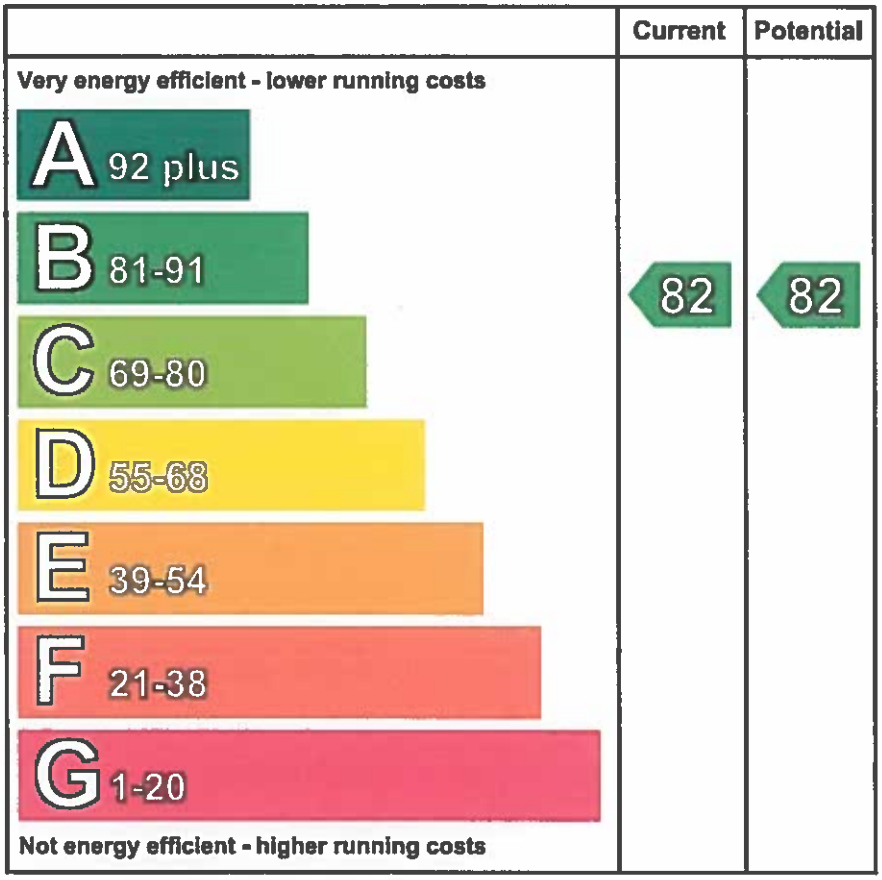
Energy Performance Certificate — Northern Ireland

13, The Poets Glen
Crossmaglen
NEWRY
BT35 9EZ

Date of assessment:	05 July 2013
Date of certificate:	05 July 2013
Reference number:	0663-3975-0534-9007-2945
Type of assessment:	SAP, new dwelling
Accreditation scheme:	NES
Assessor's name:	MrPaulSherry
Assessor's accreditation number:	NHER005176
Employer/Trading name:	Energy Assessments N.I.
Employer/Trading address:	
Related party disclosure:	No related party

Energy Efficiency Rating



Technical Information

Main heating type and fuel:	Boiler and radiators, oil
Total floor area:	94 m²
Approximate energy use:	108 kWh/m² per year
Approximate CO_2 emissions:	26 kg/m² per year
Dwelling type:	Mid-terrace house

Benchmarks

Typical new build: B83

Average for Northern Ireland: D57

The approximate energy use and CO_2 emissions are per square metre of floor area based on fuel costs for the heating, ventilation, hot water and lighting systems. The rating can be compared to two benchmarks: one that would be attained by a typical new dwelling with oil heating constructed to the minimum standards of the building regulations current at the date of the assessment and the second is the average for the housing stock in Northern Ireland.

Estimated energy use, carbon dioxide (CO_2) emissions and fuel costs of this home

	Current	Potential
Energy use	108 kWh/m² per year	108 kWh/m² per year
Carbon dioxide emissions	2.4 tonnes per year	2.4 tonnes per year
Lighting	£54 per year	£54 per year
Heating	£274 per year	£274 per year
Hot water	£138 per year	£138 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 temperatures, 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.

To see how this home can achieve its potential rating please see the recommended measures.

About this document

The Energy Performance Certificate for this dwelling was produced following an energy assessment undertaken by a qualified assessor, accredited by NES, to a scheme authorised by the Government. This certificate was produced using the SAP 2009 assessment methodology and has been produced under the Energy Performance of Buildings (Certificates and Inspections) Regulations (Northern Ireland) 2008. A copy of the certificate has been lodged on a national register.

If you have a complaint or wish to confirm that the certificate is genuine

Details of the assessor and the relevant accreditation scheme are on the preceding page. You can get contact details of the accreditation scheme from their website at www.nesltd.co.uk together with details of their procedures for confirming authenticity of a certificate and for making a complaint.

About the building's performance ratings

The ratings provide a measure of the building's overall energy efficiency and its environmental impact, calculated in accordance with a national methodology that takes into account factors such as insulation, heating and hot water systems, ventilation and fuels used. The average Energy Efficiency Rating for a dwelling in Northern Ireland is band D (rating 57).

Not all buildings are used in the same way, so energy ratings use 'standard occupancy' assumptions which may be different from the specific way you use your home. Different methods of calculation are used for homes and for other buildings. Details can be found at www.epb.dfpni.gov.uk

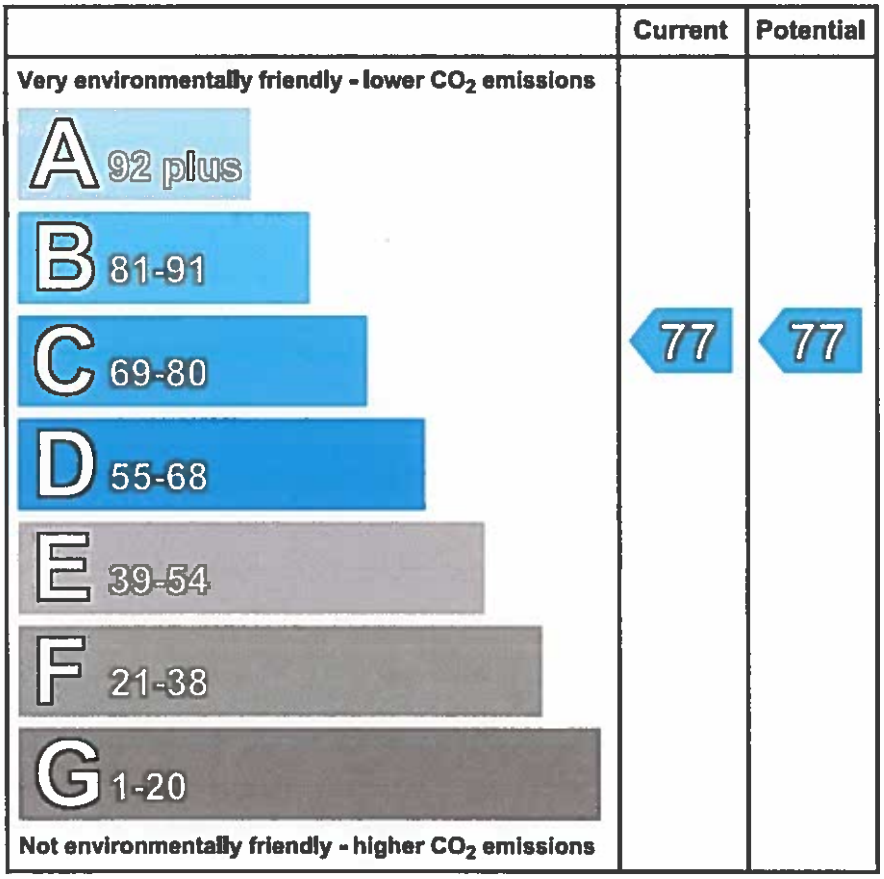
Buildings that are more energy efficient use less energy, save money and help protect the environment. A building with a rating of 100 would cost almost nothing to heat and light and would cause almost no carbon emissions. The potential ratings describe how close this building could get to 100 if all the cost effective recommended improvements were implemented.

About the impact of buildings on the environment

One of the biggest contributors to global warming is carbon dioxide. The way we use energy in buildings causes emissions of carbon. The energy we use for heating, lighting and power in homes produces over a quarter of the UK's carbon dioxide emissions and other buildings produce a further one-sixth.

The average household causes about 6 tonnes of carbon dioxide every year. Adopting the recommendations in this report can reduce emissions and protect the environment. You could reduce emissions even more by switching to renewable energy sources. In addition there are many simple everyday measures that will save money, improve comfort and reduce the impact on the environment. Some examples are given at the end of this report.

Environmental Impact (CO_2) Rating



Visit the Department of Finance and Personnel website at www.epb.dfpni.gov.uk to:

- Find how to confirm the authenticity of an energy performance certificate
- Find how to make a complaint about a certificate or the assessor who produced it
- Learn more about the national register where this certificate has been lodged
- Learn more about energy efficiency and reducing energy consumption

Recommended measures to improve this home's energy performance

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Reference number: 0663-3975-0534-9007-2945

Summary of this home's energy performance related features

The following is an assessment of the key individual elements that have an impact on this home's performance rating. Each element is assessed by the national calculation methodology; 1 star means least efficient and 5 stars means most efficient.

Element	Description	Current performance	
		Energy Efficiency	Environmental
Walls	Average thermal transmittance 0.27 W/m²K	★★★★★	★★★★★
Roof	Average thermal transmittance 0.13 W/m²K	★★★★★	★★★★★
Floor	Average thermal transmittance 0.17 W/m²K	—	—
Windows	High performance glazing	★★★★★	★★★★★
Main heating	Boiler and radiators, oil	★★★★☆	★★★★☆
Main heating controls	Time and temperature zone control	★★★★★	★★★★★
Secondary heating	Room heaters, dual fuel (mineral and wood)	—	—
Hot water	From main system	★★★☆☆	★★★☆☆
Lighting	Low energy lighting in all fixed outlets	★★★★★	★★★★★
Air tightness	Air permeability 8.3 m³/h.m² (assessed average)	★★★☆☆	★★★☆☆
Current energy efficiency rating		B 82	
Current environmental impact (CO_2) rating			C 77

Thermal transmittance is a measure of the rate of heat loss through a building element; the lower the value the better the energy performance.
Air permeability is a measure of the air tightness of a building; the lower the value the better the air tightness.

Low and zero carbon energy sources

None

Recommendations

None

Further measures to achieve even higher standards

The measures listed below should be considered if aiming for the highest possible standards for this home. Some of these measures may be cost-effective when other building work is being carried out such as an alteration, extension or repair. Also they may become cost-effective in the future depending on changes in technology costs and fuel prices. However you should check the conditions in any covenants, planning conditions, warranties or sale contracts before undertaking any of these measures.

1 Solar water heating	£4,000 - £6,000	£57	B 84	C 80
2 Solar photovoltaic panels, 2.5 kWp	£11,000 - £20,000	£222	A 93	B 89
Enhanced energy efficiency rating			A 93	
Enhanced environmental impact (CO_2) rating				B 89

Improvements to the energy efficiency and environmental impact ratings will usually be in step with each other. However, they can sometimes diverge because reduced energy costs are not always accompanied by reduced carbon dioxide emissions.

About the cost effective measures to improve this home's performance ratings

Not applicable

About the further measures to achieve even higher standards

Further measures that could deliver even higher standards for this home. You should check the conditions in any covenants, planning conditions, warranties or sale contracts before undertaking any of these measures.

Building regulations apply to most measures. Building regulations approval and planning consent may be required for some measures. If you are a tenant, before undertaking any work you should check the terms of your lease and obtain approval from your landlord if the lease either requires it, or makes no express provision for such work. Also check with the Energy Saving Trust or your local council to see if any grants are available.

1 Solar water heating

A solar water heating panel, usually fixed to the roof, uses the sun to pre-heat the hot water supply. This will significantly reduce the demand on the heating system to provide hot water and hence save fuel and money. The Solar Trade Association has up-to-date information on local installers.

2 Solar photovoltaic (PV) panels

A solar PV system is one which converts light directly into electricity via panels placed on the roof with no waste and no emissions. This electricity is used throughout the home in the same way as the electricity purchased from an energy supplier. The British Photovoltaic Association has up-to-date information on local installers who are qualified electricians. It is best to obtain advice from a qualified electrician. Ask the electrician to explain the options.

What can I do today?

Actions that will save money and reduce the impact of your home on the environment include:

- Ensure that you understand the dwelling and how its energy systems are intended to work so as to obtain the maximum benefit in terms of reducing energy use and CO_2 emissions. The papers you are given by the builder and the warranty provider will help you in this.
- Check that your heating system thermostat is not set too high (in a home, 21°C in the living room is suggested) and use the timer to ensure you only heat the building when necessary.
- Make sure your hot water is not too hot - a cylinder thermostat need not normally be higher than 60°C.
- Turn off lights when not needed and do not leave appliances on standby. Remember not to leave chargers (e.g. for mobile phones) turned on when you are not using them.
- Close your curtains at night to reduce heat escaping through the windows.
- If you're not filling up the washing machine, tumble dryer or dishwasher, use the half-load or economy programme. Minimise the use of tumble dryers and dry clothes outdoors where possible.

F1 Checklist

As Built - Final

This as built final submission provides evidence of compliance with Technical Booklet F1 of the Northern Ireland Building Regulations 2000. This is in accordance with Appendix A of Technical Booklet F1, conservation of fuel and power in dwellings, August 2006. It has been carried out by an Authorised SAP Assessor and can be accepted for Building Control purposes without further checking. The assessor has confirmed any changes from the design submission with the builder.

Assessor name	Mr Paul Sherry	Assessor number	5176
Client		Last modified	05/07/2013
Address	13 Poet's Glen, Glassdrumman Road, Crossmaglen, Down , BT35 9EZ		

No.	Check	Evidence	Produced by	OK?
Criterion 1: achieving the TER				
1	TER (kg $CO_2/m^2.a$)	Main fuel - Oil Fuel factor = 1.17 TER = 27.89	Authorised SAP Assessor	N/A
2	DER for dwelling as designed (kg $CO_2/m^2.a$)	DER = 25.94	Authorised SAP Assessor	N/A
3	Are emissions from dwelling as built less than or equal to the target?	DER 25.94 < TER 27.89	Authorised SAP Assessor	Passed
Criterion 2: minimum acceptable standards				
	U-values			
6	Are all U-values within the minimum acceptable standards?	**Element** **Average** **Highest** Wall 0.27 (0.35) 0.27 (0.70) Floor 0.17 (0.25) 0.21 (0.70) Roof 0.13 (0.25) 0.13 (0.35) Openings 1.56 (2.20) 2.00 (3.30)	Authorised SAP Assessor	Passed
	Common areas in buildings with multiple dwellings (where relevant)			
7	If the common areas are un-heated, are all the U-values better than the limits in Table	Schedule of U-values	Builder's submission	N/A
	Heating and hot water systems			
8	Does the efficiency of the heating systems meet the minimum value set out in the Domestic Heating Compliance Guide?	Main heating system: Oil, boiler, condensing Model name = Silverpac Efficiency = 92.60% Minimum = 86.00% Secondary heating system: Open fire in grate, HETAS approved Efficiency = 37.00% Minimum = 37.00%	Authorised SAP Assessor	Passed
9	Does the insulation of the hot water cylinder meet the standards set out in the Domestic Heating Compliance Guide?	Cylinder volume = 210.00 litres Maximum permitted cylinder loss = 3.20kWh/day Nominal cylinder loss = 1.79kWh/day Primary hot water pipes are insulated	Authorised SAP Assessor	Passed
10	Do controls meet the minimum controls provision set out in the Domestic Heating Compliance Guide?	Space heating control: Time and temperature zone control Hot water control: Boiler interlock Cylinder thermostat Separate water control	Authorised SAP Assessor	Passed

No.	Check	Evidence	Produced by	OK?
11	Does the heating and hot water system meet the other minimum provisions in the Domestic Heating Compliance Guide?	Schedule of compliance provisions	Builder's submission (see schedule below)	
	Fixed internal and external lighting			
12	Does fixed internal lighting comply with paragraphs 2.34 to 2.36?	Schedule of installed fixed internal lighting Standard light fittings = 12 Dedicated low energy light fittings = 8	Builder's submission (see schedule below)	Passed
13	Does the external lighting comply with paragraphs 2.37 to	Schedule of installed fixed external lighting	Builder's submission (see schedule below)	N/A
Criterion 3: limiting the effects of solar gain				
14	Does the dwelling have a strong tendency to high summertime temperatures?	Region = Northern Ireland Thermal mass parameter = 9.75 Ventilation rate in hot weather = 8.00 ach Overheating risk = Not significant	Authorised SAP Assessor	Passed
Criterion 4: quality of design, construction and commissioning				
15	Have the key features of the design been included (or bettered) in practice?	The following walls have a U-value less than 0.28W/m²K: • Wall 1 (0.27) The following floors have a U-value less than 0.2W/m²K: • Floor 1 (0.16) The following roofs have a U-value less than 0.15W/m²K: • Joist (0.13) The following openings have a U-value less than 1.8W/m²K: • Window reference 1 (1.40) • Window reference 2 (1.40) • Window reference 3 (1.40) • Window reference 5 (1.40) • Window reference 6 (1.40) • Window reference 7 (1.40) • Window reference 8 (1.40) The main heating system efficiency is more than 4% better than the recommended	Authorised SAP Assessor	N/A
	Building fabric			
16	Have accredited details been used?	Schedule of details used and their reference codes	Builder's submission	
17	Have non-accredited details been used?	Evidence that details conform to standards set out in IP1/06	Builder's submission	
18	Has satisfactory documentary evidence of site inspection checks been provided?	Completed pro-formas showing checklists have been completed	Builder's submission	N/A
	Air permeability and air pressure testing			
19	Design air permeability ($m^3/(h.m^2)$ at 50Pa)	Design air permeability = 10.00 As built air permeability = 8.34	Authorised SAP Assessor	Passed
20	Has the design air permeability been achieved?		Builder's submission (see schedule below)	N/A
	Commissioning heating and hot water systems			
21	Have the heating and hot water system(s) been properly comissioned?	Commissioning completion certificate	Builder's submission (see schedule below)	N/A
Criterion 5: operating and maintenance instructions				
22	Has the relevant information been provided in a suitable form?	O&M instructions SAP = 83.07 SAP band = B	Builder's submission	N/A

Schedule of supporting competencies

No.	Check	Evidence		Produced by	OK?
Check no.		Organisation providing evidence	Telephone no	Evidence of competency	
11					
12					
13					
20					
21					

SAP 2005 Worksheet

As Built - Final

NHER

This as built submission has been carried out by an Authorised SAP Assessor. The assessor has confirmed any changes from the design submission with the builder.

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Client		Last modified	05/07/2013
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1. Overall dwelling dimensions

		Area (m^2)			Average storey height (m)		Volume (m^3)	
Lowest occupied		42.48	(1a)	x	2.60	=	110.45	(1)
+1		51.84	(2a)	x	2.50	=	129.60	(2)
Total floor area	(1a) + (2a) + (3a) + (4a) =	94.32	(5)					
Dwelling volume						(1) + (2) + (3) + (4) =	240.05	(6)

2. Ventilation rate

			m³ per hour	
Number of chimneys	1	x 40 =	40	(7)
Number of open flues	0	x 20 =	0	(8)
Number of intermittent fans or passive vents	3	x 10 =	30	(9)
Number of flueless gas fires	0	x 40 =	0	(9a)

			Air changes per hour	
Infiltration due to chimneys, flues and fans	(7) + (8) + (9) + (9a) =	70	÷ (6) =	0.29 (10)
If a pressurisation test has been carried out, proceed to box (19)				
Number of storeys in the dwelling		N/A (11)		
Additional infiltration			[(11) - 1] x 0.1 =	N/A (12)
Structural infiltration: 0.25 for steel or timber frame or 0.35 for masonry construction				N/A (13)
If suspended wooden floor, enter 0.2 (unsealed) or 0.1 (sealed), else enter 0				N/A (14)
If no draught lobby, enter 0.05, else enter 0				N/A (15)
Percentage of windows and doors draught stripped		N/A (16)		
Window infiltration			0.25 - [0.2 x (16) ÷ 100] =	N/A (17)
Infiltration rate			(10) + (12) + (13) + (14) + (15) + (17) =	N/A (18)
If based on air permeability value, then [q50 ÷ 20] + (10) in (19), otherwise (19) = (18)				0.71 (19)
Air permeability value applies if a pressurisation test has been done, or a design or specified air permeability is being used				
Number of sides on which sheltered				2 (20)
Shelter factor			1 - [0.075 x (20)] =	0.85 (21)
Adjusted infiltration rate			(19) x (21) =	0.60 (22)
Calculate effective air change rate for the applicable case:				
If balanced whole house mechanical ventilation			air throughput (in ach, see 2.6.6) =	N/A (22a)
If balanced with heat recovery			efficiency in % allowing for in-use factor =	N/A (22b)
a) If balanced mechanical ventilation with heat recovery			(22) + (22a) x [1 - (22b) ÷ 100] =	N/A (23)
b) If balanced mechanical ventilation without heat recovery			(22) + (22a) =	N/A (23a)
c) If whole house extract ventilation or positive input ventilation from outside if (22) < 0.25, then (23b) = 0.5; otherwise (23b) = 0.25 + (22)				N/A (23b)

d) If natural ventilation or whole house positive input ventilation from loft
if (22) >= 1, then (24) = (22); otherwise (24) = 0.5 + [(22)² x 0.5]

	0.68	(24)
Effective air change rate - enter (23) or (23a) or (23b) or (24) in (25)	0.68	(25)

3. Heat losses and heat loss perimeter

	Net area (m²)		U-value		AxU (W/K)	
Windows*	10.71	x	1.33	=	14.20	(27)
Doors	3.82	x	2.00	=	7.64	(26)
Ground floor	42.48	x	0.16	=	6.80	(28)
Upper floor	9.36	x	0.21	=	1.97	(28)
Walls	70.87	x	0.27	=	19.13	(29)
Roof	51.84	x	0.13	=	6.74	(30)
Total area of elements	189.08	(32)				

**for windows and rooflights, use effective window U-value calculated as given in paragraph 3.2*

Fabric heat loss (26) + (27) + (28) + (29) + (30) =	56.48	(33)
Thermal bridges - calculated using Appendix K	15.13	(34)
if details of thermal bridging are not known calculate y x (32) [see Appendix K] and enter in (34)		
Total fabric heat loss (33) + (34) =	71.61	(35)
Ventilation heat loss (25) x 0.33 x (6) =	53.98	(36)
Heat loss coefficient (35) + (36) =	125.58	(37)
Heat loss parameter (HLP), W/m²K (37) ÷ (5) =	1.33	(38)

4. Water heating energy requirements

	kWh/year	
Energy content of hot water used from Table 1 column (b)	2030.91	(39)
Distribution loss from Table 1 column (c)	358.40	(40)
if instantaneous water heating at point of use, enter '0' in (40) to (45)		
for community heating use Table 1 (c) whether or not hot water tank is present		

Water storage loss:

a) If manufacturer's declared loss factor is known (kWh/day)	N/A	(41)
Temperature factor from Table 2b	N/A	(41a)
Energy lost from water storage, kWh/year (41) x (41a) =	N/A	(42)
b) If manufacturer's declared cylinder loss factor is not known:		
Cylinder volume (litres) including any solar storage within same	210.00	(43)
if community heating and no tank in dwelling, enter 110 litres in (43)		
otherwise if no stored hot water (this includes instantaneous combi boilers) enter 0 in (43)		
Hot water storage loss factor from Table 2, kWh/litre/day	0.01	(44)
if community heating and no tank in dwelling, use cylinder loss from Table 2 for 50mm factory insulation		
Volume factor from Table 2a	0.83	(44a)
Temperature factor from Table 2b	0.54	(44b)
Energy lost from water storage, kWh/year	353.38	(45)

Enter (42) or (45) in (46)	353.38	(46)
If dedicated solar storage is within cylinder, (47) = (46) x [(43) - (H11)] ÷ (43), else	353.38	(47)
Primary circuit loss from Table 3	360.00	(48)
Combi loss from Table 3a (enter 0 if not a combi)	0.00	(49)
Solar DHW input calculated using Appendix H (enter 0 if no solar collector)	0.00	(50)
Output from water heater (39) + (40) + (47) + (48) + (49) - (50) =	3102.69	(51)
Heat gains from water heating 0.25 x [(39) + (49)] + 0.8 x [(40) + (47) + (48)] =	1365.15	(52)
include (47) in the calculation of (52) only if a cylinder is in the dwelling or hot water is from community heating		

5. Internal gains

	Watts	
Lights, appliances, cooking and metabolic from Table 5	548.61	(53)
Reduction of internal gains due to low energy lighting using Appendix L	68.10	(53a)
Additional gains from Table 5a	0.00	(53b)
Water heating	155.84	(54)
Total internal gains	636.35	(55)

6. Solar gains

	Access factor Table 6d		Area (m^2)		Flux Table 6a		gL Table 6b		FF Table 6c		Gains (W)	
North	1.00	x	4.68	x	29.00	x 0.9 x	0.63	x	0.70	=	53.87	(56)
South	1.00	x	6.03	x	72.00	x 0.9 x	0.63	x	0.70	=	172.32	(60)

Total solar gains	(56) + (57) + (58) + (59) + (60) + (61) + (62) + (63) + (64) =	226.19 (65)
Total gains	(55) + (65) =	862.53 (66)
Gain/loss ratio (GLR)	(66) ÷ (37) =	6.87 (67)
Utilisation factor from Table 7, using GLR in (67)		0.93 (68)
Useful gains	(66) x (68) =	799.79 (69)

7. Mean internal temperature

	°C	
Mean internal temperature of the living area from Table 8	18.88	(70)
Temperature adjustment from Table 4e, where appropriate	0.00	(71)
Adjustment for gains {[(69) ÷ (37)] - 4) x 0.2 x R =	0.47	(72)
R is obtained from the 'responsiveness' column of Table 4a or Table 4d		
Adjusted living room temperature (70) + (71) + (72) =	19.35	(73)
Temperature difference between zones from Table 9	1.86	(74)
Living area fraction (0 to 1.0) living room area ÷ (5) =	0.16	(75)
Rest-of-house fraction 1 - (75) =	0.84	(76)
Mean internal temperature (73) - [(74) x (76)] =	17.79	(77)

8. Degree days

Temperature rise from gains	(69) ÷ (37) =	6.37 (78)
Base temperature	(77) - (78) =	11.42 (79)
Degree days, use (79) and Table 10	1224.56	(80)

9. Space heating requirement

	kWh/year	
Space heating requirement (useful) 0.024 x (80) x (37) =	3690.79	(81)

9a. Energy requirements - individual heating systems

Space heating

Fraction of heat from secondary/supplementary system using value from Table 11, Appendix F or Appendix N	0.10	(82)
Efficiency of main heating system, %	93.60	(83)
SEDBUK or from Table 4a or 4b, adjusted where appropriate by the amount shown in the 'efficiency adjustment' column of Table 4c		
Efficiency of secondary/supplementary system, %	37.00	(84)
use value from Table 4a or Appendix E		
Main fuel requirement, kWh/year [(1 - (82)] - (81) x 100 ÷ (83) =	3548.83	(85)
Secondary fuel requirement, kWh/year (82) x (81) x 100 ÷ (84) =	997.51	(85a)

Water heating

Efficiency of water heater, % *SEDBUK or from Table 4a or 4b, adjusted where appropriate by the amount shown in the 'efficiency adjustment' column of Table 4c*		93.60	(86)
Energy required for water heating, kWh/year	(51) x 100 ÷ (86) =	3314.84	(86a)
Electricity for pumps and fans		kWh/year	
Each central heating pump from Table 4f		130.00	(87a)
Each boiler with a fan-assissted flue from Table 4f		100.00	(87b)
Warm air heating system fans from Table 4f		0.00	(87c)
Mechanical ventilation - balanced, extract or positive input from outside from Table 4f		0.00	(87d)
Maintaining keep-hot facility for gas combi boiler from Table 4f		0.00	(87e)
Pump for solar water heating from Table 4f		0.00	(87f)
Total electricity for the above equipment	(87a) + (87b) + (87c) + (87d) + (87e) + (87f) =	230.00	(87)

10a. Fuel costs - individual heating systems

	Fuel required kWh/year		Fuel price Table 12		Fuel cost £/year	
Main space heating	(85)	x	2.17	x 0.01 =	77.01	(88)
Secondary space heating	(85a)	x	2.10	x 0.01 =	20.95	(89)
Water heating (electric off-peak tariff)						
On-peak fraction, from Table 13 or Appendix F for electric CPSUs				0.00		(90)
Off-peak fraction			1 - (90) =	1.00		(90a)
On-peak cost	(86a) x (90)	x	0.00	x 0.01 =	0.00	(91)
Off-peak cost	(86a) x (90a)	x	0.00	x 0.01 =	0.00	(91a)
Water heating (other fuel)	(86a)	x	2.17	x 0.01 =	71.93	(91b)
Pump and fan energy	(87)	x	7.12	x 0.01 =	16.38	(92)
Energy for lighting, calculated in Appendix L	453.99	x	7.12	x 0.01 =	32.32	(93)
Additional standing charges from Table 12					0.00	(94)
Renewable and energy-saving technologies (Appendices M, N and Q)						
Energy produced or saved	0.00	x	N/A	x 0.01 =	0.00	(95)
Energy consumed	0.00	x	N/A	x 0.01 =	0.00	(96)
Total energy cost	(88) + (89) + (91) + (91a) + (91b) + (92) + (93) + (94) - (95) + (96) =				218.59	(97)

11a. SAP rating - individual heating system

Energy cost deflator	0.91	(98)
Energy cost factor (ECF)	1.21	(99)
SAP rating from Table 14	83	(100)
SAP band	B	

12a. CO_2 emissions - individual heating systems and community heating without CHP

	Energy kWh/year		Emission factor kg CO_2/kWh		Emissions kg CO_2/year	
Individual heating system						
Main space heating	(85)	x	0.265	=	940.44	(101)
Secondary space heating	(85a)	x	0.187	=	186.53	(102)
Water heating	(86a)	x	0.265	=	878.43	(103)
Space and water heating *if negative, enter '0' in (107)*			(101) + (102) + (103) =		2005.41	(107)
Electricity from pumps and fans from (87) or (88*)	230.00	x	0.422	=	97.06	(108)
Energy for lighting from Appendix L	453.99	x	0.422	=	191.58	(109)
Renewable and energy-saving technologies (Appendices M, N and Q)						

Energy produced or saved	0.00	x	N/A	=	0.00	(110)
Energy consumed	0.00	x	N/A	=	0.00	(111)
Total CO_2			(107) + (108) + (109) - (110) + (111) =		2294.05	(112)
Dwelling CO_2 emission rate				(112) ÷ (5) =	24.32	(113)
EI rating					78	
EI band					C	

13a. Primary energy - individual heating systems and community heating without CHP

	Energy kWh/year		Primary energy factor		Primary energy kWh/year	
Individual heating system						
Main space heating	(85)	x	1.190	=	4223.11	(101)
Secondary space heating	(85a)	x	1.100	=	1097.26	(102)
Water heating	(86a)	x	1.190	=	3944.65	(103)
Space and water heating *if negative, enter '0' in (107)*				(101) + (102) + (103) =	9265.03	(107)
Electricity from pumps and fans from (87) or (88*)	230.00	x	2.800	=	644.00	(108)
Energy for lighting from Appendix L	453.99	x	2.800	=	1271.16	(109)
Renewable and energy-saving technologies (Appendices M, N and Q)						
Energy produced or saved	0.00	x	N/A	=	0.00	(110)
Energy consumed	0.00	x	N/A	=	0.00	(111)
Primary energy			(107) + (108) + (109) - (110) + (111) =		11180.19	(112)
Primary energy, kWh/m²/year				(112) ÷ (5) =	118.53	(113)