

This Publishable Report is provided as part of The Rathlin Sustainable Island Network study and is for illustrative public information purposes. The building owner's reports are confidential and thus not published here.

ENERGY AUDIT REPORT

Sample Home 7

Detached Home – 2019 –Cavity Block – 160.58 m²
Current EPC rating – B (84) – Energy Use 84 kWh/m²/yr – Total Energy Use: 13,371 kWh/yr



Existing Building Details		
Building Elements		U-Value (W/m ² .K)
Walls	350mm Block Cavity Construction with 150mm Filled Cavity	0.20
Walls	Timber Frame (Dormer Cheeks)	0.30
Roof	Pitched Roof – Insulated at joist level	0.09
Roof	Pitched Roof – Insulated on Rafter	0.16
Ground Floor	Solid	0.12
Door	Half Glazed uPVC Exposed Door – Front	2
Door	Half Glazed uPVC exposed door - Rear	2
Windows	Double-glazed, argon filled, low e coating, Wood frames	1.4

Existing Heating Characteristics			
Heating System		Energy	Efficiency (%)
Primary Heating System	Non - Condensing Oil Boiler, primary pipework insulated (Aga, Rayburn 880K (M))	Oil	85.6%
Secondary Heating System	Closed Room Heater – Stove	Wood Logs	
Domestic Hot Water	Heated with Primary heating system and immersion	Oil	85.6%
Cylinder	Cylinder with manufactured jacket (80mm)		
Controls	Full Time & Temp Zone Controls		

Domestic Retrofit Guidelines (Step by Step)						
Proposed Interventions		Energy saving (kWh/yr)	Energy saving (kWh/m2/yr)	Revised energy use (kWh/yr)	Revised BER Rating	CO2 savings/yr (kg)
1	Solar PV panels 2.5kWp linked to hot water	6,268	39	9,353	A (93)	1,136
	Overall Savings Potential	6,268	39			1,136

Estimated Costs Summary		
Measures	Estimated Costs (£/m ²)/Unit	Estimated Total Costs (£)
1	Install 2.5 kWp linked to hot water	£6,000.00
Total to achieve A rating		£6,000.00
VAT @ 20%		£1,200.00
Subtotal		£7,200.00
PM Fee (8%)		£480.00
Total Build Costs		£7,680.00
Simple Payback		12 years

Savings Summary					
BER Rating	Energy Use (kWh/yr)	Energy Use (kWh/m ² /yr)	Energy Savings (kWh/yr)	Cost Savings (£/yr)*	CO2 Savings (kg)
Current B (84)	13,371	84	()	0.00	
Upgraded A (92)	9,353	44	6,268	£650.94	1,136

*See 'Assumptions' Below

** This represents 69% of the pre-upgrade energy consumption

To illustrate Carbon Dioxide savings: 1 10-year-old evergreen tree will absorb 14kg of CO₂ per year (deciduous absorb less). Therefore, the carbon savings of the works would be the equivalent of **planting 81 evergreen trees.**

Savings calculations

Per Annum

Upgrade: Install PV & link to immersion heater

Electricity Generated by PV: 6,268kWh

Savings Hot Water usage 3417kWh x 70% = 2,392kWh of Kerosene x £0.10 = £239.20

Electricity for lighting, fans etc = 2,309kWh of electricity x 50% = 1,154kWh x £0.2365 = £272.92

Electricity exported to 'grid' = 2,722kWh x £0.051 = £138.82

TOTAL SAVED VIA PV PANELS = £650.94

Assumptions

Kerosene produces 0.257kg CO₂ per kWh. This does not include emissions in production and transport

The amount of Carbon that is emitted per kWh Electricity in Northern Ireland is .330kg/kWh¹

Electricity Rate pence per kWh = £0.2365

Kerosene cost per kWh = £0.10

Seasoned Wood & coal per kWh = £0.08²

¹ <https://www.daera-ni.gov.uk/sites/default/files/publications/daera/Northern%20Ireland%20Carbon%20Intensity%20Indicators%202021.pdf>

² <https://nottenergy.com/resources/energy-cost-comparison>