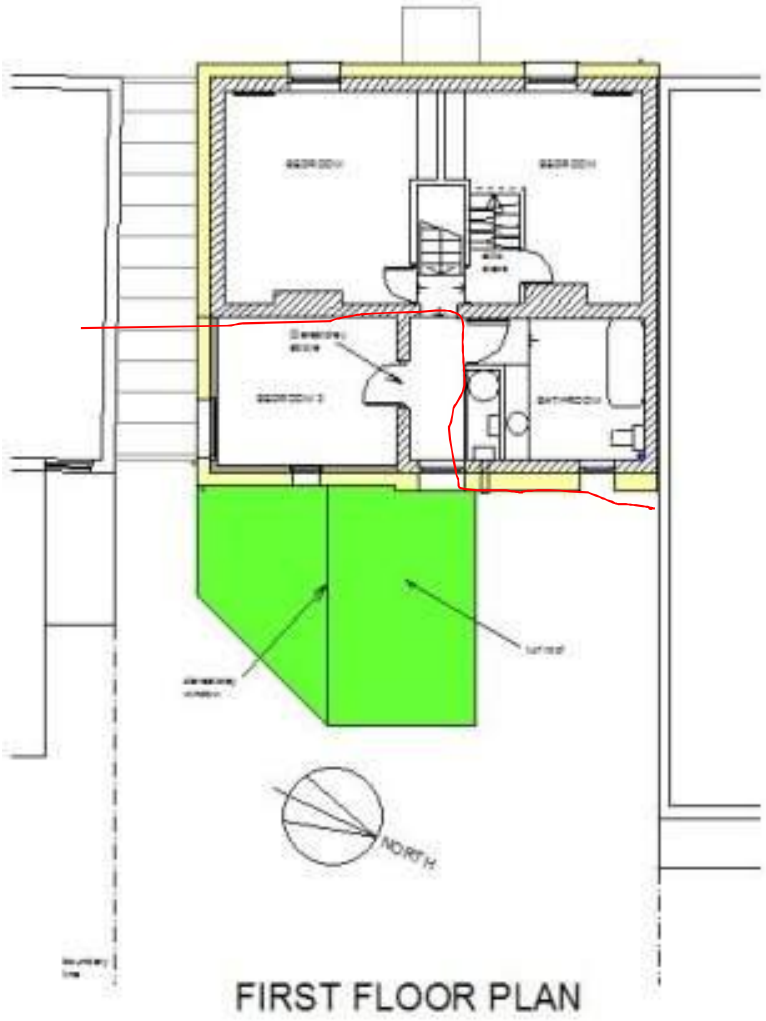
Room in roof



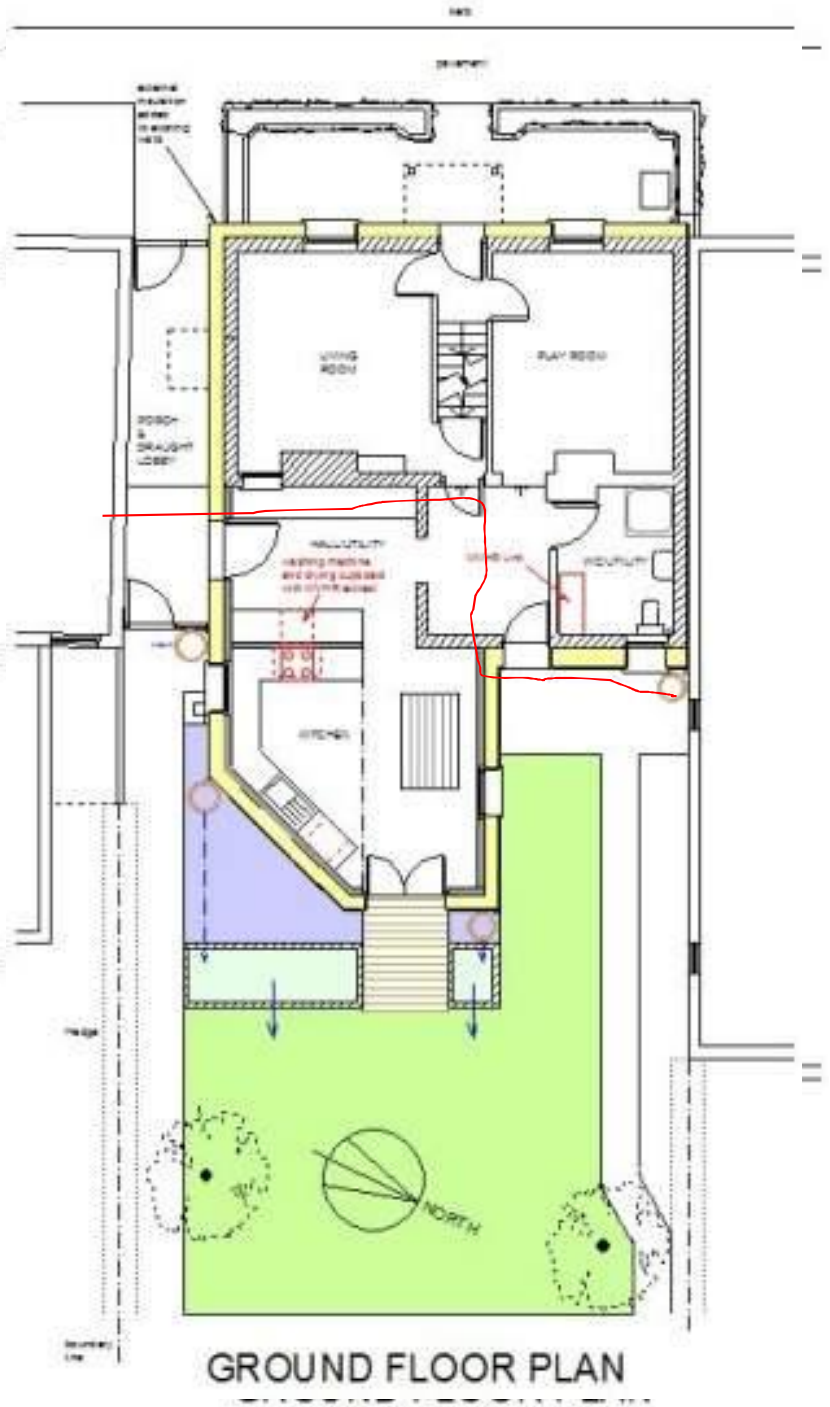
Simmonds Mills
ARCHITECTS
www.simmondsmills.com

ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

Design proposals



FIRST FLOOR PLAN



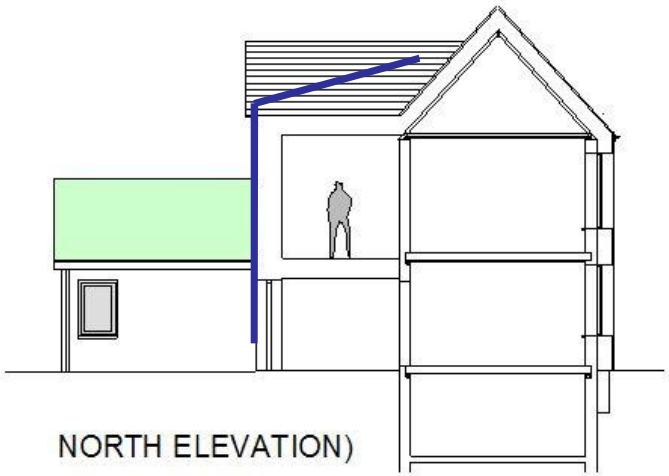
GROUND FLOOR PLAN

Simmonds Mills
ARCHITECTS
www.simmondsmills.com

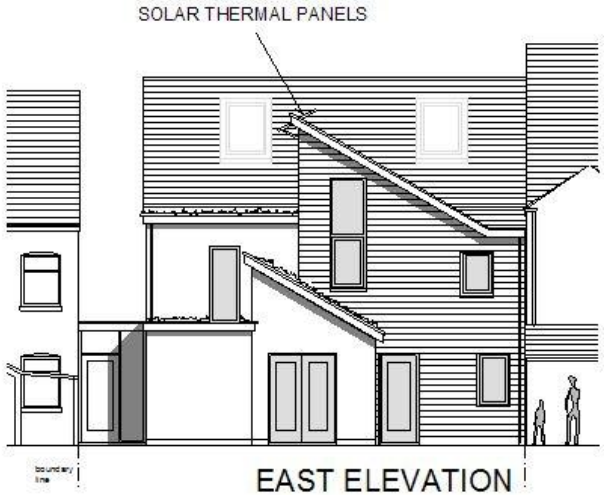
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB
the sustainable building association

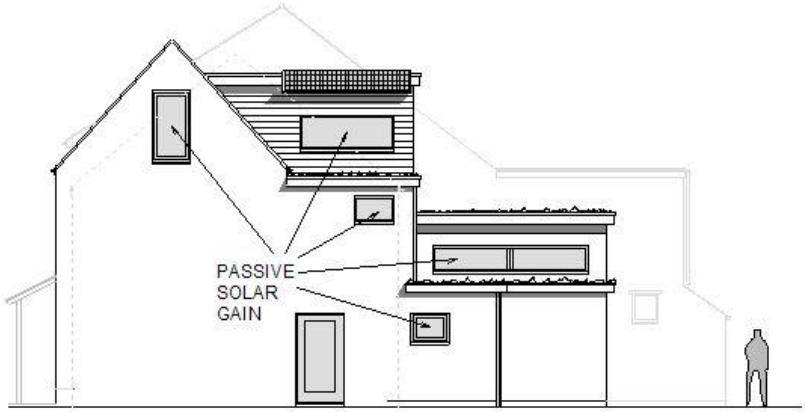
passnet



NORTH ELEVATION)



EAST ELEVATION



SOUTH ELEVATION
(section thro' passage way)

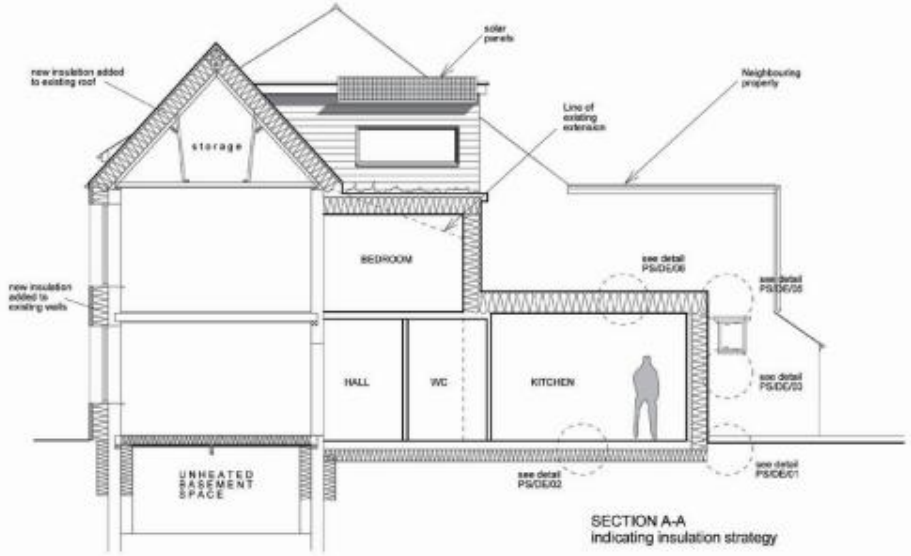
WEST ELEVATION

Simmonds Mills
ARCHITECTS
www.simmondsmills.com

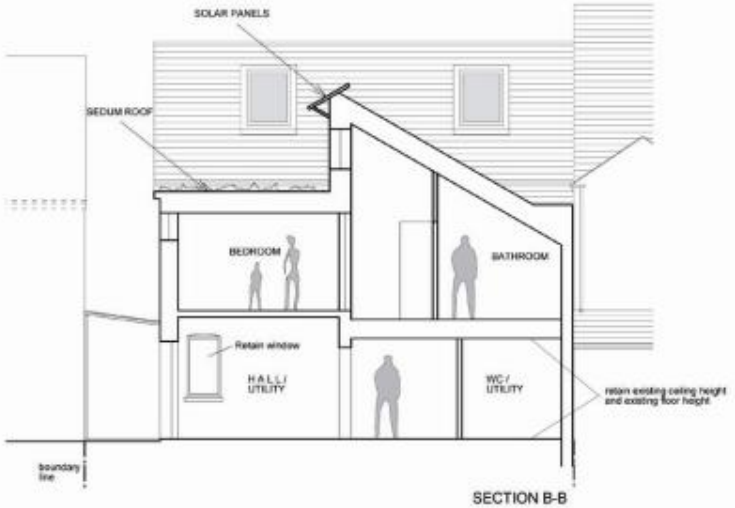
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB
the sustainable building association

passnet



SECTION A-A
indicating insulation strategy



SECTION B-B

Simmonds Mills
ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB
the sustainable building association
passnet

Before (1869 - 2008)

Work outstanding:
- house plaque
- timber porch
- Painted lintels/cills

After its 100 year service (2008-2009)

Simmonds Mills ARCHITECTS ECOLOGICAL DESIGN

AECB the sustainable building association

passnet

Section 2 - Design Stage Data

Planned Occupancy : 2 adults and 3 children.

Space Heating Strategy : HRV system + gas boiler + retention of existing radiator system

Water Heating Strategy : * gas boiler + insulated solar ready hot water cylinder with additional insulation * all hot and cold water pipes insulated * space for 4.5 m2 of solar thermal panels to feed into HWC

Fuel Strategy : * (minimised use of) natural gas: water heating remaining space heating

Renewable Energy Strategy : *Active solar planned in future years * No power generation technologies adopted.

Solar Strategy : Passive solar gain maximised - new South facing windows.

Space Cooling Strategy : New & existing thermal mass * Windows - summer shading* HRV summer/winter bypass within insulated envelope. * Natural ventilation via openable windows

Daylighting Strategy : Extensive daylighting to all rooms to displace electric lighting.

Ventilation Strategy : HRV & openable windows as required

Airtightness Strategy: * Existing house: external face of existing brick walls parged * New extension: blockwork walls plastered * use of air-vapour barriers.

Thermal bridge Strategy : Adoption of 'thermal bridge-free' construction detailing for new construction and also in refurbishment work where possible.

Predicted Annual Space Heat Demand : 18 kWh/m² and yr

Heating Load : 12 W/m² (demand)

Predicted Primary Energy Requirements : 78 kWh/m² and yr

Simmonds Mills
ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

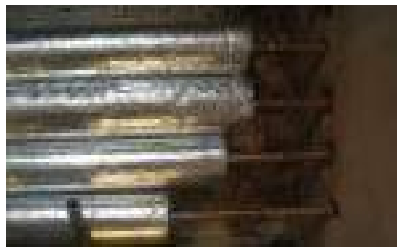
Solar strategy

House emissions *without* and *with* solar thermal = 22 and 15kg/(m^2.a)

Solar gain offsets 70% heat loss through doors and windows


solar gain/daylight

- **Passive solar** design – creation of new openings
- **Daylight** to displace substantial amounts of electric light
- **Future proofed roof** design for future fit of **solar thermal** panels




As shown – extra HWC and pipe insulations not fitted

Simmonds Mills ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB the sustainable building association

passnet

Solar strategy – windows, existing house

Maximising solar gain: new window, existing house – solar gain, daylight & view

Rooflights in refurbished roof – daylight and view..

Rooflight energy penalties: frame losses and overheating risk

.....unwanted solar gain

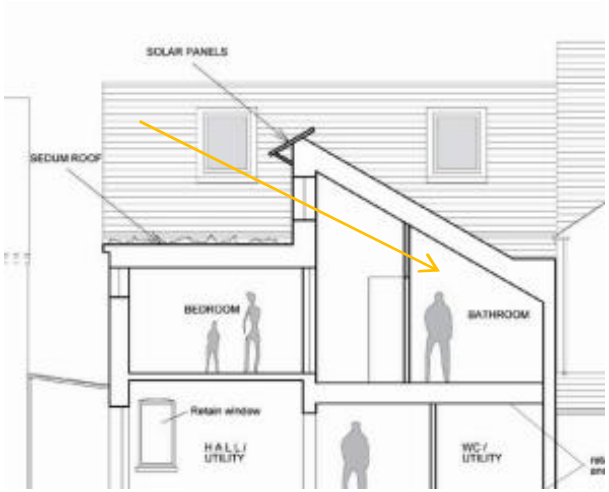
Simmonds Mills ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB the sustainable building association

passnet

Solar strategy – windows, extension

South facing vertical windows in extension and refurbished roof –

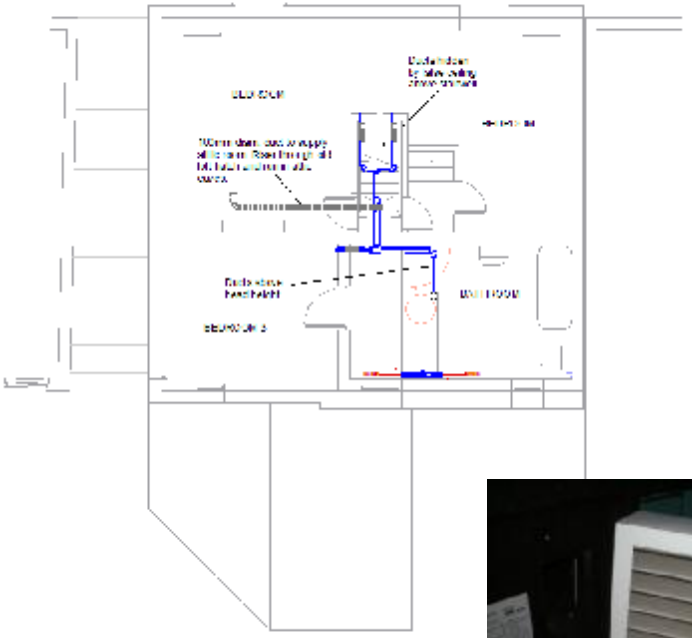


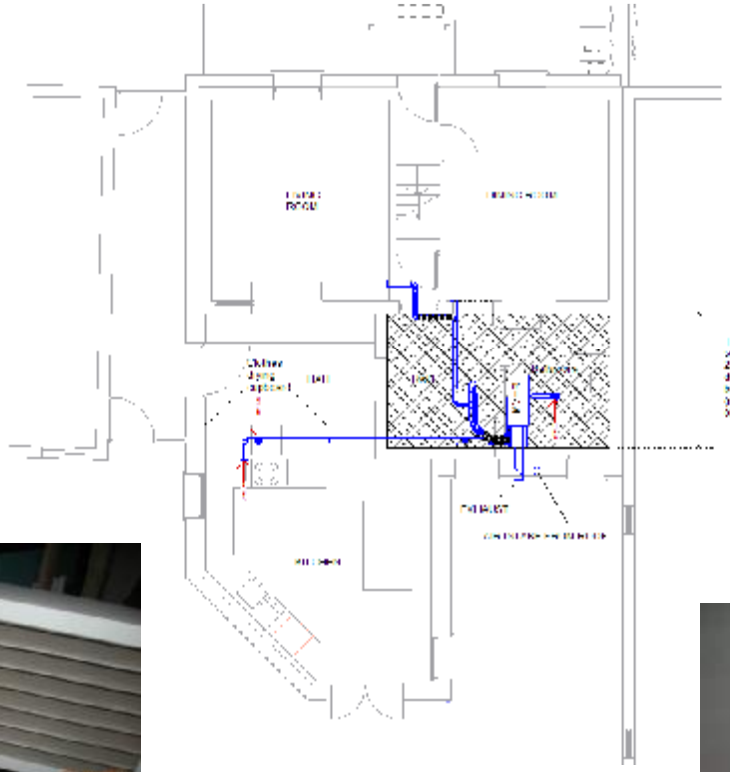
- less energy penalties via heat losses' less overheating risk

Simmonds Mills
ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

Air leakage (Final test):
0.79 ac/hr and 0.82 m3/m2hr

Heating and ventilation strategy –
Heat Recovery Ventilation + gas boiler + existing radiators





Exhaust

Cardboard and
'fleece' filters

Galv. Metal
ducts

Simmonds Mills ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB the sustainable building association

passnet

Making the most of MVHR....

...junking the tumble dryer.

Clothes drying cupboard with dedicated MVHR extract.

Clothes dry 10 – 12 hrs

Simmonds Mills
ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB
the sustainable building association

passnet

Simmonds Mills
ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB
the sustainable building association

passnet

Insulation strategy – roof

U-value:
0.09



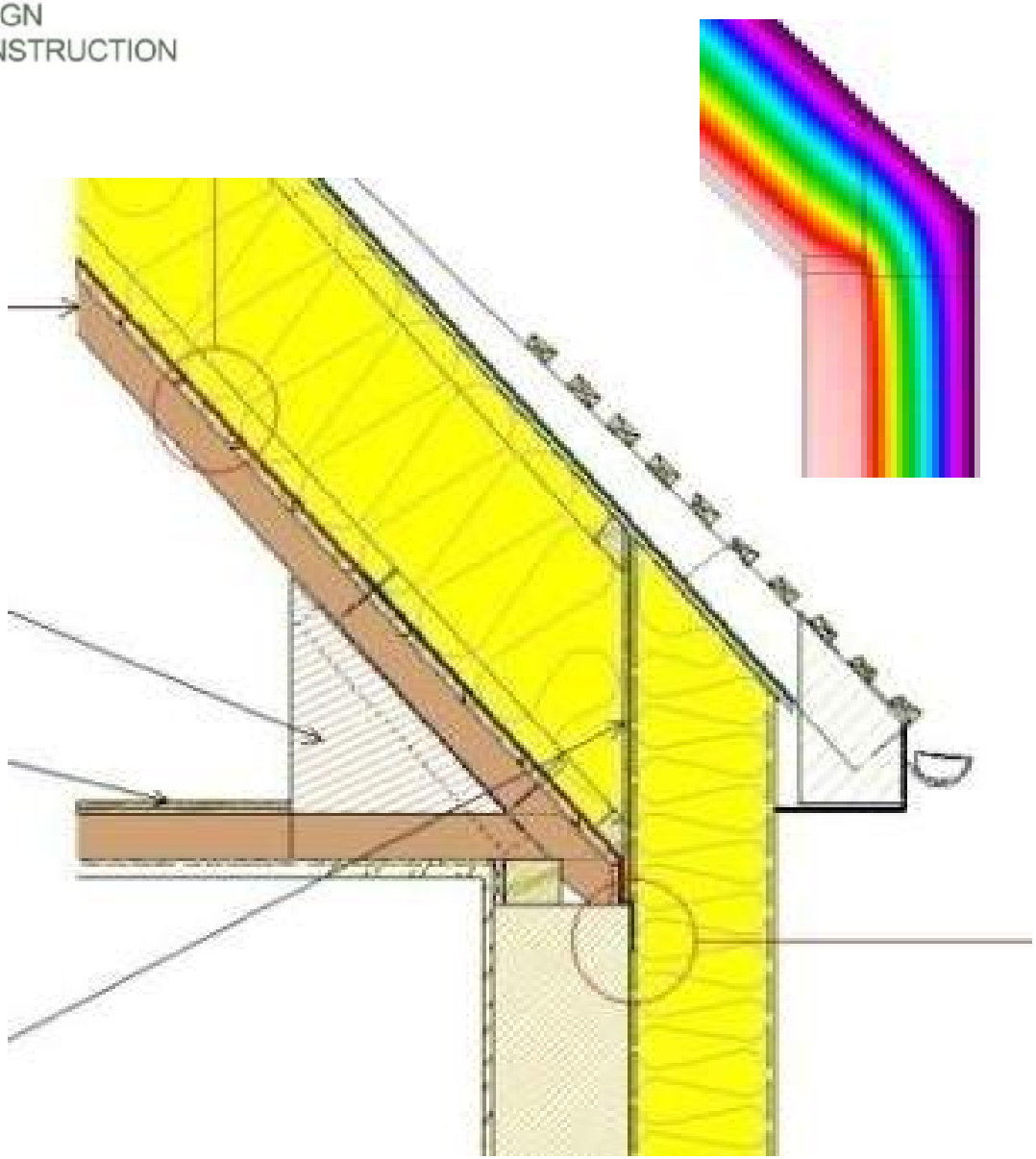



Simmonds Mills ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB the sustainable building association

passnet

Insulation strategy – roof



Simmonds Mills
ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB
the sustainable building association

passnet

Warm room!

Roof insulated – attic room habitable.

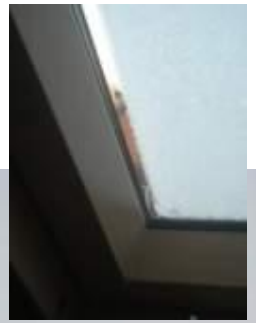
No wall insulation yet.

Simmonds Mills ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB the sustainable building association

passnet

Insulation strategy – roof



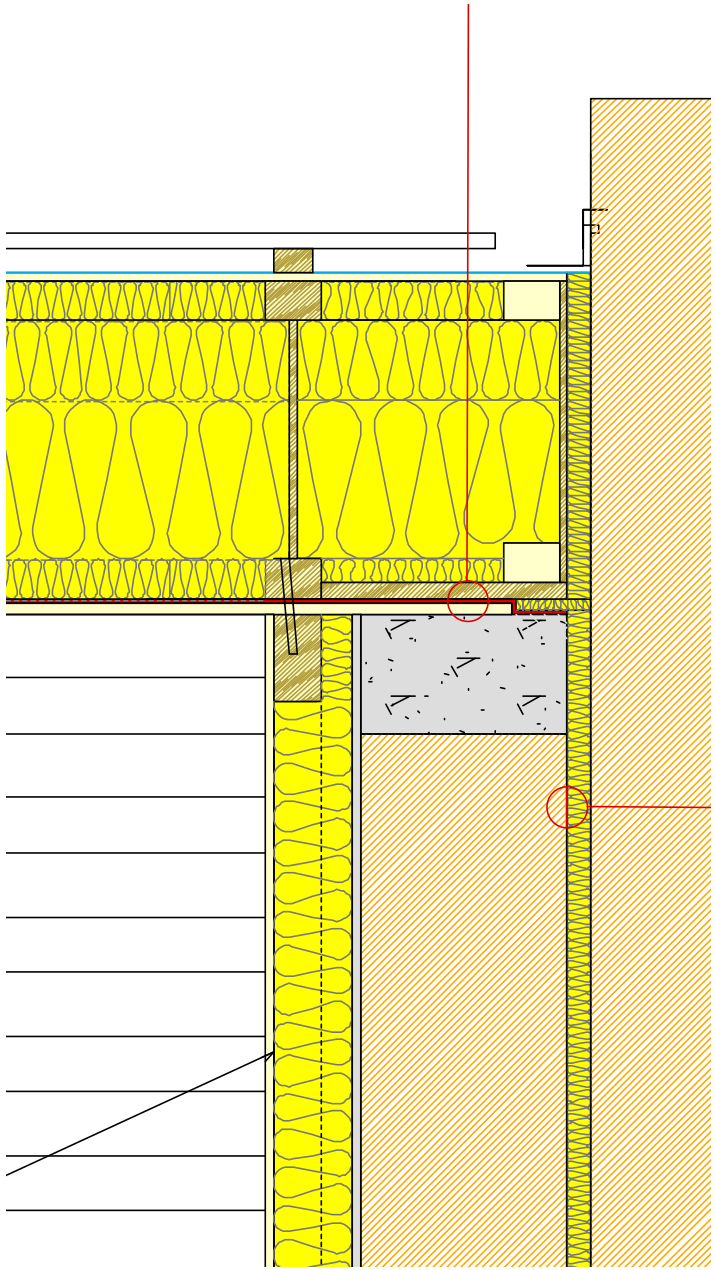
Simmonds Mills ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB the sustainable building association

passnet

Insulation strategy – roof

Airtightness strategy – 'abutting wall'



Simmonds Mills
ARCHITECTS
www.simmondsmills.com

ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB
the sustainable building association

passnet

Simmonds Mills ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB the sustainable building association

passnet

Insulation strategy – walls

U-values:
0.12

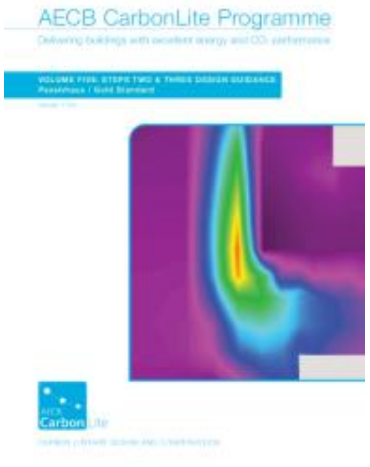
MW1 type external wall insulation

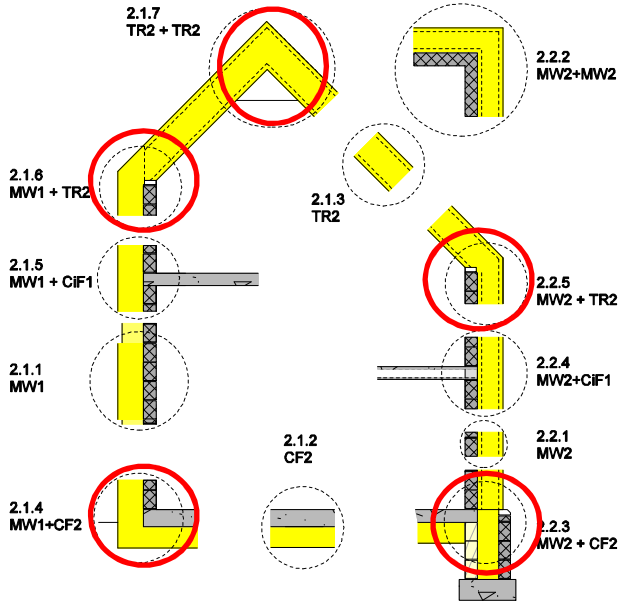
MW2 type external wall insulation

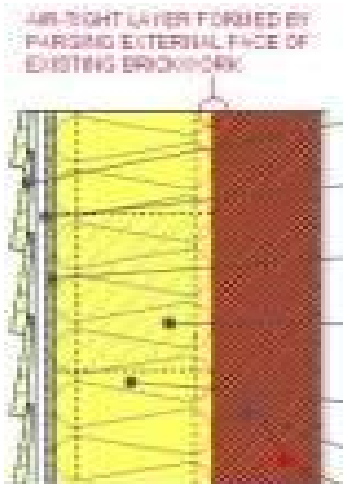
Simmonds Mills ARCHITECTS

www.simmondsmills.com

ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION







MW1 type external wall insulation

MW2 type external wall insulation

Simmonds Mills ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB the sustainable building association

passnet

Insulation strategy –walls

MW1 type external wall insulation

MW1 type external wall insulation

Simmonds Mills
ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

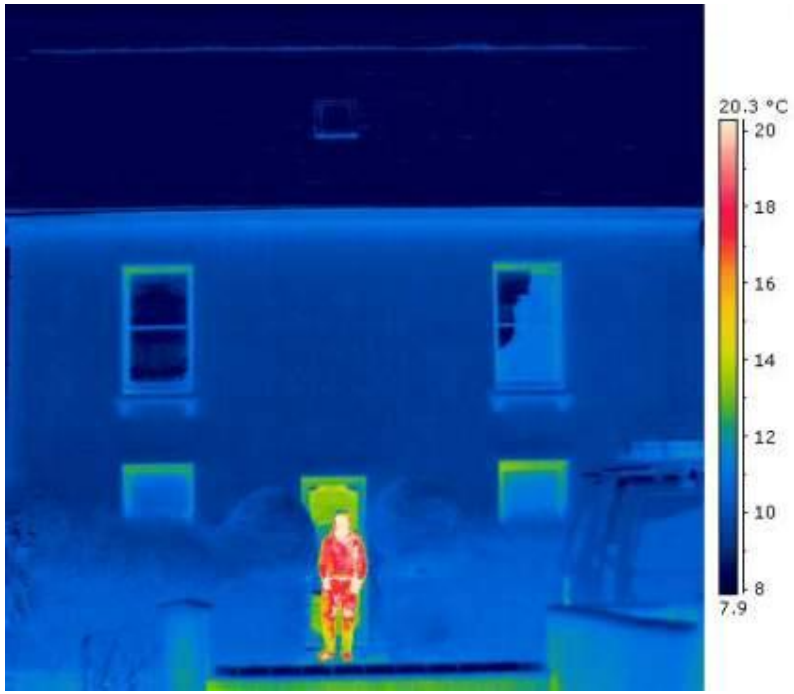
AECB
the sustainable building association

passnet

Insulation strategy –walls

MW1 type external wall insulation


Copyright Thermal Inspections Ltd 2009


20.3 °C
20
18
16
14
12
10
8
7.9


15.0 °C
15
14
13
12
11
10
Copyright Thermal Inspections Ltd 2009

Simmonds Mills ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

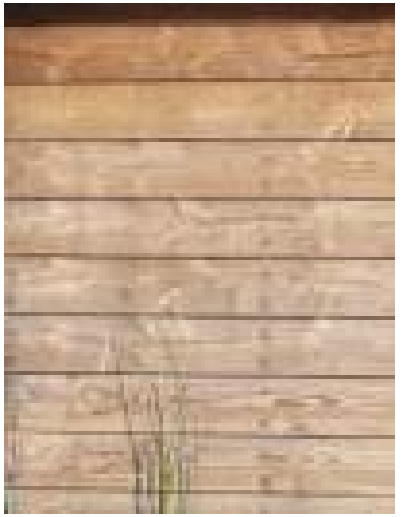
AECB the sustainable building association

passnet

Insulation strategy – walls

MW2 type external wall insulation

U = 0.12

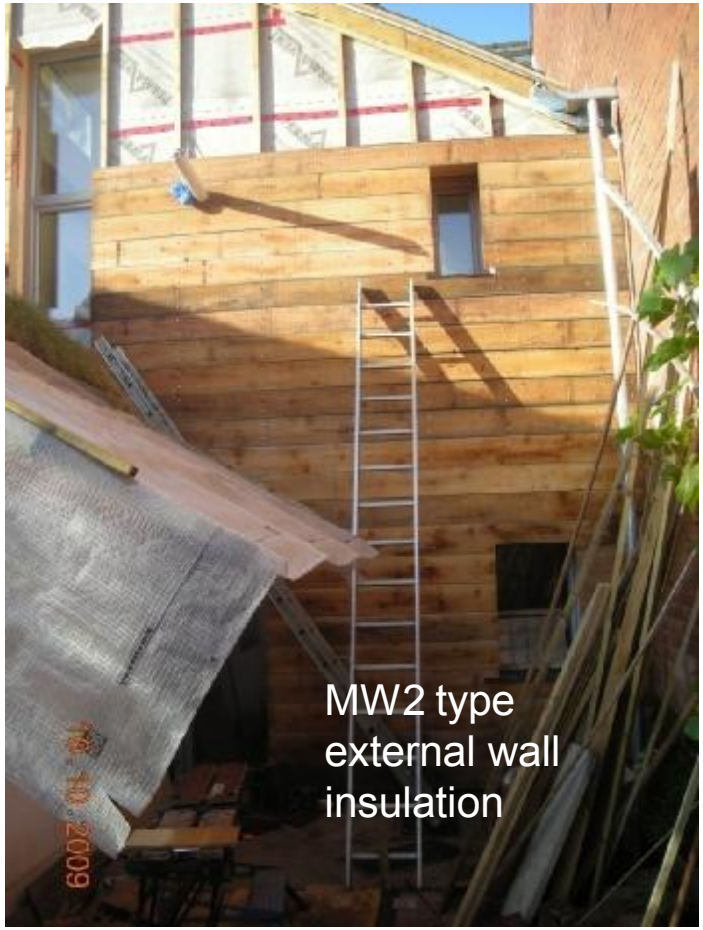


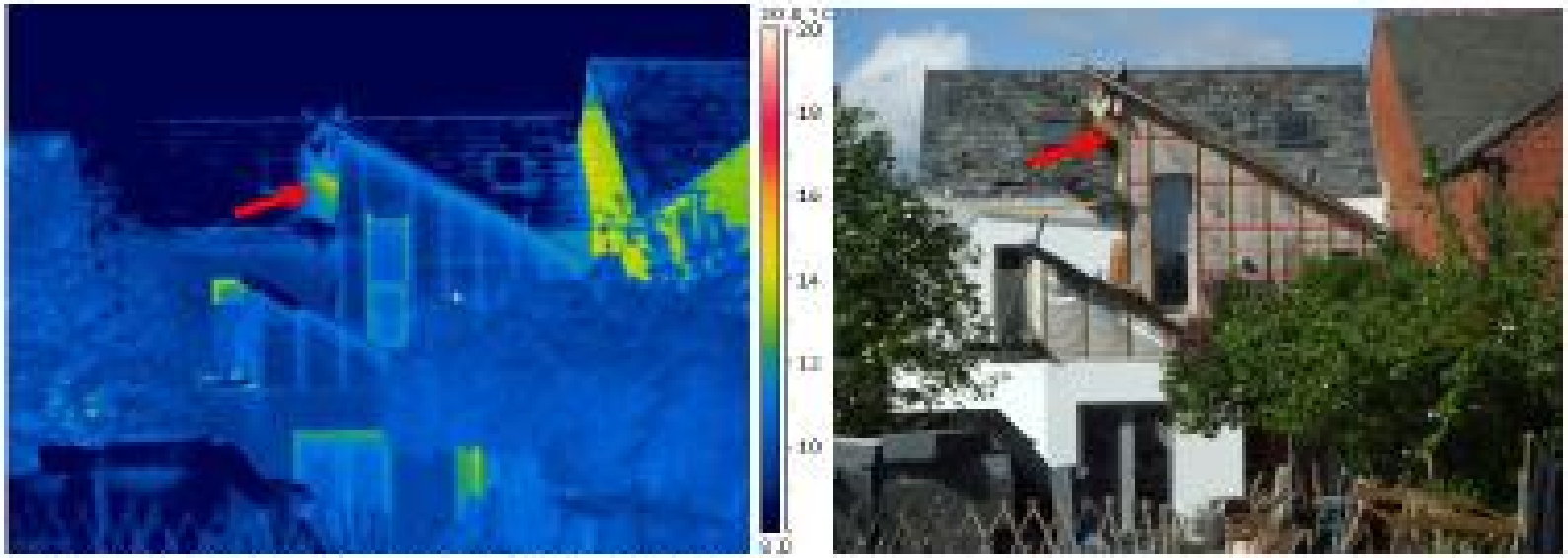
(Timber clad) ‘Larsen Truss’ walls insulated

Simmonds Mills
ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB
the sustainable building association

passnet



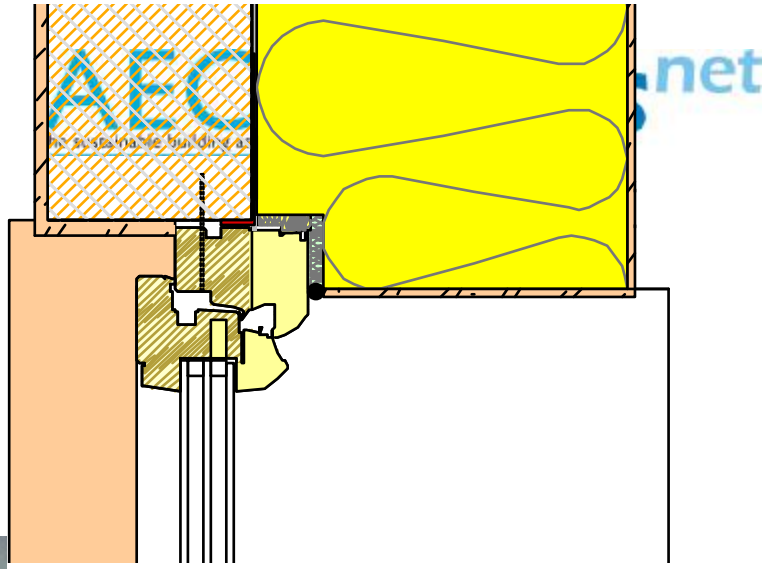


Thermogram 9 – Rear of Grove Cottage

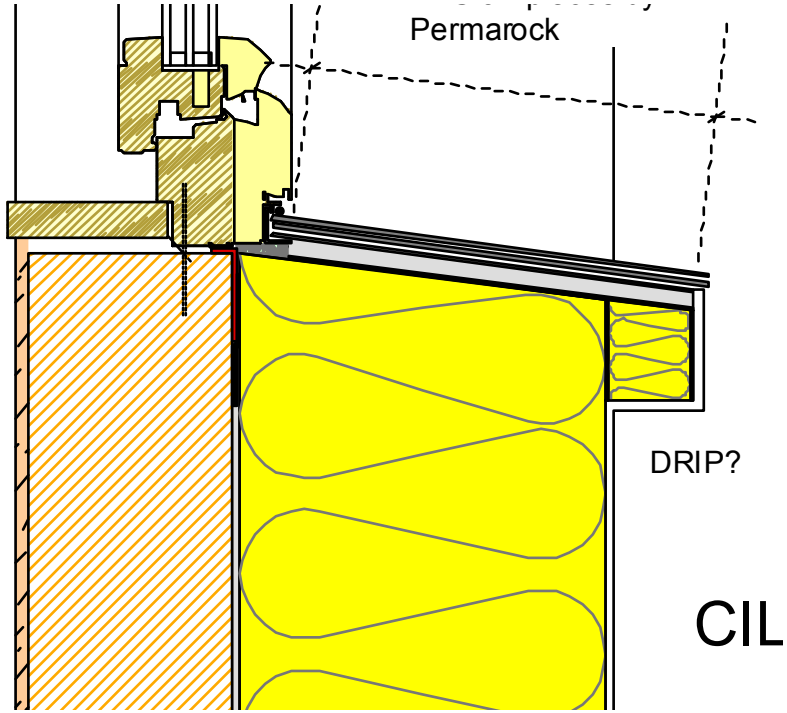
No major issues. Worth investigating the elevated temperature indicated by the arrow underneath the eve of the extension roof where it meets the house roof.

Simmonds Mills
ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

Insulation strategy – windows



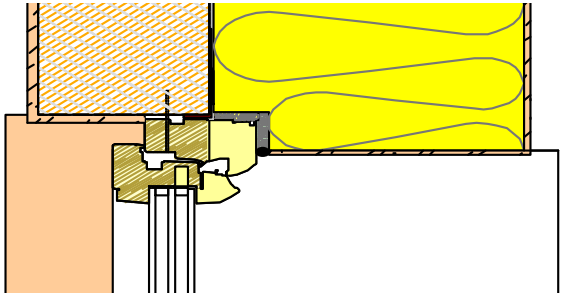
In MW1 type external wall insulation

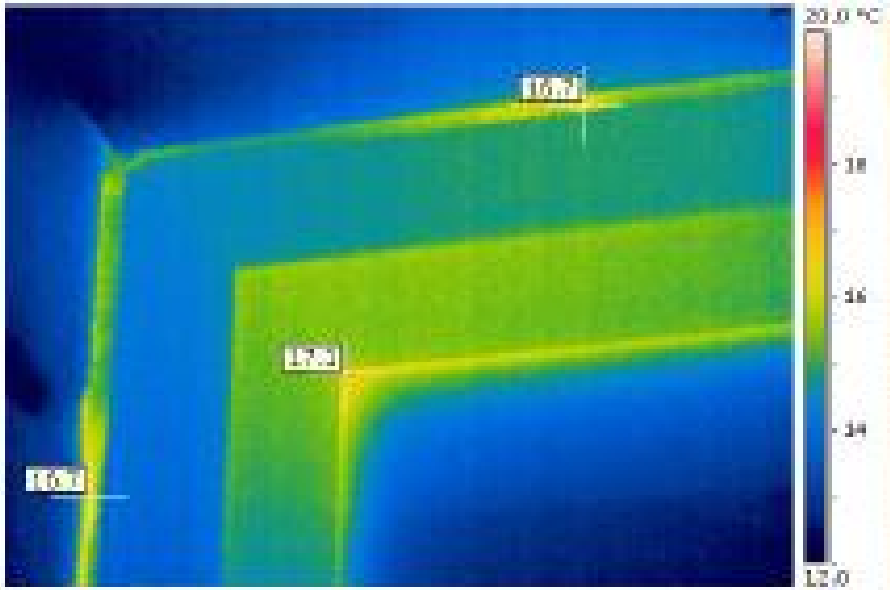


CIL

Simmonds Mills
ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB
the sustainable building association
passnet





Thermogram 15 – Back door, next to WC

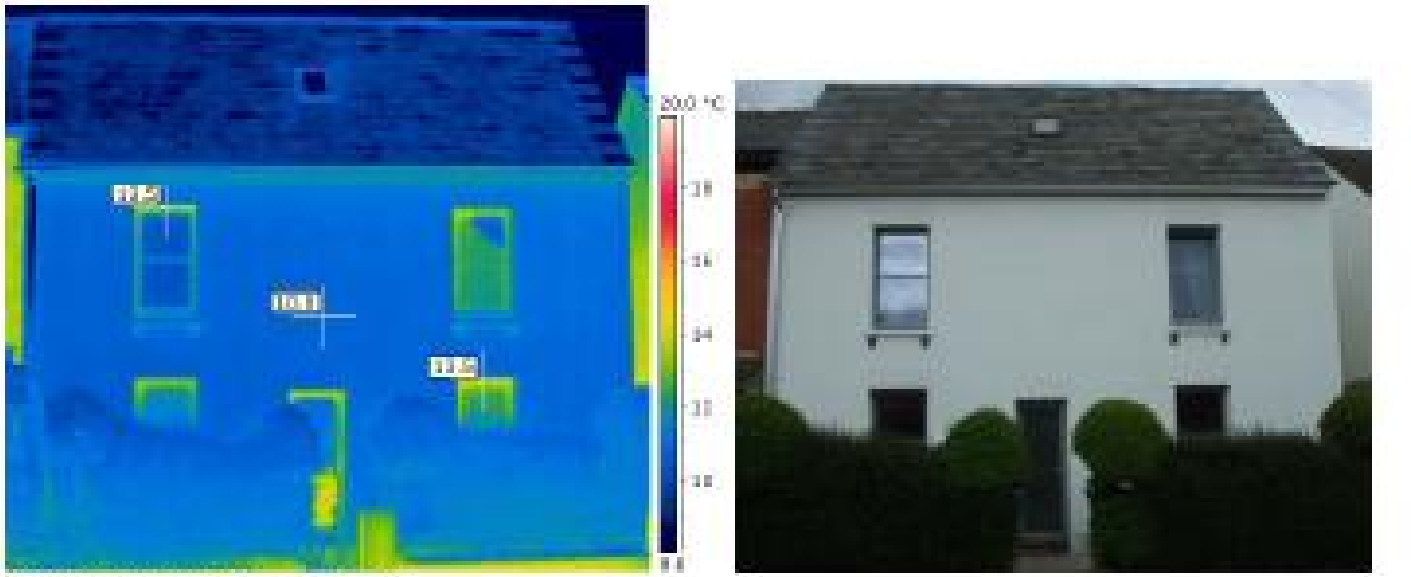
The temperatures marked with the crosshairs were excessive and would indicate heat losses around the frame. Investigate.

Simmonds Mills ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB the sustainable building association

passnet

Thermograms



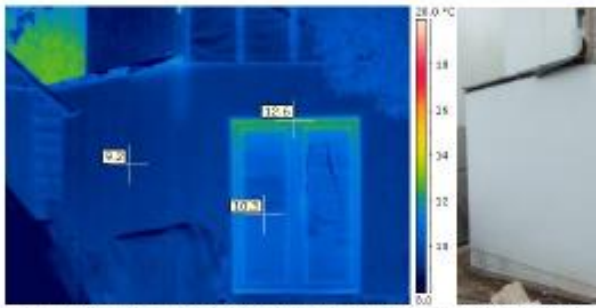
Thermogram 2 – Front
Distance and angle of camera: 10m 90 degrees

No evidence of thermal bridging or any other heat losses. The 'warmer' window frames are due to the shielding effect (shielding is when a surface is not affected by exposure to the cold night sky, this can make it appear warmer than the surrounding surfaces).

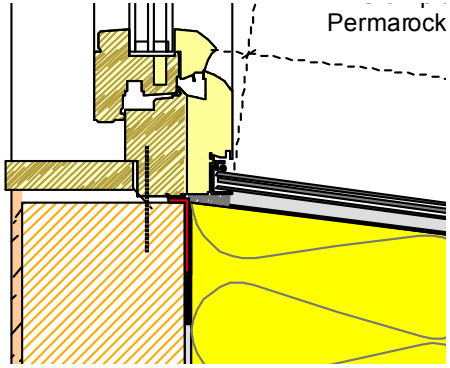
Simmonds Mills ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB the sustainable building association

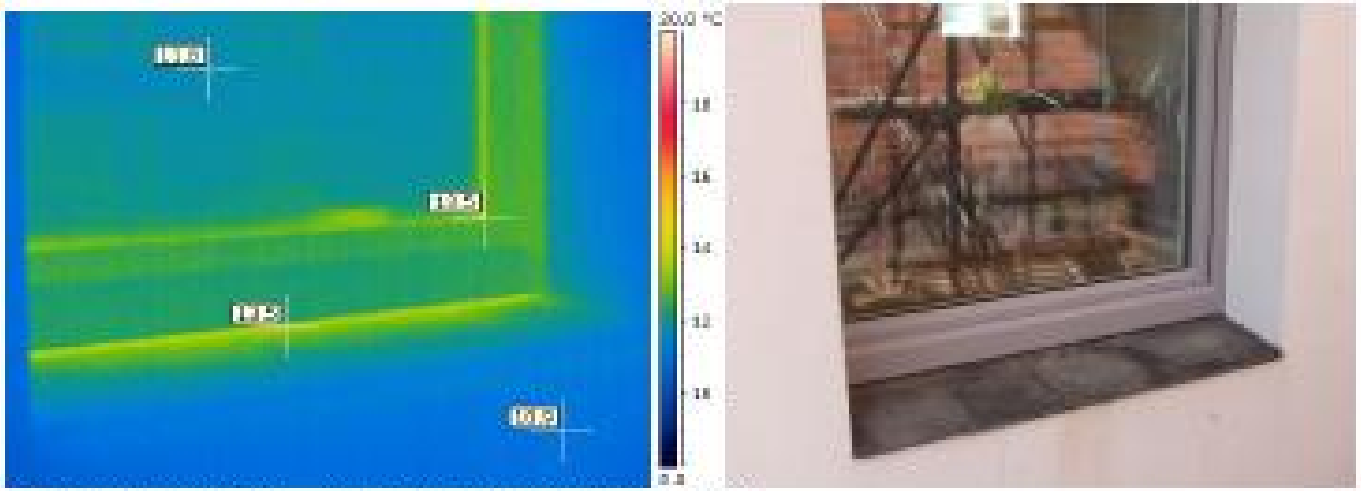
passnet



Thermogram 13 – Rear of Grove Cottage, kitchen doors



As the doors are recessed, the frame is shielded from the cold night sky and therefore appears warmer. No issues.



Thermogram 14 – Kitchen window, NW wall

This shows the 'warmer' parts of the window, however, these are due to shielding from the sky and not considered heat losses.

Simmonds Mills ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB the sustainable building association

passnet

Airtightness strategy – walls and windows

In MW1 type external wall insulation

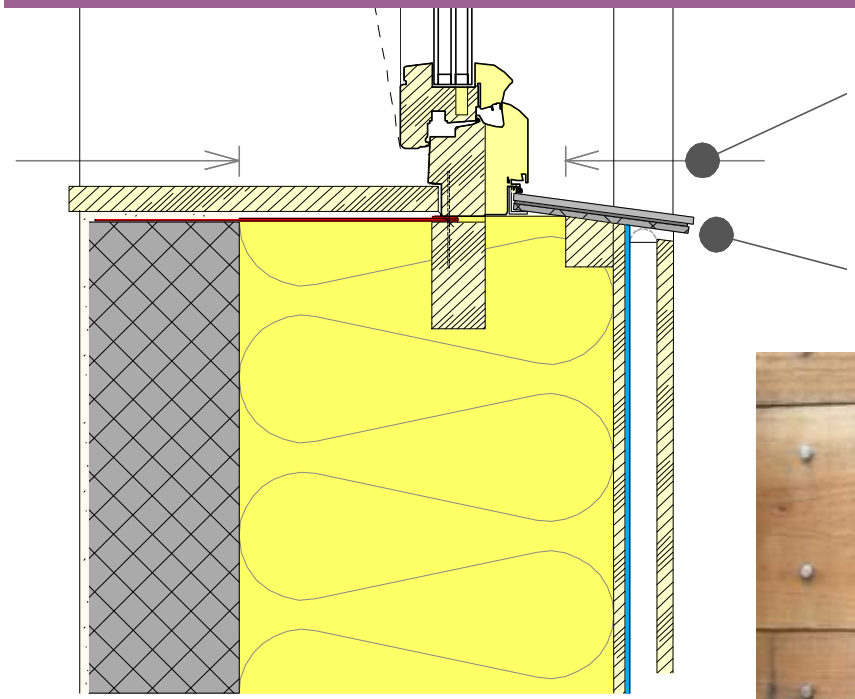
Windows replaced, walls made airtight

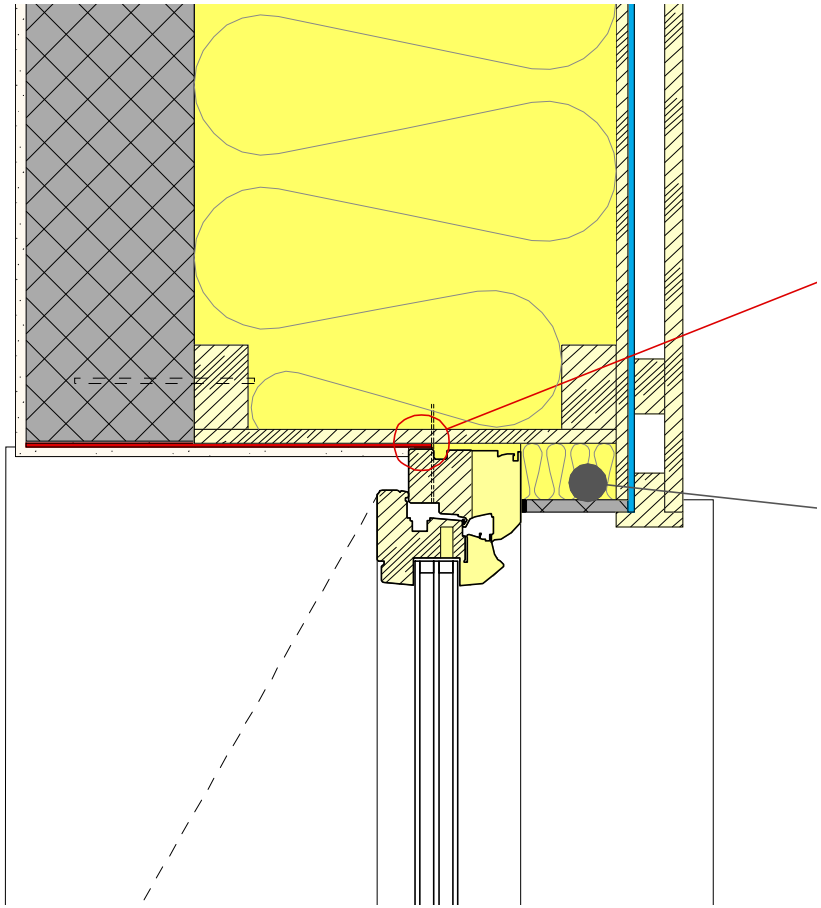
Simmonds Mills ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB the sustainable building association

passnet

Airtightness strategy – walls and windows





HEAD & CILL

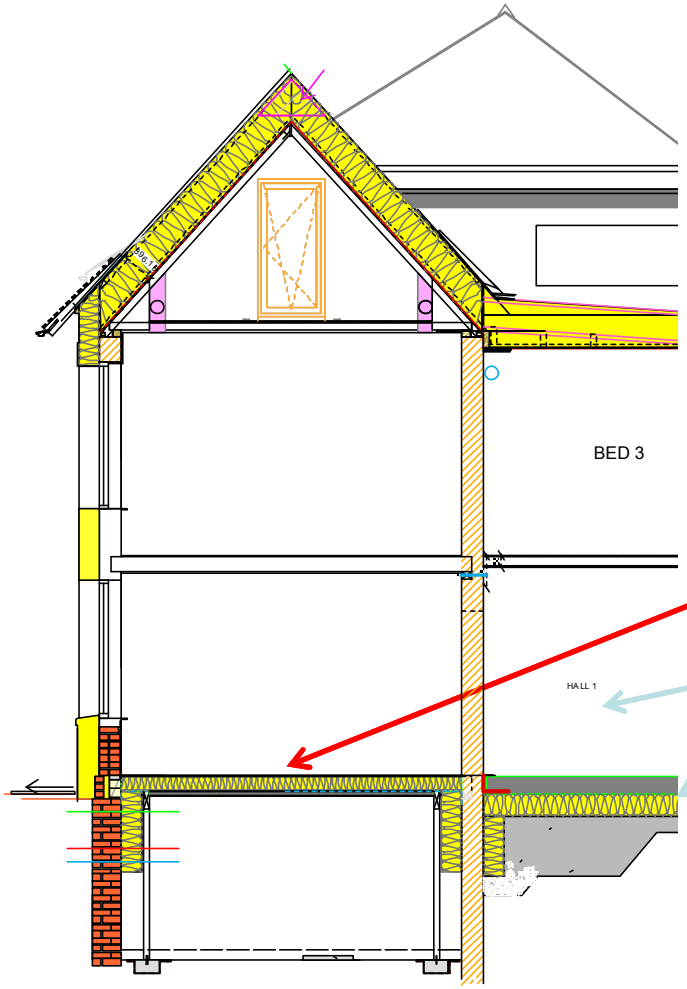
In MW2 type external wall insulation

Simmonds Mills ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB the sustainable building association

passnet

Insulation strategy – ground floor over basement



3 floor types:

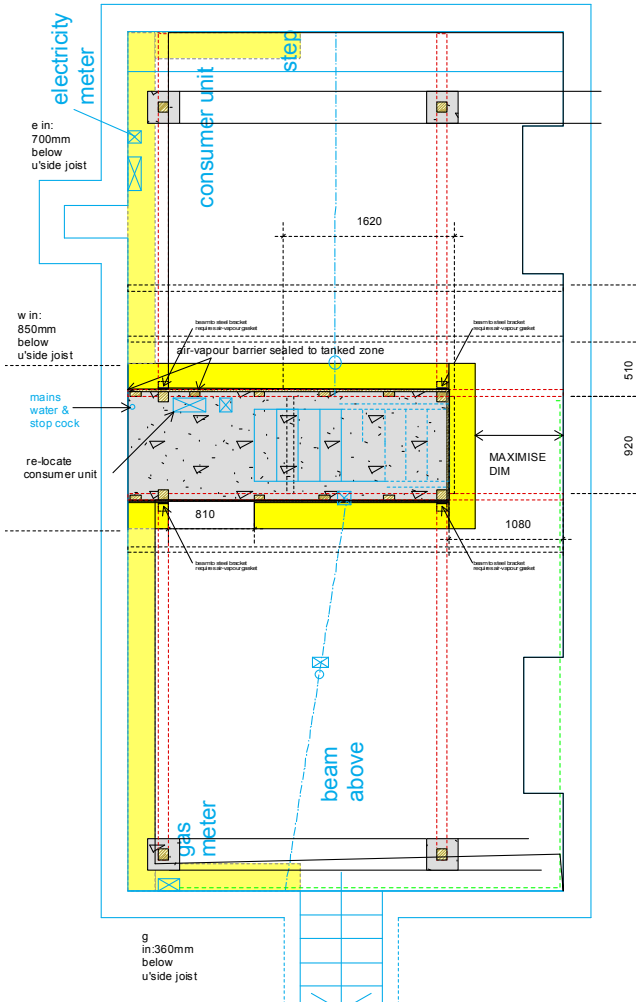
- Existing suspended floor over basement
- Existing solid floor
- New floor to extension

Simmonds Mills ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB the sustainable building association

passnet

Insulation strategy – ground floor over basement



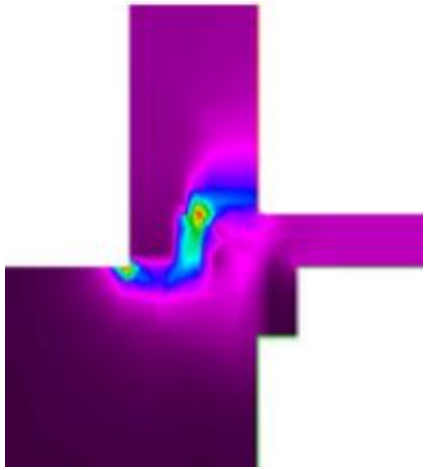
Floors – basement ceiling

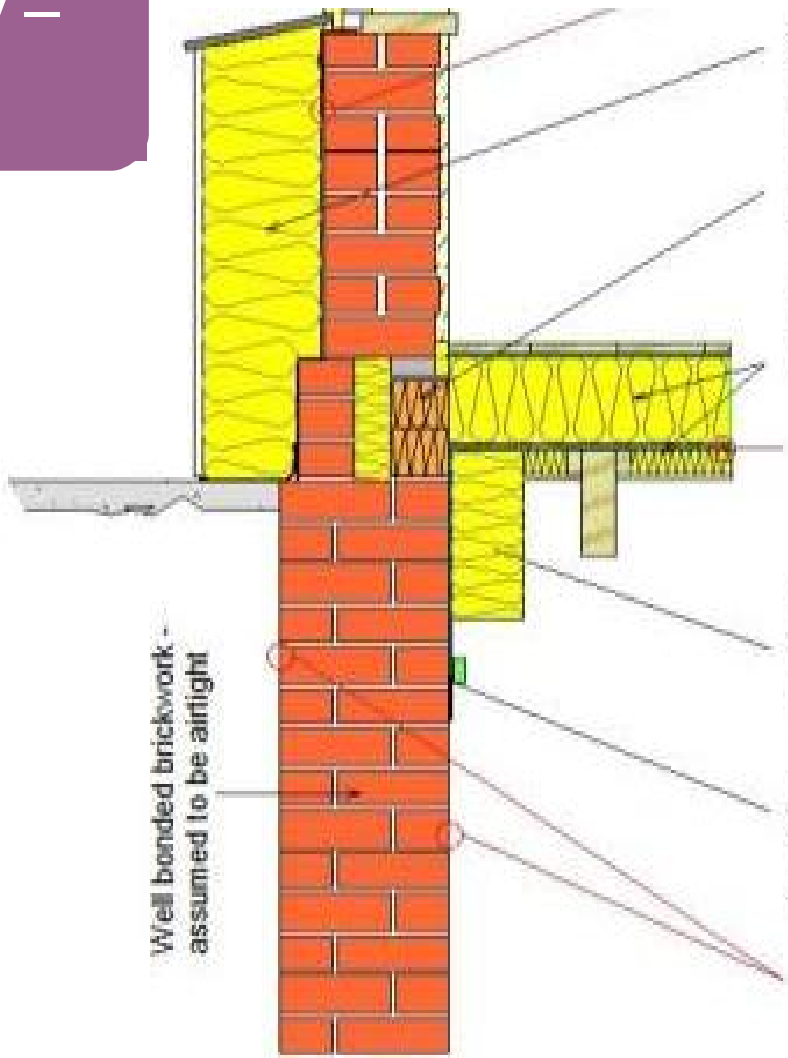
U = 0.17

Simmonds Mills
ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

£150 spent on 'Therm' modelling to develop a method of repairing area of house wall whilst dramatically improving its thermal performance on line with requirements of PH standard – saved several hundreds of pounds.

Insulation strategy – wall to floor

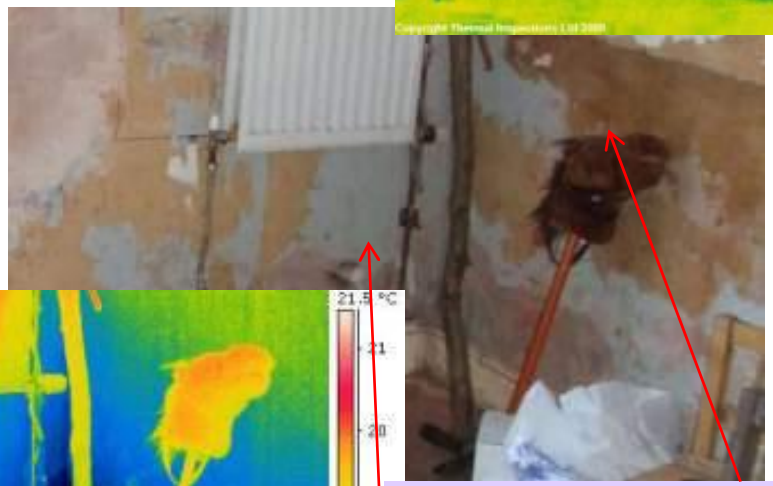


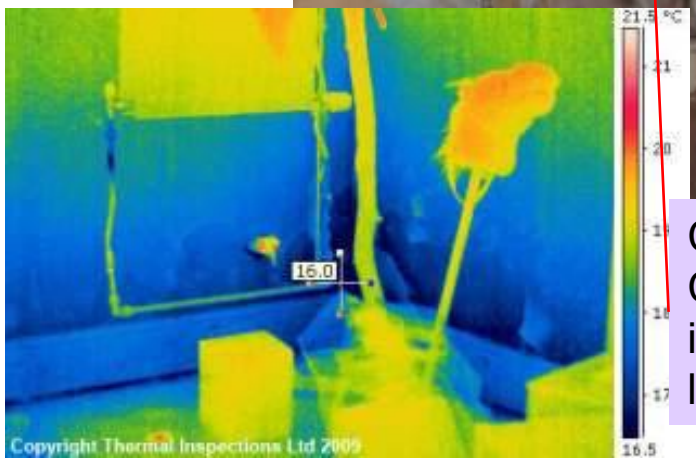


Simmonds Mills
ARCHITECTS
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION
www.simmondsmills.com

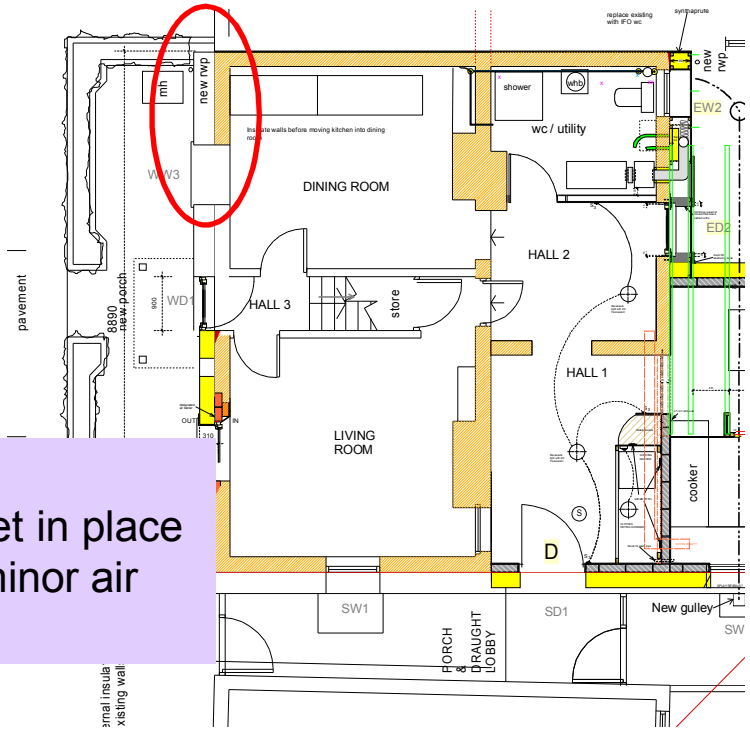
Insulation strategy – wall to floor

Cold spot:
Cause: recessed air vent in external insulation





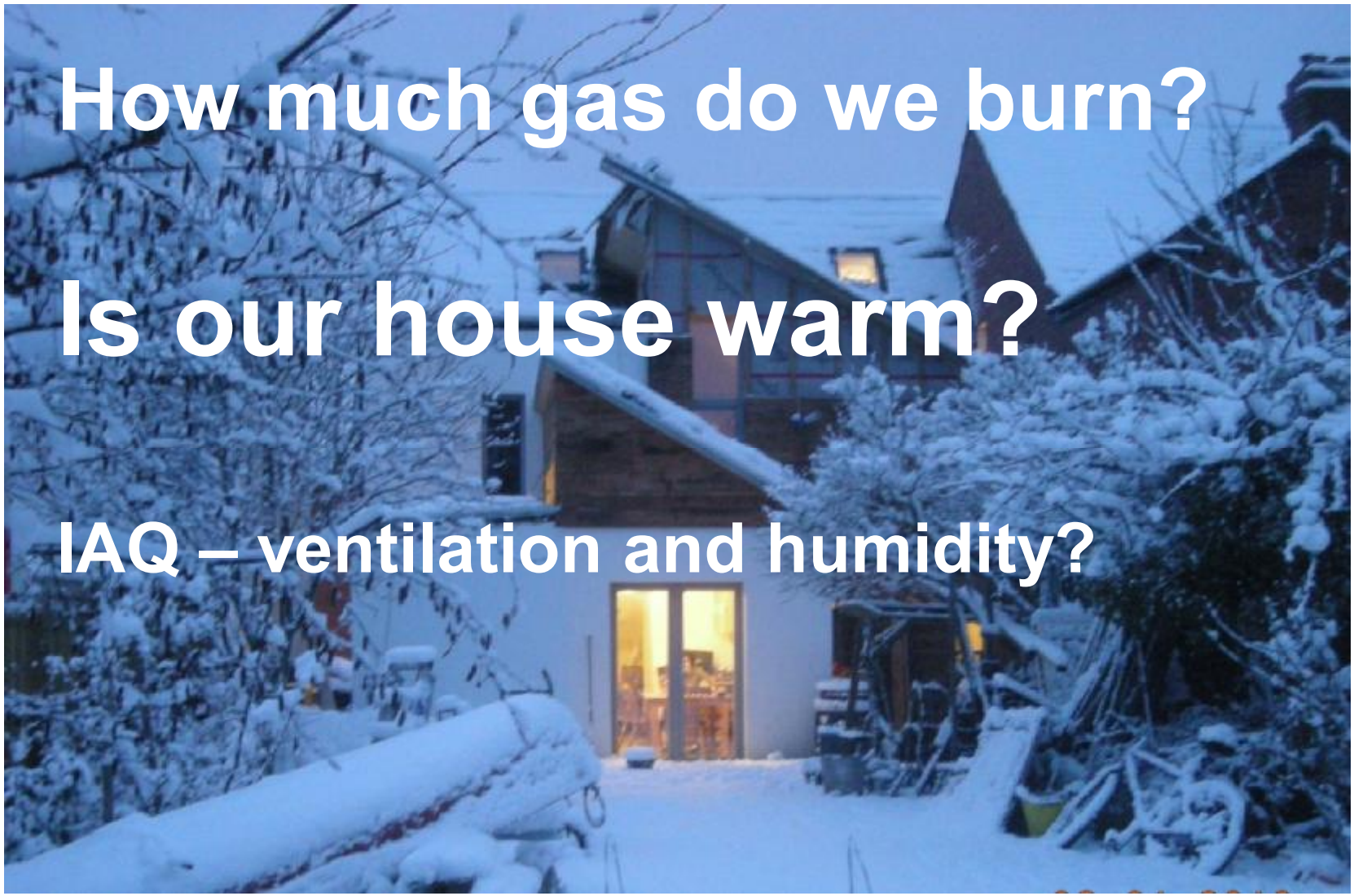
Cold spot:
Cause: cavity foam not yet in place in this area. Also site of minor air leakage.



Simmonds Mills
ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB
the sustainable building association

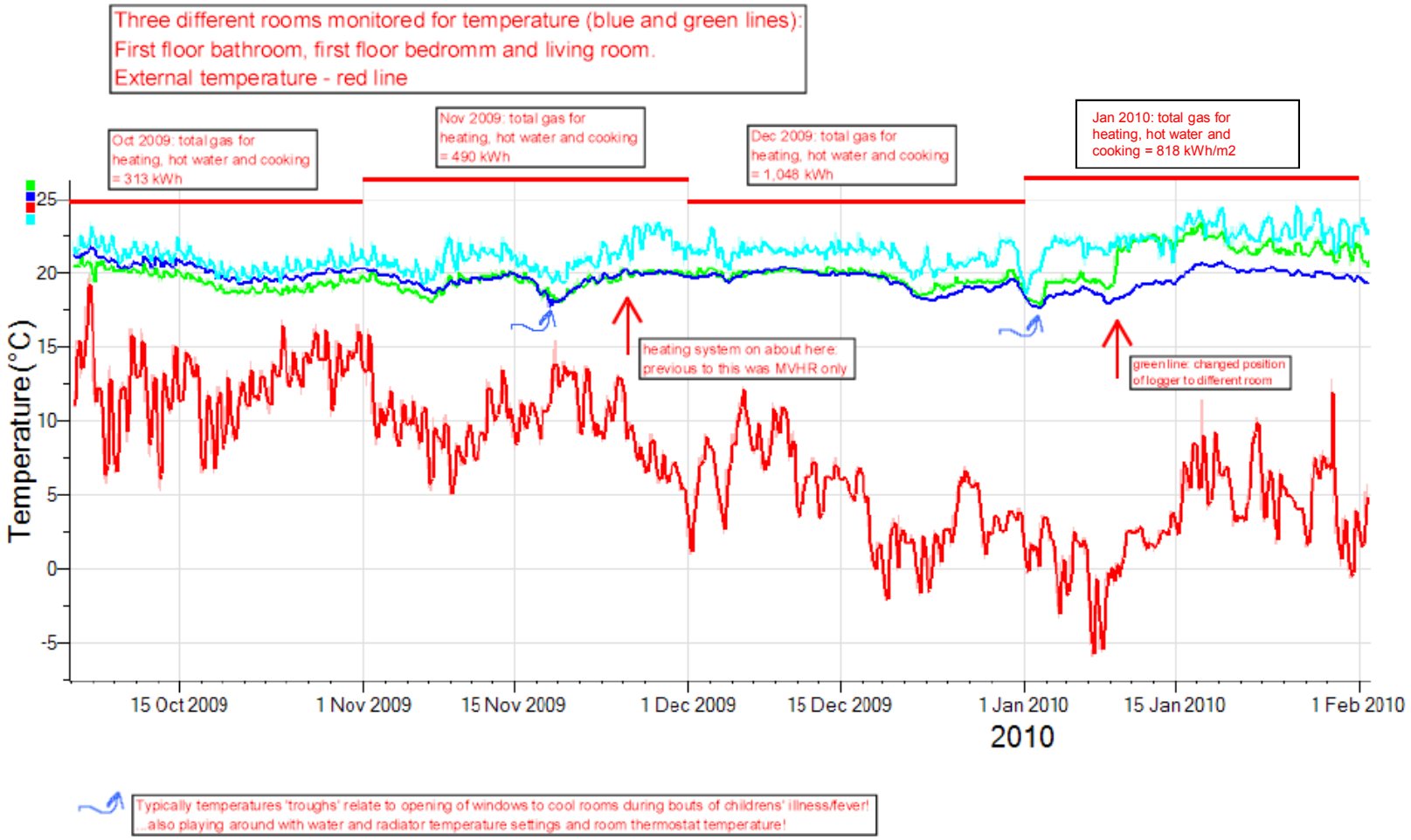
passnet



Simmonds Mills ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB the sustainable building association

passnet

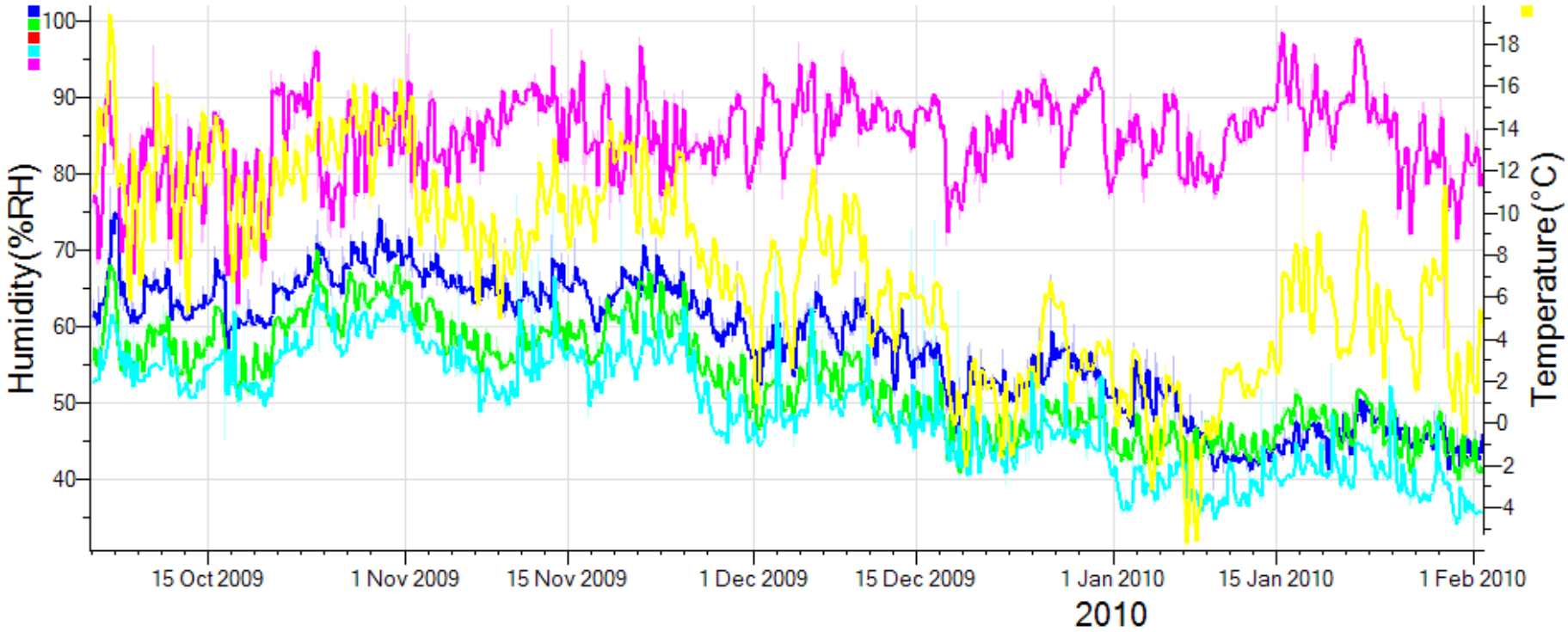


Electricity: 6 months from mid Aug ‘09 to mid Feb 2010, we used 2,282 kWh suggesting approx. 32kWh/m2.yr (delivered energy)

Simmonds Mills ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB the sustainable building association

passnet



Logger D dark blue = piano room till 20 Dec 09 then Living Room from c.9 Jan 2010.
C light blue = bathroom
A green = bedroom

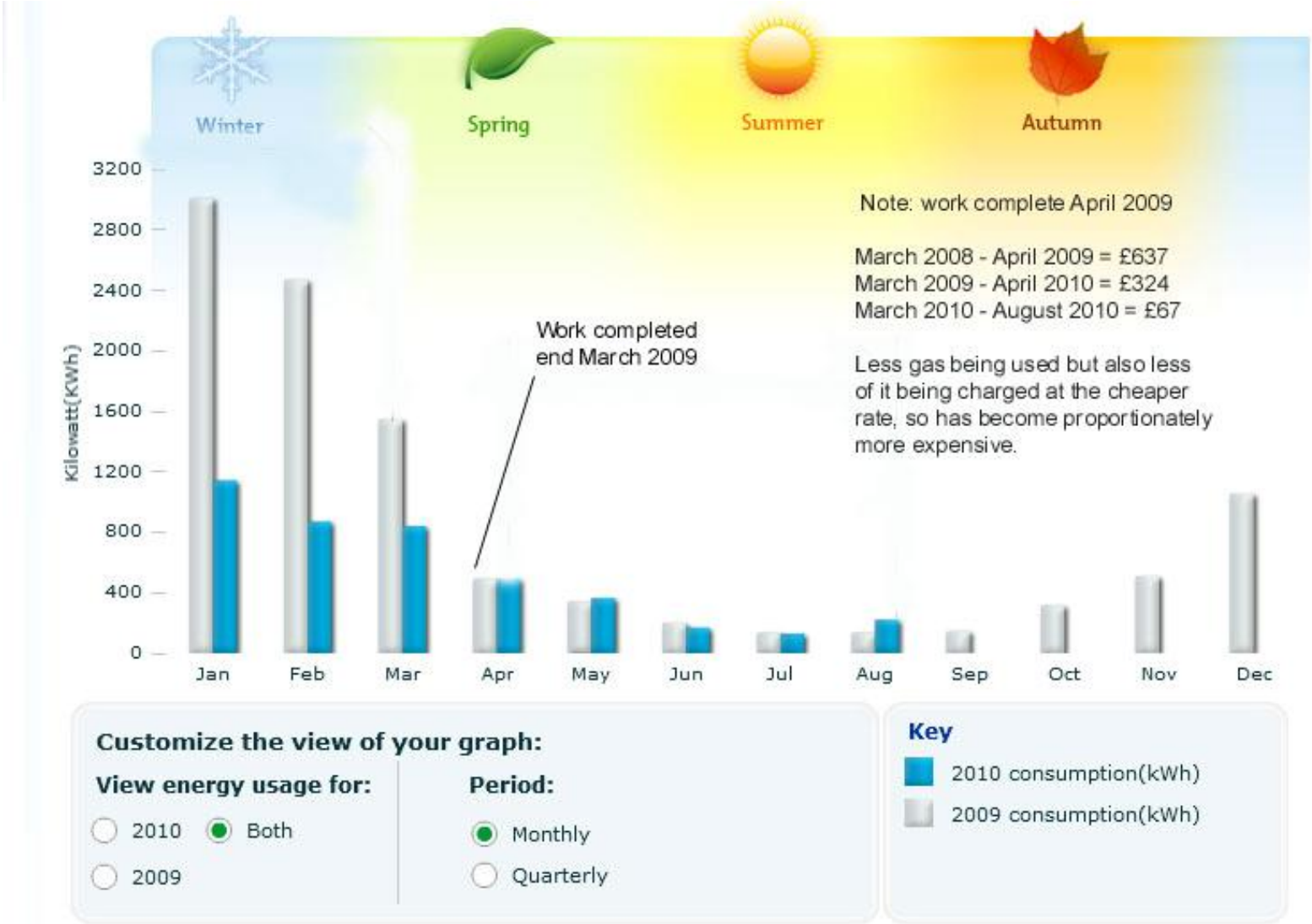
Pink = external RH
Yellow = external temp

Simmonds Mills
ARCHITECTS
www.simmondsmills.com

ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB
the sustainable building association

passnet



Simmonds Mills ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB the sustainable building association

passnet

typical semi, gas for cooking and heating, and electric for other uses

TYPICAL CASE			
typical semi-detached	fuel	kwh/m2.yr	applied to grove area (136m2) kWh/yr)
delivered	gas	230.00	31,280.00
delivered	ele	50.00	6,800.00

Grove cottage if 'typical'	total PE	389.50	kWh/m2.yr
	total co2	76.90	kgCO2/m2.yr

Simmonds Mills ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB the sustainable building association

passnet

Metric	grove consumption - forecast.	grove consumption - measured.	typical semi. - consumption measured	measured Grove saving on typical semi.	% measured Grove reduction vs. typical semi	% forecast reduction vs.typical
PE	kWh/m2.yr	kWh/m2.yr	kWh/m2.yr	kWh/m2.yr		
	91.70	124.90	389.50	264.60	68	76
CO2	kg CO2/m2.yr	kg CO2/m2.yr	kg CO2/m2.yr	kg CO2/m2.yr		
	19.30	26.60	76.90	50.30	65	75

3.62
Annual household emissions - tonnes co2

0.72 Tonne CO2/yr per person — as measured last 12 months

Warning: *figures prepared by Architect. TBC*

0.68	Tonne CO2/yr	(turn off night time lights)
0.68	Tonne CO2/yr	4.5 sq. m solar thermal

Simmonds Mills ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB the sustainable building association

passnet

How to reduce consumption further?

End of 'drying out' period – should use less gas as a result of construction drying out.

Less cold winter in coming year will reduce gas use!

Run the house at 19 or 20 degrees? Only if we had to!

Replace inefficient appliances (overlarge fridge has already been downsized!). Dodgy kettle has been replaced.

Hot water (HW) related kwh at Grove Cottage is half of typical, even less in terms of m2 as house is above average in m2/person. Total HW at 5kWh/day = 1825kWh/yr = 2.6 kgCO2/m2.a (approx) and panels only account for 50-70% of this: i.e., 0.6 x 2.6 = 1.56 kg co2/m2.yr = 212kg co2/yr

Lights left on at night – turn off / replace with v low energy nightlights.

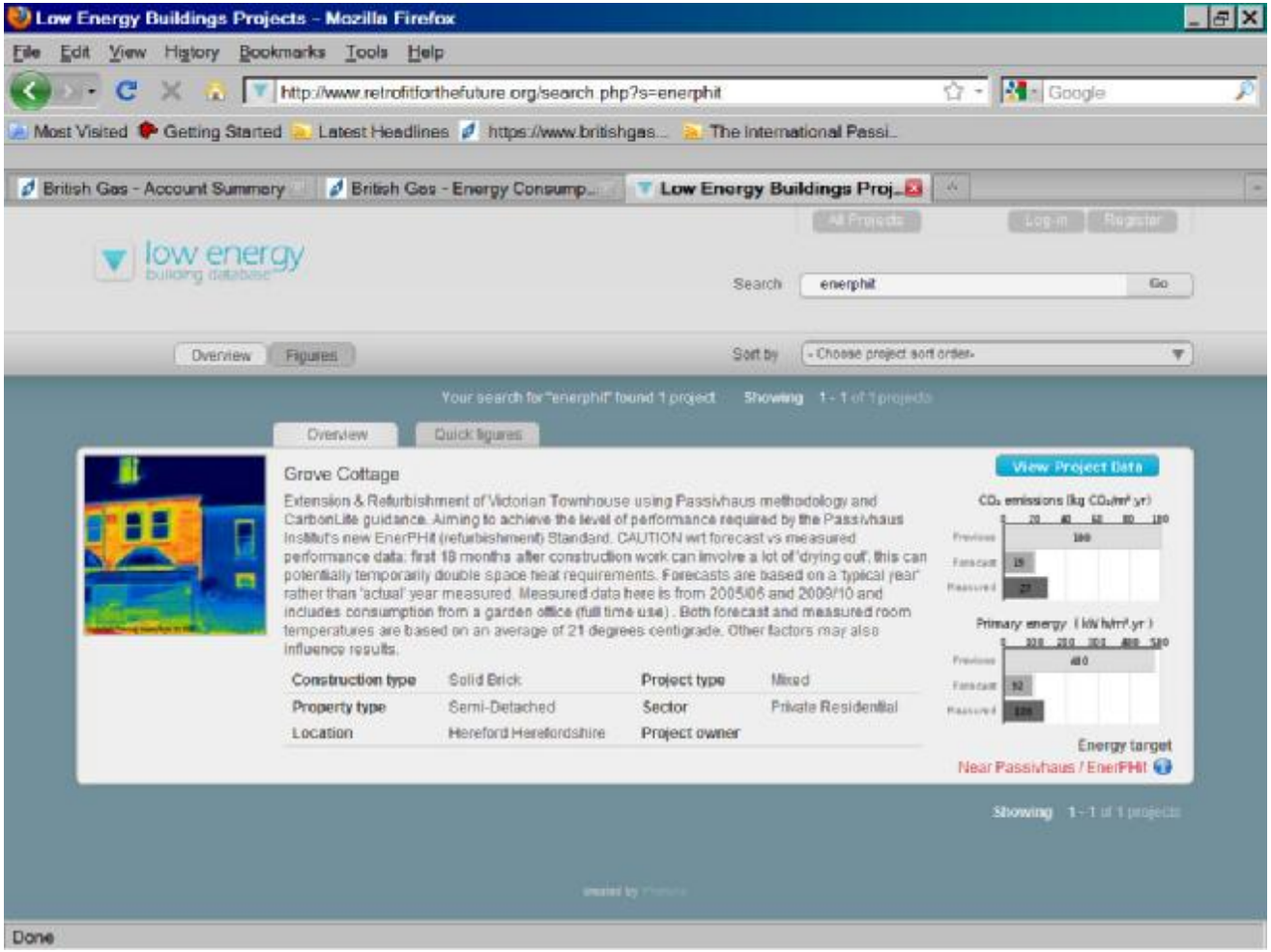
Getting busy young family to turn lights and standbys off regularly – or use motion/daylight sensors to automate this?

Simmonds Mills
ARCHITECTS
www.simmondsmills.com

ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB
the sustainable building association

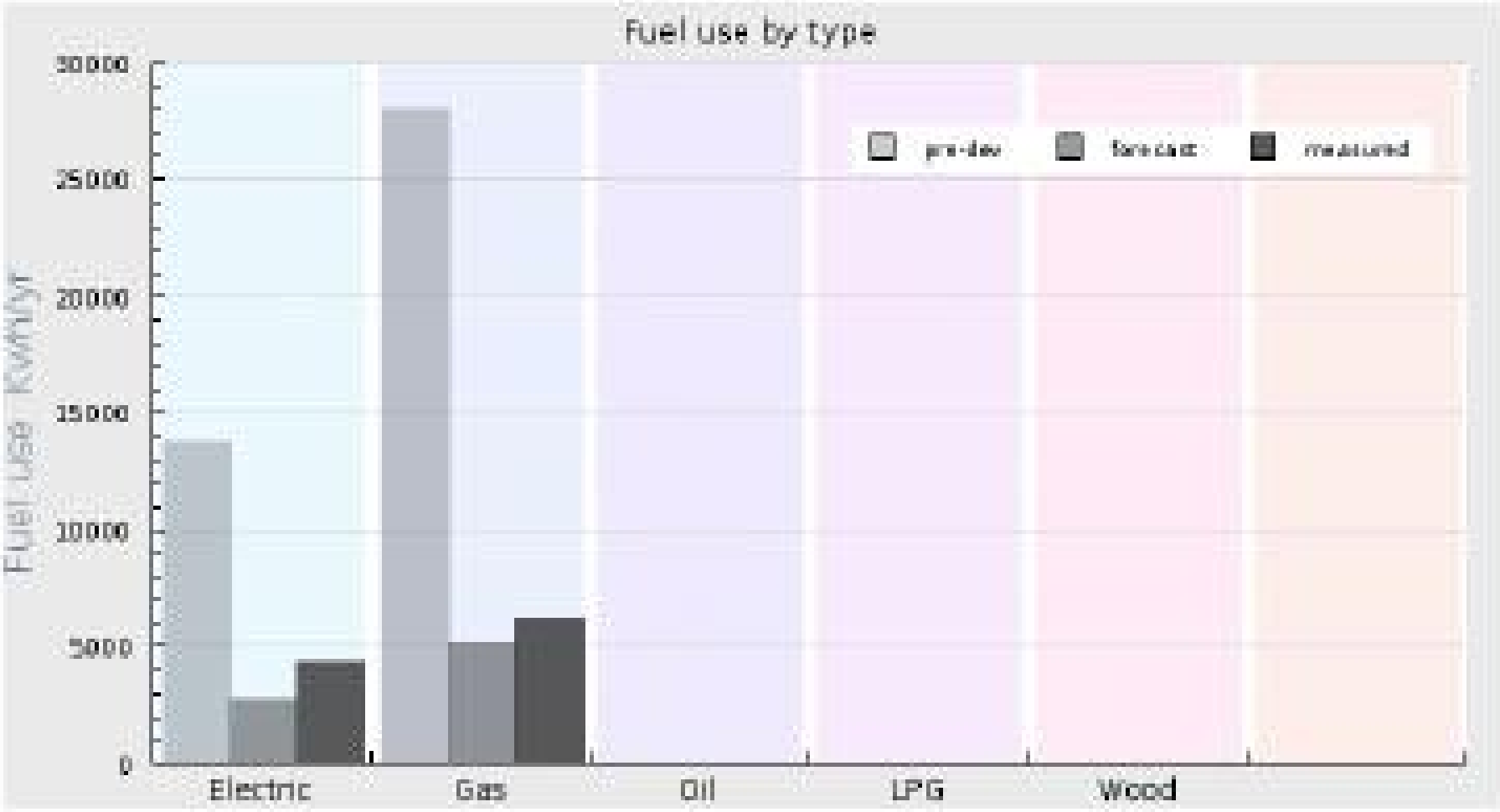
passnet



Simmonds Mills
ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB
the sustainable building association

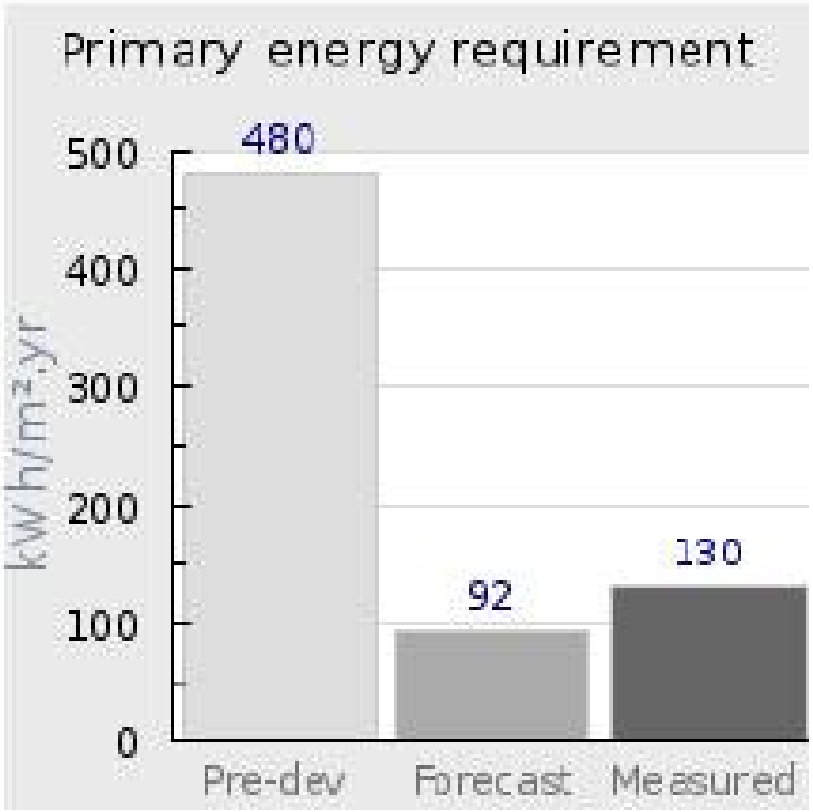
passnet

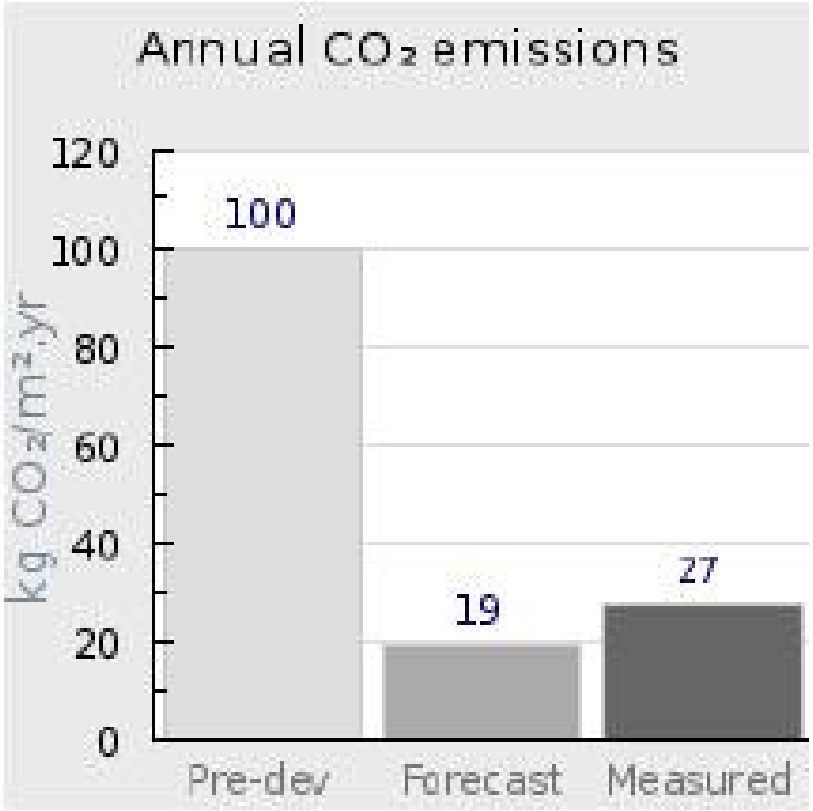


Simmonds Mills
ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB
the sustainable building association

passnet

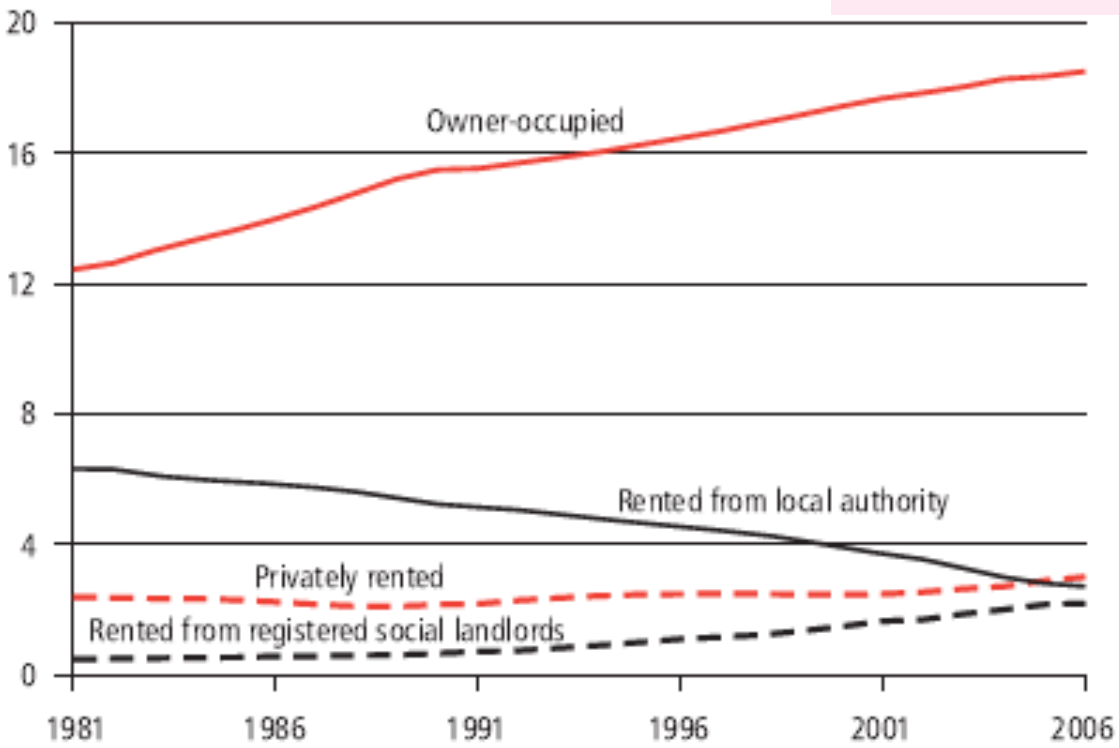




Stock of dwellings:[1] by tenure

United Kingdom

Millions



1 See Appendix, Part 10: Dwelling stock, and Tenure. Data for England and Wales are at 31 March, and for Scotland and Northern Ireland data are at 31 December the previous year, except for 1991, where census figures are used.

Source: Communities and Local Government; Welsh Assembly Government; Scottish Government; Department of the Environment, Northern Ireland

- The number of owner-occupied dwellings in the UK increased by 48 per cent to 18.4 million between 1981 and 2005, representing nearly three-quarters of total dwelling stock. (Figure 10.5)

- The average price paid by first-time buyers in the UK rose by 204 per cent between 1995 and 2005. Their average incomes increased by 92 per cent. (Figure 10.19)

Simmonds Mills
ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

Finance – pay for it yourself?

"For most owner-occupiers their home represents their most valuable financial asset. Releasing equity from the value of a home can be a relatively inexpensive and convenient way of borrowing money.
In 2005/06 it was reported that almost 5 per cent (656,000) of owner-occupiers in England had withdrawn equity from their home within the previous three years.
The average amount released by each homeowner was **£33,300**."

"Home improvements or renovations was the most common reason for withdrawing equity (56 per cent), followed by paying off debts (29 per cent) and buying new goods for the property (15 per cent)"

Do the 'right' thing with your money, or invest in more poor quality ?!

"Those who withdrew more than £20,000 were far more likely than those withdrawing less to use the proceeds towards financing the purchase of another property for themselves in the UK (10 per cent compared with 2 per cent), or to invest or save (17 per cent compared with 8 per cent)."

From Social Trends 38 Chapter 10 Housing, Published in web format: 2 August 2010

Simmonds Mills
ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

What will 'Less is More' say about Grove Cottage?

"To preserve and enhance UK living standards, a more appropriate response would be a policy to squeeze more economic output out of a constrained energy supply, via lavish investment in energy efficiency, on a scale not seen before."

So although the project's focus on 'NegaWatts' is certainly in tune with the main thrust of the report, the level and cost of fabric measures adopted is open to question - once set in a wider community level approach to heat and power supply:

"Good buys in fabric improvements include:
1.Low- to medium-cost thermal envelope improvements.
2.Building services measures, including laying heat mains, extending existing DH systems and/or improving the controls and insulation of CHP engines and turbines.
3.Improved energy efficiency of domestic electrical appliances, lighting and HVAC pumps, fans and controls.

Less good buys in fabric improvements include:
1.Replacement high-performance windows, especially if the existing windows are in good condition.
2.Increasing the roof insulation thickness beyond a point of diminishing returns. The worthwhile limit depends on the marginal cost of heat.
3. Perimeter insulation of a solid concrete ground floor.

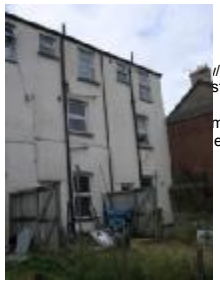
The replacement windows are an especially costly option. "

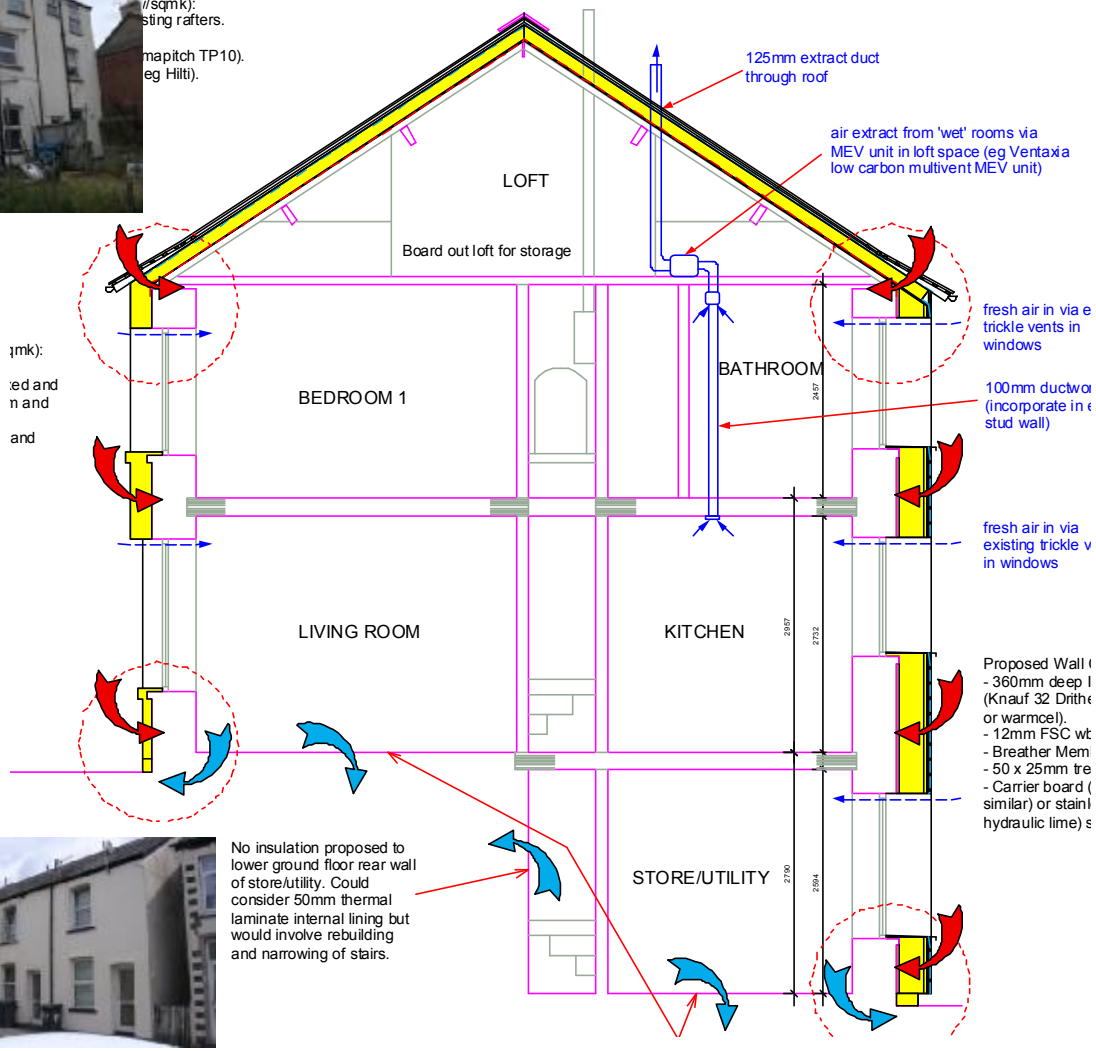
Simmonds Mills ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

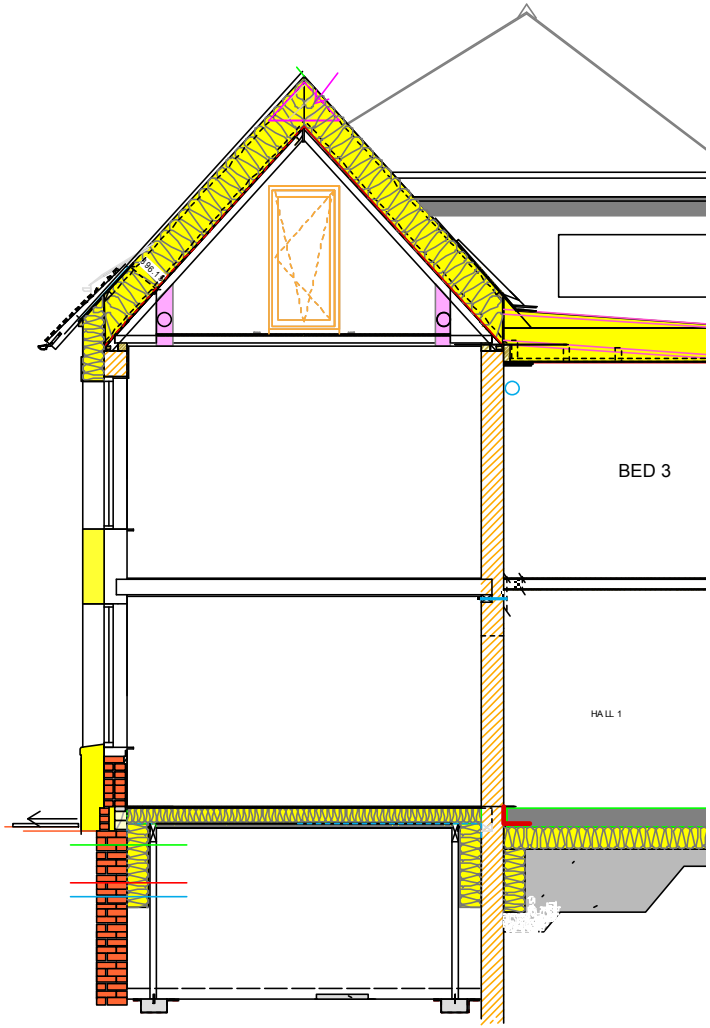
AECB the sustainable building association

passnet

What might the local results of a ‘Less is More’ policy look like?







Simmonds Mills ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

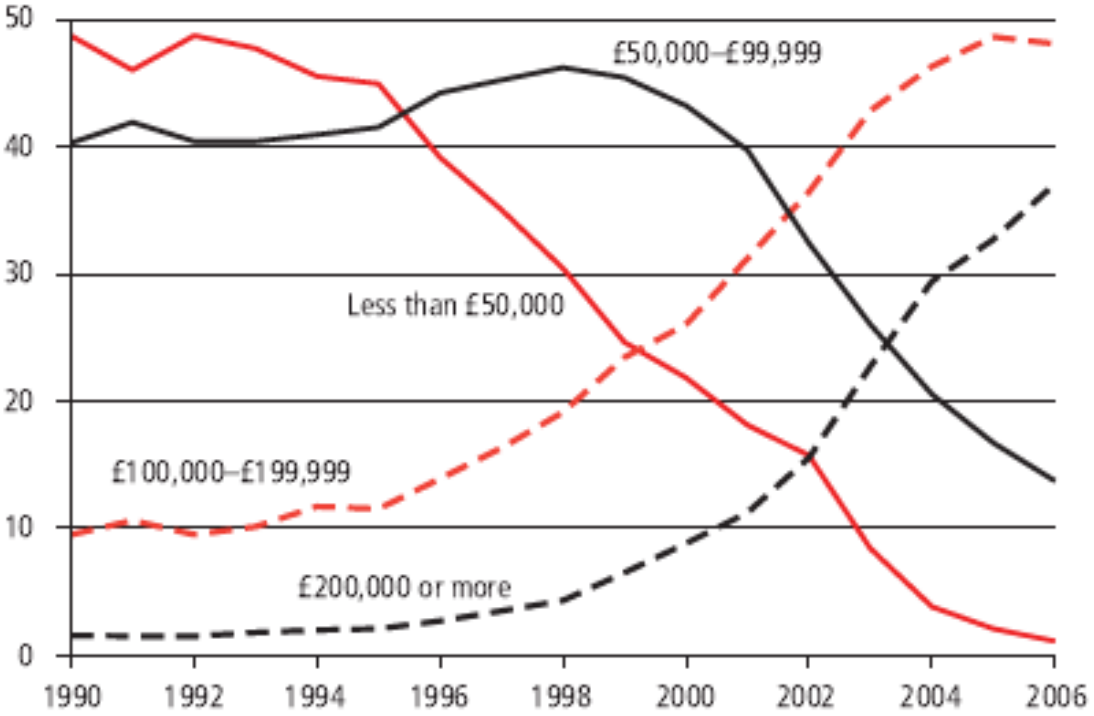
AECB the sustainable building association

passnet

Distribution of dwelling prices

United Kingdom

Percentages



Source: Communities and Local Government

High initial borrowing to buy poor quality houses!

Prices for energy inefficient houses (i.e. most houses) are moving in the wrong direction.

Simmonds Mills ARCHITECTS
www.simmondsmills.com
ECOLOGICAL DESIGN
SUSTAINABLE CONSTRUCTION

AECB the sustainable building association

passnet

Costs

- The Sustainable Development Commission estimate: advanced low carbon refurbishment costs - in the region of £25,000 - £30,000 per dwelling.
- Environmental Change Institute (ECI) estimate: £20,000 - £60,000 per dwelling.
- WWF estimated costs of £2.6 - £3.5bn per year to reduce CO2 by 80% by 2050
- Pending a careful cost analysis this project suggests that for similar properties with the same sort of challenges faced at Grove Cottage , costs for refurbishment to near Passivhaus levels of performance could be more in line with ECI predictions.

  – In total, some £23bn is currently spent by home owners each year on repair, maintenance and improvement in the UK housing stock, a figure well in excess of what is being discussed for low-carbon works.


25.09.2010 13:05