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

Block Compliance WorkSheet: College Yard

User Details

Assessor Name:	Paul Byrne	**Stroma Number:**	STRO011431
Software Name:	Stroma FSAP	**Software Version:**	Version: 1.0.4.12

Calculation Details

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

Calculation Summary

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

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

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 10:13:22

Project Information:

Assessed By: Paul Byrne (STRO011431) **Building Type:** Maisonette

Dwelling Details:

NEW DWELLING AS BUILT Total Floor Area: 75.6m²
Site Reference : 1-8 College Yard **Plot Reference:** Unit 1
Address : 1, College Yard, LONDON, NW5 1BR

Client Details:

Name: GML Architects
Address : Unit 3, 1-4 Christina Street, London, EC2A 4PA

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

1a TER and DER

Fuel for main heating system: Mains gas
Fuel factor: 1.00 (mains gas)

Target Carbon Dioxide Emission Rate (TER)	18.41 kg/m²	
Dwelling Carbon Dioxide Emission Rate (DER)	12.29 kg/m²	**OK**

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	53.3 kWh/m²	
Dwelling Fabric Energy Efficiency (DFEE)	46.7 kWh/m²	
		OK

2 Fabric U-values

Element	Average	Highest	
External wall	0.16 (max. 0.30)	0.16 (max. 0.70)	**OK**
Party wall	0.00 (max. 0.20)	-	**OK**
Floor	0.12 (max. 0.25)	0.12 (max. 0.70)	**OK**
Roof	(no roof)		
Openings	1.53 (max. 2.00)	1.60 (max. 3.30)	**OK**

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air permeability

Air permeability at 50 pascals	7.1m³/m²h (average for dwelling type)	
Maximum	10.0	**OK**

4 Heating efficiency

Main Heating system: Database: (rev 418, product index 016836):
Boiler systems with radiators or underfloor heating - mains gas
Brand name: Vaillant
Model: ecoTEC plus 618
Model qualifier: VU GB 186/5-5
(Regular)
Efficiency 89.3 % SEDBUK2009
Minimum 88.0 % **OK**

Secondary heating system: None

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

Regulations Compliance Report

5 Cylinder insulation

Hot water Storage:	Measured cylinder loss: 1.30 kWh/day	
	Permitted by DBSCG: 1.89 kWh/day	OK
Primary pipework insulated:	Yes	OK

6 Controls

Space heating controls	TTZC by plumbing and electrical services	OK
Hot water controls:	Cylinderstat	OK
	Independent timer for DHW	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 valley):	Medium	OK

Based on:

Overshading:	Average or unknown
Windows facing: South West	5.5m²
Windows facing: South East	5.7m²
Windows facing: North East	4.6m²
Ventilation rate:	4.00
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	

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

Code for Sustainable Homes Report

For use with Nov 2010 addendum 2014 England

Assessor and House Details

Assessor Name: Paul Byrne
Assessor Number: STRO011431
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 CO_2 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
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.

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

SAP Input

Property Details: Unit 1

Address:	1, College Yard, LONDON, NW5 1BR
Located in:	England
Region:	Thames valley
UPRN:	8809854578
Date of assessment:	19 October 2017
Date of certificate:	19 October 2017
Assessment type:	New dwelling as built
Transaction type:	New dwelling
Tenure type:	Unknown
Related party disclosure:	No related party
Thermal Mass Parameter:	Indicative Value Low
Water use <= 125 litres/person/day:	True
PCDF Version:	418

Property description:

Dwelling type:	Maisonette
Detachment:	
Year Completed:	2017

Floor Location:	Floor area:	Storey height:
Floor 0	48 m²	2.5 m
Floor 1	27.6 m²	2.7 m

Living area:	25.4 m² (fraction 0.336)
Front of dwelling faces:	South East

Opening types:

Name:	Source:	Type:	Glazing:	Argon:	Frame:
Front door	Manufacturer	Solid			
Front	Manufacturer	Windows	double-glazed	Yes	
Side	Manufacturer	Windows	double-glazed	Yes	
Rear	Manufacturer	Windows	double-glazed	Yes	

Name:	**Gap:**	**Frame Factor:**	**g-value:**	**U-value:**	**Area:**	**No. of Openings:**
Front door	mm	0.7	0	1	2.1	1
Front		0.8	0.76	1.6	5.5	1
Side		0.8	0.76	1.6	5.7	1
Rear		0.8	0.76	1.6	4.6	1

Name:	Type-Name:	Location:	Orient:	Width:	Height:
Front door		External wall	South East	0	0
Front		External wall	South West	0	0
Side		External wall	South East	0	0
Rear		External wall	North East	0	0

Overshading:	Average or unknown

Opaque Elements:

Type:	Gross area:	Openings:	Net area:	U-value:	Ru value:	Curtain wall:	Kappa:
External Elements							
Basement wall	19.8	0	19.8	0.16	0	False	N/A
External wall	98.5	17.9	80.6	0.16	0	False	N/A
Ground floor	48			0.12			N/A
Internal Elements							
Party Elements							
Party wall	15.2						N/A

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

SAP Input

Party ceiling	48		N/A

Thermal bridges:

Thermal bridges: User-defined (individual PSI-values) Y-Value = 0.0624

	Length	Psi-value		
[Approved]	10.1	0.3	E2	Other lintels (including other steel lintels)
[Approved]	4.1	0.04	E3	Sill
[Approved]	18	0.05	E4	Jamb
[Approved]	15.9	0.16	E5	Ground floor (normal)
	13.2	0	E22	Basement floor
[Approved]	15.2	0.07	E6	Intermediate floor within a dwelling
[Approved]	16.4	0.07	E7	Party floor between dwellings (in blocks of flats)
[Approved]	29.9	0.09	E16	Corner (normal)
[Approved]	12.9	-0.09	E17	Corner (inverted internal area greater than external area)
	6.1	0	P1	Ground floor
	7.5	0	P3	Intermediate floor between dwellings (in blocks of flats)

Ventilation:

Pressure test: Yes (As built)

Ventilation: Balanced with heat recovery
Number of wet rooms: Kitchen + 2
Ductwork: Insulation, rigid
Approved Installation Scheme: True

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 (Average permeability of dwellings of 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
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:

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: None

Water heating:

Water heating: From main heating system
Water code: 901
Fuel :mains gas
Hot water cylinder
Cylinder volume: 150 litres

SAP Input

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

Others:

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

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

SAP 2012 Overheating Assessment

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

Property Details: Unit 1

Dwelling type:	Maisonette
Located in:	England
Region:	Thames valley
Cross ventilation possible:	Yes
Number of storeys:	2
Front of dwelling faces:	South East
Overshading:	Average or unknown
Overhangs:	None
Thermal mass parameter:	Indicative Value Low
Night ventilation:	False
Blinds, curtains, shutters:	
Ventilation rate during hot weather (ach):	4 (Windows open half the time)

Overheating Details:

Summer ventilation heat loss coefficient:	256.77	**(P1)**
Transmission heat loss coefficient:	58.1	
Summer heat loss coefficient:	314.83	**(P2)**

Overhangs:

Orientation:	**Ratio:**	**Z_overhangs:**
South West (Front)	0	1
South East (Side)	0	1
North East (Rear)	0	1

Solar shading:

Orientation:	**Z blinds:**	**Solar access:**	**Overhangs:**	**Z summer:**	
South West (Front)	1	0.9	1	0.9	**(P8)**
South East (Side)	1	0.9	1	0.9	**(P8)**
North East (Rear)	1	0.9	1	0.9	**(P8)**

Solar gains:

Orientation		**Area**	**Flux**	**g_**	**FF**	**Shading**	**Gains**	
South West (Front)	0.9 x	5.5	119.92	0.76	0.8	0.9	324.83	
South East (Side)	0.9 x	5.7	119.92	0.76	0.8	0.9	336.64	
North East (Rear)	0.9 x	4.6	98.85	0.76	0.8	0.9	223.92	
						Total	885.39	**(P3/P4)**

Internal gains:

	June	**July**	**August**	
Internal gains	456.44	439.32	447.18	
Total summer gains	1392.55	1324.71	1247.44	**(P5)**
Summer gain/loss ratio	4.42	4.21	3.96	**(P6)**
Mean summer external temperature (Thames valley)	16	17.9	17.8	
Thermal mass temperature increment	1.3	1.3	1.3	
Threshold temperature	21.72	23.41	23.06	**(P7)**
Likelihood of high internal temperature	**Slight**	**Medium**	**Medium**	

Assessment of likelihood of high internal temperature: Medium

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

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 10:13:09

Project Information:

Assessed By: Paul Byrne (STRO011431) **Building Type:** Maisonette

Dwelling Details:

NEW DWELLING AS BUILT Total Floor Area: 80.6m²
Site Reference : 1-8 College Yard **Plot Reference:** Unit 2
Address : 2, College Yard, LONDON, NW5 1BR

Client Details:

Name: GML Architects
Address : Unit 3, 1-4 Christina Street, London, EC2A 4PA

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

1a TER and DER

Fuel for main heating system: Mains gas
Fuel factor: 1.00 (mains gas)

Target Carbon Dioxide Emission Rate (TER)	19.25 kg/m²	
Dwelling Carbon Dioxide Emission Rate (DER)	11.18 kg/m²	**OK**

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	59.6 kWh/m²	
Dwelling Fabric Energy Efficiency (DFEE)	46.6 kWh/m²	
		OK

2 Fabric U-values

Element	Average	Highest	
External wall	0.16 (max. 0.30)	0.16 (max. 0.70)	**OK**
Party wall	0.00 (max. 0.20)	-	**OK**
Floor	(no floor)		
Roof	0.15 (max. 0.20)	0.15 (max. 0.35)	**OK**
Openings	1.55 (max. 2.00)	1.60 (max. 3.30)	**OK**

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air permeability

Air permeability at 50 pascals	5.08 (measured in this dwelling)	
Maximum	10.0	**OK**

4 Heating efficiency

Main Heating system: Database: (rev 418, product index 016836):
Boiler systems with radiators or underfloor heating - mains gas
Brand name: Vaillant
Model: ecoTEC plus 618
Model qualifier: VU GB 186/5-5
(Regular)
Efficiency 89.3 % SEDBUK2009
Minimum 88.0 % **OK**

Secondary heating system: None

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

Regulations Compliance Report

5 Cylinder insulation

Hot water Storage:	Measured cylinder loss: 1.30 kWh/day	
	Permitted by DBSCG: 1.89 kWh/day	OK
Primary pipework insulated:	Yes	OK

6 Controls

Space heating controls	TTZC by plumbing and electrical services	OK
Hot water controls:	Cylinderstat	OK
	Independent timer for DHW	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 valley):	Medium	OK

Based on:

Overshading:	Average or unknown
Windows facing: South West	7.4m²
Windows facing: North West	1.2m²
Windows facing: South East	14.9m²
Windows facing: North East	4.6m²
Roof windows facing: Horizontal	1.4m²
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
Photovoltaic array	

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

Code for Sustainable Homes Report

For use with Nov 2010 addendum 2014 England

Assessor and House Details

Assessor Name: Paul Byrne
Assessor Number: STRO011431
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 CO_2 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 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.

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

SAP Input

Property Details: Unit 2

Address:	2, College Yard, LONDON, NW5 1BR
Located in:	England
Region:	Thames valley
UPRN:	5909854578
Date of assessment:	19 October 2017
Date of certificate:	19 October 2017
Assessment type:	New dwelling as built
Transaction type:	New dwelling
Tenure type:	Unknown
Related party disclosure:	No related party
Thermal Mass Parameter:	Indicative Value Low
Water use <= 125 litres/person/day:	True
PCDF Version:	418

Property description:

Dwelling type:	Maisonette
Detachment:	
Year Completed:	2017

Floor Location:	Floor area:	Storey height:
Floor 0	25.1 m²	2.5 m
Floor 1	55.5 m²	2.7 m

Living area:	26 m² (fraction 0.323)
Front of dwelling faces:	South West

Opening types:

Name:	Source:	Type:	Glazing:	Argon:	Frame:
Front door	Manufacturer	Solid			
Front	Manufacturer	Windows	double-glazed	Yes	
Side	Manufacturer	Windows	double-glazed	Yes	
Side	Manufacturer	Windows	double-glazed	Yes	
Rear	Manufacturer	Windows	double-glazed	Yes	
Roof light	Manufacturer	Roof Windows	double-glazed	Yes	

Name:	**Gap:**	**Frame Factor:**	**g-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
Front		External wall	South West	0	0
Side		External wall	North West	0	0
Side		External wall	South East	0	0
Rear		External wall	North East	0	0
Roof light		Flat roof	Horizontal	0.001	0

Overshading:	Average or unknown

Opaque Elements:

Type:	Gross area:	Openings:	Net area:	U-value:	Ru value:	Curtain wall:	Kappa:
External Elements							
External wall	86.6	30.2	56.4	0.16	0	False	N/A

SAP Input

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: User-defined (individual PSI-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
	9.2	0	P3	Intermediate floor between dwellings (in blocks of flats)
	9.2	0	P4	Roof (insulation at ceiling level)

Ventilation:

Pressure test: Yes (As built)

Ventilation: Balanced with heat recovery
Number of wet rooms: Kitchen + 2
Ductwork: Insulation, rigid
Approved Installation Scheme: True

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 (Assessed dwelling is tested)

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
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:

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: None

Water heating:

Water heating: From main heating system
Water code: 901

SAP Input

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

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

SAP 2012 Overheating Assessment

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

Property Details: Unit 2

Dwelling type:	Maisonette
Located in:	England
Region:	Thames valley
Cross ventilation possible:	Yes
Number of storeys:	2
Front of dwelling faces:	South West
Overshading:	Average or unknown
Overhangs:	None
Thermal mass parameter:	Indicative Value Low
Night ventilation:	False
Blinds, curtains, shutters:	
Ventilation rate during hot weather (ach):	8 (Windows fully open)

Overheating Details:

Summer ventilation heat loss coefficient:	561.26	**(P1)**
Transmission heat loss coefficient:	72.9	
Summer heat loss coefficient:	634.17	**(P2)**

Overhangs:

Orientation:	**Ratio:**	**Z_overhangs:**
South West (Front)	0	1
North West (Side)	0	1
South East (Side)	0	1
North East (Rear)	0	1
Horizontal (Roof light)	0	1

Solar shading:

Orientation:	**Z blinds:**	**Solar access:**	**Overhangs:**	**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)	1	0.9	1	0.9	**(P8)**
North East (Rear)	1	0.9	1	0.9	**(P8)**
Horizontal (Roof light)	1	1	1	1	**(P8)**

Solar gains:

Orientation		**Area**	**Flux**	**g_**	**FF**	**Shading**	**Gains**	
South West (Front)	0.9 x	7.4	119.92	0.76	0.8	0.9	437.04	
North West (Side)	0.9 x	1.2	98.85	0.76	0.8	0.9	58.42	
South East (Side)	0.9 x	14.9	119.92	0.76	0.8	0.9	879.98	
North East (Rear)	0.9 x	4.6	98.85	0.76	0.8	0.9	223.92	
	1 x	1.4	203	0.76	0.8	1	155.51	
						Total	1754.88	**(P3/P4)**

Internal gains:

	June	**July**	**August**	
Internal gains	473.77	455.89	464.01	
Total summer gains	2327.36	2210.77	2056.14	**(P5)**
Summer gain/loss ratio	3.67	3.49	3.24	**(P6)**
Mean summer external temperature (Thames valley)	16	17.9	17.8	

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

SAP 2012 Overheating Assessment

Thermal mass temperature increment	1.3	1.3	1.3
Threshold temperature	20.97	22.69	22.34 **(P7)**
Likelihood of high internal temperature	**Slight**	**Medium**	**Medium**

Assessment of likelihood of high internal temperature: Medium

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

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 10:12:53

Project Information:

Assessed By: Paul Byrne (STRO011431) **Building Type:** Mid-terrace House

Dwelling Details:

NEW DWELLING AS BUILT Total Floor Area: 148.8m²
Site Reference : 1-8 College Yard **Plot Reference:** Unit 3
Address : 3, College Yard, LONDON, NW5 1BR

Client Details:

Name: GML Architects
Address : Unit 3, 1-4 Christina Street, London, EC2A 4PA

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

1a TER and DER

Fuel for main heating system: Mains gas
Fuel factor: 1.00 (mains gas)

Target Carbon Dioxide Emission Rate (TER)	13.53 kg/m²	
Dwelling Carbon Dioxide Emission Rate (DER)	7.29 kg/m²	**OK**

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	46.9 kWh/m²	
Dwelling Fabric Energy Efficiency (DFEE)	35.0 kWh/m²	
		OK

2 Fabric U-values

Element	Average	Highest	
External wall	0.16 (max. 0.30)	0.16 (max. 0.70)	**OK**
Party wall	0.00 (max. 0.20)	-	**OK**
Floor	0.12 (max. 0.25)	0.12 (max. 0.70)	**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 bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air permeability

Air permeability at 50 pascals	7.4m³/m²h (average for dwelling type)	
Maximum	10.0	**OK**

4 Heating efficiency

Main Heating system: Database: (rev 418, product index 016836):
Boiler systems with radiators or underfloor heating - mains gas
Brand name: Vaillant
Model: ecoTEC plus 618
Model qualifier: VU GB 186/5-5
(Regular)
Efficiency 89.3 % SEDBUK2009
Minimum 88.0 % **OK**

Secondary heating system: None

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

Regulations Compliance Report

5 Cylinder insulation

Hot water Storage:	Measured cylinder loss: 1.30 kWh/day	
	Permitted by DBSCG: 1.89 kWh/day	OK
Primary pipework insulated:	Yes	OK

6 Controls

Space heating controls	TTZC by plumbing and electrical services	OK
Hot water controls:	Cylinderstat	OK
	Independent timer for DHW	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:	0.73	
Maximum	1.5	OK
MVHR efficiency:	88%	
Minimum	70%	OK

9 Summertime temperature

Overheating risk (Thames valley):	Medium	OK

Based on:

Overshading:	Average or unknown
Windows facing: South West	9.5m²
Windows facing: South East	4.1m²
Windows facing: North East	4.6m²
Roof windows facing: Horizontal	16.2m²
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	

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

Code for Sustainable Homes Report

For use with Nov 2010 addendum 2014 England

Assessor and House Details

Assessor Name: Paul Byrne
Assessor Number: STRO011431
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 CO_2 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.

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

SAP Input

Property Details: Unit 3

Address:	3, College Yard, LONDON, NW5 1BR
Located in:	England
Region:	Thames valley
UPRN:	9019854578
Date of assessment:	19 October 2017
Date of certificate:	19 October 2017
Assessment type:	New dwelling as built
Transaction type:	New dwelling
Tenure type:	Unknown
Related party disclosure:	No related party
Thermal Mass Parameter:	Indicative Value Low
Water use <= 125 litres/person/day:	True
PCDF Version:	418

Property description:

Dwelling type:	House
Detachment:	Mid-terrace
Year Completed:	2017

Floor Location:	Floor area:	Storey height:
Basement floor	57.4 m²	2.5 m
Floor 1	44.9 m²	2.7 m
Floor 2	46.5 m²	2.7 m

Living area:	57.4 m² (fraction 0.508)
Front of dwelling faces:	South West

Opening types:

Name:	Source:	Type:	Glazing:	Argon:	Frame:
Front door	Manufacturer	Solid			
Front	Manufacturer	Windows	double-glazed	Yes	
Side	Manufacturer	Windows	double-glazed	Yes	
Rear	Manufacturer	Windows	double-glazed	Yes	
Roof light	Manufacturer	Roof Windows	double-glazed	Yes	

Name:	**Gap:**	**Frame Factor:**	**g-value:**	**U-value:**	**Area:**	**No. of Openings:**
Front door	mm	0.7	0	1	2.1	1
Front		0.8	0.76	1.6	9.5	1
Side		0.8	0.76	1.6	4.1	1
Rear		0.8	0.76	1.6	4.6	1
Roof light		0.8	0.76	1.3	16.2	1

Name:	Type-Name:	Location:	Orient:	Width:	Height:
Front door		External wall	South West	0	0
Front		External wall	South West	0	0
Side		External wall	South East	0	0
Rear		External wall	North East	0	0
Roof light		Flat roof	Horizontal	0	0

Overshading:	Average or unknown

Opaque Elements:

Type:	Gross area:	Openings:	Net area:	U-value:	Ru value:	Curtain wall:	Kappa:
External Elements							
Basement wall	13.7	0	13.7	0.16	0	False	N/A
External wall	80.5	20.3	60.2	0.16	0	False	N/A

SAP Input

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: User-defined (individual PSI-values) Y-Value = 0.0405

	Length	Psi-value		
[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 designed)

Ventilation: Balanced with heat recovery
Number of wet rooms: Kitchen + 3
Ductwork: Insulation, rigid
Approved Installation Scheme: True

Number of chimneys: 0

Number of open flues: 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: 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
Weather Compensator

Main heating Control:

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: None

Water heating:

Water heating: From main heating system

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

SAP Input

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

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

SAP 2012 Overheating Assessment

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

Property Details: Unit 3

Dwelling type:	Mid-terrace House
Located in:	England
Region:	Thames valley
Cross ventilation possible:	Yes
Number of storeys:	3
Front of dwelling faces:	South West
Overshading:	Average or unknown
Overhangs:	None
Thermal mass parameter:	Indicative Value Low
Night ventilation:	False
Blinds, curtains, shutters:	
Ventilation rate during hot weather (ach):	8 (Windows fully open)

Overheating Details:

Summer ventilation heat loss coefficient:	1030.34	**(P1)**
Transmission heat loss coefficient:	83.3	
Summer heat loss coefficient:	1113.61	**(P2)**

Overhangs:

Orientation:	**Ratio:**	**Z_overhangs:**
South West (Front)	0	1
South East (Side)	0	1
North East (Rear)	0	1
Horizontal (Roof light)	0	1

Solar shading:

Orientation:	**Z blinds:**	**Solar access:**	**Overhangs:**	**Z summer:**	
South West (Front)	1	0.9	1	0.9	**(P8)**
South East (Side)	1	0.9	1	0.9	**(P8)**
North East (Rear)	1	0.9	1	0.9	**(P8)**
Horizontal (Roof light)	1	1	1	1	**(P8)**

Solar gains:

Orientation		**Area**	**Flux**	**g_**	**FF**	**Shading**	**Gains**	
South West (Front)	0.9 x	9.5	119.92	0.76	0.8	0.9	561.06	
South East (Side)	0.9 x	4.1	119.92	0.76	0.8	0.9	242.14	
North East (Rear)	0.9 x	4.6	98.85	0.76	0.8	0.9	223.92	
	1 x	16.2	203	0.76	0.8	1	1799.52	
						Total	2826.65	**(P3/P4)**

Internal gains:

	June	**July**	**August**	
Internal gains	615.56	591.25	601	
Total summer gains	3624.09	3417.9	3067.07	**(P5)**
Summer gain/loss ratio	3.25	3.07	2.75	**(P6)**
Mean summer external temperature (Thames valley)	16	17.9	17.8	
Thermal mass temperature increment	1.3	1.3	1.3	
Threshold temperature	20.55	22.27	21.85	**(P7)**
Likelihood of high internal temperature	**Slight**	**Medium**	**Slight**	

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

SAP 2012 Overheating Assessment

Assessment of likelihood of high internal temperature: Medium

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

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 10:12:39

Project Information:

Assessed By: Paul Byrne (STRO011431) **Building Type:** Mid-terrace House

Dwelling Details:

NEW DWELLING AS BUILT Total Floor Area: 148.8m²
Site Reference : 1-8 College Yard **Plot Reference:** Unit 4
Address : 4, College Yard, LONDON, NW5 1BR

Client Details:

Name: GML Architects
Address : Unit 3, 1-4 Christina Street, London, EC2A 4PA

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

1a TER and DER

Fuel for main heating system: Mains gas
Fuel factor: 1.00 (mains gas)

Target Carbon Dioxide Emission Rate (TER)	13.43 kg/m²	
Dwelling Carbon Dioxide Emission Rate (DER)	7.84 kg/m²	**OK**

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	46.4 kWh/m²	
Dwelling Fabric Energy Efficiency (DFEE)	34.7 kWh/m²	
		OK

2 Fabric U-values

Element	Average	Highest	
External wall	0.16 (max. 0.30)	0.16 (max. 0.70)	**OK**
Party wall	0.00 (max. 0.20)	-	**OK**
Floor	0.12 (max. 0.25)	0.12 (max. 0.70)	**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 bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air permeability

Air permeability at 50 pascals	7.4m³/m²h (average for dwelling type)	
Maximum	10.0	**OK**

4 Heating efficiency

Main Heating system: Database: (rev 418, product index 016836):
Boiler systems with radiators or underfloor heating - mains gas
Brand name: Vaillant
Model: ecoTEC plus 618
Model qualifier: VU GB 186/5-5
(Regular)
Efficiency 89.3 % SEDBUK2009
Minimum 88.0 % **OK**

Secondary heating system: None

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

Regulations Compliance Report

5 Cylinder insulation

Hot water Storage:	Measured cylinder loss: 1.30 kWh/day	
	Permitted by DBSCG: 1.89 kWh/day	OK
Primary pipework insulated:	Yes	OK

6 Controls

Space heating controls	TTZC by plumbing and electrical services	OK
Hot water controls:	Cylinderstat	OK
	Independent timer for DHW	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:	0.73	
Maximum	1.5	OK
MVHR efficiency:	88%	
Minimum	70%	OK

9 Summertime temperature

Overheating risk (Thames valley):	Medium	OK

Based on:

Overshading:	Average or unknown
Windows facing: South West	9.5m²
Windows facing: South East	4.1m²
Windows facing: North East	4.6m²
Roof windows facing: Horizontal	16.2m²
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	

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

Code for Sustainable Homes Report

For use with Nov 2010 addendum 2014 England

Assessor and House Details

Assessor Name: Paul Byrne
Assessor Number: STRO011431
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 CO_2 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.

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

SAP Input

Property Details: Unit 4

Address:	4, College Yard, LONDON, NW5 1BR
Located in:	England
Region:	Thames valley
UPRN:	0319854578
Date of assessment:	19 October 2017
Date of certificate:	19 October 2017
Assessment type:	New dwelling as built
Transaction type:	New dwelling
Tenure type:	Unknown
Related party disclosure:	No related party
Thermal Mass Parameter:	Indicative Value Low
Water use <= 125 litres/person/day:	True
PCDF Version:	418

Property description:

Dwelling type:	House
Detachment:	Mid-terrace
Year Completed:	2017

Floor Location:	Floor area:	Storey height:
Basement floor	57.4 m²	2.5 m
Floor 1	44.9 m²	2.7 m
Floor 2	46.5 m²	2.7 m

Living area:	57.4 m² (fraction 0.508)
Front of dwelling faces:	South West

Opening types:

Name:	Source:	Type:	Glazing:	Argon:	Frame:
Front door	Manufacturer	Solid			
Front	Manufacturer	Windows	double-glazed	Yes	
Side	Manufacturer	Windows	double-glazed	Yes	
Rear	Manufacturer	Windows	double-glazed	Yes	
Roof light	Manufacturer	Roof Windows	double-glazed	Yes	

Name:	**Gap:**	**Frame Factor:**	**g-value:**	**U-value:**	**Area:**	**No. of Openings:**
Front door	mm	0.7	0	1	2.1	1
Front		0.8	0.76	1.6	9.5	1
Side		0.8	0.76	1.6	4.1	1
Rear		0.8	0.76	1.6	4.6	1
Roof light		0.8	0.76	1.3	16.2	1

Name:	Type-Name:	Location:	Orient:	Width:	Height:
Front door		External wall	South West	0	0
Front		External wall	South West	0	0
Side		External wall	South East	0	0
Rear		External wall	North East	0	0
Roof light		Flat roof	Horizontal	0	0

Overshading:	Average or unknown

Opaque Elements:

Type:	Gross area:	Openings:	Net area:	U-value:	Ru value:	Curtain wall:	Kappa:
External Elements							
Basement wall	13.7	0	13.7	0.16	0	False	N/A
External wall	73.3	20.3	53	0.16	0	False	N/A

SAP Input

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: User-defined (individual PSI-values) Y-Value = 0.0419

	Length	Psi-value		
[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 designed)

Ventilation: Balanced with heat recovery
Number of wet rooms: Kitchen + 3
Ductwork: Insulation, rigid
Approved Installation Scheme: True

Number of chimneys: 0

Number of open flues: **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: 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
Weather Compensator

Main heating Control:

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: None

Water heating:

Water heating: From main heating system

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

SAP Input

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

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

SAP 2012 Overheating Assessment

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

Property Details: Unit 4

Dwelling type:	Mid-terrace House
Located in:	England
Region:	Thames valley
Cross ventilation possible:	Yes
Number of storeys:	3
Front of dwelling faces:	South West
Overshading:	Average or unknown
Overhangs:	None
Thermal mass parameter:	Indicative Value Low
Night ventilation:	False
Blinds, curtains, shutters:	
Ventilation rate during hot weather (ach):	8 (Windows fully open)

Overheating Details:

Summer ventilation heat loss coefficient:	1030.34	**(P1)**
Transmission heat loss coefficient:	82.1	
Summer heat loss coefficient:	1112.46	**(P2)**

Overhangs:

Orientation:	**Ratio:**	**Z_overhangs:**
South West (Front)	0	1
South East (Side)	0	1
North East (Rear)	0	1
Horizontal (Roof light)	0	1

Solar shading:

Orientation:	**Z blinds:**	**Solar access:**	**Overhangs:**	**Z summer:**	
South West (Front)	1	0.9	1	0.9	**(P8)**
South East (Side)	1	0.9	1	0.9	**(P8)**
North East (Rear)	1	0.9	1	0.9	**(P8)**
Horizontal (Roof light)	1	1	1	1	**(P8)**

Solar gains:

Orientation		**Area**	**Flux**	**g_**	**FF**	**Shading**	**Gains**	
South West (Front)	0.9 x	9.5	119.92	0.76	0.8	0.9	561.06	
South East (Side)	0.9 x	4.1	119.92	0.76	0.8	0.9	242.14	
North East (Rear)	0.9 x	4.6	98.85	0.76	0.8	0.9	223.92	
	1 x	16.2	203	0.76	0.8	1	1799.52	
						Total	2826.65	**(P3/P4)**

Internal gains:

	June	**July**	**August**	
Internal gains	615.56	591.25	601	
Total summer gains	3624.09	3417.9	3067.07	**(P5)**
Summer gain/loss ratio	3.26	3.07	2.76	**(P6)**
Mean summer external temperature (Thames valley)	16	17.9	17.8	
Thermal mass temperature increment	1.3	1.3	1.3	
Threshold temperature	20.56	22.27	21.86	**(P7)**
Likelihood of high internal temperature	**Slight**	**Medium**	**Slight**	

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

SAP 2012 Overheating Assessment

Assessment of likelihood of high internal temperature: Medium

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

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 10:12:25

Project Information:

Assessed By: Paul Byrne (STRO011431) **Building Type:** Mid-terrace House

Dwelling Details:

NEW DWELLING AS BUILT Total Floor Area: 148.8m²
Site Reference : 1-8 College Yard **Plot Reference:** Unit 5
Address : 5, College Yard, LONDON, NW5 1BR

Client Details:

Name: GML Architects
Address : Unit 3, 1-4 Christina Street, London, EC2A 4PA

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

1a TER and DER

Fuel for main heating system: Mains gas
Fuel factor: 1.00 (mains gas)

Target Carbon Dioxide Emission Rate (TER)	13.43 kg/m²	
Dwelling Carbon Dioxide Emission Rate (DER)	8.46 kg/m²	**OK**

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	46.4 kWh/m²	
Dwelling Fabric Energy Efficiency (DFEE)	34.7 kWh/m²	
		OK

2 Fabric U-values

Element	Average	Highest	
External wall	0.16 (max. 0.30)	0.16 (max. 0.70)	**OK**
Party wall	0.00 (max. 0.20)	-	**OK**
Floor	0.12 (max. 0.25)	0.12 (max. 0.70)	**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 bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air permeability

Air permeability at 50 pascals	7.4m³/m²h (average for dwelling type)	
Maximum	10.0	**OK**

4 Heating efficiency

Main Heating system: Database: (rev 418, product index 016836):
Boiler systems with radiators or underfloor heating - mains gas
Brand name: Vaillant
Model: ecoTEC plus 618
Model qualifier: VU GB 186/5-5
(Regular)
Efficiency 89.3 % SEDBUK2009
Minimum 88.0 % **OK**

Secondary heating system: None

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

Regulations Compliance Report

5 Cylinder insulation

Hot water Storage:	Measured cylinder loss: 1.30 kWh/day	
	Permitted by DBSCG: 1.89 kWh/day	OK
Primary pipework insulated:	Yes	OK

6 Controls

Space heating controls	TTZC by plumbing and electrical services	OK
Hot water controls:	Cylinderstat	OK
	Independent timer for DHW	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:	0.73	
Maximum	1.5	OK
MVHR efficiency:	88%	
Minimum	70%	OK

9 Summertime temperature

Overheating risk (Thames valley):	Medium	OK

Based on:

Overshading:	Average or unknown
Windows facing: South West	9.5m²
Windows facing: South East	4.1m²
Windows facing: North East	4.6m²
Roof windows facing: Horizontal	16.2m²
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	

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

Code for Sustainable Homes Report

For use with Nov 2010 addendum 2014 England

Assessor and House Details

Assessor Name: Paul Byrne
Assessor Number: STRO011431
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 CO_2 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.

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

SAP Input

Property Details: Unit 5

Address:	5, College Yard, LONDON, NW5 1BR
Located in:	England
Region:	Thames valley
UPRN:	7319854578
Date of assessment:	19 October 2017
Date of certificate:	19 October 2017
Assessment type:	New dwelling as built
Transaction type:	New dwelling
Tenure type:	Unknown
Related party disclosure:	No related party
Thermal Mass Parameter:	Indicative Value Low
Water use <= 125 litres/person/day:	True
PCDF Version:	418

Property description:

Dwelling type:	House
Detachment:	Mid-terrace
Year Completed:	2017

Floor Location:	Floor area:	Storey height:
Basement floor	57.4 m²	2.5 m
Floor 1	44.9 m²	2.7 m
Floor 2	46.5 m²	2.7 m

Living area:	57.4 m² (fraction 0.386)
Front of dwelling faces:	South West

Opening types:

Name:	Source:	Type:	Glazing:	Argon:	Frame:
Front door	Manufacturer	Solid			
Front	Manufacturer	Windows	double-glazed	Yes	
Side	Manufacturer	Windows	double-glazed	Yes	
Rear	Manufacturer	Windows	double-glazed	Yes	
Roof light	Manufacturer	Roof Windows	double-glazed	Yes	

Name:	**Gap:**	**Frame Factor:**	**g-value:**	**U-value:**	**Area:**	**No. of Openings:**
Front door	mm	0.7	0	1	2.1	1
Front		0.8	0.76	1.6	9.5	1
Side		0.8	0.76	1.6	4.1	1
Rear		0.8	0.76	1.6	4.6	1
Roof light		0.8	0.76	1.3	16.2	1

Name:	Type-Name:	Location:	Orient:	Width:	Height:
Front door		External wall	South West	0	0
Front		External wall	South West	0	0
Side		External wall	South East	0	0
Rear		External wall	North East	0	0
Roof light		Flat roof	Horizontal	0	0

Overshading:	Average or unknown

Opaque Elements:

Type:	Gross area:	Openings:	Net area:	U-value:	Ru value:	Curtain wall:	Kappa:
External Elements							
Basement wall	13.7	0	13.7	0.16	0	False	N/A
External wall	73.3	20.3	53	0.16	0	False	N/A

SAP Input

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: User-defined (individual PSI-values) Y-Value = 0.0419

	Length	Psi-value		
[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 designed)

Ventilation: Balanced with heat recovery
Number of wet rooms: Kitchen + 3
Ductwork: Insulation, rigid
Approved Installation Scheme: True

Number of chimneys: 0

Number of open flues: **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: 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
Weather Compensator

Main heating Control:

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: None

Water heating:

Water heating: From main heating system

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

SAP Input

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

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

SAP 2012 Overheating Assessment

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

Property Details: Unit 5

Dwelling type:	Mid-terrace House
Located in:	England
Region:	Thames valley
Cross ventilation possible:	Yes
Number of storeys:	3
Front of dwelling faces:	South West
Overshading:	Average or unknown
Overhangs:	None
Thermal mass parameter:	Indicative Value Low
Night ventilation:	False
Blinds, curtains, shutters:	
Ventilation rate during hot weather (ach):	8 (Windows fully open)

Overheating Details:

Summer ventilation heat loss coefficient:	1030.34	**(P1)**
Transmission heat loss coefficient:	82.1	
Summer heat loss coefficient:	1112.46	**(P2)**

Overhangs:

Orientation:	**Ratio:**	**Z_overhangs:**
South West (Front)	0	1
South East (Side)	0	1
North East (Rear)	0	1
Horizontal (Roof light)	0	1

Solar shading:

Orientation:	**Z blinds:**	**Solar access:**	**Overhangs:**	**Z summer:**	
South West (Front)	1	0.9	1	0.9	**(P8)**
South East (Side)	1	0.9	1	0.9	**(P8)**
North East (Rear)	1	0.9	1	0.9	**(P8)**
Horizontal (Roof light)	1	1	1	1	**(P8)**

Solar gains:

Orientation		**Area**	**Flux**	**g_**	**FF**	**Shading**	**Gains**	
South West (Front)	0.9 x	9.5	119.92	0.76	0.8	0.9	561.06	
South East (Side)	0.9 x	4.1	119.92	0.76	0.8	0.9	242.14	
North East (Rear)	0.9 x	4.6	98.85	0.76	0.8	0.9	223.92	
	1 x	16.2	203	0.76	0.8	1	1799.52	
						Total	2826.65	**(P3/P4)**

Internal gains:

	June	**July**	**August**	
Internal gains	615.56	591.25	601	
Total summer gains	3624.09	3417.9	3067.07	**(P5)**
Summer gain/loss ratio	3.26	3.07	2.76	**(P6)**
Mean summer external temperature (Thames valley)	16	17.9	17.8	
Thermal mass temperature increment	1.3	1.3	1.3	
Threshold temperature	20.56	22.27	21.86	**(P7)**
Likelihood of high internal temperature	**Slight**	**Medium**	**Slight**	

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

SAP 2012 Overheating Assessment

Assessment of likelihood of high internal temperature: Medium

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

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

Project Information:

Assessed By: Paul Byrne (STRO011431) **Building Type:** End-terrace House

Dwelling Details:

NEW DWELLING AS BUILT Total Floor Area: 147.6m²
Site Reference : 1-8 College Yard **Plot Reference:** Unit 6
Address : 6, College Yard, LONDON, NW5 1BR

Client Details:

Name: GML Architects
Address : Unit 3, 1-4 Christina Street, London, EC2A 4PA

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

1a TER and DER

Fuel for main heating system: Mains gas
Fuel factor: 1.00 (mains gas)

Target Carbon Dioxide Emission Rate (TER)	15.3 kg/m²	
Dwelling Carbon Dioxide Emission Rate (DER)	10.86 kg/m²	**OK**

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	55.3 kWh/m²	
Dwelling Fabric Energy Efficiency (DFEE)	41.2 kWh/m²	
		OK

2 Fabric U-values

Element	Average	Highest	
External wall	0.16 (max. 0.30)	0.16 (max. 0.70)	**OK**
Party wall	0.00 (max. 0.20)	-	**OK**
Floor	0.12 (max. 0.25)	0.12 (max. 0.70)	**OK**
Roof	0.15 (max. 0.20)	0.15 (max. 0.35)	**OK**
Openings	1.44 (max. 2.00)	1.60 (max. 3.30)	**OK**

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air permeability

Air permeability at 50 pascals	5.39 (measured in this dwelling)	
Maximum	10.0	**OK**

4 Heating efficiency

Main Heating system: Database: (rev 418, product index 016836):
Boiler systems with radiators or underfloor heating - mains gas
Brand name: Vaillant
Model: ecoTEC plus 618
Model qualifier: VU GB 186/5-5
(Regular)
Efficiency 89.3 % SEDBUK2009
Minimum 88.0 % **OK**

Secondary heating system: None

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

Regulations Compliance Report

5 Cylinder insulation

Hot water Storage:	Measured cylinder loss: 1.30 kWh/day	
	Permitted by DBSCG: 1.89 kWh/day	OK
Primary pipework insulated:	Yes	OK

6 Controls

Space heating controls	TTZC by plumbing and electrical services	OK
Hot water controls:	Cylinderstat	OK
	Independent timer for DHW	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:	0.73	
Maximum	1.5	OK
MVHR efficiency:	88%	
Minimum	70%	OK

9 Summertime temperature

Overheating risk (Thames valley):	Medium	OK

Based on:

Overshading:	Average or unknown
Windows facing: South West	9.6m²
Windows facing: South East	4.1m²
Windows facing: North East	4.6m²
Roof windows facing: Horizontal	14.6m²
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	

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

Code for Sustainable Homes Report

For use with Nov 2010 addendum 2014 England

Assessor and House Details

Assessor Name: Paul Byrne
Assessor Number: STRO011431
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 CO_2 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.

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

SAP Input

Property Details: Unit 6

Address:	6, College Yard, LONDON, NW5 1BR
Located in:	England
Region:	Thames valley
UPRN:	1519854578
Date of assessment:	19 October 2017
Date of certificate:	19 October 2017
Assessment type:	New dwelling as built
Transaction type:	New dwelling
Tenure type:	Unknown
Related party disclosure:	No related party
Thermal Mass Parameter:	Indicative Value Low
Water use <= 125 litres/person/day:	True
PCDF Version:	418

Property description:

Dwelling type:	House
Detachment:	End-terrace
Year Completed:	2017

Floor Location:	Floor area:	Storey height:
Basement floor	55.5 m²	2.5 m
Floor 1	45.2 m²	2.7 m
Floor 2	46.9 m²	2.7 m

Living area:	55.5 m² (fraction 0.376)
Front of dwelling faces:	South West

Opening types:

Name:	Source:	Type:	Glazing:	Argon:	Frame:
Front door	Manufacturer	Solid			
Front	Manufacturer	Windows	double-glazed	Yes	
Side	Manufacturer	Windows	double-glazed	Yes	
Rear	Manufacturer	Windows	double-glazed	Yes	
Roof light	Manufacturer	Roof Windows	double-glazed	Yes	

Name:	**Gap:**	**Frame Factor:**	**g-value:**	**U-value:**	**Area:**	**No. of Openings:**
Front door	mm	0.7	0	1	2.1	1
Front		0.8	0.76	1.6	9.6	1
Side		0.8	0.76	1.6	4.1	1
Rear		0.8	0.76	1.6	4.6	1
Roof light		0.8	0.76	1.3	14.6	1

Name:	Type-Name:	Location:	Orient:	Width:	Height:
Front door		External wall	South West	0	0
Front		External wall	South West	0	0
Side		External wall	South East	0	0
Rear		External wall	North East	0	0
Roof light		Flat roof	Horizontal	0	0

Overshading:	Average or unknown

Opaque Elements:

Type:	Gross area:	Openings:	Net area:	U-value:	Ru value:	Curtain wall:	Kappa:
External Elements							
Basement wall	29.4	0	29.4	0.16	0	False	N/A
External wall	144.4	20.4	124	0.16	0	False	N/A

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: User-defined (individual PSI-values) Y-Value = 0.0405

	Length	Psi-value		
[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: Balanced with heat recovery
Number of wet rooms: Kitchen + 3
Ductwork: Insulation, rigid
Approved Installation Scheme: True

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: 5.39 (Assessed dwelling is tested)

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
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:

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: None

Water heating:

Water heating: From main heating system

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

SAP Input

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

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

SAP 2012 Overheating Assessment

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

Property Details: Unit 6

Dwelling type:	End-terrace House
Located in:	England
Region:	Thames valley
Cross ventilation possible:	Yes
Number of storeys:	3
Front of dwelling faces:	South West
Overshading:	Average or unknown
Overhangs:	None
Thermal mass parameter:	Indicative Value Low
Night ventilation:	False
Blinds, curtains, shutters:	
Ventilation rate during hot weather (ach):	8 (Windows fully open)

Overheating Details:

Summer ventilation heat loss coefficient:	1022.79	**(P1)**
Transmission heat loss coefficient:	97	
Summer heat loss coefficient:	1119.77	**(P2)**

Overhangs:

Orientation:	**Ratio:**	**Z_overhangs:**
South West (Front)	0	1
South East (Side)	0	1
North East (Rear)	0	1
Horizontal (Roof light)	0	1

Solar shading:

Orientation:	**Z blinds:**	**Solar access:**	**Overhangs:**	**Z summer:**	
South West (Front)	1	0.9	1	0.9	**(P8)**
South East (Side)	1	0.9	1	0.9	**(P8)**
North East (Rear)	1	0.9	1	0.9	**(P8)**
Horizontal (Roof light)	1	1	1	1	**(P8)**

Solar gains:

Orientation		**Area**	**Flux**	**g_**	**FF**	**Shading**	**Gains**	
South West (Front)	0.9 x	9.6	119.92	0.76	0.8	0.9	566.97	
South East (Side)	0.9 x	4.1	119.92	0.76	0.8	0.9	242.14	
North East (Rear)	0.9 x	4.6	98.85	0.76	0.8	0.9	223.92	
	1 x	14.6	203	0.76	0.8	1	1621.79	
						Total	2654.83	**(P3/P4)**

Internal gains:

	June	**July**	**August**	
Internal gains	613.83	589.6	599.34	
Total summer gains	3438.58	3244.43	2919.45	**(P5)**
Summer gain/loss ratio	3.07	2.9	2.61	**(P6)**
Mean summer external temperature (Thames valley)	16	17.9	17.8	
Thermal mass temperature increment	1.3	1.3	1.3	
Threshold temperature	20.37	22.1	21.71	**(P7)**
Likelihood of high internal temperature	**Not significant**	**Medium**	**Slight**	

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

SAP 2012 Overheating Assessment

Assessment of likelihood of high internal temperature: Medium