



elmhurst
energy



SAP Report Submission for Building Regulations Compliance

Client:

Project: Abbey Road Retail Park
Barking

Contact: Paul Pasifull
Paul Pasifull
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Report Issue Date: 24/02/2022

EXCELLENCE
IN ENERGY
ASSESSMENT

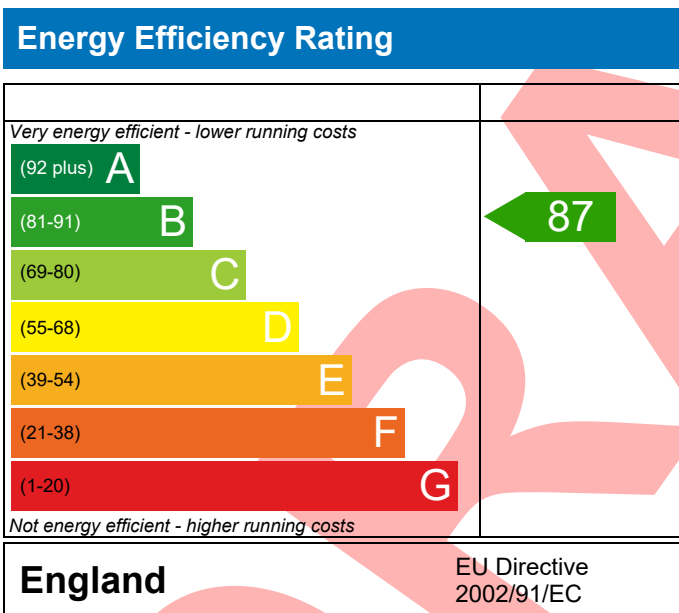
PREDICTED ENERGY ASSESSMENT

Abbey Road Retail Park,
Barking

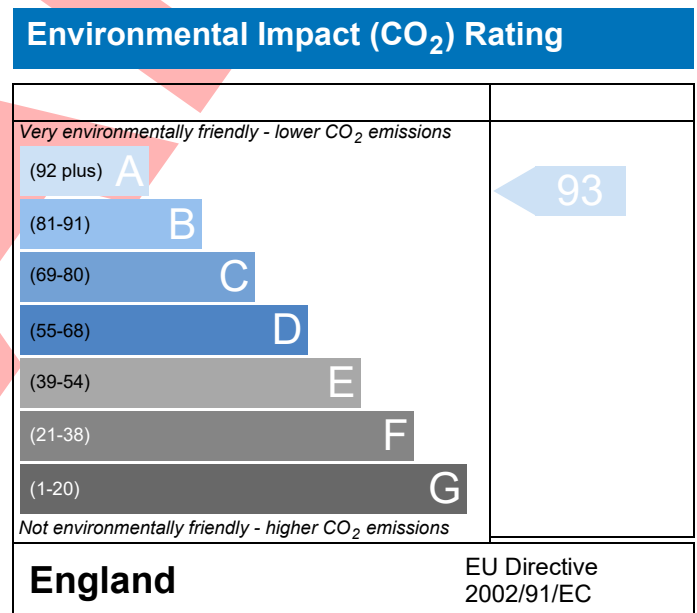
Dwelling type: Flat, End-Terrace
Date of assessment: 24/02/2022
Produced by: Paul Pasifull
Total floor area: 95.74 m²

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.



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.



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.

This report has not been submitted through the Elmhurst Energy members' portal, therefore results are subject to change when the dwelling is completed.

BUILDING REGULATION COMPLIANCE

Calculation Type: New Build (As Designed)

Property Reference	WH190 Plot 323	Issued on Date	24/02/2022
Assessment Reference	Plot 323	Prop Type Ref	Flat Type B1N-02
Property	Abbey Road Retail Park, Barking		
SAP Rating	87 B	DER	8.29
Environmental	93 A	TER	15.26
CO ₂ Emissions (t/year)	0.66	% DER<TER	45.67
General Requirements Compliance	Pass	DFEE	34.52
		TREE	43.31
		% DFEE<TFEE	20.31
Assessor Details	Mr. Paul Pasifull, Stansted Environmental Services, Tel: 01277225709, paul@sestesting.com	Assessor ID	Q133-0001
Client			

SUMMARY FOR INPUT DATA FOR New Build (As Designed)

Criterion 1 – Achieving the TER and TFE rate

1a TER and DER

Fuel for main heating	Mains gas (c)		
Fuel factor	1.00 (mains gas)		
Target Carbon Dioxide Emission Rate (TER)	15.26	kgCO ₂ /m ²	
Dwelling Carbon Dioxide Emission Rate (DER)	8.29	kgCO ₂ /m ²	Pass
	-6.97 (-45.7%)	kgCO ₂ /m ²	

1b TFE and DFEE

Target Fabric Energy Efficiency (TFEE)	43.31	kWh/m ² /yr	
Dwelling Fabric Energy Efficiency (DFEE)	34.52	kWh/m ² /yr	
	-8.8 (-20.3%)	kWh/m ² /yr	Pass

Criterion 2 – Limits on design flexibility

Limiting Fabric Standards

2 Fabric U-values

Element	Average	Highest	
External wall	0.16 (max. 0.30)	0.27 (max. 0.70)	Pass
Party wall	0.00 (max. 0.20)	-	Pass
Floor	0.07 (max. 0.25)	0.07 (max. 0.70)	Pass
Openings	1.40 (max. 2.00)	1.40 (max. 3.30)	Pass

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air permeability

Air permeability at 50 pascals	3.00 (design value)	m ³ /(h.m ²) @ 50 Pa	
Maximum	10.0	m ³ /(h.m ²) @ 50 Pa	Pass

Limiting System Efficiencies

4 Heating efficiency

Main heating system	Community heating scheme	-
Secondary heating system	None	

5 Cylinder insulation

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BUILDING REGULATION COMPLIANCE

Calculation Type: New Build (As Designed)

Hot water storage	Measured cylinder loss: 0.40 kWh/day Permitted by DBSCG 0.50	Pass
Primary pipework insulated	No primary pipework	

6 Controls

Space heating controls	Charging system linked to use of community heating, programmer and at least two room stats	Pass
Hot water controls	No cylinderstat	

7 Low energy lights

Percentage of fixed lights with low-energy fittings	100	%	
Minimum	75	%	Pass

8 Mechanical ventilation

Continuous extract system			
Specific fan power	0.16		
Maximum	0.7		Pass

Criterion 3 – Limiting the effects of heat gains in summer

9 Summertime temperature

Overheating risk (Thames Valley)	Slight	Pass
Based on:		
Overshading	Average	
Windows facing West	13.37 m ² , No overhang	
Air change rate	4.00 ach	
Blinds/curtains	None	

Criterion 4 – Building performance consistent with DER and DFEE rate

Party Walls

Type	U-value		
Solid Wall	0.00	W/m ² K	Pass
Filled Cavity with Edge Sealing	0.00	W/m ² K	Pass

Air permeability and pressure testing

3 Air permeability

Air permeability at 50 pascals	3.00 (design value)	m ³ /(h.m ²) @ 50 Pa	
Maximum	10.0	m ³ /(h.m ²) @ 50 Pa	Pass

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BUILDING REGULATION COMPLIANCE

Calculation Type: New Build (As Designed)

10 Key features

External wall U-value	0.14	W/m ² K
External wall U-value	0.14	W/m ² K
External wall U-value	0.14	W/m ² K
External wall U-value	0.14	W/m ² K
Party wall U-value	0.00	W/m ² K
Party wall U-value	0.00	W/m ² K
Exposed floor U-value	0.07	W/m ² K
Air permeability	3.0	m ³ /m ² h
Community CHP, Mains gas	N/A	
Photovoltaic array	265.00	kWh/Year

DRAFT

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RECOMMENDATIONS

	Typical cost	Typical savings per year	Energy efficiency	Environmental impact	Result
Low energy lights			0	0	Already installed
Solar water heating			0	0	Not applicable
Photovoltaic			0	0	Not applicable
Wind turbine			0	0	Not applicable
Totals	£0	£0	B 87	A 93	

DRAFT

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THERMAL BRIDGING

Calculation Type: New Build (As Designed)

Property Reference	WH190 Plot 323		Issued on Date	24/02/2022	
Assessment Reference	Plot 323	Prop Type Ref	Flat Type B1N-02		
Property	Abbey Road Retail Park, Barking				
SAP Rating	87 B	DER	8.29	TER	15.26
Environmental	93 A	% DER<TER	45.67		
CO ₂ Emissions (t/year)	0.66	DFEE	34.52	TFEE	43.31
General Requirements Compliance	Pass	% DFEE<TFEE	20.31		
Assessor Details	Mr. Paul Pasifull, Stansted Environmental Services, Tel: 01277225709, paul@sestesting.com			Assessor ID	Q133-0001
Client					

	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	6.34	1.90	
External wall	E4 Jamb	Table K1 - Approved	0.050	16.88	0.84	
External wall	E20 Exposed floor (normal)	Table K1 - Default	0.320	11.56	3.70	
External wall	E7 Party floor between dwellings (in blocks of flats)	Table K1 - Approved	0.070	24.44	1.71	
External wall	E8 Balcony within a dwelling, wall insulation continuous	Table K1 - Approved	0.000	12.88	0.00	
External wall	E16 Corner (normal)	Table K1 - Approved	0.090	8.25	0.74	
External wall	E17 Corner (inverted – internal area greater than external area)	Table K1 - Approved	-0.090	5.50	-0.50	
External wall	E18 Party wall between dwellings	Table K1 - Approved	0.060	2.75	0.17	
External wall	E25 Staggered party wall between dwellings	Table K1 - Default	0.120	2.75	0.33	
Party wall	P3 Party wall - Intermediate floor between dwellings (in blocks of flats)	Table K1 - Default	0.000	15.65	0.00	

Total: **8.90** W/mK:
Y-Value: **0.058** W/m²K:

FULL SAP CALCULATION PRINTOUT

Calculation Type: New Build (As Designed)

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CO ₂ Emissions (t/year)	0.66	DFEE	34.52	TFEE	43.31
General Requirements Compliance	Pass	% DFEE<TFEE	20.31		
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FULL SAP CALCULATION PRINTOUT

Calculation Type: New Build (As Designed)

REGULATIONS COMPLIANCE REPORT - Approved Document L1A, 2013 Edition, England

REGULATIONS COMPLIANCE REPORT - Approved Document L1A, 2013 Edition, England

DWELLING AS DESIGNED

Mid-floor flat, total floor area 96 m²

This report covers items included within the SAP calculations.
It is not a complete report of regulations compliance.

1a TER and DER

Fuel for main heating:Mains gas (c)
Fuel factor:1.00 (mains gas)
Target Carbon Dioxide Emission Rate (TER) 15.26 kgCO₂/m²
Dwelling Carbon Dioxide Emission Rate (DER) 8.29 kgCO₂/m²OK

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)43.3 kWh/m²/yr
Dwelling Fabric Energy Efficiency (DFEE)34.5 kWh/m²/yrOK

2 Fabric U-values

Element	Average	Highest	
External wall	0.16 (max. 0.30)	0.27 (max. 0.70)	OK
Party wall	0.00 (max. 0.20)	-	OK
Floor	0.07 (max. 0.25)	0.07 (max. 0.70)	OK
Roof (no roof)			
Openings	1.40 (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: 3.00 (design value)
Maximum 10.0 OK

4 Heating efficiency

Main heating system: Community heating scheme -
Secondary heating system: None

5 Cylinder insulation

Hot water storage Measured cylinder loss: 0.40 kWh/day
Permitted by DBSCG 0.50 OK
Primary pipework insulated: No primary pipework

6 Controls

Space heating controls: Charging system linked to use of community heating, programmer and at least two room statsOK
Hot water controls: No cylinderstat

7 Low energy lights

Percentage of fixed lights with low-energy fittings:100%
Minimum 75% OK

8 Mechanical ventilation

Continuous extract system
Specific fan power: 0.16
Maximum 0.7 OK

9 Summertime temperature

Overheating risk (Thames Valley): Slight OK
Based on:
Overshading: Average
Windows facing West: 13.37 m², No overhang
Air change rate: 4.00 ach
Blinds/curtains: None

10 Key features

External wall U-value	0.14 W/m ² K
External wall U-value	0.14 W/m ² K
External wall U-value	0.14 W/m ² K
External wall U-value	0.14 W/m ² K
Party wall U-value	0.00 W/m ² K
Party wall U-value	0.00 W/m ² K
Exposed floor U-value	0.07 W/m ² K
Air permeability	3.0 m ³ /m ² h
Community CHP, Mains gas	
Photovoltaic array	265.00 kWh/Year

FULL SAP CALCULATION PRINTOUT

Calculation Type: New Build (As Designed)

CALCULATION OF DWELLING EMISSIONS FOR REGULATIONS COMPLIANCE 09 Jan 2014

SAP 2012 WORKSHEET FOR New Build (As Designed) (Version 9.92, January 2014)
 CALCULATION OF DWELLING EMISSIONS FOR REGULATIONS COMPLIANCE 09 Jan 2014

1. Overall dwelling dimensions

	Area (m2)	Storey height (m)	Volume (m3)
Ground floor	95.7400 (1b)	x 2.5000 (2b)	= 239.3500 (1b) - (3b)
Total floor area TFA = (1a)+(1b)+(1c)+(1d)+(1e)...(1n)	95.7400		(4)
Dwelling volume		(3a)+(3b)+(3c)+(3d)+(3e)...(3n)	= 239.3500 (5)

2. Ventilation rate

	main heating	secondary heating	other	total	m3 per hour
Number of chimneys	0	0	0	0 * 40 =	0.0000 (6a)
Number of open flues	0	0	0	0 * 20 =	0.0000 (6b)
Number of intermittent fans				0 * 10 =	0.0000 (7a)
Number of passive vents				0 * 10 =	0.0000 (7b)
Number of flueless gas fires				0 * 40 =	0.0000 (7c)
Infiltration due to chimneys, flues and fans = (6a)+(6b)+(7a)+(7b)+(7c) =				0.0000 / (5) =	0.0000 (8)
Pressure test				Yes	
Measured/design AP50					3.0000
Infiltration rate					0.1500 (18)
Number of sides sheltered					2 (19)
Shelter factor				(20) = 1 - [0.075 x (19)] =	0.8500 (20)
Infiltration rate adjusted to include shelter factor				(21) = (18) x (20) =	0.1275 (21)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Wind speed	5.1000	5.0000	4.9000	4.4000	4.3000	3.8000	3.8000	3.7000	4.0000	4.3000	4.5000	4.7000 (22)
Wind factor	1.2750	1.2500	1.2250	1.1000	1.0750	0.9500	0.9500	0.9250	1.0000	1.0750	1.1250	1.1750 (22a)
Adj infilt rate	0.1626	0.1594	0.1562	0.1403	0.1371	0.1211	0.1211	0.1179	0.1275	0.1371	0.1434	0.1498 (22b)
Mechanical extract ventilation - centralised												0.5000 (23a)
If mechanical ventilation:												
Effective ac	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000 (25)

3. Heat losses and heat loss parameter

Element	Gross m2	Openings m2	NetArea m2	U-value W/m2K	A x U W/K	K-value kJ/m2K	A x K kJ/K
Windows (Uw = 1.40)			13.3700	1.3258	17.7254		(27)
Exposed Floor			95.7400	0.0700	6.7018		(28b)
2. Column wall	8.4000		8.4000	0.2700	2.2680	150.0000	1260.0000 (29a)
3. Uni panel cladding	8.9100	4.7900	4.1200	0.1400	0.5768	14.0000	57.6800 (29a)
1. Uni panel brick	26.1000	8.5800	17.5200	0.1400	2.4528	14.0000	245.2800 (29a)
31. Block Block	10.9700		10.9700	0.1400	1.5358	150.0000	1645.5000 (29a)
2. Column wall to gym	4.4700		4.4700	0.1400	0.6258	150.0000	670.5000 (29a)
Total net area of external elements Aum(A, m2)			154.5900				(31)
Fabric heat loss, W/K = Sum (A x U)					(26)...(30) + (32) =	31.8864	(33)
Party Wall 1			11.9700	0.0000	0.0000	180.0000	2154.6000 (32)
Party Wall 2			31.0700	0.0000	0.0000	70.0000	2174.9000 (32)
Party Ceilings			95.7400			40.0000	3829.6000 (32b)
Internal Wall - SFS			117.9800			9.0000	1061.8200 (32c)
Heat capacity Cm = Sum(A x k)							(28)...(30) + (32) + (32a)...(32e) =
Thermal mass parameter (TMP = Cm / TFA) in kJ/m2K							13099.8800 (34)
Thermal bridges (Sum(L x Psi) calculated using Appendix K)							136.8277 (35)
Total fabric heat loss							(33) + (36) =
							40.7849 (37)

Ventilation heat loss calculated monthly (38)m = 0.33 x (25)m x (5)

(38)m	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Heat transfer coeff	39.4928	39.4928	39.4928	39.4928	39.4928	39.4928	39.4928	39.4928	39.4928	39.4928	39.4928	39.4928 (38)
Average = Sum(39)m / 12 =	80.2776	80.2776	80.2776	80.2776	80.2776	80.2776	80.2776	80.2776	80.2776	80.2776	80.2776	80.2776 (39)
HLP (average)	0.8385	0.8385	0.8385	0.8385	0.8385	0.8385	0.8385	0.8385	0.8385	0.8385	0.8385	0.8385 (40)
Days in month	31	28	31	30	31	30	31	31	30	31	30	31 (41)

4. Water heating energy requirements (kWh/year)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Assumed occupancy												2.6964 (42)
Average daily hot water use (litres/day)												98.2403 (43)
Daily hot water use												

FULL SAP CALCULATION PRINTOUT

Calculation Type: New Build (As Designed)

CALCULATION OF DWELLING EMISSIONS FOR REGULATIONS COMPLIANCE 09 Jan 2014

Energy conte	108.0644	104.1348	100.2052	96.2755	92.3459	88.4163	88.4163	92.3459	96.2755	100.2052	104.1348	108.0644 (44)
Energy content (annual)	160.2564	140.1612	144.6338	126.0953	120.9914	104.4064	96.7479	111.0196	112.3455	130.9279	142.9180	155.1997 (45)
Distribution loss (46)m = 0.15 x (45)m												1545.7032 (45)
Water storage loss:	24.0385	21.0242	21.6951	18.9143	18.1487	15.6610	14.5122	16.6529	16.8518	19.6392	21.4377	23.2800 (46)
Store volume												10.0000 (47)
a) If manufacturer declared loss factor is known (kWh/day):												0.4000 (48)
Temperature factor from Table 2b												1.0000 (49)
Enter (49) or (54) in (55)												0.4000 (55)
Total storage loss												
12.4000	11.2000	12.4000	12.0000	12.4000	12.0000	12.4000	12.4000	12.0000	12.4000	12.0000	12.4000	12.4000 (56)
If cylinder contains dedicated solar storage												
12.4000	11.2000	12.4000	12.0000	12.4000	12.0000	12.4000	12.4000	12.0000	12.4000	12.0000	12.4000	12.4000 (57)
Primary loss	23.2624	21.0112	23.2624	22.5120	23.2624	22.5120	23.2624	23.2624	22.5120	23.2624	22.5120	23.2624 (59)
Total heat required for water heating calculated for each month												
Solar input	195.9188	172.3724	180.2962	160.6073	156.6538	138.9184	132.4103	146.6820	146.8575	166.5903	177.4300	190.8621 (62)
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000 (63)
Solar input (sum of months) = Sum(63)m =												0.0000 (63)
Output from w/h	195.9188	172.3724	180.2962	160.6073	156.6538	138.9184	132.4103	146.6820	146.8575	166.5903	177.4300	190.8621 (64)
Total per year (kWh/year) = Sum(64)m =												1965.5992 (64)
Heat gains from water heating, kWh/month	81.8152	72.3726	76.6207	69.5363	68.7596	62.3247	60.6986	65.4439	64.9645	72.0634	75.1298	80.1338 (65)

5. Internal gains (see Table 5 and 5a)

Metabolic gains (Table 5), Watts												
(66)m	134.8218	134.8218	134.8218	134.8218	134.8218	134.8218	134.8218	134.8218	134.8218	134.8218	134.8218	134.8218 (66)
Lighting gains (calculated in Appendix L, equation L9 or L9a), also see Table 5	23.8520	21.1851	17.2289	13.0434	9.7501	8.2314	8.9944	11.5612	15.5174	19.7030	22.9963	24.5149 (67)
Appliances gains (calculated in Appendix L, equation L13 or L13a), also see Table 5	249.2512	251.8377	245.3199	231.4444	213.9290	197.4670	186.4694	183.8829	190.4007	204.2762	221.7916	238.2536 (68)
Cooking gains (calculated in Appendix L, equation L15 or L15a), also see Table 5	36.4822	36.4822	36.4822	36.4822	36.4822	36.4822	36.4822	36.4822	36.4822	36.4822	36.4822	36.4822 (69)
Pumps, fans	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000 (70)
Losses e.g. evaporation (negative values) (Table 5)	-107.8574	-107.8574	-107.8574	-107.8574	-107.8574	-107.8574	-107.8574	-107.8574	-107.8574	-107.8574	-107.8574	-107.8574 (71)
Water heating gains (Table 5)	109.9666	107.6973	102.9848	96.5782	92.4188	86.5621	81.5841	87.9623	90.2285	96.8595	104.3470	107.7068 (72)
Total internal gains	446.5164	444.1666	428.9801	404.5125	379.5444	355.7071	340.3944	346.8530	359.5931	384.2852	412.5814	433.9218 (73)

6. Solar gains

[Jan]												
West			13.3700		19.6403		0.4200		0.7000		0.7700	53.5007 (80)
Solar gains	53.5007	104.6587	172.3579	251.3738	308.0680	315.3624	300.2379	257.8999	200.4594	124.1863	66.7091	43.9964 (83)
Total gains	500.0171	548.8253	601.3381	655.8862	687.6124	671.0695	640.6322	604.7528	560.0525	508.4715	479.2905	477.9182 (84)

7. Mean internal temperature (heating season)

Temperature during heating periods in the living area from Table 9, Th1 (C)												21.0000 (85)
Utilisation factor for gains for living area, nil,m (see Table 9a)												
tau	45.3284	45.3284	45.3284	45.3284	45.3284	45.3284	45.3284	45.3284	45.3284	45.3284	45.3284	45.3284
alpha	4.0219	4.0219	4.0219	4.0219	4.0219	4.0219	4.0219	4.0219	4.0219	4.0219	4.0219	4.0219
util living area	0.9880	0.9814	0.9648	0.9222	0.8324	0.6826	0.5276	0.5749	0.7964	0.9420	0.9807	0.9900 (86)
MIT	19.5813	19.7368	20.0216	20.3859	20.7081	20.9067	20.9745	20.9638	20.8192	20.4036	19.9178	19.5329 (87)
Th 2	20.2201	20.2201	20.2201	20.2201	20.2201	20.2201	20.2201	20.2201	20.2201	20.2201	20.2201	20.2201 (88)
util rest of house	0.9859	0.9780	0.9582	0.9069	0.7987	0.6207	0.4431	0.4903	0.7453	0.9275	0.9766	0.9882 (89)
MIT 2	18.2933	18.5190	18.9310	19.4497	19.8894	20.1350	20.2036	20.1951	20.0387	19.4822	18.7839	18.2228 (90)
Living area fraction										fLA = Living area / (4) =		0.4557 (91)
MIT	18.8803	19.0740	19.4280	19.8763	20.2625	20.4867	20.5549	20.5454	20.3944	19.9021	19.3006	18.8198 (92)
Temperature adjustment												0.0000
adjusted MIT	18.8803	19.0740	19.4280	19.8763	20.2625	20.4867	20.5549	20.5454	20.3944	19.9021	19.3006	18.8198 (93)

8. Space heating requirement

Utilisation	0.9810	0.9717	0.9499	0.8991	0.8007	0.6428	0.4803	0.5267	0.7577	0.9204	0.9704	0.9838 (94)
Useful gains	490.5217	533.2926	571.2275	589.7238	550.5939	431.3765	307.6873	318.5298	424.3525	468.0140	465.0808	470.1954 (95)
Ext temp.	4.3000	4.9000	6.5000	8.9000	11.7000	14.6000	16.6000	16.4000	14.1000	10.6000	7.1000	4.2000 (96)
Heat loss rate W	1170.4707	1137.8526	1037.8314	881.1534	687.3739	472.5676	317.4889	332.7842	505.3010	746.7478	979.4353	1173.6450 (97)
Month fracti	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0000	1.0000	1.0000	1.0000 (97a)
Space heating kWh	505.8820	406.2643	347.1533	209.8293	101.7643	0.0000	0.0000	0.0000	0.0000	207.3779	370.3352	523.3665 (98)
Space heating												2671.9729 (98)
Space heating per m2												(98) / (4) = 27.9086 (99)

FULL SAP CALCULATION PRINTOUT

Calculation Type: New Build (As Designed)

CALCULATION OF DWELLING EMISSIONS FOR REGULATIONS COMPLIANCE 09 Jan 2014

8c. Space cooling requirement

Not applicable

9b. Energy requirements

Fraction of space heat from secondary/supplementary system (Table 11)	0.0000 (301)
Fraction of space heat from community system	1.0000 (302)
Fraction of heat from community Boilers	0.1740 (303a)
Fraction of heat from community Combined Heat and Power	0.8260 (303b)
Fraction of total space heat from community Boilers	0.1740 (304a)
Fraction of total space heat from community Combined Heat and Power	0.8260 (304b)
Factor for control and charging method (Table 4c(3)) for community space heating	1.0000 (305)
Factor for control and charging method (Table 4c(3)) for community water heating	1.0000 (305a)
Distribution loss factor (Table 12c) for community heating system	1.0500 (306)
Space heating:	
Annual space heating requirement	2671.9729 (98)
Space heat from Boilers = (98) x 0.17 x 1.00 x 1.05	488.1695 (307a)
Space heat from Combined Heat and Power = (98) x 0.83 x 1.00 x 1.05	2317.4021 (307b)
Efficiency of secondary/supplementary heating system in % (from Table 4a or Appendix E)	0.0000 (308)
Space heating fuel for secondary/supplementary system	0.0000 (309)
Water heating	
Annual water heating requirement	1965.5992 (64)
Water heat from Boilers = (64) x 0.17 x 1.00 x 1.05	359.1150 (310a)
Water heat from Combined Heat and Power = (64) x 0.83 x 1.00 x 1.05	1704.7642 (310b)
Electricity used for heat distribution	48.6945 (313)
Annual totals kWh/year	
Electricity for pumps and fans:	
(MEVCentralised, Database: in-use factor = 1.3000, SFP = 0.2080)	
mechanical ventilation fans (SFP = 0.2080)	60.7375 (330a)
Total electricity for the above, kWh/year	60.7375 (331)
Electricity for lighting (calculated in Appendix L)	421.2337 (332)
Energy saving/generation technologies (Appendices M ,N and Q)	
Total delivered energy for all uses	5351.4218 (338)

12b. Carbon dioxide emissions - Community heating scheme

	Energy kWh/year	Emission factor kg CO2/kWh	Emissions kg CO2/year	
Efficiency of heat source Boilers			91.4000	(367a)
Space heating from Boilers	927.0070	0.2160	200.2335	(367)
Electrical efficiency of CHP unit			33.2000	(361)
Heat efficiency of CHP unit			38.6000	(362)
Space heating from Combined Heat and Power	6003.6324	0.2160	1296.7846	(363)
less credit emissions for electricity	-1993.2060	0.5190	-1034.4739	(364)
Water heating from Combined Heat and Power	4416.4875	0.2160	953.9613	(365)
less credit emissions for electricity	-1466.2738	0.5190	-760.9961	(366)
Electrical energy for heat distribution	48.6945	0.5190	25.2724	(372)
Total CO2 associated with community systems (negative value allowed since DFEE <= TFEE)			680.7818	(373)
Space and water heating			680.7818	(376)
Pumps and fans	60.7375	0.5190	31.5227	(378)
Energy for lighting	421.2337	0.5190	218.6203	(379)
Energy saving/generation technologies				
PV Unit	-265.0000	0.5190	-137.5350	(380)
Total CO2, kg/year			793.3899	(383)
Dwelling Carbon Dioxide Emission Rate (DER)			8.2900	(384)

16 CO2 EMISSIONS ASSOCIATED WITH APPLIANCES AND COOKING AND SITE-WIDE ELECTRICITY GENERATION TECHNOLOGIES

DER			8.2900	ZC1
Total Floor Area			95.7400	TFA
Assumed number of occupants			2.6964	N
CO2 emission factor in Table 12 for electricity displaced from grid			0.5190	EF
CO2 emissions from appliances, equation (L14)			15.4273	ZC2
CO2 emissions from cooking, equation (L16)			1.9189	ZC3
Total CO2 emissions			25.6362	ZC4
Residual CO2 emissions offset from biofuel CHP			0.0000	ZC5
Additional allowable electricity generation, kWh/m ² /year			0.0000	ZC6
Resulting CO2 emissions offset from additional allowable electricity generation			0.0000	ZC7
Net CO2 emissions			25.6362	ZC8

FULL SAP CALCULATION PRINTOUT

Calculation Type: New Build (As Designed)

CALCULATION OF TARGET EMISSIONS 09 Jan 2014

SAP 2012 WORKSHEET FOR New Build (As Designed) (Version 9.92, January 2014)
 CALCULATION OF TARGET EMISSIONS 09 Jan 2014

1. Overall dwelling dimensions

	Area (m ²)	Storey height (m)	Volume (m ³)
Ground floor	95.7400 (1b)	2.5000 (2b)	239.3500 (1b) - (3b)
Total floor area TFA = (1a)+(1b)+(1c)+(1d)+(1e)...(1n)	95.7400		(4)
Dwelling volume		(3a)+(3b)+(3c)+(3d)+(3e)...(3n)	239.3500 (5)

2. Ventilation rate

	main heating	secondary heating	other	total	m ³ per hour
Number of chimneys	0	0	0	0 * 40 =	0.0000 (6a)
Number of open flues	0	0	0	0 * 20 =	0.0000 (6b)
Number of intermittent fans				3 * 10 =	30.0000 (7a)
Number of passive vents				0 * 10 =	0.0000 (7b)
Number of flueless gas fires				0 * 40 =	0.0000 (7c)
Air changes per hour					
Infiltration due to chimneys, flues and fans = (6a)+(6b)+(7a)+(7b)+(7c) =				30.0000 / (5) =	0.1253 (8)
Pressure test				Yes	
Measured/design AP50					5.0000
Infiltration rate					0.3753 (18)
Number of sides sheltered					2 (19)
Shelter factor			(20) = 1 - [0.075 x (19)] =		0.8500 (20)
Infiltration rate adjusted to include shelter factor			(21) = (18) x (20) =		0.3190 (21)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Wind speed	5.1000	5.0000	4.9000	4.4000	4.3000	3.8000	3.8000	3.7000	4.0000	4.3000	4.5000	4.7000 (22)
Wind factor	1.2750	1.2500	1.2250	1.1000	1.0750	0.9500	0.9500	0.9250	1.0000	1.0750	1.1250	1.1750 (22a)
Adj infiltr rate	0.4068	0.3988	0.3908	0.3509	0.3430	0.3031	0.3031	0.2951	0.3190	0.3430	0.3589	0.3749 (22b)
Effective ac	0.5827	0.5795	0.5764	0.5616	0.5588	0.5459	0.5459	0.5435	0.5509	0.5588	0.5644	0.5703 (25)

3. Heat losses and heat loss parameter

Element	Gross m ²	Openings m ²	NetArea m ²	U-value W/m ² K	A x U W/K	K-value kJ/m ² K	A x K kJ/K					
TER Opening Type (Uw = 1.40)			13.3700	1.3258	17.7254		(27)					
Exposed Floor			95.7400	0.1300	12.4462		(28b)					
2. Column wall	8.4000		8.4000	0.1800	1.5120		(29a)					
3. Uni panel cladding	8.9100	4.7900	4.1200	0.1800	0.7416		(29a)					
1. Uni panel brick	26.1000	8.5800	17.5200	0.1800	3.1536		(29a)					
31. Block Block	10.9700		10.9700	0.1800	1.9746		(29a)					
2. Column wall to gym	4.4700		4.4700	0.1800	0.8046		(29a)					
Total net area of external elements Aum(A, m ²)			154.5900				(31)					
Fabric heat loss, W/K = Sum (A x U)					(26)...(30) + (32) =	38.3580	(33)					
Thermal mass parameter (TMP = Cm / TFA) in kJ/m ² K							250.0000 (35)					
Thermal bridges (Sum(L x Psi) calculated using Appendix K)							7.1485 (36)					
Total fabric heat loss						(33) + (36) =	45.5065 (37)					
Ventilation heat loss calculated monthly (38)m = 0.33 x (25)m x (5)												
(38)m	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Heat transfer coeff	46.0274	45.7737	45.5250	44.3567	44.1381	43.1206	43.1206	42.9322	43.5125	44.1381	44.5803	45.0426 (38)
Average = Sum(39)m / 12 =	91.5339	91.2802	91.0314	89.8632	89.6446	88.6271	88.6271	88.4387	89.0190	89.6446	90.0868	90.5491 (39)
	91.5339	91.2802	91.0314	89.8632	89.6446	88.6271	88.6271	88.4387	89.0190	89.6446	90.0868	90.5491 (39)
HLP	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
HLP (average)	0.9561	0.9534	0.9508	0.9386	0.9363	0.9257	0.9257	0.9237	0.9298	0.9363	0.9410	0.9458 (40)
Days in month	31	28	31	30	31	30	31	31	30	31	30	31 (41)

4. Water heating energy requirements (kWh/year)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Assumed occupancy												2.6964 (42)
Average daily hot water use (litres/day)												98.2403 (43)
Daily hot water use	108.0644	104.1348	100.2052	96.2755	92.3459	88.4163	88.4163	92.3459	96.2755	100.2052	104.1348	108.0644 (44)
Energy conte	160.2564	140.1612	144.6338	126.0953	120.9914	104.4064	96.7479	111.0196	112.3455	130.9279	142.9180	155.1997 (45)
Energy content (annual)												Total = Sum(45)m = 1545.7032 (45)
Distribution loss (46)m = 0.15 x (45)m	24.0385	21.0242	21.6951	18.9143	18.1487	15.6610	14.5122	16.6529	16.8518	19.6392	21.4377	23.2800 (46)
Water storage loss:												10.0000 (47)
Store volume												0.3712 (48)
a) If manufacturer declared loss factor is known (kWh/day):												

FULL SAP CALCULATION PRINTOUT

Calculation Type: New Build (As Designed)

CALCULATION OF TARGET EMISSIONS 09 Jan 2014

Temperature factor from Table 2b												0.5400 (49)
Enter (49) or (54) in (55)												0.2005 (55)
Total storage loss	6.2141	5.6127	6.2141	6.0136	6.2141	6.0136	6.2141	6.2141	6.0136	6.2141	6.0136	6.2141 (56)
If cylinder contains dedicated solar storage	6.2141	5.6127	6.2141	6.0136	6.2141	6.0136	6.2141	6.2141	6.0136	6.2141	6.0136	6.2141 (57)
Primary loss	23.2624	21.0112	23.2624	22.5120	23.2624	22.5120	23.2624	23.2624	22.5120	23.2624	22.5120	23.2624 (59)
Total heat required for water heating calculated for each month	189.7329	166.7852	174.1103	154.6209	150.4679	132.9320	126.2244	140.4961	140.8712	160.4044	171.4437	184.6762 (62)
Solar input	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000 (63)
Output from w/h	189.7329	166.7852	174.1103	154.6209	150.4679	132.9320	126.2244	140.4961	140.8712	160.4044	171.4437	184.6762 (64)
Heat gains from water heating, kWh/month	76.8664	67.9028	71.6720	64.7472	63.8109	57.5356	55.7499	60.4952	60.1754	67.1147	70.3408	75.1851 (65)

5. Internal gains (see Table 5 and 5a)

Metabolic gains (Table 5), Watts	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
(66)m	134.8218	134.8218	134.8218	134.8218	134.8218	134.8218	134.8218	134.8218	134.8218	134.8218	134.8218	134.8218 (66)
Lighting gains (calculated in Appendix L, equation L9 or L9a), also see Table 5	23.8520	21.1851	17.2289	13.0434	9.7501	8.2314	8.8944	11.5612	15.5174	19.7030	22.9963	24.5149 (67)
Appliances gains (calculated in Appendix L, equation L13 or L13a), also see Table 5	249.2512	251.8377	245.3199	231.4444	213.9290	197.4670	186.4694	183.8829	190.4007	204.2762	221.7916	238.2536 (68)
Cooking gains (calculated in Appendix L, equation L15 or L15a), also see Table 5	36.4822	36.4822	36.4822	36.4822	36.4822	36.4822	36.4822	36.4822	36.4822	36.4822	36.4822	36.4822 (69)
Pumps, fans	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000 (70)
Losses e.g. evaporation (negative values) (Table 5)	-107.8574	-107.8574	-107.8574	-107.8574	-107.8574	-107.8574	-107.8574	-107.8574	-107.8574	-107.8574	-107.8574	-107.8574 (71)
Water heating gains (Table 5)	103.3151	101.0458	96.3333	89.9267	85.7673	79.9106	74.9326	81.3108	83.5770	90.2080	97.6955	101.0553 (72)
Total internal gains	442.8649	440.5151	425.3286	400.8610	375.8929	352.0556	336.7429	343.2015	355.9416	380.6337	408.9299	430.2703 (73)

6. Solar gains

[Jan]	Area	Solar flux	g	FF	Access	Gains						
	m ²	Table 6a	Specific data	Specific data	factor	W						
		W/m ²	or Table 6b	or Table 6c	Table 6d							
West	13.3700	19.6403	0.6300	0.7000	0.7700	80.2510 (80)						
Solar gains	80.2510	156.9880	258.5369	377.0607	462.1020	473.0436	450.3568	386.8498	300.6891	186.2795	100.0636	65.9945 (83)
Total gains	523.1159	597.5031	683.8655	777.9216	837.9949	825.0992	787.0997	730.0513	656.6307	566.9132	508.9935	496.2649 (84)

7. Mean internal temperature (heating season)

Temperature during heating periods in the living area from Table 9, Th1 (C)												21.0000 (85)
Utilisation factor for gains for living area, nil,m (see Table 9a)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
tau	72.6355	72.8374	73.0364	73.9859	74.1663	75.0178	75.0178	75.1777	74.6875	74.1663	73.8023	73.4255
alpha	5.8424	5.8558	5.8691	5.9324	5.9444	6.0012	6.0012	6.0118	5.9792	5.9444	5.9202	5.8950
util living area	0.9987	0.9969	0.9897	0.9567	0.8538	0.6630	0.4917	0.5498	0.8266	0.9790	0.9971	0.9991 (86)
MIT	19.9769	20.1109	20.3454	20.6500	20.8793	20.9794	20.9970	20.9944	20.9270	20.6149	20.2406	19.9553 (87)
Th 2	20.1201	20.1223	20.1245	20.1348	20.1367	20.1457	20.1457	20.1474	20.1422	20.1367	20.1328	20.1288 (88)
util rest of house	0.9983	0.9959	0.9861	0.9415	0.8087	0.5846	0.3983	0.4518	0.7593	0.9689	0.9960	0.9988 (89)
MIT 2	18.7412	18.9386	19.2809	19.7206	20.0191	20.1321	20.1446	20.1450	20.0835	19.6798	19.1364	18.7161 (90)
Living area fraction	19.3043	19.4728	19.7660	20.1441	20.4111	20.5182	20.5330	20.5321	20.4679	20.1059	19.6396	19.2808 (92)
Temperature adjustment	19.3043	19.4728	19.7660	20.1441	20.4111	20.5182	20.5330	20.5321	20.4679	20.1059	19.6396	0.0000
adjusted MIT	19.3043	19.4728	19.7660	20.1441	20.4111	20.5182	20.5330	20.5321	20.4679	20.1059	19.6396	19.2808 (93)

8. Space heating requirement

Utilisation	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Useful gains	521.9629	594.4567	673.1118	732.5811	690.6163	511.3570	347.1045	362.5674	516.7066	549.0302	506.4896	495.4547 (95)
Ext temp.	4.3000	4.9000	6.5000	8.9000	11.7000	14.6000	16.6000	16.4000	14.1000	10.6000	7.1000	4.2000 (96)
Heat loss rate W	1373.4041	1330.2072	1207.6231	1010.4350	780.9070	524.5118	348.5730	365.4375	566.8613	852.1568	1129.6505	1365.5518 (97)
Month fracti	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.0000	1.0000	1.0000	1.0000	1.0000 (97a)
Space heating kWh	633.4722	494.4243	397.6764	200.0548	67.1763	0.0000	0.0000	0.0000	0.0000	225.5262	448.6758	647.3522 (98)
Space heating												3114.3584 (98)
Space heating per m ²												(98) / (4) = 32.5293 (99)

8c. Space cooling requirement

Not applicable

FULL SAP CALCULATION PRINTOUT

Calculation Type: New Build (As Designed)

CALCULATION OF TARGET EMISSIONS 09 Jan 2014

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

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Fraction of space heat from secondary/supplementary system (Table 11)													0.0000 (201)
Fraction of space heat from main system(s)													1.0000 (202)
Efficiency of main space heating system 1 (in %)													93.5000 (206)
Efficiency of secondary/supplementary heating system, %													0.0000 (208)
Space heating requirement													3330.8646 (211)
Space heating requirement	633.4722	494.4243	397.6764	200.0548	67.1763	0.0000	0.0000	0.0000	0.0000	225.5262	448.6758	647.3522	(98)
Space heating efficiency (main heating system 1)	93.5000	93.5000	93.5000	93.5000	93.5000	0.0000	0.0000	0.0000	0.0000	93.5000	93.5000	93.5000	(210)
Space heating fuel (main heating system)	677.5104	528.7960	425.3224	213.9624	71.8463	0.0000	0.0000	0.0000	0.0000	241.2045	479.8672	692.3553	(211)
Water heating requirement	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(215)
Water heating requirement	189.7329	166.7852	174.1103	154.6209	150.4679	132.9320	126.2244	140.4961	140.8712	160.4044	171.4437	184.6762	(64)
Efficiency of water heater (217)m	87.7870	87.5392	86.9499	85.5020	82.8224	79.8000	79.8000	79.8000	79.8000	85.7227	87.2651	87.8844	(216)
Fuel for water heating, kWh/month	216.1286	190.5262	200.2421	180.8389	181.6754	166.5815	158.1759	176.0603	176.5303	187.1201	196.4632	210.1353	(219)
Water heating fuel used													2240.4778 (219)
Annual totals kWh/year													
Space heating fuel - main system													3330.8646 (211)
Space heating fuel - secondary													0.0000 (215)
Electricity for pumps and fans:													
central heating pump													30.0000 (230c)
main heating flue fan													45.0000 (230e)
Total electricity for the above, kWh/year													75.0000 (231)
Electricity for lighting (calculated in Appendix L)													421.2337 (232)
Total delivered energy for all uses													6067.5761 (238)

12a. Carbon dioxide emissions - Individual heating systems including micro-CHP

	Energy kWh/year	Emission factor kg CO2/kWh	Emissions kg CO2/year
Space heating - main system 1	3330.8646	0.2160	719.4667 (261)
Space heating - secondary	0.0000	0.0000	0.0000 (263)
Water heating (other fuel)	2240.4778	0.2160	483.9432 (264)
Space and water heating			1203.4100 (265)
Pumps and fans	75.0000	0.5190	38.9250 (267)
Energy for lighting	421.2337	0.5190	218.6203 (268)
Total CO2, kg/m2/year			1460.9552 (272)
Emissions per m2 for space and water heating			12.5696 (272a)
Fuel factor (mains gas)			1.0000
Emissions per m2 for lighting			2.2835 (272b)
Emissions per m2 for pumps and fans			0.4066 (272c)
Target Carbon Dioxide Emission Rate (TER) = (12.5696 * 1.00) + 2.2835 + 0.4066, rounded to 2 d.p.			15.2600 (273)

FULL SAP CALCULATION PRINTOUT

Calculation Type: New Build (As Designed)

CALCULATION OF FABRIC ENERGY EFFICIENCY 09 Jan 2014

SAP 2012 WORKSHEET FOR New Build (As Designed) (Version 9.92, January 2014)
 CALCULATION OF FABRIC ENERGY EFFICIENCY 09 Jan 2014

1. Overall dwelling dimensions

	Area (m ²)	Storey height (m)	Volume (m ³)
Ground floor	95.7400 (1b)	x 2.5000 (2b)	= 239.3500 (1b) - (3b)
Total floor area TFA = (1a)+(1b)+(1c)+(1d)+(1e)...(1n)	95.7400		(4)
Dwelling volume		(3a)+(3b)+(3c)+(3d)+(3e)...(3n)	= 239.3500 (5)

2. Ventilation rate

	main heating	secondary heating	other	total	m ³ per hour
Number of chimneys	0	0	0	0 * 40 =	0.0000 (6a)
Number of open flues	0	0	0	0 * 20 =	0.0000 (6b)
Number of intermittent fans				3 * 10 =	30.0000 (7a)
Number of passive vents				0 * 10 =	0.0000 (7b)
Number of flueless gas fires				0 * 40 =	0.0000 (7c)
Air changes per hour					
Infiltration due to chimneys, flues and fans = (6a)+(6b)+(7a)+(7b)+(7c) =				30.0000 / (5) =	0.1253 (8)
Pressure test				Yes	
Measured/design AP50				3.0000	
Infiltration rate				0.2753	(18)
Number of sides sheltered				2	(19)
Shelter factor			(20) = 1 - [0.075 x (19)] =		0.8500 (20)
Infiltration rate adjusted to include shelter factor			(21) = (18) x (20) =		0.2340 (21)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Wind speed	5.1000	5.0000	4.9000	4.4000	4.3000	3.8000	3.8000	3.7000	4.0000	4.3000	4.5000	4.7000 (22)
Wind factor	1.2750	1.2500	1.2250	1.1000	1.0750	0.9500	0.9500	0.9250	1.0000	1.0750	1.1250	1.1750 (22a)
Adj infilt rate												
Effective ac	0.2984	0.2925	0.2867	0.2574	0.2516	0.2223	0.2223	0.2165	0.2340	0.2516	0.2633	0.2750 (22b)
Effective ac	0.5445	0.5428	0.5411	0.5331	0.5316	0.5247	0.5247	0.5234	0.5274	0.5316	0.5347	0.5378 (25)

3. Heat losses and heat loss parameter

Element	Gross m ²	Openings m ²	NetArea m ²	U-value W/m ² K	A x U W/K	K-value kJ/m ² K	A x K kJ/K
Windows (Uw = 1.40)			13.3700	1.3258	17.7254		(27)
Exposed Floor			95.7400	0.0700	6.7018		(28b)
2. Column wall	8.4000		8.4000	0.2700	2.2680	150.0000	1260.0000 (29a)
3. Uni panel cladding	8.9100	4.7900	4.1200	0.1400	0.5768	14.0000	57.6800 (29a)
1. Uni panel brick	26.1000	8.5800	17.5200	0.1400	2.4528	14.0000	245.2800 (29a)
31. Block Block	10.9700		10.9700	0.1400	1.5358	150.0000	1645.5000 (29a)
2. Column wall to gym	4.4700		4.4700	0.1400	0.6258	150.0000	670.5000 (29a)
Total net area of external elements Aum(A, m ²)			154.5900				(31)
Fabric heat loss, W/K = Sum (A x U)				(26)...(30) + (32) =	31.8864		(33)
Party Wall 1			11.9700	0.0000	0.0000	180.0000	2154.6000 (32)
Party Wall 2			31.0700	0.0000	0.0000	70.0000	2174.9000 (32)
Party Ceilings			95.7400			30.0000	2872.2000 (32b)
Internal Wall - SFS			117.9800			9.0000	1061.8200 (32c)
Heat capacity Cm = Sum(A x k)						(28)...(30) + (32) + (32a)...(32e) =	12142.4800 (34)
Thermal mass parameter (TMP = Cm / TFA) in kJ/m ² K							126.8277 (35)
Thermal bridges (Sum(L x Psi) calculated using Appendix K)							8.8985 (36)
Total fabric heat loss						(33) + (36) =	40.7849 (37)

Ventilation heat loss calculated monthly (38)m = 0.33 x (25)m x (5)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
(38)m	43.0093	42.8727	42.7389	42.1102	41.9926	41.4450	41.4450	41.3436	41.6559	41.9926	42.2305	42.4793 (38)
Heat transfer coeff	83.7941	83.6576	83.5237	82.8951	82.7775	82.2299	82.2299	82.1285	82.4408	82.7775	83.0154	83.2642 (39)
Average = Sum(39)m / 12 =												82.8945 (39)
HLP	0.8752	0.8738	0.8724	0.8658	0.8646	0.8589	0.8589	0.8578	0.8611	0.8646	0.8671	0.8697 (40)
HLP (average)												0.8658 (40)
Days in month	31	28	31	30	31	30	31	31	30	31	30	31 (41)

4. Water heating energy requirements (kWh/year)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Assumed occupancy												2.6964 (42)
Average daily hot water use (litres/day)												98.2403 (43)
Daily hot water use	108.0644	104.1348	100.2052	96.2755	92.3459	88.4163	88.4163	92.3459	96.2755	100.2052	104.1348	108.0644 (44)
Energy conte	160.2564	140.1612	144.6338	126.0953	120.9914	104.4064	96.7479	111.0196	112.3455	130.9279	142.9180	155.1997 (45)
Energy content (annual)										Total = Sum(45)m =		1545.7032 (45)

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Distribution loss (46)m = 0.15 x (45)m	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(46)
Water storage loss:													
Total storage loss	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(56)
If cylinder contains dedicated solar storage													
Primary loss	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(57)
Heat gains from water heating, kWh/month	34.0545	29.7843	30.7347	26.7952	25.7107	22.1864	20.5589	23.5917	23.8734	27.8222	30.3701	32.9799	(65)

5. Internal gains (see Table 5 and 5a)

Metabolic gains (Table 5), Watts	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
(66)m	134.8218	134.8218	134.8218	134.8218	134.8218	134.8218	134.8218	134.8218	134.8218	134.8218	134.8218	134.8218	(66)
Lighting gains (calculated in Appendix L, equation L9 or L9a), also see Table 5	23.8520	21.1851	17.2289	13.0434	9.7501	8.2314	8.8944	11.5612	15.5174	19.7030	22.9963	24.5149	(67)
Appliances gains (calculated in Appendix L, equation L13 or L13a), also see Table 5	249.2512	251.8377	245.3199	231.4444	213.9290	197.4670	186.4694	183.8829	190.4007	204.2762	221.7916	238.2536	(68)
Cooking gains (calculated in Appendix L, equation L15 or L15a), also see Table 5	36.4822	36.4822	36.4822	36.4822	36.4822	36.4822	36.4822	36.4822	36.4822	36.4822	36.4822	36.4822	(69)
Pumps, fans	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(70)
Losses e.g. evaporation (negative values) (Table 5)	-107.8574	-107.8574	-107.8574	-107.8574	-107.8574	-107.8574	-107.8574	-107.8574	-107.8574	-107.8574	-107.8574	-107.8574	(71)
Water heating gains (Table 5)	45.7721	44.3218	41.3101	37.2156	34.5574	30.8144	27.6330	31.7092	33.1575	37.3954	42.1807	44.3279	(72)
Total internal gains	382.3219	380.7912	367.3054	345.1499	321.6830	299.9593	286.4432	290.5999	302.5222	324.8211	350.4151	370.5430	(73)

6. Solar gains

[Jan]	Area m ²	Solar flux Table 6a W/m ²	g Specific data or Table 6b	FF Specific data or Table 6c	Access factor Table 6d	Gains W							
West	13.3700	19.6403	0.4200	0.7000	0.7700	53.5007	(80)						
Solar gains	53.5007	104.6587	172.3579	251.3738	308.0680	315.3624	300.2379	257.8999	200.4594	124.1863	66.7091	43.9964	(83)
Total gains	435.8226	485.4499	539.6634	596.5237	629.7510	615.3218	586.6811	548.4998	502.9816	449.0075	417.1241	414.5393	(84)

7. Mean internal temperature (heating season)

Temperature during heating periods in the living area from Table 9, T_{hl} (C)													21.0000	(85)
Utilisation factor for gains for living area, U_{il} (see Table 9a)														
tau	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
alpha	40.2523	40.3181	40.3827	40.6889	40.7467	41.0181	41.0181	41.0687	40.9131	40.7467	40.6299	40.5086		
util living area	3.6835	3.6879	3.6922	3.7126	3.7164	3.7345	3.7345	3.7379	3.7275	3.7164	3.7087	3.7006		
util living area	0.9906	0.9850	0.9713	0.9356	0.8591	0.7233	0.5734	0.6246	0.8341	0.9553	0.9852	0.9922	(86)	
MIT	19.3064	19.4788	19.7966	20.2189	20.5981	20.8571	20.9553	20.9381	20.7374	20.2414	19.6962	19.2684	(87)	
Th 2	20.1886	20.1898	20.1910	20.1966	20.1977	20.2026	20.2026	20.2035	20.2007	20.1977	20.1956	20.1933	(88)	
util rest of house	0.9889	0.9824	0.9660	0.9227	0.8292	0.6631	0.4847	0.5374	0.7884	0.9441	0.9821	0.9908	(89)	
MIT 2	18.6127	18.7851	19.1010	19.5190	19.8794	20.1099	20.1817	20.1725	20.0137	19.5468	19.0067	18.5785	(90)	
Living area fraction									fLA = Living area / (4) =				0.4557	(91)
MIT	18.9288	19.1013	19.4180	19.8379	20.2070	20.4504	20.5342	20.5214	20.3435	19.8634	19.3209	18.8929	(92)	
Temperature adjustment												0.0000		
adjusted MIT	18.9288	19.1013	19.4180	19.8379	20.2070	20.4504	20.5342	20.5214	20.3435	19.8634	19.3209	18.8929	(93)	

8. Space heating requirement

Utilisation	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Useful gains	429.5473	474.7056	517.9266	546.4398	522.4481	420.2436	306.7991	314.7399	401.1132	421.3265	407.8900	409.5125	(95)
Ext temp.	4.3000	4.9000	6.5000	8.9000	11.7000	14.6000	16.6000	16.4000	14.1000	10.6000	7.1000	4.2000	(96)
Heat loss rate W	1225.8115	1188.0431	1078.9602	906.6993	704.1839	481.0780	323.5114	338.4812	514.7191	766.7968	1014.5239	1223.3949	(97)
Month fracti	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0000	1.0000	1.0000	1.0000	(97a)
Space heating kWh	592.4206	479.3628	417.4090	259.3868	135.2115	0.0000	0.0000	0.0000	0.0000	257.0299	436.7764	605.5285	(98)
Space heating												3183.1256	(98)
Space heating per m ²										(98) / (4) =		33.2476	(99)

8c. Space cooling requirement

Calculated for June, July and August. See Table 10b													
Ext. temp.	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Heat loss rate W	4.3000	4.9000	6.5000	8.9000	11.7000	14.6000	16.6000	16.4000	14.1000	10.6000	7.1000	4.2000	
Utilisation	0.0000	0.0000	0.0000	0.0000	0.0000	772.9610	608.5012	624.1766	0.0000	0.0000	0.0000	0.0000	(100)
Useful loss	0.0000	0.0000	0.0000	0.0000	0.0000	0.8126	0.8767	0.8522	0.0000	0.0000	0.0000	0.0000	(101)
Total gains	0.0000	0.0000	0.0000	0.0000	0.0000	628.0906	533.4810	531.9423	0.0000	0.0000	0.0000	0.0000	(102)
						822.5290	786.9125	744.3096	0.0000	0.0000	0.0000	0.0000	(103)

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Month fracti	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0000 (103a)
Space cooling kWh												
Space cooling	0.0000	0.0000	0.0000	0.0000	0.0000	139.9956	188.5530	158.0013	0.0000	0.0000	0.0000	0.0000 (104)
Space cooling Cooled fraction												486.5499 (104)
Intermittency factor (Table 10b)												fC = cooled area / (4) = 1.0000 (105)
Space cooling kWh	0.0000	0.0000	0.0000	0.0000	0.0000	0.2500	0.2500	0.2500	0.0000	0.0000	0.0000	0.0000 (106)
Space cooling												
Space cooling per m2	0.0000	0.0000	0.0000	0.0000	0.0000	34.9989	47.1383	39.5003	0.0000	0.0000	0.0000	0.0000 (107)
Energy for space heating												121.6375 (107)
Energy for space cooling												1.2705 (108)
Total												33.2476 (99)
Dwelling Fabric Energy Efficiency (DFEE)												1.2705 (108)
												34.5181 (109)
												34.5 (109)

FULL SAP CALCULATION PRINTOUT

Calculation Type: New Build (As Designed)

CALCULATION OF TARGET FABRIC ENERGY EFFICIENCY 09 Jan 2014

SAP 2012 WORKSHEET FOR New Build (As Designed) (Version 9.92, January 2014)
 CALCULATION OF TARGET FABRIC ENERGY EFFICIENCY 09 Jan 2014

1. Overall dwelling dimensions

	Area (m2)	Storey height (m)	Volume (m3)
Ground floor	95.7400 (1b)	x 2.5000 (2b)	= 239.3500 (1b) - (3b)
Total floor area TFA = (1a)+(1b)+(1c)+(1d)+(1e)...(1n)	95.7400		(4)
Dwelling volume		(3a)+(3b)+(3c)+(3d)+(3e)...(3n)	= 239.3500 (5)

2. Ventilation rate

	main heating	secondary heating	other	total	m3 per hour
Number of chimneys	0	0	0	0 * 40 =	0.0000 (6a)
Number of open flues	0	0	0	0 * 20 =	0.0000 (6b)
Number of intermittent fans				3 * 10 =	30.0000 (7a)
Number of passive vents				0 * 10 =	0.0000 (7b)
Number of flueless gas fires				0 * 40 =	0.0000 (7c)
Air changes per hour					
Infiltration due to chimneys, flues and fans = (6a)+(6b)+(7a)+(7b)+(7c) =				30.0000 / (5) =	0.1253 (8)
Pressure test				Yes	
Measured/design AP50				5.0000	
Infiltration rate					0.3753 (18)
Number of sides sheltered				2	(19)
Shelter factor				(20) = 1 - [0.075 x (19)] =	0.8500 (20)
Infiltration rate adjusted to include shelter factor				(21) = (18) x (20) =	0.3190 (21)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Wind speed	5.1000	5.0000	4.9000	4.4000	4.3000	3.8000	3.8000	3.7000	4.0000	4.3000	4.5000	4.7000 (22)
Wind factor	1.2750	1.2500	1.2250	1.1000	1.0750	0.9500	0.9500	0.9250	1.0000	1.0750	1.1250	1.1750 (22a)
Adj infilt rate	0.4068	0.3988	0.3908	0.3509	0.3430	0.3031	0.3031	0.2951	0.3190	0.3430	0.3589	0.3749 (22b)
Effective ac	0.5827	0.5795	0.5764	0.5616	0.5588	0.5459	0.5459	0.5435	0.5509	0.5588	0.5644	0.5703 (25)

3. Heat losses and heat loss parameter

Element	Gross m2	Openings m2	NetArea m2	U-value W/m2K	A x U W/K	K-value kJ/m2K	A x K kJ/K					
TER Opening Type (Uw = 1.40)			13.3700	1.3258	17.7254		(27)					
Exposed Floor			95.7400	0.1300	12.4462		(28b)					
2. Column wall	8.4000		8.4000	0.1800	1.5120		(29a)					
3. Uni panel cladding	8.9100	4.7900	4.1200	0.1800	0.7416		(29a)					
1. Uni panel brick	26.1000	8.5800	17.5200	0.1800	3.1536		(29a)					
31. Block Block	10.9700		10.9700	0.1800	1.9746		(29a)					
2. Column wall to gym	4.4700		4.4700	0.1800	0.8046		(29a)					
Total net area of external elements Aum(A, m2)			154.5900				(31)					
Fabric heat loss, W/K = Sum (A x U)					(26)...(30) + (32) =	38.3580	(33)					
Thermal mass parameter (TMP = Cm / TFA) in kJ/m2K							250.0000 (35)					
Thermal bridges (Sum(L x Psi) calculated using Appendix K)							7.1485 (36)					
Total fabric heat loss						(33) + (36) =	45.5065 (37)					
Ventilation heat loss calculated monthly (38)m = 0.33 x (25)m x (5)												
(38)m	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Heat transfer coeff	46.0274	45.7737	45.5250	44.3567	44.1381	43.1206	43.1206	42.9322	43.5125	44.1381	44.5803	45.0426 (38)
Average = Sum(39)m / 12 =	91.5339	91.2802	91.0314	89.8632	89.6446	88.6271	88.6271	88.4387	89.0190	89.6446	90.0868	90.5491 (39)
HLP	0.9561	0.9534	0.9508	0.9386	0.9363	0.9257	0.9257	0.9237	0.9298	0.9363	0.9410	0.9458 (40)
HLP (average)												0.9386 (40)
Days in month	31	28	31	30	31	30	31	31	30	31	30	31 (41)

4. Water heating energy requirements (kWh/year)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Assumed occupancy												2.6964 (42)
Average daily hot water use (litres/day)												98.2403 (43)
Daily hot water use	108.0644	104.1348	100.2052	96.2755	92.3459	88.4163	88.4163	92.3459	96.2755	100.2052	104.1348	108.0644 (44)
Energy conte	160.2564	140.1612	144.6338	126.0953	120.9914	104.4064	96.7479	111.0196	112.3455	130.9279	142.9180	155.1997 (45)
Energy content (annual)												Total = Sum(45)m = 1545.7032 (45)
Distribution loss (46)m = 0.15 x (45)m	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000 (46)
Water storage loss:												
Total storage loss	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000 (56)

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Calculation Type: New Build (As Designed)

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If cylinder contains dedicated solar storage	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(57)
Primary loss	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(59)
Heat gains from water heating, kWh/month	34.0545	29.7843	30.7347	26.7952	25.7107	22.1864	20.5589	23.5917	23.8734	27.8222	30.3701	32.9799	(65)

5. Internal gains (see Table 5 and 5a)

Metabolic gains (Table 5), Watts	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
(66)m	134.8218	134.8218	134.8218	134.8218	134.8218	134.8218	134.8218	134.8218	134.8218	134.8218	134.8218	134.8218	(66)
Lighting gains (calculated in Appendix L, equation L9 or L9a), also see Table 5	23.8520	21.1851	17.2289	13.0434	9.7501	8.2314	8.9444	11.5612	15.5174	19.7030	22.9963	24.5149	(67)
Appliances gains (calculated in Appendix L, equation L13 or L13a), also see Table 5	249.2512	251.8377	245.3199	231.4444	213.9290	197.4670	186.4694	183.8829	190.4007	204.2762	221.7916	238.2536	(68)
Cooking gains (calculated in Appendix L, equation L15 or L15a), also see Table 5	36.4822	36.4822	36.4822	36.4822	36.4822	36.4822	36.4822	36.4822	36.4822	36.4822	36.4822	36.4822	(69)
Pumps, fans	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(70)
Losses e.g. evaporation (negative values) (Table 5)	-107.8574	-107.8574	-107.8574	-107.8574	-107.8574	-107.8574	-107.8574	-107.8574	-107.8574	-107.8574	-107.8574	-107.8574	(71)
Water heating gains (Table 5)	45.7721	44.3218	41.3101	37.2156	34.5574	30.8144	27.6330	31.7092	33.1575	37.3954	42.1807	44.3279	(72)
Total internal gains	382.3219	380.7912	367.3054	345.1499	321.6830	299.9593	286.4432	290.5999	302.5222	324.8211	350.4151	370.5430	(73)

6. Solar gains

[Jan]	Area m2	Solar flux Table 6a W/m2	Specific data or Table 6b	g Specific data or Table 6c	FF	Access factor Table 6d	Gains W						
West	13.3700	19.6403	0.6300		0.7000	0.7700	80.2510 (80)						
Solar gains	80.2510	156.9880	258.5369	377.0607	462.1020	473.0436	450.3568	386.8498	300.6891	186.2795	100.0636	65.9945	(83)
Total gains	462.5729	537.7792	625.8423	722.2106	783.7850	773.0030	736.8000	677.4497	603.2113	511.1006	450.4787	436.5375	(84)

7. Mean internal temperature (heating season)

Temperature during heating periods in the living area from Table 9, T_{hi} (C)													21.0000 (85)
Utilisation factor for gains for living area, n_{iL} (see Table 9a)													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
tau	72.6355	72.8374	73.0364	73.9859	74.1663	75.0178	75.0178	75.1777	74.6875	74.1663	73.8023	73.4255	
alpha	5.8424	5.8558	5.8691	5.9324	5.9444	6.0012	6.0012	6.0118	5.9792	5.9444	5.9202	5.8950	
util living area	0.9994	0.9982	0.9934	0.9685	0.8810	0.6994	0.5237	0.5890	0.8644	0.9871	0.9985	0.9995	(86)
MIT	19.9157	20.0510	20.2893	20.6043	20.8539	20.9728	20.9958	20.9920	20.9051	20.5634	20.1817	19.8947	(87)
Th 2	20.1201	20.1223	20.1245	20.1348	20.1367	20.1457	20.1457	20.1474	20.1422	20.1367	20.1328	20.1288	(88)
util rest of house	0.9991	0.9976	0.9910	0.9567	0.8403	0.6199	0.4250	0.4858	0.8033	0.9806	0.9979	0.9994	(89)
MIT 2	19.1176	19.2545	19.4934	19.8097	20.0370	20.1331	20.1446	20.1450	20.0878	19.7757	19.3939	19.1037	(90)
Living area fraction	f _{LA} = Living area / (4) =												
MIT	19.4813	19.6175	19.8561	20.1718	20.4093	20.5157	20.5325	20.5310	20.4602	20.1346	19.7529	19.4642	(91)
Temperature adjustment	0.0000												
adjusted MIT	19.4813	19.6175	19.8561	20.1718	20.4093	20.5157	20.5325	20.5310	20.4602	20.1346	19.7529	19.4642	(93)

8. Space heating requirement

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Utilisation	0.9989	0.9972	0.9900	0.9573	0.8543	0.6555	0.4702	0.5331	0.8282	0.9805	0.9975	0.9992	(94)
Useful gains	462.0733	536.2620	619.6148	691.3954	669.6091	506.7200	346.4605	361.1751	499.5879	501.1548	449.3590	436.2028	(95)
Ext temp.	4.3000	4.9000	6.5000	8.9000	11.7000	14.6000	16.6000	16.4000	14.1000	10.6000	7.1000	4.2000	(96)
Heat loss rate W	1389.6015	1343.4151	1215.8217	1012.9213	780.7389	524.2956	348.5272	365.3402	566.1831	854.7283	1139.8627	1382.1567	(97)
Month fracti	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0000	1.0000	1.0000	1.0000	(97a)
Space heating kWh	690.0810	542.4068	443.5780	231.4986	82.6805	0.0000	0.0000	0.0000	0.0000	263.0587	497.1627	703.7897	(98)
Space heating	3454.2561 (98)												
Space heating per m2	(98) / (4) = 36.0796 (99)												

8c. Space cooling requirement

Calculated for June, July and August. See Table 10b	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Ext. temp.	4.3000	4.9000	6.5000	8.9000	11.7000	14.6000	16.6000	16.4000	14.1000	10.6000	7.1000	4.2000	
Heat loss rate W	0.0000	0.0000	0.0000	0.0000	0.0000	833.0947	655.8405	672.1338	0.0000	0.0000	0.0000	0.0000	(100)
Utilisation	0.0000	0.0000	0.0000	0.0000	0.0000	0.9246	0.9658	0.9486	0.0000	0.0000	0.0000	0.0000	(101)
Useful loss	0.0000	0.0000	0.0000	0.0000	0.0000	770.2939	633.3940	637.5754	0.0000	0.0000	0.0000	0.0000	(102)
Total gains	0.0000	0.0000	0.0000	0.0000	0.0000	1006.8317	962.3762	895.0303	0.0000	0.0000	0.0000	0.0000	(103)
Month fracti	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0000	(103a)
Space cooling kWh	0.0000	0.0000	0.0000	0.0000	0.0000	170.3072	244.7627	191.5464	0.0000	0.0000	0.0000	0.0000	(104)
Space cooling	606.6164 (104)												
Cooled fraction	f _C = cooled area / (4) = 1.0000 (105)												

FULL SAP CALCULATION PRINTOUT

Calculation Type: New Build (As Designed)

CALCULATION OF TARGET FABRIC ENERGY EFFICIENCY 09 Jan 2014

Intermittency factor (Table 10b)	0.0000	0.0000	0.0000	0.0000	0.2500	0.2500	0.2500	0.0000	0.0000	0.0000	0.0000	(106)
Space cooling kWh	0.0000	0.0000	0.0000	0.0000	42.5768	61.1907	47.8866	0.0000	0.0000	0.0000	0.0000	(107)
Space cooling											151.6541	(107)
Space cooling per m2											1.5840	(108)
Energy for space heating											36.0796	(99)
Energy for space cooling											1.5840	(108)
Total											37.6636	(109)
Target Fabric Energy Efficiency (TFEE)											43.3	(109)

SUMMARY FOR INPUT DATA

Calculation Type: New Build (As Designed)

Property Reference	WH190 Plot 323	Issued on Date	24/02/2022
Assessment Reference	Plot 323	Prop Type Ref	Flat Type B1N-02
Property	Abbey Road Retail Park, Barking		

SAP Rating	87 B	DER	8.29	TER	15.26
Environmental	93 A	% DER<TER	45.67		
CO ₂ Emissions (t/year)	0.66	DFEE	34.52	TFEE	43.31
General Requirements Compliance	Pass	% DFEE<TFEE	20.31		

Assessor Details	Mr. Paul Pasifull, Stansted Environmental Services, Tel: 01277225709, paul@sestesting.com	Assessor ID	Q133-0001
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Client	
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SUMMARY FOR INPUT DATA FOR: New Build (As Designed)

Orientation	East
Property Tenure	Unknown
Transaction Type	New dwelling
Terrain Type	Urban
1.0 Property Type	Flat, End-Terrace
2.0 Number of Storeys	1
3.0 Date Built	2022
4.0 Sheltered Sides	2
5.0 Sunlight/Shade	Average or unknown

6.0 Measurements

	Ground Floor:	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
		24.44 m	95.74 m ²	2.50 m
7.0 Living Area	43.63		m ²	
8.0 Thermal Mass Parameter	Precise calculation			
Thermal Mass	136.83			kJ/m ² K

9.0 External Walls

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area (m ²)	Nett Area (m ²)
2. Column wall	Solid Wall	Solid wall : plasterboard on dabs, 200 mm dense block, insulated externally	0.27	150.00	8.40	8.40
3. Uni panel cladding	Steel Frame	Steel frame wall (warm frame or hybrid construction)	0.14	14.00	8.91	4.12
1. Uni panel brick	Steel Frame	Steel frame wall (warm frame or hybrid construction)	0.14	14.00	26.10	17.52
31. Block Block	Cavity Wall	Cavity wall : plasterboard on dabs, dense block, filled cavity, any outside structure	0.14	150.00	10.97	10.97
2. Column wall to gym	Solid Wall	Solid wall : plasterboard on dabs, 200 mm dense block, insulated externally	0.14	150.00	4.47	4.47

9.1 Party Walls

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)
Party Wall 1	Solid Wall	Dense plaster both sides, dense blocks, cavity or cavity fill	0.00	180.00	11.97
Party Wall 2	Filled Cavity with Edge Sealing	Single plasterboard on dabs on both sides, dense blocks, cavity or cavity fill	0.00	70.00	31.07

9.2 Internal Walls

Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
Internal Wall - SFS	Other	9.00	117.98

SUMMARY FOR INPUT DATA

Calculation Type: New Build (As Designed)

10.1 Party Ceilings

Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
Party Ceilings	Precast concrete planks floor, screed, carpeted	30.00	95.74

11.0 Heat Loss Floors

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)
Exposed Floor	Exposed Floor - Solid	Other	0.07	0.00	95.74

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Argon Filled	G-value	Frame Type	Frame Factor	U Value (W/m ² K)
Windows	Manufacturer	Window	Double Low-E Hard 0.2			0.42		0.70	1.40
Full glazed door	Manufacturer	Window	Double Low-E Hard 0.2			0.42		0.70	1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Curtain Type	Overhang Ratio	Wide Overhang	Width (m)	Height (m)	Count	Area (m ²)	Curtain Closed
Window West	Window	[2] 3. Uni panel cladding	West	None	0.00					4.79	
Window West	Window	[3] 1. Uni panel brick	West	None	0.00					4.29	
Glazed Door West	Window	[3] 1. Uni panel brick	West	None	0.00					4.29	

14.0 Conservatory

15.0 Draught Proofing

 %

16.0 Draught Lobby

17.0 Thermal Bridging

17.1 List of Bridges

Source Type	Bridge Type	Length	Psi	Imported
Table K1 - Approved	E2 Other lintels (including other steel lintels)	6.34	0.300	Yes
Table K1 - Approved	E4 Jamb	16.88	0.050	Yes
Table K1 - Default	E20 Exposed floor (normal)	11.56	0.320	No
Table K1 - Approved	E7 Party floor between dwellings (in blocks of flats)	24.44	0.070	No
Table K1 - Approved	E8 Balcony within a dwelling, wall insulation continuous	12.88	0.000	No
Table K1 - Approved	E16 Corner (normal)	8.25	0.090	No
Table K1 - Approved	E17 Corner (inverted – internal area greater than external area)	5.50	-0.090	No
Table K1 - Approved	E18 Party wall between dwellings	2.75	0.060	No
Table K1 - Default	E25 Staggered party wall between dwellings	2.75	0.120	No
Table K1 - Default	P3 Party wall - Intermediate floor between dwellings (in blocks of flats)	15.65	0.000	No

Y-value	<input type="text" value="0.058"/>	W/m ² K
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18.0 Pressure Testing

Designed AP ₅₀	<input type="text" value="3.00"/>	m ³ /(h.m ²) @ 50 Pa
Property Tested ?	<input type="text"/>	
As Built AP ₅₀	<input type="text"/>	m ³ /(h.m ²) @ 50 Pa

19.0 Mechanical Ventilation

Summer Overheating

Windows open in hot weather	<input type="text" value="Windows fully open"/>
Cross ventilation possible	<input type="text" value="No"/>
Night Ventilation	<input type="text" value="Yes"/>

SUMMARY FOR INPUT DATA

Calculation Type: New Build (As Designed)

Air change rate

Mechanical Ventilation

Mechanical Ventilation System Present

Approved Installation

Mechanical Ventilation data Type

Type

MV Reference Number

Configuration

Manufacturer SFP

Duct Type

Wet Rooms

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				0
Number of passive vents				0
Number of flueless gas fires				0

21.0 Fixed Cooling System

22.0 Lighting

Internal

Total number of light fittings

Total number of L.E.L. fittings

Percentage of L.E.L. fittings %

External

External lights fitted

23.0 Electricity Tariff

24.0 Main Heating 1

26.0 Community Heating

Community Heating

Space Community Heating

PCDF Index

Distribution Loss

Controls

SAP Code

PCDF Index

	Heat Source	Fuel Type	Heating Use	Efficiency	Percentage Of Heat	Heat	Heat Power Ratio	Electrical
Heat Source 1	Boilers	Mains Gas	Space and Water	91.40	17.40%			
Heat Source 2	Combined Heat and Power	Mains Gas	Space and Water	91.40	82.60%	38.60	1.00	33.20

28.0 Water Heating

Water Heating

Flue Gas Heat Recovery System

Waste Water Heat Recovery

SUMMARY FOR INPUT DATA

Calculation Type: New Build (As Designed)

Instantaneous System 1		
Waste Water Heat Recovery	No	
Instantaneous System 2		
Waste Water Heat Recovery	No	
Storage System		
Solar Panel	No	
Water use <= 125 litres/person/day	Yes	
SAP Code	901	
<hr/>		
29.0 Hot Water Cylinder	HIU	
Insulation Type	Measured Loss	
Cylinder Volume	10.00	L
Loss	0.40	kWh/day
<hr/>		
32.0 Photovoltaic Unit	More Dwellings, One Block	
Apportioned	265.00	kWh/Year

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None