

# PREDICTED ENERGY ASSESSMENT

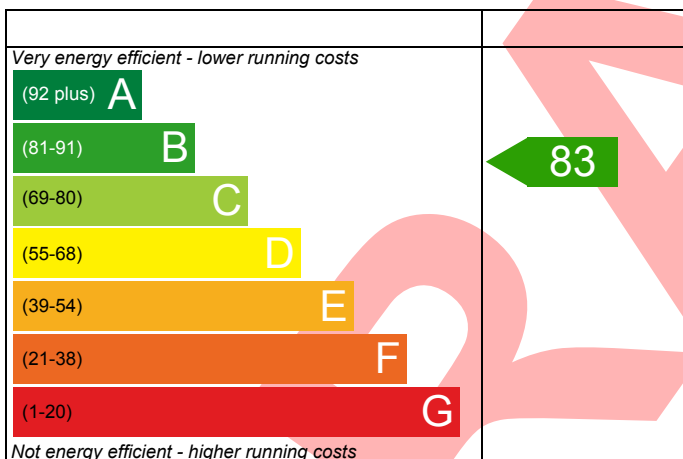
3 bed,  
2 bath

Dwelling type: House, End-Terrace  
Date of assessment: 30/05/2019  
Produced by: Michael Brogden  
Total floor area: 76.86 m<sup>2</sup>

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<sub>2</sub>) emissions.

## Energy Efficiency Rating

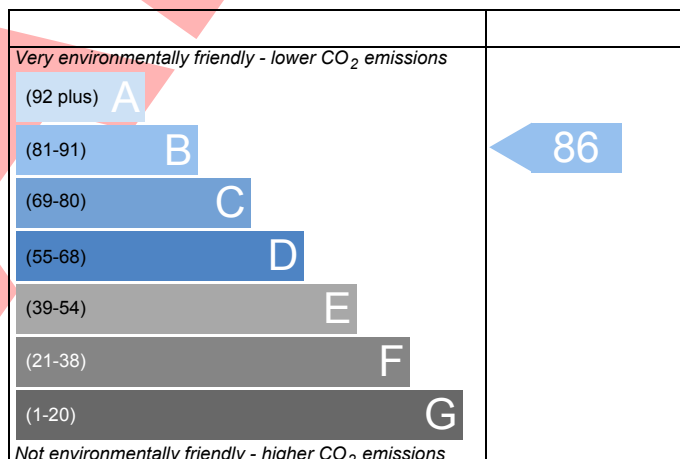


**England**

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<sub>2</sub>) 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<sub>2</sub>) 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)

Property Reference	Plot 057 AS	Issued on Date	30/05/2019
Assessment Reference	Plot 057 AS	Prop Type Ref	Type 51 Hipped 1FW END
Property	3 bed, 2 bath		
SAP Rating	83 B	DER	18.40
Environmental	86 B	TER	19.08
CO <sub>2</sub> Emissions (t/year)	1.20	% DER<TER	3.54
General Requirements Compliance	Pass	DFEE	48.69
		TFEE	52.65
		% DFEE<TFEE	7.53
Assessor Details	Mr. Michael Brogden, Michael Brogden, Tel: 0333 5777 577, michael@darren-evans.co.uk		Assessor ID
			R034-0001
Client			

### 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)	19.08	kgCO <sub>2</sub> /m <sup>2</sup>	
Dwelling Carbon Dioxide Emission Rate (DER)	18.40	kgCO <sub>2</sub> /m <sup>2</sup>	Pass
	-0.68 (-3.6%)	kgCO <sub>2</sub> /m <sup>2</sup>	

##### 1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	52.65	kWh/m <sup>2</sup> /yr	
Dwelling Fabric Energy Efficiency (DFEE)	48.69	kWh/m <sup>2</sup> /yr	
	-4.0 (-7.6%)	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	0.27 (max. 0.30)	0.27 (max. 0.70)	Pass
Party wall	0.00 (max. 0.20)	-	Pass
Floor	0.15 (max. 0.25)	0.15 (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 <sup>3</sup> /(h.m <sup>2</sup> ) @ 50 Pa	
Maximum	10.0	m <sup>3</sup> /(h.m <sup>2</sup> ) @ 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 m<sup>2</sup>, No overhang

Windows facing West

4.07 m<sup>2</sup>, 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/m<sup>2</sup>K

Pass

### Air permeability and pressure testing

#### 3 Air permeability

Air permeability at 50 pascals

5.00 (design value)

m<sup>3</sup>/(h.m<sup>2</sup>) @ 50 Pa

Maximum

10.0

m<sup>3</sup>/(h.m<sup>2</sup>) @ 50 Pa

Pass

### 10 Key features

Party wall U-value

0.00

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

Roof U-value

0.10

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

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## RECOMMENDATIONS

	Typical cost	Typical savings per year	Energy efficiency	Environmenta l impact	Result
Low energy lights			0	0	Already installed
Solar water heating	£4,000 - £6,000	£29	B 85	B 88	Recommended
Photovoltaic	£3,500 - £5,500	£309	A 96	A 98	Recommended
Wind turbine			0	0	Not applicable
<b>Totals</b>	<b>£7,500 - £11,500</b>	<b>£338</b>	<b>A 96</b>	<b>A 98</b>	

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# THERMAL BRIDGING

## Calculation Type: New Build (As Designed)

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Assessment Reference	Plot 057 AS	Prop Type Ref	Type 51 Hipped 1FW END
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SAP Rating	83 B	DER	18.40	TER	19.08
Environmental	86 B	% DER<TER	3.54		
CO <sub>2</sub> Emissions (t/year)	1.20	DFEE	48.69	TFEE	52.65
General Requirements Compliance	Pass	% DFEE<TFEE	7.53		

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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	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	17.54	0.67	E05-CXBR-CW4040_100 mm-01-150B&
External wall	E6 Intermediate floor within a dwelling	Independently assessed	0.004	17.54	0.07	E06-CXBR-CW4040_100 mm-01
External wall	E10 Eaves (insulation at ceiling level)	Table K1 - Approved	0.060	17.54	1.05	
External wall	E16 Corner (normal)	Independently assessed	0.042	9.74	0.41	E16-CXBR-CW4040_100 mm-01
External wall	E18 Party wall between dwellings	Independently assessed	0.052	9.74	0.51	E18-CXBR-CW4040_100 mm-01-RD22
Party wall	P1 Party wall - Ground floor	Independently assessed	0.010	8.55	0.09	P01-CXBR-EWM22-150B&Bperp
Party wall	P2 Party wall - Intermediate floor within a dwelling	Table K1 - Default	0.000	8.55	0.00	
Party wall	P4 Party wall - Roof (insulation at ceiling level)	Independently assessed	0.117	8.55	1.00	P04-CXBR-EWM22-Spand

Total: **6.95** W/mK:  
Y-Value: **0.044** W/m²K:

# BASIC COMPLIANCE REPORT

## Calculation Type: New Build (As Designed)

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General Requirements Compliance	Pass	DfEE	48.69
		TfEE	52.65
		% DfEE<TfEE	7.53
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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)	19.08	kgCO <sub>2</sub> /m <sup>2</sup>	
Dwelling Carbon Dioxide Emission Rate (DER)	18.40	kgCO <sub>2</sub> /m <sup>2</sup>	Pass
	-0.68 (-3.6%)	kgCO <sub>2</sub> /m <sup>2</sup>	

##### 1b TfEE and DfEE

Target Fabric Energy Efficiency (TfEE)	52.65	kWh/m <sup>2</sup> /yr	
Dwelling Fabric Energy Efficiency (DfEE)	48.69	kWh/m <sup>2</sup> /yr	
	-4.0 (-7.6%)	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	0.27 (max. 0.30)	0.27 (max. 0.70)	Pass
Party wall	0.00 (max. 0.20)	-	Pass
Floor	0.15 (max. 0.25)	0.15 (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

### 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<sup>2</sup>, No overhang

Windows facing West

4.07 m<sup>2</sup>, 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/m<sup>2</sup>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<sup>2</sup>K

Roof U-value

0.10

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

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Client	
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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, End-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:	17.54 m	38.43 m <sup>2</sup>	2.31 m
	1st Storey:	17.54 m	38.43 m <sup>2</sup>	2.56 m

7.0 Living Area	31.02	m <sup>2</sup>
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8.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	207	kJ/m <sup>2</sup> K

9.0 External Walls						
Description	Type	Construction	U-Value (W/m <sup>2</sup> K)	Kappa (kJ/m <sup>2</sup> K)	Gross Area (m <sup>2</sup> )	Nett Area (m <sup>2</sup> )
External Wall 1	Cavity Wall	Cavity wall : plasterboard on dabs, AAC block, filled cavity, any outside structure	0.27	60.00	85.42	72.22

9.1 Party Walls					
Description	Type	Construction	U-Value (W/m <sup>2</sup> K)	Kappa (kJ/m <sup>2</sup> K)	Area (m <sup>2</sup> )
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	41.61

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

10.0 External Roofs						
Description	Type	Construction	U-Value (W/m <sup>2</sup> K)	Kappa (kJ/m <sup>2</sup> K)	Gross Area (m <sup>2</sup> )	Nett Area (m <sup>2</sup> )
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/m²K)	Area (m²)
Internal Ceiling 1	Plasterboard ceiling, carpeted chipboard floor	9.00	38.43

### 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	0.15	110.00	38.43

### 11.2 Internal Floors

Description	Construction	Kappa (kJ/m²K)	Area (m²)
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/m²K)
French Door	Manufacture r	Window	Double glazed			0.71		0.70	1.41
Window	Manufacture r	Window	Double glazed			0.71		0.70	1.41
Solid door tall window	Manufacture r	Solid Door							1.20
half glazed	Manufacture r	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 (m²)	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

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)	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)	17.54	0.038	No	E05-CXBR-CW4040_100mm-01-150B&
Independently assessed	E6 Intermediate floor within a dwelling	17.54	0.004	No	E06-CXBR-CW4040_100mm-01
Table K1 - Approved	E10 Eaves (insulation at ceiling level)	17.54	0.060	No	
Independently assessed	E16 Corner (normal)	9.74	0.042	No	E16-CXBR-CW4040_100mm-01
Independently assessed	E18 Party wall between dwellings	9.74	0.052	No	E18-CXBR-CW4040_100mm-01-RD22
Independently assessed	P1 Party wall - Ground floor	8.55	0.010	No	P01-CXBR-EWM22-150B&Bperp
Table K1 - Default	P2 Party wall - Intermediate floor within a dwelling	8.55	0.000	No	
Independently assessed	P4 Party wall - Roof (insulation at ceiling level)	8.55	0.117	No	P04-CXBR-EWM22-Spand

Y-value 0.044 W/m²K

# SUMMARY FOR INPUT DATA

## Calculation Type: New Build (As Designed)

<b>18.0 Pressure Testing</b>	<input type="text" value="Yes"/>	
Designed AP <sub>50</sub>	<input type="text" value="5.00"/>	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"/>	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 half open"/>
Cross ventilation possible	<input type="text" value="Yes"/>
Night Ventilation	<input type="text" value="No"/>
Air change rate	<input type="text" value="4.00"/>

#### 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				3
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="15"/>	
Total number of L.E.L. fittings	<input type="text" value="15"/>	
Percentage of L.E.L. fittings	<input type="text" value="100.00"/>	%

#### External

External lights fitted	<input type="text" value="No"/>
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<b>23.0 Electricity Tariff</b>	<input type="text" value="Standard"/>
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### 24.0 Main Heating 1

	<input type="text" value="Database"/>	
Percentage of Heat	<input type="text" value="100"/>	%
Database Ref. No.	<input type="text" value="17929"/>	
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="90.5"/>	
In Summer	<input type="text" value="87.3"/>	
Controls	<input type="text" value="CBI Time and temperature zone control"/>	
PCDF Controls	<input type="text" value="0"/>	
Delayed Start Stat	<input type="text" value="Yes"/>	
Sap Code	<input type="text" value="2110"/>	
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"/>	

# SUMMARY FOR INPUT DATA

## Calculation Type: New Build (As Designed)

Combi keep hot type	None
<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	No
Water use <= 125 litres/person/day	Yes
SAP Code	901
<b>29.0 Hot Water Cylinder</b>	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 85	
	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 96	