PREDICTED ENERGY ASSESSMENT

ATSPACE
DELIVERING BEYOND COMPLIANCE

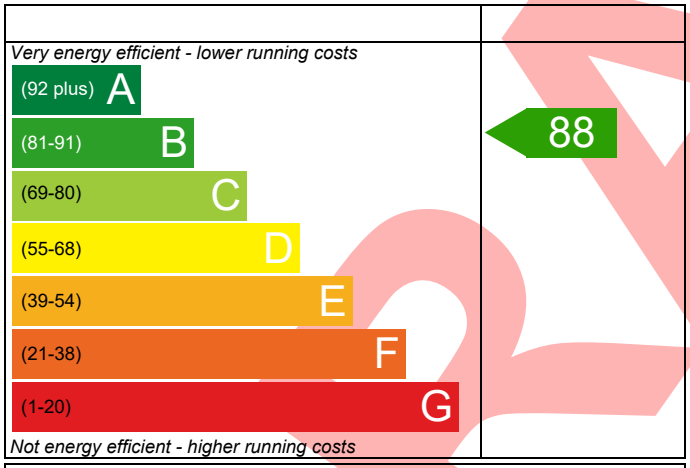
Flat 2, 20 , Shinfield Road,
Reading,
RG2 7BW

Dwelling type:	Flat, Semi-Detached
Date of assessment:	30/06/2023
Produced by:	Paul Whiffin
Total floor area:	70.96 m²

This document is a Predicted Energy Assessment for properties marketed when they are incomplete. It includes a predicted energy rating which might not represent the final energy rating of the property on completion. Once the property is completed, this rating will be updated and an official Energy Performance Certificate will be created for the property. This will include more detailed information about the energy performance of the completed property.

The energy performance has been assessed using the Government approved SAP2012 methodology and is rated in terms of the energy use per square meter of floor area; the energy efficiency is based on fuel costs and the environmental impact is based on carbon dioxide (CO_2) emissions.

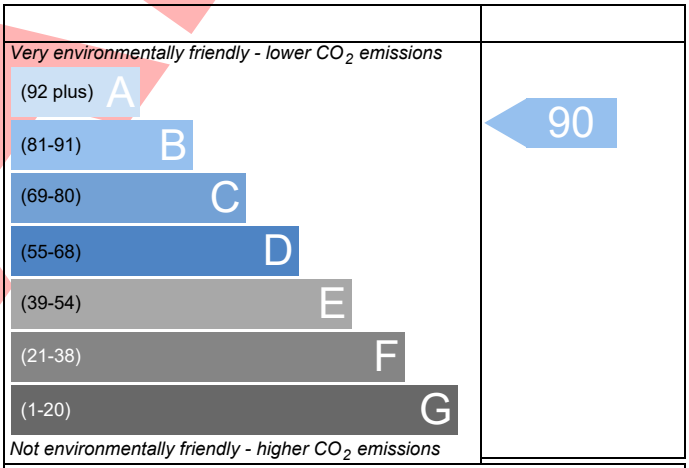
Energy Efficiency Rating



England EU Directive 2002/91/EC

The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating the more energy efficient the home is and the lower the fuel bills are likely to be.

Environmental Impact (CO_2) Rating



England EU Directive 2002/91/EC

The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide (CO_2) emissions. The higher the rating the less impact it has on the environment.

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BUILDING REGULATION COMPLIANCE
Calculation Type: New Build (As Designed)

ATSPACE
DELIVERING BEYOND COMPLIANCE

Property Reference	Q09487 - Flat 2	Issued on Date	30/06/2023
Assessment Reference	Design V2 (Gas & PV)	Prop Type Ref	
Property	Flat 2, 20 , Shinfield Road, Reading, RG2 7BW		

SAP Rating	88 B	DER	14.59	TER	19.49
Environmental	90 B	% DER<TER	25.12		
CO_2 Emissions (t/year)	0.72	DFEE	48.87	TFEE	53.59
General Requirements Compliance	Pass	% DFEE<TFEE	8.81		

Assessor Details	Mr. Paul Whiffin, Paul Whiffin, Tel: 01763 268685, energy@atspaceltd.com	Assessor ID	y314-0001
Client			

SUMARY FOR INPUT DATA FOR New Build (As Designed)

Criterion 1 – Achieving the TER and TFEE rate

1a TER and DER

Fuel for main heating	Mains gas		
Fuel factor	1.00 (mains gas)		
Target Carbon Dioxide Emission Rate (TER)	19.49	$kgCO_2/m^2$	
Dwelling Carbon Dioxide Emission Rate (DER)	14.59	$kgCO_2/m^2$	Pass
	-4.90 (-25.1%)	$kgCO_2/m^2$	

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	53.59	$kWh/m^2/yr$	
Dwelling Fabric Energy Efficiency (DFEE)	48.87	$kWh/m^2/yr$	
	-4.7 (-8.8%)	$kWh/m^2/yr$	Pass

Criterion 2 – Limits on design flexibility

Limiting Fabric Standards

2 Fabric U-values

Element	Average	Highest	
External wall	0.18 (max. 0.30)	0.19 (max. 0.70)	Pass
Party wall	0.00 (max. 0.20)	-	Pass
Floor	0.11 (max. 0.25)	0.11 (max. 0.70)	Pass
Openings	1.50 (max. 2.00)	1.50 (max. 3.30)	Pass

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air permeability

Air permeability at 50 pascals	5.01 (design value)	$m^3/(h.m^2)$ @ 50 Pa	
Maximum	10.0	$m^3/(h.m^2)$ @ 50 Pa	Pass

Limiting System Efficiencies

4 Heating efficiency

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Main heating system	Boiler system with radiators or underfloor - Mains gas Data from database Ideal LOGIC CODE COMBI ESP1 26 Combi boiler Efficiency: 89.6% SEDBUK2009 Minimum: 88.0%		Pass
Secondary heating system	None		

5 Cylinder insulation

Hot water storage	No cylinder		

6 Controls

Space heating controls	Time and temperature zone control		Pass
Hot water controls	No cylinder		
Boiler interlock	Yes		Pass

7 Low energy lights

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

8 Mechanical ventilation

Not applicable

Criterion 3 – Limiting the effects of heat gains in summer

9 Summertime temperature

Overheating risk (Thames Valley)	Slight		Pass

Based on:

Overshading	Average	
Windows facing North East	7.62 m², No overhang	
Windows facing South East	1.09 m², No overhang	
Windows facing North West	1.09 m², No overhang	
Air change rate	3.00 ach	
Blinds/curtains	None	

Criterion 4 – Building performance consistent with DER and DFEE rate

Party Walls

Type	U-value		
Filled Cavity with Edge Sealing	0.00	W/m²K	Pass

Air permeability and pressure testing

3 Air permeability

Air permeability at 50 pascals	5.01 (design value)	m³/(h.m²) @ 50 Pa	
Maximum	10.0	m³/(h.m²) @ 50 Pa	Pass

10 Key features

Party wall U-value	0.00	W/m²K
Floor U-value	0.11	W/m²K
Photovoltaic array	1.00	kW

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THERMAL BRIDGING
Calculation Type: New Build (As Designed)

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Environmental	90 B	**% DER<TER**	25.12		
CO_2 Emissions (t/year)	0.72	**DFEE**	48.87	**TFEE**	53.59
General Requirements Compliance	Pass	**% DFEE<TFEE**	8.81		

Assessor Details	Mr. Paul Whiffin, Paul Whiffin, Tel: 01763 268685, energy@atspaceltd.com	**Assessor ID**	y314-0001
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	Junction detail	Source Type	Psi (W/mK)	Length (m)	Result	Reference
External wall	E2 Other lintels (including other steel lintels)	Table K1 - Approved	0.300	7.28	2.18	E2 - ACD
External wall	E3 Sill	Table K1 - Approved	0.040	4.46	0.18	E3 - ACD
External wall	E4 Jamb	Table K1 - Approved	0.050	20.72	1.04	E4 - ACD
External wall	E5 Ground floor (normal)	Table K1 - Approved	0.160	32.48	5.20	E5 - ACD
External wall	E16 Corner (normal)	Table K1 - Approved	0.090	9.60	0.86	E16 - ACD
External wall	E17 Corner (inverted – internal area greater than external area)	Table K1 - Approved	-0.090	4.80	-0.43	E17 - ACD
External wall	E18 Party wall between dwellings	Table K1 - Approved	0.060	4.80	0.29	E18 - ACD
Party wall	P1 Party wall - Ground floor	Table K1 - Default	0.160	4.87	0.78	P1 - Default
Party wall	P3 Party wall - Intermediate floor between dwellings (in blocks of flats)	Table K1 - Default	0.000	37.35	0.00	P3 - Default

Total: 10.09 **W/mK:**

Y-Value: 0.068 **W/m²K:**

U-VALUE CALCULATOR REPORT

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CO_2 Emissions (t/year)	0.72	DFEE	48.87	TFEE	53.59
General Requirements Compliance	Pass	% DFEE<TFEE	8.81		

Assessor Details	Mr. Paul Whiffin, Paul Whiffin, Tel: 01763 268685, energy@atspaceltd.com	Assessor ID	y314-0001
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Building Elements

Wall External Wall - Masonry wall full cavity fill-slabs

Wall Type: Standard Wall

Layer	Description	Thickness (mm)	Conductivity (W/m²K)	Resistance (m²K/W)	Fraction (%)
Ext surface				0.0400	
Layer 1	**Render**				
	Main construction	5	1.0000	0.0050	100.00
Layer 2	**Medium Density Block (0.45)**				
	Main construction	100	0.4500	0.2222	93.43
	Main construction	100	0.8803	0.1136	6.57
Layer 3	**Dritherm 32**				
	Main construction	150	0.0320	4.6875	100.00
	Corrections - Air Gap: Level 1, Fasteners: Wall ties, Cross sectional area: 12.50 mm², Lambda: 17.000 W/m.K, per m²: 2.500				
Layer 4	**Medium Density Block (0.45)**				
	Main construction	100	0.4500	0.2222	93.43
	Main construction	100	0.8803	0.1136	6.57
Layer 5	**airspace/plaster dabs**				
	Main construction	15	0.0882	0.1700	80.00
	Main construction	15	0.0882	0.1700	20.00
	Corrections - Cavity Unventilated, Emissivity: Normal				
Layer 6	**Plasterboard (standard wallboard)**				
	Main construction	12.5	0.2100	0.0595	100.00
Layer 7	**Plaster**				
	Main construction	3	0.4000	0.0075	100.00
Int surface				0.1300	

Total resistance: **Upper limit =** 5.529 m² K/W **Lower limit =** 5.518 m² K/W **Average =** 5.524 m² K/W

Total correction = 0.0092 m² K/W **U-value (unrounded) =** 0.19 W/m² K

Unheated space: None

Total thickness: 386 mm **U-value: 0.19 W/m² K** **Kappa: n/a**

U-VALUE CALCULATOR REPORT

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Environmental	90 B	**% DER<TER**	25.12		
CO_2 Emissions (t/year)	0.72	**DFEE**	48.87	**TFEE**	53.59
General Requirements Compliance	Pass	**% DFEE<TFEE**	8.81		

Assessor Details	Mr. Paul Whiffin, Paul Whiffin, Tel: 01763 268685, energy@atspaceltd.com	**Assessor ID**	y314-0001
Client			

Building Elements

Wall Sheltered Wall - Masonry wall full cavity fill-slabs

Wall Type: Standard Wall

Layer	Description	Thickness (mm)	Conductivity (W/m²K)	Resistance (m²K/W)	Fraction (%)
Ext surface				0.0400	
Layer 1	**Plaster**				
	Main construction	3	0.4000	0.0075	100.00
Layer 2	**Plasterboard (standard wallboard)**				
	Main construction	12.5	0.2100	0.0595	100.00
Layer 3	**airspace/plaster dabs**				
	Main construction	15	0.0882	0.1700	80.00
	Main construction	15	0.0882	0.1700	20.00
	Corrections - Cavity Unventilated, Emissivity: Normal				
Layer 4	**Medium Density Block (0.45)**				
	Main construction	100	0.4500	0.2222	93.43
	Main construction	100	0.8803	0.1136	6.57
Layer 5	**Dritherm 32**				
	Main construction	150	0.0320	4.6875	100.00
	Corrections - Air Gap: Level 1, Fasteners: Wall ties, Cross sectional area: 12.50 mm², Lambda: 17.000 W/m.K, per m²: 2.500				
Layer 6	**Medium Density Block (0.45)**				
	Main construction	100	0.4500	0.2222	93.43
	Main construction	100	0.8803	0.1136	6.57
Layer 7	**airspace/plaster dabs**				
	Main construction	15	0.0882	0.1700	80.00
	Main construction	15	0.0882	0.1700	20.00
	Corrections - Cavity Unventilated, Emissivity: Normal				
Layer 8	**Plasterboard (standard wallboard)**				
	Main construction	12.5	0.2100	0.0595	100.00
Layer 9	**Plaster**				
	Main construction	3	0.4000	0.0075	100.00
Int surface				0.1300	

Total resistance: **Upper limit =** 5.761 m² K/W **Lower limit =** 5.750 m² K/W **Average =** 5.756 m² K/W

Total correction = 0.0085 m² K/W **U-value (unrounded) =** 0.18 W/m² K

Unheated space: None

Total thickness: 411 mm **U-value: 0.18 W/m² K** **Kappa: n/a**

U-VALUE CALCULATOR REPORT

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SAP Rating	88 B	DER	14.59	TER	19.49
Environmental	90 B	% DER<TER	25.12		
CO_2 Emissions (t/year)	0.72	DFEE	48.87	TFEE	53.59
General Requirements Compliance	Pass	% DFEE<TFEE	8.81		

Assessor Details	Mr. Paul Whiffin, Paul Whiffin, Tel: 01763 268685, energy@atspaceltd.com	Assessor ID	y314-0001
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Building Elements

Floor Ground Floor - Floor - suspended beam-and-block floor

Floor Type: Suspended Floor
Area = 70.96 m², Perimeter = 32.48 m, Wall thickness = 300.00 mm, Soil: Clay
Depth of underfloor space below ground:0.200 m Floor wind shielding: Average (suburban)
Floor height above ground:h = 0.000 m
U-value of walls above ground:Uw = 0.180 m
Ventilation openings per perimeter length:e = 0.0015 %
Mean wind speed:v = 5.000 m/s
Resistance on solum:Rg = 0.000 m²K/W

Layer	Description	Thickness (mm)	Conductivity (W/m²K)	Resistance (m²K/W)	Fraction (%)
Ext surface				0.1700	
Layer 1	**AAC (600 kg/m3)/ concrete**				
	Main construction	100	0.1800	0.5556	86.30
	Main construction	100	1.3500	0.0741	13.70
Layer 2	**Kingspan K103**				
	Main construction	125	0.0190	6.5789	100.00
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 3	**Screed**				
	Main construction	75	1.1500	0.0652	100.00
Int surface				0.1700	

Total resistance: **Upper limit =** 7.470 m² K/W **Lower limit =** 7.278 m² K/W **Average =** 7.374 m² K/W

Total correction = 0.0080 m² K/W **U-value (unrounded) =** 0.11 W/m² K

Unheated space: None

Total thickness: 300 mm **U-value: 0.11 W/m² K** **Kappa: n/a**

BASIC COMPLIANCE REPORT
Calculation Type: New Build (As Designed)

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DELIVERING BEYOND COMPLIANCE

Property Reference	Q09487 - Flat 2	**Issued on Date**	30/06/2023
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Environmental	90 B	**% DER<TER**	25.12		
CO_2 Emissions (t/year)	0.72	**DFEE**	48.87	**TFEE**	53.59
General Requirements Compliance	Pass	**% DFEE<TFEE**	8.81		

Assessor Details	Mr. Paul Whiffin, Paul Whiffin, Tel: 01763 268685, energy@atspaceltd.com	**Assessor ID**	y314-0001
Client			

SUMARY FOR INPUT DATA FOR New Build (As Designed)

Criterion 1 – Achieving the TER and TFEE rate

1a TER and DER

Fuel for main heating	Mains gas		
Fuel factor	1.00 (mains gas)		
Target Carbon Dioxide Emission Rate (TER)	19.49	$kgCO_2/m^2$	
Dwelling Carbon Dioxide Emission Rate (DER)	14.59	$kgCO_2/m^2$	Pass
	-4.90 (-25.1%)	$kgCO_2/m^2$	

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	53.59	$kWh/m^2/yr$	
Dwelling Fabric Energy Efficiency (DFEE)	48.87	$kWh/m^2/yr$	
	-4.7 (-8.8%)	$kWh/m^2/yr$	Pass

Criterion 2 – Limits on design flexibility

Limiting Fabric Standards

2 Fabric U-values

Element	Average	Highest	
External wall	0.18 (max. 0.30)	0.19 (max. 0.70)	Pass
Party wall	0.00 (max. 0.20)	-	Pass
Floor	0.11 (max. 0.25)	0.11 (max. 0.70)	Pass
Openings	1.50 (max. 2.00)	1.50 (max. 3.30)	Pass

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air permeability

Air permeability at 50 pascals	5.01 (design value)	
Maximum	10.0	Pass

Limiting System Efficiencies

4 Heating efficiency

Main heating system	Boiler system with radiators or underfloor - Mains gas Data from database Ideal LOGIC CODE COMBI ESP1 26 Combi boiler Efficiency: 89.6% SEDBUK2009 Minimum: 88.0%	Pass
Secondary heating system	None	

5 Cylinder insulation

Hot water storage	No cylinder	

6 Controls

Space heating controls	Time and temperature zone control	Pass
Hot water controls	No cylinder	
Boiler interlock	Yes	Pass

7 Low energy lights

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

8 Mechanical ventilation

Not applicable

Criterion 3 – Limiting the effects of heat gains in summer

9 Summertime temperature

Overheating risk (Thames Valley)	Slight	Pass

Based on:

Overshading	Average
Windows facing North East	7.62 m², No overhang
Windows facing South East	1.09 m², No overhang
Windows facing North West	1.09 m², No overhang
Air change rate	3.00 ach
Blinds/curtains	None

Criterion 4 – Building performance consistent with DER and DFEE rate

Party Walls

Type	U-value		
Filled Cavity with Edge Sealing	0.00	W/m²K	Pass

Air permeability and pressure testing

3 Air permeability

Air permeability at 50 pascals	5.01 (design value)	
Maximum	10.0	Pass

10 Key features

Party wall U-value	0.00	W/m²K
Floor U-value	0.11	W/m²K
Photovoltaic array	1.00	kW

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SUMMARY FOR INPUT DATA
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General Requirements Compliance	Pass	**% DFEE<TFEE**	8.81		

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SUMMARY FOR INPUT DATA FOR: New Build (As Designed)

Orientation	North East
Property Tenure	Unknown
Transaction Type	New dwelling
Terrain Type	Urban
1.0 Property Type	Flat, Semi-Detached
2.0 Number of Storeys	1
3.0 Date Built	2023
4.0 Sheltered Sides	1
5.0 Sunlight/Shade	Average or unknown

6.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground Floor:	32.48 m	70.96 m²	2.40 m

7.0 Living Area	24.39	m²

8.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	243.14	kJ/m²K

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area (m²)	Nett Area (m²)
Cavity Wall	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.19	110.00	62.22	50.31
Sheltered Wall	Cavity Wall	Cavity wall : plasterboard on dabs, dense block, filled cavity, any outside structure	0.18	150.00	15.73	15.73

9.1 Party Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Area (m²)
Party Wall 1	Filled Cavity with Edge Sealing	Single plasterboard on both sides, dense cellular blocks, cavity	0.00	70.00	11.68

9.2 Internal Walls

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Stud Partitions	Plasterboard on timber frame	9.00	121.24

10.1 Party Ceilings

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Party Ceilings	Timber I-joists, carpeted	20.00	70.96

11.0 Heat Loss Floors

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Area (m²)
Ground Floor	Ground Floor - Solid	Suspended concrete floor, carpeted	0.11	75.00	70.96

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Argon Filled	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Windows	Manufacturer	Window	Double Low-E Soft 0.1			0.63		0.70	1.50
Glazed Door	Manufacturer	Window	Double Low-E Soft 0.1			0.63		0.70	1.50
Solid Door	Manufacturer	Solid Door							1.50

13.0 Openings

Name	Opening Type	Location	Orientation	Curtain Type	Overhang Ratio	Wide Overhang	Width (m)	Height (m)	Count	Area (m²)	Curtain Closed
FW	Window	[1] Cavity Wall	North East	None	0.00					3.81	
LSW	Window	[1] Cavity Wall	South East	None	0.00					1.09	
RSW	Window	[1] Cavity Wall	North West	None	0.00					1.09	
FGD	Window	[1] Cavity Wall	North East	None	0.00					3.81	
FSD	Solid Door	[1] Cavity Wall	North East							2.11	

14.0 Conservatory	None	
15.0 Draught Proofing	100	%
16.0 Draught Lobby	No	

17.0 Thermal Bridging	Calculate Bridges	

17.1 List of Bridges

Source Type	Bridge Type	Length	Psi	Imported	Reference:
Table K1 - Approved	E2 Other lintels (including other steel lintels)	7.28	0.300	No	E2 - ACD
Table K1 - Approved	E3 Sill	4.46	0.040	No	E3 - ACD
Table K1 - Approved	E4 Jamb	20.72	0.050	No	E4 - ACD
Table K1 - Approved	E5 Ground floor (normal)	32.48	0.160	No	E5 - ACD
Table K1 - Approved	E16 Corner (normal)	9.60	0.090	No	E16 - ACD
Table K1 - Approved	E17 Corner (inverted – internal area greater than external area)	4.80	-0.090	No	E17 - ACD
Table K1 - Approved	E18 Party wall between dwellings	4.80	0.060	No	E18 - ACD
Table K1 - Default	P1 Party wall - Ground floor	4.87	0.160	No	P1 - Default
Table K1 - Default	P3 Party wall - Intermediate floor between dwellings (in blocks of flats)	37.35	0.000	No	P3 - Default

Y-value	0.068	W/m²K

18.0 Pressure Testing	Yes	
Designed AP_{50}	5.01	m³/(h.m²) @ 50 Pa
Property Tested ?		
As Built AP_{50}		m³/(h.m²) @ 50 Pa

19.0 Mechanical Ventilation

Summer Overheating

Windows open in hot weather	Windows half open
Cross ventilation possible	Yes
Night Ventilation	No
Air change rate	3.00

Mechanical Ventilation

Mechanical Ventilation System Present	No

20.0 Fans, Open Fireplaces, Flues

	MHS	SHS	Other	Total
Number of Chimneys	0		0	0
Number of open flues	0		0	0
Number of intermittent fans				3
Number of passive vents				0
Number of flueless gas fires				0

21.0 Fixed Cooling System	No	
22.0 Lighting		
Internal		
Total number of light fittings	20	
Total number of L.E.L. fittings	20	
Percentage of L.E.L. fittings	100.00	%
External		
External lights fitted	No	
23.0 Electricity Tariff	Standard	
24.0 Main Heating 1	Database	
Percentage of Heat	100	%
Database Ref. No.	18121	
Fuel Type	Mains gas	
Main Heating	BGW	
SAP Code	104	
In Winter	90.5	
In Summer	87.3	
Controls	CBI Time and temperature zone control	
PCDF Controls	0	
Delayed Start Stat	Yes	
Sap Code	2110	
Flue Type	Balanced	
Fan Assisted Flue	Yes	
Is MHS Pumped	Pump in heated space	
Heat Emitter	Underfloor	
Underfloor Heating	Yes - Pipes in Concrete	
Flow Temperature	<= 35°C	
Combi boiler type	Standard Combi	
Combi keep hot type	None	
25.0 Main Heating 2	None	
Community Heating	None	
28.0 Water Heating	HWP From main heating 1	
Water Heating	Main Heating 1	
Flue Gas Heat Recovery System	Yes	
Waste Water Heat Recovery Instantaneous System 1	No	
Waste Water Heat Recovery Instantaneous System 2	No	
Waste Water Heat Recovery	No	

Storage System	
Solar Panel	No
Water use <= 125 litres/person/day	Yes
SAP Code	901

28.1 Flue Gas Heat Recovery System

29.0 Hot Water Cylinder None

32.0 Photovoltaic Unit One Dwelling

PV Cells kWp	Orientation	Elevation	Overshading	Connected to Dwelling
1.00	South East	45°	Modest	Yes

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None