



LATIMER
by Clarion Housing Group

Boddingtons Manchester

RIBA Stage 2
TM59 Analysis

DN0107-WWL-XX-XX-RP-CS-00006

November 2021

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Issue / Revision Record

Issue	Date	By	Checked	Comment
1	22.09.2021	CS	SOH	DRAFT
2	06.10.2021	CS	SOH	Updated for Stage 2
3	25/10/2021	CS	SOH	Updated to Include DSY 2,3 Weather File Analysis
4	22.11.2021	FTC	CS	Update to include Stage 2 frozen layouts.

Executive Summary

Wallace Whittle have been appointed to provide a thermal comfort analysis of the proposed Boddingtons development. The objectives of this assessment are to:

- Evaluate the risk of summertime overheating in sample occupied spaces for the proposed ventilation strategy.
- Advise on potential measures necessary to minimise the risk of overheating.

The building was modelled using IES Virtual Environment 2021 and the analysis was carried out in accordance with CIBSE AM11 Building Performance Modelling using a full dynamic thermal analysis method.

The assessment of acceptable summertime comfort conditions is based on the CIBSE TM59 'Design methodology for the assessment of overheating risk in homes.

This report will present the findings of assessment carried out to investigate the possible risk of overheating, in a representative sample of Bedrooms and Kitchen/Living Room areas in Blocks A and B of the proposed development. This strategy requires a combination of natural and mechanical ventilation, with openable windows being proposed for the Bedroom and Kitchen/Living Room spaces in all of block B and part of block A. All windows on block A that are facing onto Great Ducie Street are defined as non-openable due to noise level constraints and hence these apartments will rely on mechanical ventilation alone to mitigate the risk of overheating.

The results demonstrate that all the rooms analysed are compliant with TM59. Therefore, a significant risk of overheating for the Kitchen/Living Room and Bedrooms areas has not shown to be present at this stage in the project.

1.0 Introduction

1.1 General

This report details the findings of a sample TM59 analysis for the Boddingtons residential project. In this study, a combined Natural and Mechanical Ventilation strategy is implemented and analysed against the CIBSE TM59 overheating criteria.

1.2 Sources of Information

The building model has been constructed according to the following design documentation:

Source	Drawing Files		Date
Assael	A3564-ASA-XX-XX-DR-A-0200	A3564-ASA-XX-XX-DR-A-0303	4 th November 2021
	A3564-ASA-XX-XX-DR-A-0201	A3564-ASA-XX-XX-DR-A-0400	
	A3564-ASA-XX-XX-DR-A-0220	A3564-ASA-XX-XX-DR-A-0401	
	A3564-ASA-XX-XX-DR-A-0221	A3564-ASA-XX-XX-DR-A-0402	
	A3564-ASA-XX-XX-DR-A-0227	A3564-ASA-XX-XX-DR-A-0403	
	A3564-ASA-XX-XX-DR-A-0300	A3564-ASA-XX-XX-DR-A-0404	
	A3564-ASA-XX-XX-DR-A-0301	A3564-ASA-XX-XX-DR-A-0405	

Table 1: Architectural drawings used for TM59 analysis

A summary of the design inputs can be found within the appendices.

1.3 Limitations

This report has been based on Stage 2 drawings. Whilst the information used is taken from the Stage 2 drawings and supporting documentation, the final performance will be dependent on the final building design & operation. Any changes to the design inputs contained within this report could result in TM59 non-compliance.

1.4 Site Location and Orientation

The building is located at 33 Great Ducie Street, Cheetham Hill, Manchester. The building's orientation is 331° clockwise, from North.

2.0 Methodology

2.1 IES Methodology

IES <VE> 2021 was used to conduct the overheating assessment in selected rooms within the model. Construction properties, window openings, occupancy, and equipment profiles have all been included in the simulations. Please refer to the Appendices for full details.

As per CIBSE TM59 guidelines, developments should refer to the latest CIBSE Design Summer Year (DSY) weather files published in 2016 and be required to pass the DSY1 file most appropriate for the site location, as this represents a moderately warm summer. For this study, Manchester_DSY1_2020High50 was selected as the most representative for the location. Secondly for information purposes only, this report has also produced results for the TM59 analysis, using the CIBSE (DSY) Weather Files Manchester_DSY2_2020High50 and Manchester_DSY3_2020High50. The description of each of the weather scenarios used is presented in the table below.

Weather Scenario	Description	Note:
DSY 1	moderately warm summer, with a return period of seven years.	Weather scenario used for compliance with CIBSE TM59.
DSY 2	short, intense warm spell, about the same length as the moderate summer year but with a higher intensity.	Weather scenario used for information only.
DSY 3	long, less intense warm spell, which is less intense than the high-intensity year, but longer and more intense than the moderate summer year.	Weather scenario used for information only.

Table 2: CIBSE DSY Weather Scenarios.

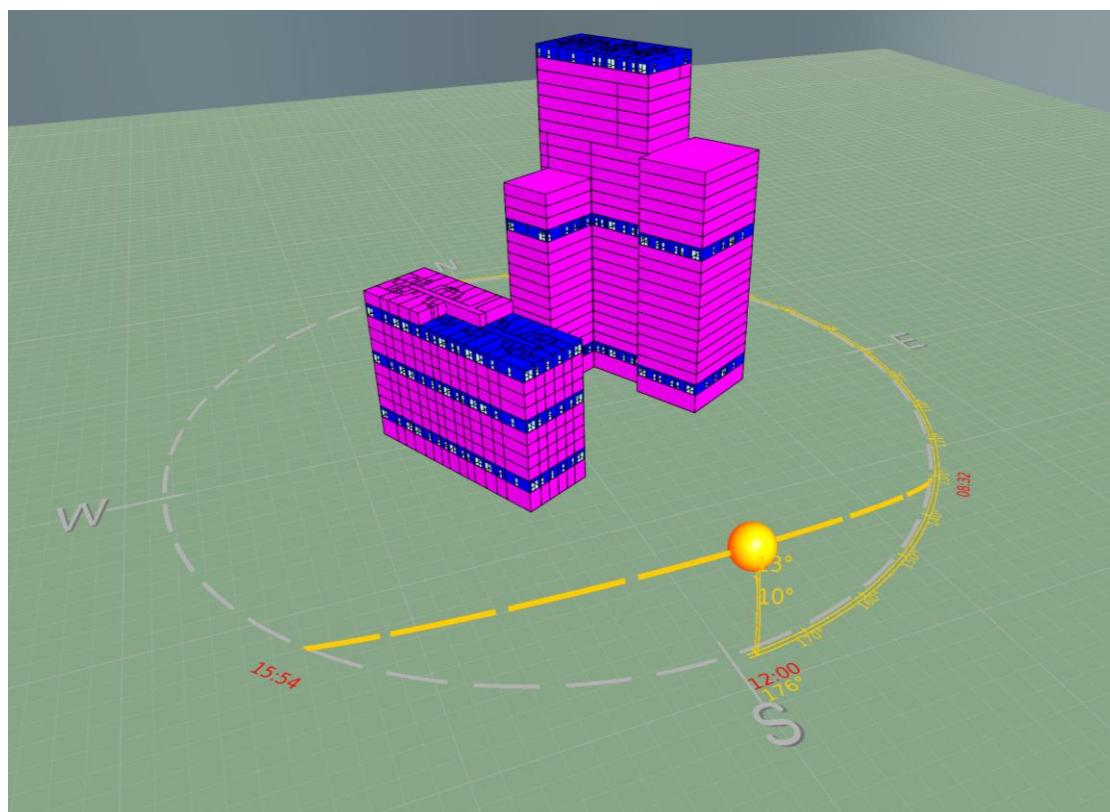


Figure 1: 3D representation of proposed Boddingtons Residential Development. Image generated on IES 2021

2.1.1 Ventilation Strategy

The overheating strategy is set to be a mixture of Natural and Mechanical Ventilation for the rooms with openable windows. However, windows that are facing onto Great Ducie Street are defined as non-openable, due to external noise concerns. To accurately represent Mechanical ventilation in the TM59 Study, a set air flow rate, in Air Changes Per Hour (ach^{-1}), is supplied into the Bedrooms and Living Room/Kitchen spaces, to represent a Mechanically Ventilated Heat Recovery Unit (MVHR). These values are 3 ach^{-1} for the flats facing onto Great Ducie Street to compensate for the non-openable windows, and 2 ach^{-1} for all other analysed spaces. These ventilation strategies are detailed further in the appendices section of this report.

Any windows that were openable have been assumed to be open when the internal air temperature exceeds 22°C . The openable window strategy and relevant information can be found in the Appendices section of the report.

2.2 Comfort Criteria

In April 2017, CIBSE launched TM59 'Design methodology for the assessment of overheating risk in homes. This specifically focuses on acceptable thermal comfort conditions for occupants during both daytime and night-time periods. The document outlines two criteria to assess overheating for homes, which are predominantly naturally ventilated and recommends the use of the CIBSE fixed temperature test for homes which predominately mechanically ventilated. The following are the criteria recommended by the TM59 methodology.

1. **Criteria one (TM59 4.2 a)** (for living rooms, kitchens, and bedrooms)
 - The number of hours during which ΔT is greater than or equal to one degree (K), during the period May to September inclusive, shall not be more than 3% of occupied hours.
2. **Criteria two (TM59 4.2 b)** (for bedrooms only):
 - To guarantee comfort during the sleeping hours the operative temperature in the bedroom from 10 pm to 7am shall not exceed 26°C for more than 1% of annual hours.

Note: The building will be deemed to fail the overheating design criteria if either of the following two criteria are exceeded:

3. **Criteria three (TM59 4.3 c)** (for homes predominantly mechanically ventilated). All occupied rooms should not exceed an operative temperature of 26°C for more than 3% of the annual occupied hours (CIBSE Guide A 2015a).

Table 3 summaries the CIBSE TM59 Criteria:

Criteria	Bedrooms	Living Room / Kitchens
4.2 Criteria (a). The number of hours in which the temperature difference in the space is greater than or equal to one degree shall not be more than 3% of occupied hours.	✓	✓
4.2 Criteria (b). The Operative Temperature shall not exceed 26°C between 10pm and 7am for more than 1% of annual occupied hours.	✓	N/A
4.3 Criteria (c). For homes with restricted window openings, the CIBSE fixed temperature test must be followed. This method states that all occupied rooms should not exceed an operative temperature of 26°C for more than 3% of the annual occupied hours (CIBSE Guide A 2015a).	✓	✓

Table 3: Overview of TM59 Overheating Criteria 4.2

Notes:

1. Criteria 4.2 (a) was conducted for the occupied hours between 1st May-30th September.
2. Criteria 4.2 (b) was conducted for the annual occupied hours, 1st Jan – 31st Dec.
3. Criteria 4.3 (c) was conducted for the annual occupied hours, 1st Jan –31st Dec.

2.3 Sample Room Guide

Figure 2 and Table 4 show the representative sample apartments assessed. A total of 39 apartments were modelled. The table and figure below display the apartments selected in each block. The sample included apartments in Level 01, 06 and 10 on block A and Levels 01, 013 and 026 in Block B.

Block A				
Apartment	TM59 Criteria (a)	TM59 Criteria (b)	TM59 Criteria (c)	Ventilation Strategy
Level 01				
Apartment 01			X	Mech Vent only
Apartment 02	X	X		Mixed Mode
Apartment 03			X	Mech Vent only
Apartment 04			X	Mech Vent only
Apartment 05			X	Mech Vent only
Level 06				
Apartment 01			X	Mech Vent only
Apartment 02	X	X		Mixed Mode
Apartment 03			X	Mech Vent only
Apartment 04			X	Mech Vent only
Apartment 05			X	Mech Vent only
Level 10				
Apartment 01			X	Mech Vent only
Apartment 02	X	X		Mixed Mode
Apartment 03			X	Mech Vent only
Apartment 04			X	Mech Vent only
Apartment 05			X	Mech Vent only

Block B				
Apartment	TM59 Criteria (a)	TM59 Criteria (b)	TM59 Criteria (c)	Ventilation Strategy
Level 01				
Apartment 01	X	X		Mixed Mode
Apartment 02	X	X		Mixed Mode
Apartment 03	X	X		Mixed Mode
Apartment 04	X	X		Mixed Mode
Apartment 05	X	X		Mixed Mode
Apartment 06	X	X		Mixed Mode
Apartment 07	X	X		Mixed Mode
Apartment 08	X	X		Mixed Mode

Block B				
Apartment	TM59 Criteria (a)	TM59 Criteria (b)	TM59 Criteria (c)	Ventilation Strategy
Level 13				
Apartment 01	X	X		Mixed Mode
Apartment 02	X	X		Mixed Mode
Apartment 03	X	X		Mixed Mode
Apartment 04	X	X		Mixed Mode
Apartment 05	X	X		Mixed Mode
Apartment 06	X	X		Mixed Mode
Apartment 07	X	X		Mixed Mode
Apartment 08	X	X		Mixed Mode
Level 26				
Apartment 01	X	X		Mixed Mode
Apartment 02	X	X		Mixed Mode
Apartment 03	X	X		Mixed Mode
Apartment 04	X	X		Mixed Mode
Apartment 05	X	X		Mixed Mode
Apartment 06	X	X		Mixed Mode
Apartment 07	X	X		Mixed Mode
Apartment 08	X	X		Mixed Mode

Table 4: Sample Rooms

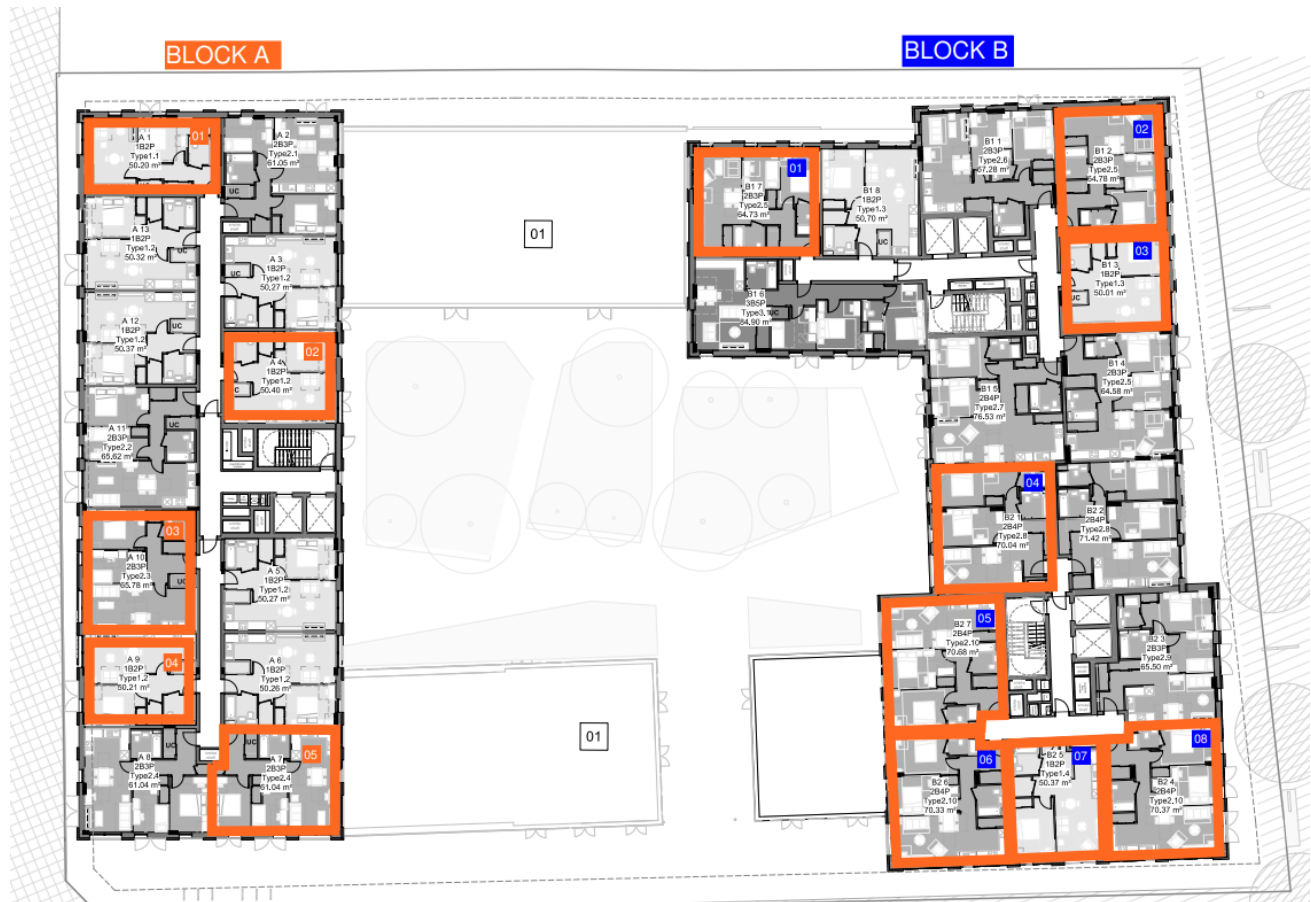


Figure 2: Representative sample apartments analysed

3.0 Design Criteria

The form & fabric has been re-created within the thermal modelling and is based on the Stage 2 architectural drawings. The following fenestration arrangements have been taken from the Stage 2 drawings. It must be noted that at this stage all simulation were carried out without any blinds or curtains.

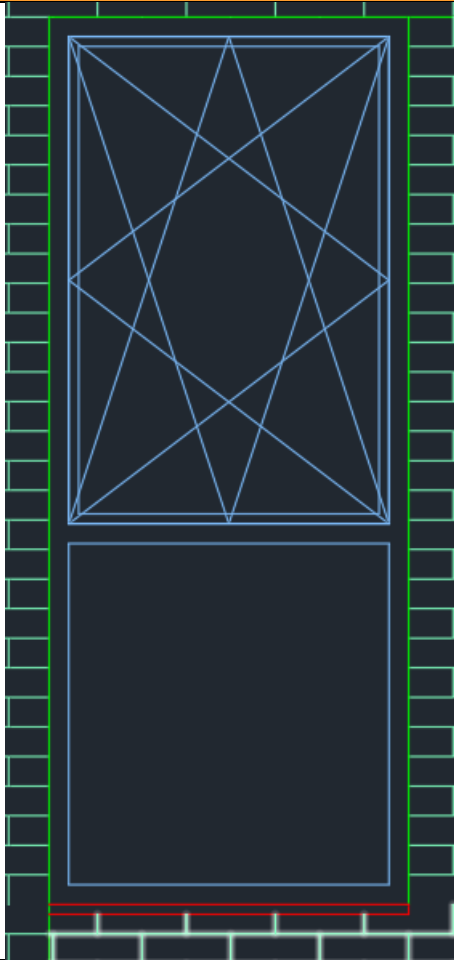
Window Reference	Area Served	Description	Image
A	Bedrooms	Top Hung Openable Window with 100mm Restrictor with Closed Bottom Window.	

Table 5: Summary of fenestration Window Reference A Openings

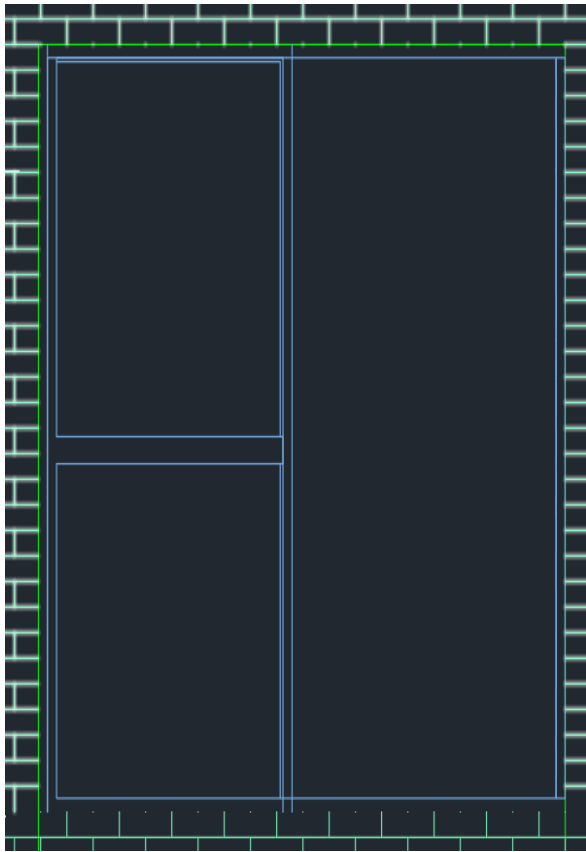
Window Reference	Area Served	Description	Image
B	Kitchen/ Living Room	Side Hung Openable Window On Left Hand Side With 100mm Restrictor	

Table 6: Summary of fenestration Window Reference B Openings

The dwelling occupancy patterns, internal heat gains etc. follow the pre-described design inputs as outlined within TM59 and CIBSE Guide A Environmental Design.

Please see the Appendix section of this report for a summary of building fabric, fenestration opening profiles and data inputs.

4.0 Results

The following section presents the results summary of the simulation and overheating assessment carried out for the proposed building. The results are broken down into the two main blocks to illustrate the results assessed against the TM59 overheating criteria.

4.1 Block A Results Summary.

The result summary for the predominately mechanically ventilated flats in Block A is presented as follows below, with the full set of results presented in appendix E.

Weather Scenario	Criteria 4.3 (c)	
	Bedrooms	Living room/Kitchen
Manchester DSY 1 2020	18nr Pass, 0nr Fail	13nr Pass, 0x Fail
Manchester DSY 2 2020	18nr Pass, 0nr Fail	13nr Pass, 0x Fail
Manchester DSY 3 2020	3nr Pass, 15nr Fail	0nr Pass, 13x Fail

Table 7: Block A TM59 4.3 (c) results summary.

The following table presents a summary of the results for the apartments that are configured to a mixed mode ventilation operation. These apartments will use openable windows to mitigate the risk of overheating.

Weather Scenario	Criteria 4.2 (a&b)	
	Bedrooms	Living room/Kitchen
Manchester DSY 1 2020	3nr Pass, 0nr Fail	3nr Pass, 0nr Fail
Manchester DSY 2 2020	3nr Pass, 0nr Fail	3nr Pass, 0nr Fail
Manchester DSY 3 2020	2nr Pass, 1nr Fail	3nr Pass, 0nr Fail

Table 8: Block A TM59 4.2 (a&b) results summary.

4.2 Block B Results Summary.

A total number of 84 bedrooms and 45 Living Room/kitchens were analysed on Block B under the DSY01 Weather File. A summary of the overheating assessment is presented in the table below. The complete set of results for this block has been added to Appendix E below. Further simulations were carried out to evaluate the building and ventilation strategy under the DSY2 and DSY3 Weather Files.

Weather Scenario	Criteria 4.2 (a&b)	
	Bedrooms	Living room/Kitchen
Manchester DSY 1 2020	84nr Pass, 0nr Fail	45nr Pass, 0nr Fail
Manchester DSY 2 2020	43nr Pass, 0nr Fail	24nr Pass, 0nr Fail
Manchester DSY 3 2020	13nr Pass, 30nr Fail	10nr Pass, 14nr Fail

Table 9: Block A TM59 4.2 (a&b) results summary.

The results presented above (and in Appendix E) suggest that the proposed ventilation strategy for Block A and B comply with the requirements under CIBSE TM59 and the DSY01 weather scenario. The results of this dynamic thermal modelling exercise suggest that the proposed dwellings will cope with a moderately warm weather condition.

5.0 Discussion

The results demonstrated that for the proposed ventilation strategy, all rooms analysed show compliance with the relevant TM59 criteria for the DSY1 weather scenario.

A further analysis was undertaken for information only. This assessment recorded the performance under the DSY2 weather scenario, when analysed for the TM59 Criteria A and B, this shows that all rooms are compliant with these TM59 Criteria.

When the DSY3 weather scenario was investigated for TM59 compliance the following was concluded:

For the dwellings that are predominantly mechanically ventilated in block A, 15nr of the 18 bedrooms assessed failed the overheating criteria. Similarly, 13 out of the 13 living room kitchens assessed fail to meet the criteria. For the dwellings with a mixed mode ventilation strategy in Blocks A and B, on average 52% of the bedrooms fail to meet the criteria whilst 42% of the living room/kitchens fail to meet the overheating criteria under this weather scenario. These negative results are due to the prolonged warm period that is simulated under this scenario.

The results obtained under the different weather scenarios show how the weather conditions can be uncertain and unpredictable. Additional educational and behaviour mitigation strategies can help occupants react and reduce overheating risk within the dwellings. These strategies include advice to building users to keep windows closed during the warmest parts of the day and allow for windows to open (where applicable) during times when temperatures have reduced. Turning off equipment and lights when they are not required as this will reduce the internal gain generation within each flat which in turn will reduce overheating risk.

6.0 Conclusion

The following parameters should be noted as critical to demonstrating compliance with CIBSE TM59 for all spaces and for all future climate scenarios:

- Windows should achieve (or exceed) the minimum opening areas, as outlined with this report.
- The glazing g-value should be no more than 0.34
- The fresh air volumes should be no less than those outlined in this report.

At this stage the proposed ventilation strategy is compliant with the overheating requirements under CIBSE TM59. The figure below illustrates the concept and details applied to these buildings to achieve compliance.

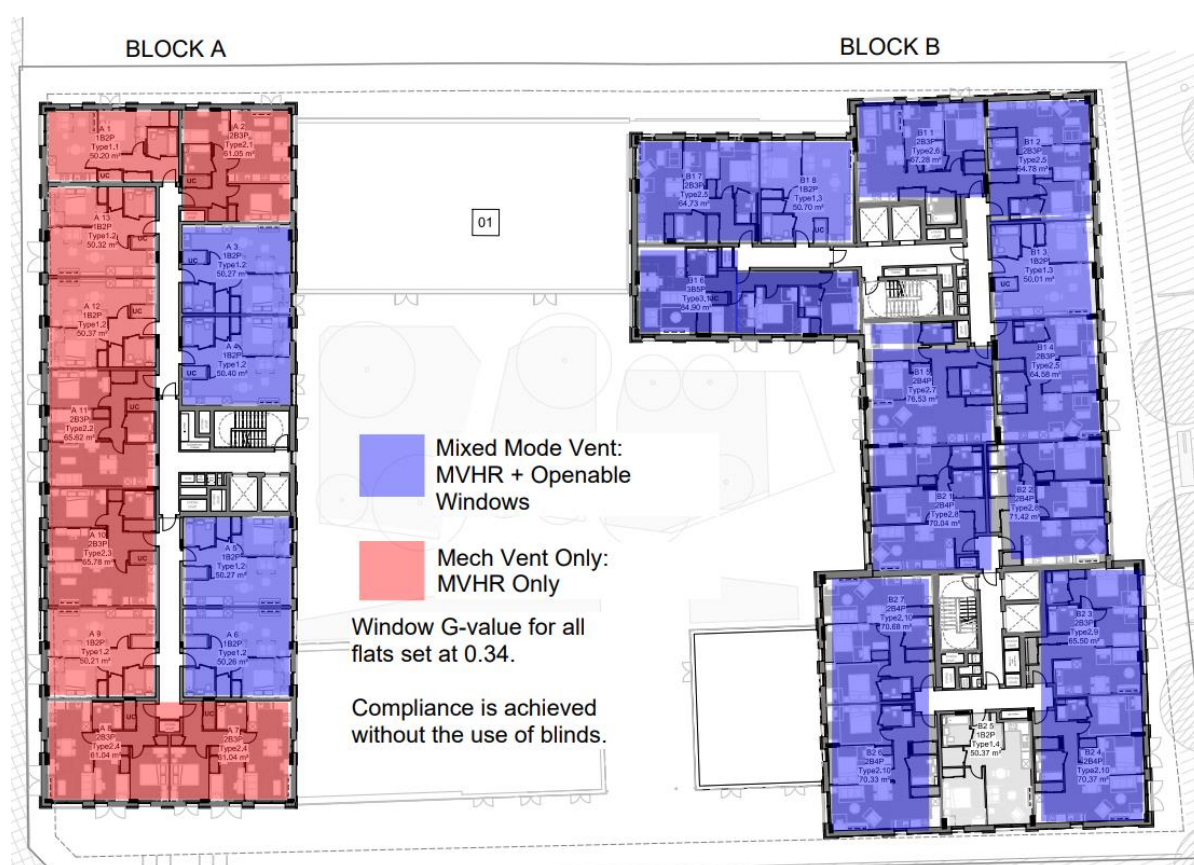


Figure 3: Stage2 TM59 Compliance Details.

The results of the analysis show that based on the ventilation and servicing strategy outlined in this document, all assessed spaces demonstrate compliance with the CIBSE TM59 overheating criteria.

Please note that results and recommendations are based on the assumptions described in this report. If any of the inputs change, results are likely to change, and the recommendations may no longer be appropriate.

This report presents a snapshot of the proposed development and design solutions during RIBA Stage 2. Further detailed design will be undertaken to refine and verify that the overheating risk is appropriately mitigated.

7.0 Appendix

7.1 Appendix A: Building Fabric Performance

Element	Target Values (W/m ² K)	Comments
Opaque Elements (W/m²K):		
External Walls	0.17	Taken from "Boddingtons Manchester, Design Note DN-002, Energy Strategy Options"
Roof	0.15	Taken from "Boddingtons Manchester, Design Note DN-002, Energy Strategy Options"
Ground Floor	0.10	Taken from "Boddingtons Manchester, Design Note DN-002, Energy Strategy Options"
Windows / Glazed Doors:		
U Value(W/m ² K)	1.50	Taken from "Boddingtons Manchester, Design Note DN-002, Energy Strategy Options" – including frame
g-value	0.34	Assumed based on CIBSE data

Table 10: Design Inputs – Building Fabric Performance

7.2 Appendix B: Design Data Inputs

Element	Data	Comments
Overheating Methodology	CIBSE TM59 (2013) Cat II	Default as per CIBSE TM59 (2013)
Weather:		
Location	Manchester	
Data files	Manchester_DSY1_2020High50_`epw.	
	Manchester_DSY2_2020High50_`epw.	For Information Purposes Only
	Manchester_DSY3_2020High50_`epw.	For Information Purposes Only
Internal conditions:		
Heating	On Continuously (16DegC Set temp)	
Cooling	Off Continuously	
Ventilation strategy:		
Double Bedroom	Natural/Mechanical Ventilation	See Appendix C and D for Further Details.
Single Bedroom	Natural/Mechanical Ventilation	See Appendix C and D for Further Details.
Living/Kitchen	Natural/Mechanical Ventilation	See Appendix C and D for Further Details.
Infiltration Rates:		
Double Bedroom	0.15 air changes / hour	
Single Bedroom	0.15 air changes / hour	
Living/Kitchen	0.15 air changes / hour	
Building Parameters:		
Building category	Cat II (new builds)	
"Air speed: Nominal design / summer (elevated)	0.10 / 0.10	
Internal Gains:		
Double Bedroom:		
Occupancy	2 people. Maximum sensible gain = 75W & Maximum latent gain = 55W. Double Bedroom occupancy profile	As per CIBSE TM59 template Table 2
Fluorescent Lighting	2 W/m ² . On continuously	As per CIBSE TM59 template Table 2
Equipment	Maximum sensible gain = 100W. Studio equipment profile	80W quoted as per CIBSE TM59 template Table 2. Increased to 100W as a precaution of extra equipment.
Single Bedroom:		
Occupancy	1 person. Maximum sensible gain = 75W & Maximum latent gain = 55W. Single Bedroom occupancy profile	As per CIBSE TM59 template Table 2
Fluorescent Lighting	2 W/m ² . On continuously	As per CIBSE TM59 template Table 2
Equipment	Maximum sensible gain = 100W. Studio equipment profile	80W quoted as per CIBSE TM59 template Table 2. Increased to 100W as a precaution of extra equipment.

Element	Data	Comments
Living/Kitchen:		
Occupancy	4 people. Maximum sensible gain = 75W & Maximum latent gain = 55W. Living / Kitchen Occupancy profile	Assuming maximum number of residents in the kitchen based on the properties having 2 double beds each. Template based on CIBSE TM59 Table 2
General Lighting	2 W/m ² . On continuously	As per CIBSE TM59 template Table 2
Equipment	Maximum sensible gain = 450W. Studio equipment profile	As per CIBSE TM59 template Table 2

Table 11: Design Inputs for CIBSE TM59 templates for Option One Natural Ventilation.

7.3 Appendix C: Window References A and B Opening Data.

Window Criteria	Values Window Reference A	Values Window Reference B	Comments
Exposure Type	1:1 Semi Exposed Wall	1:1 Semi Exposed Wall	
Opening Category	Window Top Hung	Top Side Hung	To be confirmed by Architect
Window free area assumed	1.00m ²	1.066m ²	
Aerodynamic Free Area Assumed.	0.117m ²	0.137m ²	
Assumed discharge coefficient	0.12	0.13	
Opening Threshold	22.00°C	22.00°C	As Per TM59 Guidelines
Length Of Window Restrictor	100mm	100mm	As Per TM59 Guidelines
Blinds / Curtains	None Used	None Used	

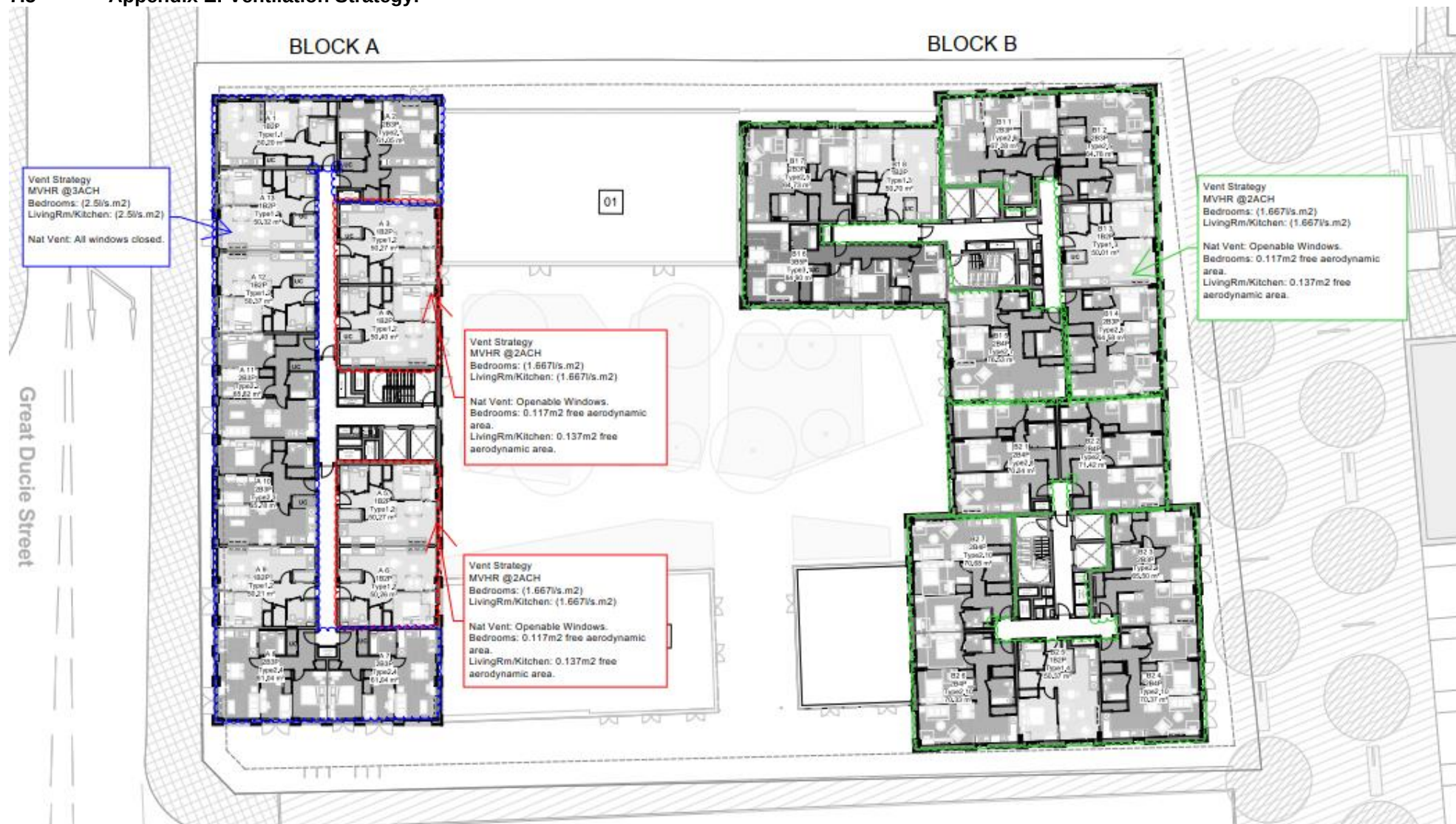
Table 12: Window References A and B Opening Data.

7.4 Appendix D: Mechanical Ventilation Room Flow Rates.

Room	Air Change Rate (ach ⁻¹ -1) BLOCK B and Part of Block A	Air Change Rate (ach ⁻¹ -1) BLOCK A	Ventilation Profile	Comments
Double Bedroom	2	3	On Continuously	Mechanical Ventilation Heat Recovery Unit Proposed. Air Flow Rates TBC by Mechanical Engineer
Single Bedroom	2	3	On Continuously	Mechanical Ventilation Heat Recovery Unit Proposed. Air Flow Rates TBC by Mechanical Engineer
Living Room / Kitchen Area	2	3	On Continuously	Mechanical Ventilation Heat Recovery Unit Proposed. Air Flow Rates TBC by Mechanical Engineer

Table 13: Mechanical Ventilation Room Flow Rates.

7.5 Appendix E: Ventilation Strategy.



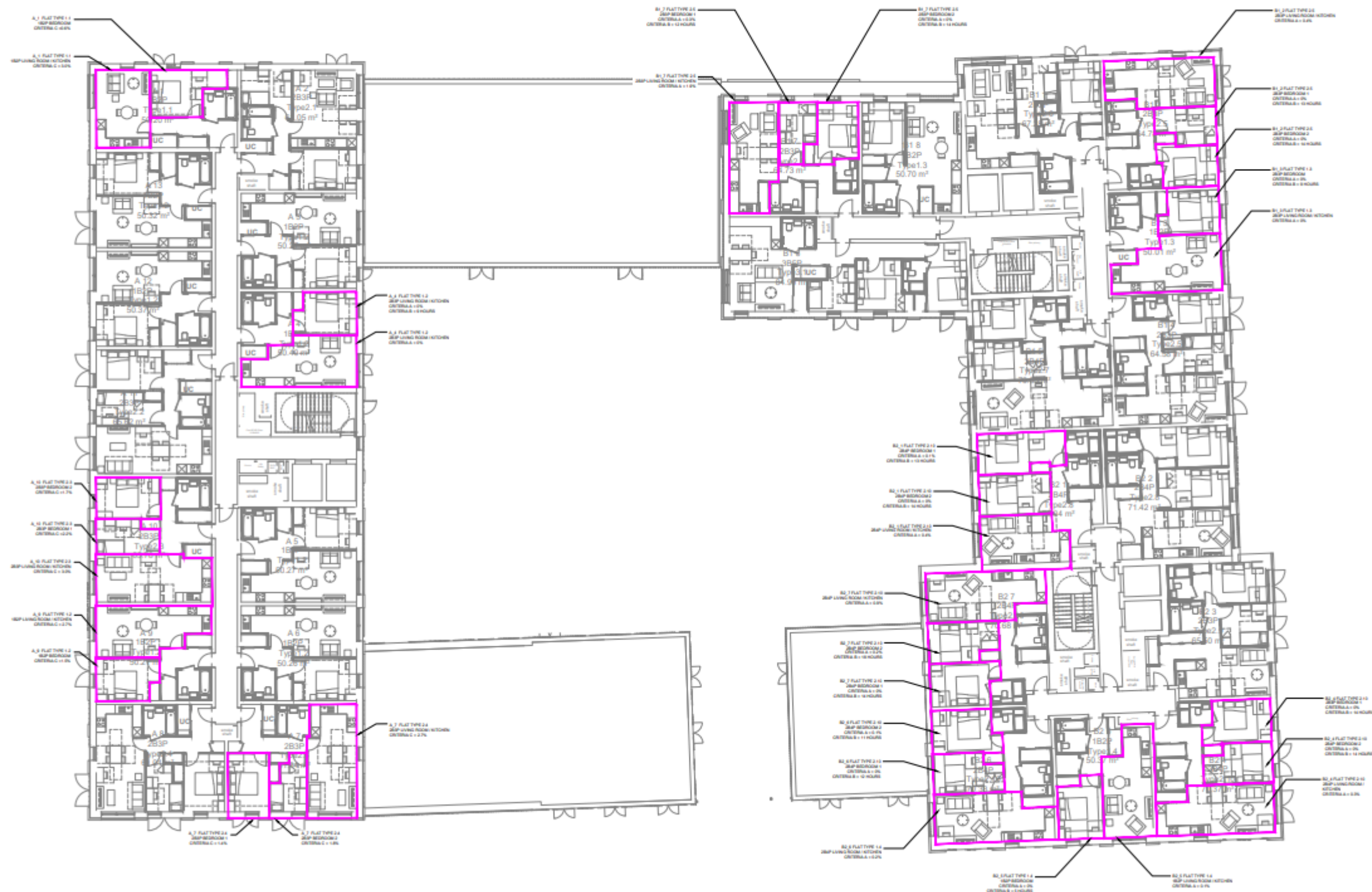
7.6 Appendix E: Detailed thermal modelling results

7.6.1 DSY 01 Block and B Combined Results Level 01 Layout.

BLOCK A AND B 1st FLOOR CIBSE TM59 CRITERIA A AND B RESULTS AND FLAT LOCATION MARK UP

NOTE

1. TO PASS CRITERIA A, VALUE MUST BE EQUAL TO OR LOWER THAN 10.
2. TO PASS CRITERIA B, THE AVERAGE OF THE NUMBER OF HOURS MUST BE LOWER THAN 10.
3. TO PASS CRITERIA C, THIS APPLIES ONLY TO BLOCK A FOR OCCUPIED ROOMS WITH PERMANENTLY CLOSED WINDOWS. ALL OCCUPIED ROOMS SHALL NOT EXCEED THE OPERATIVE TEMPERATURE OF 26°C FOR MORE THAN 5% OF THE OCCUPIED HOURS.



6.2 Block A Tabulated Results

Summary of TM59 Compliance Block A (Mech Vent Only) Bedrooms Only						
Room Name	Criteria (c) DSY 1 Compliance		Criteria (c) DSY 2 Compliance		Criteria (c) DSY 3 Compliance	
L01_01 A1 Flat Type 1.1 1B2P Bedroom 1	0.6%	✓	0.4%	✓	2.2%	✓
L01_03 A10 Flat Type 2.3 2B3P Bedroom 1	2.2%	✓	1.5%	✓	4.7%	✗
L01_03 A10 Flat Type 2.3 2B3P Bedroom 2	1.7%	✓	1.2%	✓	4.2%	✗
L01_04 A9 Flat Type 1.2 1B2P Bedroom 1	1.5%	✓	1.0%	✓	3.6%	✗
L01_05 A7 Flat Type 2.4 2B3P Bedroom 1	1.4%	✓	0.9%	✓	3.9%	✗
L01_05 A7 Flat Type 2.4 2B3P Bedroom 2	1.8%	✓	1.1%	✓	4.3%	✗
L06_01 A1 Flat Type 1.1 1B2P Bedroom 1	0.3%	✓	0.3%	✓	1.8%	✓
L06_03 A10 Flat Type 2.3 2B3P Bedroom 1	1.8%	✓	1.1%	✓	4.3%	✗
L06_03 A10 Flat Type 2.3 2B3P Bedroom 2	1.4%	✓	0.9%	✓	3.8%	✗
L06_04 A9 Flat Type 1.2 1B2P Bedroom 1	1.2%	✓	0.7%	✓	3.2%	✗
L06_05 A7 Flat Type 2.4 2B3P Bedroom 1	1.3%	✓	0.6%	✓	3.5%	✗
L06_05 A7 Flat Type 2.4 2B3P Bedroom 2	1.5%	✓	0.8%	✓	4.0%	✗
L10_05 A7 Flat Type 2.4 2B3P Bedroom 1	1.0%	✓	0.5%	✓	3.2%	✗
L10_05 A7 Flat Type 2.4 2B3P Bedroom 2	1.4%	✓	0.7%	✓	3.6%	✗
L10_01 A1 Flat Type 1.1 1B2P Bedroom 1	0.3%	✓	0.3%	✓	1.7%	✓
L10_03 A10 Flat Type 2.3 2B3P Bedroom 1	1.5%	✓	0.9%	✓	4.0%	✗
L10_03 A10 Flat Type 2.3 2B3P Bedroom 2	1.2%	✓	0.7%	✓	3.4%	✗
L10_04 A9 Flat Type 1.2 1B2P Bedroom 1	1.1%	✓	0.5%	✓	3.0%	✗

Summary of TM59 Compliance Block A (Mech Vent Only) Living Room/Kitchens						
Room Name	Criteria (c) DSY 1 Compliance		Criteria (c) DSY 2 Compliance		Criteria (c) DSY 3 Compliance	
L01_01 A1 Flat Type 1.1 1B2P Living Room/Kitchen Area	3.0%	✓	2.3%	✓	6.0%	✗
L01_03 A10 Flat Type 2.3 2B3P Living Room/Kitchen	3.0%	✓	2.3%	✓	6.6%	✗
L01_04 A9 Flat Type 1.2 1B2P Living Room/Kitchen	2.7%	✓	1.8%	✓	5.6%	✗
L01_05 A7 Flat Type 2.4 2B3P Living Room/Kitchen Area	2.7%	✓	1.7%	✓	6.1%	✗

Summary of TM59 Compliance Block A (Mech Vent Only) Living Room/Kitchens						
Room Name	Criteria (c) DSY 1 Compliance		Criteria (c) DSY 2 Compliance		Criteria (c) DSY 3 Compliance	
L06_01 A1 Flat Type 1.1 1B2P Living Room/Kitchen Area	2.2%	✓	1.5%	✓	5.3%	✗
L06_03 A10 Flat Type 2.3 2B3P Living Room/Kitchen	2.3%	✓	1.5%	✓	5.7%	✗
L06_04 A9 Flat Type 1.2 1B2P Living Room/Kitchen	1.9%	✓	1.2%	✓	5.0%	✗
L06_05 A7 Flat Type 2.4 2B3P Living Room/Kitchen Area	2.1%	✓	1.2%	✓	5.4%	✗
L10_05 A7 Flat Type 2.4 2B3P Living Room/Kitchen Area	1.8%	✓	1.0%	✓	4.9%	✗
L10_01 A1 Flat Type 1.1 1B2P Living Room/Kitchen Area	2.1%	✓	1.4%	✓	5.2%	✗
L10_03 A10 Flat Type 2.3 2B3P Living Room/Kitchen	2.0%	✓	1.3%	✓	5.2%	✗
L10_04 A9 Flat Type 1.2 1B2P Living Room/Kitchen	1.7%	✓	1.0%	✓	4.4%	✗
L11 A1 Flat Type 1.1 1B2P Living Room/Kitchen Area	1.9%	✓	1.2%	✓	4.8%	✗

Summary of TM59 Compliance Block A (Mixed Mode)						
Room Name	Criteria (a) DSY 1 Compliance		Criteria (a) DSY 2 Compliance		Criteria (a) DSY 3 Compliance	
L01_02 A4 Flat Type 1.2 1B2P Bedroom 1	0.00	✓	0.40	✓	0.30	✓
L01_02 A4 Flat Type 1.2 1B2P Living Room/Kitchen Area	0.00	✓	0.50	✓	0.40	✓
L06_02 A4 Flat Type 1.2 1B2P Bedroom 1	0.00	✓	0.30	✓	0.00	✓
L06_02 A4 Flat Type 1.2 1B2P Living Room/Kitchen Area	0.00	✓	0.20	✓	0.00	✓
L10_02 A4 Flat Type 1.2 1B2P Bedroom 1	0.00	✓	0.30	✓	0.00	✓
L10_02 A4 Flat Type 1.2 1B2P Living Room/Kitchen Area	0.00	✓	0.20	✓	0.00	✓

Summary of TM59 Compliance Block A (Mixed Mode)						
Room Name	Criteria (b) DSY 1 Compliance		Criteria (b) DSY 2 Compliance		Criteria (b) DSY 3 Compliance	
L01_02 A4 Flat Type 1.2 1B2P Bedroom 1	9.00	✓	9.00	✓	37.00	✗
L06_02 A4 Flat Type 1.2 1B2P Bedroom 1	5.00	✓	7.00	✓	30.00	✓
L10_02 A4 Flat Type 1.2 1B2P Bedroom 1	5.00	✓	7.00	✓	30.00	✓

Table 14: Block A CIBSE TM59 Detailed Results.

7.6.3 Block B

Room (Living Room/Kitchens)	Criteria 4.2 (a)	Compliance
	Criteria 1 (%Hrs Top-Tmax>=1K)	
Level 01		
B1 7 Flat Type 2.5 2B3P Living Room/Kitchen	1.90	✓
B1 1 Flat Type 2.6 2B3P Living Room/Kitchen	1.60	✓
B1 2 Flat Type 2.5 2B3P Living Room/Kitchen	0.40	✓
B1 3 Flat Type 1.3 1B2P Living Room/Kitchen	0.00	✓
B1 4 Flat Type 2.5 2B3P Living Room/Kitchen	0.50	✓
B1 5 Flat Type 2.7 2B4P Living Room/Kitchen	0.40	✓
B1 6 Flat Type 3.1 3B5P Living Room/Kitchen	0.40	✓
B1 Flat Type 1.3 1B2P Kitchen Living Room	0.20	✓
B2 1 Flat Type 2.8 2B4P Living Room/Kitchen	2.60	✓
B2 2 Flat Type 2.8 2B4P Living Room/Kitchen	0.80	✓
B2 3 Flat Type 2.9 2B3P Living Room/Kitchen	0.50	✓
B2 4 Flat Type 2.10 2B4P Living Room/Kitchen	0.30	✓
B2 5 Flat Type 1.40 1B2P Living Room/Kitchen	0.10	✓
B2 6 Flat Type 2.10 1B2P Living Room/Kitchen	0.20	✓
B2 7 Flat Type 2.10 2B4P Living Room/Kitchen	0.90	✓
Level 13		
B1 1 Flat Type 2.6 2B3P Living Room/Kitchen	0.80	✓
B1 2 Flat Type 2.5 2B3P Living Room/Kitchen	0.10	✓
B1 3 Flat Type 1.3 1B2P Living Room/Kitchen	0.00	✓
B1 4 Flat Type 2.5 2B3P Living Room/Kitchen	0.20	✓
B1 5 Flat Type 2.7 2B4P Living Room/Kitchen	0.50	✓
B1 6 Flat Type 3.1 3B5P Living Room/Kitchen	0.60	✓
B1 7 Flat Type 2.5 2B3P Living Room/Kitchen	1.50	✓
B1 Flat Type 1.3 1B2P Kitchen Living Room	0.00	✓
B2 2 Flat Type 2.8 2B4P Living Room/Kitchen	0.30	✓
B2 3 Flat Type 2.9 2B3P Living Room/Kitchen	0.10	✓
B2 4 Flat Type 2.10 2B4P Living Room/Kitchen	0.00	✓
B2 5 Flat Type 1.40 1B2P Living Room/Kitchen	0.00	✓
B2 6 Flat Type 2.10 1B2P Living Room/Kitchen	0.60	✓
B2 7 Flat Type 2.10 2B4P Living Room/Kitchen	0.80	✓
Level 26		
B1 7 Flat Type 2.5 2B3P Living Room/Kitchen	1.50	✓
B1 1 Flat Type 2.6 2B3P Living Room/Kitchen	0.80	✓
B1 2 Flat Type 2.5 2B3P Living Room/Kitchen	0.10	✓
B1 3 Flat Type 1.3 1B2P Living Room/Kitchen	0.00	✓
B1 4 Flat Type 2.5 2B3P Living Room/Kitchen	0.20	✓
B1 5 Flat Type 2.7 2B4P Living Room/Kitchen	0.50	✓

Room (Living Room/Kitchens)	Criteria 4.2 (a)	Compliance
	Criteria 1 (%Hrs Top-Tmax>=1K)	
Level 01		
B1 6 Flat Type 3.1 3B5P Living Room/Kitchen	0.60	
B1 Flat Type 1.3 1B2P Kitchen Living Room	0.00	
B2 2 Flat Type 2.8 2B4P Living Room/Kitchen	0.30	
B2 3 Flat Type 2.9 2B3P Living Room/Kitchen	0.20	
B2 4 Flat Type 2.10 2B4P Living Room/Kitchen	0.00	
B2 5 Flat Type 1.40 1B2P Living Room/Kitchen	0.00	
B2 6 Flat Type 2.10 1B2P Living Room/Kitchen	0.60	
B2 7 Flat Type 2.10 2B4P Living Room/Kitchen	0.50	

Room (Bedrooms)	Criteria 4.2 (a)	Compliance
	Criteria 1 (%Hrs Top-Tmax>=1K)	
Level 01		
B1 1 Flat Type 2.6 2B3P Bedroom 1	1.90	✓
B1 1 Flat Type 2.6 2B3P Bedroom 2	1.60	✓
B1 2 Flat Type 2.5 2B3P Bedroom 1	0.40	✓
B1 2 Flat Type 2.5 2B3P Bedroom 2	0.00	✓
B1 3 Flat Type 1.3 1B2P Bedroom 1	0.50	✓
B1 4 Flat Type 2.5 2B3P Bedroom 1	0.40	✓
B1 4 Flat Type 2.5 2B3P Bedroom 2	0.40	✓
B1 5 Flat Type 2.7 2B34P Bedroom 1	0.20	✓
B1 5 Flat Type 2.7 2B4P Bedroom 2	2.60	✓
B1 6 Flat Type 3.1 3B5P Bedroom 1	0.80	✓
B1 6 Flat Type 3.1 3B5P Bedroom 2	0.50	✓
B1 6 Flat Type 3.1 3B5P Bedroom Three	0.30	✓
B1 7 Flat Type 2.5 2B3P Bedroom 1	0.10	✓
B1 7 Flat Type 2.5 2B3P Bedroom 2	0.20	✓
B1 Flat Type 1.3 1B2P Bedroom	0.90	✓
B2 1 Flat Type 2.8 2B4P Bedroom 1	0.00	✓
B2 1 Flat Type 2.8 2B4P Bedroom 2	0.10	✓
B2 2 Flat Type 2.8 2B4P Bedroom 1	0.00	✓
B2 2 Flat Type 2.8 2B4P Bedroom 2	0.00	✓
B2 3 Flat Type 2.9 2B3P Bedroom 1	0.00	✓
B2 3 Flat Type 2.9 2B3P Bedroom 2	0.00	✓
B2 4 Flat Type 2.10 2B4P Bedroom 1	0.00	✓
B2 4 Flat Type 2.10 2B4P Bedroom 2	0.00	✓
B2 5 Flat Type 1.40 1B2P Bedroom 1	0.00	✓
B2 6 Flat Type 2.10 1B2P Bedroom 1	0.10	✓
B2 6 Flat Type 2.10 1B2P Bedroom 2	0.00	✓
B2 7 Flat Type 2.10 2B4P Bedroom 1	0.00	✓
B2 7 Flat Type 2.10 2B4P Bedroom 2	0.00	✓
Level 13		
B1 1 Flat Type 2.6 2B3P Bedroom 1	0.00	✓

Room (Bedrooms)	Criteria 4.2 (a)	Compliance
	Criteria 1 (%Hrs Top-Tmax>=1K)	
Level 01		
B1 1 Flat Type 2.6 2B3P Bedroom 2	0.00	✓
B1 2 Flat Type 2.5 2B3P Bedroom 1	0.00	✓
B1 2 Flat Type 2.5 2B3P Bedroom 2	0.00	✓
B1 3 Flat Type 1.3 1B2P Bedroom 1	0.00	✓
B1 4 Flat Type 2.5 2B3P Bedroom 1	0.00	✓
B1 4 Flat Type 2.5 2B3P Bedroom 2	0.00	✓
B1 5 Flat Type 2.7 2B34P Bedroom 1	0.00	✓
B1 5 Flat Type 2.7 2B4P Bedroom 2	0.10	✓
B1 6 Flat Type 3.1 3B5P Bedroom 1	0.00	✓
B1 6 Flat Type 3.1 3B5P Bedroom 2	0.00	✓
B1 6 Flat Type 3.1 3B5P Bedroom Three	0.00	✓
B1 7 Flat Type 2.5 2B3P Bedroom 1	0.10	✓
B1 7 Flat Type 2.5 2B3P Bedroom 2	0.00	✓
B1 Flat Type 1.3 1B2P Bedroom	0.00	✓
B2 1 Flat Type 2.8 2B4P Bedroom 1	0.00	✓
B2 1 Flat Type 2.8 2B4P Bedroom 2	0.20	✓
B2 2 Flat Type 2.8 2B4P Bedroom 1	0.00	✓
B2 2 Flat Type 2.8 2B4P Bedroom 2	0.00	✓
B2 3 Flat Type 2.9 2B3P Bedroom 1	0.00	✓
B2 3 Flat Type 2.9 2B3P Bedroom 2	0.00	✓
B2 4 Flat Type 2.10 2B4P Bedroom 1	0.00	✓
B2 4 Flat Type 2.10 2B4P Bedroom 2	0.00	✓
B2 5 Flat Type 1.40 1B2P Bedroom 1	0.00	✓
B2 6 Flat Type 2.10 1B2P Bedroom 1	0.10	✓
B2 6 Flat Type 2.10 1B2P Bedroom 2	0.20	✓
B2 7 Flat Type 2.10 2B4P Bedroom 1	0.10	✓
B2 7 Flat Type 2.10 2B4P Bedroom 2	0.30	✓
Level 26		
B1 1 Flat Type 2.6 2B3P Bedroom 1	0.00	✓
B1 1 Flat Type 2.6 2B3P Bedroom 2	0.00	✓
B1 2 Flat Type 2.5 2B3P Bedroom 1	0.00	✓
B1 2 Flat Type 2.5 2B3P Bedroom 2	0.00	✓
B1 3 Flat Type 1.3 1B2P Bedroom 1	0.00	✓
B1 4 Flat Type 2.5 2B3P Bedroom 1	0.00	✓
B1 4 Flat Type 2.5 2B3P Bedroom 2	0.00	✓
B1 5 Flat Type 2.7 2B34P Bedroom 1	0.00	✓
B1 5 Flat Type 2.7 2B4P Bedroom 2	0.10	✓
B1 6 Flat Type 3.1 3B5P Bedroom 1	0.00	✓
B1 6 Flat Type 3.1 3B5P Bedroom 2	0.00	✓
B1 6 Flat Type 3.1 3B5P Bedroom Three	0.00	✓
B1 7 Flat Type 2.5 2B3P Bedroom 1	0.10	✓
B1 7 Flat Type 2.5 2B3P Bedroom 2	0.00	✓
B1 Flat Type 1.3 1B2P Bedroom	0.00	✓

Room (Bedrooms)	Criteria 4.2 (a)	Compliance
	Criteria 1 (%Hrs Top-Tmax>=1K)	
Level 01		
B2 1 Flat Type 2.8 2B4P Bedroom 1	0.00	✓
B2 1 Flat Type 2.8 2B4P Bedroom 2	0.00	✓
B2 2 Flat Type 2.8 2B4P Bedroom 1	0.00	✓
B2 2 Flat Type 2.8 2B4P Bedroom 2	0.00	✓
B2 3 Flat Type 2.9 2B3P Bedroom 1	0.00	✓
B2 3 Flat Type 2.9 2B3P Bedroom 2	0.00	✓
B2 4 Flat Type 2.10 2B4P Bedroom 1	0.00	✓
B2 4 Flat Type 2.10 2B4P Bedroom 2	0.00	✓
B2 5 Flat Type 1.40 1B2P Bedroom 1	0.00	✓
B2 6 Flat Type 2.10 1B2P Bedroom 1	0.10	✓
B2 6 Flat Type 2.10 1B2P Bedroom 2	0.20	✓
B2 7 Flat Type 2.10 2B4P Bedroom 1	0.20	✓
B2 7 Flat Type 2.10 2B4P Bedroom 2	0.20	✓

Room (Bedrooms)	Criteria 4.2 (b)	Compliance
	Criteria 1 (%Hrs Top-Tmax>=1K)	
Level 01		
B1 1 Flat Type 2.6 2B3P Bedroom 1	11.00	✓
B1 1 Flat Type 2.6 2B3P Bedroom 2	12.00	✓
B1 2 Flat Type 2.5 2B3P Bedroom 1	11.00	✓
B1 2 Flat Type 2.5 2B3P Bedroom 2	11.00	✓
B1 3 Flat Type 1.3 1B2P Bedroom 1	9.00	✓
B1 4 Flat Type 2.5 2B3P Bedroom 1	13.00	✓
B1 4 Flat Type 2.5 2B3P Bedroom 2	11.00	✓
B1 5 Flat Type 2.7 2B34P Bedroom 1	10.00	✓
B1 5 Flat Type 2.7 2B4P Bedroom 2	12.00	✓
B1 6 Flat Type 3.1 3B5P Bedroom 1	10.00	✓
B1 6 Flat Type 3.1 3B5P Bedroom 2	10.00	✓
B1 6 Flat Type 3.1 3B5P Bedroom Three	7.00	✓
B1 7 Flat Type 2.5 2B3P Bedroom 1	11.00	✓
B1 7 Flat Type 2.5 2B3P Bedroom 2	11.00	✓
B1 Flat Type 1.3 1B2P Bedroom	6.00	✓
B2 1 Flat Type 2.8 2B4P Bedroom 1	10.00	✓
B2 1 Flat Type 2.8 2B4P Bedroom 2	12.00	✓
B2 2 Flat Type 2.8 2B4P Bedroom 1	10.00	✓
B2 2 Flat Type 2.8 2B4P Bedroom 2	11.00	✓
B2 3 Flat Type 2.9 2B3P Bedroom 1	9.00	✓
B2 3 Flat Type 2.9 2B3P Bedroom 2	11.00	✓
B2 4 Flat Type 2.10 2B4P Bedroom 1	12.00	✓
B2 4 Flat Type 2.10 2B4P Bedroom 2	12.00	✓
B2 5 Flat Type 1.40 1B2P Bedroom 1	5.00	✓
B2 6 Flat Type 2.10 1B2P Bedroom 1	10.00	✓
B2 7 Flat Type 2.10 2B4P Bedroom 1	11.00	✓

Room (Bedrooms)	Criteria 4.2 (b)	Compliance
	Criteria 1 (%Hrs Top-Tmax>=1K)	
Level 01		
B2 7 Flat Type 2.10 2B4P Bedroom 2	14.00	✓
		✓
Level 13		
B1 1 Flat Type 2.6 2B3P Bedroom 1	8.00	✓
B1 1 Flat Type 2.6 2B3P Bedroom 2	9.00	✓
B1 2 Flat Type 2.5 2B3P Bedroom 1	7.00	✓
B1 2 Flat Type 2.5 2B3P Bedroom 2	7.00	✓
B1 3 Flat Type 1.3 1B2P Bedroom 1	3.00	✓
B1 4 Flat Type 2.5 2B3P Bedroom 1	8.00	✓
B1 4 Flat Type 2.5 2B3P Bedroom 2	7.00	✓
B1 5 Flat Type 2.7 2B34P Bedroom 1	7.00	✓
B1 5 Flat Type 2.7 2B4P Bedroom 2	9.00	✓
B1 6 Flat Type 3.1 3B5P Bedroom 1	8.00	✓
B1 6 Flat Type 3.1 3B5P Bedroom 2	8.00	✓
B1 6 Flat Type 3.1 3B5P Bedroom Three	1.00	✓
B1 7 Flat Type 2.5 2B3P Bedroom 1	8.00	✓
B1 7 Flat Type 2.5 2B3P Bedroom 2	9.00	✓
B1 Flat Type 1.3 1B2P Bedroom	1.00	✓
B2 1 Flat Type 2.8 2B4P Bedroom 1	8.00	✓
B2 1 Flat Type 2.8 2B4P Bedroom 2	10.00	✓
B2 2 Flat Type 2.8 2B4P Bedroom 1	4.00	✓
B2 2 Flat Type 2.8 2B4P Bedroom 2	7.00	✓
B2 3 Flat Type 2.9 2B3P Bedroom 1	2.00	✓
B2 3 Flat Type 2.9 2B3P Bedroom 2	7.00	✓
B2 4 Flat Type 2.10 2B4P Bedroom 1	7.00	✓
B2 4 Flat Type 2.10 2B4P Bedroom 2	7.00	✓
B2 5 Flat Type 1.40 1B2P Bedroom 1	0.00	✓
B2 6 Flat Type 2.10 1B2P Bedroom 1	9.00	✓
B2 6 Flat Type 2.10 1B2P Bedroom 2	10.00	✓
B2 7 Flat Type 2.10 2B4P Bedroom 1	10.00	✓
B2 7 Flat Type 2.10 2B4P Bedroom 2	10.00	✓
Level 26		
B1 1 Flat Type 2.6 2B3P Bedroom 1	8.00	✓
B1 1 Flat Type 2.6 2B3P Bedroom 2	9.00	✓
B1 2 Flat Type 2.5 2B3P Bedroom 1	7.00	✓
B1 2 Flat Type 2.5 2B3P Bedroom 2	7.00	✓
B1 3 Flat Type 1.3 1B2P Bedroom 1	3.00	✓
B1 4 Flat Type 2.5 2B3P Bedroom 1	8.00	✓
B1 4 Flat Type 2.5 2B3P Bedroom 2	7.00	✓
B1 5 Flat Type 2.7 2B34P Bedroom 1	7.00	✓
B1 5 Flat Type 2.7 2B4P Bedroom 2	9.00	✓
B1 6 Flat Type 3.1 3B5P Bedroom 1	8.00	✓
B1 6 Flat Type 3.1 3B5P Bedroom 2	8.00	✓

Room (Bedrooms)	Criteria 4.2 (b)	Compliance
	Criteria 1 (%Hrs Top-Tmax>=1K)	
Level 01		
B1 6 Flat Type 3.1 3B5P Bedroom Three	1.00	✓
B1 7 Flat Type 2.5 2B3P Bedroom 1	8.00	✓
B1 7 Flat Type 2.5 2B3P Bedroom 2	9.00	✓
B1 Flat Type 1.3 1B2P Bedroom	1.00	✓
B2 1 Flat Type 2.8 2B4P Bedroom 1	4.00	✓
B2 1 Flat Type 2.8 2B4P Bedroom 2	2.00	✓
B2 2 Flat Type 2.8 2B4P Bedroom 1	4.00	✓
B2 2 Flat Type 2.8 2B4P Bedroom 2	7.00	✓
B2 3 Flat Type 2.9 2B3P Bedroom 1	2.00	✓
B2 3 Flat Type 2.9 2B3P Bedroom 2	7.00	✓
B2 4 Flat Type 2.10 2B4P Bedroom 1	7.00	✓
B2 4 Flat Type 2.10 2B4P Bedroom 2	7.00	✓
B2 5 Flat Type 1.40 1B2P Bedroom 1	0.00	✓
B2 6 Flat Type 2.10 1B2P Bedroom 1	9.00	✓
B2 6 Flat Type 2.10 1B2P Bedroom 2	10.00	✓
B2 7 Flat Type 2.10 2B4P Bedroom 1	10.00	✓
B2 7 Flat Type 2.10 2B4P Bedroom 2	10.00	✓

Table 15: Bock B TM59 DSY 01 Detailed Results.

Table 13: Block B TMS5 B3F 01 Detailed Results:

Room (Living Room/Kitchens)	Criteria 4.2 (a)	Compliance
	Criteria 1 (%Hrs Top-Tmax>=1K)	
Level 01		
B1 2 Flat Type 2.5 2B3P Living Room/Kitchen	1.10	✓
B1 3 Flat Type 1.3 1B2P Living Room/Kitchen	0.70	✓
B1 7 Flat Type 2.5 2B3P Living Room/Kitchen	2.20	✓
B2 1 Flat Type 2.8 2B4P Living Room/Kitchen	3.10	✓
B2 3 Flat Type 2.9 2B3P Living Room/Kitchen	1.00	✓
B2 4 Flat Type 2.10 2B4P Living Room/Kitchen	1.10	✓
B2 5 Flat Type 1.40 1B2P Living Room/Kitchen	1.00	✓
B2 6 Flat Type 2.10 1B2P Living Room/Kitchen	1.00	✓
B2 7 Flat Type 2.10 2B4P Living Room/Kitchen	1.40	✓
Level 13		
B1 2 Flat Type 2.5 2B3P Living Room/Kitchen	0.80	✓
B1 3 Flat Type 1.3 1B2P Living Room/Kitchen	0.50	✓
B1 7 Flat Type 2.5 2B3P Living Room/Kitchen	1.80	✓

Room (Living Room/Kitchens)	Criteria 4.2 (a)	Compliance
	Criteria 1 (%Hrs Top-Tmax>=1K)	
Level 01		
B2 4 Flat Type 2.10 2B4P Living Room/Kitchen	1.00	✓
B2 5 Flat Type 1.40 1B2P Living Room/Kitchen	0.70	✓
B2 6 Flat Type 2.10 1B2P Living Room/Kitchen	1.00	✓
B2 7 Flat Type 2.10 2B4P Living Room/Kitchen	1.20	✓
B2_1 Living Room / Kitchen	2.00	✓
Level 26		
B11 FLAT TYPE 2.6 2B3P Living Room/Kitchen	1.50	✓
B12 FLAT TYPE 2.5 2B3P Living Room/Kitchen	1.00	✓
B13 FLAT TYPE 1.3 1B2P Kitchen/Living Room	0.80	✓
B14 FLAT TYPE 2.5 2B3P Living Room / Kitchen	0.90	✓
B15 FLAT TYPE 2.5 2B4P Living Room/Kitchen	2.00	✓
B16 FLAT TYPE 2.5 2B3P Living Room / Kitchen	1.00	✓
B17 FLAT TYPE 2.7 2B3P Living Room/Kitchen	1.10	✓

Room (Bedrooms)	Criteria 4.2 (a)	Compliance
	Criteria 1 (%Hrs Top-Tmax>=1K)	
Level 01		
B1 2 Flat Type 2.5 2B3P Bedroom 1	0.60	✓
B1 2 Flat Type 2.5 2B3P Bedroom 2	0.60	✓
B1 3 Flat Type 1.3 1B2P Bedroom 1	0.50	✓
B1 7 Flat Type 2.5 2B3P Bedroom 1	0.70	✓
B1 7 Flat Type 2.5 2B3P Bedroom 2	0.50	✓
B2 1 Flat Type 2.8 2B4P Bedroom 1	0.50	✓
B2 1 Flat Type 2.8 2B4P Bedroom 2	0.60	✓
B2 3 Flat Type 2.9 2B3P Bedroom 1	0.60	✓
B2 3 Flat Type 2.9 2B3P Bedroom 2	0.60	✓
B2 4 Flat Type 2.10 2B4P Bedroom 1	0.50	✓
B2 4 Flat Type 2.10 2B4P Bedroom 2	0.60	✓
B2 5 Flat Type 1.40 1B2P Bedroom 1	0.50	✓
B2 6 Flat Type 2.10 1B2P Bedroom 1	0.50	✓
B2 6 Flat Type 2.10 1B2P Bedroom 2	0.50	✓
B2 7 Flat Type 2.10 2B4P Bedroom 1	0.50	✓
B2 7 Flat Type 2.10 2B4P Bedroom 2	0.50	✓
Level 13		

Room (Bedrooms)	Criteria 4.2 (a)	Compliance
	Criteria 1 (%Hrs Top-Tmax>=1K)	
Level 01		
B1 2 Flat Type 2.5 2B3P Bedroom 1	0.50	✓
B1 2 Flat Type 2.5 2B3P Bedroom 2	0.40	✓
B1 3 Flat Type 1.3 1B2P Bedroom 1	0.40	✓
B1 7 Flat Type 2.5 2B3P Bedroom 1	0.40	✓
B1 7 Flat Type 2.5 2B3P Bedroom 2	0.40	✓
B2 1 Flat Type 2.8 2B4P Bedroom 1	0.40	✓
B2 1 Flat Type 2.8 2B4P Bedroom 2	0.40	✓
B2 4 Flat Type 2.10 2B4P Bedroom 1	0.40	✓
B2 4 Flat Type 2.10 2B4P Bedroom 2	0.40	✓
B2 5 Flat Type 1.40 1B2P Bedroom 1	0.40	✓
B2 6 Flat Type 2.10 1B2P Bedroom 1	0.40	✓
B2 6 Flat Type 2.10 1B2P Bedroom 2	0.50	✓
B2 7 Flat Type 2.10 2B4P Bedroom 1	0.40	✓
B2 7 Flat Type 2.10 2B4P Bedroom 2	0.60	✓
Level 26		
B11 FLAT TYPE 2.6 2B3P Bedroom 1	0.40	✓
B11 FLAT TYPE 2.6 2B3P Bedroom 2	0.40	✓
B12 FLAT TYPE 2.5 2B3P Bedroom 1	0.60	✓
B12 FLAT TYPE 2.5 2B3P Bedroom 2	0.40	✓
B13 FLAT TYPE 1.3 1B2P Bedroom	0.50	✓
B14 FLAT TYPE 2.5 2B3P Bedroom 1	0.50	✓
B14 FLAT TYPE 2.5 2B3P Bedroom 2	0.50	✓
B15 FLAT TYPE 2.5 2B4P Bedroom 1	0.40	✓
B15 FLAT TYPE 2.5 2B4P Bedroom 2	0.90	✓
B16 FLAT TYPE 2.5 2B3P Bedroom 1	0.50	✓
B16 FLAT TYPE 2.5 2B3P Bedroom 2	0.50	✓
B17 FLAT TYPE 2.7 2B3P Bedroom 1	0.60	✓
B17 FLAT TYPE 2.7 2B3P Bedroom 2	0.40	✓

Room (Bedrooms)	Criteria 4.2 (a)	Compliance
	Criteria 1 (%Hrs Top-Tmax>=1K)	
Level 01		
B1 2 Flat Type 2.5 2B3P Bedroom 1	12.00	✓
B1 2 Flat Type 2.5 2B3P Bedroom 2	12.00	✓
B1 3 Flat Type 1.3 1B2P Bedroom 1	11.00	✓
B1 7 Flat Type 2.5 2B3P Bedroom 1	12.00	✓
B1 7 Flat Type 2.5 2B3P Bedroom 2	12.00	✓
B2 1 Flat Type 2.8 2B4P Bedroom 1	12.00	✓
B2 1 Flat Type 2.8 2B4P Bedroom 2	12.00	✓
B2 4 Flat Type 2.10 2B4P Bedroom 1	12.00	✓

Room (Bedrooms)	Criteria 4.2 (a)	Compliance
	Criteria 1 (%Hrs Top-Tmax>=1K)	
Level 01		
B2 4 Flat Type 2.10 2B4P Bedroom 2	12.00	✓
B2 5 Flat Type 1.40 1B2P Bedroom 1	8.00	✓
B2 6 Flat Type 2.10 1B2P Bedroom 1	12.00	✓
B2 6 Flat Type 2.10 1B2P Bedroom 2	12.00	✓
B2 7 Flat Type 2.10 2B4P Bedroom 1	13.00	✓
B2 7 Flat Type 2.10 2B4P Bedroom 2	13.00	✓
Level 13		
B1 2 Flat Type 2.5 2B3P Bedroom 1	8.00	✓
B1 2 Flat Type 2.5 2B3P Bedroom 2	8.00	✓
B1 3 Flat Type 1.3 1B2P Bedroom 1	5.00	✓
B1 7 Flat Type 2.5 2B3P Bedroom 1	9.00	✓
B1 7 Flat Type 2.5 2B3P Bedroom 2	8.00	✓
B2 1 Flat Type 2.8 2B4P Bedroom 1	8.00	✓
B2 1 Flat Type 2.8 2B4P Bedroom 2	10.00	✓
B2 4 Flat Type 2.10 2B4P Bedroom 1	8.00	✓
B2 4 Flat Type 2.10 2B4P Bedroom 2	9.00	✓
B2 5 Flat Type 1.40 1B2P Bedroom 1	5.00	✓
B2 6 Flat Type 2.10 1B2P Bedroom 1	9.00	✓
B2 6 Flat Type 2.10 1B2P Bedroom 2	10.00	✓
B2 7 Flat Type 2.10 2B4P Bedroom 1	10.00	✓
B2 7 Flat Type 2.10 2B4P Bedroom 2	10.00	✓
Level 26		
B11 FLAT TYPE 2.6 2B3P Bedroom 1	10.00	✓
B11 FLAT TYPE 2.6 2B3P Bedroom 2	7.00	✓
B12 FLAT TYPE 2.5 2B3P Bedroom 1	12.00	✓
B12 FLAT TYPE 2.5 2B3P Bedroom 2	8.00	✓
B14 FLAT TYPE 2.5 2B3P Bedroom 1	10.00	✓
B14 FLAT TYPE 2.5 2B3P Bedroom 2	11.00	✓
B15 FLAT TYPE 2.5 2B4P Bedroom 1	7.00	✓
B15 FLAT TYPE 2.5 2B4P Bedroom 2	12.00	✓
B16 FLAT TYPE 2.5 2B3P Bedroom 1	10.00	✓
B16 FLAT TYPE 2.5 2B3P Bedroom 2	12.00	✓
B17 FLAT TYPE 2.7 2B3P Bedroom 1	11.00	✓
B17 FLAT TYPE 2.7 2B3P Bedroom 2	11.00	✓

Table 16: Block B TM59 DSY 02 Detailed Results.

Room (Living Room/Kitchens)	Criteria 4.2 (a)	Compliance
	Criteria 1 (%Hrs Top-Tmax>=1K)	
Level 01		
B1 2 Flat Type 2.5 2B3P Living Room/Kitchen	2.40	✓
B1 3 Flat Type 1.3 1B2P Living Room/Kitchen	0.90	✓

Room (Living Room/Kitchens)	Criteria 4.2 (a)	Compliance
	Criteria 1 (%Hrs Top-Tmax>=1K)	
B1 7 Flat Type 2.5 2B3P Living Room/Kitchen	5.50	X
B2 1 Flat Type 2.8 2B4P Living Room/Kitchen	7.00	X
B2 4 Flat Type 2.10 2B4P Living Room/Kitchen	3.30	X
B2 5 Flat Type 1.40 1B2P Living Room/Kitchen	2.00	✓
B2 6 Flat Type 2.10 1B2P Living Room/Kitchen	2.90	✓
B2 7 Flat Type 2.10 2B4P Living Room/Kitchen	4.40	X
Level 13		
B1 2 Flat Type 2.5 2B3P Living Room/Kitchen	1.30	✓
B1 3 Flat Type 1.3 1B2P Living Room/Kitchen	0.20	✓
B1 7 Flat Type 2.5 2B3P Living Room/Kitchen	5.20	X
B2 4 Flat Type 2.10 2B4P Living Room/Kitchen	1.70	✓
B2 5 Flat Type 1.40 1B2P Living Room/Kitchen	0.50	✓
B2 6 Flat Type 2.10 1B2P Living Room/Kitchen	3.00	✓
B2 7 Flat Type 2.10 2B4P Living Room/Kitchen	3.70	X
B2_1 Living Room / Kitchen	5.80	X
Level 26		
B11 FLAT TYPE 2.6 2B3P Living Room/Kitchen	4.40	X
B12 FLAT TYPE 2.5 2B3P Living Room/Kitchen	1.90	✓
B13 FLAT TYPE 1.3 1B2P Kitchen/Living Room	1.60	✓
B14 FLAT TYPE 2.5 2B3P Living Room / Kitchen	2.00	✓
B15 FLAT TYPE 2.5 2B4P Living Room/Kitchen	5.60	X
B16 FLAT TYPE 2.5 2B3P Living Room / Kitchen	1.70	✓
B17 FLAT TYPE 2.7 2B3P Living Room/Kitchen	3.30	X

Room (Bedrooms)	Criteria 4.2 (a)	Compliance
	Criteria 1 (%Hrs Top-Tmax>=1K)	
Level 01		
B1 7 Flat Type 2.5 2B3P Bedroom 1	1.60	✓
B1 2 Flat Type 2.5 2B3P Bedroom 1	1.50	✓
B1 2 Flat Type 2.5 2B3P Bedroom 2	0.70	✓
B1 3 Flat Type 1.3 1B2P Bedroom 1	0.70	✓
B1 7 Flat Type 2.5 2B3P Bedroom 2	0.80	✓
B2 1 Flat Type 2.8 2B4P Bedroom 1	1.30	✓

Room (Bedrooms)	Criteria 4.2 (a)	Compliance
	Criteria 1 (%Hrs Top-Tmax>=1K)	
B2 1 Flat Type 2.8 2B4P Bedroom 2	2.00	✓
B2 4 Flat Type 2.10 2B4P Bedroom 1	0.70	✓
B2 4 Flat Type 2.10 2B4P Bedroom 2	1.00	✓
B2 5 Flat Type 1.40 1B2P Bedroom 1	0.70	✓
B2 6 Flat Type 2.10 1B2P Bedroom 1	1.40	✓
B2 6 Flat Type 2.10 1B2P Bedroom 2	1.80	✓
B2 7 Flat Type 2.10 2B4P Bedroom 1	1.60	✓
B2 7 Flat Type 2.10 2B4P Bedroom 2	2.00	✓
Level 13		
B1 2 Flat Type 2.5 2B3P Bedroom 1	0.50	✓
B1 2 Flat Type 2.5 2B3P Bedroom 2	0.10	✓
B1 3 Flat Type 1.3 1B2P Bedroom 1	0.10	✓
B1 7 Flat Type 2.5 2B3P Bedroom 1	1.00	✓
B1 7 Flat Type 2.5 2B3P Bedroom 2	0.20	✓
B2 1 Flat Type 2.8 2B4P Bedroom 1	0.90	✓
B2 1 Flat Type 2.8 2B4P Bedroom 2	1.60	✓
B2 4 Flat Type 2.10 2B4P Bedroom 1	0.10	✓
B2 4 Flat Type 2.10 2B4P Bedroom 2	0.20	✓
B2 5 Flat Type 1.40 1B2P Bedroom 1	0.00	✓
B2 6 Flat Type 2.10 1B2P Bedroom 1	1.10	✓
B2 6 Flat Type 2.10 1B2P Bedroom 2	1.80	✓
B2 7 Flat Type 2.10 2B4P Bedroom 1	1.40	✓
B2 7 Flat Type 2.10 2B4P Bedroom 2	2.00	✓
Level 26		
B11 FLAT TYPE 2.6 2B3P Bedroom 1	0.60	✓
B11 FLAT TYPE 2.6 2B3P Bedroom 2	0.10	✓
B12 FLAT TYPE 2.5 2B3P Bedroom 1	1.10	✓
B12 FLAT TYPE 2.5 2B3P Bedroom 2	0.10	✓
B13 FLAT TYPE 1.3 1B2P Bedroom	0.20	✓
B14 FLAT TYPE 2.5 2B3P Bedroom 1	0.30	✓
B14 FLAT TYPE 2.5 2B3P Bedroom 2	0.30	✓
B15 FLAT TYPE 2.5 2B4P Bedroom 1	1.20	✓
B15 FLAT TYPE 2.5 2B4P Bedroom 2	2.60	✓
B16 FLAT TYPE 2.5 2B3P Bedroom 1	0.40	✓
B16 FLAT TYPE 2.5 2B3P Bedroom 2	0.70	✓
B17 FLAT TYPE 2.7 2B3P Bedroom 1	1.80	✓
B17 FLAT TYPE 2.7 2B3P Bedroom 2	1.60	✓

Room (Bedrooms)	Criteria 4.2 (a)	Compliance
	Criteria 1 (%Hrs Top-Tmax>=1K)	
Level 01		
B1 7 Flat Type 2.5 2B3P Bedroom 1	48.00	X
B1 7 Flat Type 2.5 2B3P Bedroom 2	51.00	X
B1 2 Flat Type 2.5 2B3P Bedroom 2	51.00	X
B1 3 Flat Type 1.3 1B2P Bedroom 1	41.00	X
B2 1 Flat Type 2.8 2B4P Bedroom 1	46.00	X
B2 1 Flat Type 2.8 2B4P Bedroom 2	53.00	X
B2 7 Flat Type 2.10 2B4P Bedroom 2	54.00	X
B2 7 Flat Type 2.10 2B4P Bedroom 1	56.00	X
B2 4 Flat Type 2.10 2B4P Bedroom 2	50.00	X
B2 4 Flat Type 2.10 2B4P Bedroom 1	50.00	X
B2 5 Flat Type 1.40 1B2P Bedroom 1	32.00	✓
B2 6 Flat Type 2.10 1B2P Bedroom 1	49.00	X
B2 6 Flat Type 2.10 1B2P Bedroom 2	48.00	X
B1 2 Flat Type 2.5 2B3P Bedroom 1	45.00	X
Level 13		
B1 7 Flat Type 2.5 2B3P Bedroom 1	33.00	✓
B1 7 Flat Type 2.5 2B3P Bedroom 2	34.00	X
B1 2 Flat Type 2.5 2B3P Bedroom 2	33.00	✓
B1 3 Flat Type 1.3 1B2P Bedroom 1	26.00	✓
B2 1 Flat Type 2.8 2B4P Bedroom 1	36.00	X
B2 1 Flat Type 2.8 2B4P Bedroom 2	40.00	X
B2 7 Flat Type 2.10 2B4P Bedroom 2	44.00	X
B2 7 Flat Type 2.10 2B4P Bedroom 1	46.00	X
B2 4 Flat Type 2.10 2B4P Bedroom 2	34.00	X
B2 4 Flat Type 2.10 2B4P Bedroom 1	32.00	✓
B2 5 Flat Type 1.40 1B2P Bedroom 1	21.00	✓
B2 6 Flat Type 2.10 1B2P Bedroom 1	39.00	X
B2 6 Flat Type 2.10 1B2P Bedroom 2	40.00	X
B1 2 Flat Type 2.5 2B3P Bedroom 1	30.00	
Level 26		
B11 FLAT TYPE 2.6 2B3P Bedroom 1	32.00	✓
B11 FLAT TYPE 2.6 2B3P Bedroom 2	26.00	✓
B12 FLAT TYPE 2.5 2B3P Bedroom 2	30.00	✓
B13 FLAT TYPE 1.3 1B2P Bedroom	27.00	✓
B14 FLAT TYPE 2.5 2B3P Bedroom 1	33.00	✓
B14 FLAT TYPE 2.5 2B3P Bedroom 2	35.00	X
B15 FLAT TYPE 2.5 2B4P Bedroom 1	32.00	✓
B15 FLAT TYPE 2.5 2B4P Bedroom 2	54.00	X

Room (Bedrooms)	Criteria 4.2 (a)	Compliance
	Criteria 1 (%Hrs Top-Tmax>=1K)	
B17 FLAT TYPE 2.7 2B3P Bedroom 1	42.00	X
B17 FLAT TYPE 2.7 2B3P Bedroom 2	41.00	X
B16 FLAT TYPE 2.5 2B3P Bedroom 2	40.00	X
B16 FLAT TYPE 2.5 2B3P Bedroom 1	36.00	X
B12 FLAT TYPE 2.5 2B3P Bedroom 1	41.00	X

Table 17 Block B TM59 DSY03 Detailed Results.

Contact

David Spiteri
Director, Head of Sustainability
Wallace Whittle Limited
Suite D, Chadwick House
Birchwood Park
Warrington, WA3 6AE
United Kingdom

DD: +44(0)330 460 5200
Mob: +44 (0)7809 343029
David.Spiteri@wallacewhittle.com

Aberdeen Office
166 Great Western Road
Aberdeen, AB10 6QE

Belfast Office
Suite 3, Bamford House, 91-93
Saintfield Road, Belfast, BT8 7HN

Edinburgh Office
One Lochrin Square, 92
Fountainbridge, Edinburgh, EH3 9QA

Glasgow Office
Venlaw Building, 349 Bath Street
Glasgow, G2 4AA

London Office
22 Chapter Street
London, SW1P 4NP

UAE Office
Office 407, IBN Battuta Gate
PO Box 2834

Warrington Office
Suite D, Chadwick House
Birchwood Park, Warrington, WA3 6AE

General
Tel: +44(0)330 460 5200
Email: contact@wallacewhittle.com
www.wallacewhittle.com

