elmhurst energy

Dwellings with **cross ventilation** calculator tool - **Moderate Risk Location**

Section 1: Buildings or parts of buildings with cross-ventilation should not exceed the maximum glazing areas

Section 1a: Limiting solar gains - Maximum glazing area for the dwelling
1. Use 'Calculator 1a- Maximum glazing area for dwelling'
2. Select from the drop down list the orientation of the most glazed façade (this will be the same for 1a and 1b)
3. This will highlight the cell in Table 1 you need to enter once calculated
4. Enter the floor area and glazing area of the dwelling
5. Take the calculated Area of glazing (% floor area) and put it into the now teal coloured box in Table 1.
6. If this stays teal with green front then it meets the standard, if it turns red the value exceeds the standards (see reference table).

Calculator 1a- Maximum glazing area for dwelling	
Orientation of the façade that has the largest glazing area	North
Floor area of dwelling	202.64
Glazing area of the dwelling	25.27
Area of glazing (% floor area)	12.47

Section 1b: Limiting solar gains - Maximum glazing area in the most glazed room
1. Use 'Calculator 1b - Maximum glazing area for most glazed room'
2. Identify the room that has the highest area of glazing
3. Enter the floor area and glazing area of this room in calculator 1b
4. Take the calculated area of glazing (%floor area) and put it into the now teal coloured box in Table 1
5. If this stays teal with green front then it meets the standard, if it turns red then value exceeds the standards (see reference table).

Calculator 1b- Maximum glazing area for most glazed room	
Floor area of most glazed room	26.04
Glazing area of most glazed room	9.29
Maximum area of glazing in the most glazed room (% floor area of room)	35.68

Table 1: Enter your dwellings data (see instructions)

Section 1: Buildings or parts of buildings with cross-ventilation should not exceed the maximum glazing areas

Largest glazed façade orientation	Area of glazing for the whole dwelling (% floor area)	Area of glazing in the most glazed room (% floor area of room)
North	12.47	35.68
East		
South		
West		
Pass/Fail?	Pass	Pass
Section 1 maximum glazed area (pass/fail?)		**Pass**

Reference Table 1: Limits taken from Approved Document O

Section 1: Buildings or parts of buildings with cross-ventilation should not exceed the maximum glazing areas

Largest glazed façade orientation	Maximum area of glazing (% floor area)	Maximum area of glazing in the most glazed room (% floor area of room)
North	18	35
East	18	35
South	15	30
West	11	22

Section 2: Buildings or parts of buildings with cross-ventilation should be equal to or exceed the minimum free areas

Section 2a: Removing excess heat - Minimum free area for whole dwelling
1. Use 'Calculator 2a - Minimum Free Area for Whole Dwelling'
2. Calculate the equivalent area of all the openings in the dwelling (to do this you can use tab 'Free Eqv Area')
3. When calculating for the whole dwelling (2a) daytime opening angles can be used.
4. Enter the floor area and glazing area of the whole dwelling
5. Table 2 will then calculate the minimum free area and compare this to the equivalent area
6. If it meets requirements the cell will go green and if does not meet the requirements the cell will go red.

It is important that when using openings for ventilation as a mitigation measure for overheating that they can actually be opened. For more information on the limitations to opening and the angles of openings with respect to noise, pollution, security, protection from falling and protection from entrapment please refer to Approved Document O.

Calculator 2a - Minimum Free Area for Whole Dwelling	
Equivalent area of openings	25.36
Floor area of whole dwelling	202.64
Glazing area of whole dwelling	25.27

Section 2b: Removing excess heat - Minimum free area for bedrooms
1. Use 'Calculator 2b - Minimum free area for bedrooms'
2. Calculate the equivalent area of all the bedroom openings (To do this you can use tab 'Free Eqv Area')
3. For bedroom ventilation this is to be used at night time and therefore the opening angles should reflect this.
4. Enter the floor area of the bedroom
5. Table 2 will then calculate the minimum free area and compare this to the equivalent area
6. If it meets requirements the cell will go green and if does not meet the requirements the cell will go red.

It is important that when using openings for ventilation as a mitigation measure for overheating that they can actually be opened. For more information on the limitations to opening and the angles of openings with respect to noise, pollution, security, protection from falling and protection from entrapment please refer to Approved Document O.

Calculator 2b - Minimum free area for bedrooms

Bedroom 1		*Bedroom 2 - Only enter if present*		*Bedroom 3 - Only enter if present*	
Free area or Equivalent area of windows for bedroom	2.60	Free area or Equivalent area of windows for bedroom	2.60	Free area or Equivalent area of windows for bedroom	1.66
Floor area of bedroom	13.11	Floor area of bedroom	10.91	Floor area of bedroom	10.92
Bedroom 4 - Only enter if present		*Bedroom 5 - Only enter if present*			
Free area or Equivalent area of windows for bedroom	1.92	Free area or Equivalent area of windows for bedroom	1.92		
Floor area of bedroom	16.20	Floor area of bedroom	13.75		

Table 2: Enter your dwellings data (see instructions)

Section 2: Buildings or parts of buildings with cross-ventilation should equal or exceed the minimum free areas

The greater of the following:	Minimum Free Area (m2)	Equivalent area (m2)
Floor area	18.24	25.36
Glazing Area	13.90	25.36
Bedroom 1	0.52	2.60
Bedroom 2	0.44	2.60
Bedroom 3	0.44	1.66
Bedroom 4	0.65	1.92
Bedroom 5	0.55	1.92
Total Minimum Free Area		**Pass**
Bedrooms minimum Free Area Result		**Pass**
Section 2: Minimum Free Area (pass/fail)		**Pass**

Reference Table 2: Limits taken from Approved Document O

Section 2: Buildings or parts of buildings with cross-ventilation should equal or exceed the minimum free areas

	The greater of the following:
Total minimum free area*	a. 9% of the floor area
	b. 55% of the glazing area
Bedroom minimum free area	4% of the floor area of the room

Does the dwelling meet the simplified requirements for moderate risk with cross ventilation?	**Pass**

elmhurst energy

Approved Document O - Simplified Method Report

Created in the Elmhurst Overheating tool - For use in England only

Building and Site Details

Residential building name/number	Plot 3 Penlands Farm Development Site
Street	Penlands Green
Town	Haywards Heath
County	West Sussex
Postcode	RH17 5HR
Proposed building use/type of building	Domestic Dwelling
Are there any security, noise or pollution issues?	No
Site Details	Moderate risk location with cross ventilation
Is this building high risk and shading strategy required?	No
Shading strategy included? (Give details)	

Results

	Target	Result		Pass/Fail?
Maximum area of glazing (%)	11	12.47		Pass
Maximum area of glazing in the most glazed room (%)	22	35.68		Pass
Total minimum free area as % floor area (m²)	18.24	25.36		Pass
Total minimum free area % glazing area (m²)	13.90	25.36		Pass
The greater of the minimum free area/ floor area or glazing area should pass - Highlighted yellow				
Bedroom 1 minimum free area (m²)	0.52	2.60		Pass
Bedroom 2 minimum free area (m²)	0.44	2.60		Pass
Bedroom 3 minimum free area (m²)	0.44	1.66		Pass
Bedroom 4 minimum free area (m²)	0.65	1.92		Pass
Bedroom 5 minimum free area (m²)	0.55	1.92		Pass
Dwelling overall result		**Pass**		

Designer's declaration

Designer's name	Faye Mitchell
Designer's organisation	Falcon Energy Ltd
Designer's email	info@falconenergy.co.uk
Designer's contact number	01403253439
Designer's signature	
Registration number (if applicable)	Y981-0001
Date of design	29/10/2025