info@pbsustainability.co.uk 0151 691 6685 Block Compliance WorkSheet: College Yard



		User Details				
Assessor Name: Software Name:	Paul Byrne Stroma FSAP		na Number: vare Version		STRO01143 [.] /ersion: 1.0.4	
Dwelling		DER	TER	DFEE	TFEE	TFA
Unit 1		12.29	18.41	46.7	53.3	75.6
Unit 2		11.18	19.25	46.6	59.6	80.6
Unit 3		7.29	13.53	35	46.9	148.8
Unit 4		7.84	13.43	34.7	46.4	148.8
Unit 5		8.46	13.43	34.7	46.4	148.8
Unit 6		10.86	15.3	41.2	55.3	147.6

Total Floor Area	750.20
Average TER	14.94
Average DER	9.26
Average DFEE	38.53
Average TFEE	50.36
Compliance	Pass
% Improvement DER TER	38.02
% Improvement DFEE TFEE	23.49



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Project Information	on:			
Assessed By:	Paul Byrne (STR	O011431)	Building Type: Ma	isonette
Dwelling Details:				
EW DWELLING	AS BUILT		Total Floor Area: 75.6m ²	2
ite Reference :	1-8 College Yard		Plot Reference: Unit	:1
ddress :	1, College Yard,	LONDON, NW5 1BR		
Client Details:				
lame:	GML Architects			
ddress :	Unit 3, 1-4 Christ	ina Street, London, EC2A 4PA		
-		vithin the SAP calculations. tions compliance.		
1a TER and DER	R			
	ing system: Mains	jas		
uel factor: 1.00 (r				
•	oxide Emission Rate Dioxide Emission Ra		18.41 kg/m² 12.29 kg/m²	ок
1b TFEE and DF			12.29 kg/III-	OK
	rgy Efficiency (TFE	Ξ)	53.3 kWh/m ²	
-	nergy Efficiency (DF		46.7 kWh/m ²	
Ū				ОК
2 Fabric U-value	S			
Element		Average	Highest	.
External v		0.16 (max. 0.30)	0.16 (max. 0.70)	OK
Party wal Floor	I	0.00 (max. 0.20)	- 0.12 (max 0.70)	OK OK
Roof		0.12 (max. 0.25) (no roof)	0.12 (max. 0.70)	UK
Openings	3	1.53 (max. 2.00)	1.60 (max. 3.30)	ок
2a Thermal bridg				
Thermal I	bridging calculated	from linear thermal transmittand	es for each junction	
3 Air permeabili	ty			
•	oility at 50 pascals		7.1m ³ /m ² h (average fo	••••
Maximum			10.0	OK
4 Heating efficie				
Main Heatir	ng system:	Database: (rev 418, product Boiler systems with radiators Brand name: Vaillant Model: ecoTEC plus 618 Model qualifier: VU GB 186/9 (Regular) Efficiency 89.3 % SEDBUK2 Minimum 88.0 %	s or underfloor heating - mains g 5-5	as OK
Secondary	heating system:	None		

Photovoltaic array

Regulations Compliance Report



5 Cylinder insulation			
Hot water Storage:	Measured cylinder loss: 1.	-	
	Permitted by DBSCG: 1.8	9 kWh/day	OK
Primary pipework insulated:	Yes		OK
6 Controls			
Space heating controls	TTZC by plumbing and ele	ectrical services	OK
Hot water controls:	Cylinderstat		OK
	Independent timer for DH	N	OK
Boiler interlock:	Yes		OK
7 Low energy lights			
Percentage of fixed lights with	low-energy fittings	100.0%	
Minimum		75.0%	ОК
8 Mechanical ventilation			
Continuous supply and extract	svstem		
Specific fan power:	-,	0.6	
Maximum		1.5	ОК
MVHR efficiency:		89%	-
Minimum		70%	ОК
9 Summertime temperature			
Overheating risk (Thames valle	ey):	Medium	ОК
Based on:			
Overshading:		Average or unknown	
Windows facing: South West		5.5m ²	
Windows facing: South East		5.7m ²	
Windows facing: North East		4.6m ²	
Ventilation rate:		4.00	
Blinds/curtains:			
		Closed 100% of daylight hours	
	and the second secon		
10 Key features			
Doors U-value		1 W/m²K	
Party Walls U-value		0 W/m²K	
Floors U-value		0.12 W/m²K	



Assessor and House Details Assessor Name: Paul Byrne Property Address: 1, College Yard LONDON NW5 1BR Buiding regulation assessment

	kg/m²/year
TER	18.41
DER	12.29
ENE 1 Assessment - Dwelling Emission Rate	

Total Energy Type CO₂ Emissions for Codes Levels 1 - 5

	%	kg/m²/year	
DER from SAP 2012 DER Worksheet		12.29	(ZC1)
TER		18.41	
Residual CO2 emissions offset from biofuel CHP		0	(ZC5)
CO2 emissions offset from additional allowable electricty generation		0	(ZC7)
Total CO2 emissions offset from SAP Section 16 allowances		0	
DER accounting for SAP Section 16 allowances		12.29	
% improvement DER/TER	33.2		

Total Energy Type CO2 Emissions for Codes Levels 6

	kg/m²/year	
DER accounting for SAP Section 16 allowances	12.29	(ZC1)
CO2 emissions from appliances, equation (L14)	16.16	(ZC2)
CO2 emissions from cooking, equation (L16)	2.21	(ZC3)
Net CO2 emissions	30.8	(ZC8)

Result:

Credits awarded for ENE 1 = 4.1

Code Level = 4

ENE 2 - Fabric energy Efficiency

Fabric energy Efficiency: 46.69

Credits awarded for ENE 2 = 3.4

ENE 7 - Low or Zero Carbon (LZC) Technologies

Reduction in CO2 Emissions

	%	kg/m²/year	L
Standard Case CO2 emissions		38.45	
Standard DER		19.73	
Actual Case CO2 emissions		32.35	
Actual DER		13.63	
Reduction in CO2 emissions	15.86		

Credits awarded for ENE 7 = 2

Technologies eligible to contribute to achieving the requirements of this issue must produce energy from renewable sources and meet all other ancillary requirements as defined by Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC.

The following requirements must also be met:

• Where not provided by accredited external renewables there must be a direct supply of energy produced to the dwelling under assessment.

Where covered by the Microgeneration Certification Scheme (MCS), technologies under 50kWe or 300kWth must be certified

• Combined Heat and Power (CHP) schemes above 50kWe must be certified under the CHPQA standard.

All technologies must be accounted for by SAP.

CHP schemes fuelled by mains gas are eligible to contribute to performance against this issue. Where these schemes are above 50kWe they must be certified under the CHPQA. It is the responsibly of the Accredited OCDEA and Code Assessor to ensure all technologies use in the calculation are appropriate before awarding credits.



Property Details: Ur	nit 1							
Address: Located in: Region: UPRN:		1, Colle Englan Thame 880985	s valley	J, NW5 1BR				
Date of assessment: Date of certificate:		19 Octo 19 Octo	19 October 2017 19 October 2017					
Assessment type Transaction type		New du	•					
Tenure type: Related party dis Thermal Mass Pa Water use <= 12 PCDF Version:	arameter:	Indicat	vn ted party ive Value Low True					
Property description	ו:							
Dwelling type: Detachment:		Maison	ette					
Year Completed: Floor Location:		2017 Floor	araa					
FIOUR LOCATION:		FIUUI	area:	S	Storey height	:		
Floor 0 Floor 1		48 m² 27.6 m	48 m ² 2.5 m 27.6 m ² 2.7 m					
Living area: Front of dwelling fa	aces:	25.4 m South I	² (fraction 0.336) East)				
Opening types:								
Name: Front door	Source: Manufacturer	Sc	ype: Ilid	Glazing:	-	Argon:	Fram	e:
Front Side Rear	Manufacturer Manufacturer Manufacturer	W	indows indows indows	double-glaze double-glaze double-glaze	ed	Yes Yes Yes		
Name: Front door	Gap: mm		Frame Facto	or: g-value:	U-value:	Area: 2.1	No. o 1	f Openings:
Front			0.8	0.76	1.6	5.5	1	
Side Rear			0.8 0.8	0.76 0.76	1.6 1.6	5.7 4.6	1 1	
Name: Front door	Type-Name		ocation: iternal wall	Orient: South East		Width: 0	Heigl 0	nt:
Front Side			ternal wall ternal wall	South West South East		0 0	0 0	
Rear		E>	ternal wall	North East		0	0	
Overshading:		Averag	e or unknown					
Opaque Elements:								
Type: (<u>External Elements</u>	Gross area:	Openings:	Net area:	U-value:	Ru value:	Curtain	wall:	Kappa:
Basement wall	19.8	0	19.8	0.16	0	False		N/A
External wall Ground floor	98.5 48	17.9	80.6	0.16 0.12	0	False		N/A N/A
<u>Internal Elements</u> <u>Party Elements</u> Party wall	15.2							N/A



N/A

Party ceiling

48

Thermal bridges:						
Thermal bridges:				Y-Value = 0.0624		
	Length	Psi-valu	-			
[Approved]	10.1	0.3	E2	Other lintels (including other steel lintels)		
[Approved]	4.1	0.04	E3	Sill		
[Approved]	18 15.9	0.05 0.16	E4 E5	Jamb Ground floor (normal)		
[Approved]	13.2	0.16	E5 E22	Basement floor		
[Approved]	13.2	0.07	E22 E6	Intermediate floor within a dwelling		
[Approved] [Approved]	16.4	0.07	E0 E7	Party floor between dwellings (in blocks of flats)		
[Approved]	29.9	0.07	E16	Corner (normal)		
[Approved]	12.9	-0.09	E17	Corner (inverted internal area greater than external area)		
[Approved]	6.1	0.07	P1	Ground floor		
	7.5	0	P3	Intermediate floor between dwellings (in blocks of flats)		
Ventilation:						
Pressure test:	Yes (As bui	lt)				
Ventilation:		ith heat recov	ery			
		wet rooms: Ki	•			
		Insulation, rigi				
		nstallation Sch				
Number of chimneys:	0					
Number of open flues:	0					
Number of fans:	0					
Number of passive stacks:	0					
Number of sides sheltered:	2					
Pressure test:	5.08 (Avera	ige permeabili	ity of dwell	ings of that type was used)		
Main heating system:						
Main heating system:	Boiler syste	ms with radia	tors or unc	lerfloor heating		
Main neating system.	-	and oil boilers		london houring		
	Fuel: mains		5			
		: Boiler Datab	ase			
				016836) Efficiency: Winter 79.6 % Summer: 90.3		
	Brand name					
	Model: ecoTEC plus 618					
	Model qualifier: VU GB 186/5-5					
	(Regular boiler)					
	Underfloor heating and radiators, pipes in screed above insulation					
	Central heating pump : 2013 or later					
	Boiler interlock: Yes					
	Weather Co					
Main heating Control:						
Main heating Control:	Time and temperature zone control by suitable arrangement of plumbing and electrical					
~	services					
	Control cod	e: 2110				
Secondary heating system:						
Secondary heating system:	None					
Water heating:						
Water heating:	From main	heating syster	m			
5	Water code					
	Fuel :mains					
	Hot water of	•				
		ume: 150 litre	es			
	5					

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Cylinder insulation: Measured loss, 1.3kWh/day Primary pipework insulation: True Cylinderstat: True Cylinder in heated space: True Solar panel: False

Others:

Electricity tariff: In Smoke Control Area: Conservatory: Low energy lights: Terrain type: EPC language: Wind turbine: Photovoltaics: Standard Tariff Unknown No conservatory 100% Low rise urban / suburban English No <u>Photovoltaic 1</u> Installed Peak power: 1.35 Tilt of collector: 30° Overshading: Modest Collector Orientation: South West No

Assess Zero Carbon Home:

SAP 2012 Overheating Assessment



Calculated by Stroma FSAP 2012 program, produced and printed on 19 October 2017

Property Details: Unit 1

Dwelling type: Located in: Region: Cross ventilation po Number of storeys: Front of dwelling fac Overshading: Overhangs: Thermal mass param Night ventilation: Blinds, curtains, shu Ventilation rate durin Overheating Details: Summer ventilation for Transmission heat loss co	es: heter: htters: hg hot we heat loss oss coeffi	coeffici cient:		Maisonette England Thames va Yes 2 South East Average or None Indicative v False 4 (Window 256.77 58.1 314.83	unknown	he time)		(P1) (P2)
Overhangs:								
Orientation:	Ratio:		Z_overhangs:					
South West (Front) South East (Side) North East (Rear)	0 0 0		1 1 1					
Solar shading:								
Orientation:	Z blind	ls:	Solar access:	Over	hangs:	Z summer:		
South West (Front) South East (Side) North East (Rear)	1 1 1		0.9 0.9 0.9	1 1 1		0.9 0.9 0.9		(P8) (P8) (P8)
Solar gains:								
Orientation South West (Front)	0.9 x		Flux 119.92	g_ 0.76	FF 0.8	Shading 0.9	Gains 324.83	
South East (Side) North East (Rear)	0.9 x 0.9 x	5.7 4.6	119.92 98.85	0.76 0.76	0.8 0.8	0.9 0.9 Total	336.64 223.92 885.39	(P3/P4)
Internal gains:								
Internal gains Total summer gains Summer gain/loss rati Mean summer externa Thermal mass temper Threshold temperature Likelihood of high in	al tempera ature incre	ement		13 4.4 16 1.3 21	6.44 92.55 12	July 439.32 1324.71 4.21 17.9 1.3 23.41 Medium	August 447.18 1247.44 3.96 17.8 1.3 23.06 Mediur	4 (P5) (P6) (P7)
Assessment of likeli		-			edium			



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Project Informatio	n:			
Assessed By:	Paul Byrne (STR	D011431)	Building Type:	Maisonette
Dwelling Details:				
IEW DWELLING	AS BUILT		Total Floor Area: 80.	ôm²
Site Reference :	1-8 College Yard		Plot Reference:	Jnit 2
Address :	2, College Yard, I	ONDON, NW5 1BR		
Client Details:				
lame:	GML Architects			
ddress :	Unit 3, 1-4 Christi	na Street, London, EC2A 4PA		
-		vithin the SAP calculations. tions compliance.		
1a TER and DER				
	ng system: Mains g	as		
Fuel factor: 1.00 (n	U ,		10.05 kg/m2	
-	xide Emission Rate ioxide Emission Ra		19.25 kg/m² 11.18 kg/m²	ок
1b TFEE and DF				UN
	gy Efficiency (TFE	Ξ)	59.6 kWh/m ²	
welling Fabric En	ergy Efficiency (DF	EE)	46.6 kWh/m ²	
				OK
2 Fabric U-value	S	-		
Element		Average	Highest	.
External v		0.16 (max. 0.30)	0.16 (max. 0.70)	OK OK
Party wall Floor		0.00 (max. 0.20) (no floor)	-	UN
Roof		0.15 (max. 0.20)	0.15 (max. 0.35)	ОК
Openings		1.55 (max. 2.00)	1.60 (max. 3.30)	OK
2a Thermal bridg	ging			
Thermal b	oridging calculated	rom linear thermal transmittar	ces for each junction	
3 Air permeabilit	у			
•	oility at 50 pascals		5.08 (measured in	•
Maximum			10.0	OK
4 Heating efficie	ncy			
Main Heatin	g system:	Database: (rev 418, produc Boiler systems with radiato Brand name: Vaillant Model: ecoTEC plus 618 Model qualifier: VU GB 186 (Regular) Efficiency 89.3 % SEDBUK Minimum 88.0 %	rs or underfloor heating - main	s gas OK
Secondary I	neating system:	None		

Photovoltaic array

Regulations Compliance Report



5 Cylinder insulation			
Hot water Storage:	Measured cylinder loss: 1		
	Permitted by DBSCG: 1.8	39 kWh/day	OK
Primary pipework insulated:	Yes		OK
6 Controls			
Space heating controls	TTZC by plumbing and el	ectrical services	OK
Hot water controls:	Cylinderstat		OK
	Independent timer for DH	W	OK
Boiler interlock:	Yes		OK
7 Low energy lights			
Percentage of fixed lights with	low-energy fittings	100.0%	
Minimum		75.0%	OK
8 Mechanical ventilation			
Continuous supply and extract	system		
Specific fan power:		0.6	
Maximum		1.5	OK
MVHR efficiency:		89%	
Minimum		70%	OK
9 Summertime temperature			
Overheating risk (Thames vall	ey):	Medium	OK
Based on:			
Overshading:		Average or unknown	
Windows facing: South West		7.4m ²	
Windows facing: North West		1.2m ²	
Windows facing: South East		14.9m ²	
Windows facing: North East		4.6m ²	
Roof windows facing: Horizont	al	1.4m ²	
Ventilation rate:		8.00	
Blinds/curtains:			
		Closed 100% of daylight hou	rs
10 Key features			
Doors U-value		1 W/m²K	
Party Walls U-value		0 W/m²K	



Assessor and House Details Assessor Name: Paul Byrne Property Address: 2, College Yard LONDON NW5 1BR Buiding regulation assessment

	kg/m²/year
TER	19.25
DER	11.18
ENE 1 Assessment - Dwelling Emission Rate	

Total Energy Type CO₂ Emissions for Codes Levels 1 - 5

	%	kg/m²/year	
DER from SAP 2012 DER Worksheet		11.18	(ZC1)
TER		19.25	
Residual CO2 emissions offset from biofuel CHP		0	(ZC5)
CO2 emissions offset from additional allowable electricty generation		0	(ZC7)
Total CO2 emissions offset from SAP Section 16 allowances		0	
DER accounting for SAP Section 16 allowances		11.18	
% improvement DER/TER	41.9		

Total Energy Type CO2 Emissions for Codes Levels 6

	kg/m²/year	
DER accounting for SAP Section 16 allowances	11.18	(ZC1)
CO2 emissions from appliances, equation (L14)	12.66	(ZC2)
CO2 emissions from cooking, equation (L16)	1.27	(ZC3)
Net CO2 emissions	21.9	(ZC8)

Result:

Credits awarded for ENE 1 = 4.8

Code Level = 4

ENE 2 - Fabric energy Efficiency

Fabric energy Efficiency: 46.58

Credits awarded for ENE 2 = 3.5

ENE 7 - Low or Zero Carbon (LZC) Technologies

Reduction in CO2 Emissions

	%	kg/m²/year
Standard Case CO2 emissions		36.56
Standard DER		18.18
Actual Case CO2 emissions		30.84
Actual DER		12.46
Reduction in CO2 emissions	15.65	

Credits awarded for ENE 7 = 2

Technologies eligible to contribute to achieving the requirements of this issue must produce energy from renewable sources and meet all other ancillary requirements as defined by Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC.

The following requirements must also be met:

• Where not provided by accredited external renewables there must be a direct supply of energy produced to the dwelling under assessment.

Where covered by the Microgeneration Certification Scheme (MCS), technologies under 50kWe or 300kWth must be certified

Combined Heat and Power (CHP) schemes above 50kWe must be certified under the CHPQA standard.

All technologies must be accounted for by SAP.

CHP schemes fuelled by mains gas are eligible to contribute to performance against this issue. Where these schemes are above 50kWe they must be certified under the CHPOA. It is the responsibly of the Accredited OCDEA and Code Assessor to ensure all technologies use in the calculation are appropriate before awarding credits.



Property Details:	Unit 2					
Address:		2, College Yard, LONDON	, NW5 1BR			
Located in:		England Thames valley				
Region: UPRN:		5909854578				
Date of assess	ment.	19 October 2017				
Date of certific		19 October 2017				
Assessment ty		New dwelling as built				
Transaction ty	•	New dwelling				
Tenure type:		Unknown				
Related party		No related party				
Thermal Mass		Indicative Value Low				
	125 litres/person/	'day: True 418				
PCDF Version:		410				
Property descrip	tion:					
Dwelling type: Detachment:		Maisonette				
Year Completed	:	2017				
Floor Location	::	Floor area:	C+	orey height		
		$25.1 m^2$				
Floor 0		25.1 m² 55.5 m²		2.5 m 2.7 m		
Floor 1				2.7 111		
Living area: Front of dwelling	g faces:	26 m ² (fraction 0.323) South West				
Opening types:						
Name:	Source:	Туре:	Glazing:		Argon:	Frame:
Front door	Manufacturer	Solid				
Front	Manufacturer	Windows	double-glazed		Yes	
Side	Manufacturer	Windows	double-glazed		Yes	
Side Rear	Manufacturer Manufacturer	Windows Windows	double-glazed double-glazed		Yes Yes	
Roof light	Manufacturer	Roof Windows	double-glazed		Yes	
Name:	Gap:	Frame Factor	r. a-value.	U-value:	Area:	No. of Openings:
Front door	mm	0.7	0	1	2.1	1
Front		0.8	0.76	1.6	7.4	1
Side		0.8	0.76	1.6	1.2	1
Side		0.8	0.76	1.6	14.9	1
Rear		0.8	0.76	1.6	4.6	1
Roof light		0.8	0.76	1.3	1.4	1
Name:	Type-Name:	Location:	Orient:		Width:	Height:
Front door		External wall	South West		0	0
					<u> </u>	0
Front		External wall	South West		0	
Side		External wall	North West		0	0
Side Side		External wall External wall	North West South East		0 0	0 0
Side Side Rear		External wall External wall External wall	North West South East North East		0 0 0	0 0 0
Side Side		External wall External wall	North West South East		0 0	0 0
Side Side Rear Roof light Overshading:		External wall External wall External wall	North West South East North East		0 0 0	0 0 0
Side Side Rear Roof light	S:	External wall External wall External wall Flat roof	North West South East North East		0 0 0	0 0 0
Side Side Rear Roof light Overshading:	Gross area: Op	External wall External wall External wall Flat roof	North West South East North East	Ru value:	0 0 0	0 0 0 0



Flat roof	59.3	1.4	57.9	0.15	0	N/A
Internal Elements						
Party Elements						
Party wall	46.9					N/A
Party floor	25.1					N/A

Thermal bridges

Thermal bridges:		d (individual PS	I-values)	Y-Value = 0.0625					
-	Length	Psi-value							
[Approved]	15.2	0.3	E2	Other lintels (including other steel lintels)					
[Approved]	7.4	0.04	E3	Sill					
[Approved]	37.5	0.05	E4	Jamb					
[Approved]	4.6	0.07	E6	Intermediate floor within a dwelling					
[Approved]	19.8	0.07	E7	Party floor between dwellings (in blocks of flats)					
[Approved]	14.7	0.09	E16	Corner (normal)					
[Approved]	7.2	-0.09	E17	Corner (inverted internal area greater than external area)					
[Approved]	30.3	0	E15	Flat roof with parapet Intermediate floor between dwellings (in blocks of flats)					
	9.2	0	P3 P4	Roof (insulation at ceiling level)					
	9.2	0	P4						
Ventilation:									
Pressure test:	Yes (As buil								
Ventilation:		ith heat recover	5						
		wet rooms: Kito	:hen + 2						
		nsulation, rigid	-						
		nstallation Sche	me: Irue						
Number of chimneys:	0								
Number of open flues:	0 0								
Number of fans:	0								
Number of passive stacks:	2								
Number of sides sheltered: Pressure test:		sed dwelling is	tastad)						
Main heating system:	5.00 (ASSES	seu uwennig is	lesieu)						
Main heating system:	Boiler syste	ms with radiato	rs or und	erfloor heating					
Wait Heating System.	•	and oil boilers							
	Fuel: mains gas								
		•	se						
			Info Source: Boiler Database Database: (rev 418, product index 016836) Efficiency: Winter 79.6 % Summer: 90.3						
	Brand name: Vaillant								
	Brand name	e: Vaillant		Tooso, Emalency. Winter 77.0 / Summer. 70.0					
		e: Vaillant FEC plus 618							
	Model: ecol								
	Model: ecol	TEC plus 618 fier: VU GB 186							
	Model: ecoT Model qualit (Regular bo	FEC plus 618 fier: VU GB 186 iler)	/5-5	pes in screed above insulation					
	Model: ecoT Model qualit (Regular bo Underfloor f	FEC plus 618 fier: VU GB 186 iler)	/5-5 liators, pi	pes in screed above insulation					
	Model: ecoT Model qualit (Regular bo Underfloor f	FEC plus 618 fier: VU GB 186 iler) neating and rac ting pump : 20	/5-5 liators, pi	pes in screed above insulation					
	Model: ecoT Model qualit (Regular bo Underfloor I Central hea	FEC plus 618 fier: VU GB 186 iler) neating and rac ting pump : 20 ock: Yes	/5-5 liators, pi	pes in screed above insulation					
Main heating Control:	Model: eco Model qualit (Regular bo Underfloor h Central hea Boiler interle	FEC plus 618 fier: VU GB 186 iler) neating and rac ting pump : 20 ock: Yes	/5-5 liators, pi	pes in screed above insulation					
	Model: ecoT Model qualit (Regular bo Underfloor f Central hea Boiler interle Weather Co	FEC plus 618 fier: VU GB 186 iler) neating and rac ting pump : 20 ock: Yes mpensator	i/5-5 liators, pi 13 or late	pes in screed above insulation					
Main heating Control: Main heating Control:	Model: ecoT Model qualit (Regular bo Underfloor f Central hea Boiler interle Weather Co	FEC plus 618 fier: VU GB 186 iler) neating and rac ting pump : 20 ock: Yes mpensator	i/5-5 liators, pi 13 or late	pes in screed above insulation r					
	Model: ecoT Model qualiti (Regular bo Underfloor H Central heat Boiler interle Weather Co Time and te	FEC plus 618 fier: VU GB 186 iler) heating and rac ting pump : 20 ock: Yes mpensator emperature zon	i/5-5 liators, pi 13 or late	pes in screed above insulation r					
	Model: ecoT Model qualiti (Regular bo Underfloor H Central heat Boiler interle Weather Co Time and te services	FEC plus 618 fier: VU GB 186 iler) heating and rac ting pump : 20 ock: Yes mpensator emperature zon	i/5-5 liators, pi 13 or late	pes in screed above insulation r					
Main heating Control:	Model: ecoT Model qualiti (Regular bo Underfloor H Central heat Boiler interle Weather Co Time and te services	FEC plus 618 fier: VU GB 186 iler) heating and rac ting pump : 20 ock: Yes mpensator emperature zon	i/5-5 liators, pi 13 or late	pes in screed above insulation r					
Main heating Control: Secondary heating system:	Model: ecoT Model qualiti (Regular bo Underfloor H Central hea Boiler interle Weather Co Time and te services Control code	FEC plus 618 fier: VU GB 186 iler) heating and rac ting pump : 20 ock: Yes mpensator emperature zon	i/5-5 liators, pi 13 or late	pes in screed above insulation r					
Main heating Control: Secondary heating system: Secondary heating system:	Model: ecoT Model qualiti (Regular bo Underfloor h Central hea Boiler interle Weather Co Time and te services Control code None	FEC plus 618 fier: VU GB 186 iler) heating and rac ting pump : 20 ock: Yes mpensator emperature zon e: 2110 heating system	/5-5 liators, pi 13 or late e control	pes in screed above insulation r					





Fuel :mains gas Hot water cylinder Cylinder volume: 150 litres Cylinder insulation: Measured loss, 1.3kWh/day Primary pipework insulation: True Cylinderstat: True Cylinder in heated space: True Solar panel: False

Others:

Electricity tariff: In Smoke Control Area: Conservatory: Low energy lights: Terrain type: EPC language: Wind turbine: Photovoltaics: Standard Tariff Unknown No conservatory 100% Low rise urban / suburban English No <u>Photovoltaic 1</u> Installed Peak power: 1.35 Tilt of collector: 30° Overshading: Modest Collector Orientation: South West No

Assess Zero Carbon Home:

SAP 2012 Overheating Assessment



Calculated by Stroma FSAP 2012 program, produced and printed on 19 October 2017

Property Details: Unit 2

Dwelling type: Located in: Region: Cross ventilation pos Number of storeys: Front of dwelling face Overshading: Overhangs: Thermal mass parame Night ventilation: Blinds, curtains, shut Ventilation rate during Overheating Details:	es: eter: ters: g hot we			Maisonette England Thames va Yes 2 South Wes Average or None Indicative V False 8 (Window	lley t unknown		
Summer ventilation h Transmission heat los	ss coeffi	cient:	ient:	561.26 72.9			(P1)
Summer heat loss co	efficient	:		634.17			(P2)
Overhangs:							
Orientation:	Ratio:		Z_overhangs:				
South West (Front)	0		1				
North West (Side)	0		1				
South East (Side) North East (Rear)	0 0		1				
Horizontal (Roof light)	0		1				
Solar shading:	U		•				
<u> </u>							
Orientation:	Z blind	ls:	Solar access:	Over	hangs:	Z summer:	
South West (Front)	1		0.9	1		0.9	(P8)
North West (Side)	1		0.9	1		0.9	(P8)
South East (Side) North East (Rear)	1 1		0.9 0.9	1		0.9 0.9	(P8) (P8)
Horizontal (Roof light)	1		1	1		1	(P8)
Solar gains:	•		•	·			()
		A	F 1			01 - 11	0
Orientation			Flux	g	FF	Shading	Gains
South West (Front)	0.9 x 0.9 x	7.4 1.2	119.92 98.85	0.76 0.76	0.8 0.8	0.9 0.9	437.04 58.42
North West (Side) South East (Side)	0.9 x 0.9 x	1.Z 14.9	98.85 119.92	0.76	0.8 0.8	0.9	58.42 879.98
North East (Rear)	0.9 x 0.9 x	4.6	98.85	0.76	0.8	0.9	223.92
North East (Roar)	1 x	1.4	203	0.76	0.8	1	155.51
						Total	1754.88 (P3/P4)
Internal gains:							
Internal gains Total summer gains Summer gain/loss ratio Mean summer external		ture (T	hames valley)		3.77 27.36	July 455.89 2210.77 3.49 17.9	August 464.01 2056.14 (P5) 3.24 (P6) 17.8

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Assessment of likelihood of high internal temperature:

<u>Medium</u>



Approved Document L1A, 2013 Edition, England assessed by Stroma FSAP 2012 program, Version: 1.0.4.10 *Printed on 19 October 2017 at 10:12:53*

Project Information					
ssessed By:	Paul Byrne (STR	O011431)	Building Type:	Mid-terrace House	
Dwelling Details:					
IEW DWELLING	AS BUILT		Total Floor Area: 1	48.8m²	
Site Reference :	1-8 College Yard		Plot Reference:	Unit 3	
Address :	3, College Yard,	LONDON, NW5 1BR			
Client Details:					
lame:	GML Architects				
Address :	Unit 3, 1-4 Christ	ina Street, London, EC2A 4PA			
-		within the SAP calculations.			
-		tions compliance.			
1a TER and DEF					
	ing system: Mains o	jas			
Fuel factor: 1.00 (I	mains gas) oxide Emission Rate		13.53 kg/m²		
-	Dioxide Emission Rate		7.29 kg/m²		ок
1b TFEE and DF			7.29 kg/m		UN
	rgy Efficiency (TFE	E)	46.9 kWh/m²		
-	nergy Efficiency (DF		35.0 kWh/m ²		
					ОК
2 Fabric U-value					
Element		Average	Highest		.
External		0.16 (max. 0.30)	0.16 (max. 0.70)		OK
Party wal Floor	1	0.00 (max. 0.20) 0.12 (max. 0.25)	- 0.12 (max. 0.70)		OK OK
Roof		0.15 (max. 0.20)	0.15 (max. 0.35)		ок
Openings	6	1.43 (max. 2.00)	1.60 (max. 3.30)		OK
2a Thermal brid			· · · · · · · · · · · · · · · · · · ·		
	00	from linear thermal transmittar	ices for each junction		
3 Air permeabili	·				
•	bility at 50 pascals			age for dwelling type)	
Maximum			10.0		ок
4 Heating efficie		Database (no. 110 and 1	(i.e.). 040000)		
Main Heatir	ng system:	Brand name: Vaillant Model: ecoTEC plus 618 Model qualifier: VU GB 186 (Regular)	rs or underfloor heating - ma 5/5-5	ains gas	
		Efficiency 89.3 % SEDBUK Minimum 88.0 %	2009		ок
	heating system:	None			



5 Cylinder insulation				
Hot water Storage:	•	Measured cylinder loss: 1.30 kWh/day Permitted by DBSCG: 1.89 kWh/day		
Primary pipework insulated:	Yes		OK	
6 Controls				
Space heating controls Hot water controls:	TTZC by plumbing and Cylinderstat Independent timer for D		ОК ОК ОК	
Boiler interlock:	Yes		OK	
7 Low energy lights				
Percentage of fixed lights with	low-energy fittings	100.0%		
Minimum		75.0%	ОК	
8 Mechanical ventilation				
Continuous supply and extract	system			
Specific fan power:		0.73		
Maximum		1.5	OK	
MVHR efficiency:		88%		
Minimum		70%	ОК	
9 Summertime temperature				
Overheating risk (Thames valle	ey):	Medium	OK	
Based on:				
Overshading:		Average or unknown		
Windows facing: South West		9.5m ²		
Windows facing: South East		4.1m ²		
Windows facing: North East		4.6m ²		
Roof windows facing: Horizonta	al	16.2m ²		
Ventilation rate:		8.00		
Blinds/curtains:				
		Closed 100% of daylight hours		
10 Key features				
Air permeablility		3.0 m³/m²h		
Doors U-value		1 W/m²K		
Party Walls U-value		0 W/m²K		
Floors U-value		0.12 W/m²K		
Photovoltaic array				
*				



Assessor and House Details Assessor Name: Paul Byrne Property Address: 3, College Yard LONDON NW5 1BR Buiding regulation assessment

	kg/m²/year
TER	13.53
DER	7.29
ENE 1 Assessment - Dwelling Emission Rate	

Total Energy Type CO₂ Emissions for Codes Levels 1 - 5

	%	kg/m²/year	
DER from SAP 2012 DER Worksheet		7.29	(ZC1)
TER		13.53	
Residual CO2 emissions offset from biofuel CHP		0	(ZC5)
CO2 emissions offset from additional allowable electricty generation		0	(ZC7)
Total CO2 emissions offset from SAP Section 16 allowances		0	
DER accounting for SAP Section 16 allowances		7.29	
% improvement DER/TER	46.1		

Total Energy Type CO2 Emissions for Codes Levels 6

	kg/m²/year	
DER accounting for SAP Section 16 allowances	7.29	(ZC1)
CO2 emissions from appliances, equation (L14)	12.66	(ZC2)
CO2 emissions from cooking, equation (L16)	1.27	(ZC3)
Net CO2 emissions	22.4	(ZC8)

Result:

Credits awarded for ENE 1 = 5.1

Code Level = 4

ENE 2 - Fabric energy Efficiency

Fabric energy Efficiency: 35.03

Credits awarded for ENE 2 = 8

ENE 7 - Low or Zero Carbon (LZC) Technologies

Reduction in CO2 Emissions

	%	kg/m²/year	
Standard Case CO2 emissions		25.62	
Standard DER		11.68	
Actual Case CO2 emissions		21.9	
Actual DER		7.96	
Reduction in CO2 emissions	14.52		

Credits awarded for ENE 7 = 1

Technologies eligible to contribute to achieving the requirements of this issue must produce energy from renewable sources and meet all other ancillary requirements as defined by Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC.

The following requirements must also be met:

• Where not provided by accredited external renewables there must be a direct supply of energy produced to the dwelling under assessment.

Where covered by the Microgeneration Certification Scheme (MCS), technologies under 50kWe or 300kWth must be certified.

Combined Heat and Power (CHP) schemes above 50kWe must be certified under the CHPQA standard.

All technologies must be accounted for by SAP.

CHP schemes fuelled by mains gas are eligible to contribute to performance against this issue. Where these schemes are above 50kWe they must be certified under the CHPQA. It is the responsibly of the Accredited OCDEA and Code Assessor to ensure all technologies use in the calculation are appropriate before awarding credits.



Property Details	: Unit 3					
Address: Located in: Region: UPRN: Date of assess Date of certifi Assessment ty Transaction ty Tenure type: Related party Thermal Mass Water use <= PCDF Version	icate: ype: ype: disclosure: Parameter: 125 litres/perso	3, College Yard, LONDON England Thames valley 9019854578 19 October 2017 19 October 2017 New dwelling as built New dwelling Unknown No related party Indicative Value Low on/day: True 418	I, NW5 1BR			
Property descrip	otion:					
Dwelling type: Detachment: Year Completed Floor Location		House Mid-terrace 2017 Floor area:	S	torey height 2.5 m	:	
Basement floor Floor 1		57.4 m² 44.9 m²		2.5 m 2.7 m		
Floor 2		46.5 m ²		2.7 m		
Living area: Front of dwellin	ig faces:	57.4 m ² (fraction 0.508) South West				
Opening types:						
Name: Front door Front Side Rear Roof light	Source: Manufacturer Manufacturer Manufacturer Manufacturer Manufacturer	Type: Solid Windows Windows Windows Roof Windows	Glazing: double-glazed double-glazed double-glazed double-glazed	d d	Argon: Yes Yes Yes Yes	Frame:
Name: Front door Front Side Rear	Gap: mm	Frame Facto 0.7 0.8 0.8 0.8 0.8	r: g-value: 0 0.76 0.76 0.76 0.76	U-value: 1 1.6 1.6 1.6	Area: 2.1 9.5 4.1 4.6	No. of Openings: 1 1 1 1
Roof light		0.8	0.76	1.3	4.0 16.2	1
Name: Front door Front Side Rear Roof light	Type-Name:	Location: External wall External wall External wall External wall Flat roof	Orient: South West South West South East North East Horizontal		Width: 0 0 0 0 0	Height: 0 0 0 0 0
Overshading: Opaque Elemen	ts	Average or unknown				
- Opaque Elemen						
Type: <u>External Elemer</u>		Openings: Net area:	U-value:	Ru value:	Curtain	wall: Kappa:
Basement wall External wall	13.7 80.5	0 13.7 20.3 60.2	0.16 0.16	0 0	False False	N/A N/A

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Flat roof	59.7	16.2	43.5	0.15	0	N/A
Ground floor	57.4			0.12		N/A
Internal Elements						
Party Elements						
Party wall	152.6					N/A
Thermal bridges:						

Thermal bridges:	Usor dofino	d (individual [(aoulev 12	Y-Value = 0.0405
mermai biluges.	Length	Psi-value		1-Value - 0.0+05
[Approved]	9.8	0.3	E2	Other lintels (including other steel lintels)
[Approved]	4.7	0.04	E3	Sill
[Approved]	21.7	0.05	E4	Jamb
[Approved]	22.9	0.07	E6	Intermediate floor within a dwelling
[Approved]	21.8	0.09	E16	Corner (normal)
[Approved]	13.1	-0.09	E17	Corner (inverted internal area greater than external area)
[Approved]	12.2	0	E15	Flat roof with parapet
[Approved]	12.2	0.16	E5	Ground floor (normal)
	18.4	0	P4	Roof (insulation at ceiling level)
	18.4	0	P1	Ground floor
	36.8	0	P2	Intermediate floor within a dwelling
Ventilation:				
Pressure test:	Yes (As des	•		
Ventilation:		ith heat recov	•	
		wet rooms: Ki		
		Insulation, rigi		
Number of chimpous	0	nstallation Sch	ieme: mue	
Number of chimneys: Number of open flues:	0			
Number of fans:	0			
Number of passive stacks:	0			
Number of sides sheltered:	3			
Pressure test:		ne nermeabili	tv of dwell	ings of that type was used)
Main heating system:		ge permeable	ty of atton	
Main heating system:	Boiler syste	ms with radia	tors or und	lerfloor heating
Wain neuting system.	•	and oil boilers		
	Fuel: mains			
		: Boiler Datab	ase	
				016836) Efficiency: Winter 79.6 % Summer: 90.3
	Brand name	•		
		TEC plus 618		
		fier: VU GB 18	86/5-5	
	(Regular bo			
			adiators, pi	ipes in screed above insulation
		ting pump : 2		
	Boiler interl			21 21
	Weather Co			
Main heating Control:				
Main heating Control:	Time and te	emperature zo	ne control	by suitable arrangement of plumbing and electrical
	services			
	Control cod	e: 2110		
Secondary heating system:	N			
Secondary heating system: Water heating:	None			

Water heating:

From main heating system





Water code: 901 Fuel :mains gas Hot water cylinder Cylinder volume: 150 litres Cylinder insulation: Measured loss, 1.3kWh/day Primary pipework insulation: True Cylinderstat: True Cylinder in heated space: True Solar panel: False

Others:

Electricity tariff: In Smoke Control Area: Conservatory: Low energy lights: Terrain type: EPC language: Wind turbine: Photovoltaics: Standard Tariff Unknown No conservatory 100% Low rise urban / suburban English No <u>Photovoltaic 1</u> Installed Peak power: 1.62 Tilt of collector: 30° Overshading: Modest Collector Orientation: South West No

Assess Zero Carbon Home:

SAP 2012 Overheating Assessment



Calculated by Stroma FSAP 2012 program, produced and printed on 19 October 2017

Property Details: Unit 3

Dwelling type: Located in: Region: Cross ventilation possible: Number of storeys: Front of dwelling faces: Overshading: Overhangs: Thermal mass parameter: Night ventilation: Blinds, curtains, shutters: Ventilation rate during hot weather (ach): Overheating Details:				Mid-terrace England Thames va Yes 3 South Wes Average or None Indicative False 8 (Window	llley t `unknown		
Summer ventilation h Transmission heat los			ent:	1030.34 83.3			(P1)
Summer heat loss co				1113.61			(P2)
Overhangs:							
Orientation: South West (Front) South East (Side) North East (Rear) Horizontal (Roof light) Solar shading:	Ratio: 0 0 0		Z_overhangs: 1 1 1 1 1 1				
Orientation:	Z blinc	ls:	Solar access:	Over	hangs:	Z summer:	
South West (Front) South East (Side) North East (Rear) Horizontal (Roof light) Solar gains:	1 1 1 1		0.9 0.9 0.9 1	1 1 1 1	-	0.9 0.9 0.9 1	(P8) (P8) (P8) (P8)
		A	Flux	-		Chading	Caina
Orientation South West (Front) South East (Side) North East (Rear)	0.9 x 0.9 x 0.9 x 1 x	Area 9.5 4.1 4.6 16.2	Flux 119.92 119.92 98.85 203	g_ 0.76 0.76 0.76 0.76	FF 0.8 0.8 0.8 0.8	Shading 0.9 0.9 0.9 1 Total	Gains 561.06 242.14 223.92 1799.52 2826.65 (P3/P4)
					no		August
Internal gains Total summer gains Summer gain/loss ratio Mean summer external temperature (Thames valley) Thermal mass temperature increment Threshold temperature Likelihood of high internal temperature			36. 3.2 16 1.3 20	5.56 24.09 25	July 591.25 3417.9 3.07 17.9 1.3 22.27 Medium	August 601 3067.07 (P5) 2.75 (P6) 17.8 1.3 21.85 (P7) Slight	

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Assessment of likelihood of high internal temperature:

<u>Medium</u>



Approved Document L1A, 2013 Edition, England assessed by Stroma FSAP 2012 program, Version: 1.0.4.10 *Printed on 19 October 2017 at 10:12:39*

accord Bur				
Assessed By:	Paul Byrne (STR	O011431)	Building Type:	Mid-terrace House
Dwelling Details:				
IEW DWELLING	AS BUILT		Total Floor Area: 1	48.8m ²
Site Reference :	1-8 College Yard		Plot Reference:	Unit 4
Address :	4, College Yard,	LONDON, NW5 1BR		
Client Details:				
lame:	GML Architects			
Address :	Unit 3, 1-4 Christ	ina Street, London, EC2A 4PA		
-		within the SAP calculations. tions compliance.		
1a TER and DER				
	ing system: Mains g	jas		
Fuel factor: 1.00 (n	U /			
-	xide Emission Rate Dioxide Emission Ra		13.43 kg/m ²	OK
1b TFEE and DF		ale (DER)	7.84 kg/m ²	OK
	rgy Efficiency (TFE	E)	46.4 kWh/m²	
-	ergy Efficiency (DF		34.7 kWh/m ²	
Ū		, ,		OK
2 Fabric U-value	S			
Element		Average	Highest	
External v		0.16 (max. 0.30)	0.16 (max. 0.70)	OK
Party wall Floor		0.00 (max. 0.20) 0.12 (max. 0.25)	- 0.12 (max. 0.70)	OK OK
Roof		0.15 (max. 0.20)	0.15 (max. 0.35)	OK
Openings	;	1.43 (max. 2.00)	1.60 (max. 3.30)	OK
2a Thermal bridg			· · · · ·	
Thermal t	oridging calculated	from linear thermal transmittan	ces for each junction	
3 Air permeabilit	у			
	pility at 50 pascals			age for dwelling type)
Maximum			10.0	OK
4 Heating efficie	ncy			
Main Heatin	⊧g system:	Brand name: Vaillant Model: ecoTEC plus 618 Model qualifier: VU GB 186	rs or underfloor heating - ma	ains gas
		(Regular) Efficiency 89.3 % SEDBUK Minimum 88.0 %	2009	ок



5 Cylinder insulation				
Hot water Storage:	•	Measured cylinder loss: 1.30 kWh/day Permitted by DBSCG: 1.89 kWh/day		
Primary pipework insulated:	Yes		OK	
6 Controls				
Space heating controls Hot water controls:	TTZC by plumbing and Cylinderstat Independent timer for D		ОК ОК ОК	
Boiler interlock:	Yes		OK	
7 Low energy lights				
Percentage of fixed lights with	low-energy fittings	100.0%		
Minimum		75.0%	ОК	
8 Mechanical ventilation				
Continuous supply and extract	system			
Specific fan power:		0.73		
Maximum		1.5	OK	
MVHR efficiency:		88%		
Minimum		70%	ОК	
9 Summertime temperature				
Overheating risk (Thames valle	ey):	Medium	OK	
Based on:				
Overshading:		Average or unknown		
Windows facing: South West		9.5m ²		
Windows facing: South East		4.1m ²		
Windows facing: North East		4.6m ²		
Roof windows facing: Horizonta	al	16.2m ²		
Ventilation rate:		8.00		
Blinds/curtains:				
		Closed 100% of daylight hours		
10 Key features				
Air permeablility		3.0 m³/m²h		
Doors U-value		1 W/m²K		
Party Walls U-value		0 W/m²K		
Floors U-value		0.12 W/m²K		
Photovoltaic array				
*				



Assessor and House Details Assessor Name: Paul Byrne Property Address: 4, College Yard LONDON NW5 1BR Buiding regulation assessment

	kg/m²/year
TER	13.43
DER	7.84
ENE 1 Assessment - Dwelling Emission Rate	

Total Energy Type CO₂ Emissions for Codes Levels 1 - 5

	%	kg/m²/year	
DER from SAP 2012 DER Worksheet		7.84	(ZC1)
TER		13.43	
Residual CO2 emissions offset from biofuel CHP		0	(ZC5)
CO2 emissions offset from additional allowable electricty generation		0	(ZC7)
Total CO2 emissions offset from SAP Section 16 allowances		0	
DER accounting for SAP Section 16 allowances		7.84	
% improvement DER/TER	41.6		

Total Energy Type CO2 Emissions for Codes Levels 6

	kg/m²/year	
DER accounting for SAP Section 16 allowances	7.84	(ZC1)
CO2 emissions from appliances, equation (L14)	12.66	(ZC2)
CO2 emissions from cooking, equation (L16)	1.27	(ZC3)
Net CO2 emissions	23.1	(ZC8)

Result:

Credits awarded for ENE 1 = 4.8

Code Level = 4

ENE 2 - Fabric energy Efficiency

Fabric energy Efficiency: 34.69

Credits awarded for ENE 2 = 8.1

ENE 7 - Low or Zero Carbon (LZC) Technologies

Reduction in CO2 Emissions

	%	kg/m²/year	
Standard Case CO2 emissions		25.54	
Standard DER		11.6	
Actual Case CO2 emissions		22.44	
Actual DER		8.5	
Reduction in CO2 emissions	12.14		

Credits awarded for ENE 7 = 1

Technologies eligible to contribute to achieving the requirements of this issue must produce energy from renewable sources and meet all other ancillary requirements as defined by Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC.

The following requirements must also be met:

• Where not provided by accredited external renewables there must be a direct supply of energy produced to the dwelling under assessment.

Where covered by the Microgeneration Certification Scheme (MCS), technologies under 50kWe or 300kWth must be certified

Combined Heat and Power (CHP) schemes above 50kWe must be certified under the CHPQA standard.

All technologies must be accounted for by SAP.

CHP schemes fuelled by mains gas are eligible to contribute to performance against this issue. Where these schemes are above 50kWe they must be certified under the CHPQA. It is the responsibly of the Accredited OCDEA and Code Assessor to ensure all technologies use in the calculation are appropriate before awarding credits.



Property Details: U	Jnit 4							
Address: Located in: Region: UPRN: Date of assessm Date of certifica Assessment typ Transaction typ Tenure type: Related party d Thermal Mass F Water use <= 7 PCDF Version:	ate: be: be: lisclosure: Parameter:	Englan Thame 03198 19 Oct 19 Oct New d New d Unkno No rela Indicat	s valley 54578 ober 2017 ober 2017 welling as built welling	N, NW5 1BR				
Property description	on:							
Dwelling type: Detachment: Year Completed: Floor Location:		House Mid-te 2017 Floor	rrace area:	SI	torey height			
Basement floor Floor 1 Floor 2		57.4 m 44.9 m 46.5 m	2		2.5 m 2.7 m 2.7 m			
Living area: Front of dwelling	faces:	57.4 m South	¹² (fraction 0.508) West)				
Opening types:								
Name: Front door Front Side Rear Roof light	Source: Manufacturer Manufacturer Manufacturer Manufacturer Manufacturer	Si Si M M M	ype: olid /indows /indows /indows oof Windows	Glazing: double-glazed double-glazed double-glazed double-glazed	ł	Argon: Yes Yes Yes Yes	Frame	:
Name: Front door Front Side Rear Roof light	Gap: mm		Frame Facto 0.7 0.8 0.8 0.8 0.8 0.8	or: g-value: 0 0.76 0.76 0.76 0.76 0.76	U-value: 1 1.6 1.6 1.6 1.3	Area: 2.1 9.5 4.1 4.6 16.2	No. of 1 1 1 1 1	Openings:
Name: Front door Front Side Rear Roof light	Type-Nam	E E E	ocation: xternal wall xternal wall xternal wall xternal wall at roof	Orient: South West South West South East North East Horizontal		Width: 0 0 0 0 0	Heigh ⁻ 0 0 0 0 0	:
Overshading: Opaque Elements:		Averag	je or unknown					
Type: <u>External Element</u> Basement wall	Gross area: <u>s</u> 13.7 73.3	Openings: 0 20.3	Net area: 13.7	U-value: 0.16 0.16	Ru value: 0	Curtain False False	wall:	Kappa: N/A

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info@pbsustainability.co.uk	
0151 691 6685	



Flat roof Ground floor <u>Internal Elements</u>	59.7 57.4	16.2	43.5	0.15 0.12	0	N/A N/A
<u>Party Elements</u> Party wall	152.6					N/A
Thermal bridges:						
Thermal bridges:		User-de Length	•		lue = 0.0419	

[Approved] 9.8 0.3 E2 Other limites (including other steel limites) [Approved] 2.7 0.04 E3 Sili [Approved] 2.7 0.05 E4 Jamb [Approved] 2.2 0.07 E6 Intermediate floor within a dwelling [Approved] 13.1 -0.09 E17 Comer (normal) [Approved] 12.2 0.16 E5 Ground floor (normal) [Approved] 12.2 0.16 E5 <th></th> <th>Length</th> <th>PSI-valu</th> <th>e</th> <th></th>		Length	PSI-valu	e	
[Approved] 21.7 0.05 E4 Jamb [Approved] 21.8 0.09 E16 Conner (normai) [Approved] 13.1 -0.09 E17 Corner (normai) [Approved] 13.1 -0.09 E17 Corner (normai) [Approved] 12.2 0 E15 Flat rod With parapet [Approved] 12.2 0.16 E5 Ground floor (normai) [Approved] 12.4 0 P1 Ground floor (normai) [Approved] 13.4 0 P2 Intermediate floor within a dwelling Ventilation: Balanced with heat recovery Number of nor within a dwelling Mumber of otwell attos Number of parsitive stacks: 0 Number of parsitive stacks: 0 Number of parsitive stacks: 0 Number of parsitive stacks: 0 Number of sides sheltered: 3 </th <th></th> <th>9.8</th> <th></th> <th></th> <th>-</th>		9.8			-
[Approved] 22.9 0.07 E6 Intermediate floor within a dwelling [Approved] 13.1 -0.09 E16 Corner (normal) [Approved] 12.2 0 E15 Filt roof with parage greater than external area) [Approved] 12.2 0.16 E5 Ground floor (normal) [Approved] 12.2 0.16 E5 Ground floor (normal) 18.4 0 P4 Roof (insulation at celling level) 18.4 0 P2 Intermediate floor within a dwelling Ventilation: Ventilation: Ventilation: Number of key to rooms: Kitchen + 3 Ductwork: insulation, rigid Approved Installation Scheme: True Number of pone flues: 0 Number of pone flues: 0 Number of passive stacks: 0 Number of stacks sheltered: 3 Pressure test: 5.39 (Average permeability of dwellings of that type was used) Main heating system: Main heating system: Boller systems with radiators, pipes in screed above insulation		4.7	0.04		Sill
[Approved] 21.8 0.09 E16 Corner (normal) [Approved] 13.1 -0.09 E17 Flat roof with parapet [Approved] 12.2 0.16 E15 Flat roof with parapet [Approved] 12.2 0.16 E15 Ground floor (normal) 18.4 0 P1 Ground floor Ground floor 36.8 0 P2 Intermediate floor within a dwelling Ventilation: Balanced with heat recovery Number of chimneys: 0 P4 Floor (normal) Number of ower floor Balanced with heat recovery Approved Installation Scheme: True Number of open flues: Number of open flues: 0 Vertilation: Number of open flues: 0 Number of disc sheltered: 3 9 Verage permeability of dwellings of that type was used) Main heating system: Boler systems with radiators or underfloor heating Group flues: Source: Boler Database: Flue: mains gas Info Source: Boler Database: (rev 418, product Index 016836) Efficiency: Winter 79.6 % Summer: 90.3 Brand name: Vallant Model qualifie: VU G3 H36/S-5 (Regular bolier) Underfloor heating and radiators, pipes in screed above insul		21.7		E4	
Maproved (Approved)13.1-0.09E17Corner (Inverted Internal area greater than external area) (Approved)12.20E15Flat root with parapet (Insulation at ceiling level)18.40P4Root (Insulation at ceiling level)18.40P4Ground floor36.80P2Intermediate floor within a dwellingVertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Number of colspan="4">Vertilation:Vertilation:	[Approved]	22.9		E6	
Approved [Approved] 12.2 0 ETS Flat root with propet Ground floor (normal) 12.2 0.16 ES Ground floor (normal) 12.4 0 P4 Root (insulation at ceiling level) 18.4 0 P1 Ground floor 36.8 0 P2 Intermediate floor within a dwelling Ventilation: Balanced with heat recovery Number of vel rooms: Kitchen + 3 Ductwork: Insulation, rigid Approved Installation Scheme: True Number of chimneys: 0 O Ductwork: Insulation, rigid Approved Installation Scheme: True Number of passive stacks: 0 O Number of assive stacks: O Number of sides sholtcred: 3 Pressure test: S 3 Pressure test: S 3 Vain heating system: Boller systems with radiators or underfloor heating Gas bollers and oil bollers Fuel: mains gas Info Source: Boller Database Database: (rev 418, product index 016836) Efficiency: Winter 79.6 % Summer: 90.3 Erand name: Vailant Model qualifier: VU GB 186/5.5 (Regular boller) Underfloor heating qurp: 2013 or later Boller interlock: Yes Weather Compensator Secondary heating system: Time and temperature zone control by suitable arrangement of plumbing and electrical services Control Secondary heating system: None None Secondary heating syst	[Approved]	21.8	0.09	E16	Corner (normal)
[Åpproved]12.20.16ESGround floor (monal) Roof (insulation at celling level) 36.80P4Roof (insulation at celling level) (insulation at celling level) 36.80P2Intermediate floor within a dwellingVentilation:Ves (As designed) Balanced with heat recovery Number of ver troms: Kitchen + 3 Ductwork: Insulation, rigid Approved Installation Scheme: True0Number of ver troms:000Number of ver troms:00Number of ver troms:00Number of open flues:00Number of station fans:0Number of states:0.39Number of states:0.39Delier states:5.39States:0.39Number of states:0.39Delier states:0.39Number of states:0.39Number of states:0.39Number of states:0.39Number of states:0.39Delier states:0.39Number of states:0.39Number of states:0.39Number of states:0.39States:0.39	[Approved]	13.1	-0.09	E17	Corner (inverted internal area greater than external area)
18.4 0 P4 Reof (insulation at ceiling level) 18.4 0 P1 Ground floor 36.8 0 P2 Intermediate floor within a dwelling Ventilation: Pressure test: Yes (As designed) Ventilation: Balanced with heat recovery Intermediate floor within a dwelling Number of chimneys: 0 Ductwork: insulation, rigid Approved Installation Scheme: True Number of open flues: 0 Outwork: insulation, rigid Approved Installation Scheme: True Number of passive stacks: 0 Outwork: insulation at ceiling soft that type was used) Main heating system: Main heating system: Boiler systems with radiators or underfloor heating Gas boilers and oil boilers Fuel: mains gas Info Source: Boiler Database Info Source: Boiler Database Database: (rev 418, product index 016836) Efficiency: Winter 79.6 % Summer: 90.3 Brand name: Wailer Will Bit 86/5-5 (Regular boiler) Underfloor heating and radiators, pipes in screed above insulation Central heating pump: 2013 or later Boiler interlook: Yes Wather Compensator Main heating Control: Time and temperature zone control by suitable arrangement of plumbing and electrical servic	[Approved]	12.2	0	E15	Flat roof with parapet
18.4 0 P1 Ground floor 36.8 0 P2 Intermediate floor within a dwelling Ventilation: Pressure test: Yes (As designed) Ventilation: Balanced with heat recovery Number of thirmeys: 0 Approved Installation Scheme: True Number of passive stacks: 0 Number of fans: 0 Number of fans: 0 Number of fans: 0 Number of passive stacks: 0 Number of sides sheltered: 3 Pressure test: 5.39 (Average permeability of dwellings of that type was used) Main heating system: Main heating system: Boller systems with radiators or underfloor heating Gas bollers and oil bollers Fuel: mains gas Info Source: Boller Database Database: (Cev 418, product index 016836) Efficiency: Winter 79.6 % Summer: 90.3 Brand name: Vaillant Model: ceoTEC plus 618 Model qualifier: VU GB 186/5-5 (Regular boller) Underfloor heating and radiators, pipes in screed above insulation Central heating pump : 2013 or later Boller interlock: Yes <	[Approved]	12.2	0.16	E5	Ground floor (normal)
36.8 0 P2 Intermediate floor within a dwelling Ventilation: Pressure test: Yes (As designed) Ventilation: Balanced with heat recovery Number of with or of with recovery Number of with neat recovery Number of chimneys: 0 Number of chimneys: 0 Number of fans: 0 Number of sides sheltered: 3 Pressure test: 5.9 (Average permeability of dwellings of that type was used) Main heating system: Boiler systems with radiators or underfloor heating Gas boilers and oil boilers Fuel: mains gas Info Source: Database: Database: (rev 418, product index 016836) Efficiency: Winter 79.6 % Summer: 90.3 Brand name: Vaillant Model qualifier: VU GB 186/5-5 (Regular boiler) Duddrifor heating pump: 2013 or later Boiler interlock: Yes Weather Compensator Main heating Control: Time and temperature zone control by suitable arrangement of plumbing and electrical services Secondary heating system: None		18.4	0	P4	Roof (insulation at ceiling level)
Ventilation: Yes (Ås designed) Pressure test: Yes (Ås designed) Balanced with heat recovery Number of wet rooms: Kitchen + 3 Ductwork: Insulation, rigid Approved Installation Scheme: True Number of open flues: 0 Number of passive stacks: 0 Number of fans: 0 Number of sides sheltered: 3 Pressure test: 5.39 (Average permeability of dwellings of that type was used) Main heating system: Boiler systems with radiators or underfloor heating Gas boilers and oil boilers Fuel: mains gas Info Source: Boiler Database Database: (rev 418, product index 016836) Efficiency: Winter 79.6 % Summer: 90.3 Brand name: Vaillant Model qualifier: VU GB 186/5-5 (Regular boiler) Underfloor heating and radiators, pipes in screed above insulation Central heating pump : 2013 or later Boiler interlock: Yes Weather Composator Yes fuel control: Main heating Control: Time and temperature zone control by suitable arrangement of plumbing and electrical services Control code: 2110 Secondary heating system: None		18.4	0	P1	Ground floor
Pressure test: Yes (As designed) Ventilation: Balanced with heat recovery Number of wet rooms: Kitchen + 3 Ductwork: Insulation, rigid Approved Installation Scheme: True 0 Number of open flues: 0 Number of passive stacks: 0 Number of sides sheltered: 3 Pressure test: 5.39 (Average permeability of dwellings of that type was used) Main heating system: Boiler systems with radiators or underfloor heating Gas boilers and oil boilers Fue!: mains gas Info Source: Boiler Database: Database: (rev 418, product index 016836) Efficiency: Winter 79.6 % Summer: 90.3 Brand name: Vailant Model: ecoTEC plus 618 Model qualifier: VU GB 186/5-5 (Regular boiler) Underfloor heating and radiators, pipes in screed above insulation Central heating pump : 2013 or later Boiler system: Main heating Control: Time and temperature zone control by suitable arrangement of plumbing and electrical services Control code: 2110 Secondary heating system: None		36.8	0	P2	Intermediate floor within a dwelling
Ventilation:Balanced with heat recovery Number of wet rooms: Kitchen + 3 Ductwork: Insulation Scheme: TrueNumber of chimneys:0Number of chimneys:0Number of ans:0Number of fans:0Number of sides sheltered:3Pressure test:5.39 (Average permeability of dwellings of that type was used)Main heating system:Boiler systems with radiators or underfloor heating Gas boilers and oil boilers Fue: mains gas Info Source: Boiler Database Database: (rev 418, product index 016836) Efficiency: Winter 79.6 % Summer: 90.3 Brand name: Vaillant Model: ecoTEC plus 618 Model qualifier: VU GB 186/5-5 (Regular boiler) Underfloor heating and radiators, pipes in screed above insulation Central heating pump : 2013 or later Boiler interlock: res Weather CompensatorMain heating Control:Time and temperature zone control by suitable arrangement of plumbing and electrical services Control code: 2110Secondary heating system:None	Ventilation:				
Ventilation:Balanced with heat recovery Number of wet rooms: Kitchen + 3 Ductwork: Insulation Scheme: TrueNumber of chimneys:0Number of chimneys:0Number of ans:0Number of fans:0Number of sides sheltered:3Pressure test:5.39 (Average permeability of dwellings of that type was used)Main heating system:Boiler systems with radiators or underfloor heating Gas boilers and oil boilers Fue: mains gas Info Source: Boiler Database Database: (rev 418, product index 016836) Efficiency: Winter 79.6 % Summer: 90.3 Brand name: Vaillant Model: ecoTEC plus 618 Model qualifier: VU GB 186/5-5 (Regular boiler) Underfloor heating and radiators, pipes in screed above insulation Central heating pump : 2013 or later Boiler interlock: res Weather CompensatorMain heating Control:Time and temperature zone control by suitable arrangement of plumbing and electrical services Control code: 2110Secondary heating system:None	Pressure test:	Yes (As des	ianed)		
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Number of Fans:0Number of passive stacks:0Number of sides sheltered:3Pressure test:5.39 (Average permeability of dwellings of that type was used)Main heating system:Boiler systems with radiators or underfloor heating Gas boilers and oil boilers Fuel: mains gas Info Source: Boiler Database Database: (rev 418, product index 016836) Efficiency: Winter 79.6 % Summer: 90.3 Brand name: Vaillant Model: ecoTEC plus 618 Model qualifier: VU GB 186/5-5 (Regular boiler) Underfloor heating and radiators, pipes in screed above insulation Central heating pump : 2013 or later Boiler interlock: Yes Weater CompensatorMain heating Control:Time and temperature zone control by suitable arrangement of plumbing and electrical services Control code: 2110Secondary heating system:None	5	0			
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Gas boilers and oil boilers Fuel: mains gas Info Source: Boiler Database Database: (rev 418, product index 016836) Efficiency: Winter 79.6 % Summer: 90.3 Brand name: Vaillant Model: ecoTEC plus 618 Model qualifier: VU GB 186/5-5 (Regular boiler) Underfloor heating and radiators, pipes in screed above insulation Central heating pump : 2013 or later Boiler interlock: Yes Weather Compensator Main heating Control: Time and temperature zone control by suitable arrangement of plumbing and electrical services control code: 2110 Secondary heating system: None		·	5 1	5	
Main heating Control: Time and temperature zone control by suitable arrangement of plumbing and electrical services Control code: 2110 Secondary heating system: Secondary heating system:	Main heating system:	Gas boilers Fuel: mains Info Source Database: (Brand name Model: eco Model quali (Regular bo Underfloor Central hea Boiler interl	and oil boilers gas : Boiler Datab rev 418, prod : Vaillant FEC plus 618 fier: VU GB 18 iler) heating and ra ting pump : 2 ock: Yes	s pase luct index (36/5-5 adiators, pi	016836) Efficiency: Winter 79.6 % Summer: 90.3 pes in screed above insulation
services Control code: 2110 Secondary heating system: Secondary heating system:	Main heating Control:				
Secondary heating system: None	Main heating Control:	services		one control	by suitable arrangement of plumbing and electrical
	Secondary heating system:				
Water heating:		None			

Water heating:

From main heating system





Water code: 901 Fuel :mains gas Hot water cylinder Cylinder volume: 150 litres Cylinder insulation: Measured loss, 1.3kWh/day Primary pipework insulation: True Cylinderstat: True Cylinder in heated space: True Solar panel: False

Others:

Electricity tariff: In Smoke Control Area: Conservatory: Low energy lights: Terrain type: EPC language: Wind turbine: Photovoltaics: Standard Tariff Unknown No conservatory 100% Low rise urban / suburban English No <u>Photovoltaic 1</u> Installed Peak power: 1.35 Tilt of collector: 30° Overshading: Modest Collector Orientation: South West No

Assess Zero Carbon Home:

SAP 2012 Overheating Assessment



Calculated by Stroma FSAP 2012 program, produced and printed on 19 October 2017

Property Details: Unit 4

Dwelling type: Located in: Region: Cross ventilation pos Number of storeys: Front of dwelling face Overshading: Overhangs: Thermal mass parame Night ventilation: Blinds, curtains, shut Ventilation rate during Overheating Details:	es: eter: ters:	ather (a	ch):	Mid-terrace England Thames va Yes 3 South Wes Average or None Indicative V False 8 (Window	llley t · unknown			
Summer ventilation h Transmission heat lo			ent:	1030.34 82.1			(P [.]	1)
Summer heat loss co				1112.46			(P2	2)
Overhangs:								
Orientation: South West (Front) South East (Side) North East (Rear) Horizontal (Roof light) Solar shading:	Ratio: 0 0 0		Z_overhangs: 1 1 1 1					
Orientation:	Z blind	ls:	Solar access:	Over	hangs:	Z summer:		
South West (Front)	1		0.9	1		0.9	(Pa	•
South East (Side) North East (Rear) Horizontal (Roof light) Solar gains:	1 1 1		0.9 0.9 1	1 1 1		0.9 0.9 1	(Pa (Pa (Pa	B)
North East (Rear) Horizontal (Roof light) Solar gains:	1	Δrea	0.9 1	1	FF	0.9 1	(P8 (P8	B)
North East (Rear) Horizontal (Roof light) Solar gains: Orientation South West (Front) South East (Side) North East (Rear)	1	Area 9.5 4.1 4.6 16.2	0.9	1	FF 0.8 0.8 0.8 0.8 0.8	0.9	(Pa	8) 8)
North East (Rear) Horizontal (Roof light) Solar gains: Orientation South West (Front) South East (Side)	1 1 0.9 x 0.9 x 0.9 x 0.9 x	9.5 4.1 4.6	0.9 1 Flux 119.92 119.92 98.85	1 1 9_ 0.76 0.76 0.76 0.76	0.8 0.8 0.8	0.9 1 Shading 0.9 0.9 0.9 0.9 1	(Pa (Pa 561.06 242.14 223.92 1799.52	8) 8)

PB Sustainability Ltd info@pbsustainability.co.uk 0151 691 6685 SAP 2012 Overheating Assessment



Assessment of likelihood of high internal temperature:

<u>Medium</u>



Approved Document L1A, 2013 Edition, England assessed by Stroma FSAP 2012 program, Version: 1.0.4.10 *Printed on 19 October 2017 at 10:12:25*

Project Information	on:			
ssessed By:	Paul Byrne (STR	O011431)	Building Type:	Mid-terrace House
Dwelling Details:				
EW DWELLING	AS BUILT		Total Floor Area: 1	48.8m ²
ite Reference :	1-8 College Yard		Plot Reference:	Unit 5
ddress :	5, College Yard,	LONDON, NW5 1BR		
Client Details:				
Name:	GML Architects			
Address :	Unit 3, 1-4 Christ	ina Street, London, EC2A 4PA		
•		vithin the SAP calculations. tions compliance.		
1a TER and DER	R			
	ing system: Mains	jas		
uel factor: 1.00 (r	e ,	(—— —)		
-	xide Emission Rate	. ,	13.43 kg/m ²	OK
1b TFEE and DF	Dioxide Emission Ra	ate (DER)	8.46 kg/m ²	OK
	rgy Efficiency (TFE	=)	46.4 kWh/m ²	
Dwelling Fabric Energy Efficiency (TFEE)			34.7 kWh/m ²	
5	<i></i>	,		ОК
2 Fabric U-value	S			
Element		Average	Highest	
External		0.16 (max. 0.30)	0.16 (max. 0.70)	OK
Party wal Floor	I	0.00 (max. 0.20) 0.12 (max. 0.25)	- 0.12 (max. 0.70)	OK OK
Roof		0.15 (max. 0.20)	0.12 (max. 0.70) 0.15 (max. 0.35)	OK
Openings	6	1.43 (max. 2.00)	1.60 (max. 3.30)	OK
2a Thermal bridg				
		from linear thermal transmittan	ces for each junction	
3 Air permeabili				
•	oility at 50 pascals			age for dwelling type)
Maximum			10.0	OK
4 Heating efficie		Detebage: (rev 440, produce	tindex 04C02C);	
Main Heatir	ng system:	Database: (rev 418, produc Boiler systems with radiator Brand name: Vaillant Model: ecoTEC plus 618 Model qualifier: VU GB 186 (Regular) Efficiency 89.3 % SEDBUK Minimum 88.0 %	s or underfloor heating - ma	ains gas OK
Cocordon	heating system:	None		



5 Cylinder insulation			
Hot water Storage:	Measured cylinder loss: Permitted by DBSCG: 1	-	ОК
Primary pipework insulated:	Yes		
6 Controls			
Space heating controls Hot water controls:	TTZC by plumbing and Cylinderstat Independent timer for D		ОК ОК ОК
Boiler interlock:	Yes		OK
7 Low energy lights			
Percentage of fixed lights with	low-energy fittings	100.0%	
Minimum		75.0%	ОК
8 Mechanical ventilation			
Continuous supply and extract	system		
Specific fan power:		0.73	
Maximum		1.5	OK
MVHR efficiency:		88%	
Minimum		70%	ОК
9 Summertime temperature			
Overheating risk (Thames valle	ey):	Medium	OK
Based on:			
Overshading:		Average or unknown	
Windows facing: South West		9.5m ²	
Windows facing: South East		4.1m ²	
Windows facing: North East		4.6m ²	
Roof windows facing: Horizonta	al	16.2m ²	
Ventilation rate:		8.00	
Blinds/curtains:			
		Closed 100% of daylight hours	
10 Key features			
Air permeablility		3.0 m³/m²h	
Doors U-value		1 W/m²K	
Party Walls U-value		0 W/m²K	
Floors U-value		0.12 W/m²K	
Photovoltaic array			
*			



Assessor and House Details Assessor Name: Paul Byrne Property Address: 5, College Yard LONDON NW5 1BR Buiding regulation assessment

	kg/m²/year
TER	13.43
DER	8.46
ENE 1 Assessment - Dwelling Emission Rate	

Total Energy Type CO₂ Emissions for Codes Levels 1 - 5

	%	kg/m²/year	
DER from SAP 2012 DER Worksheet		8.46	(ZC1)
TER		13.43	
Residual CO2 emissions offset from biofuel CHP		0	(ZC5)
CO2 emissions offset from additional allowable electricty generation		0	(ZC7)
Total CO2 emissions offset from SAP Section 16 allowances		0	
DER accounting for SAP Section 16 allowances		8.46	
% improvement DER/TER	37		

Total Energy Type CO2 Emissions for Codes Levels 6

	kg/m²/year	
DER accounting for SAP Section 16 allowances	8.46	(ZC1)
CO2 emissions from appliances, equation (L14)	12.71	(ZC2)
CO2 emissions from cooking, equation (L16)	1.28	(ZC3)
Net CO2 emissions	25.7	(ZC8)

Result:

Credits awarded for ENE 1 = 4.4

Code Level = 4

ENE 2 - Fabric energy Efficiency

Fabric energy Efficiency: 34.69

Credits awarded for ENE 2 = 8.1

ENE 7 - Low or Zero Carbon (LZC) Technologies

Reduction in CO2 Emissions

	%	kg/m²/year
Standard Case CO2 emissions		25.54
Standard DER		11.6
Actual Case CO2 emissions		23.06
Actual DER		9.12
Reduction in CO2 emissions	9.71	

Credits awarded for ENE 7 = 0

Technologies eligible to contribute to achieving the requirements of this issue must produce energy from renewable sources and meet all other ancillary requirements as defined by Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC.

The following requirements must also be met:

• Where not provided by accredited external renewables there must be a direct supply of energy produced to the dwelling under assessment.

Where covered by the Microgeneration Certification Scheme (MCS), technologies under 50kWe or 300kWth must be certified

• Combined Heat and Power (CHP) schemes above 50kWe must be certified under the CHPQA standard.

• All technologies must be accounted for by SAP.

CHP schemes fuelled by mains gas are eligible to contribute to performance against this issue. Where these schemes are above 50kWe they must be certified under the CHPQA. It is the responsibly of the Accredited OCDEA and Code Assessor to ensure all technologies use in the calculation are appropriate before awarding credits.



Property Details:	Unit 5						
Address: Located in: Region: UPRN: Date of assess Date of certific Assessment typ Transaction typ Tenure type: Related party of Thermal Mass I Water use <= PCDF Version:	ate: pe: be: disclosure: Parameter:	Englan Thame 73198 19 Oct 19 Oct New d New d Unkno No rela Indicat	es valley 54578 ober 2017 ober 2017 welling as built welling	N, NW5 1BR			
Property descripti	ion:						
Dwelling type: Detachment: Year Completed: Floor Location:		House Mid-te 2017 Floor		5	torev beight		
Basement floor Floor 1 Floor 2		57.4 m 44.9 m 46.5 m	²	Storey height: 2.5 m 2.7 m 2.7 m			
Living area: Front of dwelling	faces:		¹² (fraction 0.386))			
Opening types:							
Name: Front door Front Side Rear Roof light	Source: Manufacturer Manufacturer Manufacturer Manufacturer Manufacturer	Si Si M M M	ype: olid /indows /indows /indows oof Windows	Glazing: double-glazed double-glazed double-glazed double-glazed	1	Argon: Yes Yes Yes Yes	Frame:
Name: Front door Front Side Rear Roof light	Gap: mm		Frame Facto 0.7 0.8 0.8 0.8 0.8 0.8	or: g-value: 0 0.76 0.76 0.76 0.76 0.76	U-value: 1 1.6 1.6 1.6 1.3	Area: 2.1 9.5 4.1 4.6 16.2	No. of Opening 1 1 1 1 1
Name: Front door Front Side Rear Roof light	Type-Nam	E E E	ocation: xternal wall xternal wall xternal wall xternal wall at roof	Orient: South West South West South East North East Horizontal		Width: 0 0 0 0 0	Height: 0 0 0 0 0
Overshading: Opaque Elements	::	Averaç	je or unknown				
Type: <u>External Element</u> Basement wall External wall	Gross area: <u>s</u> 13.7 73.3	Openings: 0 20.3	Net area: 13.7 53	U-value: 0.16 0.16	Ru value: 0 0	Curtain False False	wall: Kappa: N/A N/A

PB Sustainability Ltd	
info@pbsustainability.co.uk	
0151 691 6685	

SAP Input



Flat roof Ground floor <u>Internal Elements</u>	59.7 57.4	16.2	43.5	0.15 0.12	0	N/A N/A
<u>Party Elements</u> Party wall	152.6					N/A
Thermal bridges:						
Thermal bridges:		User-de Length	•		lue = 0.0419	

[Approved] 9.8 0.3 E2 Other limites (including other steel limites) [Approved] 2.7 0.04 E3 Sili [Approved] 2.7 0.05 E4 Jamb [Approved] 2.2 0.07 E6 Intermediate floor within a dwelling [Approved] 13.1 -0.09 E17 Comer (normal) [Approved] 12.2 0.16 E5 Ground floor (normal) [Approved] 12.2 0.16 E5 <th></th> <th>Length</th> <th>PSI-valu</th> <th>e</th> <th></th>		Length	PSI-valu	e	
[Approved] 21.7 0.05 E4 Jamb [Approved] 21.8 0.09 E16 Conner (normai) [Approved] 13.1 -0.09 E17 Corner (normai) [Approved] 13.1 -0.09 E17 Corner (normai) [Approved] 12.2 0 E15 Flat rod With parapet [Approved] 12.2 0.16 E5 Ground floor (normai) [Approved] 12.4 0 P1 Ground floor (normai) [Approved] 13.4 0 P2 Intermediate floor within a dwelling Ventilation: Balanced with heat recovery Number of nor within a dwelling Mumber of otwell attos Number of parsitive stacks: 0 Number of parsitive stacks: 0 Number of parsitive stacks: 0 Number of parsitive stacks: 0 Number of sides sheltered: 3 </th <th></th> <th>9.8</th> <th></th> <th></th> <th>-</th>		9.8			-
[Approved] 22.9 0.07 E6 Intermediate floor within a dwelling [Approved] 13.1 -0.09 E16 Corner (normal) [Approved] 12.2 0 E15 Filt roof with parage greater than external area) [Approved] 12.2 0.16 E5 Ground floor (normal) [Approved] 12.2 0.16 E5 Ground floor (normal) 18.4 0 P4 Roof (insulation at celling level) 18.4 0 P2 Intermediate floor within a dwelling Ventilation: Ventilation: Ventilation: Number of key to rooms: Kitchen + 3 Ductwork: insulation, rigid Approved Installation Scheme: True Number of pone flues: 0 Number of pone flues: 0 Number of passive stacks: 0 Number of stacks sheltered: 3 Pressure test: 5.39 (Average permeability of dwellings of that type was used) Main heating system: Main heating system: Boller systems with radiators, pipes in screed above insulation		4.7	0.04		Sill
[Approved] 21.8 0.09 E16 Corner (normal) [Approved] 13.1 -0.09 E17 Flat roof with parapet [Approved] 12.2 0.16 E15 Flat roof with parapet [Approved] 12.2 0.16 E15 Ground floor (normal) 18.4 0 P1 Ground floor Ground floor 36.8 0 P2 Intermediate floor within a dwelling Ventilation: Balanced with heat recovery Number of chimneys: 0 P4 Floor (normal) Number of ower floor Balanced with heat recovery Approved Installation Scheme: True Number of open flues: Number of open flues: 0 Vertilation: Number of open flues: 0 Number of disc sheltered: 3 9 Persure trains gas 1 Number of sides sheltered: 5.39 (Average permeability of dwellings of that type was used) Main heating system: Boler systems with radiators or underfloor heating Gold before basing and oil bolers Fue: mains gas Info Source: Boler Database: (rev 418, product index 016836) Efficiency: Winter 79.6 % Summer: 90.3 Brand name: Vallant <t< th=""><th></th><th>21.7</th><th></th><th>E4</th><th></th></t<>		21.7		E4	
Maproved (Approved)13.1-0.09E17Corner (Inverted Internal area greater than external area) (Approved)12.20E15Flat root with parapet (Insulation at ceiling level)18.40P4Root (Insulation at ceiling level)18.40P4Ground floor36.80P2Intermediate floor within a dwellingVertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Vertilation:Number of colspan="4">Vertilation:Number of colspan	[Approved]	22.9		E6	
Approved [Approved] 12.2 0 ETS Flat root with propet Ground floor (normal) 12.2 0.16 ES Ground floor (normal) 12.4 0 P4 Root (insulation at ceiling level) 18.4 0 P1 Ground floor 36.8 0 P2 Intermediate floor within a dwelling Ventilation: Balanced with heat recovery Number of vel rooms: Kitchen + 3 Ductwork: Insulation, rigid Approved Installation Scheme: True Number of chimneys: 0 O Ductwork: Insulation, rigid Approved Installation Scheme: True Number of passive stacks: 0 O Number of assive stacks: O Number of sides sholtcred: 3 Pressure test: S 3 Pressure test: S 3 Vain heating system: Boller systems with radiators or underfloor heating Gas bollers and oil bollers Fuel: mains gas Info Source: Boller Database Database: (rev 418, product index 016836) Efficiency: Winter 79.6 % Summer: 90.3 Erand name: Vailant Model qualifier: VU GB 186/5.5 (Regular boller) Underfloor heating qurp: 2013 or later Boller interlock: Yes Weather Compensator Secondary heating system: Time and temperature zone control by suitable arrangement of plumbing and electrical services Control Secondary heating system: None None Secondary heating syst	[Approved]	21.8	0.09	E16	Corner (normal)
[Åpproved]12.20.16ESGround floor (monal) Roof (insulation at celling level) 36.80P4Roof (insulation at celling level) (insulation at celling level) 36.80P2Intermediate floor within a dwellingVentilation:Ves (As designed) Balanced with heat recovery Number of ver troms: Kitchen + 3 Ductwork: Insulation, rigid Approved Installation Scheme: True0Number of ver troms:000Number of ver troms:00Number of ver troms:00Number of open flues:00Number of station fans:0Number of states:0.39Number of states:0.39Delier states:5.39States:0.39Number of states:0.39Delier states:0.39Number of states:0.39Number of states:0.39Number of states:0.39Number of states:0.39Delier states:0.39Number of states:0.39Number of states:0.39Number of states:0.39States:0.39	[Approved]	13.1	-0.09	E17	Corner (inverted internal area greater than external area)
18.4 0 P4 Reof (insulation at ceiling level) 18.4 0 P1 Ground floor 36.8 0 P2 Intermediate floor within a dwelling Ventilation: Pressure test: Yes (As designed) Ventilation: Balanced with heat recovery Intermediate floor within a dwelling Number of chimneys: 0 Ductwork: insulation, rigid Approved Installation Scheme: True Number of open flues: 0 Outwork: insulation, rigid Approved Installation Scheme: True Number of passive stacks: 0 Outwork: insulation at ceiling soft that type was used) Main heating system: Main heating system: Boiler systems with radiators or underfloor heating Gas boilers and oil boilers Fuel: mains gas Info Source: Boiler Database Info Source: Boiler Database Database: (rev 418, product index 016836) Efficiency: Winter 79.6 % Summer: 90.3 Brand name: Wailer Will Bit 86/5-5 (Regular boiler) Underfloor heating and radiators, pipes in screed above insulation Central heating pump: 2013 or later Boiler interlook: Yes Wather Compensator Main heating Control: Time and temperature zone control by suitable arrangement of plumbing and electrical servic	[Approved]	12.2	0	E15	Flat roof with parapet
18.4 0 P1 Ground floor 36.8 0 P2 Intermediate floor within a dwelling Ventilation: Pressure test: Yes (As designed) Ventilation: Balanced with heat recovery Number of thirmeys: 0 Approved Installation Scheme: True Number of passive stacks: 0 Number of fans: 0 Number of fans: 0 Number of fans: 0 Number of passive stacks: 0 Number of sides sheltered: 3 Pressure test: 5.39 (Average permeability of dwellings of that type was used) Main heating system: Main heating system: Boller systems with radiators or underfloor heating Gas bollers and oil bollers Fuel: mains gas Info Source: Boller Database Database: (Cev 418, product index 016836) Efficiency: Winter 79.6 % Summer: 90.3 Brand name: Vaillant Model: ceoTEC plus 618 Model qualifier: VU GB 186/5-5 (Regular boller) Underfloor heating and radiators, pipes in screed above insulation Central heating pump : 2013 or later Boller interlock: Yes <	[Approved]	12.2	0.16	E5	Ground floor (normal)
36.8 0 P2 Intermediate floor within a dwelling Ventilation: Pressure test: Yes (As designed) Ventilation: Balanced with heat recovery Number of with or of with recovery Number of with neat recovery Number of chimneys: 0 Number of chimneys: 0 Number of fans: 0 Number of sides sheltered: 3 Pressure test: 5.9 (Average permeability of dwellings of that type was used) Main heating system: Boiler systems with radiators or underfloor heating Gas boilers and oil boilers Fuel: mains gas Info Source: Database: Database: (rev 418, product index 016836) Efficiency: Winter 79.6 % Summer: 90.3 Brand name: Vaillant Model qualifier: VU GB 186/5-5 (Regular boiler) Duddrifor heating pump: 2013 or later Boiler interlock: Yes Weather Compensator Main heating Control: Time and temperature zone control by suitable arrangement of plumbing and electrical services Secondary heating system: None		18.4	0	P4	Roof (insulation at ceiling level)
Ventilation: Yes (Ås designed) Pressure test: Yes (Ås designed) Balanced with heat recovery Number of wet rooms: Kitchen + 3 Ductwork: Insulation, rigid Approved Installation Scheme: True Number of open flues: 0 Number of passive stacks: 0 Number of fans: 0 Number of sides sheltered: 3 Pressure test: 5.39 (Average permeability of dwellings of that type was used) Main heating system: Boiler systems with radiators or underfloor heating Gas boilers and oil boilers Fuel: mains gas Info Source: Boiler Database Database: (rev 418, product index 016836) Efficiency: Winter 79.6 % Summer: 90.3 Brand name: Vaillant Model qualifier: VU GB 186/5-5 (Regular boiler) Underfloor heating and radiators, pipes in screed above insulation Central heating pump : 2013 or later Boiler interlock: Yes Weather Compensator Yes exvices Control code: 2110 Secondary heating system: Secondary heating system: None		18.4	0	P1	Ground floor
Pressure test: Yes (As designed) Ventilation: Balanced with heat recovery Number of wet rooms: Kitchen + 3 Ductwork: Insulation, rigid Approved Installation Scheme: True 0 Number of open flues: 0 Number of passive stacks: 0 Number of sides sheltered: 3 Pressure test: 5.39 (Average permeability of dwellings of that type was used) Main heating system: Boiler systems with radiators or underfloor heating Gas boilers and oil boilers Fue!: mains gas Info Source: Boiler Database: Database: (rev 418, product index 016836) Efficiency: Winter 79.6 % Summer: 90.3 Brand name: Vailant Model: ecoTEC plus 618 Model qualifier: VU GB 186/5-5 (Regular boiler) Underfloor heating and radiators, pipes in screed above insulation Central heating pump : 2013 or later Boiler set (rev 418) Boiler heating control: Time and temperature zone control by suitable arrangement of plumbing and electrical services Control code: 2110 Secondary heating system: None		36.8	0	P2	Intermediate floor within a dwelling
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Gas boilers and oil boilers Fuel: mains gas Info Source: Boiler Database Database: (rev 418, product index 016836) Efficiency: Winter 79.6 % Summer: 90.3 Brand name: Vaillant Model: ecoTEC plus 618 Model qualifier: VU GB 186/5-5 (Regular boiler) Underfloor heating and radiators, pipes in screed above insulation Central heating pump : 2013 or later Boiler interlock: Yes Weather Compensator Main heating Control: Time and temperature zone control by suitable arrangement of plumbing and electrical services control code: 2110 Secondary heating system: None		·	5 1	5	
Main heating Control: Time and temperature zone control by suitable arrangement of plumbing and electrical services Control code: 2110 Secondary heating system: Secondary heating system:	Main heating system:	Gas boilers Fuel: mains Info Source Database: (Brand name Model: eco Model quali (Regular bo Underfloor Central hea Boiler interl	and oil boilers gas : Boiler Datab rev 418, prod e: Vaillant FEC plus 618 fier: VU GB 18 iler) heating and ra ting pump : 2 ock: Yes	s pase luct index (36/5-5 adiators, pi	016836) Efficiency: Winter 79.6 % Summer: 90.3 pes in screed above insulation
services Control code: 2110 Secondary heating system: Secondary heating system:	Main heating Control:				
Secondary heating system: None	Main heating Control:	services		one control	by suitable arrangement of plumbing and electrical
	Secondary heating system:				
Water heating:		None			

Water heating:

From main heating system





Water code: 901 Fuel :mains gas Hot water cylinder Cylinder volume: 150 litres Cylinder insulation: Measured loss, 1.3kWh/day Primary pipework insulation: True Cylinderstat: True Cylinder in heated space: True Solar panel: False

Others:

Electricity tariff: In Smoke Control Area: Conservatory: Low energy lights: Terrain type: EPC language: Wind turbine: Photovoltaics: Standard Tariff Unknown No conservatory 100% Low rise urban / suburban English No <u>Photovoltaic 1</u> Installed Peak power: 1.08 Tilt of collector: 30° Overshading: Modest Collector Orientation: South West No

Assess Zero Carbon Home:

SAP 2012 Overheating Assessment



Calculated by Stroma FSAP 2012 program, produced and printed on 19 October 2017

Property Details: Unit 5

Dwelling type: Located in: Region: Cross ventilation pos Number of storeys: Front of dwelling face Overshading: Overhangs: Thermal mass parame Night ventilation: Blinds, curtains, shut Ventilation rate during Overheating Details:	es: eter: ters:	ather (a	ch):	Mid-terrace England Thames va Yes 3 South Wes Average or None Indicative V False 8 (Window	llley t unknown			
Summer ventilation h Transmission heat lo			ent:	1030.34 82.1			(P [.]	1)
Summer heat loss co				1112.46			(P2	2)
Overhangs:								
Orientation: South West (Front) South East (Side) North East (Rear) Horizontal (Roof light) Solar shading:	Ratio: 0 0 0		Z_overhangs: 1 1 1 1					
Orientation:	Z blind	ls:	Solar access:	Over	hangs:	Z summer:		
South West (Front)	1		0.9	1		0.9	(Pa	•
South East (Side) North East (Rear) Horizontal (Roof light) Solar gains:	1 1 1		0.9 0.9 1	1 1 1		0.9 0.9 1	(Pa (Pa (Pa	B)
North East (Rear) Horizontal (Roof light) Solar gains:	1	Δrea	0.9 1	1	FF	0.9 1	(P8 (P8	B)
North East (Rear) Horizontal (Roof light) Solar gains: Orientation South West (Front) South East (Side) North East (Rear)	1	Area 9.5 4.1 4.6 16.2	0.9	1	FF 0.8 0.8 0.8 0.8 0.8	0.9	(Pa	8) 8)
North East (Rear) Horizontal (Roof light) Solar gains: Orientation South West (Front) South East (Side)	1 1 0.9 x 0.9 x 0.9 x 0.9 x	9.5 4.1 4.6	0.9 1 Flux 119.92 119.92 98.85	1 1 9_ 0.76 0.76 0.76 0.76	0.8 0.8 0.8	0.9 1 Shading 0.9 0.9 0.9 0.9 1	(Pa (Pa 561.06 242.14 223.92 1799.52	8) 8)

PB Sustainability Ltd info@pbsustainability.co.uk 0151 691 6685 SAP 2012 Overheating Assessment



Assessment of likelihood of high internal temperature:

<u>Medium</u>

Regulations Compliance Report



Approved Document L1A, 2013 Edition, England assessed by Stroma FSAP 2012 program, Version: 1.0.4.10 *Printed on 19 October 2017 at 10:12:11*

ssessed By:	Paul Byrne (STR	O011431)	Building Type:	End-terrace House
Dwelling Details:				
EW DWELLING			Total Floor Area: 14	-
ite Reference :	1-8 College Yard		Plot Reference:	Unit 6
ddress :	6, College Yard,	LONDON, NW5 1BR		
Client Details:				
lame:	GML Architects			
ddress :	Unit 3, 1-4 Christ	ina Street, London, EC2A 4PA		
his report cove	rs items included v	within the SAP calculations.		
is not a comple	ete report of regula	tions compliance.		
1a TER and DEI	R			
	ting system: Mains	gas		
uel factor: 1.00 (U ,			
-	oxide Emission Rate		15.3 kg/m ²	01/
1b TFEE and DF	Dioxide Emission Ra	ate (DER)	10.86 kg/m ²	OK
	ergy Efficiency (TFE	F)	55.3 kWh/m²	
•	nergy Efficiency (DF		41.2 kWh/m ²	
U	<i></i>	,		OK
2 Fabric U-value	es			
Element		Average	Highest	
External		0.16 (max. 0.30)	0.16 (max. 0.70)	OK
Party wa	11	0.00 (max. 0.20)	-	OK
Floor Roof		0.12 (max. 0.25) 0.15 (max. 0.20)	0.12 (max. 0.70) 0.15 (max. 0.35)	OK OK
Opening	s	1.44 (max. 2.00)	1.60 (max. 3.30)	OK
2a Thermal brid				
		from linear thermal transmittan	ces for each junction	
3 Air permeabili			,	
Air permea	bility at 50 pascals		5.39 (measured i	n this dwelling)
Maximum			10.0	OK
4 Heating efficie	ency			
Main Heati		Database: (rev 418, produc	t index 016836):	
			s or underfloor heating - mai	ins gas
		Brand name: Vaillant		
		Model: ecoTEC plus 618 Model qualifier: VU GB 186	/5_5	
		(Regular)		
		Efficiency 89.3 % SEDBUK	2009	
		Minimum 88.0 %		OK
	heating system:	None		

Regulations Compliance Report



5 Cylinder insulation			
Hot water Storage:	Measured cylinder loss: 1.	•	
	Permitted by DBSCG: 1.89	9 kWh/day	OK
Primary pipework insulated:	Yes		ОК
6 Controls			
Space heating controls Hot water controls:	TTZC by plumbing and ele Cylinderstat		OK OK
	Independent timer for DHV	/V	OK
Boiler interlock:	Yes		OK
7 Low energy lights			
Percentage of fixed lights with lo	ow-energy fittings	100.0%	01/
Minimum		75.0%	ОК
8 Mechanical ventilation			
Continuous supply and extract s	ystem		
Specific fan power:		0.73	
Maximum		1.5	OK
MVHR efficiency:		88%	
Minimum		70%	OK
9 Summertime temperature			
Overheating risk (Thames valley	<i>י</i>):	Medium	OK
Based on:			
Overshading:		Average or unknown	
Windows facing: South West		9.6m ²	
Windows facing: South East		4.1m ²	
Windows facing: North East		4.6m ²	
Roof windows facing: Horizontal		14.6m ²	
Ventilation rate:		8.00	
Blinds/curtains:			
		Closed 100% of daylight hours	
10 Key features			
Doors U-value		1 W/m²K	
Party Walls U-value		0 W/m²K	
Floors U-value		0.12 W/m²K	
Photovoltaic array			



Assessor and House Details Assessor Name: Paul Byrne Property Address: 6, College Yard LONDON NW5 1BR Buiding regulation assessment

	kg/m²/year
TER	15.3
DER	10.86
ENE 1 Assessment - Dwelling Emission Rate	

Total Energy Type CO₂ Emissions for Codes Levels 1 - 5

	%	kg/m²/year	
DER from SAP 2012 DER Worksheet		10.86	(ZC1)
TER		15.3	
Residual CO2 emissions offset from biofuel CHP		0	(ZC5)
CO2 emissions offset from additional allowable electricty generation		0	(ZC7)
Total CO2 emissions offset from SAP Section 16 allowances		0	
DER accounting for SAP Section 16 allowances		10.86	
% improvement DER/TER	29		

Total Energy Type CO2 Emissions for Codes Levels 6

	kg/m²/year	
DER accounting for SAP Section 16 allowances	10.86	(ZC1)
CO2 emissions from appliances, equation (L14)	0	(ZC2)
CO2 emissions from cooking, equation (L16)	0	(ZC3)
Net CO2 emissions	0	(ZC8)

Result:

Credits awarded for ENE 1 = 3.7

Code Level = 4

ENE 2 - Fabric energy Efficiency

Fabric energy Efficiency: 41.15

Credits awarded for ENE 2 = 8.2

ENE 7 - Low or Zero Carbon (LZC) Technologies

Reduction in CO2 Emissions

	%	kg/m²/year	
Standard Case CO2 emissions		28.16	
Standard DER		14.16	
Actual Case CO2 emissions		25.66	
Actual DER		11.66	
Reduction in CO2 emissions	8.88		

Credits awarded for ENE 7 = 0

Technologies eligible to contribute to achieving the requirements of this issue must produce energy from renewable sources and meet all other ancillary requirements as defined by Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC.

The following requirements must also be met:

• Where not provided by accredited external renewables there must be a direct supply of energy produced to the dwelling under assessment.

Where covered by the Microgeneration Certification Scheme (MCS), technologies under 50kWe or 300kWth must be certified

• Combined Heat and Power (CHP) schemes above 50kWe must be certified under the CHPQA standard.

All technologies must be accounted for by SAP.

CHP schemes fuelled by mains gas are eligible to contribute to performance against this issue. Where these schemes are above 50kWe they must be certified under the CHPQA. It is the responsibly of the Accredited OCDEA and Code Assessor to ensure all technologies use in the calculation are appropriate before awarding credits.

SAP Input



Property Details	: Unit 6					
Address: Located in: Region: UPRN: Date of assess Date of certifi Assessment ty Transaction ty Tenure type: Related party Thermal Mass Water use <= PCDF Version	cate: ype: ype: disclosure: Parameter: 125 litres/person.	6, College Yard, LONDON England Thames valley 1519854578 19 October 2017 19 October 2017 New dwelling as built New dwelling Unknown No related party Indicative Value Low /day: True 418	I, NW5 1BR			
Property descrip	tion:					
Dwelling type: Detachment: Year Completec Floor Locatior		House End-terrace 2017 Floor area:	S	torey height	:	
Basement floor Floor 1 Floor 2		55.5 m² 45.2 m² 46.9 m²		2.5 m 2.7 m 2.7 m		
Living area: Front of dwellin	g faces:	55.5 m ² (fraction 0.376) South West				
Opening types:						
Name: Front door Front Side Rear Roof light	Source: Manufacturer Manufacturer Manufacturer Manufacturer Manufacturer	Type: Solid Windows Windows Windows Roof Windows	Glazing: double-glazed double-glazed double-glazed double-glazed	d d	Argon: Yes Yes Yes Yes	Frame:
Name: Front door Front Side Rear Roof light	Gap: mm	Frame Facto 0.7 0.8 0.8 0.8 0.8 0.8	r: g-value: 0 0.76 0.76 0.76 0.76 0.76	U-value: 1 1.6 1.6 1.6 1.3	Area: 2.1 9.6 4.1 4.6 14.6	No. of Openings: 1 1 1 1 1
Name: Front door Front Side Rear Roof light	Type-Name:	Location: External wall External wall External wall External wall Flat roof	Orient: South West South West South East North East Horizontal		Width: 0 0 0 0 0	Height: 0 0 0 0 0
Overshading: Opaque Elemen	ts:	Average or unknown				
Type: External Elemer Basement wall	<u>nts</u> 29.4 (oenings: Net area:	U-value: 0.16	Ru value:	Curtain False	N/A
External wall	144.4	20.4 124	0.16	0	False	N/A

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info@pbsustainability.co.uk	(
0151 691 6685	

SAP Input



Flat roof	57.9	14.6	43.3	0.15	0	N/A
Ground floor	55.5			0.12		N/A
Internal Elements						
Party Elements						
Party wall	79.9					N/A

Thermal bridges:

Thermal bridges:								
Thermal bridges:	User-define	User-defined (individual PSI-values) Y-Value = 0.0405						
	Length							
[Approved]	9.8	0.3	E2	Other lintels (including other steel lintels)				
[Approved]	4.7	0.04	E3	Sill				
[Approved]	21.7	0.05	E4	Jamb				
[Approved]	39.7	0.07	E6	Intermediate floor within a dwelling				
[Approved]	22.9	0.09	E16	Corner (normal)				
[Approved]	13.1	-0.09	E17	Corner (inverted internal area greater than external area)				
[Approved]	22.3	0	E15	Flat roof with parapet				
[Approved]	23.4	0.16	E5	Ground floor (normal)				
	9.2	0	P4	Roof (insulation at ceiling level)				
	9.2	0	P1	Ground floor				
	18.4	0	P2	Intermediate floor within a dwelling				
Ventilation:								
Pressure test:		Yes (As built)						
Ventilation:		ith heat recov						
		wet rooms: Ki						
		Ductwork: Insulation, rigid						
		Approved Installation Scheme: True						
Number of chimneys:								
Number of open flues:	0							
Number of fans:		0						
Number of passive stacks:	0							
Number of sides sheltered:	2							
Pressure test: 5.39 (Assessed dwelling is tested)								
Main heating system:								
Main heating system:	Boiler syste	Boiler systems with radiators or underfloor heating						
	Gas boilers	Gas boilers and oil boilers						
	Fuel: mains	Fuel: mains gas						
		Info Source: Boiler Database						
	Database:	Database: (rev 418, product index 016836) Efficiency: Winter 79.6 % Summer: 90.3						
		Brand name: Vaillant						
	Model: ecoTEC plus 618							
	Model qualifier: VU GB 186/5-5							
	(Regular boiler)							
	Underfloor	Underfloor heating and radiators, pipes in screed above insulation						
	Central hea	ting pump : 2	013 or late	r				
	Boiler inter	ock: Yes						
	Weather Co	ompensator						
Main heating Control:								
Main heating Control:	Time and te	Time and temperature zone control by suitable arrangement of plumbing and electrical						
	services							
	Control cod	e: 2110						
Secondary heating system:								
Secondary heating system:	None							
Water heating:								
Mator boating:	Erom main	heating system	m					

Water heating:

From main heating system





Water code: 901 Fuel :mains gas Hot water cylinder Cylinder volume: 150 litres Cylinder insulation: Measured loss, 1.3kWh/day Primary pipework insulation: True Cylinderstat: True Cylinder in heated space: True Solar panel: False

Others:

Electricity tariff: In Smoke Control Area: Conservatory: Low energy lights: Terrain type: EPC language: Wind turbine: Photovoltaics: Standard Tariff Unknown No conservatory 100% Low rise urban / suburban English No <u>Photovoltaic 1</u> Installed Peak power: 1.08 Tilt of collector: 30° Overshading: Modest Collector Orientation: South West No

Assess Zero Carbon Home:

SAP 2012 Overheating Assessment



Calculated by Stroma FSAP 2012 program, produced and printed on 19 October 2017

Property Details: Unit 6

Dwelling type: Located in: Region: Cross ventilation pos Number of storeys: Front of dwelling face Overshading: Overhangs: Thermal mass parame Night ventilation: Blinds, curtains, shut Ventilation rate during Overheating Details:	es: eter: ters: g hot we	·	<i>.</i>	End-terrac England Thames va Yes 3 South Wes Average of None Indicative False 8 (Window	alley st ^ unknown		(P1)
Transmission heat loss coefficient:				97			
Summer heat loss coefficient: Overhangs:				1119.77			(P2)
	.		_ .				
Orientation: South West (Front) South East (Side) North East (Rear) Horizontal (Roof light) Solar shading:	Ratio: 0 0 0 0		Z_overhangs: 1 1 1 1				
Orientation:	Z blind	le ·	Solar access:	Ove	hangs:	Z summer:	
South West (Front) South East (Side) North East (Rear) Horizontal (Roof light) Solar gains:	2 binic 1 1 1 1	15.	0.9 0.9 0.9 1	1 1 1 1	nangs.	0.9 0.9 0.9 1	(P8) (P8) (P8) (P8)
		Aree	Elux	~	FF	Shading	Caina
Orientation South West (Front) South East (Side) North East (Rear)	0.9 x 0.9 x 0.9 x 1 x	Area 9.6 4.1 4.6 14.6	Flux 119.92 119.92 98.85 203	g 0.76 0.76 0.76 0.76	FF 0.8 0.8 0.8 0.8	Shading 0.9 0.9 0.9 1 Total	Gains 566.97 242.14 223.92 1621.79 2654.83 (P3/P4)
Internal gains:							
Internal gains Total summer gains Summer gain/loss ratio Mean summer external temperature (Thames valley) Thermal mass temperature increment Threshold temperature Likelihood of high internal temperature				June 613.83 3438.58 3.07 16 1.3 20.37 Not significant		July 589.6 3244.43 2.9 17.9 1.3 22.1 Medium	August599.342919.45(P5)2.61(P6)17.81.321.71(P7)Slight

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Assessment of likelihood of high internal temperature:

<u>Medium</u>