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Land r/o
**354 Manchester Road,
Bury BL9 9NR**

Full application for the erection of one dwelling

**Carbon and Energy Statement:
Policy JP-S2**

Energy and Carbon Proforma

Residential

Small minor development (*XL extensions & 1 home*)

Version 1.0

Project Name: 354 Manchester Road

Application ref:

Date: 20/07/2025

		Ref. name	New Dwelling to rear
		Area (m ² GIA)	183m2
		Target values	Extension/home
Minimise energy demand	Form factor per home or extension	≤ 2	2.16
	Average glazing ratio per façade: North	~10-15%	16.4
	South	~20-30%	28.54
	East	~10-20%	24.07
	West	~10-20%	23.04
	Average external walls U-value (W/m ² K)	≤ 0.15	0.14
	Wall thickness (mm)	> 400	370
	Average ground floor U-value (W/m ² K)	≤ 0.10	0.1
	Average external roofs U-value (W/m ² K)	≤ 0.10	0.13
	Average external doors U-value (W/m ² K)	≤ 1.0	1.35
	Average windows U-value (W/m ² K) (or double/ triple glazed)	≤ 1 (triple)	1.35
	Air permeability rate (m ³ /h/m ² @ 50 Pa)	≤ 3	4
	Ventilation strategy (background only)	-	MVHR
Use renewable energy	PV footprint area (% of ground floor space)	≥ 40	18.90%
Use low carbon energy	Fossil fuel free (yes/no)	Yes	No.
	Heat source - <i>Where the system for generating space heating and hot water is a heat pump and it achieves a SCOP of 3.5 or higher (then a Low Carbon Heat Appraisal not required)</i>	Electric	Electric
Reduce overheating risk	Has the Good Homes Alliance overheating risk assessment tool been completed?	Yes	Yes
	Resulting score from the GHA tool?	<12	5
Minimise embodied carbon	Confirmation that a summary of the efforts made to design a lean, low carbon structure and building design has been submitted?	Yes	Yes

EARLY STAGE OVERHEATING RISK TOOL Version 1.0, July 2019

This tool provides guidance on how to assess overheating risk in residential schemes at the early stages of design. It is specifically a pre-detail design assessment intended to help identify factors that could contribute to or mitigate the likelihood of overheating.

The questions can be answered for an overall scheme or for individual units. Score zero wherever the question does not apply.

Additional information is provided in the accompanying guidance, with examples of scoring and advice on next steps. Find out more information and download accompanying guidance at goodhomes.org.uk/overheating-in-new-homes.



KEY FACTORS INCREASING THE LIKELIHOOD OF OVERHEATING

KEY FACTORS REDUCING THE LIKELIHOOD OF OVERHEATING

Geographical and local context

#1 Where is the scheme in the UK? See guidance for map	South east	4	2
	Northern England, Scotland & NI	0	
	Rest of England and Wales	2	
#2 Is the site likely to see an Urban Heat Island effect? See guidance for details	Central London (see guidance)	3	0
	Grtr London, Manchester, B'ham	2	
	Other cities, towns & dense sub-urban areas	1	

#8 Do the site surroundings feature significant blue/green infrastructure?

Proximity to green spaces and large water bodies has beneficial effects on local temperatures; as guidance, this would require at least 50% of surroundings within a 100m radius to be blue/green, or a rural context

1 0

Site characteristics

#3 Does the site have barriers to windows opening? - Noise/Acoustic risks - Poor air quality/smells e.g. near factory or car park or very busy road - Security risks/crime - Adjacent to heat rejection plant	Day - reasons to keep all windows closed	8	0
	Day - barriers some of the time, or for some windows e.g. on quiet side	4	
	Night - reasons to keep all windows closed	8	
	Night - bedroom windows OK to open, but other windows are likely to stay closed	4	

#9 Are immediate surrounding surfaces in majority pale in colour, or blue/green?

Lighter surfaces reflect more heat and absorb less so their temperatures remain lower; consider horizontal and vertical surfaces within 10m of the scheme

1 1

#10 Does the site have existing tall trees or buildings that will shade solar-exposed glazed areas?

Shading onto east, south and west facing areas can reduce solar gains, but may also reduce daylight levels

1 0

Scheme characteristics and dwelling design

#4 Are the dwellings flats? Flats often combine a number of factors contributing to overheating risk e.g. dwelling size, heat gains from surrounding areas; other dense and enclosed dwellings may be similarly affected - see guidance for examples	3	0
#5 Does the scheme have community heating? i.e. with hot pipework operating during summer, especially in internal areas, leading to heat gains and higher temperatures	3	0

#11 Do dwellings have high exposed thermal mass AND a means for secure and quiet night ventilation?

Thermal mass can help slow down temperature rises, but it can also cause properties to be slower to cool, so needs to be used with care - see guidance

1 0

#12 Do floor-to-ceiling heights allow ceiling fans, now or in the future?

Higher ceilings increase stratification and air movement, and offer the potential for ceiling fans

>2.8m and fan installed	2	0
> 2.8m	1	

Solar heat gains and ventilation

#6 What is the estimated average glazing ratio for the dwellings? (as a proportion of the facade on solar-exposed areas i.e. orientations facing east, south, west, and anything in between). Higher proportions of glazing allow higher heat gains into the space	>65%	12	0
	>50%	7	
	>35%	4	
#7 Are the dwellings single aspect? Single aspect dwellings have all openings on the same facade. This reduces the potential for ventilation	Single-aspect	3	0
	Dual aspect	0	

#13 Is there useful external shading?

Shading should apply to solar exposed (E/S/W) glazing. It may include shading devices, balconies above, facade articulation etc. See guidance on "full" and "part". Scoring depends on glazing proportions as per #6

	Full	Part	0
>65%	6	3	
>50%	4	2	
>35%	2	1	

#14 Do windows & openings support effective ventilation?

Larger, effective and secure openings will help dissipate heat - see guidance

	Openings compared to Part F purge rates		0
	= Part F	+50% +100%	
Single-aspect	minimum required	3 4	0
Dual aspect	minimum required	2 3	

TOTAL SCORE **5** = Sum of contributing factors: **6**

minus Sum of mitigating factors: **1**

High

12

Medium

8

Low

score >12:

Incorporate design changes to reduce risk factors and increase mitigation factors AND Carry out a detailed assessment (e.g. dynamic modelling against CIBSE TM59)

score between 8 and 12:

Seek design changes to reduce risk factors and/or increase mitigation factors AND Carry out a detailed assessment (e.g. dynamic modelling against CIBSE TM59)

score <8:

Ensure the mitigating measures are retained, and that risk factors do not increase (e.g. in planning conditions)

354 Manchester Road

Info for Energy and Carbon Calculations

Lean ,Low Carbon Structure and building design.

The thermal elements of the property have been designed to a good standard based upon the materials that are currently available at a reasonably affordable price. i.e. using the best available insulation thicknesses and lintel widths etc. Providing a better specification for the thermal elements that have been specified would currently be cost prohibitive due to the material required not currently being available at affordable prices.

The design of the building will exceed the minimum requirements of the 2022 Part L Building Regulations requirements.

The building will be provided with an electric vehicle charging point in accordance with Part S

The hot water and space heating are to be via air source heat pump which achieves a SCOP of 3.5 or higher

The ventilation will be via a MVHR system

The building will have a 5kW solar array fitted to the south facing elevation roof with high efficiency PV Panels.

U – Values

Summary of U- values

Ground floor – 0.10W/m²K

Cavity Wall - 0.14W/m²K

Roof insulation Flat ceilings – 0.12W/m²K

Pitch roof - Vaulted ceiling insulation between and under – 0.13W/m²K

Balcony Roof/Floor – Say 0.14 W/m²K

Windows and doors – 1.35 W/m²K

Target Air permeability

4.00 m³/h-m²0@50Pa

Details of internal finishes

Internal wall finishes – dot and dabbed skim plasterboard

Internal floor finished – laminate floor, tiles, carpet on sand cement screed

Internal ceiling finished – skimmed plasterboard

Ventilation strategy

MVHR System

Background ventilation

Floor area minimum requirement $99 + 84 = 183 \times 0.3 = 55\text{l/s}$

Minimum extract ventilation

WC 6 l/s

Utility 10 l/s

Kitchen	15 l/s
Bathroom	9 l/s
En-suite 1	8 l/s
En-suite 2	8 l/s
Total	56 l/s

Heating

Air source Heat Pump SCOP of 3.5 or higher.

U – Values

Details



← Application area

Roof

← Type of Roof

Pitched Roof

← Location Of The Insulation Layer

Pitched Roof Horizontal

← Insulation Type

Roll Insulation

← Joist Depth

150 mm

← Back

Change U-value
[mm]



U-value
0.12
[W/m²K]

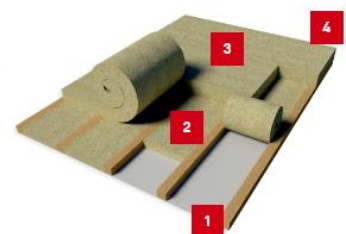
Change thickness
[mm]



Insulation thickness
400 mm

Construction build-up:

1. Gypsum plasterboard (12.5 mm)
2. Roll (150 mm)
3. Roll (150 mm + 100 mm)
4. Sheeted or tiled roof with felt/boards under tiles (500 mm)



Cavity Wall - Near Full Fill

354 Manchester road

30/01/2026

U Value

0.14 W/(m²·K)

Layer	Material	Thickness mm	Lambda W/(m·K)	R value m ² ·K/W
Internal Surface Resistance				0.130
Internal Finish	PLASTER (LIGHTWEIGHT)	13	0.180	0.072
Inner Leaf	AERATED BLOCK (k-value = 0.15 W/mK)	100	0.150	0.667
Mortar Bridging	MORTAR		0.800	0.000
Bridge percentage	7%			
Insulation	KOOLTHERM K106 (Polypropylene fleece (grey facing) to face outward)	115	0.019	6.053
Wall Ties	STAINLESS STEEL WALL TIES		17.000	
	Number of Anchors per m ²	3		
	Diameter of Anchors (mm)	3.99 mm		
Residual Airspace	UNV. A/SPACE;	10		0.149
Outer Leaf	BRICKWORK FACING	102.5	0.770	0.133
External Surface Resistance				0.040
Total Construction Thickness				340.5 mm

U-values calculated to BS EN ISO 6946:2017 or BS EN ISO 13370:2017 depending on application. For floor calculations the u-value result is dependent on the exposed perimeter and area entered into the calculator for each individual floor calculation. Soil type thermal conductivity taken as 1.5 W/mK, relevant to Clay/Silt. The physical and chemical properties of the products of Kingspan Insulation represent average values obtained by testing in accordance with generally accepted standards and are subject to standard tolerances.

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Pitched Roof - Insulation between and under rafters (partially filled - no sarking board)

354 Manchester road

30/01/2026

U Value
0.13 W/(m²·K)

Layer	Material	Thickness mm	Lambda W/(m·K)	R value m ² ·K/W
External Surface Resistance				0.100
Roof tiles	TILES / SLATES & BATTENS	30		0.000
Counter Battens	highly-ventilated	38		0.000
Membrane	KINGSPAN NILVENT BREATHABLE MEMBRANE	0.5		0.006
Bridging rafters	TIMBER RAFTERS 150mm (47mm@400mm)	150	0.130	1.154
Bridge percentage	13%			
Air cavity between	TIMBER RAFTER CAVITY; U/V. (47mm@400mm LOW-E)	50		0.507
Insulation between rafters	KOOLTHERM K107 - (BETWEEN TIMBER RAFTERS)	100	0.019	5.263
Insulated- Plasterboard	KOOLTHERM K118 72.5mm (12.5mm plasterboard internal finish)	72.5		3.224
Internal finish	PLASTER SKIM	3	0.180	0.017

Layer	Material	Thickness mm	Lambda W/(m·K)	R value m ² ·K/W
Internal Surface Resistance				0.100
Total Construction Thickness				294 mm

U-values calculated to BS EN ISO 6946:2017 or BS EN ISO 13370:2017 depending on application. For floor calculations the u-value result is dependent on the exposed perimeter and area entered into the calculator for each individual floor calculation. Soil type thermal conductivity taken as 1.5 W/mK, relevant to Clay/Silt. The physical and chemical properties of the products of Kingspan Insulation represent average values obtained by testing in accordance with generally accepted standards and are subject to standard tolerances.

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Solid Ground Floor - Insulation Below Slab

354 Manchester road

30/01/2026

U Value

0.10 W/(m²·K)

Layer	Material	Thickness mm	Lambda W/(m·K)	R value m ² ·K/W
Internal Surface Resistance				0.170
Floor Finish	SAND CEMENT SCREED	65	1.400	0.046
Floor Slab	CONCRETE 1:2:4 2000 kg/m ³	100	1.400	0.071
Separation Layer	POLYTHENE SEPARATION LAYER	0.5		0.001
Insulation	KOOLTHERM K103	150	0.019	7.895
Damp Proof Membrane	DAMP PROOF MEMBRANE	0.9		0.001
External Surface Resistance				0.040
Exposed Perimeter	Area	P/A Ratio	Total Construction Thickness	
47 m	99 m ²	0.475	316.4 mm	

U-values calculated to BS EN ISO 6946:2017 or BS EN ISO 13370:2017 depending on application. For floor calculations the u-value result is dependent on the exposed perimeter and area entered into the calculator for each individual floor calculation. Soil type thermal conductivity taken as 1.5 W/mK, relevant to Clay/Silt. The physical and chemical properties of the products of Kingspan Insulation represent average values obtained by testing in accordance with generally accepted standards and are subject to standard tolerances.

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