



# Energy Statement

150 Portway,  
Bristol,  
BS9 2HT

February 28<sup>th</sup>, 2022



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## 1 Table of Contents

1	Table of Contents .....	2
2	Summary.....	3
3	Methodology .....	3
4	Adopted Measurements .....	4
5	Contact .....	6
6	Appendix: Example SAP Modelling Output .....	6

## 2 Summary

The proposed development consists of 4 new built residential units and one existing house with extension, All the units have been modelled using the Design SAP 2012 software. The estimated energy reductions of the 4 residential units are as following:

CO2 emissions (TonnesCO2/year)& % reduction	TER (TCO2/yr)	DER (TCO2/yr)	% Improvement
New Built Residential Units	3.31	3.09	1.52%

The DER (Dwelling Emission Rate) is lower than the TER (Target Emission Rate) by 1.52%. Hence, the flats show compliance with England Part L Regulation.

Flat No	Area m2	TER		DER		% Improvement
		(kgCO2/m2/yr)	TCO2/yr	(kgCO2/m2/yr)	TCO2/yr	
FLAT 1	40.96	21.64	0.89	20.50	0.84	1.14%
FLAT 2	40.96	21.96	0.90	20.14	0.82	1.82%
FLAT 3	30.72	25.83	0.79	24.27	0.75	1.56%
FLAT 4	30.72	23.90	0.73	22.27	0.68	1.56%
<b>Total</b>	<b>143.36</b>	<b>93.33</b>	<b>3.31</b>	<b>87.18</b>	<b>3.09</b>	<b>1.52%</b>

The Existing house has been assessed in order to determine the level of CO2 emissions. The Actual house with extension has a CO2 emission of 2.06 t/yr which is lower than a notional extension, which has an an emission of 2.16 t/yr.

## 3 Methodology

The site is 150 Portway, Bristol BS9 2HT. The scope of the proposed work includes demolition of part of the existing buildings and redevelopment of the site to create 4 residential units of 144 m2. The four flats are developed on two floors of similar layout. Additionally, part of the existing house is maintained and a two floor extension is added.

The carbon footprint of regulated emissions for the development has been determined using the National Calculation Methodology (NCM). The carbon footprint from all dwellings has been calculated using an accredited SAP software (Design SAP 2012).

A baseline target for dwelling and commercial space has been developed to reflect the building regulations target Part L 2013 compliance.



In order to achieve an improvement against target value, a number of measurements have been implemented such as installation of PV panels, Improvement of U value, installation of efficient heating system.

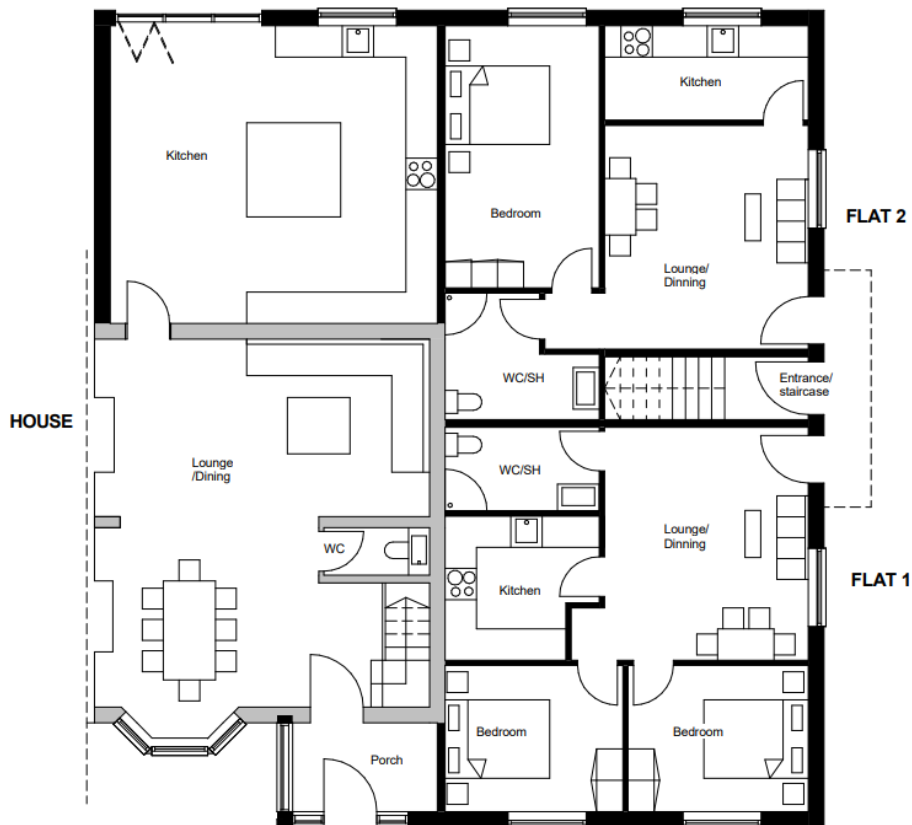


Image 1. Ground Floor Plan

#### 4 Adopted Measurements

The development exceeds building regulations Part L 2013 compliance by 0.46% through demand reduction initiatives alone. This shall include both architectural and building fabric measures (passive design) and energy efficient services (active design).

Specific initiatives to the development include the following:

Thermal performance external walls (U value)	0.12 W/m2.K
Thermal performance roof (U value)	0.15 W/m2.K
Thermal performance floor (U value)	0.10 W/m2.K



Thermal performance windows (U value)	1.6 W/m <sup>2</sup> .K
Air permeability	3.50 m <sup>3</sup> /hr.m <sup>2</sup> @ 50Pa
Lighting efficacy	All LED lights

For the existing building the existing boiler is maintained. Brand New Combi boilers are installed in the four new flats.

Solar panels shall be provided on the roof. A proposed array layout is presented above. The provided Solar Panels serve existing house. The following parameters have been considered:

- Collector orientation: South East, South West and North West
- Collector tilt: 30 degrees
- Overshading: None or Very Little
- Solar Storage Volume: 75

The proposed array size is approximately 75/80 m<sup>2</sup>.

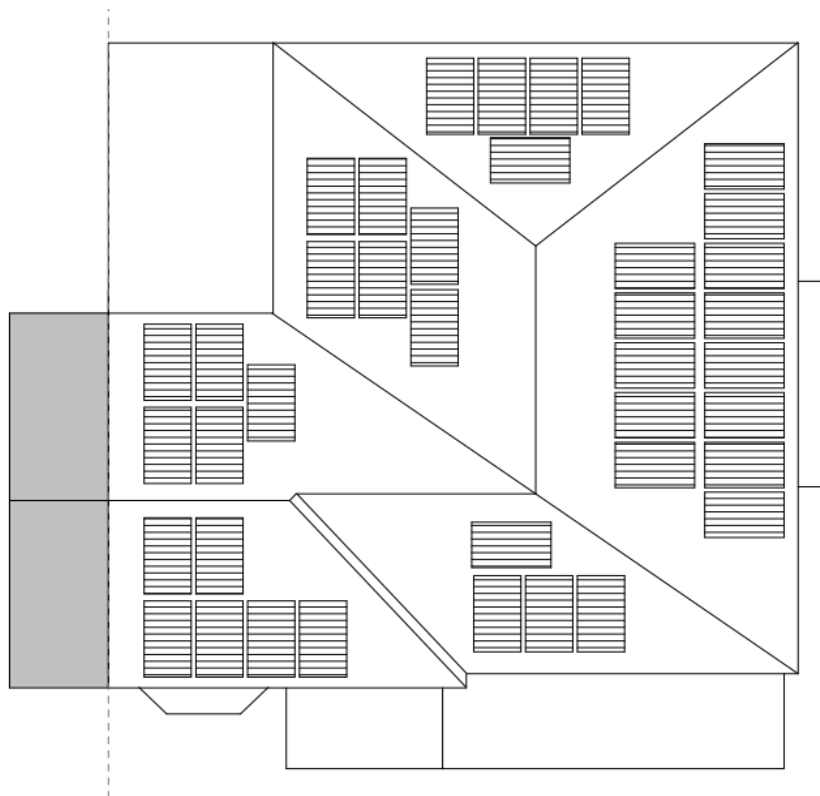


Image 2. Roof Floor Plan

Sample outputs for the dwelling (SAP) Building calculations are provided in appendix.



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## 5 Contact

Focus360energy.co.uk

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M: 02036331460

Focus 360 Energy Ltd

18 St George Wharf,

Vauxhall, London SW8 2LQ

## 6 Appendix: Example SAP Modelling Output

# BASIC COMPLIANCE REPORT

## Calculation Type: New Build (As Designed)

<b>Property Reference</b>	150 Portway (Be Lean)		<b>Issued on Date</b>	26/02/2022	
<b>Assessment Reference</b>	Flat 1	<b>Prop Type Ref</b>			
<b>Property</b>	150 Portway, Bristol, BS9 2HT				
<b>SAP Rating</b>	82 B	<b>DER</b>	20.50	<b>TER</b>	21.64
<b>Environmental</b>	87 B	<b>% DER&lt;TER</b>	5.29		
<b>CO<sub>2</sub> Emissions (t/year)</b>	0.77	<b>DFEE</b>	50.02	<b>TFEE</b>	50.27
<b>General Requirements Compliance</b>	Pass	<b>% DFEE&lt;TFEE</b>	0.49		
<b>Assessor Details</b>	Miss Cristina Aloisio, Cristina Aloisio, Tel: 07513835700, cristina.aloisio@gmail.com			<b>Assessor ID</b>	Y453-0001
<b>Client</b>					

### SUMMARY 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)	21.64	kgCO <sub>2</sub> /m <sup>2</sup>		
Dwelling Carbon Dioxide Emission Rate (DER)	20.50	kgCO <sub>2</sub> /m <sup>2</sup>		Pass
	-1.14 (-5.3%)	kgCO <sub>2</sub> /m <sup>2</sup>		

##### 1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	50.27	kWh/m <sup>2</sup> /yr		
Dwelling Fabric Energy Efficiency (DFEE)	50.02	kWh/m <sup>2</sup> /yr		
	-0.3 (-0.6%)	kWh/m <sup>2</sup> /yr		Pass

#### Criterion 2 – Limits on design flexibility

##### Limiting Fabric Standards

##### 2 Fabric U-values

Element	Average	Highest	
External wall	0.12 (max. 0.30)	0.12 (max. 0.70)	Pass
Floor	0.10 (max. 0.25)	0.10 (max. 0.70)	Pass
Roof	0.15 (max. 0.20)	0.15 (max. 0.35)	Pass
Openings	1.60 (max. 2.00)	1.60 (max. 3.30)	Pass

##### 2a Thermal bridging

Thermal bridging calculated using default  $\gamma$ -value of 0.15

##### 3 Air permeability

Air permeability at 50 pascals	3.50 (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 Potterton ASSURE 36 COMBI Combi boiler Efficiency: 89.0% SEDBUK2009 Minimum: 88.0%	Pass
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# BASIC COMPLIANCE REPORT

## Calculation Type: New Build (As Designed)

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 (Severn Valley)

Not significant

Pass

Based on:

Overshading

Average

Windows facing South East

1.96 m<sup>2</sup>, No overhang

Windows facing South West

3.92 m<sup>2</sup>, No overhang

Air change rate

6.00 ach

Blinds/curtains

Light-coloured curtain or roller blind, closed 80% of daylight hours

## Criterion 4 – Building performance consistent with DER and DFEE rate

### Air permeability and pressure testing

#### 3 Air permeability

Air permeability at 50 pascals

3.50 (design value)

Maximum

10.0

Pass

### 10 Key features

External wall U-value

0.12

W/m<sup>2</sup>K

External wall U-value

0.12

W/m<sup>2</sup>K

Floor U-value

0.10

W/m<sup>2</sup>K

Air permeability

3.5

m<sup>3</sup>/m<sup>2</sup>h

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



# BASIC COMPLIANCE REPORT

## Calculation Type: New Build (As Designed)

<b>Property Reference</b>	150 Portway (Be Lean)	<b>Issued on Date</b>	27/02/2022
<b>Assessment Reference</b>	Flat 2	<b>Prop Type Ref</b>	
<b>Property</b>	150 Portway, Bristol, BS9 2HT		

<b>SAP Rating</b>	82 B	<b>DER</b>	20.14	<b>TER</b>	21.96
<b>Environmental</b>	88 B	<b>% DER&lt;TER</b>	8.28		
<b>CO<sub>2</sub> Emissions (t/year)</b>	0.75	<b>DFEE</b>	48.18	<b>TFEE</b>	51.79
<b>General Requirements Compliance</b>	Pass	<b>% DFEE&lt;TFEE</b>	6.97		

<b>Assessor Details</b>	Miss Cristina Aloisio, Cristina Aloisio, Tel: 07513835700, cristina.aloisio@gmail.com	<b>Assessor ID</b>	Y453-0001
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<b>Client</b>	
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### SUMMARY 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)	21.96	kgCO <sub>2</sub> /m <sup>2</sup>	
Dwelling Carbon Dioxide Emission Rate (DER)	20.14	kgCO <sub>2</sub> /m <sup>2</sup>	Pass
	-1.82 (-8.3%)	kgCO <sub>2</sub> /m <sup>2</sup>	

##### 1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	51.79	kWh/m <sup>2</sup> /yr	
Dwelling Fabric Energy Efficiency (DFEE)	48.18	kWh/m <sup>2</sup> /yr	
	-3.6 (-6.9%)	kWh/m <sup>2</sup> /yr	Pass

#### Criterion 2 – Limits on design flexibility

##### Limiting Fabric Standards

##### 2 Fabric U-values

Element	Average	Highest	
External wall	0.12 (max. 0.30)	0.12 (max. 0.70)	Pass
Floor	0.10 (max. 0.25)	0.10 (max. 0.70)	Pass
Openings	1.60 (max. 2.00)	1.60 (max. 3.30)	Pass

##### 2a Thermal bridging

Thermal bridging calculated using default  $\gamma$ -value of 0.15

##### 3 Air permeability

Air permeability at 50 pascals	3.50 (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 Potterton ASSURE 36 COMBI Combi boiler Efficiency: 89.0% SEDBUK2009 Minimum: 88.0%	Pass
Secondary heating system	None	

# BASIC COMPLIANCE REPORT

## Calculation Type: New Build (As Designed)

### 5 Cylinder insulation

Hot water storage

### 6 Controls

Space heating controls

Hot water controls

Boiler interlock

### 7 Low energy lights

Percentage of fixed lights with low-energy fittings  %

Minimum  %

### 8 Mechanical ventilation

Not applicable

## Criterion 3 – Limiting the effects of heat gains in summer

### 9 Summertime temperature

Overheating risk (Severn Valley)

Based on:

Overshading

Windows facing South East

Windows facing North West

Air change rate

Blinds/curtains

## Criterion 4 – Building performance consistent with DER and DFEE rate

### Air permeability and pressure testing

#### 3 Air permeability

Air permeability at 50 pascals

Maximum

### 10 Key features

External wall U-value  W/m<sup>2</sup>K

External wall U-value  W/m<sup>2</sup>K

Floor U-value  W/m<sup>2</sup>K

Air permeability  m<sup>3</sup>/m<sup>2</sup>h

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

# BASIC COMPLIANCE REPORT

## Calculation Type: New Build (As Designed)

<b>Property Reference</b>	150 Portway (Be Lean)		<b>Issued on Date</b>	27/02/2022	
<b>Assessment Reference</b>	Flat 3	<b>Prop Type Ref</b>			
<b>Property</b>	150 Portway, Bristol, BS9 2HT				
<b>SAP Rating</b>	81 B	<b>DER</b>	24.27	<b>TER</b>	25.83
<b>Environmental</b>	87 B	<b>% DER&lt;TER</b>	6.05		
<b>CO<sub>2</sub> Emissions (t/year)</b>	0.68	<b>DFEE</b>	59.19	<b>TFEE</b>	59.81
<b>General Requirements Compliance</b>	Pass	<b>% DFEE&lt;TFEE</b>	1.03		
<b>Assessor Details</b>	Miss Cristina Aloisio, Cristina Aloisio, Tel: 07513835700, cristina.aloisio@gmail.com			<b>Assessor ID</b>	Y453-0001
<b>Client</b>					

### SUMMARY 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)	25.83	kgCO <sub>2</sub> /m <sup>2</sup>	
Dwelling Carbon Dioxide Emission Rate (DER)	24.27	kgCO <sub>2</sub> /m <sup>2</sup>	Pass
	-1.56 (-6.0%)	kgCO <sub>2</sub> /m <sup>2</sup>	

##### 1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	59.81	kWh/m <sup>2</sup> /yr	
Dwelling Fabric Energy Efficiency (DFEE)	59.19	kWh/m <sup>2</sup> /yr	
	-0.6 (-1.0%)	kWh/m <sup>2</sup> /yr	Pass

#### Criterion 2 – Limits on design flexibility

##### Limiting Fabric Standards

##### 2 Fabric U-values

Element	Average	Highest	
External wall	0.12 (max. 0.30)	0.12 (max. 0.70)	Pass
Floor	0.10 (max. 0.25)	0.10 (max. 0.70)	Pass
Roof	0.15 (max. 0.20)	0.15 (max. 0.35)	Pass
Openings	1.60 (max. 2.00)	1.60 (max. 3.30)	Pass

##### 2a Thermal bridging

Thermal bridging calculated using default  $\gamma$ -value of 0.15

##### 3 Air permeability

Air permeability at 50 pascals	3.50 (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 Potterton ASSURE 36 COMBI Combi boiler Efficiency: 89.0% SEDBUK2009 Minimum: 88.0%	Pass
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# BASIC COMPLIANCE REPORT

## Calculation Type: New Build (As Designed)

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 (Severn Valley)

Not significant

Pass

Based on:

Overshading

Average

Windows facing South West

3.92 m<sup>2</sup>, No overhang

Air change rate

6.00 ach

Blinds/curtains

Light-coloured curtain or roller blind, closed 80% of daylight hours

## Criterion 4 – Building performance consistent with DER and DFEE rate

### Air permeability and pressure testing

#### 3 Air permeability

Air permeability at 50 pascals

3.50 (design value)

Maximum

10.0

Pass

### 10 Key features

External wall U-value

0.12

W/m<sup>2</sup>K

External wall U-value

0.12

W/m<sup>2</sup>K

Floor U-value

0.10

W/m<sup>2</sup>K

Air permeability

3.5

m<sup>3</sup>/m<sup>2</sup>h

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

# BASIC COMPLIANCE REPORT

## Calculation Type: New Build (As Designed)

<b>Property Reference</b>	150 Portway (Be Lean)		<b>Issued on Date</b>	27/02/2022	
<b>Assessment Reference</b>	Flat 4	<b>Prop Type Ref</b>			
<b>Property</b>	150 Portway, Bristol, BS9 2HT				
<b>SAP Rating</b>	81 B	<b>DER</b>	22.27	<b>TER</b>	23.90
<b>Environmental</b>	86 B	<b>% DER&lt;TER</b>	6.84		
<b>CO<sub>2</sub> Emissions (t/year)</b>	0.83	<b>DFEE</b>	58.13	<b>TFEE</b>	61.69
<b>General Requirements Compliance</b>	Pass	<b>% DFEE&lt;TFEE</b>	5.78		
<b>Assessor Details</b>	Miss Cristina Aloisio, Cristina Aloisio, Tel: 07513835700, cristina.aloisio@gmail.com			<b>Assessor ID</b>	Y453-0001
<b>Client</b>					

### SUMMARY 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)	23.90	kgCO <sub>2</sub> /m <sup>2</sup>		
Dwelling Carbon Dioxide Emission Rate (DER)	22.27	kgCO <sub>2</sub> /m <sup>2</sup>		Pass
	-1.63 (-6.8%)	kgCO <sub>2</sub> /m <sup>2</sup>		

##### 1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	61.69	kWh/m <sup>2</sup> /yr		
Dwelling Fabric Energy Efficiency (DFEE)	58.13	kWh/m <sup>2</sup> /yr		
	-3.6 (-5.8%)	kWh/m <sup>2</sup> /yr		Pass

#### Criterion 2 – Limits on design flexibility

##### Limiting Fabric Standards

##### 2 Fabric U-values

Element	Average	Highest	
External wall	0.12 (max. 0.30)	0.12 (max. 0.70)	Pass
Floor	0.10 (max. 0.25)	0.10 (max. 0.70)	Pass
Roof	0.15 (max. 0.20)	0.15 (max. 0.35)	Pass
Openings	1.60 (max. 2.00)	1.60 (max. 3.30)	Pass

##### 2a Thermal bridging

Thermal bridging calculated using default  $\gamma$ -value of 0.15

##### 3 Air permeability

Air permeability at 50 pascals	3.50 (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 Potterton ASSURE 36 COMBI Combi boiler Efficiency: 89.0% SEDBUK2009 Minimum: 88.0%	Pass
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# BASIC COMPLIANCE REPORT

## Calculation Type: New Build (As Designed)

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 (Severn Valley)

Not significant

Pass

Based on:

Overshading

Average

Windows facing South East

1.96 m<sup>2</sup>, No overhang

Windows facing North West

3.92 m<sup>2</sup>, No overhang

Air change rate

6.00 ach

Blinds/curtains

Light-coloured curtain or roller blind, closed 80% of daylight hours

## Criterion 4 – Building performance consistent with DER and DFEE rate

### Air permeability and pressure testing

#### 3 Air permeability

Air permeability at 50 pascals

3.50 (design value)

Maximum

10.0

Pass

### 10 Key features

External wall U-value

0.12

W/m<sup>2</sup>K

External wall U-value

0.12

W/m<sup>2</sup>K

Floor U-value

0.10

W/m<sup>2</sup>K

Air permeability

3.5

m<sup>3</sup>/m<sup>2</sup>h

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

# SUMMARY FOR INPUT DATA

## Calculation Type: Existing Dwelling

Property Reference	150 Portway (BeClean)+ExiHouse		Issued on Date	27/02/2022	
Assessment Reference	Existing House Actual	Prop Type Ref			
Property	150 Portway, Bristol, BS9 2HT				
SAP Rating	81 B	DER	N/A	TER	N/A
Environmental	81 B	% DER<TER	N/A		
CO <sub>2</sub> Emissions (t/year)	2.06	DFEE	N/A	TFEE	N/A
General Requirements Compliance	N/A	% DFEE<TFEE	N/A		
Assessor Details	Miss Cristina Aloisio, Cristina Aloisio, Tel: 07513835700, cristina.aloisio@gmail.com			Assessor ID	Y453-0001
Client					

### SUMMARY FOR INPUT DATA FOR: Existing Dwelling

Orientation	South West
Property Tenure	Unknown
Transaction Type	New dwelling
Terrain Type	Urban
1.0 Property Type	House, Mid-Terrace
2.0 Number of Storeys	2
3.0 Date Built	
3.0 Property Age Band	D 1950-1966
4.0 Sheltered Sides	2
5.0 Sunlight/Shade	Average or unknown

#### 6.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground Floor:	16.20 m	66.18 m <sup>2</sup>	2.80 m
1st Storey:	12.40 m	50.10 m <sup>2</sup>	2.80 m

7.0 Living Area  m<sup>2</sup>

8.0 Thermal Mass Parameter  
 Thermal Mass  kJ/m<sup>2</sup>K

#### 9.0 External Walls

Description	Type	U-Value (W/m <sup>2</sup> K)	Gross Area (m <sup>2</sup> )	Nett Area (m <sup>2</sup> )
North West Wall	Cavity Wall	0.12	61.60	51.12
South West Wall	Cavity Wall	0.35	18.48	12.15

#### 10.0 External Roofs

Description	Type	U-Value (W/m <sup>2</sup> K)	Gross Area (m <sup>2</sup> )	Nett Area (m <sup>2</sup> )
External Roof 1	External Slope Roof	0.35	54.66	54.66
External Roof 2	External Slope Roof	0.15	11.52	11.52

#### 11.0 Heat Loss Floors

Description	Type	Construction	U-Value (W/m <sup>2</sup> K)	Area (m <sup>2</sup> )
Heat Loss Floor 1	Ground Floor - Solid		0.35	43.14
Heat Loss Floor 2	Ground Floor - Solid		0.10	23.04

#### 12.0 Opening Types

# SUMMARY FOR INPUT DATA

## Calculation Type: Existing Dwelling

Description	Data Source	Type	Glazing	Glazing Gap	Argon Filled	G-value	Frame Type	Frame Factor	U Value (W/m <sup>2</sup> K)
Opening Type 1	Manufacturer	Window	Double Low-E Soft 0.05			0.63		0.70	1.60
Opening Type 2	Manufacturer	Solid Door							1.60

### 13.0 Openings

Name	Opening Type	Location	Orientation	Curtain Type	Overhang Ratio	Wide Overhang	Width (m)	Height (m)	Count	Area (m <sup>2</sup> )	Curtain Closed
Opening 2	Window	[2] South West Wall	South West	Light-coloured curtain or roller blind	0.00					4.53	80
Opening 3	Solid Door	[2] South West Wall	South West							1.80	
Opening 3	Window	[1] North West Wall	North West	Light-coloured curtain or roller blind	0.00					10.48	80

14.0 Conservatory	<input type="text" value="None"/>	
15.0 Draught Proofing	<input type="text" value="100"/>	%
16.0 Draught Lobby	<input type="text" value="No"/>	

17.0 Thermal Bridging	<input type="text" value="Default"/>	
Y-value	<input type="text" value="0.150"/>	W/m <sup>2</sup> K

18.0 Pressure Testing	<input type="text" value="Yes"/>	
Designed AP <sub>50</sub>	<input type="text"/>	m <sup>3</sup> /(h.m <sup>2</sup> ) @ 50 Pa
Property Tested ?	<input type="text"/>	
As Built AP <sub>50</sub>	<input type="text" value="15.00"/>	m <sup>3</sup> /(h.m <sup>2</sup> ) @ 50 Pa

### 19.0 Mechanical Ventilation

#### Summer Overheating

Windows open in hot weather	<input type="text" value="Windows fully open"/>
Cross ventilation possible	<input type="text" value="Yes"/>
Night Ventilation	<input type="text" value="Yes"/>
Air change rate	<input type="text" value="6.00"/>

#### Mechanical Ventilation

Mechanical Ventilation System Present	<input type="text" value="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				1
Number of passive vents				0
Number of flueless gas fires				0

21.0 Fixed Cooling System	<input type="text" value="No"/>
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### 22.0 Lighting

#### Internal

Total number of light fittings	<input type="text" value="12"/>	
Total number of L.E.L. fittings	<input type="text" value="12"/>	
Percentage of L.E.L. fittings	<input type="text" value="100.00"/>	%

#### External



# SUMMARY FOR INPUT DATA

## Calculation Type: Existing Dwelling

External lights fitted	No	
<b>23.0 Electricity Tariff</b>	Standard	
<b>24.0 Main Heating 1</b>	Database	
Percentage of Heat	100	%
Database Ref. No.	10326	
Fuel Type	Mains gas	
Main Heating	BGW	
SAP Code	104	
In Winter	89.8	
In Summer	79.7	
Controls	CBE Programmer, room thermostat and TRVs	
PCDF Controls	0	
Delayed Start Stat	No	
Sap Code	2106	
Flue Type	Balanced	
Fan Assisted Flue	Yes	
Is MHS Pumped	Pump in heated space	
Heat Emitter	Radiators	
Flow Temperature	Normal (> 45°C)	
Combi boiler type	Standard Combi	
Combi keep hot type	Gas/Oil, time clock	
<b>25.0 Main Heating 2</b>	None	
Community Heating	None	
<b>28.0 Water Heating</b>	HWP From main heating 1	
Water Heating	Main Heating 1	
Flue Gas Heat Recovery System	No	
Waste Water Heat Recovery Instantaneous System 1	No	
Waste Water Heat Recovery Instantaneous System 2	No	
Waste Water Heat Recovery Storage System	No	
Solar Panel	Yes	
Water use <= 125 litres/person/day	Yes	
SAP Code	901	
<b>29.0 Hot Water Cylinder</b>	None	
<b>30.0 Solar Panel</b>		
Solar Panel Area	80.00	m <sup>2</sup>
Area Type	Aperture	
Panel Type	Flat plate, glazed	
n0, a1, a2, A/G ratio	0.75, 6.00, 0.0050, 0.90	
Orientation	South East	
Elevation	30°	
Overshading	None Or Little	

# SUMMARY FOR INPUT DATA

## Calculation Type: Existing Dwelling

Solar Storage Volume	<input type="text" value="75.00"/>	L
Pump electrically powered	<input type="text" value="Yes"/>	
Combined Cylinder	<input type="text" value="No"/>	

### Recommendations

#### Lower cost measures

None

#### Further measures to achieve even higher standards

	Typical Cost	Typical savings per year	Ratings after improvement	
			SAP rating	Environmental Impact
Solar photovoltaic panels, 2.5 kWp	£3,500 - £5,500	£367	B 89	

# SUMMARY FOR INPUT DATA

## Calculation Type: Existing Dwelling

Property Reference	150 Portway (BeClean)+ExiHouse		Issued on Date	27/02/2022	
Assessment Reference	Existing House Notional	Prop Type Ref			
Property	150 Portway, Bristol, BS9 2HT				
SAP Rating	80 C	DER	N/A	TER	N/A
Environmental	80 C	% DER<TER	N/A		
CO <sub>2</sub> Emissions (t/year)	2.16	DFEE	N/A	TFEE	N/A
General Requirements Compliance	N/A	% DFEE<TFEE	N/A		
Assessor Details	Miss Cristina Aloisio, Cristina Aloisio, Tel: 07513835700, cristina.aloisio@gmail.com			Assessor ID	Y453-0001
Client					

### SUMMARY FOR INPUT DATA FOR: Existing Dwelling

Orientation	South West
Property Tenure	Unknown
Transaction Type	New dwelling
Terrain Type	Urban
1.0 Property Type	House, Mid-Terrace
2.0 Number of Storeys	2
3.0 Date Built	
3.0 Property Age Band	D 1950-1966
4.0 Sheltered Sides	2
5.0 Sunlight/Shade	Average or unknown

#### 6.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground Floor:	16.20 m	66.18 m <sup>2</sup>	2.80 m
1st Storey:	12.40 m	50.10 m <sup>2</sup>	2.80 m

7.0 Living Area  m<sup>2</sup>

8.0 Thermal Mass Parameter  
 Thermal Mass  kJ/m<sup>2</sup>K

#### 9.0 External Walls

Description	Type	U-Value (W/m <sup>2</sup> K)	Gross Area (m <sup>2</sup> )	Nett Area (m <sup>2</sup> )
North West Wall	Cavity Wall	0.28	61.60	51.12
South West Wall	Cavity Wall	0.35	18.48	12.15

#### 10.0 External Roofs

Description	Type	U-Value (W/m <sup>2</sup> K)	Gross Area (m <sup>2</sup> )	Nett Area (m <sup>2</sup> )
External Roof 1	External Slope Roof	0.35	54.66	54.66
External Roof 2	External Slope Roof	0.18	11.52	11.52

#### 11.0 Heat Loss Floors

Description	Type	Construction	U-Value (W/m <sup>2</sup> K)	Area (m <sup>2</sup> )
Heat Loss Floor 1	Ground Floor - Solid		0.35	43.14
Heat Loss Floor 2	Ground Floor - Solid		0.22	23.04

#### 12.0 Opening Types

# SUMMARY FOR INPUT DATA

## Calculation Type: Existing Dwelling

Description	Data Source	Type	Glazing	Glazing Gap	Argon Filled	G-value	Frame Type	Frame Factor	U Value (W/m <sup>2</sup> K)
Opening Type 1	Manufacturer	Window	Double Low-E Soft 0.05			0.63		0.70	1.60
Opening Type 2	Manufacturer	Solid Door							1.60

### 13.0 Openings

Name	Opening Type	Location	Orientation	Curtain Type	Overhang Ratio	Wide Overhang	Width (m)	Height (m)	Count	Area (m <sup>2</sup> )	Curtain Closed
Opening 2	Window	[2] South West Wall	South West	Light-coloured curtain or roller blind	0.00					4.53	80
Opening 3	Solid Door	[2] South West Wall	South West							1.80	
Opening 3	Window	[1] North West Wall	North West	Light-coloured curtain or roller blind	0.00					10.48	80

<b>14.0 Conservatory</b>	<input type="text" value="None"/>	
<b>15.0 Draught Proofing</b>	<input type="text" value="100"/>	%
<b>16.0 Draught Lobby</b>	<input type="text" value="No"/>	

<b>17.0 Thermal Bridging</b>	<input type="text" value="Default"/>	
Y-value	<input type="text" value="0.150"/>	W/m <sup>2</sup> K

<b>18.0 Pressure Testing</b>	<input type="text" value="Yes"/>	
Designed AP <sub>50</sub>	<input type="text"/>	m <sup>3</sup> /(h.m <sup>2</sup> ) @ 50 Pa
Property Tested ?	<input type="text"/>	
As Built AP <sub>50</sub>	<input type="text" value="15.00"/>	m <sup>3</sup> /(h.m <sup>2</sup> ) @ 50 Pa

### 19.0 Mechanical Ventilation

#### Summer Overheating

Windows open in hot weather	<input type="text" value="Windows fully open"/>
Cross ventilation possible	<input type="text" value="Yes"/>
Night Ventilation	<input type="text" value="Yes"/>
Air change rate	<input type="text" value="6.00"/>

#### Mechanical Ventilation

Mechanical Ventilation System Present	<input type="text" value="No"/>
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### 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				1
Number of passive vents				0
Number of flueless gas fires				0

<b>21.0 Fixed Cooling System</b>	<input type="text" value="No"/>
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### 22.0 Lighting

#### Internal

Total number of light fittings	<input type="text" value="12"/>	
Total number of L.E.L. fittings	<input type="text" value="12"/>	
Percentage of L.E.L. fittings	<input type="text" value="100.00"/>	%

#### External

# SUMMARY FOR INPUT DATA

## Calculation Type: Existing Dwelling

External lights fitted	<input type="text" value="No"/>	
<b>23.0 Electricity Tariff</b>	<input type="text" value="Standard"/>	
<b>24.0 Main Heating 1</b>	<input type="text" value="Database"/>	
Percentage of Heat	<input type="text" value="100"/>	%
Database Ref. No.	<input type="text" value="10326"/>	
Fuel Type	<input type="text" value="Mains gas"/>	
Main Heating	<input type="text" value="BGW"/>	
SAP Code	<input type="text" value="104"/>	
In Winter	<input type="text" value="89.8"/>	
In Summer	<input type="text" value="79.7"/>	
Controls	<input type="text" value="CBE Programmer, room thermostat and TRVs"/>	
PCDF Controls	<input type="text" value="0"/>	
Delayed Start Stat	<input type="text" value="No"/>	
Sap Code	<input type="text" value="2106"/>	
Flue Type	<input type="text" value="Balanced"/>	
Fan Assisted Flue	<input type="text" value="Yes"/>	
Is MHS Pumped	<input type="text" value="Pump in heated space"/>	
Heat Emitter	<input type="text" value="Radiators"/>	
Flow Temperature	<input type="text" value="Normal (&gt; 45°C)"/>	
Combi boiler type	<input type="text" value="Standard Combi"/>	
Combi keep hot type	<input type="text" value="Gas/Oil, time clock"/>	
<b>25.0 Main Heating 2</b>	<input type="text" value="None"/>	
Community Heating	<input type="text" value="None"/>	
<b>28.0 Water Heating</b>	<input type="text" value="HWP From main heating 1"/>	
Water Heating	<input type="text" value="Main Heating 1"/>	
Flue Gas Heat Recovery System	<input type="text" value="No"/>	
Waste Water Heat Recovery Instantaneous System 1	<input type="text" value="No"/>	
Waste Water Heat Recovery Instantaneous System 2	<input type="text" value="No"/>	
Waste Water Heat Recovery Storage System	<input type="text" value="No"/>	
Solar Panel	<input type="text" value="Yes"/>	
Water use <= 125 litres/person/day	<input type="text" value="Yes"/>	
SAP Code	<input type="text" value="901"/>	
<b>29.0 Hot Water Cylinder</b>	<input type="text" value="None"/>	
<b>30.0 Solar Panel</b>		
Solar Panel Area	<input type="text" value="80.00"/>	m <sup>2</sup>
Area Type	<input type="text" value="Aperture"/>	
Panel Type	<input type="text" value="Flat plate, glazed"/>	
n0, a1, a2, A/G ratio	<input type="text" value="0.75, 6.00, 0.0050, 0.90"/>	
Orientation	<input type="text" value="South East"/>	
Elevation	<input type="text" value="30°"/>	
Overshading	<input type="text" value="None Or Little"/>	

# SUMMARY FOR INPUT DATA

## Calculation Type: Existing Dwelling

Solar Storage Volume	75.00	L
Pump electrically powered	Yes	
Combined Cylinder	No	

### Recommendations

#### Lower cost measures

None

#### Further measures to achieve even higher standards

	Typical Cost	Typical savings per year	Ratings after improvement	
			SAP rating	Environmental Impact
Solar photovoltaic panels, 2.5 kWp	£3,500 - £5,500	£367	B 89	

# U-VALUE CALCULATOR REPORT

Property Reference	150 Portway	Issued on Date	27/02/2022
Assessment Reference		Prop Type Ref	
Project	150 Portway, Bristol, BS9 2HT		
Calculation Type	New Build (As Built)		

SAP Rating		DER		TER	
Environmental		% DER<TER			
CO <sub>2</sub> Emissions (t/year)		DFEE		TFEE	
General Requirements Compliance		% DFEE<TFEE			

Assessor Details	Miss Cristina Aloisio, Cristina Aloisio, Tel: 07513835700, cristina.aloisio@gmail.com	Assessor ID	Y453-0001
Client			

## Building Elements

### Floor Floor - floor - slab-on-ground floor

Floor Type: Slab On Ground Floor  
 Area = 0.00 m<sup>2</sup>, Perimeter = 0.00 m, Wall thickness = 300.00 mm, Soil: Clay  
 Horizontal edge insulation: none  
 Vertical edge insulation: none

Layer	Description	Thickness (mm)	Conductivity (W/m <sup>2</sup> K)	Resistance (m <sup>2</sup> K/W)	Fraction (%)
Ext surface				0.0400	
Layer 1	<b>Concrete, reinforced (2% steel)</b> Main construction	300	2.5000	0.1200	100.00
Layer 2	<b>1200g Visqueen DPM</b> Main construction	1	0.0000	0.0000	100.00
Layer 3	<b>Thermafloor TF70 zero ODP</b> Main construction Corrections - Air Gap: Level 1, Fasteners: None or plastic	150	0.0220	6.8182	100.00
Layer 4	<b>Thermafloor TF70 zero ODP</b> Main construction Corrections - Air Gap: Level 1, Fasteners: None or plastic	50	0.0220	2.2727	100.00
Layer 5	<b>1000g VCL</b> Main construction	1	0.0000	0.0000	100.00
Layer 6	<b>Screed</b> Main construction	75	1.1500	0.0652	100.00
Int surface				0.1700	

Total resistance: Upper limit = 9.276 m<sup>2</sup> K/W Lower limit = 9.276 m<sup>2</sup> K/W Average = 9.276 m<sup>2</sup> K/W  
 Total correction = 0.0060 m<sup>2</sup> K/W U-value (unrounded) = 0.1 W/m<sup>2</sup> K

Unheated space: None

**Total thickness: 577 mm**

**U-value: 0.10 W/m<sup>2</sup> K**

**Kappa: n/a**

# U-VALUE CALCULATOR REPORT

Property Reference	150 Portway	Issued on Date	27/02/2022
Assessment Reference		Prop Type Ref	
Project	150 Portway, Bristol, BS9 2HT		
Calculation Type	New Build (As Built)		

SAP Rating		DER		TER	
Environmental		% DER<TER			
CO <sub>2</sub> Emissions (t/year)		DFEE		TFEE	
General Requirements Compliance		% DFEE<TFEE			

Assessor Details	Miss Cristina Aloisio, Cristina Aloisio, Tel: 07513835700, cristina.aloisio@gmail.com	Assessor ID	Y453-0001
Client			

## Building Elements

### Wall Wall - Masonry full cavity fill-injected

#### Wall Type: Standard Wall

Layer	Description	Thickness (mm)	Conductivity (W/m <sup>2</sup> K)	Resistance (m <sup>2</sup> K/W)	Fraction (%)
Ext surface				0.0400	
Layer 1	<b>Brick, outer leaf</b> Main construction	102	0.7700	0.1325	100.00
Layer 2	<b>Thermawall TW55 zero ODP</b> Main construction Corrections - Air Gap: Level 1, Fasteners: None or plastic	75	0.0220	3.4091	100.00
Layer 3	<b>Thermawall TW55 zero ODP</b> Main construction Corrections - Air Gap: Level 1, Fasteners: None or plastic	100	0.0220	4.5455	100.00
Layer 4	<b>Concrete block (dense)</b> Main construction	150	1.1300	0.1327	100.00
Layer 5	<b>airspace/plaster dabs</b> Main construction Main construction Corrections - Cavity Unventilated, Emissivity: Normal	15 15	0.0880 0.4286	0.1705 0.0350	80.00 20.00
Layer 6	<b>Plasterboard (standard wallboard)</b> Main construction	12.5	0.2100	0.0595	100.00
Int surface				0.1300	

Total resistance: Upper limit = 8.592 m<sup>2</sup> K/W Lower limit = 8.545 m<sup>2</sup> K/W Average = 8.569 m<sup>2</sup> K/W  
 Total correction = 0.0044 m<sup>2</sup> K/W U-value (unrounded) = 0.12 W/m<sup>2</sup> K

Unheated space: None

**Total thickness: 455 mm**

**U-value: 0.12 W/m<sup>2</sup> K**

**Kappa: n/a**



# U-VALUE CALCULATOR REPORT

Property Reference	150 Portway	Issued on Date	27/02/2022
Assessment Reference		Prop Type Ref	
Project	150 Portway, Bristol, BS9 2HT		
Calculation Type	New Build (As Built)		

SAP Rating		DER		TER	
Environmental		% DER<TER			
CO <sub>2</sub> Emissions (t/year)		DFEE		TFEE	
General Requirements Compliance		% DFEE<TFEE			

Assessor Details	Miss Cristina Aloisio, Cristina Aloisio, Tel: 07513835700, cristina.aloisio@gmail.com	Assessor ID	Y453-0001
Client			

## Building Elements

### Roof Roof - Pitched roof - insulated at ceiling

Roof Type: Pitched Roof, insulated flat ceiling

Layer	Description	Thickness (mm)	Conductivity (W/m <sup>2</sup> K)	Resistance (m <sup>2</sup> K/W)	Fraction (%)
Ext surface				0.0400	
Layer 1	<b>Roof space</b>				
	Main construction	0	0.2000	0.2000	100.00
Layer 2	<b>ROCKWOOL ROLL</b>				
	Main construction	170	0.0440	3.8636	100.00
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 3	<b>ROCKWOOL ROLL</b>				
	Main construction	100	0.0440	2.2727	100.00
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 4	<b>ROCKWOOL ROLL</b>				
	Main construction	100	0.0440	2.2727	100.00
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 5	<b>Plasterboard, standard</b>				
	Main construction	12.5	0.2100	0.0595	100.00
Int surface				0.1000	

Total resistance: Upper limit = 8.809 m<sup>2</sup> K/W Lower limit = 8.809 m<sup>2</sup> K/W Average = 8.809 m<sup>2</sup> K/W  
 Total correction = 0.0063 m<sup>2</sup> K/W U-value (unrounded) = 0.12 W/m<sup>2</sup> K

Unheated space: None

**Total thickness: 383 mm**

**U-value: 0.12 W/m<sup>2</sup> K**

**Kappa: n/a**