PREDICTED ENERGY ASSESSMENT

Design SAP
elmhurst energy

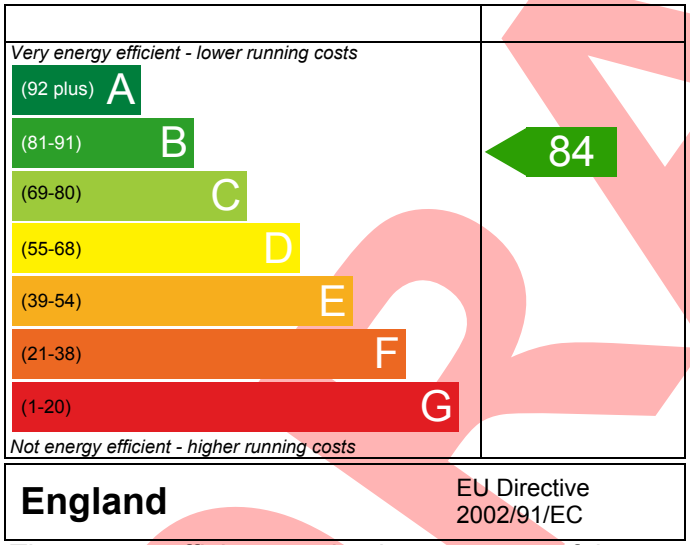
1 bed,
1 bath

Dwelling type:	Flat, End-Terrace
Date of assessment:	30/05/2019
Produced by:	Michael Brogden
Total floor area:	69.93 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.

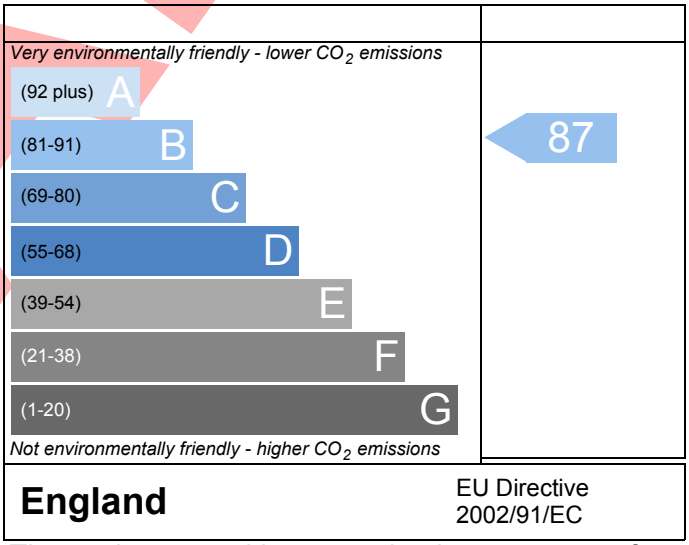
Energy Efficiency Rating



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)

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Property Reference	Plot 066 AS	**Issued on Date**	30/05/2019
Assessment Reference	Plot 066 AS	**Prop Type Ref**	Hornsea V5 0F
Property	1 bed, 1 bath		

SAP Rating	84 B	**DER**	17.91	**TER**	18.88
Environmental	87 B	**% DER<TER**	5.14		
CO_2 Emissions (t/year)	1.04	**DFEE**	42.36	**TFEE**	48.13
General Requirements Compliance	Pass	**% DFEE<TFEE**	11.98		

Assessor Details	Mr. Michael Brogden, Michael Brogden, Tel: 0333 5777 577, michael@darren-evans.co.uk	**Assessor ID**	R034-0001
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)	18.88	$kgCO_2/m^2$	
Dwelling Carbon Dioxide Emission Rate (DER)	17.91	$kgCO_2/m^2$	Pass
	-0.97 (-5.1%)	$kgCO_2/m^2$	

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	48.13	$kWh/m^2/yr$	
Dwelling Fabric Energy Efficiency (DFEE)	42.36	$kWh/m^2/yr$	
	-5.7 (-11.9%)	$kWh/m^2/yr$	Pass

Criterion 2 – Limits on design flexibility

Limiting Fabric Standards

2 Fabric U-values

Element	Average	Highest	
External wall	0.25 (max. 0.30)	0.27 (max. 0.70)	Pass
Party wall	0.00 (max. 0.20)	-	Pass
Floor	0.13 (max. 0.25)	0.13 (max. 0.70)	Pass
Openings	1.33 (max. 2.00)	1.41 (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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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 North Windows facing East	3.71 m², No overhang 2.47 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
Door U-value	1.10	W/m²K

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RECOMMENDATIONS

Design SAP
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	Typical cost	Typical savings per year	Energy efficiency	Environmental impact	Result
Low energy lights			0	0	Already installed
Solar water heating			0	0	Not applicable
Photovoltaic			0	0	Not applicable
Wind turbine			0	0	Not applicable
Totals	**£0**	**£0**	**B 84**	**B 87**	

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THERMAL BRIDGING
Calculation Type: New Build (As Designed)

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General Requirements Compliance	Pass	**% DFEE<TFEE**	11.98		

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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	5.58	1.18	CATNIC
External wall	E3 Sill	Table K1 - Approved	0.040	4.57	0.18	
External wall	E4 Jamb	Table K1 - Approved	0.050	15.00	0.75	
External wall	E5 Ground floor (normal)	Independently assessed	0.038	27.93	1.06	E05-CXBR-CW4040_100 mm-01-150B&
External wall	E7 Party floor between dwellings (in blocks of flats)	Independently assessed	0.058	27.93	1.62	cd09
External wall	E16 Corner (normal)	Independently assessed	0.042	6.93	0.29	E16-CXBR-CW4040_100 mm-01
External wall	E17 Corner (inverted – internal area greater than external area)	Independently assessed	-0.091	2.31	-0.21	E17-CXBR-CW4040_100 mm-01
External wall	E18 Party wall between dwellings	Independently assessed	0.052	2.31	0.12	E18-CXBR-CW4040_100 mm-01-RD22
External wall	E25 Staggered party wall between dwellings	Table K1 - Default	0.120	2.31	0.28	
Party wall	P1 Party wall - Ground floor	Independently assessed	0.010	7.20	0.07	P01-CXBR-EWM22-150B&Bperp
Party wall	P3 Party wall - Intermediate floor between dwellings (in blocks of flats)	Table K1 - Default	0.000	7.20	0.00	

Total: 5.34 **W/mK:**

Y-Value: 0.040 **W/m²K:**

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

Design SAP
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	-0.97 (-5.1%)	$kgCO_2/m^2$	

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	48.13	$kWh/m^2/yr$	
Dwelling Fabric Energy Efficiency (DFEE)	42.36	$kWh/m^2/yr$	
	-5.7 (-11.9%)	$kWh/m^2/yr$	Pass

Criterion 2 – Limits on design flexibility

Limiting Fabric Standards

2 Fabric U-values

Element	Average	Highest	
External wall	0.25 (max. 0.30)	0.27 (max. 0.70)	Pass
Party wall	0.00 (max. 0.20)	-	Pass
Floor	0.13 (max. 0.25)	0.13 (max. 0.70)	Pass
Openings	1.33 (max. 2.00)	1.41 (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

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 North	3.71 m², No overhang
Windows facing East	2.47 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)		
Maximum	10.0		Pass

10 Key features

Party wall U-value	0.00	W/m²K
Door U-value	1.10	W/m²K

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CO_2 Emissions (t/year)	1.04	**DFEE**	42.36	**TFEE**	48.13
General Requirements Compliance	Pass	**% DFEE<TFEE**	11.98		

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

Orientation	North
Property Tenure	Unknown
Transaction Type	New dwelling
Terrain Type	Urban
1.0 Property Type	Flat, End-Terrace
2.0 Number of Storeys	1
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:	27.93 m	69.93 m²	2.31 m

7.0 Living Area	30.28	m²
8.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	276.38	kJ/m²K

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area (m²)	Nett Area (m²)
External Wall 1	Cavity Wall	Cavity wall : plasterboard on dabs, AAC block, filled cavity, any outside structure	0.27	60.00	46.30	38.10
Wall to Corridor	Cavity Wall	Cavity wall : plasterboard on dabs, AAC block, filled cavity, any outside structure	0.27	60.00	18.21	18.21

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 dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	16.62

9.2 Internal Walls

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Wall 1	Plasterboard on timber frame	9.00	92.63

10.1 Party Ceilings

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Party Ceilings 1	Concrete floor slab, carpeted	100.00	69.93

SUMMARY FOR INPUT DATA
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11.0 Heat Loss Floors

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Area (m²)
Heat Loss Floor 1	Ground Floor - Solid	Slab on ground, screed over insulation	0.13	110.00	69.93

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Argon Filled	G-value	Frame Type	Frame Factor	U Value (W/m²K)
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 Door	Manufacturer	Half Glazed Door	Double Low-E Soft 0.05			0.63		0.70	1.50
solid door	Manufacturer	Solid Door							1.10

13.0 Openings

Name	Opening Type	Location	Orientation	Curtain Type	Overhang Ratio	Wide Overhang	Width (m)	Height (m)	Count	Area (m²)	Curtain Closed
front door	Solid Door	[1] External Wall 1	North							2.02	
front windows	Window	[1] External Wall 1	North	Dark-coloured curtain or roller blind	0.00					3.71	100
LHS window	Window	[1] External Wall 1	East	Dark-coloured curtain or roller blind	0.00					2.47	100

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:
Independently assessed	E2 Other lintels (including other steel lintels)	5.58	0.211	No	CATNIC
Table K1 - Approved	E3 Sill	4.57	0.040	No	
Table K1 - Approved	E4 Jamb	15.00	0.050	No	
Independently assessed	E5 Ground floor (normal)	27.93	0.038	No	E05-CXBR-CW4040_100mm-01-150B&
Independently assessed	E7 Party floor between dwellings (in blocks of flats)	27.93	0.058	No	cd09
Independently assessed	E16 Corner (normal)	6.93	0.042	No	E16-CXBR-CW4040_100mm-01
Independently assessed	E17 Corner (inverted – internal area greater than external area)	2.31	-0.091	No	E17-CXBR-CW4040_100mm-01
Independently assessed	E18 Party wall between dwellings	2.31	0.052	No	E18-CXBR-CW4040_100mm-01-RD22
Table K1 - Default	E25 Staggered party wall between dwellings	2.31	0.120	No	
Independently assessed	P1 Party wall - Ground floor	7.20	0.010	No	P01-CXBR-EWM22-150B&Bperp
Table K1 - Default	P3 Party wall - Intermediate floor between dwellings (in blocks of flats)	7.20	0.000	No	

Y-value	0.040	W/m²K
18.0 Pressure Testing	Yes	
Designed AP_{50}	5.00	m³/(h.m²) @ 50 Pa
Property Tested ?		
As Built AP_{50}		m³/(h.m²) @ 50 Pa

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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

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

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	
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

None