

Retrofit Assessment

Property Address	56 Conway Drive, Milford Haven SA73 1JA
Client	Mr J Jones
Surveyor name & number	Dylan Horne - 2320097
Survey Number	5026
Date of Survey	7 th January 2026



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Introduction

This report provides a detailed home retrofit assessment for 56 Conway Drive, a 4-bedroom house in Pembrokeshire. Utilising modern surveying skills this assessment aims to develop a comprehensive retrofit assessment to identify improvements aligning with current carbon emission reduction and sustainability goals. The primary aim of this assessment is to identify issues with the property and implement strategic improvements to reduce fuel bills and enhance occupant health.

Project Scope and Objectives

The assessment is structured through the following sections:

- **Comprehensive Audit:** Identifying the property's existing fabric, issues, services and the specific needs of the residents.
- **Energy Reduction:** Evaluating technologies and solutions that directly reduce operational carbon and energy reduction.
- **Holistic Deep Retrofit:** Applying a strategy that considers the five principles of deep retrofit to ensure long-term sustainability.

Client Profile

The client's goal is to lower energy expenditure and reduce condensation issues within the property. The property is occupied by 5 adults. Since the client has not provided a budget for the assessment two potential solutions will be provided ensuring compliance with the 5 principles of deep retrofit.

Property Survey and Audit

Property Details

Type of Property	The property is a detached two-storey 4-bedroom house.
Approximate year of construction	2007
Approximate year of extension	N/A

Approximate year of conversion	N/A
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Accommodation

	Living-Rooms	Bed-rooms	Bath or Shower	Separate Toilet	Kitchen	Utility	Other
Lower Ground							
Ground	2			1	1	1	1 (garage)
First		4	2				
Second							
Third							
Other							
Roof-space							

Property Construction

The main roof is covered in concrete tiles.

The walls are timber frame cavity construction.

The floors are of concrete and suspended timber construction.

Energy Performance & Services

EPC Rating	74
Mains Services	Water, Gas, Electricity & Drainage
Mains Heating	Gas

[GOV 2024]

A copy of the EPC Certificate is available in the appendices.

Condition Report

Condition will be appraised using the following criteria:

3	Defects that are serious and/or need to be repaired or investigated urgently!
2	Defects that need repairing or replacing but are not considered to be either serious or urgent. The property must be maintained in the normal way.
1	No repair is currently needed. The property must be maintained in the normal way.
NI	Not inspected (see 'Important note' below)

[Watson Property n.d]

External

Element	Condition	Description
Roof	1	Roof is covered in concrete interlocking roof tiles with angled ridge tiles. Soffits are made from UPVC. PV is fitted to the rear facing elevation of the property. There is no Chimney stack present on the property.
Rainwater Goods	1	Storm discharges from the roof into UPVC rainwater goods.
Main Walls	2	Walls are constructed of timber-frame cavity construction with a DPC present. The external face is assumed blockwork with smooth render finish. It is assumed that the wall contains ~100mm rockwool insulation to satisfy building regulations at the time of construction [Department for Communities and Local Government 2006] The render beading shows signs of rust along all corners and the bell cast. This should be hacked off and renewed with galvanised or plastic beading.

Windows	1	UPVC double glazed windows are present with internal beading. Trickle vents are not present.
Doors	1	The main door at the front of the property composite material. The rear door is made of UPVC. Rear patio door is made of UPVC with double glazing. The garage door is metal presenting access from the front elevation; the internal garage door is timber.

Internal

Element	Condition	Description
Roof Structure	2	Access to the loft space is gained through a loft access hatch with a ladder. The roof structure is formed from timber pre-formed trusses. The roof slopes are lined with a modern breathable felt. Mineral wool loft insulation is present at ~300mm thickness. Due to stored items in the loft space performance of the loft insulation is likely reduced. It is recommended that loft legs be installed to allow for stored items whilst not compromising performance.
Ceilings	1	Ceilings are formed from plasterboard with a skimmed finish. Ceilings are in good condition.
Internal Walls	1	Internal walls are formed from stud partitions with plasterboard and skim finish. Walls are generally in good condition.
Floors	1	Ground floor is made up of a ground bearing slab. It is assumed that insulation is present in

		accordance with building regulations at the timer of construction. [Department for Communities and Local Government 2006] The first floor is constructed from a suspended timber construction.
Built in fittings	1	There are modern units fitted to the kitchen & utility space. Extractor fans are present to both spaces however do not have a humidistat function.
Wood-work	2	The property has timber doors, door liners, stairs, skirting and other areas of joinery. Condition is generally good, however degradation to decoration present.
Bathroom Fittings	2	Bathroom fittings are modern and generally in good condition, with wall boarding to the wet areas of the bathroom. Humidistat sensing fans are present to both bathrooms, however mould is present on the windows. It is recommended that ventilation is increased to the areas.
Other (Garage)	1	Garage is internal to the property and contains most of the services for the property. The ceiling is comprised of fire-rated plasterboard. The finished floor height is lower than in the main property to protect the property in a floor.

Services & other considerations

Element	Condition	Description
Electricity	3	Mains electricity is received by the meter on the RHS gable adjacent to the garage. The consumer unit is present in the garage alongside an inverter to receive power from the solar PV panels.

		The installation although modern likely does not meet current wiring standards and as such an Electrical Installation Condition Report should be undertaken to confirm.
Gas	3	Mains gas is connected to the meter on the RHS gable adjacent to the garage. The gas installation and all appliances should be inspected by a Gas Safe Registered Engineer to identify any issues with the installation. [Gas Safe Register]
Water	1	Mains water is connected with the external stopcock located in the road; the internal stopcock is in the garage. Service pipework is plumbed in copper.
Heating/ Hot Water	3	Central Heating & Hot Water is provided by a modern combination boiler present in the garage. Radiators are present in most areas of the property with copper pipework. It is recommended that a Gas Safe Registered engineer undertakes an inspection to the heating system to ensure it is operating correctly. [British Gas]
Drainage	1	Surface water from the downpipes dispersed into gullies around the property connected to mains storm drainage. It is also assumed that there is a soakaway in the rear garden. The property is connected to mains shared foul drainage.
Radon	1	The property location has been identified as a high-risk area for Radon (10-30%) [UK Radon]. Radon information provided in the appendices. It is assumed that the only protection from Radon is the DPM in the floor slab that extends through the cavity which is sufficient for Radon protection under BR 211 [BRE 2023].

Grounds

Element	Condition	Description
General	2	The property is bounded by timber fences to the LHS, RHS and rear boundary. Some of which are in disrepair. The front boundary of the property is a masonry wall assumed to be of block and flat construction. Decoration to the wall is in poor condition. The driveway at the front of the property is hardstanding made up of brick which stone chippings to the LHS front garden. The rear elevated section of the property is hardstanding with patio slabs and stone chippings. The lower section of the garden is grassed. It is assumed that the elevated section of the garden has a soakaway fitted. There is no evidence of flooding at the property and NRW deems the area very low risk [National Resources Wales]. A copy of this is available in the appendices.

Proposed Upgrades & Energy Performance

As a budget has not been imposed by the client two potential solutions will be provided in this assessment.

Fabric Improvements

Solution A (Airtightness & Top Up):

Solution A focusses on improving air tightness throughout the property and topping up insulation as necessary to the loft space. Air tightness can be improved by installing air-tightness tapes to the sole plate of the external

walls at ground level and window reveals to help reduce heat loss. Additionally, smoke tests and thermography surveys can be used to identify cold spots as well as air leakage [Scottish Government 2015a & BRE 2015]. Cold spots can be investigated further, and remedial works can be undertaken to ensure a homogenous insulation detail. Loft legs can also be installed to the loft space to allow the client to store items whilst not compromising the R-Value of the mineral wool insulation, loft insulation can also be increased to 400mm thickness to improve the property further [Loft Leg].

Solution B (Internal Wall Insulation):

Solution B focuses on installing an internal wall insulation system to further improve the thermal performance and the air tightness of the external walls to reduce carbon production from the property. It is important to remove all thermal bridging & thermal bypass when installing IWI as these will lower the internal surface temperature or render the insulation ineffective. To prevent thermal bridging the insulation detail should continue around junctions, edges and corners this is to include between the ground & first floor ensuring that the insulation detail is homogenous and “flies through” the whole habitable space. Thermal bypass should be prevented by installing an airtight layer on the warm side of the wall [Department of Business, energy and Industrial Strategy 2021]. It is assumed that the current ground bearing slab is insulated, however trial pits should be undertaken to define the thickness & type of insulation and ensure there is a sufficient upstand to prevent thermal bridging [BRE 2001]. As highlighted in solution A loft insulation can be improved and loft legs installed to not compromise performance of the insulation [Loft Leg].

Glazing and Openings

Solution A (Maintenance and Draught Stripping):

Solution A focusses on servicing the windows & doors to reduce air infiltration. Servicing the seals and hinges on the window prevents air filtration which allows cold air into warm spaces. Doors should also be serviced to ensure draught strips and seals are working effectively to

reduce heat loss [Scottish Government 2015b]. This approach also provides a cheaper and less wasteful option than replacement as the windows are modern UPVC with double glazing providing a strong thermal performance and aligns with The Sustainable Renovation Guide from The Pebble Trust [The Pebble Trust 2023].

Solution B (Triple Glazing Units):

Solution B focused on renewing the existing double-glazed units for more efficient triple glazed units. The largest benefit of this approach is further reducing operational carbon and energy use of the property by increasing the thermal performance of all the windows. This will also seek to improve the comfort of the property by reducing external noise from entering the property as well as helping to prevent overheating during the warmer summers [Glass and Glazing Federation 2016]. Additionally, this meets the fabric first and increased comfort approach favoured by the Pebble Trust [The Pebble Trust 2023].

Heating & Ventilation

Solution A: Low-Cost (Smart Zonal Controls):

Solution A aims to upgrade the existing heating controls and system to introduce smart controls as well as zonal heating controls. By providing more control to the user, smart heating and zonal controls remove the need to heat up vacant rooms aiding to reduce heating expenditure. [Energy Saving Trust & CIBSE 2009]. Extractor fans in both the kitchen and bathroom should be upgraded to operate on a humidistat sensing function; this will help to remove humidity from the property without the owner's input, aiming to improve comfort and air quality in the property [BRE 2015]. A solar battery could also be installed at the property to further reduce the energy consumption from the national grid.

Solution B: (Air Source Heat Pump & MVHR):

Solution B aims to completely renew the central heating system and ventilation system within the property. Due to the increased efficiency of heat pumps over gas fired combi boilers operational carbon and cost can

be reduced from the property's use. [CIBSE 2019 & Energy Saving Trust a]. To further improve the efficiency of this system a Mechanical Ventilation Heat Recovery (MVHR) system should be introduced to further reduce heating costs. Modern MVHR systems operate at ~90% efficiency providing warm fresh air into the property. MVHR systems are important to implement when increasing air tightness as they provide a significant improvement to indoor air quality helping to increase occupant comfort [Passivhaus Trust 2020]. A solar battery could also be installed at the property to further reduce the energy consumption from the national grid.

Holistic Strategy and Deep Retrofit Principles

To achieve an effective result, the proposed improvements to the property are viewed as a whole house approach. This ensures that the property's performance is not undermined by unintended consequences like damp or poor air quality.

5 Principles of Deep Retrofit

The core principles of a deep retrofit as outlined in the PAS 2035 are the following [The Retrofit Academy]:

Fabric First:

This has been addressed in both solutions by increasing air tightness and ensuring a homogeneous insulation detail reducing potential heat loss from the building prior to considering new heating systems.

Air Tightness with Planned Ventilation:

As we improve the air tightness in the property, we have also aimed to increase the ventilation within the dwelling helping to better manage moisture and air quality.

Thermal Bridge-Free Design:

Both strategies aim to ensure a homogeneous insulation detail whilst also continuing around junctions, edges and corners to prevent thermal bridging.

High-Performance Openings:

Both solutions address this by ensuring existing units are operating as per the manufacturer's guidance or by installing new triple-glazed high-performance units to reduce potential heat loss through openings.

Professional Installation and Commissioning:

By using best practice guidelines potential issues can be addressed prior to installation reducing potential risk for the client.

The above principles have been addressed by both solutions provided whilst providing two different price points allowing the client to make a more informed decision.

Impact on Carbon Emissions and Occupant Health

This assessment has been undertaken to align the property with the carbon emission reduction targets by improving the building fabric to reduce the operational carbon footprint and consider occupant health & comfort.

Airtightness: By improving air tightness, the property will feel less draughty helping to improve occupant comfort.

Air Quality: By improving the ventilation within the property pollutants and humidity are controlled improving overall air quality.

Acoustic Comfort: By improving the air tightness of the openings in the property habitants should be better protected from external noise.

Final Recommendations

It is recommended that the client adopts a phased retrofit approach. Initial works should focus on the low-cost solutions to address immediate heating costs. When budget allows or system failures occur the property

should be transitioned towards a deep retrofit solution to ensure long-term sustainability and property performance.

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Appendices

Images available at: [56 Conway Drive - Images](#)

Energy performance certificate (EPC)

 This certificate has expired.

You can get a new certificate by visiting www.gov.uk/get-new-energy-certificate

Get help with certificates for this property

If you need help getting a new certificate or if you know of other certificates for this property that are not listed here, contact the Ministry of Housing, Communities and Local Government (MHCLG).

mhclg.digital-services@communities.gov.uk
Telephone: 020 3829 0748

56, Conway Drive Steynton MILFORD HAVEN SA73 1JA	Energy rating C	This certificate expired on:	19 August 2024
		Certificate number:	2408-3070-7258-1314-4920
Property type		Detached house	
Total floor area		160 square metres	

Rules on letting this property

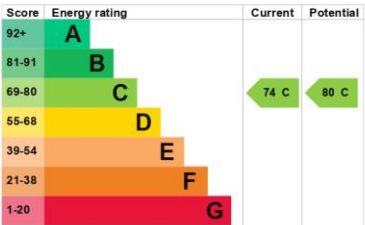
Properties can be let if they have an energy rating from A to E.

You can read [guidance for landlords on the regulations and exemptions \(https://www.gov.uk/guidance/domestic-private-rented-property-minimum-energy-efficiency-standard-landlord-guidance\)](https://www.gov.uk/guidance/domestic-private-rented-property-minimum-energy-efficiency-standard-landlord-guidance).

Energy rating and score

This property's energy rating is C. It has the potential to be C.

[See how to improve this property's energy efficiency.](#)



The graph shows this property's current and potential energy rating.

Properties get a rating from A (best) to G (worst) and a score. The better the rating and score, the lower your energy bills are likely to be.

For properties in England and Wales:

the average energy rating is D
the average energy score is 60

Breakdown of property's energy performance

Features in this property

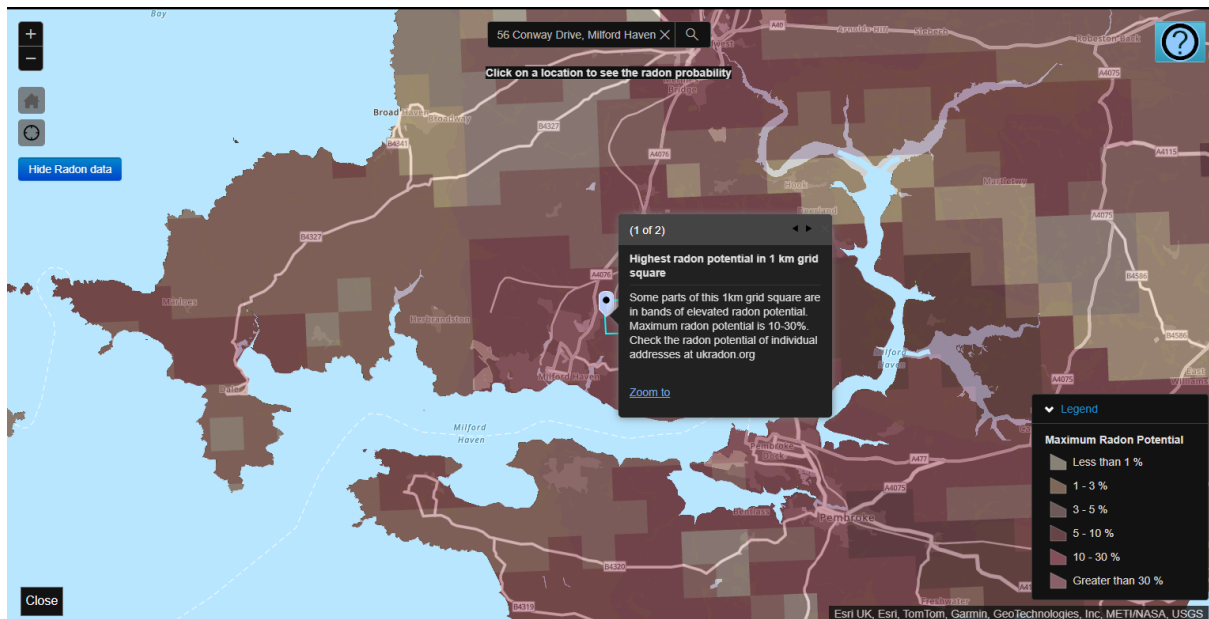
Features get a rating from very good to very poor, based on how energy efficient they are. Ratings are not based on how well features work or their condition.

Assumed ratings are based on the property's age and type. They are used for features the assessor could not inspect.

Feature	Description	Rating
Wall	Timber frame, as built, insulated (assumed)	Good
Roof	Pitched, 200 mm loft insulation	Good
Roof	Pitched, insulated (assumed)	Good
Window	Fully double glazed	Good
Main heating	Boiler and radiators, mains gas	Good
Main heating control	Programmer, room thermostat and TRVs	Good
Hot water	From main system	Good
Lighting	Low energy lighting in 75% of fixed outlets	Very good
Floor	Solid, insulated (assumed)	N/A
Secondary heating	Room heaters, electric	N/A

Primary energy use

The primary energy use for this property per year is 128 kilowatt hours per square metre (kWh/m2).



[UK Radon]

Flood risk information for the area around:

56, CONWAY DRIVE, STEYNTON, MILFORD HAVEN, SA73 1JA

This information is for the area **within 10 metres of the address above**. It shows the **highest risk level** for each type of flooding.

The risk levels are: High, Medium, Low and Very low.

Very low risk	Flooding from rivers Risk less than 0.1% chance each year. More about very low risk from rivers
Very low risk	Flooding from the sea Risk less than 0.1% chance each year. More about very low risk from the sea
Very low risk	Flooding from surface water and small watercourses Risk less than 0.1% chance each year. More about very low risk from surface water and small watercourses
This area	Does not benefit from flood defences.

[National Resources Wales]

Timber frame construction

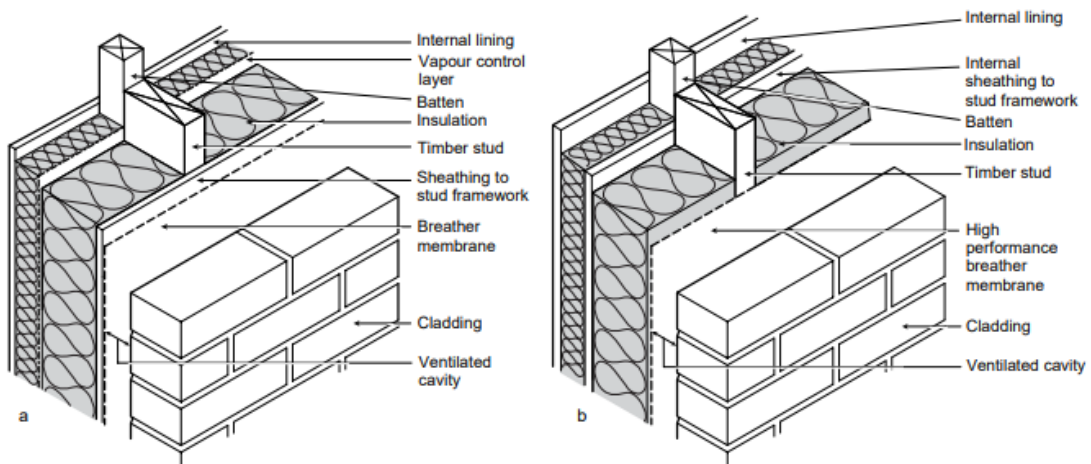
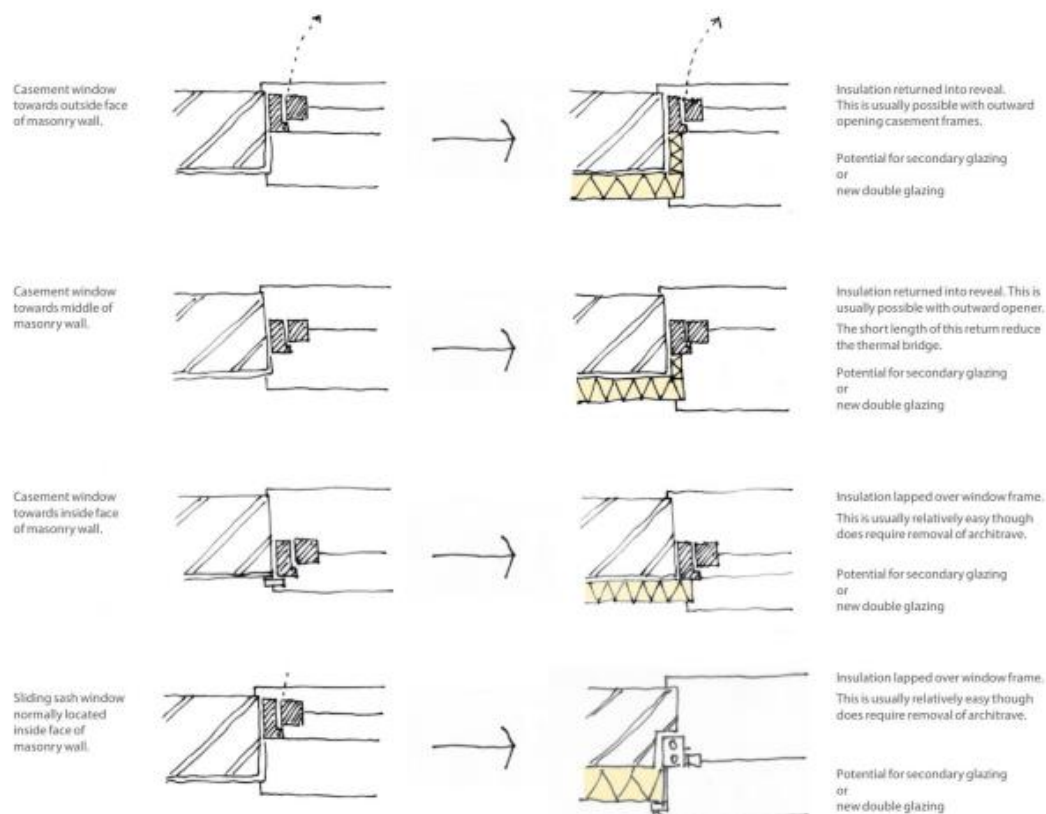


Figure 1.7 Typical wall construction: a Sheathing on external face of frame; b Sheathing on internal face of frame

[BM Trada 2011]



[Department of Business, energy and Industrial Strategy 2021]

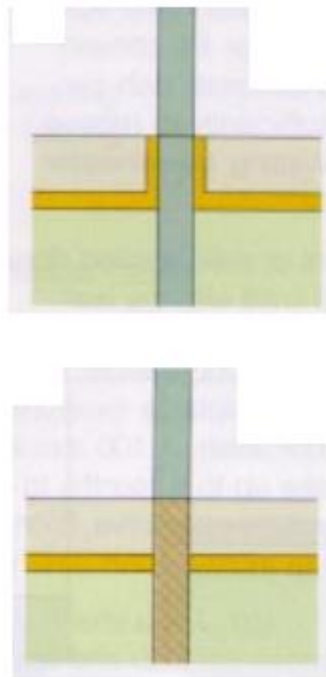


Figure 4 Vertical insulation against internal walls or use of insulating blockwork

[BRE 2001]

Report based on: **RICS (2017)** *RICS Condition Report (Sample)*. [Online]. Available at: <https://foundationsurveyors.com/wp-content/uploads/2017/03/RICS-Condition-Report-Sample.pdf> [Accessed 29 Dec 2025].