

PREDICTED ENERGY ASSESSMENT

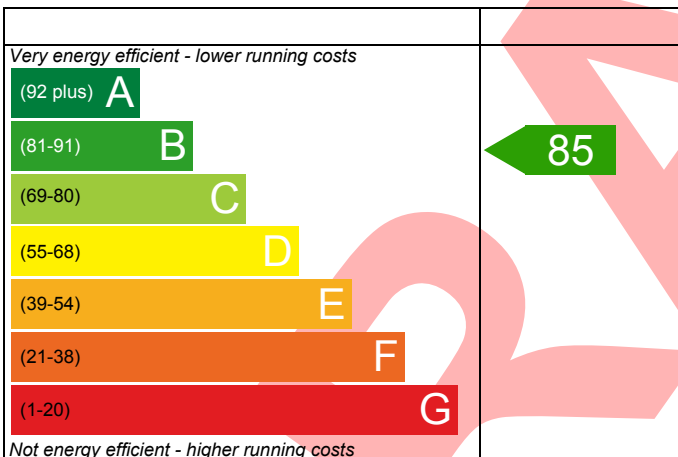
3 bed,
2 bath

Dwelling type: House, Mid-Terrace
Date of assessment: 30/05/2019
Produced by: Michael Brogden
Total floor area: 76.86 m²

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

The energy performance has been assessed using the Government approved SAP2012 methodology and is rated in terms of the energy use per square meter of floor area; the energy efficiency is based on fuel costs and the environmental impact is based on carbon dioxide (CO₂) emissions.

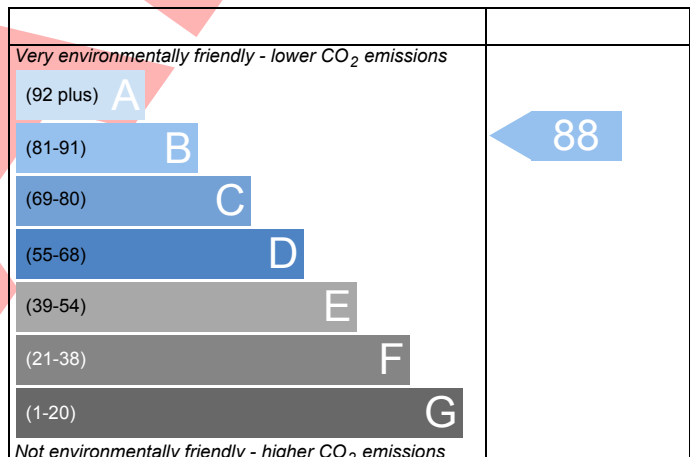
Energy Efficiency Rating



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 (CO₂) 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 (CO₂) emissions. The higher the rating the less impact it has on the environment.

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

BUILDING REGULATION COMPLIANCE

Calculation Type: New Build (As Designed)

Property Reference	Plot 058 AS	Issued on Date	30/05/2019
Assessment Reference	Plot 058 AS	Prop Type Ref	Type 51 Eaves 1FW MID
Property	3 bed, 2 bath		

SAP Rating	85 B	DER	16.41	TER	17.70
Environmental	88 B	% DER<TER	7.27		
CO ₂ Emissions (t/year)	1.06	DFEE	39.89	TFEE	45.58
General Requirements Compliance	Pass	% DFEE<TFEE	12.49		

Assessor Details	Mr. Michael Brogden, Michael Brogden, Tel: 0333 5777 577, michael@darren-evans.co.uk	Assessor ID	R034-0001
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Client	
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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)	17.70	kgCO ₂ /m ²	
Dwelling Carbon Dioxide Emission Rate (DER)	16.41	kgCO ₂ /m ²	Pass
	-1.29 (-7.3%)	kgCO ₂ /m ²	

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	45.58	kWh/m ² /yr	
Dwelling Fabric Energy Efficiency (DFEE)	39.89	kWh/m ² /yr	
	-5.7 (-12.5%)	kWh/m ² /yr	Pass

Criterion 2 – Limits on design flexibility

Limiting Fabric Standards

2 Fabric U-values

Element	Average	Highest	
External wall	0.27 (max. 0.30)	0.27 (max. 0.70)	Pass
Party wall	0.00 (max. 0.20)	-	Pass
Floor	0.12 (max. 0.25)	0.12 (max. 0.70)	Pass
Roof	0.10 (max. 0.20)	0.10 (max. 0.35)	Pass
Openings	1.39 (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	5.00 (design value)	m ³ /(h.m ²) @ 50 Pa	
Maximum	10.0	m ³ /(h.m ²) @ 50 Pa	Pass

Limiting System Efficiencies

4 Heating efficiency

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BUILDING REGULATION COMPLIANCE

Calculation Type: New Build (As Designed)

Main heating system

Boiler system with radiators or underfloor - Mains gas
Data from database
Ideal LOGIC COMBI ESP1 35
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 (Severn Valley)

Not significant

Pass

Based on:

Overshading

Average

Windows facing East

4.89 m², No overhang

Windows facing West

4.07 m², No overhang

Air change rate

4.00 ach

Blinds/curtains

Dark-coloured curtain or roller blind, closed 100% of daylight hours

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

5.00 (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

Roof U-value

0.10

W/m²K

Floor U-value

0.12

W/m²K

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RECOMMENDATIONS

	Typical cost	Typical savings per year	Energy efficiency	Environmental impact	Result
Low energy lights			0	0	Already installed
Solar water heating	£4,000 - £6,000	£29	B 86	B 90	Recommended
Photovoltaic	£3,500 - £5,500	£309	A 97	A 100	Recommended
Wind turbine			0	0	Not applicable
Totals	£7,500 - £11,500	£338	A 97	A 100	

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THERMAL BRIDGING

Calculation Type: New Build (As Designed)

Property Reference	Plot 058 AS		Issued on Date	30/05/2019
Assessment Reference	Plot 058 AS	Prop Type Ref	Type 51 Eaves 1FW MID	
Property	3 bed, 2 bath			

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Environmental	88 B	% DER<TER	7.27		
CO ₂ Emissions (t/year)	1.06	DFEE	39.89	TFEE	45.58
General Requirements Compliance	Pass	% DFEE<TFEE	12.49		

Assessor Details	Mr. Michael Brogden, Michael Brogden, Tel: 0333 5777 577, michael@darren-evans.co.uk	Assessor ID	R034-0001
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	Junction detail	Source Type	Psi (W/mK)	Length (m)	Result	Reference
External wall	E2 Other lintels (including other steel lintels)	Independently assessed	0.211	9.26	1.95	CATNIC
External wall	E3 Sill	Table K1 - Approved	0.040	7.24	0.29	
External wall	E4 Jamb	Table K1 - Approved	0.050	18.30	0.92	
External wall	E5 Ground floor (normal)	Independently assessed	0.038	8.99	0.34	E05-CXBR-CW4040_100 mm-01-150B&
External wall	E6 Intermediate floor within a dwelling	Independently assessed	0.004	8.99	0.04	E06-CXBR-CW4040_100 mm-01
External wall	E10 Eaves (insulation at ceiling level)	Table K1 - Approved	0.060	8.99	0.54	
External wall	E18 Party wall between dwellings	Independently assessed	0.052	19.48	1.01	E18-CXBR-CW4040_100 mm-01-RD22
Party wall	P1 Party wall - Ground floor	Independently assessed	0.010	17.09	0.17	P01-CXBR-EWM22-150B&Bperp
Party wall	P2 Party wall - Intermediate floor within a dwelling	Table K1 - Default	0.000	17.09	0.00	
Party wall	P4 Party wall - Roof (insulation at ceiling level)	Independently assessed	0.117	17.09	2.00	P04-CXBR-EWM22-Spand

Total: **7.26** W/mK:
 Y-Value: **0.062** W/m²K:

BASIC COMPLIANCE REPORT

Calculation Type: New Build (As Designed)

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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)	17.70	kgCO ₂ /m ²		
Dwelling Carbon Dioxide Emission Rate (DER)	16.41	kgCO ₂ /m ²		Pass
	-1.29 (-7.3%)	kgCO ₂ /m ²		

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	45.58	kWh/m ² /yr		
Dwelling Fabric Energy Efficiency (DFEE)	39.89	kWh/m ² /yr		
	-5.7 (-12.5%)	kWh/m ² /yr		Pass

Criterion 2 – Limits on design flexibility

Limiting Fabric Standards

2 Fabric U-values

Element	Average	Highest	
External wall	0.27 (max. 0.30)	0.27 (max. 0.70)	Pass
Party wall	0.00 (max. 0.20)	-	Pass
Floor	0.12 (max. 0.25)	0.12 (max. 0.70)	Pass
Roof	0.10 (max. 0.20)	0.10 (max. 0.35)	Pass
Openings	1.39 (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	5.00 (design value)		
Maximum	10.0		Pass

Limiting System Efficiencies

4 Heating efficiency

BASIC COMPLIANCE REPORT

Calculation Type: New Build (As Designed)

Main heating system	Boiler system with radiators or underfloor - Mains gas Data from database Ideal LOGIC COMBI ESP1 35 Combi boiler Efficiency: 89.6% SEDBUK2009 Minimum: 88.0%	Pass
Secondary heating system	None	

5 Cylinder insulation

Hot water storage	No cylinder	
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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 East	4.89 m ² , No overhang	
Windows facing West	4.07 m ² , No overhang	
Air change rate	4.00 ach	
Blinds/curtains	Dark-coloured curtain or roller blind, closed 100% of daylight hours	

Criterion 4 – Building performance consistent with DER and DFEE rate

Party Walls

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

Air permeability and pressure testing

3 Air permeability

Air permeability at 50 pascals	5.00 (design value)	
Maximum	10.0	Pass

10 Key features

Party wall U-value	0.00	W/m ² K
Roof U-value	0.10	W/m ² K
Floor U-value	0.12	W/m ² K

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

Orientation	East
Property Tenure	Unknown
Transaction Type	New dwelling
Terrain Type	Urban
1.0 Property Type	House, Mid-Terrace
2.0 Number of Storeys	2
3.0 Date Built	2017
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:	8.99 m	38.43 m ²	2.31 m
1st Storey:	8.99 m	38.43 m ²	2.56 m

7.0 Living Area	31.02	m ²
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8.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	234.08	kJ/m ² K

9.0 External Walls

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area (m ²)	Nett Area (m ²)
External Wall 1	Cavity Wall	Cavity wall : plasterboard on dabs, AAC block, filled cavity, any outside structure	0.27	60.00	43.81	30.61

9.1 Party Walls

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)
Party Wall 1	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	83.23

9.2 Internal Walls

Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
Internal Wall 1	Plasterboard on timber frame	9.00	119.90

10.0 External Roofs

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area (m ²)	Nett Area (m ²)
External Roof 1	External Plane Roof	Plasterboard, insulated at ceiling level	0.10	9.00	34.43	34.43

10.2 Internal Ceilings

SUMMARY FOR INPUT DATA

Calculation Type: New Build (As Designed)

Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
Internal Ceiling 1	Plasterboard ceiling, carpeted chipboard floor	9.00	38.43

11.0 Heat Loss Floors

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)
Heat Loss Floor 1	Ground Floor - Solid	Slab on ground, screed over insulation	0.12	110.00	38.43

11.2 Internal Floors

Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
floor	Plasterboard ceiling, carpeted chipboard floor	18.00	38.43

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Argon Filled	G-value	Frame Type	Frame Factor	U Value (W/m ² K)
French Door	Manufacturer	Window	Double glazed			0.71		0.70	1.41
Window	Manufacturer	Window	Double glazed			0.71		0.70	1.41
Solid door tall window	Manufacturer	Solid Door							1.20
half glazed	Manufacturer	Half Glazed Door	Double Low-E Soft 0.05			0.63		0.70	1.50

13.0 Openings

Name	Opening Type	Location	Orientation	Curtain Type	Overhang Ratio	Wide Overhang	Width (m)	Height (m)	Count	Area (m ²)	Curtain Closed
Front door	Solid Door	[1] External Wall 1	East							2.12	
front windows	Window	[1] External Wall 1	East	Dark-coloured curtain or roller blind	0.00					4.89	100
rear door	Half Glazed Door	[1] External Wall 1	West							2.12	100
rear windows	Window	[1] External Wall 1	West	Dark-coloured curtain or roller blind	0.00					4.07	100

14.0 Conservatory

15.0 Draught Proofing

 %

16.0 Draught Lobby

17.0 Thermal Bridging

17.1 List of Bridges

Source Type	Bridge Type	Length	Psi	Imported	Reference:
Independently assessed	E2 Other lintels (including other steel lintels)	9.26	0.211	No	CATNIC
Table K1 - Approved	E3 Sill	7.24	0.040	No	
Table K1 - Approved	E4 Jamb	18.30	0.050	No	
Independently assessed	E5 Ground floor (normal)	8.99	0.038	No	E05-CXBR-CW4040_100mm-01-150B&
Independently assessed	E6 Intermediate floor within a dwelling	8.99	0.004	No	E06-CXBR-CW4040_100mm-01
Table K1 - Approved	E10 Eaves (insulation at ceiling level)	8.99	0.060	No	
Independently assessed	E18 Party wall between dwellings	19.48	0.052	No	E18-CXBR-CW4040_100mm-01-RD22
Independently assessed	P1 Party wall - Ground floor	17.09	0.010	No	P01-CXBR-EWM22-150B&Bperp
Table K1 - Default	P2 Party wall - Intermediate floor within a dwelling	17.09	0.000	No	
Independently assessed	P4 Party wall - Roof (insulation at ceiling level)	17.09	0.117	No	P04-CXBR-EWM22-Spand

Y-value W/m²K

SUMMARY FOR INPUT DATA

Calculation Type: New Build (As Designed)

18.0 Pressure Testing	Yes	
Designed AP ₅₀	5.00	m ³ /(h.m ²) @ 50 Pa
Property Tested ?		
As Built AP ₅₀		m ³ /(h.m ²) @ 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	4.00

Mechanical Ventilation

Mechanical Ventilation System Present	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				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	15	
Total number of L.E.L. fittings	15	
Percentage of L.E.L. fittings	100.00	%

External

External lights fitted	No
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23.0 Electricity Tariff

Standard

24.0 Main Heating 1

Database		
Percentage of Heat	100	%
Database Ref. No.	17929	
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	Radiators	
Flow Temperature	Normal (> 45°C)	
Combi boiler type	Standard Combi	

SUMMARY FOR INPUT DATA

Calculation Type: New Build (As Designed)

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	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	No
Water use <= 125 litres/person/day	Yes
SAP Code	901
29.0 Hot Water Cylinder	None

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 water heating	£4,000 - £6,000	£29	B 86	
	Typical Cost	Typical savings per year	Ratings after improvement	
			SAP rating	Environmental Impact
Solar photovoltaic panels, 2.5 kWp	£3,500 - £5,500	£309	A 97	