

Pre-retrofit condition survey & risk report – 1970s Lancaster retrofit

1. Pre-retrofit condition




West elevation



East elevation




South elevation

Radon	Radon level tested pre-retrofit came in at 10 Bq/m ³ so no action needed
Exposure zone	Severe
Conservation area / listed status	None
House type / age	1970s semi-detached
Construction type	<p>Cavity wall with existing EPS beads fill, cold loft at bedroom ceiling level, suspended floor with no insulation over concrete sub-base, windows had been replaced recently (average U_w in PHPP = 1.64 W/m²K, sticker from window itself shown below)</p> 
TFA	73.5m ²
Heating & DHW	Heating and hot water with gas combi boiler
Lighting, ventilation	Lighting mostly with CFLs along with some incandescents and halogens, natural ventilation strategy.
Existing renewables	19 solar PV panels on east and west roofs giving 4,084 kWh/a

Baseline PHPP result

We have a baseline PHPP model with all dimensions/areas/u-values etc for the existing building – available on request. For now, the verification sheet is shown below.

PHPP-Energy balance calculation



Building:

Street: _____

Postcode/City: **Lancaster**

Province/Country: **Lancashire** | **GB-United Kingdom/ Bri**

Building type: **Semi-detached**

Climate data set: **GB0008a-Fairfield**

Climate zone: **3: Cool-temperate** Altitude of location: **63 m**

Home owner / Client:

Street: _____

Postcode/City: **Lancaster**

Province/Country: **Lancashire** | **GB-United Kingdom/ Bri**

Mechanical engineer:

Street: _____

Postcode/City: _____

Province/Country: _____

Certification:

Street: _____

Postcode/City: **10-Dwelling**

Province/Country: _____ | **1-Standard (only for resi**

Architecture:

Street: _____

Postcode/City: _____

Province/Country: _____

Energy consultancy: **Eric Fewster, ColdProof**

Street: _____

Postcode/City: **Salford**

Province/Country: **Greater Manchester** | **GB-United Kingdom/ Bri**

Year of construction: **1970**

No. of dwelling units: **1**

No. of occupants: **1.9**

Interior temperature winter [C]: **20.0**

Internal heat gains (IHG) heating case [W/m²]: **2.8**

Specific capacity [Wh/K per m² TFA]: **156**

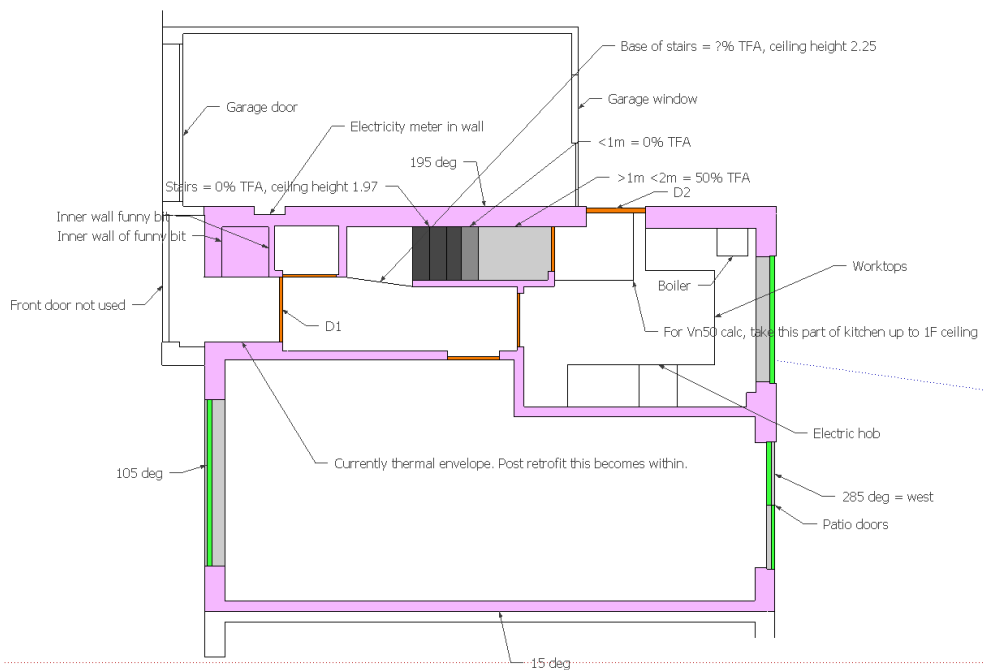
Interior temp. summer [C]: **25.0**

IHG cooling case [W/m²]: **2.8**

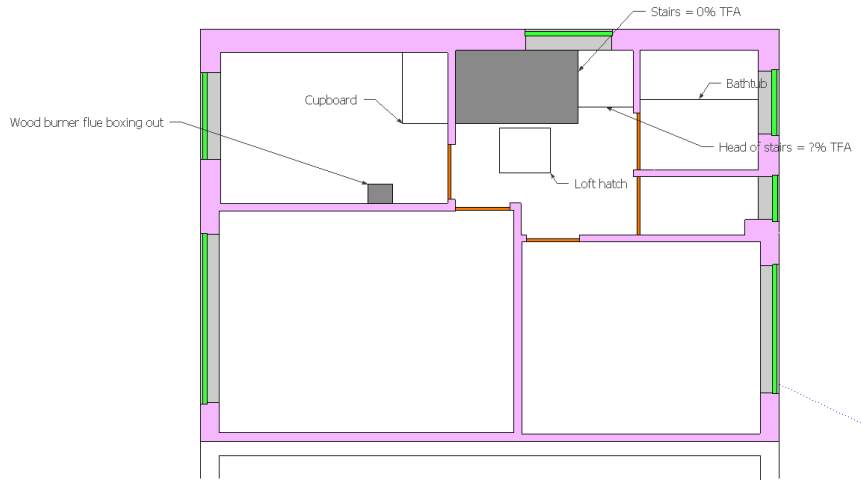
Mechanical cooling: _____

Specific building characteristics with reference to the treated floor area		Criteria	Alternative criteria	Fulfilled?²
Space heating	Treated floor area m²	74.3		
	Heating demand kWh/(m²a)	189	≤	
	Heating load W/m²	77	≤	
Space cooling	Cooling & dehum. demand kWh/(m²a)	-	≤	
	Cooling load W/m²	-	≤	
	Frequency of overheating (> 25°C) %	0	≤	
	Frequency of excessively high humidity (> 12 g/kg) %	0	≤	
Airtightness	Pressurization test result n ₅₀ 1/h	12.0	≤	
Non-renewable Primary Energy (PE)	PE demand kWh/(m²a)	335	≤	
	PER demand kWh/(m²a)	416	≤	
Primary Energy Renewable (PER)	Generation of renewable energy (in relation to projected building footprint area) kWh/(m²a)	86	≥	

Floor plans – ground floor



Floor plans –
first floor

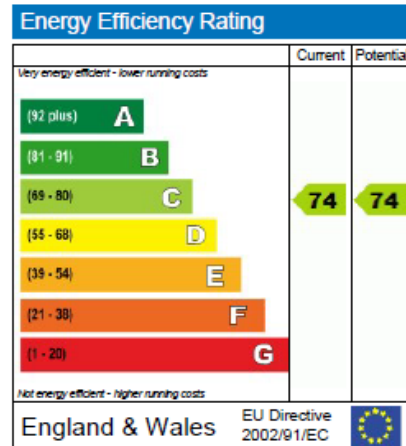


Existing EPC

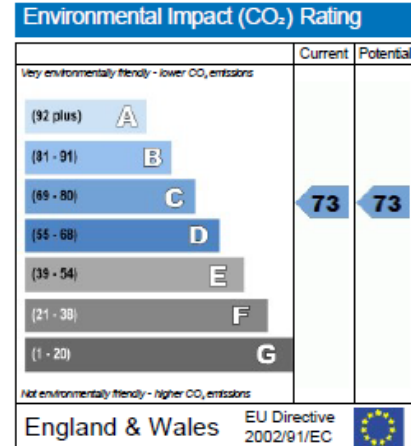
Energy Performance Certificate

Dwelling type: Semi-detached house
 Date of assessment: 19 April 2010
 Date of certificate: 20-Apr-2010
 Reference number: 8309-8017-4529-9596-5403
 Type of assessment: RdSAP, existing dwelling
 Total floor area: 85 m²

This home's performance is rated in terms of the energy use per square metre of floor area, energy efficiency based on fuel costs and environmental impact based on carbon dioxide (CO₂) emissions.



The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating, the more energy efficient the home is and the lower the fuel bills are likely to be.



The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide (CO₂) emissions. The higher the rating, the less impact it has on the environment.

Estimated energy use, carbon dioxide (CO₂) emissions and fuel costs of this home

	Current	Potential
Energy use	200 kWh/m ² per year	200 kWh/m ² per year
Carbon dioxide emissions	2.6 tonnes per year	2.6 tonnes per year
Lighting	£44 per year	£44 per year
Heating	£453 per year	£453 per year
Hot water	£98 per year	£98 per year

The figures in the table above have been provided to enable prospective buyers and tenants to compare the fuel costs and carbon emissions of one home with another. To enable this comparison the figures have been calculated using standardised running conditions (heating periods, room temperature, etc.) that are the same for all homes, consequently they are unlikely to match an occupier's actual fuel bills and carbon emissions in practice. The figures do not include the impacts of the fuels used for cooking or running appliances, such as TV, fridge etc.; nor do they reflect the costs associated with service, maintenance or safety inspections. Always check the certificate date because fuel prices can change over time and energy saving recommendations will evolve.

Remember to look for the energy saving recommended logo when buying energy-efficient products. It's a quick and easy way to identify the most energy-efficient products on the market.

This EPC and recommendations report may be given to the Energy Saving Trust to provide you with information on improving your dwelling's energy performance.

2. Pre- and post-retrofit risks

	Pre-retrofit risks	Mitigation measures	Residual risks, any planned monitoring, risks because of the retrofit measures
Moisture – window junction and door threshold	Cold reveal to frame junction (e.g. 11.5 deg C)	Insulated reveals and walls	Temperatures are raised (e.g. same window now 13.2 deg C) but this is still below 15 deg C. This was due to existing window

			frames and positions not being changed.
Moisture – party wall to external wall junction	None	None	Neighbour's internal corner is 15.7 deg C post-retrofit so should be OK.
Moisture – cavity wall	Generally lower risk since it is cavity wall construction (insulated already pre-retrofit), however it is in a higher exposure zone	None	Gable wall pointing will probably need repointing in the near future to maintain weather protection
Heat loss – party wall	Possible heat loss due to air movement in party wall cavity	None (didn't know about the issues with party wall cavity at the time)	Possible heat loss due to air movement in party wall cavity
Radon	None	None taken	Negligible
Flooding	Officially it's deemed high risk	None taken	Given its actual site, it seems unlikely that flooding will be an issue
Overheating	None reported	Good insulation levels throughout, openable windows for summer	None planned