SAP Calculations

Client: Radmore & others

Project: House 9, Green Farm Paddocks
Stafford, Seighford

Contact: Ian Owen
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energy rating made easy

Active Energy Assessors Ltd
Triangle House
40 Weeping Cross
Stafford
ST17 0DS

Building Regulation Compliance

Property Reference: 000310
Survey Reference: 001-LPG Combi FGHR
Property: House 9, Green Farm Paddocks, Seighford, Stafford

Issued on Date: 10.Aug.2015
Prop Type Ref: House 9 Small Detached

SAP Rating:	76 C	**CO2 Emissions (t/year):**	1.66	**DER:**	18.66 Pass	**TER:**	19.51	**Percentage DER<TER:**	4.35 %
Environmental:	84 B	**General Requirements Compliance:**	Pass	**DFEE:**	49.20 Pass	**TFEE:**	56.37	**Percentage DFEE<TFEE:**	12.72 %

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

Surveyor: Ian Owen, Tel: 01785660066 — Surveyor ID: 8172-0001
Address: 40 Weeping Cross, Stafford, ST17 0DS
Client: Radmore & others, JD & WT

Software Version: Elmhurst Energy Systems SAP2012 Calculator (Design System) version 3.01r13
SAP version: SAP 2012, Regs Region: England (Part L1A 2013), Calculation Type: New Dwelling As Designed

SUMMARY FOR INPUT DATA FOR New Build (As Designed)

1a TER and DER

Fuel for main heating:	Bulk LPG	
Fuel factor:	1.06 (LPG)	
Target Carbon Dioxide Emission Rate (TER)	19.51 kg/m^2	
Dwelling Carbon Dioxide Emission Rate (DER)	18.66 kg/m^2	OK

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	56.37 kWh/m^2	
Dwelling Fabric Energy Efficiency (DFEE)	49.20 kWh/m^2	OK

2 Fabric U-values

Element	Average	Highest	
External wall	0.21 (max. 0.30)	0.21 (max. 0.70)	OK
Floor	0.14 (max. 0.25)	0.14 (max. 0.70)	OK
Roof	0.11 (max. 0.20)	0.11 (max. 0.35)	OK
Openings	1.11 (max. 2.00)	1.20 (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:	5.00 (design value)	
Maximum	10.0	OK

4 Heating efficiency

Main heating system:	Boiler system with radiators or underfloor - Bulk LPG Data from database Worcester Greenstar CDi 25 Cdi Combi boiler Efficiency: 91.1% SEDBUK2009 Minimum: 88.0%	OK
Secondary heating system:	None	

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 (Midlands):	Not significant	OK
Based On:		
Overshading:	Average	
Windows facing North:	2.89 m^2, No overhang	
Windows facing East:	1.13 m^2, No overhang	
Windows facing South:	6.67 m^2, No overhang	
Air change rate:	4.00 ach	
Blinds/curtains:	None	

10 Key features

Roof U-value	0.11 W/m^2K
Door U-value	1.10 W/m^2K
Window U-value	1.10 W/m^2K

Predicted Energy Assessment

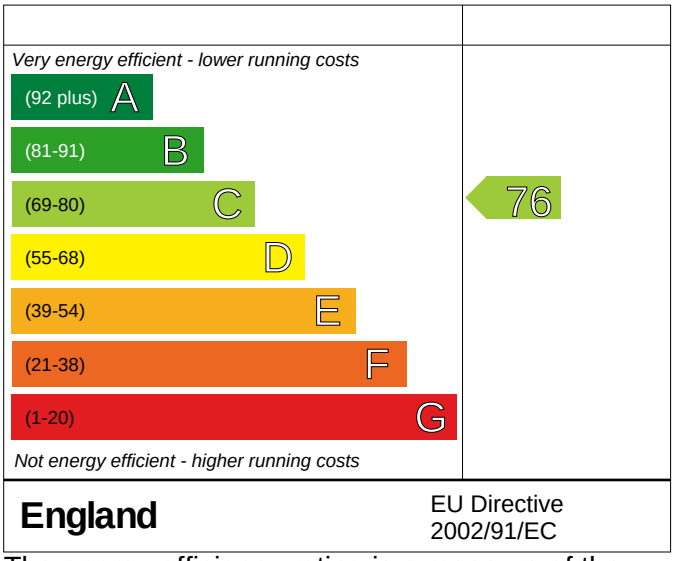
House 9, Green Farm Paddocks,
Seighford,
Stafford

Dwelling type:	House, Detached
Date of assessment:	10.Aug.2015
Produced by:	Active Energy Assessors Ltd
Total floor area:	97.16 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.

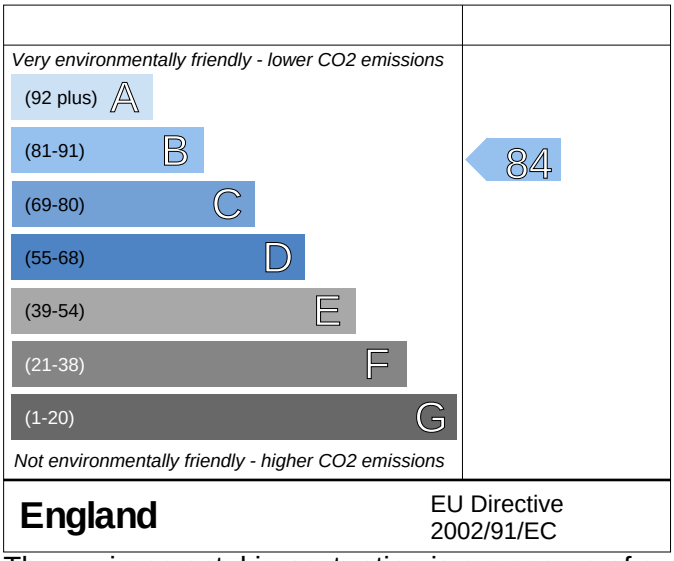
The energy performance has been assessed using the Government approved SAP2012 methodology and is rated in terms of the energy use per square meter of floor area; the energy efficiency is based on fuel costs and the environmental impact is based on carbon dioxide (CO2) emissions.

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.

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Summary Information

Property Reference: 000310
Survey Reference: 001-LPG Combi FGHR
Property: House 9, Green Farm Paddocks, Seighford, Stafford

Issued on Date: 10.Aug.2015
Prop Type Ref: House 9 Small Detached

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SUMMARY FOR INPUT DATA FOR New Build (As Designed)

Orientation	South
1.0 Property Type	House, Detached
2.0 Number of Storeys	2
3.0 Date Built	2015
3.0 Property Age Band	
4.0 Sheltered Sides	2
5.0 Sunlight/Shade	Average or unknown

6.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground Floor:	27.92	48.58	2.60
1st Storey:	27.92	48.58	2.30

7.0 Living Area 15.00

8.0 Thermal Mass Parameter Simple calculation - Low

9.0 External Walls

Description	Construction	U-Value	Kappa	Gross Area	Nett Area
External Wall 1	Cavity wall : plasterboard on dabs, AAC block, filled cavity, any outside structure	0.21		136.81	117.60

9.2 Internal Walls

Description	Construction	Kappa	Area

10.0 External Roofs

Description	Construction	U-Value	Kappa	Gross Area	Nett Area
External Roof 1	Plasterboard, insulated at ceiling level	0.11		48.58	48.58

10.2 Internal Ceilings

Description	Construction	Kappa	Area

11.0 HeatLoss Floors

Description	Construction	U-Value	Kappa	Area
Heat Loss Floor 1	Slab on ground, screed over insulation	0.14		48.58

11.2 Internal Floors

Description	Construction	Kappa	Area

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Argon Filled	Solar Trans	Frame Type	Frame Factor	U value
Windows	Manufacturer	Window	Double Low-E Soft 0.1			0.70		0.70	1.10

French windows	Manufacturer	Half Glazed Door	Double Low-E Soft 0.1	0.70	0.70	1.10	
Half glazed door	Manufacturer	Half Glazed Door	Double Low-E Soft 0.1	0.70	0.70	1.20	

13.0 Openings

Name	Opening Type	Location	Orientation	Curtain Type	Overhang Ratio	Wide Overhang	Width	Height	Count	Area	Curtain Closed
Front	Window	[1] External Wall 1	South	None	0.00					6.67	
Front Door	Half Glazed Door	[1] External Wall 1	South							1.80	
Rear windows	Window	[1] External Wall 1	North	None	0.00					2.89	
French Windows	Half Glazed Door	[1] External Wall 1	North							6.72	
Side	Window	[1] External Wall 1	East	None	0.00					1.13	

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
Table K1 - Approved	E2 Other lintels (including other steel lintels)	14.32	0.300	Yes
Table K1 - Approved	E3 Sill	10.26	0.040	Yes
Table K1 - Approved	E4 Jamb	33.38	0.050	Yes
Table K1 - Approved	E5 Ground floor (normal)	27.92	0.160	Yes
Table K1 - Approved	E6 Intermediate floor within a dwelling	27.92	0.070	Yes
Table K1 - Approved	E10 Eaves (insulation at ceiling level)	14.72	0.060	No
Table K1 - Approved	E12 Gable (insulation at ceiling level)	13.20	0.240	No
Table K1 - Approved	E16 Corner (normal)	19.60	0.090	Yes

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

19.0 Mechanical Ventilation
- Mechanical Ventilation System Present: No
- Approved Installation
- Windows open in hot weather: Windows half open
- Cross ventilation possible: Yes
- Night Ventilation: No
- Air change rate: 4.00
- 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
Number of open flues	0		0	0
Number of intermittent fans				3
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: 16
  - Total number of L.E.L. fittings: 16
  - Percentage of L.E.L. fittings: 100.00
- External
  - External lights fitted: No
  - Light and motion sensors

23.0 Electricity Tariff: Standard

24.0 Heating Systems	
Main Heating 1	Database
Description	LPG Combi
Percentage of Heat	100 %
Main Heating 2	None
Description	
Percentage of Heat	%
Community Heating	
Secondary Heating	None
Water Heating	Main Heating 1
Flue Gas Heat Recovery System	Yes
Waste Water Heat Recovery	No
Instantaneous System 1	
Waste Water Heat Recovery	No
Instantaneous System 2	
Waste Water Heat Recovery Storage System	No
Solar Panel	No
25.0 Main Heating 1	
Database Ref. No.	10264
Fuel Type	Bulk LPG
Main Heating	BLW
TestMethod	
SAP Code	104
Efficiency (Split Efficiences) %	
Efficiency (Split Efficiences) %	
In Winter	92.0
In Summer	81.9
Model Name	
Manufacturer	
Controls	CBI Time and temperature zone control
PCDF Controls	0
Delayed Start Stat	Yes
Sap Code	2110
Burner Control	
Boiler Compensator	
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	
Flow Temperature	
Electric CPSU Temperature	
Combi boiler type	Standard Combi
Combi keep hot type	None
Combi store type	
27.0 Community Heating	
Space Community Heating	
PCDF Index	
Distribution Loss	
Distribution Loss Value	
Controls	
SAP Code	
Water Community Heating	
PCDF Index	
Distribution Loss	
Distribution Loss Value	
Charging Linked To Heat Use	
28.0 Secondary Heating	
Description	
SHS efficiency %	
SAP Code	
HETAS Approved System	
Smoke Control Area	
Test Method	
Manufacturer	
Model Name	
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	60002
Brand Model	Zenex, GasSaver
Details	Year: + current Applicable Fuel: 2 Boiler Types: RCSK Heat Store Volume: 0 PV module: 0
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, a2, A/G ratio	
Orientation	
Elevation	
Overshading	
Solar Storage Volume	
Pump electrically powered	
Combined Cylinder	
32.0 Thermal Store	
Thermal Store Pipework	
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 water heating	£4,000 - £6,000	£71	C 78	B 86
Solar photovoltaic panels, 2.5 kWp	£5,000 - £8,000	£286	B 88	A 94

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Thermal Bridging

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	Junction detail	Source Type	Psi (W/mK)	Length (m)	Result	Reference
External wall	E2 Other lintels (including other steel lintels)	Table K1 - Approved	0.300	14.32	4.30	
External wall	E3 Sill	Table K1 - Approved	0.040	10.26	0.41	
External wall	E4 Jamb	Table K1 - Approved	0.050	33.38	1.67	
External wall	E5 Ground floor (normal)	Table K1 - Approved	0.160	27.92	4.47	
External wall	E6 Intermediate floor within a dwelling	Table K1 - Approved	0.070	27.92	1.95	
External wall	E10 Eaves (insulation at ceiling level)	Table K1 - Approved	0.060	14.72	0.88	
External wall	E12 Gable (insulation at ceiling level)	Table K1 - Approved	0.240	13.20	3.17	
External wall	E16 Corner (normal)	Table K1 - Approved	0.090	19.60	1.76	

Total W/mK: 18.61
Y-Value W/m2K: 0.080

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U-value calculator report

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Building Elements:

Roof 000002 - 400mm Quilt

Roof Type: Pitched Roof, insulated flat ceiling

Layer	Description	Thickness	Conductivity	Resistance	Fraction
Ext surface				0.040	
Layer 1	**Mineral wool quilt**				
	Main construction	300 mm	0.042	7.143	100.00 %
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 2	**Mineral wool quilt**				
	Main construction	100 mm	0.042	2.381	90.14 %
	Bridging - Timber	100 mm	0.130		9.86 %
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 3	**Plasterboard, standard**				
	Main construction	12 mm	0.210	0.057	100.00 %
Int surface				0.100	

Total resistance: Upper limit = 9.534 m² K/W Lower limit = 9.313 m² K/W Average = 9.424 m² K/W
U-value (unrounded) = 0.11 W/m² K

Unheated space: None

Total thickness: 412 mm **U-value: 0.11 W/m² K**

Floor 000001 - 125 mm Celotex slab

Floor Type: Slab On Ground Floor
Area = 42.90 m², Perimeter = 19.60 m, Wall thickness = 275.00 mm, Soil: Unknown
Horizontal edge insulation: none
Vertical edge insulation: none

Layer	Description	Thickness	Conductivity	Resistance	Fraction
Ext surface				0.040	
Layer 1	**Screed**				
	Main construction	75 mm	1.150	0.065	100.00 %
Layer 2	**Celotex FF4000**				
	Main construction	125 mm	0.022	5.682	100.00 %
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 3	**Concrete, medium density**				
	Main construction	100 mm	1.350	0.074	100.00 %
Int surface				0.170	

Total resistance: Upper limit = 5.821 m² K/W Lower limit = 5.821 m² K/W Average = 5.821 m² K/W
U-value (unrounded) = 0.14 W/m² K

Unheated space: None

Total thickness: 300 mm **U-value: 0.14 W/m² K**