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Our Ref: BM/kb/R3005-001

13th February 2024

Mr. Paul Sinclair
Westchurch Homes
Kennedy House
31 Stamford Street
Altrincham
Cheshire
WA14 1ES

Dear Mr. Sinclair

REF: LOUISA STREET, OPENSHAW – BUILDING REGULATIONS PART O - OVERHEATING

As per your request for a response regarding this issue, I can confirm that Focus have undertaken an assessment on one of each housetype and a representative sample of apartments at the above scheme, as per the "Section 2 – Dynamic Thermal Modelling" method of demonstrating compliance with requirement O1 of the Part O Building Regulations.

These calculations were undertaken by a suitably qualified assessor using IESVE software in line with CIBSE TM59 – Design Methodology for the Assessment of Overheating Risk in Homes. The calculations were undertaken utilising drawings and specification information provided by Westchurch Homes.

As per Section 2.2 (1) of TM59, "a suitable sample of units within a development should be selected" for assessment. Section 3.1 provides further clarification on this, stating that "the report should justify the sample of units chosen for this assessment and explain why this is appropriate".

As such, the sample plots have been chosen on the basis of assessing one of each housetype and a representative sample of apartments, with the specific plots chosen based on an assessment of the plot with the highest risk of overheating for each housetype. The key factors for ascertaining the 'worst case' unit were the level of exposure and shading of the dwelling and the orientation of the largest areas of glazing. A full list of plots relevant to each housetype can be found below:

- Arundel + – Plots 1 – 8 & 24 - 27
- Chomondley – Plots 28 & 29
- Montacute – Plots 16 - 19
- Wob + – Plots 9 - 15 & 20 – 23
- Apartments – Plots 30-71

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As the enclosed calculation reports detail, Part O Compliance is achieved for all housetypes at Lousia Street, Openshaw.

Yours sincerely

BEN MATTHEWS
Senior Sustainability Consultant
For and on behalf of Focus Consultants 2010 LLP

Westchurch Homes

Arundel + Contemporary

ADO Specification and Results

November 2023

Contact Information

Client:	Westchurch Homes Kennedy House, 31 Stamford Street Altrincham Cheshire WA14 1ES
Client Lead:	Paul Sinclair
Email:	[redacted]
Prepared By:	Focus Consultants 2010 LLP Focus House Millennium Way West Phoenix Business Park Nottingham NG8 6AS
Project:	Arundel + Contemporary
Document Title:	ADO Specification and Results
Date:	November 2023
Focus Contact Details:	Sana Arif, Senior Sustainability Consultant [redacted]
Authorised By:	Jason Redfearn, Partner
Signature:	[redacted]

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Approved Document O Specifications

FOCUS CONSULTANTS 2010 LLP

Thermal Model - Approved Document O Specifications

CLIENT:	Westchurch Homes
PROJECT:	Arundel
SOFTWARE:	IESVE
VERSION:	2023.2:0.0
SITE LOCATION:	Louisa Street, Openshaw
WEATHER FILE:	Manchester_DSY1_2020High50_.epw
DATE:	29 November 2013
BUILDING CATEGORY:	Category II
REVISION:	A

Building Fabric Elements				
External Element	**U Value (W/m2K)**	**G Value (glass only)**	**G Value (BFRC)**	**Notes**
External Windows	1.40	0.63	0.40	-
Skylight	1.40	0.63	0.40	-
Patio Doors	1.40	0.63	0.40	
External Element	**U Value (W/m2K)**	**Thermal Mass (KJ/m2K)**		**Notes**
External Walls	0.19	43.00		-
Ground Floor	0.11	50.40		
Roof	0.11	8.55		-
Internal Element	**U Value (W/m2K)**	**Thermal Mass (KJ/m2K)**		**Notes**
Internal Partitions	1.37	21.00		
Intermediate Floor	0.63	8.75		
Personnel Doors	2.20	13.87		-

Building Service - Air Exchanges			
Room	**Air Exchange Type**	**Flow Rate**	**Notes**
All Rooms	Infiltration	0.25 ach	Equivalent to Average Air Permeability 5 (CIBSE Guide A)

Internal Gains - ADO Profiles				
Room	**ADO Activity Assigned**	**Lighting Gain (W/m2)**	**Occupancy Gain (W/person)**	**Equipment Gain (W)**
Double Bedrooms	Double Bedrooms	2.00	75.00	80.00
Single Bedrooms	Single Bedrooms	2.00	75.00	80.00
Study Room	1 Bedroom - Living	2.00	75.00	150.00
3 Bedroom - Kitchen/Living	3 Bedroom - Kitchen/Living	2.00	75.00	450.00
3 Bedroom - Living	3 Bedroom - Living	2.00	75.00	150.00

Window Openings				
Opening Type	**Opening Angle**	**Equivalent Orifice Area**	**Opening Profile**	**Opening Hours**
Living Room Patio Door	90 degrees	92.90%	ADO.Section_26a	8am - 11pm
Living Room Side Hung Window	30 degrees	52.26%	ADO.Section_26a	8am - 11pm
Kitchen Side Hung Window	30 degrees	52.26%	ADO.Section_26a	8am - 11pm
Bedrooms Side Hung Window	30 degrees	52.26%	ADO.Section_26ab	All Day
Study/Dressing Skylight	20 degrees	75.48%	ADO.Section_26a	8am - 11pm

Internal Door Openings				
Opening Type	**Opening Angle**	**Equivalent Orifice Area**	**Opening Profile**	**Opening Hours**
Internal Doors Bedroom	90 degrees	92.90%	ADO.Section_26a	8am - 11pm
Internal Doors Living/Kitchen	90 degrees	92.90%	ADO.Section_26a	8am - 11pm

Definitions:
Homes that are predominantly naturally ventilated,including homes that have mechanical ventilation with heat recovery (mvhr), with good opportunities for natural ventilation in the summer should assess overheating using the adaptive method based on CIBSE TM52 (2013), as described in Section 4.2 TM59.

Homes that are predominantly mechanically ventilated because they have either no opportunity or extremely limited opportunities for opening windows (e.g. due to noise levels or air quality) should be assessed for overheating using the fixed temperature method based on CIBSE Guide A (2015a), as described in Section 4.3 TM59.

Approved Document O Report

Approved Document O report
Overheating risk in residential buildings
for
Plot 08 Arundel

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Plot 08 Arundel

Building details

Project name: Plot 08 Arundel	Date: 29-11-2023 15:55:14
Location: Manchester Ap, United Kingdom	
Address: Louisa Street, Openshaw	
Building use:	
Are there any security, noise, or pollution issues:	

Designer's details

Designer's name: Sana Arif
Designer's organisation: Focus Consultants 2010
Designer's address: Focus House Millennium Way West Phoenix Business Park Nottingham NG86AS

Dynamic thermal model

Software: IESVE version 2023.2.0.0	
Weather file: Manchester_DSY1_2020High50_.epw	
Results file: Final ARUN 29.11.23.aps	
Number of rooms analysed: 7	
TM59: summer elevated air speed: 0.1	
TM59: occupant category: Category II (normal)	
Overheating mitigation strategy:	
Has the building construction proposal been modelled accurately?	YES
Have the analysed rooms passed the assessment for Approved Doc O Dynamic Thermal Modelling Method (CIBSE TM 59)?	YES
Designer's signature: [redacted]	

Plot 08 Arundel

Summary

CIBSE TM59 overheating methodology for predominantly naturally ventilated rooms assesses against two criteria, (a) and (b) (for Category I occupancy, Tmax is reduced by 1K):

- Criterion (a) states that for living rooms, kitchens and bedrooms, the number of hours during which ΔT is greater than or equal to 1K from May to September (or November to March for southern hemisphere locations) shall not exceed 3% of occupied hours
- Criterion (b) states that the operative temperature of the bedrooms from 22:00-07:00 shall not exceed 26°C for more than 1% of annual hours (33 hours is therefore recorded as a fail). Approved document O applies limits to CIBSE TM59 section 3.3 (openings); these requirements are applied by appropriate assignment of MacroFlo types / scripted profiles in the model (see Modelled Openings Section).

CIBSE TM59 overheating methodology for predominantly mechanically ventilated rooms states the operative temperature of all rooms shall not exceed 26°C for more than 3% of annual occupied hours.

CIBSE TM59 also states that the inclusion of corridors in the overheating analysis is mandatory where community heating pipework runs through them. While there is no mandatory target for communal corridors, if an operative temperature of 28°C is exceeded for more than 3% of the total annual hours this should be identified as a significant risk.

Room name	Naturally ventilated Criterion a check	Naturally ventilated Criterion b check	Mechanically ventilated check	Corridor overheating risk check
Bedroom 1 FF	Pass	Pass	-	-
Bedroom 2 FF	Pass	Pass	-	-
Bedroom 3 FF	Pass	Pass	-	-
Bedroom 4 FF	Pass	Pass	-	-
Dining/Kitchen GF	Pass	N/A	-	-
Living GF	Pass	N/A	-	-
Study/Dressing FF	Pass	N/A	-	-

Naturally ventilated rooms – criterion (a)

Criterion (a) states that for living rooms, kitchens and bedrooms, the number of hours during which ΔT is greater than or equal to 1K from May to September (or November to March for southern hemisphere locations) shall not exceed 3% of occupied hours.

Room name	Occupied hours	No. hours ΔT ≥ 1°K	% Occupied hours ΔT ≥ 1°K	Criterion a check
Bedroom 1 FF	3672	53	1.4	Pass
Bedroom 2 FF	3672	15	0.4	Pass
Bedroom 3 FF	3672	42	1.1	Pass
Bedroom 4 FF	3672	0	0.0	Pass
Dining/Kitchen GF	1989	25	1.3	Pass
Living GF	1989	11	0.6	Pass
Study/Dressing FF	1989	8	0.4	Pass

Plot 08 Arundel

Naturally ventilated rooms – criterion (b)

Criterion (b) states that the operative temperature of the bedrooms from 22:00-07:00 shall not exceed 26°C for more than 1% of annual hours (33 hours is therefore recorded as a fail). Any rooms that are not bedrooms are therefore not assessed, hence the corresponding N/A values.

Room name	No. hours > 26°C 22:00-24:00	No. hours > 26°C 00:00-07:00	Total hours > 26°C	Criterion b check
Bedroom 1 FF	3	0	3	Pass
Bedroom 2 FF	3	0	3	Pass
Bedroom 3 FF	3	0	3	Pass
Bedroom 4 FF	1	0	1	Pass
Dining/Kitchen GF	N/A	N/A	N/A	N/A
Living GF	N/A	N/A	N/A	N/A
Study/Dressing FF	N/A	N/A	N/A	N/A

Mechanically ventilated rooms

CIBSE TM59 overheating methodology for predominantly mech. vent. rooms states the operative temperature of all rooms shall not exceed 26°C for more than 3% of annual occupied hours.

Room name	No. hours > 26°C	% Annual hours > 26°C	Mechanically ventilated check
No mech vent rooms	N/A	N/A	N/A

Communal corridors

CIBSE TM59 states that whilst there is no mandatory target for communal corridors, if an operative temperature of 28°C is exceeded for more than 3% of annual hours, then this should be identified as a significant risk within the TM59 overheating report.

Room name	No. hours > 28°C	% Annual hours > 28°C	Corridor overheating risk check
No corridors	N/A	N/A	N/A

Plot 08 Arundel

Modelled details & overheating mitigation strategy

Approved document O: Providing Information & Appendix B requires information about the model and the overheating mitigation strategy. The following tables detail the modelling method and mitigation strategies applied to each analysed room. Where multiple active openings per space (windows & louvres) exist they are all listed. Occupancy, equipment and lighting profiles for occupied rooms comply with TM59 section 5.

Modelled occupancy

Room name	Floor area m²	Thermal template	Occupancy profile	Equipment profile	Lighting profile
Bedroom 1 FF	11.12	TM59 - Double Bedroom	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
Bedroom 2 FF	9.5	TM59 - Double Bedroom	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
Bedroom 3 FF	7.44	TM59 - Single Bedroom	Single Bedroom Occupancy	Single Bedroom Equipment	18-23h
Bedroom 4 FF	18.12	TM59 - Double Bedroom	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
Dining/Kitchen GF	18.62	TM59 - 3 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
Living GF	12.01	TM59 - 3 Bedroom - Living	Living Occupancy	Living Equipment	18-23h
Study/Dressing FF	9.31	TM59 - 1 Bedroom - Living	Living Occupancy	Living Equipment	18-23h

Plot 08 Arundel

Modelled openings

Room name	Window to wall ratio %	Window g-value (EN 410)	Opening gross area m²	Opening free area (avg) %	Opening free area / floor area ratio %	Opening profile(s)
Bedroom 1 FF	20.92	0.6302	1.47, 1.1, 1.21, 1.89	20.0, 90.0, 20.0, 95.0	29.87	ADO.Section_26ab, ADO.AlwaysOff, ADO.Section_26a
Bedroom 2 FF	16.48	0.6302	1.1, 0.55, 0.7, 0.35, 1.89	90.0, 20.0, 20.0, 20.0, 95.0	32.69	ADO.Section_26ab, ADO.AlwaysOff, ADO.Section_26a
Bedroom 3 FF	18.88	0.6302	1.1, 0.55, 0.7, 0.35, 1.89	90.0, 20.0, 20.0, 20.0, 95.0	41.74	ADO.Section_26ab, ADO.AlwaysOff, ADO.Section_26a
Bedroom 4 FF	7.88	0.6302	1.1, 0.7, 1.68	90.0, 20.0, 95.0	15.04	ADO.Section_26ab, ADO.AlwaysOff
Dining/Kitchen GF	16.09	0.6302	2.1, 1.21, 0.66, 1.26, 1.89, 1.47	90.0, 90.0, 20.0, 20.0, 95.0, 95.0	35.2	ADO.Section_26a, ADO.AlwaysOff, on continuously
Living GF	15.49	0.6302	1.12, 1.76, 1.89	20.0, 90.0, 95.0	30.0	ADO.Section_26a, ADO.AlwaysOff, on continuously
Study/Dressing FF	0.0	0.5525	1.21, 1.68	90.0, 95.0	28.84	ADO.Section_26ab, ADO.AlwaysOff

Modelled ventilation

Room name	Infiltration rate ACH	Mech vent flow rate ACH
Bedroom 1 FF	0.25	0
Bedroom 2 FF	0.25	0
Bedroom 3 FF	0.25	0
Bedroom 4 FF	0.25	0
Dining/Kitchen GF	0.25	0
Living GF	0.25	0
Study/Dressing FF	0.25	0

Westchurch Homes

Chormondeley

ADO Specification and Results

November 2023

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Email:	[redacted]
Prepared By:	Focus Consultants 2010 LLP Focus House Millennium Way West Phoenix Business Park Nottingham NG8 6AS
Project:	Chormondeley
Document Title:	ADO Specification and Results
Date:	November 2023
Focus Contact Details:	Sana Arif, Senior Sustainability Consultant [redacted]
Authorised By:	Jason Redfearn, Partner
Signature:	[redacted]

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Approved Document O Specifications

FOCUS CONSULTANTS 2010 LLP

Thermal Model - Approved Document O Specifications

CLIENT:	Westchurch Homes
PROJECT:	Chormondeley
SOFTWARE:	IESVE
VERSION:	2023.2:0.0
SITE LOCATION:	Louisa Street, Openshaw
WEATHER FILE:	Manchester_DSY1_2020High50_.epw
DATE:	27 November 2023
BUILDING CATEGORY:	Category II
REVISION:	A

Building Fabric Elements				
External Element	**U Value (W/m2K)**	**G Value (glass only)**	**G Value (BFRC)**	**Notes**
External Windows	1.40	0.63	0.40	-
Patio Doors	1.40	0.63	0.40	
External Element	**U Value (W/m2K)**	**Thermal Mass (KJ/m2K)**		**Notes**
External Walls	0.19	43.00		-
Ground Floor	0.11	50.40		
Roof	0.11	8.55		-
Internal Element	**U Value (W/m2K)**	**Thermal Mass (KJ/m2K)**		**Notes**
Internal Partitions	1.37	21.00		
Intermediate Floor	0.63	8.75		
Personnel Doors	2.20	13.87		-

Building Service - Air Exchanges			
Room	**Air Exchange Type**	**Flow Rate**	**Notes**
All Rooms	Infiltration	0.25 ach	Equivalent to Average Air Permeability 5 (CIBSE Guide A)

Internal Gains - ADO Profiles				
Room	**ADO Activity Assigned**	**Lighting Gain (W/m2)**	**Occupancy Gain (W/person)**	**Equipment Gain (W)**
Double Bedrooms	Double Bedrooms	2.00	75.00	80.00
Single Bedrooms	Single Bedrooms	2.00	75.00	80.00
1 Bedroom - Kitchen/Living	1 Bedroom - Kitchen/Living	2.00	75.00	450.00
2 Bedroom - Kitchen/Living	2 Bedroom - Kitchen/Living	2.00	75.00	450.00

Window Openings				
Opening Type	**Opening Angle**	**Equivalent Orifice Area**	**Opening Profile**	**Opening Hours**
Living Room Patio Door	90 degrees	92.90%	ADO.Section_26a	8am - 11pm
Living Room Side Hung Window	30 degrees	52.26%	ADO.Section_26a	8am - 11pm
Kitchen Side Hung Window	30 degrees	52.26%	ADO.Section_26a	8am - 11pm
Bedrooms Side Hung Window	30 degrees	52.26%	ADO.Section_26a	8am - 11pm
Bedrooms Top Hung Window 100mm	100 mm	20.20%	Night Hours	11pm - 8 am

Internal Door Openings				
Opening Type	**Opening Angle**	**Equivalent Orifice Area**	**Opening Profile**	**Opening Hours**
Internal Doors Bedroom	90 degrees	92.90%	ADO.Section_26a	8am - 11pm
Internal Doors Living/Kitchen	90 degrees	92.90%	ADO.Section_26a	8am - 11pm

Definitions:
Homes that are predominantly naturally ventilated,including homes that have mechanical ventilation with heat recovery (mvhr), with good opportunities for natural ventilation in the summer should assess overheating using the adaptive method based on CIBSE TM52 (2013), as described in Section 4.2 TM59.

Homes that are predominantly mechanically ventilated because they have either no opportunity or extremely limited opportunities for opening windows (e.g. due to noise levels or air quality) should be assessed for overheating using the fixed temperature method based on CIBSE Guide A (2015a), as described in Section 4.3 TM59.

Approved Document O Report

Approved Document O report
Overheating risk in residential buildings
for
Plot 28 Chormondeley

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Plot 28 Chormondeley

Building details

Project name: Plot 28 Chormondeley	Date: 27-11-2023 12:45:50
Location: Manchester Ap, United Kingdom	
Address: Louisa Street, Openshaw	
Building use:	
Are there any security, noise, or pollution issues:	

Designer's details

Designer's name: Sana Arif
Designer's organisation: Focus Consultants 2010 LLP
Designer's address: Focus House Millennium Way West Phoenix Business Park Nottingham NG86AS

Dynamic thermal model

Software: IESVE version 2023.2.0.0	
Weather file: Manchester_DSY1_2020High50_.epw	
Results file: Chomondeley 100mm 27.11.23.aps	
Number of rooms analysed: 3	
TM59: summer elevated air speed: 0.1	
TM59: occupant category: Category II (normal)	
Overheating mitigation strategy:	
Has the building construction proposal been modelled accurately?	YES
Have the analysed rooms passed the assessment for Approved Doc O Dynamic Thermal Modelling Method (CIBSE TM 59)?	YES
Designer's signature: [redacted]	

Plot 28 Chormondeley

Summary

CIBSE TM59 overheating methodology for predominantly naturally ventilated rooms assesses against two criteria, (a) and (b) (for Category I occupancy, Tmax is reduced by 1K):

- Criterion (a) states that for living rooms, kitchens and bedrooms, the number of hours during which ΔT is greater than or equal to 1K from May to September (or November to March for southern hemisphere locations) shall not exceed 3% of occupied hours
- Criterion (b) states that the operative temperature of the bedrooms from 22:00-07:00 shall not exceed 26°C for more than 1% of annual hours (33 hours is therefore recorded as a fail). Approved document O applies limits to CIBSE TM59 section 3.3 (openings); these requirements are applied by appropriate assignment of MacroFlo types / scripted profiles in the model (see Modelled Openings Section).

CIBSE TM59 overheating methodology for predominantly mechanically ventilated rooms states the operative temperature of all rooms shall not exceed 26°C for more than 3% of annual occupied hours.

CIBSE TM59 also states that the inclusion of corridors in the overheating analysis is mandatory where community heating pipework runs through them. While there is no mandatory target for communal corridors, if an operative temperature of 28°C is exceeded for more than 3% of the total annual hours this should be identified as a significant risk.

Room name	Naturally ventilated Criterion a check	Naturally ventilated Criterion b check	Mechanically ventilated check	Corridor overheating risk check
Bedroom 1 GF	Pass	Pass	-	-
Bedroom 2 GF	Pass	Pass	-	-
Living/Dining Room + Kitchen GF	Pass	N/A	-	-

Naturally ventilated rooms – criterion (a)

Criterion (a) states that for living rooms, kitchens and bedrooms, the number of hours during which ΔT is greater than or equal to 1K from May to September (or November to March for southern hemisphere locations) shall not exceed 3% of occupied hours.

Room name	Occupied hours	No. hours ΔT ≥ 1°K	% Occupied hours ΔT ≥ 1°K	Criterion a check
Bedroom 1 GF	3672	32	0.9	Pass
Bedroom 2 GF	3672	25	0.7	Pass
Living/Dining Room + Kitchen GF	1989	16	0.8	Pass

Naturally ventilated rooms – criterion (b)

Criterion (b) states that the operative temperature of the bedrooms from 22:00-07:00 shall not exceed 26°C for more than 1% of annual hours (33 hours is therefore recorded as a fail). Any rooms that are not bedrooms are therefore not assessed, hence the corresponding N/A values.

Room name	No. hours > 26°C 22:00-24:00	No. hours > 26°C 00:00-07:00	Total hours > 26°C	Criterion b check
Bedroom 1 GF	14	7	21	Pass
Bedroom 2 GF	12	4	16	Pass
Living/Dining Room + Kitchen GF	N/A	N/A	N/A	N/A

Plot 28 Chormondeley

Mechanically ventilated rooms

CIBSE TM59 overheating methodology for predominantly mech. vent. rooms states the operative temperature of all rooms shall not exceed 26°C for more than 3% of annual occupied hours.

Room name	No. hours > 26°C	% Annual hours > 26°C	Mechanically ventilated check
No mech vent rooms	N/A	N/A	N/A

Communal corridors

CIBSE TM59 states that whilst there is no mandatory target for communal corridors, if an operative temperature of 28°C is exceeded for more than 3% of annual hours, then this should be identified as a significant risk within the TM59 overheating report.

Room name	No. hours > 28°C	% Annual hours > 28°C	Corridor overheating risk check
No corridors	N/A	N/A	N/A

Modelled details & overheating mitigation strategy

Approved document O: Providing Information & Appendix B requires information about the model and the overheating mitigation strategy. The following tables detail the modelling method and mitigation strategies applied to each analysed room. Where multiple active openings per space (windows & louvres) exist they are all listed. Occupancy, equipment and lighting profiles for occupied rooms comply with TM59 section 5.

Modelled occupancy

Room name	Floor area m²	Thermal template	Occupancy profile	Equipment profile	Lighting profile
Bedroom 1 GF	14.16	TM59 - Double Bedroom	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
Bedroom 2 GF	7.8	TM59 - Double Bedroom	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
Living/Dining Room + Kitchen GF	27.14	TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h

Plot 28 Chormondeley

Modelled openings

Room name	Window to wall ratio %	Window g-value (EN 410)	Opening gross area m²	Opening free area (avg) %	Opening free area / floor area ratio %	Opening profile(s)
Bedroom 1 GF	15.98	0.6302, 0.6302	0.84, 1.54, 1.4, 1.89	0.0, 20.20000 0762939453, 0.0, 95.0	14.88	ADO.Section_ 26a, ADO.Sec tion_26ab, off continuously
Bedroom 2 GF	16.35	0.6302	0.84, 1.54, 1.89	0.0, 20.20000 0762939453, 95.0	27.01	ADO.Section_ 26a, ADO.Sec tion_26ab, off continuously
Living/Dining Room + Kitchen GF	17.12	0.6302, 0.6302	1.32, 1.89, 1.89, 1.4, 1.89	90.0, 90.0, 90.0, 0.0, 95.0	23.53	ADO.Section_ 26a, on continuously, off continuously

Modelled ventilation

Room name	Infiltration rate ACH	Mech vent flow rate ACH
Bedroom 1 GF	0.25	0
Bedroom 2 GF	0.25	0
Living/Dining Room + Kitchen GF	0.25	0

Westchurch Homes

Louisa Apartments

ADO Specification and Results

November 2023

Contact Information

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Email:	[redacted]
Prepared By:	Focus Consultants 2010 LLP Focus House Millennium Way West Phoenix Business Park Nottingham NG8 6AS
Project:	Louisa Apartments
Document Title:	ADO Specification and Results
Date:	November 2023
Focus Contact Details:	Sana Arif, Senior Sustainability Consultant [redacted]
Authorised By:	Jason Redfearn, Partner
Signature:	[redacted]

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Approved Document O Specifications

FOCUS CONSULTANTS 2010 LLP

Thermal Model - Approved Document O Specifications

CLIENT:	Westchurch Homes
PROJECT:	Louisa Apts
SOFTWARE:	IESVE
VERSION:	2023.2:0.0
SITE LOCATION:	Louisa Street, Openshaw
WEATHER FILE:	Manchester_DSY1_2020High50_.epw
DATE:	27 November 2023
BUILDING CATEGORY:	Category II
REVISION:	A

Building Fabric Elements				
External Element	**U Value (W/m2K)**	**G Value (glass only)**	**G Value (BFRC)**	**Notes**
External Windows	1.40	0.63	0.40	-
Patio Doors	1.40	0.63	0.40	
External Element	**U Value (W/m2K)**	**Thermal Mass (KJ/m2K)**		**Notes**
External Walls	0.19	43.00		-
Ground Floor	0.11	50.40		
Roof	0.11	8.55		-
Internal Element	**U Value (W/m2K)**	**Thermal Mass (KJ/m2K)**		**Notes**
Internal Partitions	1.37	21.00		
Intermediate Floor	0.63	8.75		
Personnel Doors	2.20	13.87		-

Building Service - Air Exchanges			
Room	**Air Exchange Type**	**Flow Rate**	**Notes**
All Rooms	Infiltration	0.25 ach	Equivalent to Average Air Permeability 5 (CIBSE Guide A)

Internal Gains - ADO Profiles				
Room	**ADO Activity Assigned**	**Lighting Gain (W/m2)**	**Occupancy Gain (W/person)**	**Equipment Gain (W)**
Double Bedrooms	Double Bedrooms	2.00	75.00	80.00
Single Bedrooms	Single Bedrooms	2.00	75.00	80.00
1 Bedroom - Kitchen/Living	1 Bedroom - Kitchen/Living	2.00	75.00	450.00
2 Bedroom - Kitchen/Living	2 Bedroom - Kitchen/Living	2.00	75.00	450.00

Window Openings				
Opening Type	**Opening Angle**	**Equivalent Orifice Area**	**Opening Profile**	**Opening Hours**
Living Room Patio Door	90 degrees	92.90%	ADO.Section_26a	8am - 11pm
Living Room Side Hung Window	30 degrees	52.26%	ADO.Section_26a	8am - 11pm
Kitchen Side Hung Window	30 degrees	52.26%	ADO.Section_26a	8am - 11pm
Bedrooms Side Hung Window	30 degrees	52.26%	ADO.Section_26ab	All Day

Internal Door Openings				
Opening Type	**Opening Angle**	**Equivalent Orifice Area**	**Opening Profile**	**Opening Hours**
Internal Doors Bedroom	90 degrees	92.90%	ADO.Section_26a	8am - 11pm
Internal Doors Living/Kitchen	90 degrees	92.90%	ADO.Section_26a	8am - 11pm

Definitions:
Homes that are predominantly naturally ventilated,including homes that have mechanical ventilation with heat recovery (mvhr), with good opportunities for natural ventilation in the summer should assess overheating using the adaptive method based on CIBSE TM52 (2013), as described in Section 4.2 TM59.

Homes that are predominantly mechanically ventilated because they have either no opportunity or extremely limited opportunities for opening windows (e.g. due to noise levels or air quality) should be assessed for overheating using the fixed temperature method based on CIBSE Guide A (2015a), as described in Section 4.3 TM59.

Approved Document O Report

Approved Document O report
Overheating risk in residential buildings
for
Louisa Apartments

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Louisa Apartments

Building details

Project name: Louisa Apartments	Date: 27-11-2023 11:09:27
Location: Manchester Ap, United Kingdom	
Address: Louisa Street, Openshaw	
Building use:	
Are there any security, noise, or pollution issues:	

Designer's details

Designer's name: Sana Arif
Designer's organisation: Focus Consultants 2010 LLP
Designer's address: Focus House Millennium Way West Phoenix Business Park Nottingham NG86AS

Dynamic thermal model

Software: IESVE version 2023.2.0.0	
Weather file: Manchester_DSY1_2020High50_.epw	
Results file: Baseline Louisa Apt.aps	
Number of rooms analysed: 14	
TM59: summer elevated air speed: 0.1	
TM59: occupant category: Category II (normal)	
Overheating mitigation strategy:	
Has the building construction proposal been modelled accurately?	YES
Have the analysed rooms passed the assessment for Approved Doc O Dynamic Thermal Modelling Method (CIBSE TM 59)?	YES
Designer's signature: [redacted]	

Louisa Apartments

Summary

CIBSE TM59 overheating methodology for predominantly naturally ventilated rooms assesses against two criteria, (a) and (b) (for Category I occupancy, Tmax is reduced by 1K):

- Criterion (a) states that for living rooms, kitchens and bedrooms, the number of hours during which ΔT is greater than or equal to 1K from May to September (or November to March for southern hemisphere locations) shall not exceed 3% of occupied hours
- Criterion (b) states that the operative temperature of the bedrooms from 22:00-07:00 shall not exceed 26°C for more than 1% of annual hours (33 hours is therefore recorded as a fail). Approved document O applies limits to CIBSE TM59 section 3.3 (openings); these requirements are applied by appropriate assignment of MacroFlo types / scripted profiles in the model (see Modelled Openings Section).

CIBSE TM59 overheating methodology for predominantly mechanically ventilated rooms states the operative temperature of all rooms shall not exceed 26°C for more than 3% of annual occupied hours.

CIBSE TM59 also states that the inclusion of corridors in the overheating analysis is mandatory where community heating pipework runs through them. While there is no mandatory target for communal corridors, if an operative temperature of 28°C is exceeded for more than 3% of the total annual hours this should be identified as a significant risk.

Room name	Naturally ventilated Criterion a check	Naturally ventilated Criterion b check	Mechanically ventilated check	Corridor overheating risk check
Bedroom 1 FF - Plot 32	Pass	Pass	-	-
Bedroom 1 FF - Plot 33	Pass	Pass	-	-
Bedroom 1 FF - Plot 34	Pass	Pass	-	-
Bedroom 1 GF - Plot 30	Pass	Pass	-	-
Bedroom 1 GF - Plot 31	Pass	Pass	-	-
Bedroom 1 SF - Plot 35	Pass	Pass	-	-
Bedroom 2 GF - Plot 32	Pass	Pass	-	-
Bedroom 2 GF - Plot 34	Pass	Pass	-	-
Living/Dining Room + Kitchen FF - Plot 32	Pass	N/A	-	-
Living/Dining Room + Kitchen FF - Plot 33	Pass	N/A	-	-
Living/Dining Room + Kitchen GF - Plot 30	Pass	N/A	-	-
Living/Dining Room + Kitchen GF - Plot 31	Pass	N/A	-	-
Living/Dining Room + Kitchen SF - Plot 34	Pass	N/A	-	-
Living/Dining Room + Kitchen SF - Plot 35	Pass	N/A	-	-

Naturally ventilated rooms – criterion (a)

Criterion (a) states that for living rooms, kitchens and bedrooms, the number of hours during which ΔT is greater than or equal to 1K from May to September (or November to March for southern hemisphere locations) shall not exceed 3% of occupied hours.

Room name	Occupied hours	No. hours ΔT ≥ 1°K	% Occupied hours ΔT ≥ 1°K	Criterion a check
Bedroom 1 FF - Plot 32	3672	2	0.1	Pass
Bedroom 1 FF - Plot 33	3672	3	0.1	Pass
Bedroom 1 FF - Plot 34	3672	7	0.2	Pass
Bedroom 1 GF - Plot 30	3672	0	0.0	Pass
Bedroom 1 GF - Plot 31	3672	0	0.0	Pass
Bedroom 1 SF - Plot 35	3672	11	0.3	Pass
Bedroom 2 GF - Plot 32	3672	4	0.1	Pass
Bedroom 2 GF - Plot 34	3672	12	0.3	Pass
Living/Dining Room + Kitchen FF - Plot 32	1989	11	0.6	Pass
Living/Dining Room + Kitchen FF - Plot 33	1989	11	0.6	Pass
Living/Dining Room + Kitchen GF - Plot 30	1989	6	0.3	Pass
Living/Dining Room + Kitchen GF - Plot 31	1989	5	0.3	Pass
Living/Dining Room + Kitchen SF - Plot 34	1989	23	1.2	Pass
Living/Dining Room + Kitchen SF - Plot 35	1989	23	1.2	Pass

Naturally ventilated rooms – criterion (b)

Criterion (b) states that the operative temperature of the bedrooms from 22:00-07:00 shall not exceed 26°C for more than 1% of annual hours (33 hours is therefore recorded as a fail). Any rooms that are not bedrooms are therefore not assessed, hence the corresponding N/A values.

Room name	No. hours > 26°C 22:00-24:00	No. hours > 26°C 00:00-07:00	Total hours > 26°C	Criterion b check
Bedroom 1 FF - Plot 32	1	0	1	Pass
Bedroom 1 FF - Plot 33	1	0	1	Pass
Bedroom 1 FF - Plot 34	1	0	1	Pass
Bedroom 1 GF - Plot 30	5	25	30	Pass
Bedroom 1 GF - Plot 31	5	27	32	Pass
Bedroom 1 SF - Plot 35	6	20	26	Pass
Bedroom 2 GF - Plot 32	1	0	1	Pass
Bedroom 2 GF - Plot 34	1	0	1	Pass
Living/Dining Room + Kitchen FF - Plot 32	N/A	N/A	N/A	N/A
Living/Dining Room + Kitchen FF - Plot 33	N/A	N/A	N/A	N/A
Living/Dining Room + Kitchen GF - Plot 30	N/A	N/A	N/A	N/A
Living/Dining Room + Kitchen GF - Plot 31	N/A	N/A	N/A	N/A
Living/Dining Room + Kitchen SF - Plot 34	N/A	N/A	N/A	N/A
Living/Dining Room + Kitchen SF - Plot 35	N/A	N/A	N/A	N/A

Mechanically ventilated rooms

CIBSE TM59 overheating methodology for predominantly mech. vent. rooms states the operative temperature of all rooms shall not exceed 26°C for more than 3% of annual occupied hours.

Room name	No. hours > 26°C	% Annual hours > 26°C	Mechanically ventilated check
No mech vent rooms	N/A	N/A	N/A

Communal corridors

CIBSE TM59 states that whilst there is no mandatory target for communal corridors, if an operative temperature of 28°C is exceeded for more than 3% of annual hours, then this should be identified as a significant risk within the TM59 overheating report.

Room name	No. hours > 28°C	% Annual hours > 28°C	Corridor overheating risk check
No corridors	N/A	N/A	N/A

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Modelled details & overheating mitigation strategy

Approved document O: Providing Information & Appendix B requires information about the model and the overheating mitigation strategy. The following tables detail the modelling method and mitigation strategies applied to each analysed room. Where multiple active openings per space (windows & louvres) exist they are all listed. Occupancy, equipment and lighting profiles for occupied rooms comply with TM59 section 5.

Modelled occupancy

Room name	Floor area m²	Thermal template	Occupancy profile	Equipment profile	Lighting profile
Bedroom 1 FF - Plot 32	14.5	TM59 - Double Bedroom	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
Bedroom 1 FF - Plot 33	14.34	TM59 - Double Bedroom	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
Bedroom 1 FF - Plot 34	14.5	TM59 - Double Bedroom	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
Bedroom 1 GF - Plot 30	16.97	TM59 - Double Bedroom	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
Bedroom 1 GF - Plot 31	14.14	TM59 - Double Bedroom	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
Bedroom 1 SF - Plot 35	14.34	TM59 - Double Bedroom	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
Bedroom 2 GF - Plot 32	10.41	TM59 - Single Bedroom	Single Bedroom Occupancy	Single Bedroom Equipment	18-23h
Bedroom 2 GF - Plot 34	10.41	TM59 - Single Bedroom	Single Bedroom Occupancy	Single Bedroom Equipment	18-23h
Living/Dining Room + Kitchen FF - Plot 32	24.64	TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
Living/Dining Room + Kitchen FF - Plot 33	30.13	TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
Living/Dining Room + Kitchen GF - Plot 30	24.64	TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
Living/Dining Room + Kitchen GF - Plot 31	30.13	TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
Living/Dining Room + Kitchen SF - Plot 34	24.64	TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
Living/Dining Room + Kitchen SF - Plot 35	30.13	TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h

Modelled openings

Room name	Window to wall ratio %	Window g-value (EN 410)	Opening gross area m²	Opening free area (avg) %	Opening free area / floor area ratio %	Opening profile(s)
Bedroom 1 FF - Plot 32	13.83	0.6302	0.91, 0.28, 1.43, 0.44, 1.68	0.0, 0.0, 90.0, 0.0, 95.0	19.88	ADO.Section_26ab, ADO.Section_26a, off continuously
Bedroom 1 FF - Plot 33	15.39	0.6302	1.68, 1.43, 0.44, 0.91, 0.28	95.0, 90.0, 0.0, 0.0, 0.0	20.1	ADO.Section_26ab, ADO.Section_26a, off continuously
Bedroom 1 FF - Plot 34	13.83	0.6302	0.91, 0.28, 1.43, 0.44, 1.68	0.0, 0.0, 90.0, 0.0, 95.0	19.88	ADO.Section_26ab, ADO.Section_26a, off continuously
Bedroom 1 GF - Plot 30	11.27	0.6302	0.91, 0.28, 1.43, 0.44, 1.68	0.0, 0.0, 90.0, 0.0, 95.0	16.99	ADO.Section_26a, off continuously
Bedroom 1 GF - Plot 31	13.49	0.6302	1.43, 0.44, 0.91, 0.28, 1.68	90.0, 0.0, 0.0, 0.0, 95.0	20.39	ADO.Section_26a, off continuously
Bedroom 1 SF - Plot 35	15.39	0.6302	1.68, 1.43, 0.44, 0.91, 0.28	95.0, 90.0, 0.0, 0.0, 0.0	20.1	ADO.Section_26a, off continuously
Bedroom 2 GF - Plot 32	24.74	0.6302	1.43, 0.44, 1.68	90.0, 0.0, 95.0	27.69	ADO.Section_26ab, off continuously, on continuously
Bedroom 2 GF - Plot 34	24.74	0.6302	1.43, 0.44, 1.68	90.0, 0.0, 95.0	27.69	ADO.Section_26ab, ADO.Section_26a, off continuously
Living/Dining Room + Kitchen FF - Plot 32	17.75	0.6302	2.31, 1.47, 0.91, 0.28, 1.68	90.0, 0.0, 90.0, 0.0, 95.0	18.24	ADO.Section_26a, off continuously, on continuously
Living/Dining Room + Kitchen FF - Plot 33	17.1	0.6302	2.31, 1.47, 1.43, 0.44, 1.68	90.0, 0.0, 90.0, 0.0, 95.0	16.47	ADO.Section_26a, off continuously, on continuously
Living/Dining Room + Kitchen GF - Plot 30	17.75	0.6302	2.31, 1.47, 0.91, 0.28, 1.68	90.0, 0.0, 90.0, 0.0, 95.0	18.24	ADO.Section_26a, off continuously, on continuously

Louisa Apartments

Room name	Window to wall ratio %	Window g-value (EN 410)	Opening gross area m²	Opening free area (avg) %	Opening free area / floor area ratio %	Opening profile(s)
Living/Dining Room + Kitchen GF - Plot 31	17.1	0.6302	2.31, 1.47, 1.43, 0.44, 1.68	90.0, 0.0, 90.0, 0.0, 95.0	16.47	ADO.Section_26a, off continuously, on continuously
Living/Dining Room + Kitchen SF - Plot 34	17.75	0.6302	2.31, 1.47, 0.91, 0.28, 1.68	90.0, 0.0, 90.0, 0.0, 95.0	18.24	ADO.Section_26a, off continuously, on continuously
Living/Dining Room + Kitchen SF - Plot 35	17.1	0.6302	2.31, 1.47, 1.43, 0.44, 1.68	90.0, 0.0, 90.0, 0.0, 95.0	16.47	ADO.Section_26a, off continuously, on continuously

Modelled ventilation

Room name	Infiltration rate ACH	Mech vent flow rate ACH
Bedroom 1 FF - Plot 32	0.25	0
Bedroom 1 FF - Plot 33	0.25	0
Bedroom 1 FF - Plot 34	0.25	0
Bedroom 1 GF - Plot 30	0.25	0
Bedroom 1 GF - Plot 31	0.25	0
Bedroom 1 SF - Plot 35	0.25	0
Bedroom 2 GF - Plot 32	0.25	0
Bedroom 2 GF - Plot 34	0.25	0
Living/Dining Room + Kitchen FF - Plot 32	0.25	0
Living/Dining Room + Kitchen FF - Plot 33	0.25	0
Living/Dining Room + Kitchen GF - Plot 30	0.25	0
Living/Dining Room + Kitchen GF - Plot 31	0.25	0
Living/Dining Room + Kitchen SF - Plot 34	0.25	0
Living/Dining Room + Kitchen SF - Plot 35	0.25	0

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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	West
Floor area of dwelling	112.70
Glazing area of the dwelling	12.21
Area of glazing (% floor area)	10.83

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	21.49
Glazing area of most glazed room	3.86
Maximum area of glazing in the most glazed room (% floor area of room)	17.96

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		
East		
South		
West	10.83	17.96
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	37
East	18	37
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 miligation 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	10.37
Floor area of whole dwelling	112.70
Glazing area of whole dwelling	12.21

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 miligation 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	1.89	Free area or Equivalent area of windows for bedroom	0.99	Free area or Equivalent area of windows for bedroom	0.93
Floor area of bedroom	25.49	Floor area of bedroom	10.64	Floor area of bedroom	6.82
Bedroom 4 - Only enter if present		*Bedroom 5 - Only enter if present*			
Free area or Equivalent area of windows for bedroom	0.99	Free area or Equivalent area of windows for bedroom			
Floor area of bedroom	5.41	Floor area of bedroom			

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	10.14	10.37
Glazing Area	6.72	10.37
Bedroom 1	1.02	1.89
Bedroom 2	0.43	0.99
Bedroom 3	0.27	0.93
Bedroom 4	0.22	0.99
Bedroom 5	0.00	0.00
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

Total minimum free area*	The greater of the following:
	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**

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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	Montacute
Street	
Town	
County	
Postcode	
Proposed building use/type of building	House
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	10.83	**Pass**
Maximum area of glazing in the most glazed room (%)	22	17.96	**Pass**
Total minimum free area as % floor area (m^2)	10.14	10.37	**Pass**
Total minimum free area % glazing area (m^2)	6.72	10.37	**Pass**
The greater of the minimum free area(floor area or glazing area) should pass - Highlighted yellow			
Bedroom 1 minimum free area (m^2)	1.02	1.89	**Pass**
Bedroom 2 minimum free area (m^2)	0.43	0.99	**Pass**
Bedroom 3 minimum free area (m^2)	0.27	0.93	**Pass**
Bedroom 4 minimum free area (m^2)	0.22	0.99	**Pass**
Bedroom 5 minimum free area (m^2)	0.00	0.00	**Pass**
Dwelling overall result		**Pass**	

Designer's declaration

Designer's name	BEN MATTHEWS
Designer's organisation	FOCUS CONSULTANTS
Designer's email	[redacted]
Designer's contact number	0115 976 5050
Designer's signature	[redacted]
Registration number (if applicable)	
Date of design	26.06.2024

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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	West
Floor area of dwelling	90.90
Glazing area of the dwelling	9.89
Area of glazing (% floor area)	10.88

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	13.26
Glazing area of most glazed room	2.18
Maximum area of glazing in the most glazed room (% floor area of room)	16.44

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		
East		
South		
West	10.88	16.44
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	37
East	18	37
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	8.39
Floor area of whole dwelling	89.60
Glazing area of whole dwelling	11.22

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	1.42	Free area or Equivalent area of windows for bedroom	1.26	free area or Equivalent area of windows for bedroom	0.84
Floor area of bedroom	18.26	Floor area of bedroom	10.37	Floor area of bedroom	6.01
Bedroom 4 - Only enter if present		*Bedroom 5 - Only enter if present*			
free area or Equivalent area of windows for bedroom		Free area or Equivalent area of windows for bedroom			
Floor area of bedroom		Floor area of bedroom			

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	8.06	8.39
Glazing Area	6.17	8.39
Bedroom 1	0.73	1.42
Bedroom 2	0.41	1.26
Bedroom 3	0.24	0.84
Bedroom 4	0.00	0.00
Bedroom 5	0.00	0.00
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

Total minimum free area[a]	The greater of the following:
	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**

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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	Woburn + Contemporary
Street	
Town	
County	
Postcode	
Proposed building use/type of building	House
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	10.88	Pass
Maximum area of glazing in the most glazed room (%)	22	16.44	Pass
Total minimum free area as % floor area (m^2)	8.06	8.39	Pass
Total minimum free area % glazing area (m^2)	6.17	8.39	Pass
The greater of the minimum free area(floor area or glazing area) should pass - Highlighted yellow			
Bedroom 1 minimum free area (m^2)	0.73	1.42	Pass
Bedroom 2 minimum free area (m^2)	0.41	1.26	Pass
Bedroom 3 minimum free area (m^2)	0.24	0.84	Pass
Bedroom 4 minimum free area (m^2)	0.00	0.00	Pass
Bedroom 5 minimum free area (m^2)	0.00	0.00	Pass
Dwelling overall result	**Pass**		

Designer's declaration

Designer's name	BEN MATTHEWS
Designer's organisation	FOCUS CONSULTANTS
Designer's email	[redacted]
Designer's contact number	[redacted]
Designer's signature	[redacted]
Registration number (if applicable)	
Date of design	26.06.2024