elmhurst energy systems

SAP Calculations

Client:

Project: 4, Warren Vale
DONAGHADEE, BT21 0RE

Contact: Adrian Biggar
Thermal Matters
adrian@thermalmatters.com

energy rating made easy

Property Reference: AB2354 No 4 **Issued on Date:** 08.Aug.2018
Survey Reference: As Built **Prop Type Ref:** Bradley McClure Architec
Property: 4, Warren Vale, DONAGHADEE, BT21 0RE

SAP Rating:	85 B	**CO2 Emissions (t/year):**	3.26	**DER:** 14.14 Pass	**Reduction:** 9.8%	**FEE:** 49.7	**ZC8:**	0.00
Environmental:	85 B	**General Requirements Compliance:**	Pass	**TER:** 15.68		**HLP:** 1.21	**Energy cost:**	£ 789

CfSH Results	**Version:**	**ENE1 Credits:** N/A	**ENE2 Credits:** N/A	**ENE7 Credits:** N/A	**CfSH Level:** N/A

Surveyor: Adrian Biggar, Tel: 02887747987 Surveyor ID: F196-0001
Address: 86 Sherrigrim Road, Dungannon, Tyrone, BT71 4BX
Client:

Software Version: Elmhurst Energy Systems SAP2009 Calculator (Design System) version 4.04r04
SAP version: SAP 2009, Regs Region: Northern Ireland (NI Technical Booklet F1 2011), Calculation Type: New Dwelling As Built

SUMMARY FOR INPUT DATA FOR New Build (As Built)

1 TER and DER

Fuel for main heating:	Mains gas	
Fuel factor:	1.00 (mains gas)	
Target Carbon Dioxide Emission Rate (TER)	15.68 kg/m^2	
Dwelling Carbon Dioxide Emission Rate (DER)	14.14 kg/m^2	OK

2 Fabric U-values

Element	Average	Highest	
External wall	0.27 (max. 0.30)	0.27 (max. 0.70)	OK
Floor	0.11 (max. 0.25)	0.11 (max. 0.70)	OK
Roof	0.11 (max. 0.20)	0.11 (max. 0.35)	OK
Openings	1.37 (max. 2.00)	1.40 (max. 3.30)	OK

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air permeability

Air permeability at 50 pascals:	2.06 (measured in this dwelling)	
Maximum	10.0	OK

4 Heating efficiency

Main heating system:	Boiler system with radiators or underfloor - Mains gas Data from database Viessmann Vitodens 050-W BPJD 35kW Combi Boiler Combi boiler Efficiency: 89.0% SEDBUK2009 Minimum: 88.0%	OK
Secondary heating system:	Room heaters - mains gas Data from manufacturer, tested to BS EN 613 Studio 2 or similar Efficiency: 63% Minimum: 63%	OK

5 Cylinder insulation

Hot water storage	No cylinder	

6 Controls

Space heating controls:	Time and temperature zone control	OK
Hot water controls:	No cylinder	
Boiler interlock	Yes	OK

7 Low energy lights

Percentage of fixed lights with low-energy fittings:	100%	

Minimum	75%	OK

8 Mechanical ventilation

Not applicable

9 Summertime temperature

Overheating risk (Northern Ireland):	Slight	OK
Based On:		
Overshading:	Average	
Windows facing North East:	21.70 m^2, No overhang	
Windows facing South West:	19.05 m^2, No overhang	
Windows facing North West:	0.72 m^2, No overhang	
Ventilation rate:	1.00	
Blinds/curtains:	None	

10 Key features

Roof U-value	0.11 W/m^2K
Floor U-value	0.11 W/m^2K
Door U-value	1.20 W/m^2K
Window U-value	1.40 W/m^2K
Window U-value	1.40 W/m^2K
Roof window U-value	1.30 W/m^2K
Air permeability	2.1 m^3/m^2h
Secondary heating (mains gas)	

Predicted Energy Assessment

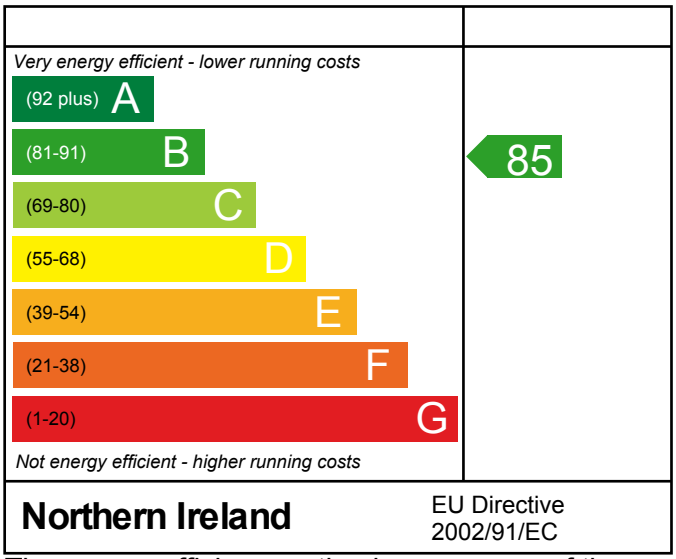
4, Warren Vale,
DONAGHADEE,
BT21 0RE

Dwelling type:	House, Detached
Date of assessment:	08.Aug.2018
Produced by:	Thermal Matters
Total floor area:	244.81 m^2

This document is a Predicted Energy Assessment for properties marketed when they are incomplete. It includes a predicted energy rating which might not represent the final energy rating of the property on completion. Once the property is completed, this rating will be updated and an official Energy Performance Certificate will be created for the property. This will include more detailed information about the energy performance of the completed property.

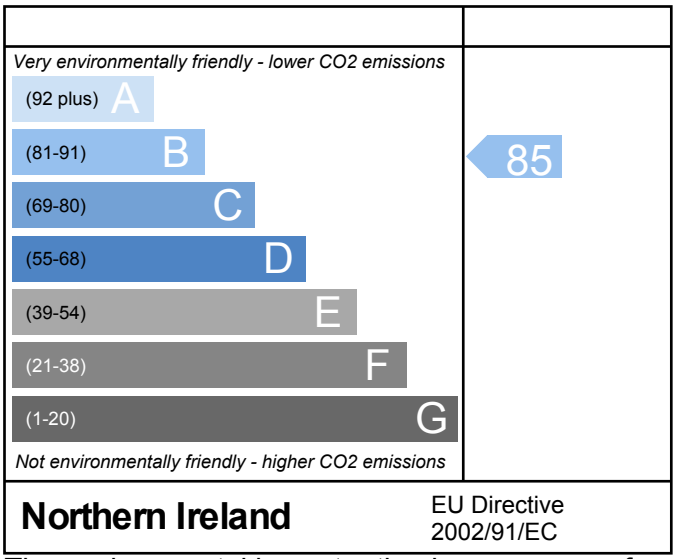
The energy performance has been assessed using the Government approved SAP2009 methodology and is rated in terms of the energy use per square meter of floor area; the energy efficiency is based on fuel costs and the environmental impact is based on carbon dioxide (CO2) emissions.

Energy Efficiency Rating



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.

Environmental Impact (CO2) Rating



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.

Summary Information

Property Reference: AB2354 No 4
Survey Reference: As Built
Property: 4, Warren Vale, DONAGHADEE, BT21 0RE

Issued on Date: 08.Aug.2018
Prop Type Ref: Bradley McClure Architec

SAP Rating:	85 B	**CO2 Emissions (t/year):**	3.26	**DER:** 14.14 Pass	**Reduction:** 9.8%	**FEE:** 49.7	**ZC8:**	0.00
Environmental:	85 B	**General Requirements Compliance:**	Pass	**TER:** 15.68		**HLP:** 1.21	**Energy cost:**	£ 789

CfSH Results	**Version:**	**ENE1 Credits:**	N/A	**ENE2 Credits:**	N/A	**ENE7 Credits:**	N/A	**CfSH Level:**	N/A

Surveyor: Adrian Biggar, Tel: 02887747987 Surveyor ID: F196-0001
Address: 86 Sherrigrim Road, Dungannon, Tyrone, BT71 4BX
Client:

Software Version: Elmhurst Energy Systems SAP2009 Calculator (Design System) version 4.04r04
SAP version: SAP 2009, Regs Region: Northern Ireland (NI Technical Booklet F1 2011), Calculation Type: New Dwelling As Built

SUMMARY FOR INPUT DATA FOR New Build (As Built)

Orientation	North East
1.0 Property Type	House, Detached
2.0 Number of Storeys	2
3.0 Date Built	2018
3.0 Property Age Band	
4.0 Sheltered Sides	2
5.0 Sunlight/Shade	Average or unknown

6.0 Measurements

	Internal Perimeter	Internal Floor Area	Average Storey Height
Ground Floor:	49.35	130.4	2.74
1st Storey:	43.1	114.41	2.86

7.0 Living Area	28.11
8.0 Thermal Mass Parameter	Simple calculation - Low

9.0 External Walls

Description	Construction	U-Value	Element	Kappa	Gross Area	Nett Area
140mm T Frame	Timber framed wall (one layer of plasterboard)	0.27		9.00	258.49	210.29

10.0 External Roofs

Description	Construction	U-Value	Element	Kappa	Gross Area	Nett Area
Plane 400mm Wool	Plasterboard, insulated at ceiling level	0.11		9	130.40	130.40

11.0 HeatLoss Floors

Description	Construction	U-Value	Element	Kappa	Area
150mm Kingspan or similar	Slab on ground, screed over insulation	0.11		110	130.40

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Argon Filled	Solar Trans	Frame Type	Frame Factor	U value
Ent Doors	Manufacturer	Half Glazed Door	Double Low-E Soft 0.05			0.63		0.70	1.20
Windows	Manufacturer	Window	Double Low-E Soft 0.05			0.63		0.70	1.40
French Doors	Manufacturer	Window	Double Low-E Soft 0.05			0.63		0.70	1.40
Rooflights	Manufacturer	Roof Window	Double Low-E Soft 0.05			0.63		0.70	1.30

13.0 Openings

Name	Opening Type	Location	Orientation	Curtain Type	Overhang Ratio	Wide Overhang	Width	Height	Count	Area	Curtain Closed
Ent Doors	Half Glazed Door - Ent Doors	140mm T Frame	North East	None	0	No	0	0	0	4.82	0
Front Windows	Window - Windows	140mm T Frame	North East	None	0	No	0	0	0	21.70	0
Rear Windows	Window - Windows	140mm T Frame	South West	None	0	No	0	0	0	10.36	0
Rear Ent Door	Half Glazed Door - Ent Doors	140mm T Frame	South West	None	0	No	0	0	0	1.91	0

Side Windows	Window - Windows	140mm T Frame	North West	None	0	No	0	0	0	0.72	0
Rear French Door	Window - French Doors	140mm T Frame	South West	None	0	No	0	0	0	8.69	0

14.0 Conservatory: None
15.0 Draught Proofing: 100
16.0 Draught Lobby: No

17.0 Thermal Bridging: Calculate Bridges

17.1 List of Bridges

Source Type	Bridge Type	Length	Psi	Imported
Independently assessed	E1 Steel lintel with perforated steel base plate	5.00	0.25	No
Table K1 - Accredited	E2 Other lintels (including other steel lintels)	24.21	0.3	No
Table K1 - Accredited	E3 Sill	21.49	0.04	No
Table K1 - Accredited	E4 Jamb	49.36	0.05	No
Table K1 - Accredited	E5 Ground floor	49.35	0.16	Yes
Table K1 - Accredited	E6 Intermediate floor within a dwelling	43.10	0.07	Yes
	E7 Intermediate floor between dwellings (in blocks of flats)	0.00		No
	E8 Balcony within a dwelling	0.00		No
	E9 Balcony between dwellings	0.00		No
Table K1 - Accredited	E10 Eaves (insulation at ceiling level)	46.28	0.06	No
	E11 Eaves (insulation at rafter level)	0.00		No
Table K1 - Accredited	E12 Gable (insulation at ceiling level)	8.90	0.24	No
	E13 Gable (insulation at rafter level)	0.00		No
	E14 Flat roof	0.00		No
	E15 Flat roof with parapet	0.00		No
Table K1 - Accredited	E16 Corner (normal)	33.36	0.09	No
Table K1 - Accredited	E17 Corner (inverted - internal area greater than external area)	10.96	-0.09	No
	E18 Party wall between dwellings	0.00		No
	P1 Party wall - Ground floor	0.00		No
	P2 Party wall - Intermediate floor within a dwelling	0.00		No
	P3 Party wall - Intermediate floor between dwellings (in blocks of flats)	0.00		No
	P4 Party wall - Roof (insulation at ceiling level)	0.00		No
	P5 Party wall - Roof (insulation at rafter level)	0.00		No

18.0 Pressure Testing: Yes
- Designed q50: 5.00
- Property Tested ?: Yes
- As Built q50: 2.06
- Same As Designed ?

19.0 Mechanical Ventilation
- Mechanical Ventilation System Present: No
- Approved Installation
- Windows open in hot weather: Windows slightly open
- Cross ventilation possible: Yes
- Night Ventilation: Yes
- Air change rate: 1.00
- Mechanical Ventilation data Type
- Type
- MV Reference Number
- Configuration
- MVHR Duct Insulated
- Manufacturer SFP
- Duct Type
- MVHR Efficiency
- Wet Rooms
- Brand, Model

20.0 Fans, Open Fireplaces, Flues

	MHS	SHS	Other	Total
Number of Chimneys	0	0	0	0
Number of open flues	0	1	0	1
Number of intermittent fans				5
Number of passive vents				0
Number of flueless gas fires				0

21.0 Cooling System: No

22.0 Lighting
- Internal

Total number of light fittings	12
Total number of L.E.L. fittings	12
Percentage of L.E.L. fittings	100.00
External	
External lights fitted	Yes
Light and motion sensors	Yes
23.0 Electricity Tariff	Standard
24.0 Heating Systems	
Main Heating 1	Database
Description	
Percentage of Heat	100.00
Main Heating 2	None
Description	
Percentage of Heat	
Community Heating	
Secondary Heating	Manufacturer
Water Heating	Main Heating 1
Flue Gas Heat Recovery System	No
Waste Water Heat Recovery System 1	No
Waste Water Heat Recovery System 2	No
Solar Panel	No
25.0 Main Heating 1	
Database Ref. No.	17728
Fuel Type	Mains gas
Main Heating	Mains gas BGW Post 98 Combi condens. with auto ign.
TestMethod	
SAP Code	104
Efficiency (Split Efficiences) %	
Efficiency (Split Efficiences) %	
In Winter	89.9
In Summer	79.8
Model Name	
Manufacturer	
Controls	CBI Time and temperature zone control
Delayed Start Stat	No
Sap Code	2110
Burner Control	
Boiler Compensator	None
HETAS approved System	
Oil Pump Inside	
FI Case	
FI Water	
Flue Type	Balanced
Smoke Control Area	
Fan Assisted Flue	Yes
Is MHS Pumped	Pump in heated space
Heat Emitter	Radiators
Underfloor Heating	
Electric CPSU Temperature	
Combi boiler type	Standard Combi
Combi keep hot type	Gas/Oil, time clock
Combi store type	
27.0 Community Heating	
Space Community Heating	
Distribution Loss	
Distribution Loss Value	
Controls	
SAP Code	
Water Community Heating	
Distribution Loss	
Distribution Loss Value	
Charging Linked To Heat Use	
28.0 Secondary Heating	RGC
Description	Mains gas RGC Modern fire with balanced flue
SHS efficiency %	63
SAP Code	609
HETAS Approved System	Yes
Smoke Control Area	
Test Method	BS EN 613
Manufacturer	Stovax or similar
Model Name	Studio 2 or similar
29.0 Water Heating	HWP From main heating 1
Water use <= 125 litres/person/day	Yes
SAP Code	901

Immersion Heater	
Summer Immersion	
Suplementary Immersion	
Immersion Only Heating Hot Water	
29.1 Flue Gas Heat Recovery System	
Database ID	
Brand Model	
Details	
29.2 Waste Water Heat Recovery System	
Total rooms with shower and/or bath	
30.0 Hot Water Cylinder	None
Cylinder Stat	
Cylinder In Heated Space	
Independent Time Control	
Insulation Type	
Insulation Thickness	
Cylinder Volume	
Loss (kwh/day)	
Pipes insulation	
In Airing Cupboard	
31.0 Solar Panel	
Solar Panel Area	
Area Type	
Panel Type	
n0, a1, A/G ratio	
Orientation	
Elevation	
Overshading	
Solar Storage Volume	
Pump electrically powered	
Combined Cylinder	
32.0 Thermal Store	None
Thermal Store Pipework	within a single casing
33.0 Photovoltaic Unit	
Apportioned KWh/Year	
34.0 Wind Turbines	
Terrain Type	Urban
Wind Turbines	
Count	
Apportioned Kwh/year	
Rotor Diameter	
Hub Height	
35.0 Small-scale Hydro	
Electricity Generated	
Description	
Apportioned kWh/Year	

Recommendations

None

Further measures to achieve even higher standards

Solar photovoltaic panels, 2.5 kWp	£284	B 90	B 89

Thermal Bridging

Property Reference: AB2354 No 4
Survey Reference: As Built
Property: 4, Warren Vale, DONAGHADEE, BT21 0RE

Issued on Date: 08.Aug.2018
Prop Type Ref: Bradley McClure Archi

SAP Rating:	85 B	**CO2 Emissions (t/year):**	3.26	**DER:** 14.14 Pass	**Reduction:** 9.8%	**FEE:** 49.7	**ZC8:**	0.00
Environmental:	85 B	**General Requirements Compliance:**	Pass	**TER:** 15.68		**HLP:** 1.21	**Energy cost:**	£ 789

CfSH Results	**Version:**	**ENE1 Credits:**	N/A	**ENE2 Credits:**	N/A	**ENE7 Credits:**	N/A	**CfSH Level:**	N/A

Surveyor: Adrian Biggar, Tel: 02887747987 Surveyor ID: F196-0001
Address: 86 Sherrigrim Road, Dungannon, Tyrone, BT71 4BX
Client:

Software Version: Elmhurst Energy Systems SAP2009 Calculator (Design System) version 4.04r04
SAP version: SAP 2009, Regs Region: Northern Ireland (NI Technical Booklet F1 2011), Calculation Type: New Dwelling As Built

	Junction detail	Source Type	Psi (W/mK)	Length (m)	Result	Reference
External wall	E1 Steel lintel with perforated steel base plate	Independently assessed	0.250	5.00	1.25	
External wall	E2 Other lintels (including other steel lintels)	Table K1 - Accredited	0.300	24.21	7.26	
External wall	E3 Sill	Table K1 - Accredited	0.040	21.49	0.86	
External wall	E4 Jamb	Table K1 - Accredited	0.050	49.36	2.47	
External wall	E5 Ground floor	Table K1 - Accredited	0.160	49.35	7.90	
External wall	E6 Intermediate floor within a dwelling	Table K1 - Accredited	0.070	43.10	3.02	
External wall	E10 Eaves (insulation at ceiling level)	Table K1 - Accredited	0.060	46.28	2.78	
External wall	E12 Gable (insulation at ceiling level)	Table K1 - Accredited	0.240	8.90	2.14	
External wall	E16 Corner (normal)	Table K1 - Accredited	0.090	33.36	3.00	
External wall	E17 Corner (inverted - internal area greater than external area)	Table K1 - Accredited	-0.090	10.96	-0.99	

Total W/mK: 29.68
Y-Value W/m2K: 0.057