CheckList

Regulation Compliance Checklist - Approved Document L1A 2006 edition assessed by Stroma FSAP program. Report Generated: 26/05/2015

Project Information:

Assessed By: Kristopher Baxter **Building Type:** Semi-detached House

Dwelling Details:

Site Reference: Appendix C - SHDC Local Plan 2006 Compliant SAP with Photovoltaics - **Plot Reference:**
Address : Plot 38, Land off Peterborough Road, Crowland, PE2

Client Details:

Name:
Address :

No.	Check	Evidence	Status
1	**TER and DER:**		
Fuel for main heating system: Mains gas (fuel factor = 1.00)			
	• Target Carbon Dioxide Emission Rate	TER = 26.42 kg/m²	
	• Dwelling Carbon Dioxide Emission Rate	DER = 26.36 kg/m²	**OK**
2.1	**Fabric U-values:**		
	Element	**Average** / **Highest**	
	Wall	0.30 (max. 0.35) / 0.30 (max. 0.70)	**OK**
	Floor	0.25 (max. 0.25) / 0.25 (max. 0.70)	**OK**
	Roof	0.25 (max. 0.25) / 0.25 (max. 0.35)	**OK**
	Openings	1.80 (max. 2.20) / 1.80 (max. 3.30)	**OK**
2.2	**Common areas:**		
	Common areas	**(builder's submission)**	
2.3	**Heating efficiency:**		
	Main Heating system:	Boiler system with radiators or underfloor - Mains Gas Data from manufacturer Efficiency: 88.0 % Minimum: 86.0 %	**OK**
	Secondry heating system:	None	**N/A**
2.4	**Cylinder insulation:**		
	Hot water Storage:	No cylinder	**N/A**
2.5	**Controls:**		
	Space heating controls:	Programmer, room thermostat and TRVs	**OK**
	Hot water controls:	No cylinder	**N/A**
	Boiler interlock:	Yes	**OK**
2.6	**Other provisions for heating:**		
	Other provisions for heating	**(builder's submission)**	
2.7	**Fixed internal and external lighting:**		
	Fixed internal and external lighting	**(builder's submission)**	
3.1	**Summertime temperature:**		
	Overheating risk (East Pennines):	Not significant	**OK**
Based on:			
	Thermal mass parameter:	8	

CheckList

Overshading:	Average or unknown
Windows facing: South East	0.66 m²
Windows facing: North West	0.61 m²
Windows facing: North West	2.52 m²
Windows facing: North West	0.61 m²
Windows facing: South East	0.22 m²
Windows facing: South East	0.66 m²
Windows facing: North West	1.44 m²
Windows facing: South East	0.66 m²
Ventilation rate:	4
Blinds/curtains:	None

4.1 Key features:

Photovaltaic array

4.2 Accredited details:

Accredited details **(builder's submission)**

4.3 Non-Accredited details:

Non-Accredited details **(builder's submission)**

4.4 Site inspection checks:

Site inspection checks **(builder's submission)**

4.5 Design air permeability:

Design air permeability at 50 pascals: 10.0 m³/m²h **OK**

4.6 Sample pressure tests:

Sample pressure tests **(builder's submission)**

4.7 Commissioning:

Commissioning **(builder's submission)**

Overall result:

Overall result **PASS**

5.1 Provision of information:

O & M instructions **(builder's submission)**

SAP rating SAP = 85

SAP Input

STUDIO11 architecture

Property Details:

Address:	Plot 38, Land off Peterborough Road, Crowland, PE2
Located in:	England
Region:	East Pennines
UPRN:	
RRN:	0000-0000-0000-0000-0000
Date of assessment:	26/05/2015
Date of certificate:	26/05/2015 10:43:17
Assessment type:	New dwelling design stage
Transaction type:	New dwelling
Related party disclosure:	No related party

Property description:

Dwelling type:	House
Detachment:	Semi-detached
Year Completed:	2015

Floor Location:	**Floor area:**	**Storey height:**
Floor 0	23.98 m²	2.4 m
Floor 1	23.98 m²	2.61 m

Living area:	21.05 m² (fraction 0.439)
Front of dwelling faces:	South East

Opening types:

Name:	**Source:**	**Type:**	**Glazing:**	**Argon:**	**Frame:**
Living Area	Manufacturer	Half glazed	low-E, En = 0.05, soft coat	Yes	PVC-U
Cloaks	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	PVC-U
Living Area (Sidelight 1)	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	PVC-U
Living Area (Double Doors)	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	PVC-U
Living Area (Sidelight 2)	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	PVC-U
Living Area (Stairs)	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	PVC-U
Bath	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	PVC-U
Bedroom	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	PVC-U
Bedroom (Stairs)	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	PVC-U

Name:	**Gap:**	**Frame Factor:**	**g-value:**	**U-value:**
Living Area	16mm or more mm	0.7	0.63	1.8
Cloaks	16mm or more	0.7	0.63	1.8
Living Area (Sidelight 1)	16mm or more	0.7	0.63	1.8
Living Area (Double Doors)	16mm or more	0.7	0.63	1.8
Living Area (Sidelight 2)	16mm or more	0.7	0.63	1.8
Living Area (Stairs)	16mm or more	0.7	0.63	1.8
Bath	16mm or more	0.7	0.63	1.8
Bedroom	16mm or more	0.7	0.63	1.8
Bedroom (Stairs)	16mm or more	0.7	0.63	1.8

Name:	**Type-Name:**	**Location:**	**Orient:**	**Width:**	**Height:**
Living Area		External Wall	South East	0	0
Cloaks		External Wall	South East	0	0
Living Area (Sidelight 1)		External Wall	North West	0	0
Living Area (Double Doors)		External Wall	North West	0	0
Living Area (Sidelight 2)		External Wall	North West	0	0
Living Area (Stairs)		External Wall	South East	0	0
Bath		External Wall	South East	0	0
Bedroom		External Wall	North West	0	0
Bedroom (Stairs)		External Wall	South East	0	0

Opaque elements:

Overshading:	Average or unknown

Type:	**Gross area:**	**Openings:**	**Net area:**	**U-value:**	**Description:**

SAP Input

External Wall	51.37	9.51	41.86	0.3
Roof	23.98	0	23.98	0.25
Ground Floor	23.98			0.25

Thermal bridges:

Thermal bridges:	User-defined y-value y =0.15 Reference: LABC Registered Details Used

Ventilation:

Pressure test:	Yes (As designed)
Ventilation:	Natural ventilation (extract fans)
Number of chimneys:	0
Number of open flues:	0
Number of fans:	3
Number of sides sheltered:	2
Design q50:	10

Main heating system:

Main heating system:	Central heating systems with radiators or underfloor heating Gas boilers and oil boilers Fuel: mains gas Info Source: Manufacturer Declaration Manufacturer's data Efficiency: 88 % Condensing combi with automatic ignition Systems with radiators

Main heating Control:

Main heating Control:	Programmer, room thermostat and TRVs Control code: 2106 Boiler interlock: Yes

Secondary heating system:

Secondary heating system:	None

Water heating:

Water heating:	From main heating system Water code: 901 Fuel :mains gas Solar panel: False No hot water cylinder

Others:

Electricity tariff:	standard tariff
In Smoke Control Area:	Unknown
Conservatory:	No conservatory
Fixed air conditioning:	No
Low energy lights:	75%
Terrain type:	Low rise urban / suburban
EPC language:	English
Wind turbine:	No
Photovoltaics:	Installed Peak power: 0.32 Tilt of collector: 45° Overshading: None or very little Collector Orientation: South East
Assess Zero Carbon Home:	No

SAP WorkSheet: New dwelling design stage

STUDIO11 architecture

User Details:

Assessor Name:	Kristopher Baxter	**Stroma Number:**	STRO007338
Software Name:	Stroma FSAP	**Software Version:**	Version: 1.1.0.244

Property Address:

Address : Plot 38, Land off Peterborough Road, Crowland, PE2

1. Overall dwelling dimensions:

	Area(m²)		Ave Height(m)		Vol(m³)	
Ground floor Area	23.98	(1a) x	2.4	=	57.55	(1)
First floor Area	23.98	(2a) x	2.61	=	62.59	(2)
Total floor area (1a)+(2a)+(3a)+(4a)+(4b)+(4d)+(4f)+(4h)	47.96	(5)				
Dwelling volume Area			(1)+(2)+(3)+(4)+(4c)+(4e)+(4g)+(4i) =		120.14	(6)

2. Ventilation rate:

			m³ per hour	
Number of chimneys	0	x 40 =	0	(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)		30	÷box(6)	0.25 (10)
If a pressurisation test has been carried out, proceed to box (19)				
Number of storeys in the dwelling				0 (11)
Additional infiltration			[(11)-1]x0.1 =	0 (12)
Structural infiltration: 0.25 for steel or timber frame or 0.35 for masonry construction				0 (13)
if both types of wall are present, use the value corresponding to the greater wall area (after deducting areas of openings); if equal user 0.35				
If suspended wooden floor, enter 0.2 (unsealed) or 0.1 (sealed), else enter 0				0 (14)
If no draught lobby, enter 0.05, else enter 0				0 (15)
Percentage of windows and doors draught stripped				0 (16)
Window infiltration		0.25 - [0.2 x Box(16) ÷ 100] =		0 (17)
Infiltration rate		(10)+(12)+(13)+(14)+(15)+(17) =		0 (18)
If based on air permeability value, then [q50 ÷ 20] + (10) in box (19), otherwise (19) = (18)				0.75 (19)
Air permeability value applies if a pressurisation test has been done or a degree air permeability is being used				
Number of sides on which sheltered				2 (20)
(Enter 2 in box (20) for new dwellings where location is not shown)				
Shelter factor		1 - [0.075 x (20)] =		0.85 (21)
Adjusted infiltration rate		(19) x (21) =		0.64 (22)
Calculate effective air change rate for the applicable case				
If balanced whole house mechanical ventilation		air throughput (in ach,see 2.6.6) =		0 (22a)
If balanced with heat recovery		efficiency in % allowing for in-use factor =		0 (22b)

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a) If balanced whole house mechanical ventilation with heat recovery	(22) + (22a) x [1-(22b) ÷ 100] =	0	(23)
b) If balanced whole house mechanical ventilation without heat recovery	(22) + (22a) =	0	(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)		0	(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]		0.7	(24)
Effective air change rate - enter	(23) or (23a) or (23b) or (24) in box (25)	0.7	(25)

3. Heat losses and heat loss parameter:

ELEMENT	Gross area (m²)			U-value		AXU (W/K)	
Doors	2.13	x		1.8	=	3.834	(26)
Windows Type 1	0.66	x		1/[1/(1.8)+ 0.04]	=	1.11	(27)
Windows Type 2	0.61	x		1/[1/(1.8)+ 0.04]	=	1.02	(27)
Windows Type 3	2.52	x		1/[1/(1.8)+ 0.04]	=	4.23	(27)
Windows Type 4	0.61	x		1/[1/(1.8)+ 0.04]	=	1.02	(27)
Windows Type 5	0.22	x		1/[1/(1.8)+ 0.04]	=	0.37	(27)
Windows Type 6	0.66	x		1/[1/(1.8)+ 0.04]	=	1.11	(27)
Windows Type 7	1.44	x		1/[1/(1.8)+ 0.04]	=	2.42	(27)
Windows Type 8	0.66	x		1/[1/(1.8)+ 0.04]	=	1.11	(27)
Floor	23.98	x		0.25	=	5.995	(28)
Walls	41.86	x		0.3	=	12.56	(29)
Roof	23.98	x		0.25	=	5.99	(30)
Total area of elements, m²						99.33	(32)

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

the above table is expanded as necessary to allow for all different types of element e.g. 6 wall types

Fabric heat loss, W/K	(26)+(27)+(27a)+(27b)+(28)+(29)+(29a)+(30)+(30a) =	40.77	(33)
Thermal bridges		14.9	(34)

*if details of thermal bridging are not known calculate y * (32) [see Appendix K] and enter in box (34)*

Total fabric heat loss	(33) + (34) =	55.67	(35)
Ventilation heat loss	(25) x 0.33 x (6) =	27.87	(36)
Heat loss coefficient, W/K	(35) + (36) =	83.55	(37)
Heat loss parameter (HLP), W/m²K	(37) ÷ (5) =	1.74	(38)

4. Water heating energy requirement:

Energy content of hot water used from Table 1 column (b)	1407.76	(39)
Distribution loss from Table 1 column (c)	248.43	(40)

If instantaneous water heating at point of use, enter 0 in boxes (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):	0	(41)

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Temperature factor from Table 2b		0	(41a)
Energy lost from water storage, kWh/year	(41) x (41a) x 365 =	0	(42)
If manufacturer's declared cylinder loss factor is not known:			
Cylinder volume (litres) including any solar storage within same		0	(43)
If community heating and no tank in dwelling, enter 110 litres in box (43)			
Otherwise if no stored hot water (this includes instantaneous combi boilers) enter '0' in box (43)			
Hot water storage loss factor from Table 2 (kWh/litre/day)		0	(44)
If community heating and no tank in dwelling, use cylinder loss from Table 2 for 50 mm factory insulation			
Volume factor from Table 2a		0	(44a)
Temperature factor from Table 2b		0	(44b)
Energy lost from water storage, kWh/year	((43) x (44) x (44a) x (44b) x 365 =	0	(45)
Enter (42) or (45) in box (46)		0	(46)
If dedicated solar storage is within cylinder,	box (47) = (46) x [(43) – (H11)] ÷ (43), else	0	(47)
Primary circuit loss from Table 3		0	(48)
Combi loss from Table 3a (enter 0 if not a combi boiler)		466.68	(49)
Solar DHW input calculated using Appendix H (enter 0 if no solar collector)		0	(50)
Output from water heater, kWh/year	(39)+(40)+(47)+(48)+(49) – (50) =	2122.87	(51)
Heat gains from water heating,	(39)+(40)+(47)+(48)+(49) – (50) =	667.35	(52)
include (47) in calculation of (52) only if cylinder is in the dwelling or hot water is from community heating			

5. Internal gains:

Lights, appliances, cooking and metabolic (Table 5)		321.71	(53)
Reduction of internal gains due to low energy lighting (calculated in Appendix L)		25.33	(53a)
Additional gains from Table 5a		10	(53b)
Water heating	(52) ÷ 8.76 =	76.18	(54)
Total internal gains	(53) + (53b) + (54) - (53a) =	382.56	(55)

6. Solar gains:

Orientation:	Access Factor Table 6d		Area m²		Flux Table 6a		g_ Table 6b		FF Table 6c		Gains (W)	
Southeast 0.9x	0.77	x	0.66	x	64	x	0.63	x	0.7	=	12.91	(59)
Southeast 0.9x	0.77	x	0.22	x	64	x	0.63	x	0.7	=	4.3	(59)
Southeast 0.9x	0.77	x	0.66	x	64	x	0.63	x	0.7	=	12.91	(59)
Southeast 0.9x	0.77	x	0.66	x	64	x	0.63	x	0.7	=	12.91	(59)
Northwest 0.9x	0.77	x	0.61	x	34	x	0.63	x	0.7	=	6.34	(63)
Northwest 0.9x	0.77	x	2.52	x	34	x	0.63	x	0.7	=	26.18	(63)
Northwest 0.9x	0.77	x	0.61	x	34	x	0.63	x	0.7	=	6.34	(63)
Northwest 0.9x	0.77	x	1.44	x	34	x	0.63	x	0.7	=	14.96	(63)

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Total solar gains:	[(56) + ... + (64)] =	96.85	(65)
Total gains, W	[(56) + ... + (64)] =	479.42	(66)
Gain/loss ratio (GLR)	(66) ÷ (37) =	5.74	(67)
Utilisation factor (Table 7, using GLR in box (67)		0.96	(68)
Useful gains, W	(66) x (68) =	458.6	(69)

7. Mean internal temperature:

		° C	
Mean internal temperature of the living area (Table 8)		18.87	(70)
Temperature adjustment from Table 4e, where appropriate		0	(71)
Adjustment for gains	{[(69) ÷ (37)] - 4.0} x 0.2 x R =	0.3	(72)

R is obtained from the 'responsiveness' column of Table 4a or Table 4d

Adjusted living room temperature	(70) + (71) + (72) =	19.16	(73)
Temperature difference between zones (Table 9)		1.53	(74)
Living area fraction (0 to 1.0)	living room area ÷ (5) =	0.44	(75)
Rest-of -house fraction	1 - (75) =	0.56	(76)
Mean internal temperature	(73) - [(74) x (76)] =	18.31	(77)

8. Degree days:

Temperature rise from gains	(69) ÷ (37) =	5.49	(78)
Base temperature	(77) - (78) =	12.82	(79)
Degree-days, use box (79) and Table 10		1519.6	(80)

9. Space heating requirement:

Space heating requirement (useful), kWh/year	0.024 x (80) x (37) =	3046.97	(81)

For range cooker boilers where efficiency is obtained from the Boiler Efficiency Database or manufacturer's declared value, multiply the result in box (81) by (1 – Fcase/Fwater) where Fcase is the heat emission from the case of the range cooker at full, load (in kW); and Fwater is the heat transferred to water at full load (in kW). Fcase and Fwater are obtained from the database, record for the range cooker boiler or manufacturer's declared value.

9a. Energy requirements - individual heating systems, including micro-CHP:

Note: when space and water heating is provided by community heating use the alternative worksheet 9b

Space heating:

Fraction of heat from secondary/supplementary system (use value from Table 11, Table 12a or Append		0	(82)
Efficiency of main heating system, %		88	(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 heating system, % (use value from Table 4a or Appendix E)		0	(84)
Space heating fuel (main) requirement, kWh/year	[1- (82)] x (81) x 100 ÷ (83) =	3462.47	(85)
Space heating fuel (secondary), kWh/year	[(82) x (81) x 100 ÷ (84) =	0	(85a)

Water heating:

Efficiency of water heater, %		88	(86)

(SEDBUK or from Table 4a or 4b, adjusted where appropriate by the amount shown in the 'efficiency adjustment' column of Table 4c)

Energy required for water heating, kWh/year	[(51) x 100 ÷ (86)] =	2412.35	(86a)

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Electricity for pumps and fans:		kWh/year	
each central heating pump, (Table 4f)		130	(87a)
each boiler with a fan-assisted flue (Table 4f)		0	(87b)
warm air heating system fans (Table 4f)		0	(87c)
mechanical ventilation - balanced, extract or positive input from outside (Table 4f)		0	(87d)
maintaining keep-hot facility for gas combi boiler (Table 4f)		0	(87e)
pump for solar water heating (Table 4f)		0	(87f)
Energy required for water heating, kWh/year	(87a) + (87b) + (87c) + (87d) + (87e)+ (87f) =	130	(87)

10a. Fuel costs - individual heating systems:

	Fuel kWh/year		Fuel Price (Table 12)		Fuel Cost £/year	
Space heating - main system	(85) x		1.63	x 0.01 =	56.44	(88)
Space heating - secondary	(85a) x		0	x 0.01 =	0	(89)
Water heating						
Water heating cost (electric, off-peak tariff)						
On-peak fraction (Table 13, or Appendix F for electric CPSUs)					0	(90)
Off-peak fraction)	1.0 - (90) =				0	(90a)
			Fuel Price			
On-peak cost	(86a) x (90) x		0	x 0.01 =	0	(91)
Off-peak cost	(86a) x (90a) x		0	x 0.01 =	0	(91a)
Water heating cost (other fuel)	(86a) x		1.63	x 0.01 =	39.32	(91b)
Pump and fan energy cost	(87) x		7.12	x 0.01 =	9.26	(92)
Energy for lighting(calculated in Appendix L)	281.4	x	7.12	x 0.01 =	20.04	(93)
Additional standing charges (Table 12)					34	(94)
Renewable and energy-saving technologies (Appendices M, N and Q)						
Energy produced or saved, kWh/year					247.81	(95)
Electricity generated - Photovoltaics	247.81	x	6.41	x 0.01 =	15.884621	(95a)
Total energy cost	(88)+(89)+(91)+(91a)+(91b)+(92)+(93)+(94) - (95a)+(96a) =				143.17	(97)

11a. SAP rating - individual heating systems

Energy cost deflator (SAP 2005)		0.91	(98)
Energy cost factor (ECF)	{[(97) x (98)] - 30.0} ÷ {(5) + 45.0} =	1.08	(99)
SAP value		84.94	(99a)
SAP rating		85	(100)
SAP Band		B	

12a. CO^2 emissions rate for individual heating systems (including micro-CHP) and community heating without CHP

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This page should used when space and water heating is provided by community heating. If boilers or heat pumps only, enter 0 c box (83), and 1.0 in box (84*)*

	Energy kWh/year		Emission factor kg CO²/kWh		Emissions kg CO²/year	
Individual heating system:						
Space heating main from box (85))	3462.47	x	0.19	=	671.72	(101)
Space heating secondary from box (85a)	0	x	0	=	0	(102)
Energy for water heating from box (86a)	2412.35	x	0.19	=	468	(103)
Community scheme:						
Efficiency of community boilers % *use actual efficiency if known, or value in Table 4a*					0	(104)
Energy for space heating (87*) x 100 ÷ (104) =	0	x	0	=	0	(105)
Energy for water heating (87b*) x 100 ÷ (104) =	0	x	0	=	0	(106)
Space and water heating	[(101) + (102) + (103)] or [(105) + (106)]			=	1139.72	(107)
Electricity for pumps and fans from box (87) or (88*)	130	x	0.42	=	54.86	(108)
Energy for lighting from Appendix L	281.4	x	0.42	=	118.75	(109)
Energy produced or saved in dwelling	(95) or (95*)	x	0	=	140.75	(110)
Energy consumed by the above technology	(96) or (96*)	x	0	=	0	(111)
Total CO², kg/year	(107) + (108) + (109) - (110) + (111)			=	1172.57	(112)
Dwelling CO² Emission Rate	(112) ÷ (5) =				24.45	(113)
EI values					83.1	
EI rating					83	
EI band					B	

13a. Primary Energy

	Energy kWh/year	Primary factor	P. Energy kWh/year	
Space heating - main system	3462.47	1.15	3981.84	(101)
Space heating, secondary	0	0	0	(102)
Water heating	2412.35	1.15	2774.2	(103)
Space and water heating			6756.04	(107)
Electricity for pumps/fans	130	2.8	364	(108)
Electricity for lighting	281.4	2.8	787.93	(109)
Energy produced or saved in dwelling	247.81	0	693.86	(110)
Electricity generated - µCHP	247.81	0	693.86	(110)
Electricity generated - wind	247.81	0	693.86	(110)
Energy saved ():	247.81	0	693.86	(110)
Energy saved ():		0	0	(111)
Primary energy kWh/year			7214.11	(112)

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Primary energy kWh/year	150.42	(113)

DER WorkSheet: New dwelling design stage

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User Details:

Assessor Name:	Kristopher Baxter	**Stroma Number:**	STRO007338
Software Name:	Stroma FSAP	**Software Version:**	Version: 1.1.0.244

Property Address:

Address : Plot 38, Land off Peterborough Road, Crowland, PE2

1. Overall dwelling dimensions:

	Area(m²)		Ave Height(m)		Vol(m³)	
Ground floor Area	23.98	(1a) x	2.4	=	57.55	(1)
First floor Area	23.98	(2a) x	2.61	=	62.59	(2)
Total floor area (1a)+(2a)+(3a)+(4a)+(4b)+(4d)+(4f)+(4h)	47.96	(5)				
Dwelling volume Area			(1)+(2)+(3)+(4)+(4c)+(4e)+(4g)+(4i) =		120.14	(6)

2. Ventilation rate:

			m³ per hour	
Number of chimneys	0	x 40 =	0	(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)		30	÷box(6)	0.25 (10)
If a pressurisation test has been carried out, proceed to box (19)				
Number of storeys in the dwelling				0 (11)
Additional infiltration			[(11)-1]x0.1 =	0 (12)
Structural infiltration: 0.25 for steel or timber frame or 0.35 for masonry construction				0 (13)
if both types of wall are present, use the value corresponding to the greater wall area (after deducting areas of openings); if equal user 0.35				
If suspended wooden floor, enter 0.2 (unsealed) or 0.1 (sealed), else enter 0				0 (14)
If no draught lobby, enter 0.05, else enter 0				0 (15)
Percentage of windows and doors draught stripped				0 (16)
Window infiltration		0.25 - [0.2 x Box(16) ÷ 100] =		0 (17)
Infiltration rate		(10)+(12)+(13)+(14)+(15)+(17) =		0 (18)
If based on air permeability value, then [q50 ÷ 20] + (10) in box (19), otherwise (19) = (18)				0.75 (19)
Air permeability value applies if a pressurisation test has been done or a degree air permeability is being used				
Number of sides on which sheltered				2 (20)
(Enter 2 in box (20) for new dwellings where location is not shown)				
Shelter factor		1 - [0.075 x (20)] =		0.85 (21)
Adjusted infiltration rate		(19) x (21) =		0.64 (22)
Calculate effective air change rate for the applicable case				
If balanced whole house mechanical ventilation		air throughput (in ach,see 2.6.6) =		0 (22a)
If balanced with heat recovery		efficiency in % allowing for in-use factor =		0 (22b)

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a) If balanced whole house mechanical ventilation with heat recovery	(22) + (22a) x [1-(22b) ÷ 100] =	0	(23)
b) If balanced whole house mechanical ventilation without heat recovery	(22) + (22a) =	0	(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)		0	(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]		0.7	(24)
Effective air change rate - enter	(23) or (23a) or (23b) or (24) in box (25)	0.7	(25)

3. Heat losses and heat loss parameter:

ELEMENT	Gross area (m²)			U-value		AXU (W/K)	
Doors	2.13	x		1.8	=	3.834	(26)
Windows Type 1	0.66	x		1/[1/(1.8)+ 0.04]	=	1.11	(27)
Windows Type 2	0.61	x		1/[1/(1.8)+ 0.04]	=	1.02	(27)
Windows Type 3	2.52	x		1/[1/(1.8)+ 0.04]	=	4.23	(27)
Windows Type 4	0.61	x		1/[1/(1.8)+ 0.04]	=	1.02	(27)
Windows Type 5	0.22	x		1/[1/(1.8)+ 0.04]	=	0.37	(27)
Windows Type 6	0.66	x		1/[1/(1.8)+ 0.04]	=	1.11	(27)
Windows Type 7	1.44	x		1/[1/(1.8)+ 0.04]	=	2.42	(27)
Windows Type 8	0.66	x		1/[1/(1.8)+ 0.04]	=	1.11	(27)
Floor	23.98	x		0.25	=	5.995	(28)
Walls	41.86	x		0.3	=	12.56	(29)
Roof	23.98	x		0.25	=	5.99	(30)
Total area of elements, m²						99.33	(32)

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

the above table is expanded as necessary to allow for all different types of element e.g. 6 wall types

Fabric heat loss, W/K	(26)+(27)+(27a)+(27b)+(28)+(29)+(29a)+(30)+(30a) =	40.77	(33)
Thermal bridges		14.9	(34)

*if details of thermal bridging are not known calculate y * (32) [see Appendix K] and enter in box (34)*

Total fabric heat loss	(33) + (34) =	55.67	(35)
Ventilation heat loss	(25) x 0.33 x (6) =	27.87	(36)
Heat loss coefficient, W/K	(35) + (36) =	83.55	(37)
Heat loss parameter (HLP), W/m²K	(37) ÷ (5) =	1.74	(38)

4. Water heating energy requirement:

Energy content of hot water used from Table 1 column (b)	1407.76	(39)
Distribution loss from Table 1 column (c)	248.43	(40)

If instantaneous water heating at point of use, enter 0 in boxes (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):	0	(41)

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Temperature factor from Table 2b		0	(41a)
Energy lost from water storage, kWh/year	(41) x (41a) x 365 =	0	(42)
If manufacturer's declared cylinder loss factor is not known:			
Cylinder volume (litres) including any solar storage within same		0	(43)
If community heating and no tank in dwelling, enter 110 litres in box (43)			
Otherwise if no stored hot water (this includes instantaneous combi boilers) enter '0' in box (43)			
Hot water storage loss factor from Table 2 (kWh/litre/day)		0	(44)
If community heating and no tank in dwelling, use cylinder loss from Table 2 for 50 mm factory insulation			
Volume factor from Table 2a		0	(44a)
Temperature factor from Table 2b		0	(44b)
Energy lost from water storage, kWh/year	((43) x (44) x (44a) x (44b) x 365 =	0	(45)
Enter (42) or (45) in box (46)		0	(46)
If dedicated solar storage is within cylinder,	box (47) = (46) x [(43) – (H11)] ÷ (43), else	0	(47)
Primary circuit loss from Table 3		0	(48)
Combi loss from Table 3a (enter 0 if not a combi boiler)		466.68	(49)
Solar DHW input calculated using Appendix H (enter 0 if no solar collector)		0	(50)
Output from water heater, kWh/year	(39)+(40)+(47)+(48)+(49) – (50) =	2122.87	(51)
Heat gains from water heating,	(39)+(40)+(47)+(48)+(49) – (50) =	667.35	(52)
include (47) in calculation of (52) only if cylinder is in the dwelling or hot water is from community heating			

5. Internal gains:

Lights, appliances, cooking and metabolic (Table 5)		321.71	(53)
Reduction of internal gains due to low energy lighting (calculated in Appendix L)		10.13	(53a)
Additional gains from Table 5a		10	(53b)
Water heating	(52) ÷ 8.76 =	76.18	(54)
Total internal gains	(53) + (53b) + (54) - (53a) =	397.76	(55)

6. Solar gains:

Orientation:	Access Factor Table 6d		Area m²		Flux Table 6a		g_ Table 6b		FF Table 6c		Gains (W)	
Southeast 0.9x	0.77	x	0.66	x	64	x	0.63	x	0.7	=	12.91	(59)
Southeast 0.9x	0.77	x	0.22	x	64	x	0.63	x	0.7	=	4.3	(59)
Southeast 0.9x	0.77	x	0.66	x	64	x	0.63	x	0.7	=	12.91	(59)
Southeast 0.9x	0.77	x	0.66	x	64	x	0.63	x	0.7	=	12.91	(59)
Northwest 0.9x	0.77	x	0.61	x	34	x	0.63	x	0.7	=	6.34	(63)
Northwest 0.9x	0.77	x	2.52	x	34	x	0.63	x	0.7	=	26.18	(63)
Northwest 0.9x	0.77	x	0.61	x	34	x	0.63	x	0.7	=	6.34	(63)
Northwest 0.9x	0.77	x	1.44	x	34	x	0.63	x	0.7	=	14.96	(63)

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Total solar gains:	[(56) + ... + (64)] =	96.85	(65)
Total gains, W	[(56) + ... + (64)] =	494.61	(66)
Gain/loss ratio (GLR)	(66) ÷ (37) =	5.92	(67)
Utilisation factor (Table 7, using GLR in box (67)		0.95	(68)
Useful gains, W	(66) x (68) =	470.96	(69)

7. Mean internal temperature:

		° C	
Mean internal temperature of the living area (Table 8)		18.87	(70)
Temperature adjustment from Table 4e, where appropriate		0	(71)
Adjustment for gains	{[(69) ÷ (37)] - 4.0} x 0.2 x R =	0.33	(72)

R is obtained from the 'responsiveness' column of Table 4a or Table 4d

Adjusted living room temperature	(70) + (71) + (72) =	19.19	(73)
Temperature difference between zones (Table 9)		1.53	(74)
Living area fraction (0 to 1.0)	living room area ÷ (5) =	0.44	(75)
Rest-of -house fraction	1 - (75) =	0.56	(76)
Mean internal temperature	(73) - [(74) x (76)] =	18.34	(77)

8. Degree days:

Temperature rise from gains	(69) ÷ (37) =	5.64	(78)
Base temperature	(77) - (78) =	12.7	(79)
Degree-days, use box (79) and Table 10		1493.56	(80)

9. Space heating requirement:

Space heating requirement (useful), kWh/year	0.024 x (80) x (37) =	2994.75	(81)

For range cooker boilers where efficiency is obtained from the Boiler Efficiency Database or manufacturer's declared value, multiply the result in box (81) by (1 – Fcase/Fwater) where Fcase is the heat emission from the case of the range cooker at full, load (in kW); and Fwater is the heat transferred to water at full load (in kW). Fcase and Fwater are obtained from the database, record for the range cooker boiler or manufacturer's declared value.

9a. Energy requirements - individual heating systems, including micro-CHP:

Note: when space and water heating is provided by community heating use the alternative worksheet 9b

Space heating:

Fraction of heat from secondary/supplementary system (use value from Table 11, Table 12a or Append		0.1	(82)
Efficiency of main heating system, %		88	(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 heating system, % (use value from Table 4a or Appendix E)		100	(84)
Space heating fuel (main) requirement, kWh/year	[1- (82)] x (81) x 100 ÷ (83) =	3062.81	(85)
Space heating fuel (secondary), kWh/year	[(82) x (81) x 100 ÷ (84) =	299.48	(85a)

Water heating:

Efficiency of water heater, %		88	(86)

(SEDBUK or from Table 4a or 4b, adjusted where appropriate by the amount shown in the 'efficiency adjustment' column of Table 4c)

Energy required for water heating, kWh/year	[(51) x 100 ÷ (86)] =	2412.35	(86a)

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Electricity for pumps and fans:		kWh/year	
each central heating pump, (Table 4f)		130	(87a)
each boiler with a fan-assisted flue (Table 4f)		0	(87b)
warm air heating system fans (Table 4f)		0	(87c)
mechanical ventilation - balanced, extract or positive input from outside (Table 4f)		0	(87d)
maintaining keep-hot facility for gas combi boiler (Table 4f)		0	(87e)
pump for solar water heating (Table 4f)		0	(87f)
Energy required for water heating, kWh/year	(87a) + (87b) + (87c) + (87d) + (87e)+ (87f) =	130	(87)

12a. CO² emissions rate for individual heating systems (including micro-CHP) and community heating without CHP

This page should used when space and water heating is provided by community heating. If boilers or heat pumps only, enter 0 c box (83), and 1.0 in box (84*)*

Individual heating system:	Energy kWh/year		Emission factor kg CO²/kWh		Emissions kg CO²/year	
Space heating main from box (85))	3062.81	x	0.19	=	594.19	(101)
Space heating secondary from box (85a)	299.48	x	0.42	=	126.38	(102)
Energy for water heating from box (86a)	2412.35	x	0.19	=	468	(103)
Community scheme:						
Efficiency of community boilers % *use actual efficiency if known, or value in Table 4a*					0	(104)
Energy for space heating (87*) x 100 ÷ (104) =	0	x	0	=	0	(105)
Energy for water heating (87b*) x 100 ÷ (104) =	0	x	0	=	0	(106)
Space and water heating	[(101) + (102) + (103)] or [(105) + (106)]			=	1188.56	(107)
Electricity for pumps and fans from box (87) or (88*)	130	x	0.42	=	54.86	(108)
Energy for lighting from Appendix L	382.71	x	0.42	=	161.5	(109)
Energy produced or saved in dwelling	(95) or (95*)	x	0	=	140.75	(110)
Energy consumed by the above technology	(96) or (96*)	x	0	=	0	(111)
Total CO², kg/year	(107) + (108) + (109) - (110) + (111)			=	1264.17	(112)
Dwelling CO² Emission Rate	(112) ÷ (5) =				26.36	(113)
EI values					81.78	
EI rating					82	
EI band					B	

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User Details:

Assessor Name:	Kristopher Baxter	**Stroma Number:**	STRO007338
Software Name:	Stroma FSAP	**Software Version:**	Version: 1.1.0.244

Property Address:

Address : Plot 38, Land off Peterborough Road, Crowland, PE2

1. Overall dwelling dimensions:

	Area(m²)		Ave Height(m)		Vol(m³)	
Ground floor Area	23.98	(1a) x	2.4	=	57.55	(1)
First floor Area	23.98	(2a) x	2.61	=	62.59	(2)
Total floor area (1a)+(2a)+(3a)+(4a)+(4b)+(4d)+(4f)+(4h)	47.96	(5)				
Dwelling volume Area			(1)+(2)+(3)+(4)+(4c)+(4e)+(4g)+(4i) =		120.14	(6)

2. Ventilation rate:

			m³ per hour	
Number of chimneys	0	x 40 =	0	(7)
Number of open flues	0	x 20 =	0	(8)
Number of intermittent fans or passive vents	3	x 10 =	20	(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)		20	÷box(6)	0.17	(10)
If a pressurisation test has been carried out, proceed to box (19)					
Number of storeys in the dwelling				0	(11)
Additional infiltration			[(11)-1]x0.1 =	0	(12)
Structural infiltration: 0.25 for steel or timber frame or 0.35 for masonry construction				0	(13)
if both types of wall are present, use the value corresponding to the greater wall area (after deducting areas of openings); if equal user 0.35					
If suspended wooden floor, enter 0.2 (unsealed) or 0.1 (sealed), else enter 0				0	(14)
If no draught lobby, enter 0.05, else enter 0				0	(15)
Percentage of windows and doors draught stripped				0	(16)
Window infiltration		0.25 - [0.2 x Box(16) ÷ 100] =		0	(17)
Infiltration rate		(10)+(12)+(13)+(14)+(15)+(17) =		0	(18)
If based on air permeability value, then [q50 ÷ 20] + (10) in box (19), otherwise (19) = (18)				0.67	(19)
Air permeability value applies if a pressurisation test has been done or a degree air permeability is being used					
Number of sides on which sheltered				2	(20)
(Enter 2 in box (20) for new dwellings where location is not shown)					
Shelter factor		1 - [0.075 x (20)] =		0.85	(21)
Adjusted infiltration rate		(19) x (21) =		0.57	(22)
Calculate effective air change rate for the applicable case					
If balanced whole house mechanical ventilation		air throughput (in ach,see 2.6.6) =		0	(22a)
If balanced with heat recovery		efficiency in % allowing for in-use factor =		0	(22b)

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a) If balanced whole house mechanical ventilation with heat recovery	(22) + (22a) x [1-(22b) ÷ 100] =	0	(23)
b) If balanced whole house mechanical ventilation without heat recovery	(22) + (22a) =	0	(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)		0	(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]		0.66	(24)
Effective air change rate - enter	(23) or (23a) or (23b) or (24) in box (25)	0.66	(25)

3. Heat losses and heat loss parameter:

ELEMENT	Gross area (m²)			U-value		AXU (W/K)	
Doors	1.85	x		2	=	3.7	(26)
Windows	10.14	x		1/[1/(2)+ 0.04]	=	18.78	(27)
Floor	23.98	x		0.25	=	5.995	(28)
Walls	39.38	x		0.35	=	13.78	(29)
Roof	23.98	x		0.16	=	3.84	(30)
Total area of elements, m²						99.33	(32)

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

the above table is expanded as necessary to allow for all different types of element e.g. 6 wall types

Fabric heat loss, W/K	(26)+(27)+(27a)+(27b)+(28)+(29)+(29a)+(30)+(30a) =	46.09	(33)
Thermal bridges		10.93	(34)

*if details of thermal bridging are not known calculate y * (32) [see Appendix K] and enter in box (34)*

Total fabric heat loss	(33) + (34) =	57.02	(35)
Ventilation heat loss	(25) x 0.33 x (6) =	26.18	(36)
Heat loss coefficient, W/K	(35) + (36) =	83.2	(37)
Heat loss parameter (HLP), W/m²K	(37) ÷ (5) =	1.73	(38)

4. Water heating energy requirement:

Energy content of hot water used from Table 1 column (b)		1407.76	(39)
Distribution loss from Table 1 column (c)		248.43	(40)

If instantaneous water heating at point of use, enter 0 in boxes (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):		0	(41)
Temperature factor from Table 2b		0	(41a)
Energy lost from water storage, kWh/year	(41) x (41a) x 365 =	0	(42)
If manufacturer's declared cylinder loss factor is not known:			
Cylinder volume (litres) including any solar storage within same		150	(43)

If community heating and no tank in dwelling, enter 110 litres in box (43)

Otherwise if no stored hot water (this includes instantaneous combi boilers) enter '0' in box (43)

Hot water storage loss factor from Table 2 (kWh/litre/day)		0.02	(44)

If community heating and no tank in dwelling, use cylinder loss from Table 2 for 50 mm factory insulation

Volume factor from Table 2a		0.93	(44a)
Temperature factor from Table 2b		0.54	(44b)

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Energy lost from water storage, kWh/year	((43) x (44) x (44a) x (44b) x 365 =	524.28	(45)
Enter (42) or (45) in box (46)		524.28	(46)
If dedicated solar storage is within cylinder,	box (47) = (46) x [(43) – (H11)] ÷ (43), else	524.28	(47)
Primary circuit loss from Table 3		610	(48)
Combi loss from Table 3a (enter 0 if not a combi boiler)		0	(49)
Solar DHW input calculated using Appendix H (enter 0 if no solar collector)		0	(50)
Output from water heater, kWh/year	(39)+(40)+(47)+(48)+(49) – (50) =	2790.47	(51)
Heat gains from water heating,	(39)+(40)+(47)+(48)+(49) – (50) =	1458.11	(52)

include (47) in calculation of (52) only if cylinder is in the dwelling or hot water is from community heating

5. Internal gains:

Lights, appliances, cooking and metabolic (Table 5)		321.71	(53)
Reduction of internal gains due to low energy lighting (calculated in Appendix L)		9.66	(53a)
Additional gains from Table 5a		10	(53b)
Water heating	(52) ÷ 8.76 =	166.45	(54)
Total internal gains	(53) + (53b) + (54) - (53a) =	488.5	(55)

6. Solar gains:

Orientation:	Access Factor Table 6d	Area m²	Flux Table 6a	g_ Table 6b	FF Table 6c	Gains (W)

Total solar gains:	[(56) + ... + (64)] =	170	(65)
Total gains, W	[(56) + ... + (64)] =	658.5	(66)
Gain/loss ratio (GLR)	(66) ÷ (37) =	7.91	(67)
Utilisation factor (Table 7, using GLR in box (67)		0.9	(68)
Useful gains, W	(66) x (68) =	590.77	(69)

7. Mean internal temperature:

		° C	
Mean internal temperature of the living area (Table 8)		18.87	(70)
Temperature adjustment from Table 4e, where appropriate		0	(71)
Adjustment for gains	{[(69) ÷ (37)] - 4.0} x 0.2 x R =	0.62	(72)

R is obtained from the 'responsiveness' column of Table 4a or Table 4d

Adjusted living room temperature	(70) + (71) + (72) =	19.49	(73)
Temperature difference between zones (Table 9)		1.53	(74)
Living area fraction (0 to 1.0)	living room area ÷ (5) =	0.44	(75)
Rest-of -house fraction	1 - (75) =	0.56	(76)
Mean internal temperature	(73) - [(74) x (76)] =	18.63	(77)

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8. Degree days:

Temperature rise from gains	(69) ÷ (37) =	7.1	(78)
Base temperature	(77) - (78) =	11.53	(79)
Degree-days, use box (79) and Table 10		1246.01	(80)

9. Space heating requirement:

Space heating requirement (useful), kWh/year	0.024 x (80) x (37) =	2488.14	(81)

For range cooker boilers where efficiency is obtained from the Boiler Efficiency Database or manufacturer's declared value, multiply the result in box (81) by (1 – Fcase/Fwater) where Fcase is the heat emission from the case of the range cooker at full, load (in kW); and Fwater is the heat transferred to water at full load (in kW). Fcase and Fwater are obtained from the database, record for the range cooker boiler or manufacturer's declared value.

9a. Energy requirements - individual heating systems, including micro-CHP:

Note: when space and water heating is provided by community heating use the alternative worksheet 9b

Space heating:

Fraction of heat from secondary/supplementary system (use value from Table 11, Table 12a or Append		0.1	(82)
Efficiency of main heating system, %		78	(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 heating system, % (use value from Table 4a or Appendix E)		100	(84)
Space heating fuel (main) requirement, kWh/year	[1- (82)] x (81) x 100 ÷ (83) =	2870.93	(85)
Space heating fuel (secondary), kWh/year	[(82) x (81) x 100 ÷ (84) =	248.81	(85a)

Water heating:

Efficiency of water heater, %		78	(86)

(SEDBUK or from Table 4a or 4b, adjusted where appropriate by the amount shown in the 'efficiency adjustment' column of Table 4c)

Energy required for water heating, kWh/year	[(51) x 100 ÷ (86)] =	3577.53	(86a)

Electricity for pumps and fans:

	kWh/year	
each central heating pump, (Table 4f)	130	(87a)
each boiler with a fan-assisted flue (Table 4f)	45	(87b)
warm air heating system fans (Table 4f)	0	(87c)
mechanical ventilation - balanced, extract or positive input from outside (Table 4f)	0	(87d)
maintaining keep-hot facility for gas combi boiler (Table 4f)	0	(87e)
pump for solar water heating (Table 4f)	0	(87f)
Energy required for water heating, kWh/year (87a) + (87b) + (87c) + (87d) + (87e)+ (87f) =	175	(87)

12a. CO^2 emissions rate for individual heating systems (including micro-CHP) and community heating without CHP

This page should used when space and water heating is provided by community heating. If boilers or heat pumps only, enter 0 c box (83), and 1.0 in box (84*)*

Individual heating system:	Energy kWh/year		Emission factor kg CO^2/kWh		Emissions kg CO^2/year	
Space heating main from box (85))	2870.93	x	0.19	=	556.96	(101)
Space heating secondary from box (85a)	248.81	x	0.42	=	105	(102)

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Energy for water heating from box (86a)		3577.53	x	0.19	=	694.04 (103)

Community scheme:

Efficiency of community boilers % *use actual efficiency if known, or value in Table 4a*						0 (104)
Energy for space heating	(87*) x 100 ÷ (104) =	0	x	0	=	0 (105)
Energy for water heating	(87b*) x 100 ÷ (104) =	0	x	0	=	0 (106)
Space and water heating			[(101) + (102) + (103)] or [(105) + (106)]		=	1356 (107)
Electricity for pumps and fans from box (87) or (88*)		175	x	0.42	=	73.85 (108)
Energy for lighting from Appendix L		364.79	x	0.42	=	153.94 (109)
Energy produced or saved in dwelling		(95) or (95*)	x	0	=	0 (110)
Energy consumed by the above technology		(96) or (96*)	x	0	=	0 (111)
Total CO^2, kg/year			(107) + (108) + (109) - (110) + (111)		=	1583.79 (112)
Dwelling CO^2 Emission Rate			(112) ÷ (5) =			33.02 (113)
EI values						77.17
EI rating						77
EI band						C

TER value = 26.42